



International Federation of  
Physical Education, Fitness and  
Sports Science Association



PROCEEDINGS OF

# International Conference on Physical Education and Exercise Science, 2021

Authors : Prof Rajesh Kumar, Prof. L.B.Laxmikanth Rathod, Dr C.Veerender



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# **International Conference on Physical Education and Exercise Science, 2021**

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# **International Conference on Physical Education and Exercise Science 2021**

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## MESSAGE



I am happy to learn that the International Conference on Physical Education and Exercise Science is scheduled during December 5-6, 2021 under the joint auspices of the International Federation of Physical Education, Fitness and Sports Science Association and the Indian Federation of Computer Science in Sports. I deeply appreciate the initiative of the organizers in bringing this international academic event to our historic City of Hyderabad. It is equally thoughtful of them to have conceived the hybrid format of physical presentation and virtual mode innovatively in holding this conference, taking into consideration the pandemic situation underway. It is indeed befitting that the Proceedings of the Conference are being brought out to mark the occasion.

The focal theme and sub themes of the Conference are well-chosen and are of current academic significance and societal relevance. They bring home the multidisciplinary, emerging perspectives and the paradigm shift underway in the broader field of Physical Education. There is need for greater integration of this evolving discipline into the mainstream of higher education for the holistic development of the learners at different levels.

**[Prof. L. B. Laxmikanth Rathod]**



**Prof. Rajesh Kumar**  
President

**International Federation of Physical Education, Fitness and Sports Science  
Association**

**MESSAGE**

International Federation of Physical Education, Fitness and Sports Science Association with great pleasure extend the warmest greetings to the Delegates and Speakers of the International Conference on Physical Education and Exercise Science (Virtual and Offline) on 5<sup>th</sup> December 2021. This Conference will provide a platform to all the Physical Education Professors, Sports Scientists, Sports Coaches, Sports Psychologist, Physical Education Scholars and other participants to share their views and promote the knowledge in the field of Physical Education and Sports Science Profession at the International Level.

I wish the Organizers a grand success.



**Prof. Rajesh Kumar, President**



**Dr. C. Veerender, Sports Psychologist.**

[www.younme.co](http://www.younme.co)

Sports Psychologist, You and Me, Institute of human dynamics and management. Hyderabad, Telangana, India  
Vice President

**International Federation of Physical Education, Fitness and Sports  
Science Association**

**MESSAGE**

I take this occasion with great pleasure extend the warmest greetings to the Organizers, Delegates and Speakers of the International Conference on Physical Education and Exercise Science, 2021. This Conference will provide a platform to all the Physical Educational Professors, Sports Scientists, Sports Coaches, Sports Trainers, Sports Doctors, Sports Psychologist, Physical Education Scholars and other participants to share their views and promote the knowledge in the field of Physical Education and Sports Science Profession at the International Level.

I wish the Organizers a grand success, as the seeds you may sow through this august conference shall reap the intended advancements and benefits to humanity through healthy practice and implementation of sports inevitably.

**Dr. C. Veerender**  
Sports Psychologist  
Hyderabad, Telangana, India.



**Prof. Syed Ibrahim**

**Life President**

## **Indian Federation of Computer Science in Sports**

### **MESSAGE**

The Indian Federation of Computer science in Sports extends the warmest greetings to the Delegates and Speakers of the International Conference on Physical Education and Exercise Science, 2021 at Hotel Green Park, Begumpet, Hyderabad on 5<sup>th</sup> December 2021. This conference promotes the knowledge in the field of Physical Education and Sports Science Profession at the International Level.

I wish the Organizers a grand success.

**Prof. Syed Ibrahim**  
Life President, IFCSS



**Prof. J. Prabhakar Rao**

**President**

## **Indian Federation of Computer Science in Sports**

### **MESSAGE**

The Indian Federation of Computer science in Sports extends the warmest greetings to the Delegates and Speakers of the International Conference on Physical Education and Exercise Science, 2021 at Hotel Green Park, Begumpet, Hyderabad on 5<sup>th</sup> December 2021. This conference promotes the knowledge among Sports Professionals in India at International level.

I wish the Organizers a grand success and good luck to the participants.

**Prof. J. Prabhakar Rao**  
President, IFCSS



**Dr. Y. Emmanuel Shashi Kumar**

**Chairman**

## **Indian Federation of Computer Science in Sports**

### **MESSAGE**

The Indian Federation of Computer science in Sports extend the warmest greetings to the Delegates and Speakers of the International Conference on Physical Education and Exercise Science, 2021 (Virtual and Offline) at Hotel Green Park, Begumpet, Hyderabad on 5<sup>th</sup> December 2021. This conference promotes the knowledge among Sports and Physical Education Professionals in India at International level.

I wish the Organizers a grand success.

**Dr. Y. Emmanuel S. Kumar**  
Chairman, IFCSS



**Secretary General, Indian Academy of Sports Sciences, Former Secretary  
Sports Board, Association of Indian Universities  
AIU House, New Delhi-110002**

**IMPORTANCE OF HEALTH**

Health being a prime concern is considered to be a relative state in which one can function well physically, mentally, socially and spiritually, with a view to communicate, express and respond to the full range of one's unique potential within the environment in which one is living. Therefore, good health is a dynamic condition resulting from a body's constant adaptation and adjustment in response to the change, leading to a stressful situation in the environment for maintaining an inner equilibrium called homeostasis. The World Health Organization (WHO) defined the term health as a "state of complete physical, mental and social well-being, not merely the absence of disease or infirmity."

1. **Physical Health:** It refers to a fine balance between anatomical integrity and physiological functioning of the human body in one's day-to-day life, with an encouraging out-come.
2. **Mental Health:** It is an ability of a person to learn and think clearly. Accordingly, an individual with good health can tackle his/her daily events and obstacles effectively in society.
3. **Social Health:** It is the ability of an individual to make and maintain socially acceptable decisions and interactions with other people in the fast evolving social environment.
4. **Optimum Health:** The medical science reveals that attitude, behavior, habits, and perception serve as an important aid to promote good health and improve quality of life. Further, habits once developed become an integral part of one's personality and performance. Parents and teachers play a key role in improving behavior-actions, reactions and perceptions of their wards through observance of social activities, eating habits, hygienic conditions and specialized training in schools, colleges and universities, etc.

A. Recently, COVID-19 has adversely affected human life from all angles- physical, mental, social and spiritual, etc. The magnitude of destruction caused by COVID-19 was hard to comprehend and beyond human imagination. It may be mentioned that the coronavirus pandemic engulfed the entire world, spoiling trade and travel, resulting in the global slow slowdown, and recession in the economy. Consequently, all these led to the deprivation of the lower and middle class as well as daily earners of their means of livelihood. As a result, human ability, behavior, perception and reaction suffered a serious set-back, especially the youth being a bread-winner of the family and vanguard of the society became the victim of anxiety, depression, frustration, and insecurity of job in gruelling struggle of life, to survive and succeed in intensely competitive environment.



## **Benefits of Laughter**

**Associate Professor Dr. Lim Boon Hooi**  
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The human being can be described as an “animal that laughs” - as said by Aristoteles - or an “animal who makes someone laugh” as expanded by Bergson (2008). Babies laugh before talking or walking, some researchers say that 40 days after birth, others mentioned 4 months after. In any case, they laugh and smile before their parents or when they are tickled.

Laughter physiologically unites three systems: neurochemistry, muscular, and respiratory. On the first one, he points out that laughter lies in the nervous system, a part of the cortex-conscious brain-, the limbic system-emotional center-, the chemical mediators, the receptors of the nervous system, endogenous opiates and the autonomous nervous system-sympathetic and parasympathetic-losing control of one’s willingness, have a lot to do with laughter.

Thus, this neurochemical system will initiate laughter which will be perceived more through the respiratory and muscular system and facial gesticulation. At such, laughter is a great form of stress relief, and that’s no joke. Short-term benefits of laughter are: A good laugh has great short-term effects. When you start to laugh, it doesn’t just lighten our load mentally, it actually induces physical changes in our body.

Laughter is able to stimulate many organs. Laughter enhances our intake of oxygen-rich air, stimulates our heart, lungs and muscles, and increases the endorphins that are released by our brain. It also activates and relieves our stress response. A rollicking laugh fires up and then cools down our stress response, and it can increase and then decrease our heart rate and blood pressure. The final result is always a good, relaxed feeling. In addition, laughter also able to soothe our muscle tension. It can also stimulate circulation and aid muscle relaxation, both of which can help reduce some of the physical symptoms of stress.

Regarding the long-term effects of laughter, it improves our immune system. Negative thoughts manifest into chemical reactions that can affect our body by bringing more stress into our system and decreasing our immunity. By contrast, positive thoughts can actually release neuropeptides that help fight stress and potentially more-serious illnesses. The most importantly, laughter may ease pain by causing the body to produce its own natural painkillers.

Furthermore, it increases personal satisfaction and can also make it easier to cope with difficult situations. It also helps us connect with other people too in many situations. Many people experience depression, sometimes due to chronic illnesses. Laughter can help lessen our stress, depression and anxiety and may make us feel happier. It can also improve our self-esteem. At such, keep up your laughter?



**N. Ramesh**

**Dronacharya Awardee, Athletics  
Athletics Coach, SAI, STC, Gachibowli, Hyderabad, Telangana, India**

## **Athletics Coaching- Long Term Planning With Short Term Strategies**

### **ABSTRACT**

The main concept of athlete development involves taking a long term approach to athlete development and training. This long-term approach is designed to help individual of all ages and all abilities to optimize their development and reach their potential to achieve the high level of performance in athletics. Effective athletics coaching program helps the athletes to improve the performance year after year possibly until the age of 35 years. The Athletes development is doing the right things at the right time for their long-term for development. The long-term athlete development approach is an organized approach toward achieving the optimal training, competition, and recovery throughout an athlete's career. There are five stages of athletes' development. The Kids' Athletics development stage should be structured for developing basic fitness and fundamental movement skills. The second stage of development is called the multi-events stage where individual now learn how to train and develop their athletic skills. The third stage is the event group development stage where an emphasis on greater individualization of fitness and technical training. The fourth stage is specialization stage where athlete end to focus on an event. The final stage of preparation and participation in athletics is the performance stage where athlete's achieves his high level of performance. The concept of athlete development that training should progress from the general training of Kids' Athlete Stage to predominantly competition Specific training of the performance stage. The Talent Identification of Child will be at Physical Education Program. Physical Literacy training is very important for Child at School Level. The Selection of Sport can be done through Physical Education and Sports Hence the Athlete approach is long-time for achieving the High level of Performance.

**Key words:** Athlete development, Coaching Program, Athlete career



**Dr. Amit Malik**

**India Ambassador, International Physical Literacy Association**

## **Paradigm Shifts from FIT India to every Indian on Physical Literacy Journey**

As a country and as a culture heritage, physical movements have always been part of our all endeavours. We have lost our touch with this aspect in recent years. We are getting more comfortable with non-moving activities. This drastic shift in our daily lives, our perceptions and “what is most valuable” requires as deeper introspection at all levels. Present data around diabetic, obesity, health, mental well-being and pre-mature death rate are good enough to give us a sense the direction in which we are heading. These data are just a symptom of our choices and decisions made in the past. We have made these choices for ourselves, our families, our offices and our society. We have made a choice “what are more valuable aspects than our life.” When such issues become really a national agenda, we saw starting of FIT INDIA initiative aimed at creating awareness of fitness among society at large. This initiative has been able to connect with a large number of people all over India. A very well intention initiative has attempted to cover fitness standards and assessments for all age groups. This approach requires serious thinking on how “this knowledge” only will motivate each Indian citizen to be active for life.

Physical literacy concept provides a holistic construct covering physical, affective and cognitive aspects. It advocates developing individuals who have motivation, confidence, physical competence and knowledge and understanding to value and take responsibilities for physical activity engagement for life. From fit India to every Indian on physical literacy journey requires a paradigm shift in approach. It requires relooking at goals, processes, outcomes and efforts; valuing human existence more than just body and seeking answers internally.



**Ma. Rosita A. Hernani Ph.D.**

**Chair, Kinesthetics Department**

**Cebu Normal University, Philippines**

## **Filipino Physical Education Teachers' Technological Pedagogical Content Knowledge on Remote Digital Teaching**

**Jem Cloyd M. Tanucan, Ma. Rosita A. Hernani, and Felix Diano Jr.**

### **ABSTRACT**

This study examined the Filipino physical education (PE) teachers' technological pedagogical content knowledge (TPACK) on remote digital teaching approach. More specifically, it looked into their preparedness on remote digital teaching using the TPACK model, the relationship between their demographics, and the seven dimensions of knowledge of TPACK model and its interrelationship using a descriptive correlational research design. The sample was composed of 1,402 PE teachers across the three major islands of the Philippines who, using online survey, answered a 19-item questionnaire with a five-point Likert scale about their TPACK on remote digital teaching. Using the Pearson Product Moment Correlation and Chi-Square test of Independence, the study yielded four major results: (1) PE teachers have an average level of preparedness to conduct remote digital teaching in all domains of knowledge of TPACK; (2) The preparedness level of the PE teachers to conduct remote digital teaching in all domains of knowledge of TPACK is dependent to their age, sex and teaching experience, except technological knowledge, as it is independent to their highest educational attainment; and (3). There is a significant interrelationship on the PE teachers' preparedness to conduct remote digital teaching among all domains of knowledge of TPACK. Hence, to successfully navigate a paradigm in education that accentuates the utilization of technology and other digital platforms, teachers have to be equipped with the tri-relationship of knowledge-content, pedagogy, and technology-through capability-building activities that consider their demographics and background. Index Terms-Physical education, remote digital teaching, teachers, technological pedagogical content knowledge.



**Prof. Henry C. Daut**

**Philippines**

## **Technology Integration in Physical Education: Challenges and Opportunities for Physical Educators**

The impact of COVID 19 pandemic affected almost all facets of life around the world. Physical Education and sports are among those hardest hit. Sporting events cancelled, sports training restricted, face-to-face classes disallowed and schools and sports facilities were literally closed to prevent the spread of the pandemic. Physical education classes in the classrooms and gymnasiums were transported into a virtual classroom conducted in the confines of homes of both teachers and students facilitated by technology.

The use of technology in the teaching and learning of physical education and sports has caught many physical educators off guard. Problems on access to technology, lack of training and time to learn, and perceived value of technology integration in physical education are some of the reasons for the struggles of physical education teachers particularly in developing countries.

In this session, the speaker will share about factors influencing the process of technology integration in the classroom and how physical educators' views in recognizing opportunities can allow for physical education to emerge stronger beyond the pandemic.



## **Associate Professor Dr. Garry Kuan**

**Secretary-General, Asian-South Pacific Association of Sport Psychology (ASPASP)**  
**Secretary-General, Malaysian Sport Psychology Association (MASPA)**  
**Executive Board Member, Asian Council of Exercise and Sports Science (ACCESS)**  
**Academic Board Member, Asian Exercise and Sport Science Association (AESAS)**  
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# **The New Norms of Prescribing Physical Activity for Adolescents, Adults and Diabetic Patients using the Technology Supported Brain-breaks**

The COVID-19 is the first global pandemic of our generation spreading worldwide, disrupting the everyday lives of people living in the affected areas, affecting almost every industry, including healthcare, education, jobs, transport, finance, and cultural activities. The outbreak of COVID-19 has forced governments to impose “lock-down,” “movement control orders” and “work from home” policies for a prolonged period. All of a sudden, the most of the world population has been on lock-down as their new normal form of living. Although these steps are crucial to slow the spread of COVID-19, they can have a detrimental effect on psychological distress and other mental health symptoms, including anxiety about the uncertainty of virus exposure and stress from social isolation.<sup>[1]</sup>

As one of the elements of healthy living, physical activity (PA) has many short and long-term health benefits across all ages. When considering children, PA is important for proper motor development, physical fitness, and the development of movement habits. PA also improves cognitive function, ability to maintain attention, developing and maintaining a working memory, cognitive flexibility, brain functioning, academic performance, cognitive ability, emotional reactions, social engagement, and mental health.<sup>[2-4]</sup>

However, with the implementation of the Movement Control Order (MCO), public parks, playgrounds, and jogging tracks have been closed. This has contributed to an even higher decline in PA levels. Fortunately, the technology-supported Brain-breaks was introduced to the Malaysian population and over 4000+ new registrations were registered due to the MCO. Brain Breaks® Physical Activity Solutions also known as brain-breaks, is an exercise video which aims to stimulate people’s interest in learning and promote better health and wellness.<sup>[5-7]</sup> The program is supported by the United Nations as part of the 17 Sustainable Developmental Goals under the #3 Health and well-being and #4 Quality education, with a focus on the CDC’s Whole School, Whole Community, Whole Child (WSCC) model.<sup>[5,8]</sup>

Thus, this presentation will focus on the benefits of implementing brain-breaks for the Malaysian population at four levels: Adolescents, young adults, older adults, and Type 2 Diabetes Mellitus patients. Participants received Brain-breaks video sessions, each of which lasted from 8 to 10 minutes, at a low-to-moderate intensity, while the control group did not engage in brain-breaks.<sup>[5]</sup>

From the results, brain-breaks have been shown to be promising tools for improving the physical activity levels of participants. It is seen as a holistic approach to be introduced into every family to improve commitment to exercise adherence and to cope with stress during the time of MCO.

## ACKNOWLEDGMENT

I would like to also acknowledge Ming-Kai Chin for providing the Brain-Breaks platform, under the GCH and HOPSports® Inc.

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## **Prof. Kaukab Azeem**

**Assistant Professor (v), Department of Physical Education  
King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia  
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### **Prevalence of Fitness, Health and Life Style Management**

#### **ABSTRACT**

Health includes the diagnosis of a disease/illness, tendency to a disease, and any unexpected injury. Wellness is a dynamic process of growth and transformation to reach your fullest health and well-being. It is associated with actively following activities such as; making choices and lifestyle changes, controlling risk factors that can harm a person, focusing on nutrition, having a balanced diet, and following spiritual practices that lead to holistic health. Moreover, to enhance and maintain one's health the following measures are important; healthy diet, planned exercise, and screening of the diseases (K. Azeem and Al Ameer, 2019). The World Health organization defined health as a state of complete physical, mental and social well-being, which is marked not only by the absence of disease or infirmity (World Health Organization, 2014). Top fitness trends around the globe (ACSM, 2021); Online training, Wearable technology, High-Intensity Interval Training (HIIT), Strength Training with free weights, Exercise is Medicine, Bodyweight Training, Fitness Programs for Older Adults, Virtual training, Personal Training, and Outdoor activities. Non-communicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally (WHO, 2021). Cardiovascular diseases account for most Non-communicable diseases deaths, or 17.9 million people annually, followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million) (WHO, 2021). In the case of heart disease, Punjab, Tamil Nadu and Haryana have the highest rate of heart diseases. Mizoram, Arunachal Pradesh and Meghalaya have the lowest. Various studies have revealed that countries such as Japan, Korea, and France have the lowest heart-related issues and it is all because of the type of lifestyle they follow. Scientific evidence indicates that regular physical activity, exercise and fitness are key determinants of health (K. Azeem *et al.*, 2019). Small studies have shown that the pomegranate juice improves blood flow and keeps the arteries from becoming stiff and thick. It may also slow the growth of plaque and build-up of cholesterol in the arteries. Eating pomegranates as a whole can have anti-inflammatory effects and can protect a human body from various diseases like type-2 diabetes, and obesity. Exercise regularly, maintain a healthy lifestyle, manage stress, avoid harmful foods and habits, include fruits and salads in the diet regularly and increase the knowledge in fitness and health.

**Key words:** Wellness, Exercise, Fitness Trend 2021, Lifestyle



## **Dr Ajay Singh Thakur**

**Consultant Orthopedic Surgeon  
Sports Medicine and Arthroscopy Specialist  
STAR Hospital, Banjara Hills, Hyderabad**

### **The athlete: Recognition and management of sports injuries in the young athlete**

#### **ABSTRACT**

The aim of the study was to identify and manage common sports injuries in the young athlete retrospective data of 84 young athletes involved in sports at various levels was obtained from hospital records. The data of history, clinical examination, investigation, and the type of intervention (surgical or non-surgical) were analyzed and charted. Injury events were classified into “acute” and “overuse” injuries based on the presence or absence of a specific identifiable traumatic event. Higher proportion of injury was reported in male athletes 61 (72.6%) than in females 23 (27.4%). The most frequently reported injured area was lower extremity (66.6%), followed by upper extremity (26.2%), and spine (7.2%). Acute injuries were significantly higher in the lower extremity (77.4%) and overuse injuries were predominantly higher in the upper extremity (45.3%). Surgical intervention was needed only in 36 (42.8%) of athletes and the rest 48 (57.2%) needed Prp, BMAC or Cortisone injections. The young athlete involved in sports pose special challenges for the caregiver because of growth, development, psychology and physiology. Knowledge of common injuries and its treatment is essential to help them have a long sporting career.



**Prof. Maj. S Bakhtiar Choudhary(Retd)\***

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**Frozen shoulder syndrome is a predisposing factor for shoulder joint injuries;  
exploratory study of all age groups**

**ABSTRACT**

**Introduction:** Varying degrees of restricted shoulder abduction and rotation is commonly diagnosed as “Frozen Shoulder Syndrome (FSS).” Large numbers (PA Shoulder) of population suffer from painful adhesive capsulitis in many occupations round the globe. There are no clear cut guidelines to address the condition. It is hypothesized, that people who get shoulder injuries during sport and non-sport occupational activities, probably had predisposing shoulder tightness due to adhesive capsulitis or subclinical frozen shoulder syndrome as a risk factor. **Methods:** 485 subjects (sports and non-sports) with non-specific shoulder pain (32%), dislocation (23%), SLAP tears (41%), and tendinitis (10%) reported for rehabilitation were studied. Acute trauma, recent surgery, and anomalies were excluded from this exploratory study. They were aged 8–65 years of both sexes; males 33.8% and females 66.2% were studied in three centers over a period of ten years. All of them were advised for invasive procedures such as infiltration and arthroscopic repair elsewhere. The ROM, pain, functional ability were tested on both shoulder joints during their rehab procedures. Their old investigations were reviewed and the ROM was compared with injured and healthy shoulder joints. **Results:** Examination of the subjects who suffered injuries and dislocations revealed, (1) All the subjects had their healthy shoulder joints were (not injured) significantly tight and the abduction and rotation were restricted. (2) Significant numbers (89%) of subjects sustained dislocations/tears due to fall on out stretched hands (abduction). Significant agreement noticed between affected and non-affected shoulder joints (kappa statistics = 0.197). **Conclusion:** Study revealed that people, who got shoulder injuries, probably had stiff joints with restricted ROM beforehand. Pre-existing subclinical frozen shoulder syndrome may be considered as a strong predisposing factor for sustaining injury or developing capsulitis. Examination of shoulder joints in both sports and non-sport employees can prevent serious shoulder injuries in future. More studies needed to evaluate the significant causes for adhesive capsulitis.

**Key words:** Shoulder Abduction, ROM, Adhesive Capsulitis, PA Shoulder



## **DR. Neeraj Jain**

**(WBR-UK London Best of India Records (BIR)**

**India Book of Records.**

**Former Chairman, Lucknow University Athletic Association.**

**Former Coordinator, Department of Physical Education, University of Lucknow.**

**Former President and General Secretary, Lucknow University Teachers Association,**

**Former President and General Secretary Lucknow University Students Union.**

## **YOGA**

The Yogic school of thought is one of the oldest and most valuable schools of Indian philosophy. The principles of Yoga have withstood the test of time and have become increasingly popular today. The word “YOGA” is known in Hindi as “योग” which is a mathematical calculation or the study of joints. I have defined “YOGA” in my own terms as: We read in books that Saint Patanjali is the father of Yoga. We tend to forget that he was the disciple of Saint Dhanwantari whose birth is believed to be the reason behind “Ocean Churning” in “Devasur Sangram.” Saint Patanjali was given this power by his guru Dhanwantari and here we are, taking his legacy ahead and bringing changes to many lives. There were 14 gems which came from Devasur Sangram and Rishi Dhanwantari who is known as the master of Yoga and Ayurveda, was one of them. The practical aspect of yoga is divided into 8 limbs (“Ashtanga”) which act as guidelines on how to live a meaningful life. These are:

1. YAMA: Refers to practicing bodily restraints
2. NIYAMA: Observing behavioral norms
3. PRANAYAMA: Breathing exercises that help the respiratory system to work at an optimum level
4. ASANA: Bodily postures
5. PRATYAHARA: Turning bodily sense inward
6. DHARANA: Focusing of mind on a particular object
7. DHYANA: Meditation
8. SAMADHI: Highest form of meditation where one loses sense of place and time.

Following these can help attain peace of mind and go through life unperturbed.

As everybody knows that the biological law of **Growth and Development** is  $HE=O$  while  $SO=Z$ . It means Heredity+Environment = Organism and Sperm+ Ovum = Zygote. It gives a complete sense of YOGA. Whenever anything comes in existence with the help of another thing/material, it is YOGA. The origin of the human being is due to yogic activities. Yoga has an extremely broad scope and means different things for different people. Why should we always study yoga as “The union of soul with God?” Being in academia, we all should be open to every perspective people have for yoga. Yoga, for some, can be a way of life, while for others it can be yoga as we perform. There should be no limitation to understanding it as yoga is all encompassing.



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**Sports Physiology and Its Significance**

Sports physiology investigates the effect of exercise on the function and structure of the body. An athlete's performance is measured by a sports physiologist with the help of special tests and specifically designed technology. This provides coaches, fitness trainers, health educators, athletic trainers, and exercise physiologists with valuable information that they can use to help their athletes to perform at their best level. Exercise Physiology has evolved from this study of anatomy and physiology, and examines how the body's structures and functions are altered when exposed to acute and chronic bouts of exercise. It is primarily the study of how the body adapts physiologically to the acute or short-term stress of exercise, and the chronic or long-term stress of physical training. Sports physiology further applies these concepts from exercise physiology specifically to training the athlete and enhancing athlete performance within a specific sport. Exercise and sport physiology is about improving performance, by knowing how the body functions during exercise, and using scientific principles to allow your body to train better, perform better and recover quicker. Studies in exercise physiology help athletes achieve greatness, for example, it is now known that Olympic weightlifting and plyometric training are two methods to increase vertical jump height. The physiological response to exercise is dependent on the intensity, duration and frequency of the exercise as well as the environmental conditions. During physical exercise, its requirements for oxygen and substrate in skeletal muscle are increased, as are the removal of metabolites and carbon dioxide. Chemical, mechanical and thermal stimuli affect alterations in metabolic, cardiovascular and ventilator function to meet these increased demands.



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## **Sports and Wellness Management Internship Program Amidst COVID-19 Pandemic**

### **ABSTRACT**

Sports management is a fast-growing career in the world. It is a professional career path and an academic content area that includes all activities, individuals, and organizations involved in sports in all its dimensions (Baker and Esherick, 2013). As an academic and career preparation, the internship program becomes a critical stage and an important milestone for all the students pursuing this educational program.

When the World Health Organization declared the Covid-19 pandemic, almost all the social sectors were unaware. As an academic institution affected by this pandemic, and since classes were disrupted, the educational institutions need to rethink and realign the processes to ensure that the learning will continue pandemic. To meet the students' content knowledge, technical skills, and management skills applied in the different leadership settings in the sports industry, the institute implemented an alternative internship program where the social media and online environment were utilized and continue to use this platform together with our Industry Partners and Interested parties.

The implementation of the alternative Internship Program is based on the Enriched Virtual Mode of Instruction consistent with the principle of dialogue, communion, and flexibility to address the gap in the practice of the profession.

**Key words:** Internship Program, Sports and Wellness Management, Sports Industry, COVID-19 Pandemic, Enriched Virtual Mode

## CONTENTS

<b>Effect of Plyometric Exercises on Shot-put Performance of Selected School Boys</b> <i>K. Raghu</i> .....	1
<b>Technical Skills and Development with Small Size Sided Games of Young Football Players at Warangal District</b> <i>Srinivas Nallella</i> .....	7
<b>Correlation Between Lean Body Weight and Shot Put Performance</b> <i>Renu, L. B. Laxmikanth Rathod</i> .....	11
<b>Impact of Plyometric Training on Selected Motor Abilities among Basketball Players of Telangana Social Welfare Residential Degree College for Women Vikarabad, Telangana</b> <i>Suramoni Rajini, Rajesh Kumar</i> .....	15
<b>Impact of Yoga and Psycho Factor at Work Place</b> <i>Chandrakant B. Biradar</i> .....	18
<b>Effect of Specific Training on Selected Physical Fitness and Skill Variables of High School Male Kho-Kho Players</b> <i>Shaikmeeravali, M. Janardhan</i> .....	21
<b>Application of Own Body Exercise Training for the Improvement of Speed and Agility Performance in Interscholastic Girls of Nalgonda District</b> <i>Bujji Bhavana, L. B. Laxmikanth Rathod</i> .....	25
<b>Effect of Circuit Training for Development of Explosive Power among Volleyball Players of Kurnool District Andhra Pradesh</b> <i>M. Vijaya Bharathi, B. Jessie</i> .....	27
<b>A Study of Motor Fitness Components between Football and Volleyball Players of Aurangabad City of Maharashtra State</b> <i>Sham Devichandji Kabuliwale</i> .....	30
<b>A Study on Development of Physical Fitness and Its Significance on Physiological Aspects of Basketball Players at Kakatiya University, Warangal</b> <i>P. Bhaskar</i> .....	32
<b>Exercise Protocol for Predicting the Sensitive Zone on Heart Rate Max among Untrained Government Degree College for Women</b> <i>Karanam Shilpa Valli</i> .....	35
<b>Effects of Roasted Garlic with and without <i>Moringa oleifera</i> on Glucose, Zinc, and Iron among Sedentary Men</b> <i>R. Venkatesan</i> .....	37

**Sports Marketing**

*Dundappa Dodamani* .....41

**Effect of Specific Training on Selected Physical Fitness and Skill Variables of Female High School Table Tennis Players**

*K. Mamatha* .....43

**Effect of Circuit Training on Selected Motor Fitness and Skill Variables of Male High School Table Tennis Players**

*M. Narasimharao* .....47

**To Compare the Conventional Chest Physiotherapy versus Other Airway clearance Technique in Patients Who Underwent Coronary Artery Bypass Grafting - A Randomized Study**

*V. Kiran, R. Venkatesan* .....51

**Effect of In-season Training on Skill Performance of Volleyball Players**

*C. Arumugam, R. Venkatesan* .....55

**Psychological Problems among Male Health Care Professionals in a Private Health Care Organization, India: Prevalence and Associated Risk Factors**

*C. M. Shankar, R. Venkatesan, V. Murugavalavan* .....59

**An Analytical Study on the Effects of Core Stability Exercises on Low Back Pain in Overweight and Obese Middle-Aged Population**

*R. Radhakrishnan, R. Venkatesan, V. Kiran, P. Senthil, K. Sharmila* .....63

**Impact of Age-appropriate Physical Activity Program of Physical Education on Speed among School Students of Zphs Kolthur**

*A. Siddhartha, K. Deepla* .....67

**Analytical Study of Injuries among Kho-Kho Players of Telanagana State**

*Gaddam Ramu, Rajesh Kumar* .....70

**A Comparative Study of Agility Among Artistic Gymnast of Hyderabad District and Ranga Reddy District of Telangana**

*Gandi Rama Devi, K. Deepla* .....73

**A Study on Cardiovascular Endurance and Strength among Rural and Urban Cricket Players of Gulbarga District**

*Mahamad Mosin Ahmed, H. S. Jange* .....76

**Historical Prespective and Development of Pro-Kabaddi - A Study**

*Banavath Balu, V. Satyanarayana* .....78

**Effect of Circuit Training on Vertical Jumping Ability Among Volleyball Players in V<sup>th</sup> Zone Social Welfare Residential Degree College of Telanagana**

*Kamagani Karuna, V. Satyanarayana* .....82

<b>A Comparative Study of Explosive Power Among Long Jumpers and Sprinters</b>	
<i>Md. Imran, Rajesh Kumar</i> .....	85
<b>Effect of Strength Training for Development of Endurance among Middle Distance Runners of Osmania University</b>	
<i>Tagulla Venkanna, L. B. Laxmikanth Rathod</i> .....	88
<b>Determination of Athletic Ability on Speed and Resting Pulse Rate of NITW College Boys</b>	
<i>D. Hari</i> .....	91
<b>Comparative Study of Self-Confidence between Athletic Players and Hockey Female Players</b>	
<i>Kasturi Rajaput</i> .....	94
<b>Effect of Yoga on Resting Pulse Rate of Secondary School Girls Students</b>	
<i>Anjanabai Sharanappa</i> .....	96
<b>Explosive Strength between Volleyball and Basketball Players: A Comparative Study</b>	
<i>Mahadevi Wali</i> .....	99
<b>Effect of Aerobic Exercises on Stress of Postgraduate Male Students</b>	
<i>Sadashiva Kotyal</i> .....	102
<b>The Impact of COVID-19 on Physical Fitness and Well-being</b>	
<i>Mohammed Yakub Baba</i> .....	105
<b>An Analytical Study of Selected Anthropometric, Physical Fitness Variables between Softball and Cricket Players</b>	
<i>B. Balamani, B. Sunil Kumar</i> .....	108
<b>Analysis of Intercollege Women Basketball and Handball Players' Cardiovascular Endurance and Respiratory Rate</b>	
<i>D. Sudha Rani, K. Vishnuvardhan Reddy</i> .....	111
<b>Effect of Hatha Yoga for Development of Flexibility among School Students of Medchal District</b>	
<i>Anjalibalakrishna Burra</i> .....	114
<b>Effect of Speed Training Program on Selected Skill Related Physical Fitness Variables of Inter-collegiate Men Kho-Kho Players</b>	
<i>B. Srinivas, B. Sunilkumar</i> .....	117
<b>Innovative Teaching Methods in Physical Education for Better Learning</b>	
<i>E. B. Srikanth</i> .....	120
<b>A Comparative Study of Agility and among Long Jumpers and Sprinters of Gulbarga District</b>	
<i>Rajshekar, N. G. Kannur</i> .....	123

<b>Ascendancy of Pranayama Practices to Improve Breath Holding Time among Hockey Players</b> <i>G. Kalpana</i> .....	126
<b>Effect of Selected Yogic Exercises on Holistic Health among School Level Volleyball Players</b> <i>Alli Naresh, L. B. Laxmikanth Rathod</i> .....	129
<b>A Case Study on an Eminent Cricketer and Coach Sunil Bandacharya Joshi His Personality and Achievements</b> <i>Vijaykumar Shivshant, N. G. Kannur</i> .....	131
<b>A Comparative Study on Cardio Respiratory Fitness among Endurance Trained and Resistance Trained Male Athletes of Jawaharlal Nehru Technological University Kakinada Andhra Pradesh</b> <i>G. Syam Kumar</i> .....	134
<b>Sport and Exercise Pedagogy: A Review on Learning</b> <i>Mantripragada Rambabu</i> .....	137
<b>Impact of Yogic Practice and Its Effects on Flexibility of Secondary School Children</b> <i>Aasma Begaum Pattewale, Anjumjaha A. Pattewale</i> .....	140
<b>Physical Activity, Physical Fitness and Health Fitness: Some Field Evidence from Telangana</b> <i>Y. Srinivas Reddy, P. Venkat Reddy, Y. Gopikrishna</i> .....	142
<b>Comparison of Speed and Leg Power among Badminton Players and Lawn Tennis Players of Gulbarga District in India</b> <i>Laxman Gaikwad, Basavaraj Siddappa Singe</i> .....	146
<b>A Study on Relationship between Self Confidence and Physical Fitness Tests Performance of Hockey Players</b> <i>Ravi G. Nayak</i> .....	148
<b>Effect of Physical Activity and Behaviour on the Performance of University Basketball Players</b> <i>Smt.Jyoti Nagindrappa, M. S. Pasodi</i> .....	151
<b>Effect of Psychological Factors on the Performance of University Kho-Kho Players</b> <i>Madhusudan Reddy, Nagreddi B. Mallanna</i> .....	153
<b>A Comparative Analysis on Selected Psychomotor Abilities between Bidar and Hasan Districts Collegiate Men Basketball Players</b> <i>Shivakumar</i> .....	155
<b>A Study of Relationship between Leadership behavior and Emotional Intelligence of North Karnataka Sports Students</b> <i>C. Rama Rao, Richa Rao</i> .....	158

**Effect of Plyometric and Circuit Training on Selected Physical Variables among Volleyball Players of Hyderabad District of Telangana State**

*B. Aruna, P. Kishan Goud* ..... 161

**Personality and Self Confidence among Girls and Boys**

*Milind Kumar Sullad* ..... 164

**Effect of Psychological Factors on Sports Performance**

*Milind Kumar Sullad* ..... 166

**A Theoretical Research Study on Sports and Mental Toughness**

*Rajanna, Rajkumar G. Karve* ..... 169

**An Analysis on Emotional Intelligence of former Indian Olympian Basketball Player Mr. G. Dilip**

*Shankar Sure, M. S. Pasodi* ..... 173

**Comparative Analysis on Selected Physical Fitness Factors of Ballary and Kalaburagi District Sports Hostel Boy's Athletes**

*Sanjeevkumar Appe, N. G. Kannur* ..... 176

**Influence of Self-confidence and Physical Fitness on the Mcdonald Soccer Skill Test Performance of Collegiate Men Football Players of Bidar District**

*Jaiprakash Samuel, S. Girwalkar Sunita* ..... 180

**An Analytical Study on Socio-cultural Deprivation and Achievement Motivation Level among Rural and Urban Men Athletes**

*Mallikarjun Sharanappa, Jayashree Makawana* ..... 183

**Influence of Achievement Motivation on the Goal Kicking Ability and Game Proficiency of Collegiate Men Football Players of Dharawad District**

*Pawan Gorawar, Jayashree Makawana* ..... 187

**A Comparative Study on the Performance of Kalaburagi and Ballary District High School Handball Players**

*Vijaykumar, Jayashree Makawana* ..... 191

**A Comparative Analysis on Differences in the Basketball Performance of Inter-district Junior and Senior Basketball Players of Karnataka State**

*Santoshkumar Bikku Rathod, Minaxi Mansukhbhai Patel* ..... 194

**An Analytical Study on the Locus of Control among Handball Players of Kalaburagi Division**

*Chandrakanth Shirolu, Jayashree Makawana* ..... 197

**An Analysis on the Influence of Aggression on the Performance among Hockey Players of Karnataka State**

*Nagendra Bhimashankar, Jayashree Makawana* ..... 201

<b>A Study on Locus of Control of Inter-collegiate Kabaddi and Non-Kabaddi Players</b>	
<i>Anand Shrimant</i> .....	204
<b>Influence of Yogic Exercises Training Intervention on Strength Development of Kabaddi Players</b>	
<i>Prasannakumar Shivasharanappa</i> .....	207
<b>A Theoretical Study on Cognitive Intervention with Elite performers: Reversal Theory</b>	
<i>Rajkumar G. Karve</i> .....	210
<b>A Study on Six Volleyball Skill Tests as a Predictor of Game Performance among Sports Hostel Volleyball Players of Bidar and Yadgir Districts</b>	
<i>Jaiprakash</i> .....	216
<b>A Study on the Effect of Stress and Anxiety on Mental Health of PG Students of Gulbarga University</b>	
<i>N. Rekha</i> .....	220
<b>Imagery - Impact on Sports Performance: A Review</b>	
<i>C. Veerender</i> .....	223
<b>Effect of Interval Training on the Performance of Middle-distance Runners of Hyderabad District</b>	
<i>A. Rakesh, M. S. Pasodi</i> .....	238
<b>Effect of Circuit Training for Development of Core Strength among Men Wrestlers of Warangal District</b>	
<i>Jatothu Somanna</i> .....	241
<b>Effect of Hill Running for Development of Cardio Vascular Endurance among Cricket Players of Rajamahendravaram Club Cricketers</b>	
<i>V. V. M. U. Phaneendra</i> .....	244
<b>A Study on Impact of Advance Equipment in Track and Field (Athletics)</b>	
<i>Palli Mallikarjuna Reddy</i> .....	247
<b>A Critical Study on Comparison of Motor Ability among Kabaddi and Kho-Kho Womens Players in North Telanagana Region</b>	
<i>Anitha, V. Satyanarayana</i> .....	250
<b>Impact of Mental Toughness Motor Components of Table Tennis Player</b>	
<i>Mallikarjun Chandrakant, M. S. Pasodi</i> .....	253
<b>Effects of Plyometric Training for the Development of Explosive Strength among the Kabaddi and Kho-Kho Players of Osmania University Hyderabad Telangana State</b>	
<i>E. Narsinga Rao, L. B. Laxmikanth Rathod</i> .....	257
<b>Effect of Psychological Factor and Physical Fitness of Table Tennis Player</b>	
<i>Mallikarjun Chandrakant1, M. S. Pasodi2</i> .....	260

<b>A Study on the Effect of Stress and Anxiety on Mental Health of PG Students of Gulbarga University</b> N. Rekha .....	264
<b>Effect of Psychological Factor and Physical Fitness of Table Tennis Player</b> <i>Mallikarjun Chandrakant1, M. S. Pasodi</i> .....	267
<b>Effect of Weight Training for Development of Speed among Men Kho-Kho Players of Bidar District</b> <i>Balasubramaniam</i> .....	270
<b>Effects of Roasted Garlic with and without Moringa on Mean Atrial Pressure, Thyroid Stimulating Hormone and Testosterone among Sedentary Men</b> <i>R. Venkatesan</i> .....	273
<b>Sports Pedagogy for Early Identifying the Good Sports Person and Guide the Player at School Level</b> <i>L. Naveen Kumar</i> .....	276
<b>Sports Injuries Seen in Basketball Players: Assessment of Injuries, Areas, and Types</b> <i>Amita Jaiswal, Rajesh Kumar</i> .....	278
<b>Comparative Study of Self-confidence between Athletic Players and Hockey Female Players</b> <i>Kasturi Rajaput</i> .....	281
<b>Effect of Core Strength Training for the Development of Abdominal Strength among Kabaddi Players of Osmania University</b> <i>Ashok Reddy</i> .....	283
<b>Isolated and Combined Effect of Yoga and Endurance Exercise on Dribbling Skill among Football Players</b> <i>V. Venkatesh, R. Arockiaraj</i> .....	286
<b>Combined Effect of Swiss Ball and Aerobic Exercise Training for the Development of Flexibility and Agility among Interscholastic Girls</b> <i>R. Sarada Bai, L. B. Laxmikanth Rathod</i> .....	290
<b>A Study on Psychological Stress between Kho-Kho and Kabaddi Players of Hyderabad</b> <i>K. Sreenivasa Rao, Raja Rao</i> .....	293
<b>Comparison of Explosive Power among Taekwondo Players and Kick Boxers of the Hyderabad District in India</b> <i>J. Babulal, L. B. Laxmikanth Rathod</i> .....	295
<b>Effect of Fartlek Training and Weight Training for development of Endurance among long-Distance Runners of Hyderabad District</b> <i>G. Sunitha, K. Venkanna, B. Gopi, Siddiq Hasan, R. Prakash, Rakesh Kumar Charka, V. Ashok, Srisailam, Rajesh Kumar</i> .....	297
<b>Nutritional Strategies for Ultra-Endurance Recreational Runner</b> <i>Sailaja Lanka, Y. Gopi Krishna</i> .....	300



# Effect of Plyometric Exercises on Shot-put Performance of Selected School Boys

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## ABSTRACT

The aim of this study was to find out the effect of plyometric exercises (PE) on a shot-put performance of secondary school boys from a selected high school whose age is in between 14 and 17 years, Chimmappudivillage, Khammam district, Telangana region. To make the study feasible, the subjects were divided into two matching groups, which consist of 30 in each group, experimental group (PE and control group). The dependent variables, namely, shot-put and abdominal strength, were selected and measured by shot-put. The collected data were analyzed with descriptive statistics, tests of hypothesis. The data inferred a significant improvement in the two variables, shot-put performance, and by the relevance of PE, the analysis of the data indicates that shot-put throwing performance was depends on the plyometric exercises. This kind of analysis is very useful to know the shot-put performance like studies on school boys for any region in the state or country.

**Keywords:** Multiple regression, Plyometric exercise, Pull ups test, Shot-put performance, Speed 30 mtrsrn, *t*-test.

## 1. INTRODUCTION

Plyometrics also called “jump training/plyos” are the exercises within maximum force is applied with muscles in little period of moment and the aim is to maximize power such as speed and strength). It mainly aims at learning how to proceed from extension of muscle till contraction rapidly like jumping repeatedly. They are fundamentally done by the athletes, namely, sprinters, martial artists, etc., to maximize performance, and also practiced infield of fitness often.

“Plyometrics” was defined by Fred Wilt in the wake of viewing how athletes of Soviet prepared for events in field and track. He believed this the key to their success. Once Wilt got to know about the work done by Michael Yessis on training methods of Soviet (Russia), they got together to help publicize information about plyometrics. Two different kinds of plyometrics had evolved since it was introduced in early 1980's. Plyometrics were defined as “Shock Method” created in first version by Yuri Verkhoshansky a Russian Scientist. He said athlete will experience “Shock” after dropping from a height. In second version, plyometric has seen unremarkably in

the United States. It is associated with performing any type of jump regardless of execution time. Although plyometrics name was given to all forms of jumps, not all of them are plyometric.

### 1.1. History of Plyometrics

Fred Wilt, a long distance runner of the United States is given credit in defining plyometrics. He accepts, plyometrics is not that good term, yet it was best defined by him after watching Russians executing their jumps and warm-ups. He said that he could not understand why all of these jumps were being done by Russians and Americans did multiple static stretches. He thought that the reason why Americans were very successful in more events. In early 1970's and late 1960's, Yuri Verkhoshansky created shock method. Since then this method is being practiced improving the performance of athletes. Many athletes perform simple and complex type of jumps and name them as plyometrics instead of jumping trainings. Since inception of the shock method many types of plyometric exercises (PE) was designed by yesses that does not involve jumping exercises.

## 1.2. Benefits of Plyometrics Training

Plyometric training improves muscular strength and jumping abilities. Therefore, these exercises increase the power of the athlete. Another benefit is varying level of intensity. This means nonetheless of fitness any individual who is looking for improving their strength and jumping can undergo plyometric training. Athletes are less likely injured and can choose from wide range of exercises. PEs do not need any equipment be used which is a benefit compared to other exercises available. These exercises promote weight loss, increased rate of metabolism, improve muscular strength, and increase heart rate.

Shot put world records				
Gender	Name	Country	Distance (in Mtrs)	Year
Men	Randy Barnes	America	23.12	1990
Women	Nataalya Lisovskaya	Soviet Union	22.63	1987
Olympic records				
Men	Ryan Crouser	America	22.52	2016
Women	Iлона Slupianek	German	22.41	1980

*Shot-put* can be defined as track and field game which has “putting” a heavy spherical ball called shot as distant as possible. This game in men started in modern Olympics since 1896 and for women in 1948. Athletes start throw from inside a circle whose diameter is 2.135 m (7 ft) and has toe board of 10 cm height in front of the circle. Distance between inside the circle and nearest mark made by shot on the ground is considered as distance thrown. According to the rules of IAAF and WMA, distances will be rounded down to nearest centimeters.

## 2. MATERIALS AND METHODOLOGY

In this study, 60 ( $n = 60$ ) male shot-put-performance school boys represented for their schools from ZPSS High School, Chimmappudi, and Khammam dist. Telangana was considered subjects at random by random sampling approach and their ages from 14 to 17. The subjects were divided into two equal groups of 30 each. The experimental group was given 12 weeks (duration – 12 weeks, session – 3 days/week, and duration of one session – 1 h) of PE training. The control group (CG) was not given any specific activity. Experimental Group I (plyometric exercise training (PT) was given to the experimental group. The subjects were tested on selected variables, namely, shot-put performance and

abdominal strength by shot-put and Jack Knife test, respectively, for this study. Before and after the training period, the data were collected. The collected data were analyzed using some descriptive measures mean, standard deviation, maximum and minimum, and paired *t*-test. The level of significance is fixed at a 0.05 level. The entire statistical was done using SPSS 20.0 version software tool.

### 2.1. Objectives of the Study

The study has been planned with the following objectives:

1. To find out the effect of PT exercises on performance of shot-put in secondary school boys
2. To test the significant difference among the variables in CG in pre- and post-tests on high school boys.

### 2.2. Hypotheses of the Study

It has been set up the hypotheses that the plyometric training will improve physical fitness and skills among the high school boys of ZPSS, Chimmappudi, Khammam district.

1. There would be significant difference in shot-put performance in pre-test and post-test on high school boys (plyometric group)
2. There would be no effect of variables in CG in pre- and post-tests on high school boys.

### 2.3. Selection of Variables

The research scholar reviewed the available scientific literature about the problem from books, journals, magazines, websites, and research papers, which revealed the importance of plyometric exercise training—taking into consideration feasibility criteria and availability of the instruments, the following variables were selected for this study.

Dependent Variables: Motor Fitness Components-Shot-put performance.

Independent Variables: PE: Speed, Pull-ups.

### 2.4. Definition and Explanation of Terms

#### 2.4.1. Shot-put

The shot-put is a sport in which shot (heavy spherical ball) is put from shoulder for a distance as far as possible. This sport is conducted in a field.

**2.4.2. Plyometrics**

Plyometric is a type of training that makes use of force and speed to improve muscle power. Types of these exercises include jumping, throwing kicking, and running.

**3. RESULTS, DISCUSSIONS AND FINDINGS OF THE STUDY**

Graph showing the mean difference of pre- and post-tests shot-put performance of in control group and experimental group.

**3.1. Results and Discussion**

Table 1 and graph indicate a significant improvement in the shot-put performance through PE training. It reveals that the obtained t-statistic observed value 10.239 is substantial since the  $P = 0.001$  lesser than the 0.05. There was a significant improvement between pre- and post-tests on the selected motor fitness components. There was a considerable improvement in the speed between the experimental groups pre- and post-tests, whereas the CG showed no significant improvement. Hence, the results indicate that the shot-put performance's considerable improvement was due to the PE (PT) training alone.

**3.2. Results and Discussion**

Above tables show the mean, standard deviation, paired differences of mean, standard deviation, CI, t-value, d.f, and  $P$ -values between pre- and post-test in CG in relation to speed by speed test of high school boys.

The speed was measured using data of speed test in pre- and post-test for CG. Data are analyzed. Results are presented in Table 2. The observed  $t$ -test value in CG on speed between pre- and post-test was 1.795. This is less than required statistical table value 2.093 at 0.05 levels ( $P = 0.083$ ). Hence, it indicates that there is no significance in speed test of pre-test and post-test of CG. The observed  $t$ -test value in experimental group on speed between pre- and post-test was 31.37. This is more than required statistical table value 2.093 at 0.05 levels ( $P = 0.000$ ). Hence, it indicates that there is significance in speed test of pre-test and post-test of experimental group. Hence, the results indicate that the shot-put performance's considerable improvement was due to the PE (PT) training alone.

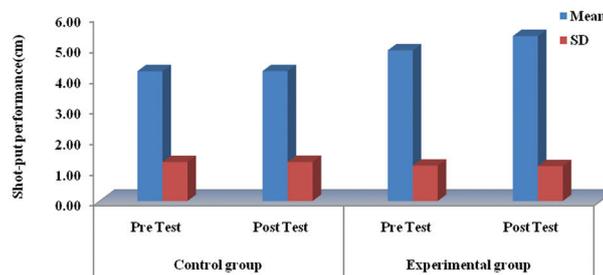
**3.3. Results and Discussion**

Above tables show mean, standard deviation, paired differences of mean, standard deviation, CI, t-value, df, and  $P$ -values between pre- and post-test in CG in relation to pull-ups by pull-ups test in high school boys. The shoulder strength is measured using the data of pull-ups test in pre- and post-test for CG. Data are analyzed. Results are presented in Table 3. The observed  $t$ -test value shot-put test in CG on pull-ups between pre- and post-test was 1.439. This is less than required statistical table value 2.093 at 0.05 levels ( $P = 0.0831$ ). Hence, result indicates that there is no significance in pull-ups test of pre- and post-test of CG. The observed  $t$ -test value shot-put test in CG on pull-ups between pre- and post-test was 21.23. This is less than required statistical table value 2.093 at 0.05 levels ( $P = 0.000$ ). Hence, result indicates that there is significance in pull-ups test of pre- and post-test of experimental group.

**Table 1: Paired mean difference in pre- and post-tests on shot-put in experimental and control groups**

Group	Test	Mean	SD	Df	Mean Diff	t-test value	P-value
Experimental	Pre-test	4.91	1.15	29	0.47	10.239	0.001*
	Post-test	5.37	1.17				
Control	Pre-test	4.23	1.26	29	0.01	2.021	0.067
	Post-test	4.24	1.27				

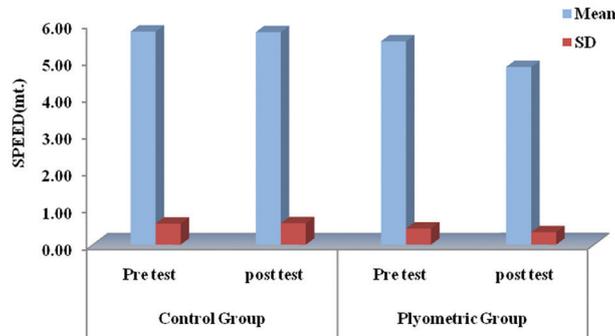
\*Significance at 0.05 levels. df: Degree of freedom



**Table 2:** Paired mean difference in pre- and post-tests on speed (30 mtr. Run) in experimental and control groups

Group	Test	Mean	SD	Df	Mean Diff	t-test value	P-value
Experimental	Pre-test	5.53	0.44	29	1.52	13.37	0.000*
	Post-test	4.01	0.34				
Control	Pre-test	5.78	0.58	29	0.00	1.795	0.083
	Post-test	5.78	0.58				

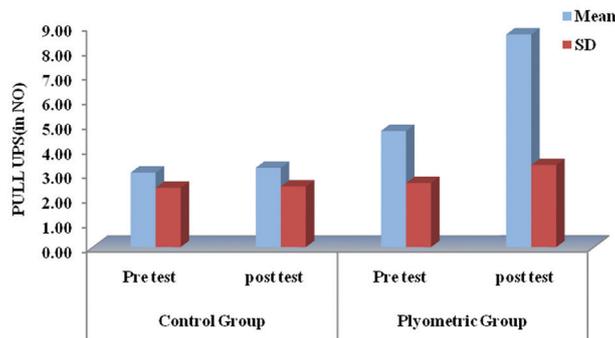
\*Critical value  $t=2.093$  significant at 0.05 levels



**Table 3:** Paired mean difference in pre- and post-tests on pull-ups in experimental and control groups

Group	Test	Mean	SD	Df	Mean Diff	t-test value	P-value
Experimental	Pre-test	4.73	2.61	29	3.94	21.23	0.000*
	Post-test	8.67	3.35				
Control	Pre-test	3.13	0.58	29	0.007	1.795	0.083
	Post-test	3.20	0.58				

\*Critical value  $t=2.093$  significant at 0.05 levels



#### 4. MULTIVARIATE REGRESSION ANALYSIS IN POST-TEST OF IN PLYOMETRIC GROUP

Results pertaining to the hypothesis, the null hypothesis is “there is significant impact of variables, namely, speed (sec) pull-ups (sec) on shot-put performance in post-test of on high school boys in plyometric training group.

The cause and effect between dependent and independent variables are carried out by this analysis

(Annawanjiku *et al.*, 2014). Hence, the regression equation is represented as (Kmenta, 1997).

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k$$

##### 4.1. Test Performed

Multiple regression analysis beta-coefficients appear in the final models which were predicted. All beta-coefficients are significant in the model which was showed in Table 4.

**4.2. Results and Discussion**

Clearly, it is revealed that the variables showed significant positive influence on shot-put performance. Finally, the model equation for shot-put performance is

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4, \text{ Where } Y_1 = \text{Shotput Performance, } X_1 = \text{Speed, } X_2 = \text{Pull-ups and } \beta_0 = 9.25, \beta_1 = -1.32, \beta_2 = -0.01$$

From the above model equation, all the variables, namely, speed (sec) pull-ups (sec) showed impact on shot-put performance.

**5. FINDINGS**

1. The study results elevate the 12 weeks of PE training on the selected dependent variables. There was a significant improvement in shot-put performance through PE training (PT). Since the  $P < 0.05$  was considered. There was a significant improvement between pre- and post-tests on shot-put performance
2. The study results reveal the 12 weeks of PE training on the selected dependent variable. There was a significant improvement in speed and shoulder strength through PE training (PT). Since the  $P < 0.05$ , there was a significant improvement between pre- and post-tests on strength.

**6. CONCLUSION**

From the result of the study, the conclusions have been drawn as follows:

There was a significant difference in abdominal strength and shot-put throw performance on schoolboys.

**Table 4: Multiple regression analysis plyometric training (post-test analysis)**

Correlation analysis	Shot-put	Speed	Pull-ups
Pearson correlation			
Shot-put	1.00	-0.69	0.58
Speed	-0.69	1.00	0.67
Pull-ups	0.58	-0.67	1.00
Sig. (1-tailed)			
Shot-put		0.000	0.000
Speed	0.000		0.000
Pull-ups	0.000	0.000	
N			
Shot-put	30	30	30
Speed	30	30	30
Pull-ups	30	30	30

**Table 5: Model summary**

Model	R	R square	Adjusted R square	Std. Error of the estimate
1	0.82 <sup>a</sup>	0.67	0.64	0.69

<sup>a</sup>Predictors: (Constant), jackknife, standingbroad, speed, pull-ups

**Table 6: ANOVA<sup>a</sup>**

Model	Sum of squares	df	Mean square	F	Sig.
1					
Regression	25.75	4	6.44	13.73	0.000 <sup>b</sup>
Residual	11.73	25	0.47		
Total	37.48	29			

<sup>a</sup>Dependent variable: Shot-put performance. <sup>b</sup>Predictors: (Constant), jackknife, standingbroad jump, speed, pull-ups

**Table 7: Coefficients<sup>a</sup>**

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% Confidence interval for B	
	B	Std. Error				Beta	Lower bound
1							
(Constant)	9.25	3.49		2.65	0.01	2.05	16.45
Speed (sec)	-1.32	0.54	-0.39	2.44	0.02*	0.21	2.42
Pull-ups (sec)	0.01	0.06	0.04	2.23	0.02*	0.10	0.13

<sup>a</sup>Dependent variable: Shot-put. \*P-value significant at 0.05. and adjusted R<sup>2</sup>=0.69 significant (since F=13.73, P<0.05)

Furthermore, all the figures show the difference in the mean of abdominal muscle and shot-put. There was a significant improvement in the selected dependent variables, namely, shot-put performance and strength by PE training.

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# Technical Skills and Development with Small Size Sided Games of Young Football Players at Warangal District

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## 1. INTRODUCTION

While physical and physiological both refer to bodies, physical means the body itself while physiological refers to the body's functions. Understanding the differences between physical and physiological helps scientist's coaches and professionals to determine root causes of a variety of conditions in humans and in nature, both physical and physiological characteristics are important in understanding development, effects, addictions, and traits among humans. Physical development refers to the growth of the physical body, such as growth of muscles, organs, or any other physical aspect. Physiological development refers to the body's capacity to increase certain functions of the body. For example, a long-distance runner overtime builds strong muscles, a physical development, but he will also increase his ability to transfer oxygen faster, a physiological development. Physiology represents the study of the biochemical, physical, and mechanical functions of the human body. To understand how the physical being adapts to disease, activity, and stress. While they use physiological aspects to define how well the body and its various parts function.

Football performance is dependent on a multitude of factors. Technical skills playing tactics and endurance capacity are known to have major influences on match performance. Football performance is dependent on a multitude of factors. Technical skills playing tactics and endurance capacity are known to have major influences on match performance. Football skills and techniques are important to be practiced and acquired.

### 1.1. Objective of the Study

The purpose of the study was to find out the effect of technical skills and small-sided games on physical fitness physiological and skill-related variables among young football players. Identify the components of

physical fitness and their importance in Gaelic games. Recognizing the train to train stage of the long-term player pathway and the focus is on player development. Implement practical ways to build fitness into games and skill development for young players. It can develop player's stamina/cardiovascular fitness by incorporating small-sided conditioned games and high-intensity ball drills in training sessions.

### 1.2. Hypothesis

There may not be any significant difference to the effect of technical skills and small-sided games in relation to their physical fitness, physiological, and skill related among pre-test and post of football players.

## 2. MATERIALS AND METHODS

The selection of subject for this study is 30 football players were selected from Railway Stadium Kazipet, Warangal district, the subject was in the age group between 14 and 16 years. The selected football players were equally divided into two groups', that is, 15 experimental group and 15 control group. The subjects were tested in the following physical fitness, physiological, and performance-related skill test.

### 2.1. Tools Use

The Table 1 shows physical fitness and skill-related test variables.

### 2.2. Data Collection Procedure

The pre- and post-test arbitrary group strategy was used as investigational strategy in which 30 young football players were separated into two groups' one experimental group and one control group of 15 players each group. The experimental group undertook

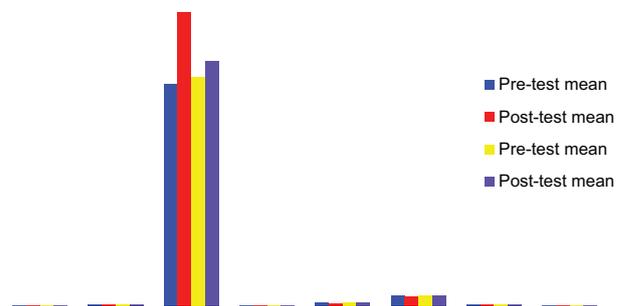
small-sided game training and control group preceded the general training. The players tested on selected physical fitness, that is, speed, agility, and endurance. Physiological variables, that is, vital capacity, breathe holding, and pulse rate. Performance-related variables such as dribbling, passing, and receiving before and immediately after the training program. The training programs were conducted on football players at Railway Stadium Kazipet, Warangal district. Total duration of the training program was 6 weeks, 3 days/week. Initially, the duration of training session was 60 min, less intensity exercise was given for the subjects to get reformed, the intensity and duration of the exercise increased after every 2 weeks (increase the duration, no. of sets, and use the verities in games). The training program started with 10 min warming up, 45 min small-sided games, and 10 min warming down exercise. The 6-week technical skills and small-sided games include technical skills are practice juggling with feet for 5–10 min every

day, shooting, heading, volleys, defensive skills, feints, and play with both feet. Small-sided games include 3 versus 3, 4 versus 4, and 6 versus 6 and its variations are warm-up games, warm-up passing and moving game, positional warm-up, conditioning, passing and possession, shooting, crossing, and finishing. After systematic training, the post-test was administrated on the experimental group and control group.

### 3. RESULTS AND DISCUSSION

The results pertaining to the study are present in the following.

The Table 2 shows the results of experimental group and control group on physical fitness variables and skill-related variables.



**Table 1: The physical fitness and skill-related test variables**

S. No.	Variables	Tests
Physical fitness tests		
1.	Speed	30 m dash
2.	Agility	Shuttle run
3.	Endurance	12 min run/walk Cooper test
Physiology tests		
1.	Vital capacity	Vital capacity measured by regular spirometer
2.	Breath holding	Breath holding test
3.	Pulse rate	Harvard step test
Performance-related skill test		
1.	Dribbling	Dribbling test
2.	Passing and receiving	Passing and receiving test

### 4. FINDING AND DISCUSSION

It is apparent from table shows that there was a significant difference between the pre- and post-test execution of experimental group on selected physical physiological and performance-related factors, hence, the mean value of the experimental group on speed

**Table 2: The results of experimental group and control group on physical fitness variables and skill-related variables**

S. No.	Variables	Experimental group		Control group		t ratio	
		Pre-test mean	Post-test mean	Pre-test mean	Post-test mean	Experiment group	Control group
1.	Speed	6.8706	5.6500	6.7117	6.4140	5.271	0.282
2.	Agility	18.1260	16.4281	18.1793	18.0913	6.341	0.323
3.	Endurance	2249.75	2982.57	2324.95	2489.10	6.490	0.446
4.	Vital capacity	3.6241	4.2230	3.6542	3.8543	1.24	0.97
5.	Breath holding	33.45	31.82	36.72	36.54	0.74	4.30
6.	Pulse rate	102.58	100.86	104.22	103.16	0.99	1.36
7.	Dribbling	20.8616	18.2212	20.8733	20.9121	6.831	1.427
8.	Passing and receiving	5.6247	4.0127	5.4247	5.2237	9.689	0.587

the pre-test mean value is 6.8706 and the post-test mean value is 5.6500, agility, the pre-test mean value is 18.1260 and the post-test mean value is 16.4281, endurance, the pre-test mean value is 2249.75 and the post-test mean value is 2982.57, vital capacity, the pre-test mean value is 3.6241 and the post-test mean value is 4.2230, breathe holding, the pre-test mean value is 33.45 and the post-test mean value is 31.82, pulse rate, the pre-test mean value is 102.58 and the post-test mean value is 100.86, dribbling, the pre-test mean value is 20.8616 and the post-test mean value is 18.2212, and passing and receiving, the pre-test mean value is 5.6247 and the post-test mean value is 4.0127.

The mean value of the control group on speed, the pre-test mean value is 6.7117 and the post-test mean value is 6.4140, agility, the pre-test mean value is 18.1793 and the post-test mean value is 18.0913, endurance, the pre-test mean value is 2324.95 and the post-test mean value is 2489.10, vital capacity, the pre-test mean value is 3.6542 and the post-test mean value is 3.8543, breathe holding, the pre-test mean value is 36.72 and the post-test mean value is 36.54, pulse rate, the pre-test mean value is 104.22 and the post-test mean value is 103.16, dribbling, the pre-test mean value is 20.8733 and the post-test mean value is 20.9121, and passing and receiving, the pre-test mean value is 5.4247 and the post-test mean value is 5.2237.

It clearly shows that the effect of small sided games is effectively influenced on physical fitness, physiological, and their game ability performance. Six weeks small-sided games training program was improved all the selected physical, physiological, and performance related variables such as speed, agility, endurance, vital capacity, breathe holding, pulse rate, dribbling, and passing and receiving among the young soccer players. The selected players had actively and sincerely contributed in the training program and they were enjoyed very well with the small-sided games.

## 5. CONCLUSION

Young players need to develop and improve physiologic abilities affecting physical fitness and to generalize and adapt them with the football skills during a match. These physical fitness and physiological factors depend not only on the intensity of play but also on the direct involvement in activities with the ball. Hence, small-sided games training causes more involvement with the ball and more opportunity to perform skills such as passing, kicking, controlling, and dribbling for the

players, it can improve and develop physical fitness and physiologic abilities and adapt them with football skills during a match and that the small-sided games training would lead to enough stimulate for physiologic adaption and physical fitness of all players can be replaced by changing the playing area, encouraging players, and changing number of players in each playing training section. As a result, since technical skills and small-sided games training in a similar amount of time has resulted in more increase of some of the selected physical fitness and physiological factors in this study, it is recommended that teams should apply specific training in preparatory programs especially in-season. Finally, it was concluded that the significantly improvement on the selected physical, physiological, and performance-related variables such as speed, agility, endurance, vital capacity, breathe holding, pulse rate, dribbling, and passing and receiving that the 6-week technical skills and small-sided games training program was an effective training program for developing the selected physical fitness, physiological, and performance skill-related variables.

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# Correlation Between Lean Body Weight and Shot Put Performance

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## ABSTRACT

The present study finds the relationship between lean body mass and performance of state level shot put players. For the purpose of the study, 16 ( $n = 16$ ) shot put players were selected as subjects with the age range between 16 and 22 years from Bhim stadium, Bhiwani. The lean body mass was selected for the testing of the hypothesis. The selected anthropometric measurements were taken with the help of digital skinfold caliper. Shot put throw performance of the subjects was taken by measuring the range covered by subjects by throwing the shot put. Pearson's product moment (zero order) for correlation between dependent variable (shot put throw performance) and independent variable was applied for analysis of data. The anthropometric variable lean body weight has been found to possess positive and significant correlation with the shot put performance at 0.05. It can be concluded from the findings of the present study that lean body weight contributes significantly in shot put performance.

**Keywords:** Anthropometry, Lean body weight, Performance and shot put, Variable.

## 1. INTRODUCTION

Sports play a very prominent role in the modern society. It is important to individuals, a group, a nation, and indeed the world. Throughout the world, sports have a popular appeal among people of all ages and both sexes.<sup>[6]</sup>

Sports according to the Australian Sports Commission, "a human activity capable of achieving a result requiring physical exertion and/or physical skill, which, by its nature and organization, are competitive and are generally accepted as being a sports." (<http://www.topensports.com/sports/what-is-a-sport.htm>. (2017-04-07).<sup>[7]</sup>

The throws are field events in athletics. They are measure for explosive strength in a human being from ancient time to modern time. The throwers of shot put differed greatly in physique from the other athletes. The better development of the lean body mass will help them to provide the great strength required in the throwing events.

Shot put event was included in first modern Olympic Games (1896) in Athens. The shot is put from a circle

2.135 m (7 feet) in diameter. A curved stop board is fixed in the middle of the circumference of the front half of the circle. The shot has to be put from the shoulder with one hand. When the athlete had taken a stance in the ring for stance in the ring for starting his put, the shot has to be in the proximity of the chin. One of the earliest forms of shot putting was an event in which a huge erode stone was used as the implement. The stone was "put" as a test of strength among the warriors of peacetime armed forces of the previous century. This form of shot putting is said to have originated in Scotland.<sup>[2]</sup>

Many variables, namely, such personal qualities as personality, physical characteristic, motivation, and motor abilities as well as environment conditions are regarded as having an interacting influence on an individual's selection of and achievement in various physical activities.<sup>[9]</sup>

Anthropometric measurements were central concern of the scientific era of measurement, which began in 1860's. The present interest in anthropometric measurements focuses on three areas growth measures, body type, and body composition. The use of such

measures includes classification, prediction of growth pattern, and prediction of success in motor activities as well as assessment of obesity.<sup>[4]</sup>

Anthropometry as a study is a technique of expressing quantitatively the different forms of the human body. In other words, anthropometry means the measurements of human beings.<sup>[1]</sup>

Anthropometric measurements are widely used to assess and predict performance in various sports. Anthropometric measurements and morphological characteristics play an important role in determining the success of a sportsperson.<sup>[8,13,22]</sup>

An athlete's anthropometric and physical characteristic may represent important prerequisites for successful participation in any given sport. Indeed, it can be assumed that an athlete's anthropometric characteristics can in some way influence his/her level of performance, at the same time helping to determine a suitable physique for a certain sport.<sup>[5]</sup>

### 1.1. Statement of the Problem

A study on correlation between lean body weight and shot put performance.

### 1.2. Purpose of the Study

The purpose of the study was to find out the relationship of lean body weight of shot put throwers.

### 1.3. Significance of the Study

The study will investigate the degree of relationship between lean body weight and shot put performance.

The study would develop new concepts in improving shot put performance.

### 1.4. Hypothesis

There would be significant relationship between lean body weights with respect to shot put performance.

## 2. METHODOLOGY

### 2.1. Selection of Subjects

Sixteen state level male shot put players of Bhim Stadium Bhiwani were selected on random basis for the present study. The selected delimitations for the present

study were kept in mind for the selection of the subjects; those who have participated in state level tournament. It was also taken into consideration that all the selected subjects were ranged from 14 to 22 years of age and who were involved in regular practice for their event of shot put to remain physically and mentally fit.

### 2.2. Selection of Variables

After the review of related literature and advice of experts, a list of variables that influence skill development and performance in shot put throwing was constructed. Analysis of the previous research was made to know the variable which contributed most in the performance of throwing event. Variable was selected after taking into consideration the availability of required equipment, available time for the investigation, and availability of subjects.

#### 2.2.1. Physical variable

Lean body weight.

#### 2.2.2. Criterion variable

The criterion variable chosen was shot put throwing performance.

### 2.3. Collection of the Data

The necessary data were collected by administering the test for selected variable. All the tests were administered at the ground of Bhim stadium, Bhiwani, during practice session of subjects.

### 2.4. Administration of the Test

#### 2.4.1. Physical variable: Lean body weight

Digital skinfold caliper was used to assess the body fat. The right side of the body was used to determine the percentage of fat. The thickness of the skin and subcutaneous fat was grasped between the thumb and index finger and measurement was taken to the nearest

**Table 1:** Descriptive statistics of lean body mass and fat mass of shot put throwers

SR. No	Variable	Mean	Maximum Score	Minimum Score	Range
1	Lean body mass (kg)	79.99	91.27	69.62	21.65
2	Fat mass (kg)	21.14	36.73	11.62	25.11

n=16 (shot put throwers)

half millimeter from for four different specific sites using the caliper. The following were the sites for the skinfold measurement:

1. Biceps
2. Triceps
3. Sub scapular Region
4. Supra iliac Region.

The sum of the skinfold thickness of four sites of the body was converted into percentage body fat with the help of standard table suggested by Durnin which is given in appendices 2. From each subject's body weight, the weight of the fat he possessed was calculated using the following formula:

$$\text{Fat weight} = \frac{\text{Body weight} \times \text{Percent value of fat}}{100}$$

Lean body weight: The weight of the fat was deducted from each subjects total body weight and recorded. Digital skinfold caliper was used to assess the body fat.

**2.4.2. Criterion variable: Shot put throw performance**

Shot put throw performance of the subjects was taken by measuring the range covered by subjects by throwing the shot put. This performance was recorded during the evening session of practice in the presence of the coach of concerned athletes at the Bhim stadium, Bhiwani.

**2.5. Analysis of Data**

The relationship between dependent variable (shot put throw performance) and independent variable (Physical) was established by computing Pearson's product moment correlation (zero order).

For testing the hypothesis, the level of confidence was set at 0.05 level.

**3. FINDINGS**

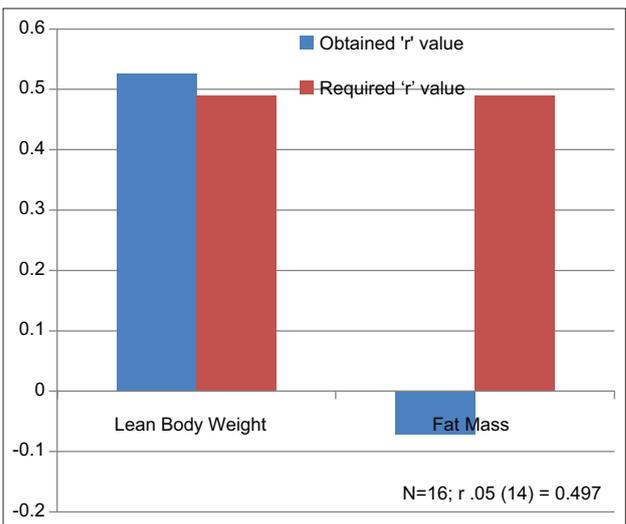
The results of the study are given in the following table:

Table 2 shows the correlation between the shot put performance and lean body weight and fat mass. The above table points out that the shot put performance of throwers has been found to possess positive and significant correlations as the value obtained with lean body weight ( $r = 0.526$ ) was much higher than the tabulated value (0.497) required to be significant at 0.05 level with 14 degree of freedom. The above table also shows negative correlation between shot put

**Table 2: Relationship of lean body mass and fat mass to shot put performance**

Variables correlated	Obtained "r" value	Required "r" value
Lean body weight and shot put performance	0.526*	0.49
Fat mass and shot put performance	-0.072	0.49

\*Significant at 0.05 level of confidence



**Figure 1: Graphical representation of the coefficient of correlation values between shot put performance and lean body weight**

performance and fat mass as the obtained value with fat mass ( $r = -0.072$ ) is negative and much lower than the tabulated value (0.497).

**4. DISCUSSION ON HYPOTHESIS**

It was hypothesized that there will be significant correlation between lean body weight and shot put performance. The result reveals that there was significant correlation between shot put performance and lean body weight, so the hypothesis was accepted this variable.

**5. CONCLUSION AND RECOMMENDATIONS**

- Through the review of the results of the study, lean body weight contributes significantly in the improvement of shot put performance
- While preparing training program in shot put, physical education teacher and coaches should give more attention to develop lean body weight,

which has significant correlation with shot put performance

- The result of this study can help the physical education teacher, trainer, and coach in screening and selection of potential shot putters.

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# Impact of Plyometric Training on Selected Motor Abilities among Basketball Players of Telangana Social Welfare Residential Degree College for Women Vikarabad, Telangana

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## ABSTRACT

The purpose of the study was to explore the impact of plyometric training on selected motor abilities among basketball players of Osmania University. To achieve this purpose of the study, 28 women basketball players of Telangana Social Welfare Residential Degree College for Women, VIKARABD, TELANGANA affiliated Osmania University. Their age group was between 18 and 20 years. The subject was divided into two groups, namely, experimental group and control group. The experimental group was subjected to plyometric training (3 days/week Monday, Wednesday, and Friday) at morning session for 6 weeks. Agility, flexibility, and speed were selected as dependent variable. The appropriate data were statistically analyzed using independent *t*-test. The level of significance was set at 0.05, the result of the present study showed that the plyometric training has significant improvement on agility, flexibility, and speed basketball players.

**Keywords:** Basketball players, Motor abilities, Plyometric training.

## 1. INTRODUCTION

Basketball is a very complex activity, where being successful depends on numerous anthropometric and motoric skills. Basic characteristic of basketball activities is quick direction change movement, as well as those of motoric structure movement intensity with and without a ball. Ability of quick activity beginning, movement stereotype reorganization, and precise movements in relatively small spaces with space and time limitation represent basketball player's activity characteristics and are directly connected to ability of quality performance of speed – explosive capacities.

Plyometric (also known as “ploys”) is a type of exercise training designed to produce fast, powerful movements, and improve the functions of the nervous system, generally for the purpose of improving performance in sports, plyometric movements, in which a muscle

is loaded and then contracted in rapid sequence, use the strength, elasticity and innervations of muscle and surrounding tissues to jump higher, run faster, throw further, or hit harder, depending on the desired training goal. Plyometric is used to increase the speed or force of muscular contractions, providing explosiveness for a variety of sport-specific activities. Plyometric has been shown across the literature to be beneficial to a variety of athletes. Benefits range from injury prevention, power development, and sprint performance among others.

### 1.1. Purpose of the Study

The main purpose of this study was to impact of plyometric training on selected motor abilities among Telangana social welfare residential degree college for women (TSWRDC) Women basketball players.

1. To find out the motor abilities components of basketball players

- To find out the plyometric training how impacts on selected motor abilities among basketball players.

## 2. METHODOLOGY

The purpose of this study was to explore the impact of plyometric training on selected motor abilities among basketball players. To achieve this purpose of the study, 28 TSWRDC women basketball players were selected from TSWRDC, Vikarabad, and Telangana, India were randomly selected as subjects. Their age ranged in between 18 and 20 years. The subject was divided into two groups, namely, experimental group (plyometric group) and control group (general training group). The plyometric group was subjected to plyometric training (for weekly 3 days Monday, Wednesday, and Friday) at evening session for 6 weeks. Flexibility, agility, and speed were selected dependent variable. After collection appropriate data, it was statistically analyzed using paired 't' test. The level of significance was set at 0.05.

### 2.1. Selection of Variables

### 2.2. Training Procedure

For experimental group underwent their training programmed as 3 days/week for 6 weeks. Training was given in the evening session. The training session includes warming up and cool down. Every day, the workout lasted for 45–60 min approximately. The subjects underwent their training programs as per

the schedules such as side to side ankle hops, double leg hops, split jumps, lateral cone hops, single leg bounding, and some simple exercises for developing and maintaining flexibility (i.e., head pull – down, shoulder blade reach, shoulder shrug, upper torso dangle exercise, toe touch exercise, knee hug, and modified lotus side bending exercise under the strict supervision). During experimental period, control group did not participate in any of the special training.

## 3. RESULTS

Table 2 reveals that the obtained mean values of experimental and control group innervations of plyometric training of agility, speed, and flexibility were 12.8993, 14.6086, 7.43, 8.71, 7.36, and 3.93, respectively; the obtained "t" ratio was 7.7982\*, 4.9486\*, and 8.7190\*, respectively; the tabulated "t" value is 2.14 at 0.05 level of confidence for the degree of freedom 14. The calculated "t" ratio was greater than the table value. It is found to be significant change in agility, speed, and flexibility of the basketball players.

## 4. DISCUSSION

The result of the study indicated that the selected motor abilities such as agility, speed, and flexibility were improved significantly after undergoing plyometric training. The changes in the selected parameters were attributed the proper planning preparation and execution of the training given to players. The result of the present study indicates that the plyometric training methods are appropriate protocol to improve agility, speed, and flexibility of TSWRDC women basketball players. From the result of the present study, it is very clear that the selected motor abilities such as agility, speed, and flexibility improvement significantly due to plyometric training.

**Table 1:** Following test was selected for the study

Variables	Test items	Unit of measurement
Flexibility	Sit and reach test	In inches
Agility	SEMO Agility test	In seconds
Speed	AAPHERD youth fitness Test (50 metret Dash)	In seconds

**Table 2:** Comparison of mean and independent "t" values of motor abilities between pre- and post-test among experimental and control group

Variables	Group	N	M	SD	SEM	t	P-value
Agility	Experimental	14	12.8993	0.6175	0.1650	7.7982	0.0001
	Control	14	14.6086	0.5398	0.1443		
Speed	Experimental	14	7.43	0.65	0.17	4.9486	0.0001
	Control	14	8.71	0.73	0.19		
Flexibility	Experimental	14	7.36	1.15	0.31	8.7190	0.0001
	Control	14	3.93	0.92	0.25		

\*Significant at 0.05 level of confidence

## 5. CONCLUSION

Based on the findings and within the limitation of the study.

1. It was noticed that practice of plyometric training helped to improve selected motor abilities of university level women basketball players
2. It was also seen that there is progressive improvement in the selected criterion variables of plyometric (experimental group) group of university level women basketball players after 6 weeks of plyometric training program.

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# Impact of Yoga and Psycho Factor at Work Place

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## ABSTRACT

Recent research has indicated concern for the degree of stress and emotional well-being among university staff. This study examined the effectiveness of yoga in enhancing emotional well-being and resilience to stress among university employees. Methods in a randomized controlled trial at a Gulbarga University; we recruited 48 employees and randomized them into either yoga or a wait-list control group. The yoga group was offered 6 weeks of Dru Yoga, comprising one 60-min class per week. These classes were offered by a certified Dru Yoga instructor at lunchtime. The wait-list control group received no intervention during this 6-week study. Baseline and end-program measurements of self-reported mood and well-being were self-assessed with the profile of mood states – bipolar and the inventory of positive psychological attitudes.

## 1. INTRODUCTION

Improving well-being and resilience to stress are key issues facing many organizations. Well-being in the workplace is characterized by employees who perceive themselves to be growing, engaged, and productive and who experience positive emotional states such as pleasure, joy, and energy that help buffer against stress and depression. Stress has been defined as the inability to cope with a perceived threat to one's mental, physical, emotional, and spiritual well-being. Resilience to stress means that employees can respond productively when faced with significant change or pressure to achieve outcomes. Although pressure to achieve outcomes is expected in the workplace, excessive pressure can undermine both physical health and psychological well-being. Among university employees, increases in workloads and student-to-staff ratios have led to a significant increase in occupational stress, anxiety, and depression. Research indicates strong links between stress and such conditions as anxiety and depression, heart disease, back pain, headaches, and gastrointestinal disturbances.

## 2. METHODS

Completed health information forms were assessed by a senior Dru Yoga instructor to ensure safe-practice and good health status. Dru Yoga was the chosen

intervention because it is a particularly safe, accessible, and therapeutic form of yoga that can be practiced by most people. Participants with "at risk" health conditions (e.g., recent surgery and first trimester pregnancy) would have been excluded from this study, but no participants met these criteria. The health information form also asked participants to indicate how often they currently practiced yoga. Participants practicing yoga once per week or more ( $n = 2$ ) were excluded from the analysis of this study, although they were allowed to participate in the classes.

### 2.1. Yoga Intervention

The participants in the yoga intervention group were asked to attend at least one of three 60-min lunchtime classes per week for 6 weeks taught by a senior Dru Yoga instructor. Each participant in the yoga intervention also received a Dru Yoga CD, which included a guided 35-min home practice session, and a home practice form to record the frequency and duration of their sessions at home.

The Dru Yoga classes consisted of flowing movements, directed breathing, and relaxation techniques that included affirmation and visualization. Each class was divided into four stages: Activation exercises, energy-block release sequences, postures, and relaxation.

The baseline characteristics were very similar for the yoga intervention and the wait-list control groups [Table 2]

**Table 1: Dru Yoga intervention, details of Dru Yoga movements and postures**

Stage	Description
Activation exercises (10 min)	Flowing warm up movement aimed at enhancing circulation, releasing tension, and preparing the body for movement
Energy block release movements (20 min)	A sequence of 12 movements, including stretching, twisting, bending (forwards, backwards, and sideways) and squatting intended to increase circulation and energy flow performed slowly with joints unlocked and slightly flexed and the limbs and torso relaxed
Postures (20 min)	Four postures were chosen the crocodile pose, bridge pose, cobra pose, and sitting forward bend. All postures are performed slowly with joints unlocked, with spinal wave and conscious intention
Relaxation (10 min)	Guided relaxation involved three parts, breath and relax, visualize and affirm, and stretch and awaken. This activates the parasympathetic nervous system to achieve greater physical and emotional balance

**Table 2: Baseline characteristics of yoga and control group participants. (Standard deviation)**

Demographic information	Women (n)	Men (n)	Age	
			Mean	SD
Yoga group (n=20)	17	3	40.6	11.40
Control group (n=20)	19	1	38.0	9.58

**Table 3: Baseline health conditions**

Health condition	Total number of participants with this health condition	Participants in yoga group with this health condition (n)	Participants in control group with this health condition (n)
Stress	13	5	8
Headaches	11	4	7
Weight problems	11	4	7
Lack of energy	11	7	4
Back problems	10	6	4

of 48 participants in this study, 40 (83%) completed both the baseline and end-of-program questionnaires of the 40 participants, 36 (90%) were women and the mean age of all participants was 39.3 years. At baseline, most participants in both the yoga and control groups had practiced yoga rarely or never (16 of 20 participants [80%] in the yoga group and 17 of the 20 participants [85%] in the control group).

A summary analysis of the health information form showed that the five most common health challenges at baseline identified by the 40 participants were stress, headaches, weight problems, lack of energy, and back problems [Table 3].

### 3. RESULTS

In summary, we have shown the positive effects of yoga in the workplace using a randomized controlled trial. As the evidence-base grows for the efficacy of yoga, recent research indicates that university employees are one population group in need of improved well-being and

resilience to stress. Kinman and Jones reported that the demands placed on university staff have increased rapidly as a result of a substantial increase in student numbers, a decrease in external funding, and greater demands for accountability. Furthermore, there is evidence that the level of psychological well-being among university staff is low compared to other professions. Kinman and Jones recommended more training in developing resilience to stress for university staff. The results of our study indicate that yoga can be an effective tool for achieving this by helping employees attain greater positive health and well-being in the workplace.

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# Effect of Specific Training on Selected Physical Fitness and Skill Variables of High School Male Kho-Kho Players

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## ABSTRACT

The present study is to find out the effect of specific training on the selected physical fitness, and skill variables of high school male kho-kho players. Twenty male kho-kho players who have represented the school were selected from Government High school, Ibrahimpatnam (TS). The subjects were between 12 and 14 years. They were divided into two groups of ten in each. One group was act as the experimental group and another was as control group. The experimental group was undergoing the specific training for 6 weeks 6 days/week. Each training session was for 1 h in the evening from 4.00 PM to 5.00 PM. To achieve the result, the collected data on following criterion measure, namely, physical fitness variables that is speed, endurance, and the following skill variables, namely, pole turning. The standardized tests were taken before and after the specific training. Speed was tested using 30 m dash run, endurance was tested using 800 m run, and pole turning and covering was find out by experts rating scale. The paired *t*-test was applied to analyze the collected data and in all cases the criteria for the statistical significance were set at 0.05 level of confidence.

## 1. INTRODUCTION

The term “Kho” is derived from the Sanskrit verb “syu” (get-up/go). Sometimes, the word “Mahapranocchar” in yoga is used as equivalent to “Kho.” Therefore, every chaser as an ignition point to start fast movement utters the sound “Kho.” The game is played in different parts of country with some variations. Kho-kho game, as it is seen today, has undergone a tremendous state of development since its birth in Maharashtra during 17<sup>th</sup> Century. Further, Maharashtra Sports Organizer “Nurulkar” modified the game as a recreational activity; however, byelaws were constituted by the office – bearers of two gymnasiums in Maharashtra during the year 1910. The Deccan Gymkhana of Poona first formulated the rules of the game in 1914 and revised in 1919 and 1928, though they were not published at that time. It was Maharashtra Physical Education Association, which published its rules in book form,

for the 1<sup>st</sup> time in 1935. In 1938, the second edition was published with certain modification.

Gradually, the next edition was published in 1943. Further, “Akhil Maharashtra Sareerika Sikhshan Mandal” published the new edition of the rules in the year 1949. In 1959, just after the national games at Calcutta, the “Kho-kho Federation of India” was formed and the first National Championship was held at Vijayawada, Andhra Pradesh, in 1960. After that, it was held in all categories in national and interuniversity levels. The federation amended the rules in 1961 and also started National Competition for Women in Kolhapur. Since then the nationals in kho-kho are held every year at some or other place in India. It was decided at indore in 1964 to give National Awards to the best kho-kho players – “Eklavya” for men and “Rani Mahalakshmbai” for women. Since 1971, 16 years old boys are also given National Awards overall in India for this game:

### 1.1. Statement of the Problem

The present study was to find out the effect of specific training on the selected physical fitness and skill variables of high school male kho-kho players.

### 1.2. Delimitations

The following delimitations are considered for the study.

1. This study is confined to 20 school male kho-kho players from Government High School, Ibrahimpatnam, (TS)
2. The subjects were selected only from the age group of 12–14 years
3. Only selected physical fitness and skill variables were chosen for this study
4. The duration of the experimental period was for 6 weeks
5. The study is confined only to the selected specific training.

### 1.3. Limitations

The following limitations are considered for the study.

1. The factors such as personal habits, life style, routine, diet, climatic conditions, and environmental factors which might have had an effect on the results of this study could not be taken into consideration
2. Hereditary, social, and other psychological factors could not be controlled.

### 1.4. Hypotheses

1. It was hypothesized that there may be significant differences due to specific training on the selected physical fitness variables, namely, speed and endurance
2. It was hypothesized that there may be significant differences due to specific training on the selected skill variables, namely, pole turning.

### 1.5. Significance of the Study

1. The study will be helpful to know the effect of specific training on selected physical fitness and skill variables of high school male kho-kho players
2. The study will be helpful to prepare training schedule to improve the effect of specific training on the selected physical fitness and skill variables of high school male kho-kho players
3. The study will be helpful to realize kho-kho players and coaches for their coaching purpose.

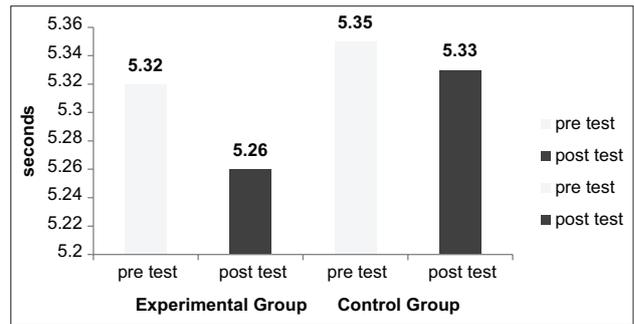


Figure 1: Bar diagram showing pre- and post-test mean value of experimental group and control group in speed

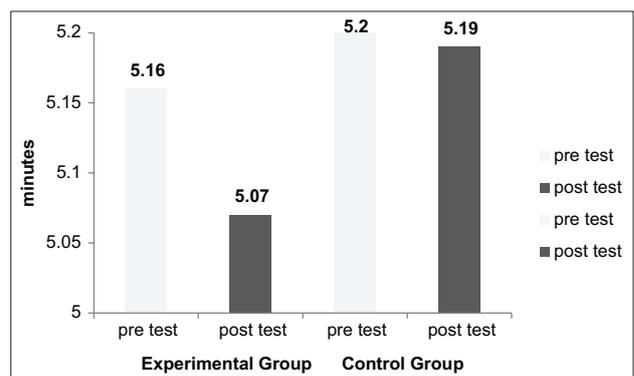


Figure 2: Bar diagram showing pre- and post-test mean value of experimental group and control group in endurance

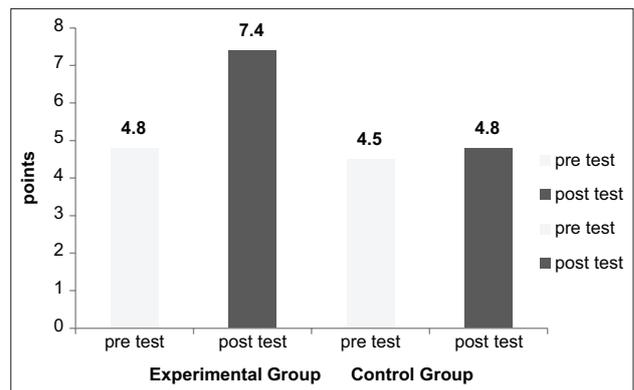


Figure 3: Bar diagram showing pre- and post-test mean value of experimental group and control group in pole turning

Table 1: Selection of tests and unit of measurements

Variables	Name of the test	Unit of measurements
Speed	30 m dash	Seconds
Endurance	800 m run	Minutes and seconds
Pole-turning	Subjective rating	Points

**Table 2:** Table showing mean difference standard deviation and ‘t’ value of experimental and control groups in speed

Group	Mean	Md	Std. deviation	Std. error of the mean	‘t’	Table value
Experimental pre-test	5.32	0.06	0.29	0.01	12.94*	2.14
Experimental post-test	5.26		0.36	0.03		
Control pre-test	5.35	0.02	0.35	0.02	1.50	2.14
Control post-test	5.33		0.34	0.04		

\*Significant at 0.05 level

**Table 3:** Table showing mean difference standard deviation and ‘t’ value of experimental and control groups in endurance

Group	Mean	Md	Std. deviation	Std. error of the mean	‘t’	Table value
Experimental pre-test	5.16	0.22	0.38	0.99	9.97*	2.14
Experimental post-test	5.07		0.41	0.10		
Control pre-test	5.20	0.01	0.17	0.43	1.96	2.14
Control post-test	5.19		0.16	0.42		

\*Significant at 0.05 level

**Table 4:** Table showing mean difference standard deviation and ‘t’ value of experimental and control groups in pole turning

Group	Mean	Md	Std. deviation	Std. error of the mean	‘t’	Table value
Experimental pre-test	4.80	2.60	0.63	0.20	15.92*	2.14
Experimental post-test	7.40		0.84	0.26		
Control pre-test	4.50	0.30	0.52	0.16	1.97	2.14
Control post-test	4.80		0.78	0.24		

\*Significant at 0.05 level

## 2. METHODOLOGY

### 2.1. Selection of Subjects

The purpose of the study was to find out the effect of specific training on the selected physical fitness and skill variables of high school male kho-kho players. For this purpose, 20 students were selected as subjects from Government High School, Ibrahimpatnam, (TS) by applying random sampling method. The age of the subjects ranged from 12 to 14 years.

### 2.2. Selection of Variables

Based on the relevant literature that is viewed and in accordance with the views of the professional physical education personalities, the importance of variables at the high level performance, feasibility aspect of testing, and the following variables were selected for this study, namely, physical fitness and skill variables. They are speed, endurance, and pole turning. A specially prepared group of exercises was used for training and is considered as independent variable in this study.

### 2.3. Independent Variable

Specific group of exercises.

### 2.4. Dependent Variables

- Physical fitness variables
  1. Speed
  2. Endurance.
- Skill variables
  1. Pole turning

### 2.5. Experimental Design

The selected subjects ( $n = 20$ ) were divided into two groups each consisting of ten. The experimental group underwent the specific training for 6 days in a week for 1 h from 4.00 pm to 5.00 pm for 6 weeks in total and the control group was not involved in any specific training but was of the investigator in engaged in their usual activities.

## 2.6. Statistical Techniques

The following statistical procedures were employed to estimate the effect of specific training on the selected physical fitness and skill variables of high school male kho-kho players. The “t” ratio was calculated to find out the significance difference between the mean of pre- and post-test of the group

Formulae

$$\text{Mean} = \frac{X}{N} \quad \text{‘t’} = \frac{DM}{\sigma DM}$$

DM – difference between the mean

$\sigma DM$  – standard error of the difference between means.

## 3. DISCUSSION ON FINDINGS

The result of the study shows that the experimental group that had undergone specific training and improved physical fitness variables, namely, speed, endurance, and skill variables, namely, pole turn. This may be due to the effect of specific training. From the result of the present study, it is concluded that the experimental group improved in physical fitness and skill variables.

## 4. CONCLUSION

Based on the statistical analysis and the limitation of the study, and results the following conclusions are drawn.

- Experimental group significantly improved on physical fitness variables, namely, speed and endurance
- Experimental group significantly improved on skill variables, namely, pole turning
- Further the control group shows insignificant improvement on physical fitness and skill variables.

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# Application of Own Body Exercise Training for the Improvement of Speed and Agility Performance in Interscholastic Girls of Nalgonda District

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## ABSTRACT

The purpose of the study was to investigate the application of own body exercise training for the improvement of speed and agility performance in interscholastic girls of Nalgonda district. To achieve the purpose of the study, the research scholar was randomly selected 30 intercollegiate girls Nalgonda district and their age ranged between 11 and 14 years age. The criterion variables selected for this study were 50 m dash test for speed and shuttle run test for agility, pre-test was conducted before starting the training and post-test was conducted after 6 weeks respected training. To find out the combined effect of two trainings on the selected performance parameters, the paired sample *t*-test was used and the level of confidence was fixed at 0.05 levels. Agreeing to the outcome, it can be concluded those 6 weeks of combined own body and saqtrainings significantly increases of speed and agility performance in interscholastic girls.

**Keywords:** Agility, Own body resistance, Speed, *t*-test.

## 1. INTRODUCTION

Bodyweight exercises (also known as bodyweight workouts) are intensity workouts that use the body's own weight as resistance against gravity. Strength, power, endurance, speed, flexibility, coordination, and balance are just a few of the bio motor abilities that can be improved with bodyweight workouts.

Speed and agility training regimens are vital for players of all ages and sports in the sports world. This training method focuses on speed, acceleration, flexibility, balance, and agility to assist athletes improve their entire athletic performance. All of these qualities can be transferred on the field or court by athletes.

## 2. METHODOLOGY

The aim of the study was to investigate the application of own body exercise training for the improvement of speed and agility performance in interscholastic girls of Nalgonda District. To achieve the purpose

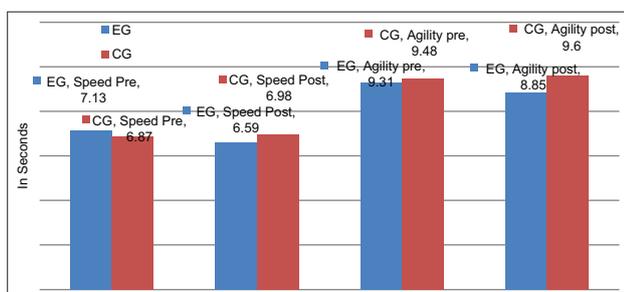
of the study, the researcher randomly selected 30 intercollegiate girls and their age ranged between 11 and 14 years age. The criterion variables selected for this study were sit and reach test for flexibility and shuttle run test for agility, pre-test was conducted before starting the training and post-test was conducted after 6 weeks respected training. To find out the effect of training on the dependent variables, paired sample *t*-test was used. The level of confidence was fixed at 0.05 levels.

1. The table reveals that the pre-test mean of speed in experimental group for interscholastic girls was 7.13 with the standard deviation of 0.46 and post-test mean was 6.59 with the standard deviation of 0.38, the obtained *t*-ratio 6.98 was found to be greater than the required table value of 2.05 at 0.05 level of confidence for 29 degrees of freedom. This indicates that there was significant difference on speed of experimental group between the pre- and post-test of interscholastic girls, but the mean and standard deviation of control group from pre-test to post-test there were no significant improvement

**Table 1:** The variation of mean, standard deviation, and t-value of inter interscholastic girls

SL. No	Parameters	n	Groups	Pre-test		Post-test		t ratio	Sig.
				Mean	SD	Mean	SD		
1.	Speed	30	EG	7.13	0.46	6.59	0.38	6.98	0.00
			CG	6.87	0.21	6.98	0.34	1.14	0.27
2.	Agility	30	EG	9.31	0.42	8.85	0.42	8.23	0.00
			CG	9.48	0.28	9.60	0.29	1.32	0.21

Level of significance  $P < 0.05$



**Figure 1:** Bar diagram showing the mean difference between pre-test and post-test of the interscholastic girls on speed and agility

occurred, this indicates to compare the control group the experimental group shown significant improvement

- The table reveals that the pre-test mean of agility in experimental group for interscholastic girls was 9.31 with the standard deviation of 0.42 and post-test mean was 8.85 with the standard deviation of 0.42. The obtained t-ratio 8.23 was found to be greater than the required table value of 2.05 at 0.05 level of confidence for 29 degrees of freedom. This indicates that there was significant difference on agility of experimental group between the pre- and post-test of interscholastic girls, but the mean and standard deviation of control group from pre-test to post-test there were no significant improvement occurred, this indicates to compare the control

group the experimental group shown significant improvement.

### 3. RESULTS AND CONCLUSION

From the present study, it is evident that the 6 weeks own body exercise training has significantly improved the speed and agility of the interscholastic girls. Hence, on the basis of the statistical findings, there is a significant improvement on the variables (i.e., speed and agility) after 6 weeks combined effects of own body resistance training on the selected interscholastic girls. Hence, this training method is recommended to all school level players and coaches for improving speed and agility performances.

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# Effect of Circuit Training for Development of Explosive Power among Volleyball Players of Kurnool District Andhra Pradesh

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## ABSTRACT

The purpose of the present study is to find out the effect of circuit training for development of explosive power among male volleyball players of Kurnool district. The subject was chosen at random from a group of men between the ages of 19 and 21 years old. The  $n = 20$  experimental group I and  $n = 20$  control group II are included in the study's sample. Vertical jump test was utilized in the study as a pre-test and post-test to determine explosive power in both groups. Experiment group I received circuit training on alternate days for 6 weeks, while control group II received general warm-up training. The experimental group's performance on the vertical jump improved from pre-test to post-test. It is concluded that significant effect in experimental group I whereas the control group exhibits a reduction in their performance.

## 1. INTRODUCTION

Volleyball is a team sport in which two teams of six players are separated by a net. Each team tries to score points by grounding a ball on the other team's court under organized rules. It has been a part of the official program of the Summer Olympic Games since Tokyo 1964. Beach volleyball was introduced to the program at the Atlanta 1996. The adapted version of volleyball at the Summer Paralympic Games is sitting volleyball.

The complete set of rules is extensive, but play essentially proceeds as follows: A player on one of the teams begins a "rally" by serving the ball (tossing or releasing it and then hitting it with a hand or arm), from behind the back boundary line of the court, over the net, and into the receiving team's court.<sup>[3]</sup> The receiving team must not let the ball be grounded within their court. The team may touch the ball up to 3 times to return the ball to the other side of the court, but individual players may not touch the ball twice consecutively. Typically, the first two touches are used to set up for an attack. An attack is an attempt to direct the ball back over the net in such a way that the team receiving the ball is unable

to pass the ball and continue the rally, thus, losing the point. The team that wins the rally is awarded a point and serves the ball to start the next rally.

Circuit training is developed by the Scientist Morgan R. E. and Adamson G. T. at University of Leeds in the year 1957. This is resistance to develop the motor abilities such as strength, speed, and endurance. Circuit training is an exercise "circuit" which consists of prescribed exercises which includes for the upper body, lower back, abdomen, and lower body. It can be done with own body weight and using the resistance exercises such as barbells and medicine balls.

Circuit training improves all round physical fitness, as opposed to fitness for a specific sport. A sportsman training for his activity, therefore, would be foolish to depend entirely on circuit training. However, skill related circuits can easily be implemented into every session. It must be recognized that only through work (assuming adequate rest and nutrition are taken) can a muscular and respiratory system be improved on. Endurance training for which circuit training is a firm base to work from must be regular and sustained over

a long period. Starting at a low level, appertaining from the standard of the class or individual, intensity should be gradually increased, with a progressive load being placed on the cardiovascular system.

Dr. M. Srinivas Reddy, Dr. P. Ramesh Reddy, and Ms. Amrita Pandey (2012) studied the effect of plyometric training, circuit training, and combined training on muscular strength and muscular power among the secondary students. All the three training groups – plyometric training group, circuit training group, and combined training group have shown significant improvement due to 12 weeks of training on muscular power and muscular strength. On comparing the training effect, there was no significant difference among the three training groups, that is, plyometric training group, circuit training group, and combined training group on muscular power and muscular strength. The control group failed to produce significant improvement on muscular power and muscular strength.

## 2. OBJECTIVE OF THE STUDY

The objective of the study is to find out the effect of circuit training on the development of explosive power among men volleyball players of Kurnool District AP.

## 3. HYPOTHESIS

It was hypothesized that there would be a significant difference in circuit training development of explosive power among volleyball players of Kurnool District AP.

## 4. METHODS

The purpose of the present study is to find out the effect of circuit training for development of explosive power among men volleyball players of Kurnool District AP. The subject was chosen at random from a group of girls between the ages of 19 and 21 years old. The  $n = 20$

Paired samples statistics				
Vertical Jump	Mean	<i>n</i>	Std. Deviation	Std. Error Mean
Control group				
Pre-test	57.9000	20	1.05880	0.23675
Post-test	57.9000	20	1.13091	0.25288
Experimental group				
Pre-test	57.7000	20	1.10501	0.24709
Post-test	62.9000	20	1.20961	0.27048

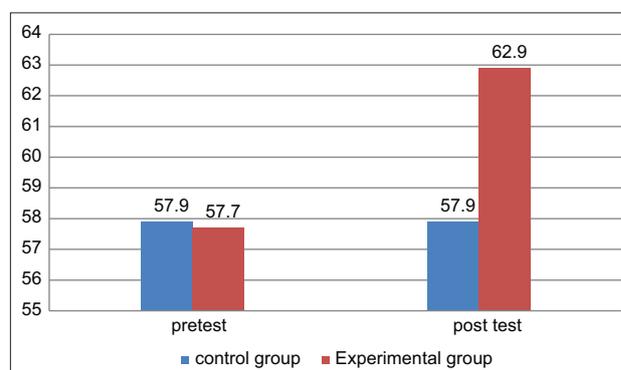
experimental group I and  $n = 20$  control group II are included in the study's sample.

### 4.1. Tools

- Vertical Jump
- Purpose of the test: To measure explosive power.

## 5. RESULTS

The analysis of the data reveals that the subjects with the circuit training have shown improvement in the performance of vertical jump test from pre- to post-test mean S.D experimental group pre-test result shown (57.7000) and controlled group (57.9000) after 8 weeks of specific of circuit training there is improvement in the subject's experimental group (62.9000) and controlled group (57.9000).



The graph clearly shows the performance of volleyball players pre-test and post-tests. The blue bar represents the control group shown the no improvement in the vertical jump test in other side orange bar shown the significance improvement in the vertical jump test after the circuit training for 6 weeks.

## 6. CONCLUSION

Due to the effect of circuit training, the explosive power of trained and untrained group subjects was significantly increased. The result of the study also indicates that significant difference exists among the trained and untrained men irrespective of group and tests, significant difference exists among the experimental and control group men irrespective of category and test, significant difference exists among the pre-test and post-test irrespective of category and on group on vertical jump. The result of the study was shown that significant difference exists among the trained and

untrained category experimental and control group at different stages of testing on vertical jump.

## 7. RECOMMENDATIONS

The following suggestions are made for the benefit of players, coach's academicians, and sports scientists. The researcher suggests the part of the coach to use the above-said development of the circuit training program for volleyball players. The study helps the physical educationist and coaches for selecting the athletes.

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# A Study of Motor Fitness Components between Football and Volleyball Players of Aurangabad City of Maharashtra State

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## ABSTRACT

Motor fitness refers to the efficiency of basic movement in addition to the physical fitness. For football and volleyball players, strength, flexibility, agility, and speed are the important variables according to the sports sciences. Keeping in view the concept, this study was taken to compare the levels of motor fitness between football and volleyball players. A total number of 20 football and volleyball players (ten football and ten volleyball) was selected randomly from two secondary schools of Aurangabad City of Maharashtra. The present study is the descriptive survey. The criterion measures adopted for this study were flexibility, agility, strength, and speed. The data collection tools used in the study were sit and reach, shuttle run, 50 yard dash, and standing broad jump. Data of motors fitness components between football and volleyball players were compared using independent sample *t*-test. The level of significance was kept at 0.05 level of significant. It was found that in selected motor fitness components such as, flexibility, agility, strength, and speed, there was significant difference between football and volleyball players. Mean scores showed that football players showed better performance in all motor fitness components such as flexibility, agility, strength, and speed as compare to volleyball players. Based on the results, it was concluded that football players have better motor fitness than volleyball players.

**Keywords:** Football players, Motor fitness, Volleyball Players.

## 1. INTRODUCTION

Motor fitness is frequently chosen to achieve desirable goals. Motor fitness may be defined as the successful adaptation to stresses of one's life style. The requirement of fitness is highly specific for different sports. It is quite possible to feel fit when a few scientific states would prove that one was far from it in physiological terms. A player may go to play a match knowing that by all standard of measurable fitness he is the fittest among the others and yet be quite unfit. It is also possible that one is very fit is one of the sports such as basketball and volley ball, but when one swims a 100 m quickly he/she gets out breath and feel quite tired. An athlete faces different types of physical stresses based on the nature of the activity concerned. For instance a wrestler, weight filter, a boxer, and a foot baller need more strength and endurance than a long jumper or a thrower

does. However, obviously, strength is the requirement of all the sports and games. Motor fitness refers to the efficiency of basic movement in addition to the physical fitness.

### 1.1. Purpose of the Study

For football and volleyball players, strength, flexibility, agility, and speed are the important variables according to the sports sciences. Keeping in view the concept, this study was taken to compare the levels of motor fitness between football and volleyball players.

## 2. METHODOLOGY

A total number of 20 football and volleyball players (ten football and ten volleyball) was selected randomly from

**Table 1: Descriptive statistics of motor fitness components of between football and volleyball players**

Motor fitness components	Football players				Volleyball players			
	<i>n</i>	Mean	Standard deviation	St. Error mean	<i>n</i>	Mean	Standard deviation	St. Error mean
Flexibility	10	7.51	4.42	1.04	10	6.62	3.659	1.03
Agility	10	11.16	4.93	0.45	10	13.42	5.873	0.73
Strength	10	166.1	0.93	4.23	10	142.9	1.987	5.66
Speed	10	6.33	4.863	0.45	10	8.97	3.546	0.24

**Table 2: Independent sample t-test of motor fitness components of between football and volleyball players**

Motor fitness components	't' value	df	Sig. (2-tailed)	Mean difference	Std. Error difference
Flexibility	0.86	18	0.038	0.89	1.15
Agility	3.17	18	0.034	2.32	0.76
Strength	4.09	18	0.021	0.23	0.54
Speed	11.00	18	0.01	2.64	1.16

two secondary schools of Aurangabad City of Maharashtra. The present study is the descriptive survey. The criterion measures adopted for this study were flexibility, agility, strength, and speed. The data collection tools used in the study were sit and reach, shuttle run, 50 yard dash, and standing broad jump. Data of motor fitness components between football and volleyball players were compared using independent sample t test. The level of significance was kept at 0.05 level of significant.

### 3. RESULTS

Table 1 shows descriptive statistics of motor fitness components of between Football and Volleyball players.

Table 2 shows independent sample t-test of motor fitness components of between Football and Volleyball players.

### 4. DISCUSSION

It was found that in selected motor fitness components such as, flexibility, agility, strength, and speed, there was significant difference between football and volleyball players. Mean scores showed that football players showed better performance in all motor fitness components such as flexibility, agility, strength, and speed as compare to volleyball players.

This finding was supported by the Berger and Paradis (2010) compared the physical fitness of children to compare the physical fitness in 10WA and Tokyo Japan. They recorded that Tokyo children scored better in all motor performance tests accepts on lie sit-ups. They also

found that Tokyo children had more chances for activity through physical classes than the 10WA group. Choudri (2002) studied the comparative physical fitness between students of residential and non-residential schools (aged 12–14 years) and had tested physical fitness index (PFI), BMI, and anthropometry measures of 50 residential school children and 40 non-residential school children of Bijapur, Karnataka. They reported that non-residential school children had poor physical anthropometry and showed a less PFI score, as compared to residential school children.

### 5. CONCLUSION

It was found that in selected motor fitness components such as, flexibility, agility, strength, and speed, there was significant difference between football and volleyball players. Based on the results in the present study, football players have better motor fitness than volleyball players.

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# A Study on Development of Physical Fitness and Its Significance on Physiological Aspects of Basketball Players at Kakatiya University, Warangal

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## 1. INTRODUCTION

The physical fitness and wellness are inter-related to each other. Physical fitness is the sum of the fine motor abilities, namely, strength, speed endurance, flexibility, and coordinative abilities. The most important aim of the sports exercise is to improve and maintain the physical fitness and wellness of the human being. Exercise is an essential element in the achievement and maintenance of physical fitness and wellness of human being. Physical fitness covers organic fitness as an individual. The main components of physical fitness are speed, strength, endurance, flexibility, agility, cardiovascular fitness, and co-coordinative ability. Physical fitness is a multifaceted continuum extending from birth to death, affected by physical activity; it ranges from optimal activities in all aspects of life through high and low levels of different physical fitness to serve disease and dysfunction.

Physical fitness is one of the most important aspects of basketball performance. A skillful player will go a long way in the sport, but without the fitness part of their game they will not be the complete player. Fitness is important at all levels of the game, whilst being essential for top level players; it is beneficial for beginners who will improve both their effectiveness and enjoyment through good standards of fitness. The aim of fitness training in basketball is to enable a player to cope with the physical demands of the game as well as allowing the efficient use of his various technical and tactical competencies throughout the match.

Human physiology is the science of the mechanical, physical, and biochemical functions of humans in good health, their organs, and the cells of which they are composed. The principal level of focus of

physiology is at the level of organs and systems. Most aspects of human physiology are closely homologous to corresponding aspects of animal physiology, and animal experimentation has provided much of the foundation of physiological knowledge. Anatomy and physiology are closely related fields of study: Anatomy, the study of form, and physiology, the study of function, are intrinsically tied and are studied in tandem as part of a medical curriculum. Conventionally, the academic discipline of physiology views the body as a collection of interacting systems, each with its own combination of functions and purposes.

### 1.1. Significance of the Study

The purpose of the study is to find out whether or not any significant difference found on physiological aspects in relation to their physical fitness of basketball players at Kakatiya University.

### 1.2. Objectives of the Study

The study is to find out the physical fitness and its significance on physiological aspects of the basketball players at Kakatiya University.

### 1.3. Hypothesis

Is there any significant difference on physiological aspects in relation to physical fitness of basketball players at Kakatiya University.

### 1.4. Sample of the Study

The study was formulated based on the simple random sampling. The samples were collected from the 50

basketball players in the age group of 20–25 years from Kakatiya University were considered. The data were collected during intercollege university tournaments.

#### Showing the Sample of the Study

Sl. No.	Category of the subjects	Number of subjects
1.	Kakatiya University, Basketball players	50

### 1.5. Tools Used

The present study under investigation selected the following physical fitness activities and test performed on physiological aspects.

- Physical fitness activities  
Speed, agility, explosive power, and endurance.
- Physiological tests  
The Harvard step test (pulse rate – 1 min) and breath holding time (1 min).

## 2. MATERIALS AND METHODS

Fifty Kakatiya University basketball players have been selected for the study and they have under gone physical fitness activities for 45 days. The pre-test was taken, and then the post-test was administrated after the systematic training of physical fitness activities such as speed, agility, explosive power, and endurance on physiological aspects.

## 3. RESULTS AND DISCUSSION

Table 1 and Graph 1 show the mean, standard deviation, degrees of freedom, t-value, and significance between pre-test and post-test of Kakatiya University basketball players in relation to their pulse rate. The mean value of pre-test was 102.16, standard deviation was 1.26 and the mean value of post-test was 128.65 and standard deviation was 2.43. The obtained t-ratio was 2.46, which was found to be significant at 0.00 levels.

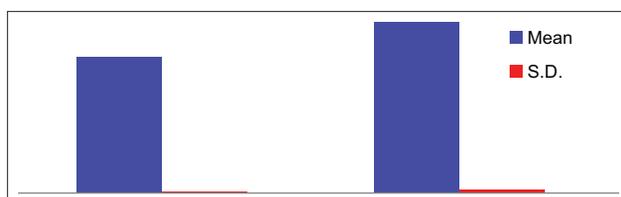
Table 2 and Graph 2 show the mean, standard deviation, degrees of freedom, t-value, and significance between pre-test and post-test of Kakatiya University basketball players in relation to their breath holding. The mean value of pre-test was 35.96 and standard deviation was 3.66 and the mean value of post-test was 32.85 and standard deviation was 1.78. The obtained t-ratio was 2.68, which was found to be significant at 0.01 levels.

**Table 1:** The mean values, SD, df, t-value, and P value between pre-test and post-test of Kakatiya University basketball players in relation to their pulse rate

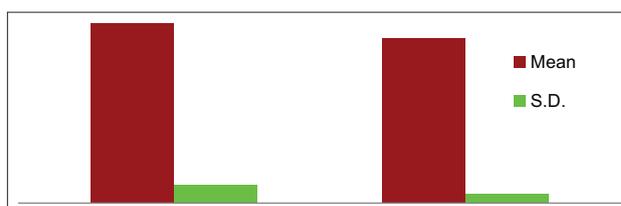
Sl. No.	Subjects	n	Mean	S.D.	df	“t” ratio	P-value
1.	Pre-test	50	102.16	1.26	98	2.46	0.00
2.	Post-test	50	128.65	2.43			

**Table 2:** The mean values, SD, df, ‘t’ value, and P value between pre-test and post-test of Kakatiya University basketball players in relation to their breath holding

Sl. No.	Subjects	N	Mean	S.D.	df	‘t’ ratio	P value
1.	Pre-test	50	35.96	3.66	98	2.68	0.01
2.	Post-test	50	32.85	1.78			



**Graph 1:** The mean values, SD, df, ‘t’ value, and P-value between pre-test and post-test of Kakatiya University basketball players in relation to their pulse rate



**Graph 2:** The mean values, SD, df, “t” value, and P-value between pre-test and post-test of Kakatiya University basketball players in relation to their breathing holding

## 4. CONCLUSION

Moreover, physical fitness has yielded significant differences on the physiological aspects of basketball players it have scientifically proved better that the Kakatiya University basketball players have major role to prove their physical fitness in the performance of the game the physical fitness variables, namely, speed, explosive power, agility, and endurance. In the present scenario, the tactical standards in basketball game

have been playing a significant role in the creeping performance of the modern game of basketball. By and large, the players exposed at the higher levels of competition need to be fit physically, mentally, and technically, so that the standards of the power game will remain at its best all the time at international level.

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# Exercise Protocol for Predicting the Sensitive Zone on Heart Rate Max among Untrained Government Degree College for Women

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## ABSTRACT

The purpose of the study is to determine the significant change in heart rate max. Capacity of untrained college girls was in the age group of 18–20 years. The purpose of this study was to compare the heart rate max. Among untrained school children of Hyderabad city. To achieve this purpose, 90 students were selected randomly and were categorized in three different groups, that is, high intensity group, middle intensity group, and low intensity group as random samples. They were ranged in age between 14 and 16 years only. The test is more economical in terms of space and the time aspects. To assess the heart rate max., the Harvard step test method was used on the students of Hyderabad city. Based on the results of the above study, the investigator has drawn the following conclusions: Among this three groups, 9 inches medium group has better average compare to 13 inches high bench, and 4 inches low bench group girls. This speaks that 9 inches medium bench test improves the heart rate max. Among the untrained college girls between the age group of 17–19 years.

**Keywords:** Heart rate max, School childrens etc.

## 1. INTRODUCTION

### 1.1. Physiology

Study of functioning of living organism or their constituent tissues or cells.

### 1.2. Heart Rate

The number of times the heart contracts per minute to pump blood around the body.

### 1.3. Aim

The purpose of the study is to determine the significant change in heart rate max. Capacity of untrained college girls was in the age group of 18–20 years.

### 1.4. Significance of the study

(1.) The study will help to estimate the significant change in heart rate max. (2) This will also help to find

out the intensity of the exercise (or) training sensitive zone to improve heart rate max. (3) This study may help the physical education teachers, coaches, and other related physical educational professionals dealing with the children on sports, fitness, etc. (4) This research may also help in bringing new scope relating to heart rate max.

### 1.5. Hypothesis

It is hypothesized that medium intensity duration exercise brings a significant change in heart rate max. Capacity in the children.

### 1.6. Delimitations

1. This study is delimited to the students between the age group of 17–19 year girls of Hyderabad region only
2. All the students selected for this study were not trained in the past.

### 1.7. Limitation

Factors such as socio-economic status, daily routine life style, and food habits of the subjects which may have an influence on the heart rate max. Capacity of the children could not be controlled.

## 2. METHODOLOGY

The purpose of this study was to compare the heart rate max. Among untrained school children of Hyderabad City. To achieve this purpose, 90 students were selected randomly and were categorized in three different groups, that is, high intensity group, middle intensity group, and low intensity group as random samples. They were ranged in age between 14 and 16 years only. The test is more economical in terms of space and the time aspects. To assess the heart rate max., the Harvard step test method was used on the students of Hyderabad city.

### 2.1. Experimental Variables

1. Harvard step of 13 inches height for higher grouped students
2. Harvard step of 9 inches height for middle grouped students
3. Harvard step of 4 inches height for lower grouped students.

### 2.2. Statistical Techniques

Mean, Where  $M = \text{mean} = \frac{\text{sum of scores}}{N}$   $x = \text{raw score}$   
 $N = \text{Total number of scores.}$

Analysis of data and results of study:

Heart rate (final)	N	Mean	Standard deviation	Standard error
4 inches benchers	30	126.2222	12.81244	2.33922
9 inches benchers	30	150.5295	4.93529	0.90106
13 inches benchers	30	147.3907	9.72754	1.77600
Total	90	141.3808	14.49490	1.52790

## 3. CONCLUSION

Based on the results of the above study, the investigator has drawn the following conclusions:

Among this three groups, 9 inches medium group has better average compare to 13 inches high bench and 4 inches low bench group girls.

This speaks that 9 inches medium bench test improves the heart rate max. Among the untrained college girls between the age group of 17–19 years.

## 4. RECOMMENDATIONS

In the light of the facts presented above, the investigator has made the following recommendations. All coaches who are giving training in improving heart rate max must be specialized in their own field so that the best learning can be made possible among the participants' good scientific and systematic coaching help the players to achieve the high level of sport performance. Educational institutions are the main agencies to promote players since childhood educational institutions must provide adequate facilities to the girls to become fir by taking part in various physical activities.

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# Effects of Roasted Garlic with and without *Moringa oleifera* on Glucose, Zinc, and Iron among Sedentary Men

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## ABSTRACT

**Statement of the Problem:** The purpose of the study was to investigate “Effects of Roasted Garlic with and without *Moringa Oleifera* on Glucose, Zinc, and Iron among Sedentary Men.” **Selection of Variables:** The following variables were selected for this study. On glucose, zinc, and iron II. Independent Variables: (1) Roasted garlic with *Moringa oleifera* (2) roasted garlic and (3) control group. **Experimental Design:** The subject was selected for this study through the random group design consisting of pre- and post-test, 45 men randomly divided into three groups, the group was assigned as an experimental group I (roasted garlic with *M. oleifera*), experimental group II (roasted garlic), and control group. Training schedules and supplementation: During the training period, the experimental group underwent their training with supplementation for the period of 8 weeks for all days. **Statistical Technique:** Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. If the adjusted post-test results were significant, the Scheffe's *post hoc* test was used to determine the paired mean significant difference. thirumalaisamy (2004). **Conclusion:** After incorporate of statistical technique, it was found a significant difference zinc, iron, and also significantly reduced plasma glucose in experimental group I (roasted garlic with *M. oleifera*) due to implemented roasted garlic with *M. oleifera* for period of 8 weeks than the roasted garlic group.

**Keywords:** Garlic, Iron, *Moringa*.

## 1. INTRODUCTION

### 1.1. Health Benefits of Garlic

(1) Roasting garlic concentrates the sugars, transforming it into a caramelized, spreadable, buttery texture, with sweet, deep complex flavors, removing all the sharpness, pungency, and bite. (2) It is easier to digest for many people. (3) It gives sweetness and depth to the dishes you are already making – soups stews, mashes, dressings, marinades, and sauces. (4) It is a great way to preserve garlic. (5) Because it smells amazing and will make you and your family feel cozy and happy. I am not kidding.

### 1.2. Health Benefits of *Moringa*

*Moringa* has many important vitamins and minerals. The leaves have 7 times more Vitamin C than oranges

and 15 times more potassium than bananas. It also has calcium, protein, iron, and amino acids, which help your body heal and build muscle. It is also packed with antioxidants and substances that can protect cells from damage and may boost your immune system. There is some evidence that some of these antioxidants can also lower blood pressure and reduce fat in the blood and body.

### 1.3. It's Traditionally Been Used as a Remedy for Such Conditions As

1. Diabetes
2. Long-lasting inflammation
3. Bacterial, viral, and fungal infections
4. Joint pain
5. Heart health
6. Cancer.

### 1.4. Statement of the Problem

The purpose of the study was to investigate “Effects of Roasted Garlic with and without *Moringa oleifera* on Glucose, Zinc, and Iron among Sedentary Men.”

### 1.5. Selection of Variables

The following variables were selected for this study. (I) Dependent Variables: (1) Glucose, (2) zinc, and (3) iron. (II) Independent Variables: (1) Roasted garlic with *M. oleifera*, (2) roasted garlic, and (3) control group.

## 2. EXPERIMENTAL DESIGN

The subject was selected for this study through the random group design consisting of pre- and post-test, 45

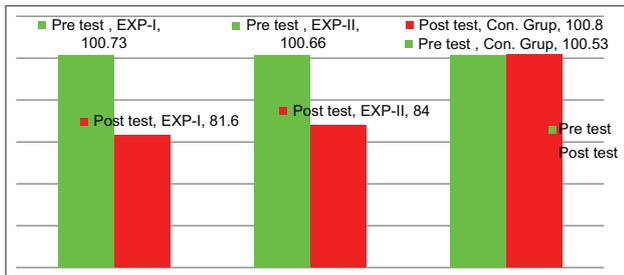


Figure 1: Final mean difference of glucose

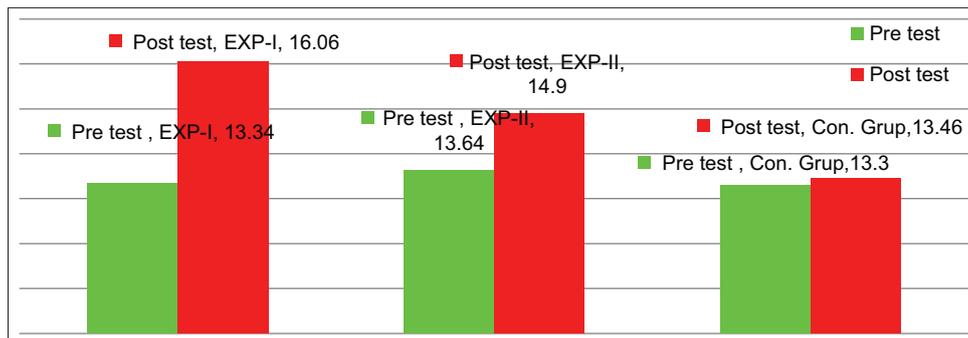


Figure 2: Final mean difference of iron

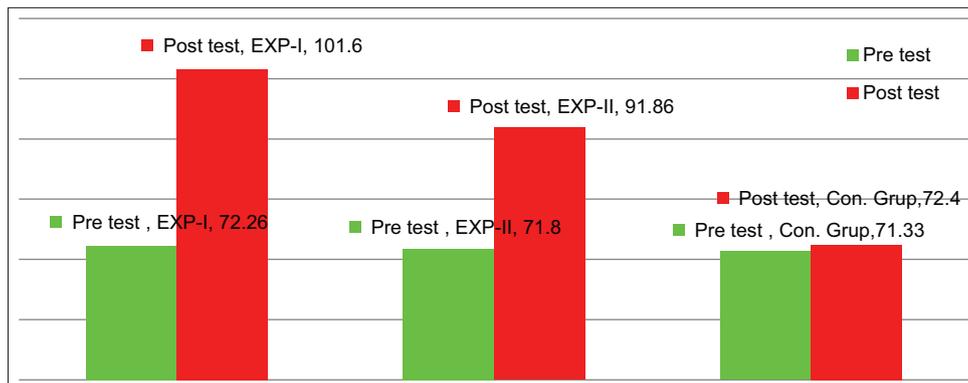


Figure 3: Final mean difference of zinc

men randomly divided into three groups, the group was assigned as an experimental group and control group. The groups are (1) roasted garlic with *M. oleifera*, (2) roasted garlic, and (3) control group.

## 3. SUPPLEMENTATION

During the training period, the experimental groups underwent their walking program period of 8 weeks for all days with roasted garlic with *M. oleifera*.

### 3.1. Statistical Technique

Analysis of covariance statistical technique was used to test the significant difference among the treatment groups. thirumalaisamy (2004).

### 3.2. Computation of Analysis of Covariance

The following tables illustrate the statistical results of effects of roasted garlic with *M. oleifera* and roasted garlic practice on glucose among sedentary men and ordered adjusted means and the difference between the means of the groups under study.

**Table 1:** Computation of analysis of covariance of glucose

Means	EXP - I	EXP - II	Con. Grup	S.V	S.S	D.F	M.S	O. F
Pre test	100.73	100.66	100.53	B	0.31	1	0.31	0.07
				W	192	43	4.46	
Post test	81.6	84	100.8	B	3283.2	1	3283.2	275.74*
				W	512	43	11.90	
Adj. Post	112.47	114.91	131.79	B	3316.5	1	3316.54	316.95*
				W	439.4	42	10.46	

**Table 2:** Computation of analysis of covariance of iron

Means	EXP - I	EXP - II	Con. Grup	S.V	S.S	D.F	M.S	O. F
Pre-test	13.34	13.64	13.30	B	1.01	2	0.50	0.43
				W	49.44	42	1.17	
Post-test	16.06	14.9	13.46	B	50.87	2	25.43	29.87
				W	35.76	42	0.85	
Adj. Post	16.07	14.87	13.48	B	50.58	2	25.29	29.76
				W	34.85	41	0.85	

**Table 3:** Computation of analysis of covariance of zinc ( $\mu\text{g}/\text{dL}$ )

Means	EXP - I	EXP - II	Con.Grup	S.V	S.S	D.F	M.S	O. F
Pre-test Mean	72.26	71.8	71.33	B	6.53	2	3.26	0.10
				W	1390.67	42	33.11	
Post-test Mean	101.6	91.86	72.4	B	6631.64	2	3315.82	70.23
				W	1982.93	42	47.21	
Ad. post test	101.39	91.86	72.60	B	6421.57	2	3210.78	77.15
				W	1706.34	2	41.61	

#### 4. DISCUSSION AND FINDINGS OF GLUCOSE

This result indicated that the effect of roasted garlic with *M. oleifera* practice had significantly reduced the glucose sedentary men, when compared with roasted garlic and control group in terms of means. Further findings of the study indicated that roasted garlic with Anuloma Viloma practice had greater reduction in glucose than the roasted garlic.

In experimental group I had implementing, the training (roasted garlic with *M. oleifera*) is influenced the significant reduction in glucose, when compare to the experimental group II and control group. It is all because of the supplementing the natural products are influenced and reduced excess glucose spent as energy for working muscle as energy fuel for the myofilaments. Finally, it avoid to forming of excess glucose in the body. Hence, it is concluded that the roasted garlic with *M. oleifera* and roasted garlic practice had significantly influenced

utilize the glucose which is present in the blood and to formation of cholesterol deposition in the body. Hence, it is concluded that the both combination of roasted garlic with *M. oleifera* had more effect than other group.

#### 5. DISCUSSION ON FINDINGS OF IRON

From these analyses, it is found that the results obtained from the experimental groups had greater increase in the iron when compared with the one from the control group. This is due to the inclusion of roasted garlic with *M. oleifera* in the analyses on experimental groups.

In experimental group I had implemented, the roasted garlic with *M. oleifera* prescription is influenced the significant increase in iron, when compare to the experimental group II and control group. It is all because of the supplementing the roasted garlic with *M. oleifera* is influenced. Garlic contains 1.7 mg of iron per 100 g. To put 100 grams in perspective, consider alternative

measures for this food. The presence of both garlic and iron led to a two-fold increase in plasma iron and a 50% increase in liver iron as compared with iron alone. However, garlic did not offer any protection against iron-induced oxidative stress. Hence, if more iron present in blood, we can increase to take-up the more oxygen from alveoli to the working muscle and tissue.

## 6. DISCUSSION ON FINDINGS OF ZINC

From these analyses, it is found that the results obtained from the experimental groups had significant greater increase in the zinc when compared with the one from the control group. This is due to the inclusion of roasted garlic with *M. oleifera* practice in the analyses on experimental groups.

It is interesting to note that the results obtained from experimental group I had more effect than experimental group II on the increased zinc level. This is due to the implementation of roasted garlic with *M. oleifera* practice in experimental group I. Hence, zinc is required for numerous processes in your body, including: Gene expression, enzymatic reactions, immune function, protein synthesis, DNA synthesis, wound healing, and growth and development. Hence, by increasing zinc, there are many physiological functions are doing positively.

## 7. RESULTS

Within the limitations of the study, the following conclusions were drawn:

1. Experimental group I (roasted garlic with *M. oleifera*) showed significantly greater reduction on glucose than that of experimental group I of training at the end of 8 week period of time.
2. Experimental group I (roasted garlic with *M. oleifera*) showed significant improvement on zinc and iron than that of experimental group II at the end of 8 week period of time.

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# Sports Marketing

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“Sports marketing” has many ugly sides, some old, and some new. Sports betting are more financially lucrative than the sports themselves. We will never eliminate its lure. The use of performance-enhancing substances has always been with us, and probably always will be: Too much money is at stake. I support efforts to curb cheating through substance abuse, because it does permanent damage to users, but eliminating performance-enhancing substances are unlikely.

Sadly, violence is also likely to remain a permanent part of the sports landscape, although we can make rules changes that, over time, reduce its severity and frequency. While the most publicity is about concussions, with baseball recently creating a 7-day disabled list for concussion victims, the cumulative impact of years of violence to athletes' bodies is a more serious issue. I directly support research to enable us to understand the multiple causes of neurological damage from violent hits to the head.

The “sports marketing that troubles me is what has crept into youth and college sports. In recent years, ESPN has broadcast the little league baseball playoffs and World Series. It spotlights young pitchers who throw curve balls that significantly increase the risk of permanent arm and shoulder damage. “Sports marketing” radically changes the economic benefit of winning for the young athlete, the coaches, and parents. An adult can decide to risk injury to his or her body; an 11-year-old should not be pushed to use athletic techniques that create injury risks he does not understand.

George Dohrmann recently wrote about basketball's “Sports marketing” for boys as young as 9 years old in his book *Playing their hearts out*. He followed a cohort of 20 boys and their families and coaches in Southern California over 8 years. Some boys ended up having great college experiences, but there were avoidable

tragedies, including one boy who was housed with a pedophilic coach and became a convicted criminal because of the commercial opportunity his mother found too good to pass up.

One characteristic of creeping sports marketing among young athletes is that it distorts, or even destroys, people and institutions it touches. College admission programs select poorly educated athletes who stay in college for 1–2 years, instead of highly qualified students who could help us overcome our global competitiveness gaps in science, business, and education. Organized youth sports programs displace more broadly based recreational sports programs. Adult-led “sports marketing” exacerbates the competitive tendencies of young athletes to risk injuries by raising the economic stakes of success.

Today, it seems that there is hardly any level of sports participation which does not have sponsorship or some variety of commercial ventures. Sporting events, teams, and even individual players wear logos on uniforms and appear in television advertising. This rise in “Sports marketing” has almost become part of the modern game, but it is important to remember it has positive and negative effects on the sport, the players, and the fans.

## 1. EXPOSURE

“Sports marketing” is about media exposure for the sport. If a major company sponsors an event, it is much more likely to get prime time television coverage, bringing in greater advertising revenues, and exposing more people to the sport. This will bring in more fans, improve the profitability of local sports clubs, which in turn helps the local economy and revives community spirit when the team is performing well.

## 2. PARTICIPATION

With increased, exposure of the game comes increased participation. For example, when a national team does well at the Olympics, the number of children taking up the sport increases. This is at a time when there is national worry about the health of young people with regards to what they eat and the level of exercise they participate in. The “sports marketing” of sport, which leads to increased exposure, encourages children to get more exercise and reduce obesity. It can also help young people find a hobby which gets them off the streets and discourages them from crime.

## 3. FUNDING

Sports teams are businesses like any other and they need to make money to survive. The only way they can keep up with rising wage costs, improving facilities, and bringing in new players is to sell advertising space to increase revenues. All fans want to see their team succeed and are not fussy about the sponsor’s logo on the team shirt or billboards around the ground. There have on some occasions been problems when the name of the stadium has been changed to include a corporate trademark.

## 4. FAN COSTS

One of the main problems with increased “sports marketing” from a fan’s perspective is the feeling the increased costs are passed on to them. Ticket prices, refreshments, and team shirt prices have all gone up at the same time more and more advertising space is sold around the stadium and television rights are sold for almost every game.

## 5. PLAYER DISTRACTION

It has been claimed in some sports that “sports marketing” results in poorer player performance at international levels. For example, the underperformance of the England soccer team despite the domestic premier league having the highest wages of any soccer league in the world. “Sports marketing” also offers a distraction from the game as the top name players are singled up by major labels to promote products.

## 6. ADVERTISEMENTS

For those watching at home, the main drawback of “sports marketing” in sport is the advertisements that appear every time the game stops. Every camera position at the super bowl is now sponsored by a different company, there are commercials shown almost continually and the advertisements during half time are the most expensive pieces of air time that can be purchased. All of this could be seen as a major distraction from the sport itself. Critics claim the pace, and occasionally the outcome, of major league sports games are dictated by television commercials.

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# Effect of Specific Training on Selected Physical Fitness and Skill Variables of Female High School Table Tennis Players

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## ABSTRACT

The present study is to find out the effect of specific training on selected physical fitness and skill variables of female high school table tennis players. Twenty students were selected from nearby schools of Government High School, Gokinapally Mudigonda Khammam district. The age of the subjects ranges from 13 to 16 years. They were divided into two groups of ten in each. One group was acted as the experimental group and another group was acted as control group. The experimental group underwent the specific training for 6 weeks 5 days/week. Each training session was for 1 h in the evening from 3.00 PM to 4.00 PM. To achieve the result, the collected data on following criterion measures, namely, physical fitness variables such as speed and agility were also tested and skill variables such as back hand. The standardized tests were taken before and after the specific training. The paired 't' test was applied to analyze the collected data and in all cases the criteria for the statistical significance were set at 0.05 level of confidence. It is conclude that the specific training significantly increased the speed, agility, and back hand of high school table tennis players.

**Keywords:** Agility, Back hand, Specific training speed

## 1. TABLE TENNIS

Table tennis, a recreational activity and an Olympic sport since 1988, is also known by the term "ping-pong." Although it is excluded from official terminology, this name is very popular today. It notably originates from the onomatopoeic sound of the ball that appeared in the Far East in 1884: "Ping" is imitative of the sound of a bat striking a ball and "pong" equates to the sound of the bounce on the table. Does the history of table tennis intrigue you? Settle in comfortably then and let yourself be guided through the beginning of time. It was in England, in the late 19<sup>th</sup> century, that table tennis made its appearance. Taking inspiration from lawn tennis, the first players belonged to middle-class Victorian society. The first game would have been played using a champagne cork as a ball, cigar boxes as bats, and books for the net. At that point, table tennis was seen as a mere distraction for the wealthy classes. In 1890, Englishman David Foster, attracted by its wide appeal, introduced the first game of tennis on a table. In

1897, the first national championships were organized in Hungary. Following a trip to the United States, in 1901, James Gibb brought back the first celluloid ball, which was a lot lighter than the rubber balls. A year later, in 1902, E.C. Gould, a British enthusiast of the game, introduced the first bats covered in rubber and rubberized pimples. It was game on for the history of table tennis!

### 1.1. Statement of the Problem

The present study was to find out the effect of specific training on the selected physical fitness, and skill variables of female high school table tennis players.

### 1.2. Delimitations

The following delimitations are considered for the study.

1. This study is confined to 20 school female table tennis players from Government High School, Gokinapally Mudigonda Khammam dist. (TS)

- The subjects were selected only from the age group of 13–16 years
- Only selected physical fitness and skill variables were chosen for this study
- The duration of the experimental period was for 6 weeks
- The study is confined only to the selected specific training.

### 1.3. Limitations

The following limitations are considered for the study.

- The factors such as personal habits, life style, routine, diet, climatic conditions, and environmental factors which might have had an effect on the results of this study could not be taken into consideration
- Hereditary, social, and other psychological factors could not be controlled.

### 1.4. Hypotheses

- It was hypothesized that there may be significant differences due to specific training on the selected physical fitness variables, namely, speed and agility
- It was hypothesized that there may be significant differences due to specific training on the selected skill variables, namely, back hand.

### 1.5. Significance of the Study

- The study will be helpful to know the effect of specific training on selected physical fitness skill variables of female high school table tennis players
- The study will be helpful to prepare training schedule to improve the effect of specific training on the selected physical fitness and skill variables of female high school table tennis players
- The study will be helpful to realize table tennis players and coaches for their coaching purpose.

## 2. METHODOLOGY

### 2.1. Selection of Subjects

The purpose of the study was to find out the effect of specific training on the selected physical fitness and skill variables of female high school table tennis players. For this purpose, 20 students were selected as subjects from Government High School, Gokinapally Mudigonda Khammam dist. (TS) by applying random sampling method. The age of the subjects ranged from 13 to 16 years.

### 2.2. Selection of Variables

Based on the relevant literature that are viewed and in accordance with the views of the professional physical education personalities, the importance of variables at the high level performance, feasibility

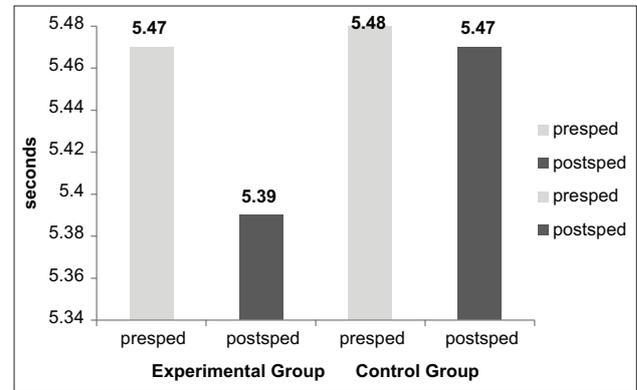


Figure 1: Bar diagram showing pre- and post-test mean value of experimental group and control group in speed

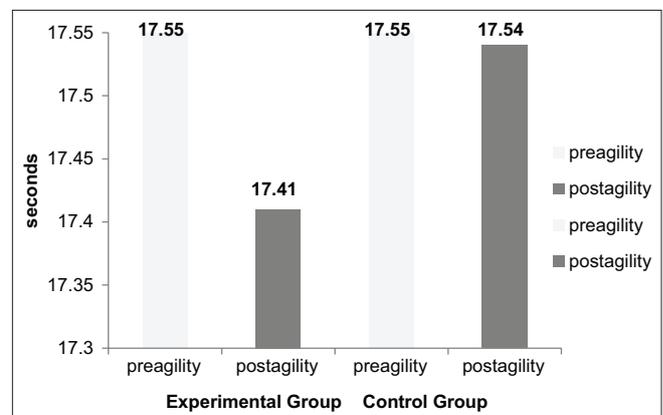


Figure 2: Bar diagram showing pre- and post-test mean value of experimental group and control group in agility

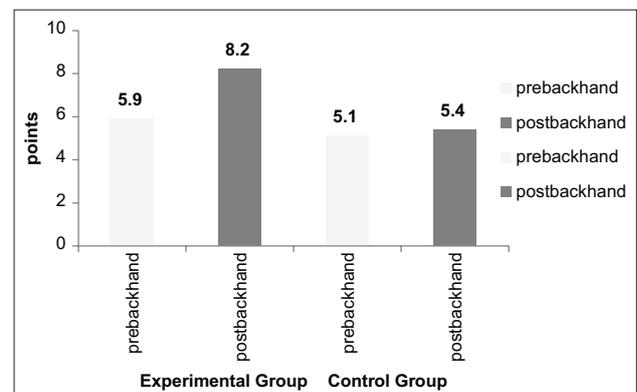


Figure 3: Bar diagram showing pre- and post-test mean value of experimental group and control group in back hand

aspect of testing, and the following variables were selected for this study, namely, physical fitness and skill variables. They are speed, agility, and back hand. A specially prepared group of exercises was used for training and is considered as independent variable in this study.

### 2.3. Independent Variable

Specific group of exercises.

### 2.4. Dependent Variables

- Physical fitness variables
  1. Speed
  2. Agility.
- Skill variables
  1. Back hand

**Table 1:** Selection of tests and unit of measurements

Variables	Name of the test	Unit of measurements
Speed	30 m dash	Seconds
Agility	4×10 m Shuttle run	Seconds
Back hand	Subjective rating	Points

### 2.5. Experimental Design

The selected subjects ( $n = 20$ ) were divided into two groups each consisting of ten. The experimental group underwent the specific training for 5 days in a week for 1 h from 3.00 pm to 4.00 pm for 6 weeks in total and the control group was not involved in any specific training but was of the investigator in engaged in their usual activities.

### 2.6. Statistical Techniques

The following statistical procedures were employed to estimate the effect of specific training on the selected physical fitness and skill variables of female high school table tennis players. “t” ratio was calculated to find out the significance difference between the mean of pre- and post-test of the group

Formulae

$$\text{Mean} = \frac{\sum X}{N} \quad 't' = \frac{DM}{\sigma DM}$$

DM – difference between the mean.

**Table 2:** Mean difference, standard deviation, and “t” value of experimental and control groups in speed

Group	Mean	Md	Std. deviation	Std. error of the mean	“t”	Table value
Experimental pre-test	5.47	0.08	0.06	0.01	7.68*	2.14
Experimental post-test	5.39		0.07	0.02		
Control pre-test	5.46	0.01	0.05	0.02	1.50	2.14
Control post-test	5.45		0.04	0.01		

\*Significant at 0.05 level

**Table 3:** Mean difference, standard deviation, and “t” value of experimental and control groups in agility

Group	Mean	Md	Std. deviation	Std. error of the mean	“t”	Table value
Experimental pre-test	17.55	0.15	0.16	0.23	3.41*	2.14
Experimental post-test	17.40		0.21	0.49		
Control pre-test	17.55	0.01	0.17	0.05	1.96	2.14
Control post-test	17.54		0.16	0.06		

\*Significant at 0.05 level

**Table 4:** Mean difference, standard deviation, and “t” value of experimental and control groups in back hand

Group	Mean	Md	Std. deviation	Std. error of the mean	“t”	Table value
Experimental pre-test	5.90	2.30	0.87	0.27	7.67*	2.14
Experimental post-test	8.20		0.63	0.20		
Control pre-test	5.10	0.40	0.73	0.23	1.98	2.14
Control post-test	5.40		0.56	0.16		

\*Significant at 0.05 level

### 3. DISCUSSION ON FINDINGS

The result of the study shows that the experimental group that had undergone specific training and improved physical fitness variables, namely, speed and agility and skill variables, namely, back hand. This may be due to the effect of specific training.

From the result of the present study, it is concluded that the experimental group improved in physical fitness and skill variables.

### 4. CONCLUSION

Based on the statistical analysis and the limitation of the study, and results the following conclusions are drawn.

- Experimental group significantly improved on physical fitness variables, namely, speed and agility
- Experimental group significantly improved on skill variables, namely, back hand

- The control group shows insignificant improvement on physical fitness and skill variables.

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# Effect of Circuit Training on Selected Motor Fitness and Skill Variables of Male High School Table Tennis Players

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## ABSTRACT

The present study is to find out the effect of circuit training on selected motor fitness and skill variables of male high school table tennis players. Thirty students were selected from nearby schools of Government High School, Gokinapally Mudigonda Khammam dist. The age of the subjects ranges from 12 to 15 years. They were divided into two groups of 15 in each. One group was acted as the experimental group and another group was acted as control group. The experimental group underwent the circuit training for 8 weeks 3 days/week. Each training session was for 1 h in the evening from 4.00 PM to 5.00 PM. To achieve the result, the collected data on following criterion measures, namely, motor fitness variables such as speed and agility were also tested and skill variables such as back hand and fore hand. The standardized tests were taken before and after the specific training. The paired *t*-test was applied to analyze the collected data and in all cases the criteria for the statistical significance were set at 0.05 level of confidence. It is conclude that the circuit training significantly increased the speed, agility, back hand, and fore hand of high school table tennis players.

**Keywords:** specific training speed, agility, back hand and fore hand.

## 1. TABLE TENNIS

Table tennis, a recreational activity and an Olympic sport since 1988, is also known by the term 'ping-pong'. Although it is excluded from official terminology, this name is very popular today. It notably originates from the onomatopoeic sound of the ball that appeared in the Far East in 1884: "Ping" is imitative of the sound of a bat striking a ball and "pong" equates to the sound of the bounce on the table. Does the history of table tennis intrigue you? Settle in comfortably then and let yourself be guided through the beginning of time. It was in England, in the late 19<sup>th</sup> century, that table tennis made its appearance. Taking inspiration from lawn tennis, the first players belonged to middle-class Victorian society. The first game would have been played using a champagne cork as a ball, cigar boxes as bats, and books for the net. At that point, table tennis was seen as a mere distraction for the wealthy classes. In 1890, Englishman David Foster, attracted by its wide appeal, introduced the first game of tennis on a table. In 1897, the first national championships were organized in Hungary. Following a trip to the United States, in

1901, James Gibb brought back the first celluloid ball, which was a lot lighter than the rubber balls. A year later, in 1902, E.C. Gould, a British enthusiast of the game, introduced the first bats covered in rubber and rubberized pimples. It was game on for the history of table tennis!

### 1.1. Statement of the Problem

The present study was to find out the effect of circuit training on the selected motor fitness and skill variables of male high school table tennis players.

### 1.2. Delimitations

The following delimitations are considered for the study

1. This study is confined to 30 school male table tennis players from Government High School, Gokinapally Mudigonda Khammam dist. (TS)
2. The subjects were selected only from the age group of 12–15 years
3. Only selected motor fitness and skill variables were chosen for this study

4. The duration of the experimental period was for 8 weeks
5. The study is confined only to the selected circuit training.

### 1.3. Limitations

The following limitations are considered for the study.

1. The factors such as personal habits, life style, routine, diet, climatic conditions, and environmental factors which might have had an effect on the results of this study could not be taken into consideration
2. Hereditary, social, and other psychological factors could not be controlled.

### 1.4. Hypotheses

1. It was hypothesized that there may be significant differences due to circuit training on the selected motor fitness variables, namely, speed and agility
2. It was hypothesized that there may be significant differences due to circuit training on the selected skill variables, namely, back hand and fore hand.

### 1.5. Significance of the Study

1. The study will be helpful to know the effect of circuit training on selected motor fitness skill variables of male high school table tennis players
2. The study will be helpful to prepare training schedule to improve the effect of circuit training on the selected motor fitness and skill variables of male high school table tennis players
3. The study will be helpful to realize table tennis players and coaches for their coaching purpose.

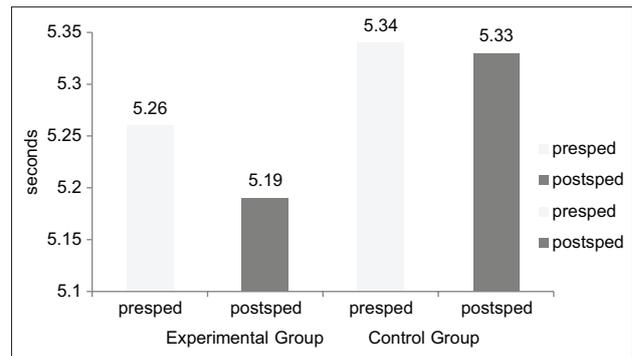
## 2. METHODOLOGY

### 2.1. Selection of Subjects

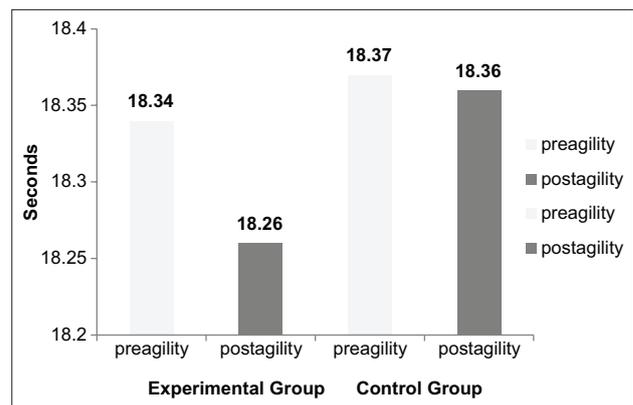
The purpose of the study was to find out the effect of circuit training on the selected motor fitness and skill variables of male high school table tennis players. For this purpose, 30 students were selected as subjects from Government High School, Gokinapally Mudigonda Khammam dist. (TS) by applying random sampling method. The age of the subjects ranged from 12 to 15 years.

### 2.2. Selection of Variables

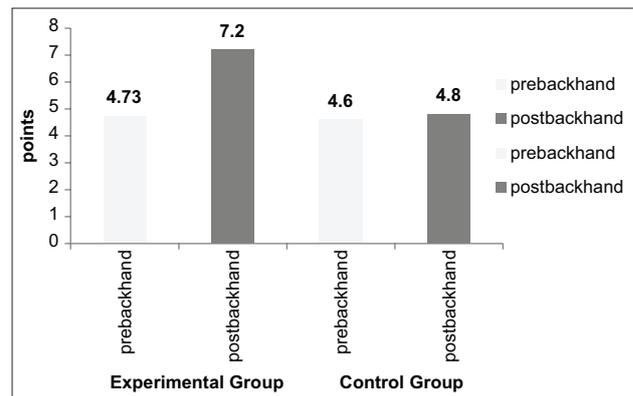
Based on the relevant literature that is viewed and in accordance with the views of the professional physical



**Figure 1:** Bar diagram showing pre- and post-test mean value of experimental group and control group in speed



**Figure 2:** Bar diagram showing pre- and post-test mean value of experimental group and control group in agility



**Figure 3:** Bar diagram showing pre- and post-test mean value of experimental group and control group in back hand

**Table 1:** Selection of tests and unit of measurements

Variables	Name of the test	Unit of measurements
Speed	30 m dash	Seconds
Agility	5×10 m Shuttle run	Seconds
Back hand	Subjective rating	Points
Fore hand	Subjective rating	Points

**Table 2:** Mean difference, standard deviation, and “t” value of experimental and control groups in speed

Group	Mean	Md	Std. deviation	Std. error of the mean	“t”	Table value
Experimental pre-test	5.26	0.07	0.087	0.022	24.67*	2.14
Experimental post-test	5.19		0.083	0.021		
Control pre-test	5.34	0.01	0.074	0.018	1.47	
Control post-test	5.33		0.072	0.019		

\*Significant at 0.05 level

**Table 3:** Mean difference, standard deviation, and “t” value of experimental and control groups in agility

Group	Mean	Md	Std. deviation	Std. error of the mean	“t”	Table value
Experimental pre-test	18.34	0.08	0.089	0.023	18.95*	2.14
Experimental post-test	18.26		0.092	0.24		
Control pre-test	18.37	0.01	0.097	0.025	1.87	2.14
Control post-test	18.36		0.099	0.026		

\*Significant at 0.05 level

**Table 4:** Mean difference, standard deviation, and “t” value of experimental and control groups in back hand

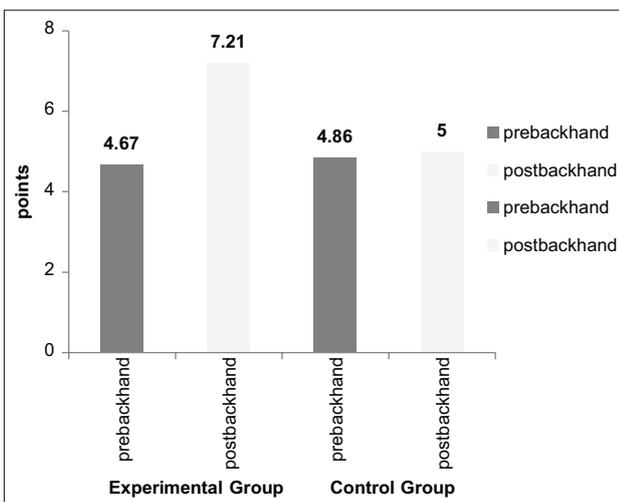
Group	Mean	Md	Std. deviation	Std. error of the mean	“t”	Table value
Experimental pre-test	4.73	2.47	0.703	0.181	18.50*	2.14
Experimental post-test	7.20		0.676	0.174		
Control pre-test	4.60	0.20	0.632	0.163	1.38	2.14
Control post-test	4.80		0.676	0.175		

\*Significant at 0.05 level

**Table 5:** Mean difference, standard deviation, and “t” value of experimental and control groups in fore hand

Group	Mean	Md	Std. deviation	Std. error of the mean	“t”	Table value
Experimental pre-test	4.67	2.53	0.723	0.186	19.00*	2.14
Experimental post-test	7.21		0.774	0.200		
Control pre-test	4.86	0.14	0.743	0.191	1.46	2.14
Control post-test	5.00		0.654	0.169		

\*Significant at 0.05 level



**Figure 4:** Bar diagram showing pre- and post-test mean value of experimental group and control group in fore hand

education personalities, the importance of variables at the high level performance, feasibility aspect of testing, and the following variables were selected for this study, namely, motor fitness and skill variables. They are speed, agility, back hand, and fore hand. A specially prepared group of exercises was used for training and is considered as independent variable in this study.

### 2.3. Independent Variable

Circuit training.

### 2.4. Dependent Variables

- Physical fitness variables
  1. Speed
  2. Agility.

- Skill variables
  1. Back hand
  2. Fore hand.

### 2.5. Experimental Design

The selected subjects ( $n=30$ ) were divided into two groups each consisting of 15. The experimental group underwent the circuit training for 3 days in a week for 1 h from 4.00 pm to 5.00 pm for 6 weeks in total and the control group was not involved in any circuit training but was of the investigator in engaged in their usual activities.

### 3. DISCUSSION ON FINDINGS

The result of the study shows that the experimental group that had undergone circuit training and improved motor fitness variables, namely, speed and agility and skill variables, namely, back hand and fore hand. This may be due to the effect of circuit training.

From the result of the present study, it is concluded that the experimental group improved in motor fitness and skill variables.

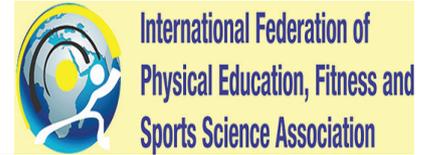
### 4. CONCLUSION

Based on the statistical analysis and the limitation of the study, and results the following conclusions are drawn.

- Experimental group significantly improved on motor fitness variables, namely, speed and agility
- Experimental group significantly improved on skill variables, namely, back hand and fore hand
- The control group shows insignificant improvement on motor fitness and skill variables.

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# To Compare the Conventional Chest Physiotherapy versus Other Airway clearance Technique in Patients Who Underwent Coronary Artery Bypass Grafting - A Randomized Study

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## ABSTRACT

**Specific Objective:** The aim of the study was to compare the conventional chest physiotherapy versus other airway clearance technique in patients who underwent coronary artery bypass grafting (CABG). **Design:** Pretest – Posttest with comparison group (Quasi experimental design). **Study Setting:** Department of Cardio Thoracic and Vascular Surgery, Narayana Medical College Hospitals, Nellore. **Participants:** A total of 30 patients who underwent cardio thoracic surgeries. **Intervention:** Group A-15 participants received deep breathing exercises, (duration of 15–20 min/session for 3 sessions/day) and Group B-15 participants received ACBT, deep breathing exercises and incentive spirometry (15 min/session for 3 sessions/day) for 6 days. **Outcome Measures:** Respiratory assessment tool, stethoscope, Spo2 probe, and ABG report. **Results:** The patients in ACBT, incentive spirometry, deep breathing exercises group, showing the mean values in PaCO<sub>2</sub>, PaO<sub>2</sub>, PEFR, and SPO<sub>2</sub> levels were 35.01, 96.48, 429.13, and 95.33, respectively. The patients with deep breathing exercises alone, showing the mean difference of PaCO<sub>2</sub>, PaO<sub>2</sub>, PEFR, and SPO<sub>2</sub> levels were 35.64, 102.59, 486.73, and 96.73, respectively. The comparison of paired *t*-test value is 2.14. The calculated value is more than the table value, so there is a statistically significant difference between the comparison of Group A and Group B. **Conclusion:** This study reveals that there was significant difference of improvement in PaCO<sub>2</sub>, PaO<sub>2</sub>, PEFR, and SPO<sub>2</sub> levels following ACBT with incentive spirometry, deep breathing exercises when compared to deep breathing exercises, alone in patients undergoing CABG surgeries.

## 1. INTRODUCTION

A majority of cardiac surgery is performed for ischemic coronary artery disease. Coronary artery bypass grafting (CABG) surgery is commonly performed through a median sternotomy. A significant reduction in lung volumes was reported in patients after median sternotomy performed during cardiac surgery. There is a reduction of PO<sub>2</sub>, PEFR, and SPO<sub>2</sub> levels. Subsequently, abnormalities in the chest wall mechanics may also occur that may influence the reduced lung function. ACBT, deep breathing exercises, and incentive spirometry are used to improve lung capacity and functions.

A majority of cardiac surgery is performed for ischemic coronary artery disease. CABG surgery is commonly performed through a median sternotomy. The surgical therapy is achieved by grafting a section of a saphenous vein and/or internal mammary artery between the aorta and the obstructed coronary artery distal to the obstructive lesion. Decrease in pulmonary function is still present several months after surgery.

Chest physiotherapy was initially aimed to improve ventilation by removing secretions from the airways. In an effort to increase lung volume following surgery. Today, various chest physiotherapy techniques are used to increase lung volumes, improve oxygenation,

decrease the incidence, and severity of pulmonary complications after cardiac surgery. It is requested respiratory physiotherapy aiming to reverse pulmonary dysfunction after CABG, thus avoiding the development of pulmonary complications. In this context, it can be highlighted early mobilization, positioning, and techniques for bronchial hygiene.

### 1.1. Aim of the Study

The aim of the study is to find out to compare the conventional chest physiotherapy versus other airway clearance techniques in patient who underwent CABG after thoracic surgeries in preventing pulmonary complications positive using on variables arterial blood gases (ABG) values (pco<sub>2</sub>, po<sub>2</sub>) and oxygen saturation (SpO<sub>2</sub>) and PEFR in patients undergone CABG surgery.

### 1.2. Need for the Study

Soon after the advent of open heart procedures, the contribution of post-operative pulmonary complications and morbidity and mortality after median sternotomy was recognized and they were considered as major factors influencing the morbidity and mortality. Post-operative pulmonary complications were known to be due to distinct operative factors, but pain was considered as one of the most important factor influencing in post-operative pulmonary dysfunction and in developing a restrictive ventilatory pattern. Chest physiotherapy has been shown to be effective in the post-operative periods of various surgeries such as CABG, lung surgeries to improve the pulmonary function. Providing chest physiotherapy after thoracic surgeries has effect on pulmonary function is of good importance

### 1.3. Objectives

The aim of the study was to compare the conventional chest physiotherapy versus other airway clearance techniques in patient who underwent CABG.

## 2. METHODOLOGY

### 2.1. Study Design

A comparative study (Quasi experimental design) involving pre- and post-test analysis with two groups – Group A and Group B.

#### 2.1.1. Sampling method

Simple random sampling technique.

#### 2.1.2. Sample size

There were total of 30 subjects, 15 subjects in Group A and 15 subjects in Group B were studied.

#### 2.1.3. Setting of sampling

All the study subjects were recruited from cardio thoracic intensive care unit of Narayana Super Speciality Hospital, Nellore.

### 2.2. Sampling Criteria

#### 2.2.1. Inclusion criteria

Both male and female subjects, age group ranged between (40 and 60) years, subjects selected with CABG, all of the subjects did not receive any physical therapy programs related to respiratory training before they were participating in the study and subjects with left ventricular ejection fraction between 40 and 75%.

#### 2.2.2. Exclusion criteria

Subjects with age <20 years and above 60 years. Subjects weight exceeding ideal weight by more than 20%, subjects who are severely ill, subjects with high LV dysfunction and subjects with post-operative respiratory treatment exceeding 20 h.

### 2.3. Variables

Dependent variables: ABG, SPO<sub>2</sub>, and PEFR and Independent variables: Chest physiotherapy, ACBT autogenic drainage, and incentive spirometry.

### 2.4. Tools

ABG values, pulse oxymetry, stethoscope, and incentive spirometer.

### 2.5. Duration of the Study

2 months.

### 2.6. Data Collection Procedure

Thirty subjects were selected on the basis of inclusion and exclusion criteria Group A and Group B. Each group consisted of 15 subjects, the study procedures were explained to the relatives of the clients and informed consent was obtained before study. Before starting the training session, pre-test scores were measured using ABG values, PaSo<sub>2</sub>, and PEFR. Group A: Subjects in Group A ( $n = 15$ ) received

deep breathing exercises along with routine care. Group B: Subjects in Group B ( $n = 15$ ) received only incentive spirometer, deep breathing exercises, and ACBT along with routine care. At the end of each session, post-test scores of both groups were taken using respiratory assessment tool.

## 2.7. Procedure

Before started the main study, ethical clearance was obtained from the ethical committee of Narayana Super Speciality Hospital, Nellore. All subjects who fulfilled the inclusion criteria were explained about the study and a written consent was taken. Study subjects were randomly allocated and assigned into experimental and control group and each group being assigned with 15 subjects.

## 2.8. Interventions

Group A received chest vibration, percussion, shaking, deep breathing exercises, and incentive spirometer from

day 1 to day 6. Duration of the session was 15–20 min. Group A was under conventional chest physiotherapy along with positioning from CABG and to till discharge whereas Group B was with only positioning. Soon after the CABG, Group A was adding incentive spirometry and deep breathing exercises along with chest physiotherapy and Group B was adding incentive spirometry and deep breathing exercises alone. At end of the day, post-test was conducted to the both groups using the ABG, PEFr, and SPO<sub>2</sub>.

## 2.9. Intervention Protocol

Duration per session is 15–20 min/session for Group A and B. The number of sessions per day is three sessions. Total duration is 7 days.

## 2.10. Outcome Measures

ABG values (PaCO<sub>2</sub>, PaO<sub>2</sub>), SPO<sub>2</sub>, and PEFr.

**Table 1: Partial carbon dioxide (PCO<sub>2</sub> mm/hg)**

Goups	Sample size= $n$	Mean values	S.D	T-cal	T-tab
A pre-test	15	42.1632	1.2836	15.636	2.145
Post-test		35.0133	9.1883		
B pre-test	15	44.2946	1.7707	15.17	2.145
Post-test		35.6471	3.9717		

**Table 2: Partial oxygen (PaO<sub>2</sub> mm/hg)**

Groups	Sample size= $n$	Mean values	S.D	T-cal	T-tab
A pre-test	15	90.6666	1.5430	34.8676	2.145
Post-test		95.33	24.6373		
B pre-test	15	94.06	1.5796	8.312	2.145
Post-test		96.73	1.549191		

**Table 3: Peak expiratory flow rate**

Goups	Sample size= $n$	Mean values	S.D	T-Cal	T-Tab
A pre-test	15	85.0213	1.5780	17.7650	2.145
Post-test		96.4826	2.1246		
B pre-test	15	84.8	2.6055	241.711	2.145
Post-test		102.5913	3.9717		

**Table 4: Oxygen saturation (SPO<sub>2</sub>)**

Groups	Sample size= $n$	Mean values	S.D	T-cal	T-tab
A pre-test	15	319.8666	52.1123	32.8652	2.145
Post-test		429.1333	77.620		
B pre-test	15	348.8	66.3833	17.6277	2.145
Post-test		486.73	66.5151		

## 2.11. Data Analysis and Interpretation

A total of 30 patients were selected by convenience sampling method. Fifteen patients were randomly assigned in Group A and 15 patients were assigned in Group B. Fifteen patients in each group completed the study. Group A ( $n = 15$ ) received deep breathing exercises and Group B ( $n = 15$ ) received incentive spirometry, deep breathing exercises, and ACBT.

- The pre-test and post-test values of 30 patients were taken for interpretation of PaCO<sub>2</sub>, PaO<sub>2</sub>, PEFR, and SPO<sub>2</sub>, respectively.

## 3. RESULTS

The main aim of the present study was to compare the conventional chest physiotherapy versus other airway clearance techniques in patients who are undergone the CABG surgeries.

### 3.1. Main Findings

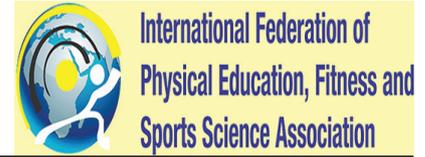
The improvement of PaCO<sub>2</sub> in Group A (35.01) is higher than Group B (35.64). The improvement of PaO<sub>2</sub> in Group B (102.59) is higher than Group A (96.48). The improvement of PEFR in Group B (486.73) is higher than Group A (429.13). The improvement of SPO<sub>2</sub> levels in Group B (96.73) is higher than Group A (95.33).

## 4. DISCUSSION

From the above data, it is clearly understood that a combination of the conventional chest physiotherapy versus other airway clearance techniques to improve the PCO<sub>2</sub>, PO<sub>2</sub>, PEFR, and SPO<sub>2</sub> in patients to reduce the pulmonary complications. The present study mainly focused on providing conventional chest physiotherapy versus other airway clearance techniques to improve the PCO<sub>2</sub>, PO<sub>2</sub>, PEFR, and SPO<sub>2</sub> levels. Patients in both groups have shown a significant improvement in PaCO<sub>2</sub>, PaO<sub>2</sub>, PEFR, and SPO<sub>2</sub>, but ACBT with deep breathing exercises and incentive spirometry group showed a better improvement when compared to group with deep breathing exercises alone.

## 5. CONCLUSION

In summary, this study was conducted to determine the effectiveness of deep breathing exercises, incentive spirometry, and ACBT when compared to deep breathing exercises alone to improve the PCO<sub>2</sub>, PO<sub>2</sub>, PEFR, and SPO<sub>2</sub> in patient's undergone CABG surgeries. From the statistical analysis of the data obtained and from the literature available, the study concludes that "there is a significant difference in improvement of PaO<sub>2</sub>, PaCo<sub>2</sub>, PEFR, and SPO<sub>2</sub> levels following deep breathing exercises, incentive spirometry, and ACBT when compared to deep breathing exercises alone in patients undergone CABG surgeries."



# Effect of In-season Training on Skill Performance of Volleyball Players

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## ABSTRACT

It is generally accepted that the training program is designed to develop the fitness component for the required sports during offseason. The fitness level will be maintained during in-session training protocol. However, the improvement in performance is possible with the help of well-designed skill training intervention. The purpose of this study was to find out changes in skill performance after an in-season training program in volleyball player. University department volleyball team players 12 in number were selected for this study and their age was ranging from 20 to 24 years. The study was designed to carry out service and attack hit skill training apart from regular practical sessions in the competitive period for about 60 min in each training session. Training was given thrice a week for 6 weeks. These two skill performance variables service and attack hit were assessed before and after the 6 weeks of training using subjective rating. Service skill was improved to 9.5% and attack hit skill was improved to 15.6%. The finding suggests that the skill performance of volleyball players could be improved during the competitive season by implying well-designed skill training program and in turn in may help the players for better during the competitions.

**Keywords:** Attack hit in volleyball and in-season training, Service skill.

## 1. INTRODUCTION

Volleyball is an Olympic sport that is being played at different levels in all over the world. It becomes popular by its thrilling actions such as power service, and unpredictable attack hit attracts the sports lover, spectators. To play this game one should be familiar with the fundamental and advance skills with required fitness, such as jumping, hitting, and blocking. Apart from these, tactical aspect of skill also plays predominant role in the successes of the International competition. It is quite natural that the coaches concerned are philosophically aspiring to enhance the performance of their players to win medals. They tried, to prove their preeminence with this scientific approach to requirements for which they think off. The researchers in this field also have shown keen interest in conceding the effective results. Due to the impact of science, every angle of sports movements could be concentrated and

analysed to look for better performance. I would like to concentrate on the significant skills such as service and attack hit besides the strength factor which also plays an important role in maximum performance, why because, the playing ability could be enhanced and these two are the deciding factors in the game of volleyball to score a point. The means of starting the game is service skill by which a player can directly score a point by executing an effective jump service and the second offensive tactics of the game are attack hit. These two offensive skills are mostly deciding factors of the game.

### 1.1 Review

Marques (2006) has stated that muscular strength and explosive power are the most important factors for the successful participation during elite competition. Due to the recent trends of technical training and competition the in-season training program concentrates on the

strength factors and designed to maintain the adequate level for several months however it was unsuccessful in the competitive season the female hockey players, Who completed a maintained training program 2 and 3 times/ week. Hakkinen (1993) suggested that in order to maintain explosive strength careful attention was given during the entire course of competitive season. He found that if heavy resistance training was stopped for about 5 weeks and explosive strength training was performed, developments in both maximum strength and explosive strength observed, in contrast to Hakkinen (1993) by his previous research with female basketball players found an increase in vertical jump explosive type of strength training. Adams *et al.* (1992) provided clear evidence that the combination of resistance training and plyometric were superior for the development of vertical jump performance compared to either training alone, most recently Marques *et al.* (2004) showed an increase in explosive power and muscular strength in a group of professional male volleyball player during in-season when using resistance and plyometric drills. These studies highlight the necessity of combining two training models when applying to improve performance in elite athletes. The ability to maintain or increase power and performance during the competitive season is an important consideration. To maintain certain level of maximum strength and explosives, frequency of the above exercise was given careful attention during the competition session. The hypothesis squabble in this article is that the mere elite volleyball players will be able to improve their strength factors in terms of jumping and hitting by doing resistance training and plyometric drills apart from regular practice sessions during competitive periods.

**1.2. The Purpose of the Study**

The purpose of the study was to find out the performance of these two thrilling offensive skills trained during the in-season period among volleyball players.

**2. METHODOLOGY**

The subjects selected for this study were the university department volleyball team players ( $n = 12$ ) from Chennai. Their age was ranging from 20 to 24 years. They are having regular practice for about 4 h daily. This was designed and executed before their inter-collegiate level match. Only the selected 12 players were administered this treatment. As such it was not possible to have a control group because in practical terms to locate another equal team sample with same training and at the same performance level in team games is difficult task.

Training was given for 6 weeks and twice a week, apart from their regular practice. The training protocol was divided into two segments as 3 weeks each. In the first 3 weeks the service skill training which includes dips and service, front roll and service, service after block, service after block, and front roll. And in the second 3 weeks, the attack hit defense and attack, dips and attack, side roll and attack, block and attack. Given below the table, shows the detailed training program. All the attached hit was administered at one 4 only [Table 1].

Pre and post-test were conducted to assess the skill performance of the players with the help of subject experts adapting 5 point liker scale to grade the ratings of the skill performance of the chosen subjects and was recorded [Table 2].

**2.1. Statically Analysis**

Collected data, were presented as mean and SD comparison between pre to post-test of the selected variable were analysis using a paired simple “t”-test.

**Table 1: Service drills training schedule**

Description	1 <sup>st</sup> week				2 <sup>nd</sup> week				3 <sup>rd</sup> week			
	Exercise	Service	Set	Rest (s)	Exercise	Service	Set	Rest (s)	Exercise	Service	Set	Rest (s)
Dips and service	10	3	3	60	12	5	3	60	15	8	4	90
Front roll and service	5	3	3	60	5	5	3	60	8	8	4	90
Block and service	10	5	3	60	12	5	3	60	15	8	4	90
Block and front roll service	10-3	5	3	60	12-3	5	3	60	12-3	10	4	90

**Table 2: Attack hit drills training schedule**

Description	1 <sup>st</sup> week				2 <sup>nd</sup> week				3 <sup>rd</sup> week			
	Exercise	Attack hit	Set	Rest (s)	Exercise	Attack hit	Set	Rest (s)	Exercise	Attack hit	Set	Rest (s)
Defense and attack	10	10	3	60	12	12	3	60	12	12	4	90
Dips and attack	5	10	3	60	8	12	3	60	10	12	4	90
Side roll and attack	10	10	3	60	12	12	3	60	12	12	4	90
Block and attack	10	10	3	60	12	12	3	60	12	12	4	90

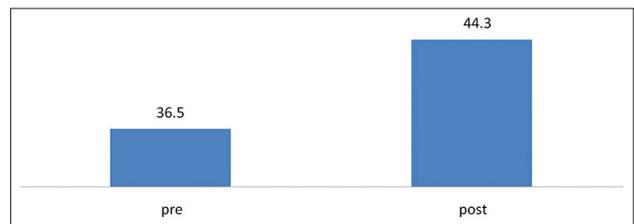
**Table 3: Mean, mean difference, standard deviation, and “t” ratio of service and attack hit among volleyball players**

Variables	Test	Mean	SD	MD	“t”
Service	Pre-test	36.5	3.19	7.8	4.01
	Post-test	44.3	6.27		
Attack hit	Pre-test	37.2	4.45	8.60	18.90
	Post-test	45.8	5.17		

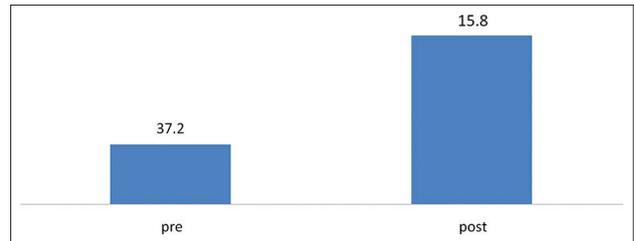
Table 3 indicates that the mean differences between pre to after training on service and attack hit. It was 4.01 and 18.90, respectively. The mean difference between the pre to post-test on service and attack hit are graphically presented in Figures 1 and 2.

### 3. DISCUSSIONS

The thought behind this study was to look at the changes in service and attack hit during the competitive seasons among the volleyball players whom are under regular training. To the best of my knowledge, it is not a risk to go for such kind of tactical training apart from regular workout during the competitive period rather concentration on team training. The result shows that the changes in serviceability and attack hit caliber are possible during the competitive phase training apart from the regular workouts with team training. The improvement of the offensive skills such as service as 9.5%, and attack hit were 15.6% respectively are to be looked into during the competitive seasons. Hence, designing training program just to maintain fitness and skill performance by regular workouts and team training, but also to enhance performance in offensive skills such as service and attack hit is also kept in mind. However delicate balance must be achieved as practice and competitive demands require by the players. Some of the studies and results reviewed by the author given



**Figure 1: Bar Diagram shows the pre and post-test mean of service of the volleyball players**



**Figure 2: Bar Diagram shows the pre and post-test mean of attack hit of the volleyball players**

below are supported to do research on the performance skills, for better understanding of the in season and training the following reviews were presented.

Several studies conducted extensively on the independent and combined effect of resistance training and plyometric training, results showed that the improvement in strength and exempling power in elite player. When the resistance training is combined with plyometric. more over the subjects are under regular training, the improvement was observed after the intervention. Studies were also conducted to develop the specific skills required to play better and proved that the in-season period also conducive period for the development of these skills. In the same manner the offensive skills such as service and attack hit in volleyball were selected for this study and with the intervention of 6 weeks, the outcome was a significant one. It is difficult to compare the resets are

scientific literature because the studies differ in their design factors, including mode, frequency, intensity frequency of training, and training history of subject. It is essential to have further research on these cases and identify other possible means responsible for the observed development after concurrent training.

Heiderscheit *et al.* Compared the effect of isokinetic training with plyometric training over head medicine ball throw on shoulder strength and as expected the isokinetic group improvement in isokinetic strength. On the other plyometric training group increased softball throw for distance by five times greater than the isokinetic group, another the changes did not reach statically significant. Medicine ball throw exercise and test were included in this study to assess in explosive power and the improvement was observed after 6 weeks introversion.

Improvement of strength during the competition session is different due to time availability and volume of work intensity for resistance training is limited. Baker reported an increase in 1RM bench press in a group of rugby players during computation session but no change in upper, lower body power of performance. Marques found significant increase in 1RM bench press professional team handball player after 6 weeks of resistance training.

To conclude these subjects were improved in their offensive skills with a intervention designed for the development during the competitive seasons and apart from their regular team training and competitive exercises which are normally and universally concentrated.

#### 4. CONCLUSIONS

The finding shows that there was an improvement in servicing ability by 9.5% and attacking hit ability was 15.6% of the volleyball players.

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# Psychological Problems among Male Health Care Professionals in a Private Health Care Organization, India: Prevalence and Associated Risk Factors

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## ABSTRACT

**Background:** The prevalence of Psychological problems is significant in many professions including health care. Healthcare professionals are exposed to a number of professional stressors that can adversely affect their mental health. **Materials and Methods:** It is a descriptive survey study conducted at a private health care organization. The study involved 282 male health care professionals working in a private health care organization. Self-reported questionnaires included (i) Demographic information and (ii) Depression Anxiety Stress Scale (DASS)-21, a shorter version of a self-administered questionnaire of the original 42 items DASS. **Results:** Of the 282 forms, 265 valid responses were considered for analysis. Depression was found in 107 out of 265 (40.37%) respondents, anxiety was found in 127 out of 265 (47.92%) respondents and stress was found in 122 out of 265 (46.03%) respondents. Prevalence was high in Surgeons followed by Nurses. **Conclusion:** Mild to extremely severe depression, anxiety, and stress were found in a substantial number of health care professionals. Organizational strategies should be developed to improve the mental health of the professionals.

**Keywords:** Health care professionals, Prevalence, Psychological problems, Risk factors.

## 1. INTRODUCTION

Psychological status of healthcare professionals is generally believed to be better than the other workers because of their knowledge of medical education. In fact, healthcare professionals face various challenges in their routine which make them burning out and gradually develop psychological issues.<sup>[1]</sup> Burnout is an emotional exhaustion and it is an outcome of long-term exposure to occupational stress.<sup>[2]</sup> Occupational stress is one of the major reasons behind Psychological problems among different professionals. Evidences suggest that levels of stress, anxiety, and depression in medical professionals are increasing worldwide.<sup>[3-5]</sup> Among different health care professions, doctors are more vulnerable to develop Psychological problems. The global prevalence of depression among doctors is 10–15%.<sup>[6,7]</sup>

Healthcare professionals are exposed to a number of professional stressors that can adversely affect not only physical health but also their mental health, decreasing their work efficiency and reducing the productivity. Individuals who are in negative emotional state have higher risk of developing depression or anxiety. In healthcare professionals, it may lead to poor decision-making and errors affecting patients' safety.<sup>[1]</sup> The emotional exhaustion resulting from occupational stress can lead to the loss of enthusiasm for work.<sup>[8]</sup>

The Psychological problems among healthcare professionals not only interfere with their working ability but also affect relationship with their colleagues. Moreover, these may gradually show impact on family relationships. Evidences also suggest that tension between family and work roles can affect psychological and physical well-being of workers.<sup>[9]</sup> Work family conflicts are associated with less work satisfaction and

greater psychological distress.<sup>[10]</sup> Strain-based family interfering with work is a precursor to both stress and turnover intentions.<sup>[11]</sup> Healthcare professionals generally do not disclose their Psychological issues due to fear of defame and losing job. Excessive workload, dissatisfaction in job, peer pressure, fear of exposure to infections, conflict with other staff and superiors, bullying are some of the main reasons for psychological problems in healthcare professionals.<sup>[12]</sup>

It is important to understand more about the effects of stress on the mental health of the medical professionals as the possible consequences range from small errors to potentially fatal mistakes. Most of the previous studies focused on the prevalence of psychological problems in either doctors or nurses. This study included various other healthcare professionals viz. Physiotherapists, Pharmacists, Laboratory technicians and radiology technicians along with doctors and nurses working in a private health care organization.

## 2. MATERIALS AND METHODS

### 2.1. Study Design and Participants

A descriptive survey study design was employed with a convenient sampling method to conduct the study. The study was executed after acquiring the ethical approval from the “Department Research Committee” of the “Tamilnadu Physical Education and Sports University,” Chennai. A written Informed consent was taken from health care professionals working in a private health care organization. A total of 310 subjects participated in the study. Male health care professionals working for at least one year in respective fields and who were below the age of 45 years were included. The subjects with congenital deformities, traumatic conditions, neuromuscular conditions, and known psychiatric conditions were excluded from the study.

### 2.2. Data Collection and Instrument

The data was collected by administering questionnaire in English that consisted of demographic information including occupational history. Psychological problems of the participants were assessed by Depression Anxiety Stress Scale (DASS)-21, a shorter version of a self-administered questionnaire of the original 42 items DASS. The DASS-21 measures depression, anxiety, and stress levels (7 items for each category).<sup>[13-15]</sup> The responses are rated on a 4-point Likert scale that indicates how much the statement applied over the past week.

### 2.3. Statistical Analysis

Descriptive statistics was used to analyze the data. The values were expressed in mean, frequencies, and percentages. Graphpad Prism 9.0.1 was used to perform all analyses.

## 3. RESULTS

The questionnaires were distributed among 310 eligible participants. Only 282 forms could be collected back. Of the 282 forms, 17 were incomplete and discarded leaving 265 for final analysis. The respondents were between 24 and 44 years with mean age of 34.51 years. Majority of the respondents were Pharmacists (20%) followed by physiotherapists (16.6%) [Table 1].

Anxiety was the most frequently reported psychological problem followed by stress and depression. Depression was found in 107 out of 265 (40.37%) respondents, anxiety was found in 127 out of 265 (47.92%) respondents and stress was found in 122 out of 265 (46.03%) respondents [Table 2].

Prevalence of psychological problems was found to be high in Surgeons followed by Nurses. Low prevalence was reported in radiology technicians [Table 3].

**Table 1: General characteristics of the respondents (n=265)**

Characteristics	Frequency (n)	Percent
Age group		
<30	60	22.64
30–35	67	25.28
36–40	65	24.52
>40	73	27.54
Occupation		
Physicians	38	14.33
Surgeons	35	13.20
Nurse	36	13.58
Physiotherapist	44	16.60
Lab technician	34	12.83
Radiology technicians	25	9.43
Pharmacists	53	20.00
Years of Experience		
<5	75	28.30
5–10	82	30.94
>10	108	40.75

**Table 2: Depression, anxiety and stress among the respondents (n=265)**

Degree of severity	Depression		Anxiety		Stress	
	Frequency (n)	Percent	Frequency (n)	Percent	Frequency (n)	Percent
Normal	164	61.88	141	53.2	149	56.22
Mild	30	11.32	38	14.33	28	10.56
Moderate	34	12.83	40	15.09	34	12.83
Severe	23	8.67	25	9.43	32	12.07
Extremely severe	20	7.54	24	9.05	28	10.56
Total	265	100	265	100	265	100

**Table 3: Depression, anxiety and stress among different age groups**

Age group	Total respondents	With depression n (%)	With anxiety n (%)	With stress n (%)
<30	60	21 (35.0)	28 (46.66)	25 (41.66)
30–35	67	39 (58.2)	40 (59.7)	31 (46.26)
36–40	65	27 (41.53)	32 (49.23)	30 (46.15)
>40	73	20 (27.39)	27 (36.98)	36 (49.31)
Total	265	107 (40.37)	127 (47.92)	122 (46.03)

Psychological problems in health care professionals are associated with various risk factors. It was found that age is one of the risk factors for depression, anxiety, and stress. Depression was mostly found in respondents who were between 30 and 35 years of age and least in respondents with >40 years of age. Anxiety was also found mostly in the age group between 30 and 35 years and minimally in the age group >40 years. Stress was mainly reported in the age group >40 years and least in the age group <30 years. Work experience also affected the psychological status of the workers. All the three subscales; depression, anxiety, and stress were present in most of the respondents who have work experience >10 years and less reported in the respondents who have work experience <5 years. Stress was mainly reported by the respondents who have work overload, high job strain, working overtime, and working atypical hours. Workplace bullying, poor human relations at workplace, lack of social support at work were associated with depression.

#### 4. DISCUSSION

The status of depression, anxiety, and stress were assessed in a considerably large sample of health care professionals in our study. The study demonstrated that anxiety was the most frequently reported psychological problem among health care professionals with a prevalence rate nearly 48% followed by stress (over 46%) and depression (over 40%). This is very high

compared to the prevalence of mental disorders among general population of India which is 14.3% in 2017.<sup>[16]</sup> Another promising finding of our study was that all the three subscales of DASS-21, i.e., depression, anxiety, and stress were found to be higher in surgeons. This is similar to the findings of Thomas who reported the prevalence of depression, anxiety, and stress higher in the residents of the surgical branches than those of the nonsurgical branches.<sup>[17]</sup> This could be because of the increased workload associated with surgeries. Surgeons work hard, work long hours, deal regularly with life-and-death situations with their patients, and make substantial personal sacrifices to practice in their field.<sup>[18]</sup>

Many of the psychological issues are more prevalent among surgeons and physicians compared with any other professionals.<sup>[18]</sup> It is predicted that physicians will be impaired at some time in their careers and will be unable to meet responsibilities and tasks related to their job because of psychological illness, alcoholism, or drug addiction.<sup>[19]</sup> Commitments, self-sacrifice, and workplace environment of surgeons may place them at particular risk for imbalance between personal and professional life.<sup>[18]</sup> Doctors overall, irrespective of the specialty more often suffer from depression compared to general population and other professional groups.<sup>[20]</sup> However, our results slightly differ, showing that psychological problems were more prevalent in nurses than physicians. As already mentioned, the nurses included were only males in this study. Our

results demonstrated that depression, anxiety and stress were present in more than half of the male nurses.

The prevalence of depression, anxiety, and stress in radiology technicians was comparatively lower than the other health care professionals of our study. Another promising finding was that the prevalence is even lower than it was found in previous studies.<sup>[21-24]</sup> We further found that the prevalence of depression, anxiety, and stress in laboratory technicians was relatively lower. In contrary to our findings, a study conducted by Aziah *et al.*,<sup>[25]</sup> demonstrated a high prevalence of job-related depression in laboratory technicians. Compared to previous studies,<sup>[26-28]</sup> a lesser number of Physiotherapist (around 50%) of our study reported psychological issues. More recently, findings of a Spanish study<sup>[29]</sup> revealed that most of the physiotherapists (over 93%) suffered from low to high levels of stress. In regards to physiotherapists, lack of autonomy, poor organization in the hierarchal model, disorganized task distribution, effort-reward imbalance were the most commonly reported sources of work-related stress. Half of the total pharmacists of our study reported Anxiety, less than half reported stress and Over 35% were depressed. Nearly similar results were presented in a study conducted by Durham *et al.*<sup>[30]</sup> However, the study used a different outcome measure to assess the mental health problems in pharmacists. These psychological issues in pharmacists were associated with a lack of resources or unawareness of available resources.

Another important finding of our study is that age appears to be one of the risk factors for depression, anxiety, and stress in our study. Depression and anxiety were reported mostly from the age group 30–35 years and minimally in respondents above 40 years. These results go in line with previous reports, showing that younger doctors and medical students reported higher rates of psychological distress and mental health problems than older doctors.<sup>[31]</sup> On the other hand, stress was mainly reported by the age group above 40 years and minimally by the age group below 30 years in our findings. The results further demonstrated that work experience can also influence mental status of the workers. The respondents with more work experience were mostly reported to have depression, anxiety, and stress, and less reported by the respondents with lesser work experience. This goes in line with the findings of CarmonaBarrientos *et al.*<sup>[29]</sup>

who reported physiotherapists with over 10 years of work experience suffered more stress. This finding is inconsistent with a study reporting that work-related stress in healthcare professionals decreases with years of experience.<sup>[32]</sup> Similarly, a study on nurses reported that more nursing experience was associated with higher levels of emotional competency.<sup>[33]</sup>

Our data indicate that there is a relatively high prevalence of depression, anxiety, and stress among surgeons, nurses, and physicians compared to other health care professionals such as pharmacists, physiotherapists, laboratory technicians, and radiology technicians of our study. Health care professionals dealing directly with patients who are facing challenging medical conditions are likely to experience persistent psychological distress. On the other hand, pharmacists, physiotherapists, laboratory technicians, and radiology technicians generally do not deal directly with critically ill patients, death, or dying that may have detrimental effects on workers' attitude. This might be the main reason for the difference in rate of prevalence of depression and other emotional problems among different categories of health workers in our study.

## 5. CONCLUSION

A substantial number of health care professionals reported mild to extremely severe depression, anxiety and stress. Relatively high prevalence was found in professionals who directly deal with critically ill patients, death, and dying. It is necessary for the organization to find out causative factors, develop strategies and incorporate programs aiming at improving mental health of the professionals.

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# An Analytical Study on the Effects of Core Stability Exercises on Low Back Pain in Overweight and Obese Middle-Aged Population

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## ABSTRACT

**Purpose:** To investigate the changes that occur in abdominal muscle firing using pressure biofeedback unit (PBU) for low back pain in overweight and obese persons. To find out the effectiveness of core stability (CS) exercises in lowback pain. **Methodology:** Overweight middle-aged male subjects ( $n = 40$ ) who were desk bourne working for long hours in their office and had not been into regular exercising and lack flexibility were selected based on the body mass index who scored more than 25. Simple randomization done with Group-A received CS exercises, and Group-B received back care exercises. Outcomes were measured for visual analog scale (VAS) score, PBU stabilizer measurement PBU. At the end of 2 weeks of training again post-test measurement was made and the results were compared using “ $t$ ” test. **Results:** The pre-test and post-test mean difference of VAS in group A are 4.6 and in group B is 3.9. The pre-test and post-test mean difference of PBU in group A is 46.12 and in group B is 21.58 which clearly states that Group-A is highly significant in this study. **Conclusion:** It is concluded that CS exercises are highly efficient in controlling low back pain and causing a change in muscle firing based on PBU for the middle-aged overweight and obese population.

**Keywords:** Body mass index, Core stability exercises, Low back pain, Pressure biofeedback unit.

## 1. INTRODUCTION

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Being overweight is especially common where food supplies are plentiful and lifestyles are sedentary.<sup>[1]</sup> The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended.<sup>[2]</sup> This leads to low back pain which is one of the leading causes of health problems in the developed world. The yearly prevalence of low back pain varies from 5% to as high as 65%.<sup>[3]</sup> Low back pain has a high rate of disability associated with it for overweight and obese persons. Therefore, it becomes imperative that correct diagnosis of low back pain be made as early as possible, with the best treatment

applied, to prevent initial acute episodes from becoming a chronic reoccurrence.<sup>[4,5]</sup> Low back pain has been associated with motor control dysfunction in the area. An association with altered muscle recruitment patterns and transversus abdominis activation delay was also found, as well as increased back muscle fatigue and altered kinematic patterns in the hips and lumbar area.<sup>[6]</sup> In this study low back pain for the obese and overweight person causes much weakness in the abdominal muscles and associated tissues. The following treatment aims in reducing their complications.

### 1.1. Core Stability Exercises (CS)

Conventionally, this term has referred to the active component to the stabilizing system including deep/

local muscles that provide segmental stability (e.g. transversus abdominis and lumbar multifidus) and/or the superficial/global muscles (e.g. rectus abdominis and erector spinae) that enable trunk movement/torque generation and also assist instability in more physically demanding tasks.<sup>[9,10]</sup> CS is defined as the ability to maintain equilibrium and control of the spine and pelvic region during movement without compensatory movement just within physiological limits.



### 1.2. Pressure Biofeedback Unit (PBU)

A stabilizer has come into general use for stabilization exercises for all parts of the body. The device consists of a pressure bladder and a pressure gauge, similar to a sphygmomanometer, that detects movement of the lumbar spine via changes in pressure applied to the air-filled bladder.<sup>[14]</sup> Its use in assessing the abdominal drawing-in action has become its most important use in relation to the treatment of problems for the local muscle system in patients with low back pain.<sup>[15,16]</sup> In this study, the researcher would like to find out the effectiveness by comparing two different modules of treatment given to non-specific low back pain, PBU stabilizer was used to find out the muscle strength before and after the treatment.

### 1.3. Objectives

The main objective of the study is to find out the outcome measure of muscle function and its firing power using PBU stabilizer and to find out the changes caused in obese and overweight person. PBU stabilizer is not frequently used to find out the muscle changes after non-specific low back pain. Hence this studies objective is to analyze the measurements made by PBU stabilizer.

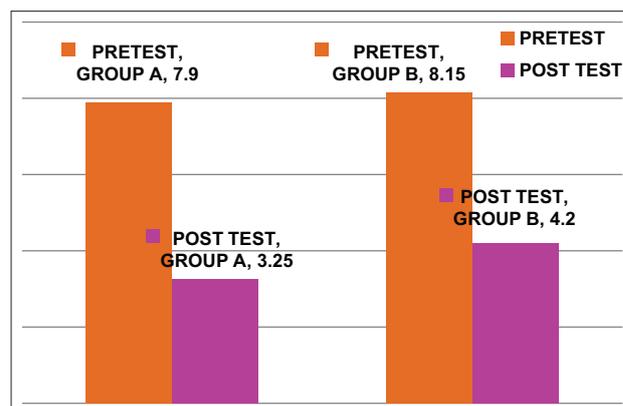
### 1.4. Research Design

A non-probability sampling method with purposive sampling technique was used to identify the samples. Overweight middle-aged male subjects ( $n = 40$ ) who had not been into regular exercising and lack flexibility were selected based on the body mass index who scored more than 25. The study was a quasi-experimental study design of pre-test – post-test design. Pre-test conducted at the beginning of the study before the treatment and post-test is conducted at the end of the treatment session for 2 weeks.

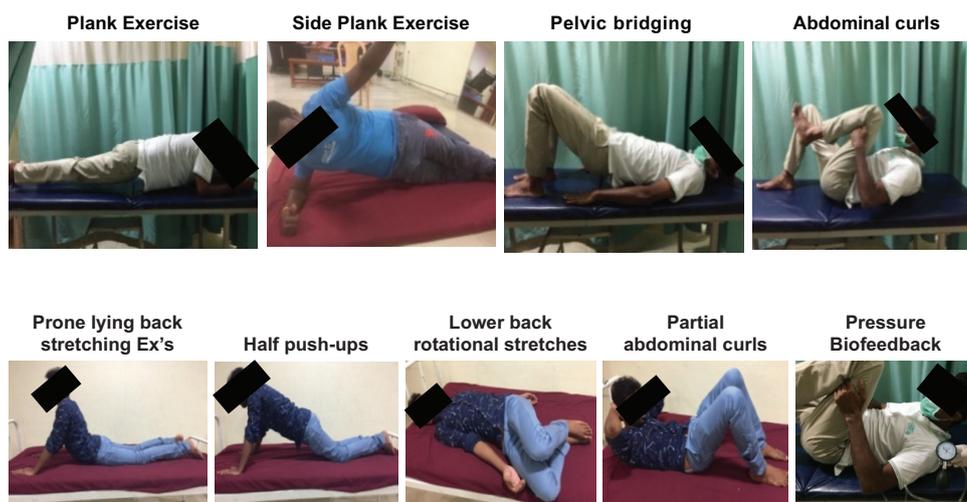
## 2. METHODOLOGY

Informed consent is obtained after careful explanation of the study protocol and its effects to the participants. Participants are selected through convenient sampling and allocated to sample population, from where simple randomization was done and total of ( $n = 40$ ) allocated into two groups. Group A ( $n = 20$ ) received CS exercises and Group B ( $n = 20$ ) received back care exercises. Both the groups received dietary advices in common. Both the groups received treatment session for 2 weeks with alternate days of treatment protocol in a week and 30–40 min of treatment duration per session.

Group A ( $n = 20$ ) persons received CS exercises. These exercises comprise a set of multiple core exercises such as plank exercises, side plank exercises, prone straight leg raise technique, pelvic bridging exercises, abdominal curl exercises, and superman exercises. All these sets of exercises were performed for 5 repetitions with 10 s break between each exercise. On the whole 30–45 min of exercise program was performed alternate days for 2 weeks.



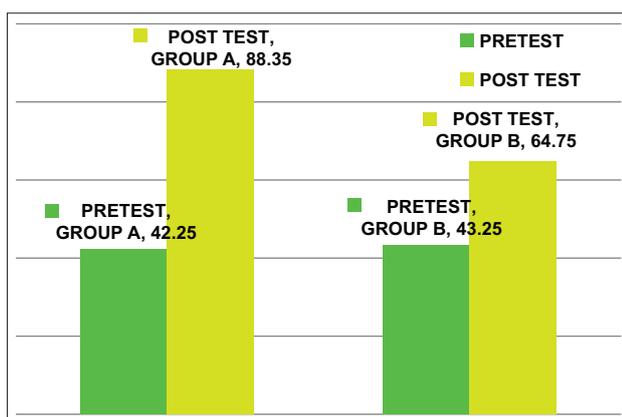
Graph 1: Showing mean visual analog scale scores comparison of group A and group B



**Table 1:** Pre-test post-test mean value, t-value, and significance of Group – A (Core stability exercises group) and Group – B (Back care exercises group)

Groups	Variables	Pre-test	Post-test	Standard Deviation	t-value	Significance
Group A	VAS	7.9	3.25	10.55	17.932	$P < 0.001^{**}$
	PBU	42.25	88.35	140.55	75.883	$P < 0.001^{**}$
Group B	VAS	8.15	4.2	8.95	15.158	$P < 0.05^*$
	PBU	43.25	64.75	71.25	35.484	$P < 0.05^*$

VAS: Visual analog scale, PBU: Pressure biofeedback unit



**Graph 2:** Showing mean pressure biofeedback unit scores comparison of group A and group B

Group B ( $n = 20$ ) persons received backcare exercises which comprises of prone lying back stretching, half push-ups, lower back rotational stretches, partial abdominal curls, and home care follow-up exercises were asked to performed twice a day.

### 3. RESULTS

In Group – A (CS exercise group) pre-test visual analog scale (VAS) score is 7.9 and that of post-test score is

3.25. The pre-test PBU score is 42.25 and post-test score is 88.35. “t” value of VAS is 17.932 and PBU is 75.883, where the  $P$ -value is highly statistically significant. In Group – B (Back care exercise group) the pre-test VAS score is 8.15 and that of post-test score is 4.2. The pre-test PBU score is 43.25 and post-test score is 64.75. “t” value of VAS is 15.158 and PBU is 35.484, where the  $P$ -value is statistically significant [Table 1 and Graphs 1 and 2].

### 4. CONCLUSION

Non-specific low back pain is a common complaint for the overweight and obese person who lack physical exercises. Across the globe, about 60% of the population in the whole world suffers from this subacute condition. In this study, the researcher was keen in identifying the effectiveness of combining CS exercises along with backcare exercises and to identify the usage of PBU in improving muscle strength. Group – A had received CS exercises and Group – B had received back care exercises. Based on the results and statistical observations of the study, the CS exercises group had shown a greater statistically significant result in comparing with that of back care exercises group. It is

evident from the study that core strengthening exercises reduce low back pain and strengthen back muscles in obese and overweight persons.

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# Impact of Age-appropriate Physical Activity Program of Physical Education on Speed among School Students of Zphs Kolthur

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## ABSTRACT

The purpose of the study is to examine the impact of age-appropriate physical activity program (AAPAP) of physical education (PE) on speed among school students of ZPHS Kolthur. A sample of ( $n = 60$ ) subjects was selected by stratified random sampling method based on age categories. Age ranges from 10 to 15 years. The selected subjects were divided into six groups, i.e., three experimental groups 1, 2, 3, and three control groups 1, 2, 3 based on the three age categories (category I-10-12 years., category II- 12-14 years. and category III- 14-16 years of age) from ZPHS Kolthur. 6 weeks of AAPAP of PE for 35 min duration of training was given. Pre-test and post-test were conducted on selected variable., i.e., Speed by administering 50 yard dash test. Statistical technique of  $t$ -ratio was used in this study. The results of the study indicate that improvement in Speed was significantly improved as a result of the participating in AAPAP of PE.

## 1. INTRODUCTION

The accurate program would help the physical education (PE) in day-to-day activities, improve health, motor skills, and skills needed for games and sports learned faster. It facilitates the daily enjoyment of physical activity, and enables greater involvement, eliminates fatigue generated by the other school subjects.

History of PE from the ancient period to British period has evolved progressively, but it's now gaining a modern aspect, and its significance is strongly felt when improving the quality of educational programs.

Thereby it is to be restructured, updated, and revamped in the specific underlying values of growth and progress in the individual underlying values of development and improvement. (Kothari Commission 1966).

Age-appropriate physical activity program (AAPAP) of PE was started as a task to fulfill the impact of these training to all the age groups accordingly for optimal results in developing physical fitness. Therefore, these AAPAP was used extensively to

improve physical Fitness according to the student's age categories.

### 1.1. Purpose of the Study

The purpose of the study was to find out the Impact of AAPAP of PE on speed among school students of ZPHS Kolthur.

## 2. METHODOLOGY

### 2.1. Selection of the Subjects

A sample of ( $n = 60$ ) subjects was selected by stratified random sampling method based on age categories. The Age ranges from 9 to 15 years. The selected subjects were divided into six groups i.e. three experimental groups 1, 2, 3, and three control groups 1, 2, 3 based on the three age categories (category I-10-12 years., category II- 12-14 years and category III- 14-16 years of age) from ZPHS Kolthur. 6 weeks of AAPAP of PE for 35 min duration of training was given. Pre-test and post-test were conducted on selected variable., i.e., speed by administering 50 yard dash test.

### 2.2. Selection of Variables

The investigator reviewed the available scientific literature on the basis of discussion with experts, feasibility criteria, and availability of equipment's and relevance of the present study variable. Physical fitness variable – speed. The selection of test for Speed is 50 yard dash.

### 2.3. Experimental Design

1. The 60 subjects from the three age categories (category I – 10–12 years, category II- 12–14 years, and category III- 14–16 years of age) of 10 each in each age category from ZPHS Kolthurschool, Medchal district of the Telangana state
2. The selected subjects will be randomly divided into six equal groups of ten subjects each based on their age categories
3. Three experimental groups of AAPAP of PE, i.e., Experimental Group I – (10–12 years), Experimental Group II- (12–14 years), Experimental Group III- (14–16 years) and three control groups of C.G-1, C.G-2, and C.G.-3 from same age category as Experimental groups
4. Three control groups with routine PE program. Control groups didn't participate in any training program of AAPAP

5. 6 weeks of training will be given to experimental groups for 3 days/week with 35 min duration per day.

### 2.4. Collection of Data

In order to collect the data, test were administrated before and after 6 weeks of training the score were recorded in the initial and final readings for the group.

## 3. RESULTS

The results of the study indicate that improvement in speed, was significantly improved all the 3 Experimental Groups, as a result of the participating in AAPAP of PE. It was hypothesized that the training of AAPAP of PE would cause more improvement in Speed on all the 3 Experimental Groups. Hence, the hypothesized was accepted.

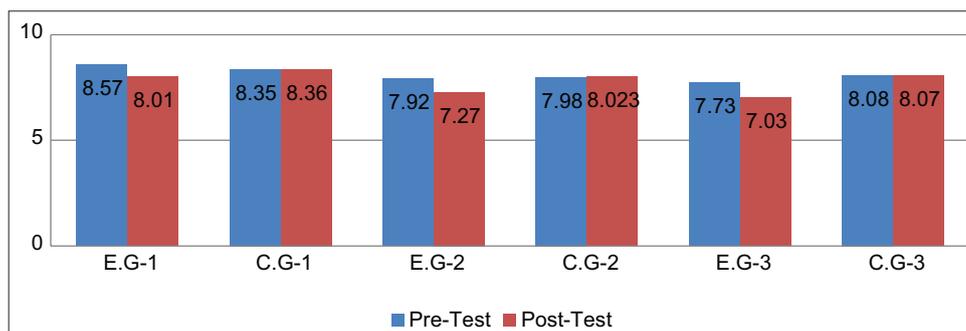
## 4. DISCUSSION

By observing the obtained results in Table 1 it shows that the mean scores of speed for experimental groups E.G-1, E.G-2, E.G-3 pre-test was 8.57, 7.92, 7.73 and post-test is 8.01, 7.27, 7.03. Whereas control groups C.G-1, C.G.-2, C.G-3 pre-test was 8.35, 7.98, 8.08 and post-test

**Table 1:** Computation of mean, standard deviations, "t" ratio, and significance for Speed on experimental groups

Sl. No	Parameters	n=60	Groups	Pre-test		Post-test		t-ratio	Sig.
				Mean	SD	Mean	SD		
1.	Speed	10	E.G.-1	8.570	0.6147	8.010	0.3784	6.332	0.000
			C.G.-1	8.350	0.5503	8.360	0.5358	-0.183	0.859
			E.G.-2	7.920	0.4392	7.270	0.3129	8.062	0.000
			C.G.-2	7.980	0.5391	8.023	0.4454	-0.854	0.415
			E.G.-3	7.730	0.4638	7.030	0.4423	18.783	0.000
			C.G.-3	8.080	0.5095	8.070	0.4990	0.190	0.853

\*Significant at 0.5 level of confidence, required table value is 2.262



**Figure 1:** Bar diagram showing the mean difference of pre-test and post-test in speed on experimental groups

is 8.36, 8.02, and 8.07. The obtained *t*-ratio's was 6.332, 8.062, 18.783 which was greater than the table value, i.e., 2.262 for 9 degrees of freedom. So, it is significant at 0.05 level of confidence [Figure 1].

## 5. CONCLUSION

Within the limitation of the study and on the basis of the obtained results from this study, the following conclusions had been drawn: It was concluded that participating in 6 weeks of AAPAP of P.E training program had significantly improved speed on all the 3 Experimental groups when compared to 3 control groups.

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# Analytical Study of Injuries among Kho-Kho Players of Telanagana State

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## ABSTRACT

The purpose of the present study goal to assess the prevalence of injury in Kho-Kho players of Telangana state. The data was collected with the help of questionnaire. Total of 120 injured Kho-Kho players (90 female and 30 male) were selected as subjects to diagnose injury profiles. Data were by the help of questionnaire. Most of the subjects were players who participated in national and intervarsity tournaments. Some of them participated in sports activities and present themselves at state and regional level. The data on various injury profiles were assessed. Descriptive analysis was done on various injury profiles. The result of the present study indicates that more than 63.4% were suffering from knee injury. Further, when the injury profile was assessed separately in relation to gender it was found that a greater number of female players was injured as compared to male players.

## 1. INTRODUCTION

Engaging in Sports Activities has numerous health benefits but also carries the risk of Injury. At every age sports persons sustain a wide variety of soft tissue, bone, ligament, tendon, and nerve injuries caused by direct trauma or repetitive stress. Different sports are associated with different patterns and types of injuries, whereas age, gender, and type of activity influence the prevalence of injuries. Sports trauma commonly affects joints of the extremities, i.e., knee, ankle, hip, shoulder, elbow, wrist, and spine. The sports injuries that occur in competition or practice have loss of time for participation in Sport.

Kho-Kho games is very popular in rural India but has not gained cognizance at national level. Participation in this activity has to be stressed. Kho-Kho players hide their injury. Handful studies have been conducted on senior players, but there is a scarcity of studies to understand injury profile of the junior players. Hence, an attempt has been made to studies the prevalence of injury in kho-kho players of 10–28 years of Telangana state.

According to the TRIPP model (Finch, 2006), the first step in injury research is to understand the extend of

the problem. The prevalence and prevalence proportion of sport injuries has been widely investigated across sports. Unfortunately, such studies have only included groups selected by either one or more criteria, such as specific sport (Jacobsson et al., 2012), level (Hall et al., 2013), age (Scase et al., 2012) or injury type (Maselli et al., 2015).

## 2. METHODOLOGY

The purpose of the present study goal to assess the prevalence of injury in Kho-Kho players of Telangana state. The data were collected with the help of questionnaire. Total of 120 injured Kho-Kho players (90 female and 30 male) were selected as subjects to diagnose injury profile. The research design of the study is descriptive. Descriptive research includes surveys and fact-finding inquiries of various kinds. For this study, descriptive research design is used where the data is collected through the questionnaire. The information is gathered from the Kho-Kho players of Telangana.

### 2.1. Purpose of Research

The objectives of the study is to investigate the frequency of injuries among Kho-Kho players of Telangana state.

This study was designed to investigate the most common types of injuries, mechanisms of injury, activities leading to injury, time and place of injury occurrence, and time lost to injury.

## 2.2. Population and Sample Group

The sample for the study consists of 90 female Kho-Kho players and 30 male Kho-Kho players who participated in the national and intervarsity tournaments. Some of them participated in sports activity and present themselves at state and regional level. Age about 15–28 years.

## 3. RESULTS

### 3.1. Statistical Analysis

The prevalence of injury of Kho-Kho players covers different regions of the body and that is head to lower extremities. The result shows that maximum injury is witnessed at the knee (45%) and least eye injury (0.83%). The remarkable injuries seen at the ankle, 9.16% elbow, foot and toe, 9.16% Head, 11.4% shoulder, 7.4% torso, and 4.6% wrist injury. The result of the present study indicates that more than 63% were suffering from knee injury [Table 1 and Figure 1]. Further, when the injury profile was assessed separately in relation to gender it was found that a greater number of female players were injured as compared to male players [Table 2].

## 4. DISCUSSION

Sports injuries varies with magnitude of factors such as type of sports, type of exposure, competition, and sex. While injuries as function of gender were seen it was found that the prevalence of injuries were more in female as compares to girls. This study corroborated with a previous study (Timothi et al.; 2005) but contradict with study conducted by Mitchel et al. (2015). Female athletes participating in high-risk sports suffer anterior cruciate ligament injury at a 4- to 6-fold greater rate than male athletes. Knee motion and knee loading during a landing task are predictors of anterior cruciate ligament injury risk in female athletes. Female athletes with increased dynamic valgus and high abduction loads are at increased risk of anterior cruciate ligament injury (Timothi et al.; 2005). In contrast, Mitchel et al. (2015) found that the overall injury rate was significantly lower for girls than boys. The knee

**Table 1:** Prevalence of injuries in male and female Kho-Kho players of Telangana

Region of injury	Frequency	Percentage
Ankle	11	9.16
Elbow	11	9.16
Eye	1	0.83
Foot and toe	11	9.16
Head	6	5
Heel	3	2.66
Heel and Finger	4	3.3
Knee	45	37.5
Neck	4	3.3
Shoulder	10	7.5
Torso	9	7.5
Wrist	5	4.16
Total	120	100.0

**Table 2:** Frequency and percentage distribution as function of gender

Valid	Frequency	Percentage
Female	90	75
Male	30	25
total	120	100

is an anatomically and biomechanically complex joint. Majewski et al. (2006) conducted study on sport injuries over a 10-year period of time and witnessed that among total injuries 39.8% injuries were related to the knee joint. The injury profile of Kho-Kho players, has been a great concern for coaches and athletes and other related sports personnel.

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# A Comparative Study of Agility Among Artistic Gymnast of Hyderabad District and Ranga Reddy District of Telangana

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## ABSTRACT

The purpose of the study is to find the agility among Artistic Gymnast of Hyderabad District and Ranga Reddy District of Telangana state. The sample for the present study consists of  $n = 40$  female artistic gymnasts from Hyderabad and Ranga Reddy district of Telangana. The Shuttle Run is used to assess the Agility. The results of the Study shows that Hyderabad District artistic gymnast are having good Agility compared to Ranga Reddy district players. The important motor qualities required to Artistic Gymnast are speed, strength, agility, power, coordination, reaction time, Kinesthetic awareness, etc. Agility is a very important quality for better performance.

**Keywords:** Agility, Motor qualities.

## 1. INTRODUCTION

Artistic gymnastics (AG) is a discipline of gymnastics in which athletes perform short routines on different apparatuses. The gymnastics system was mentioned in writings by ancient Aristotle and Plato. It included many disciplines that later became independent sports, such as authors, including Homer, swimming, racing, wrestling, boxing, and horse riding. It was also used for military training. The Italian Federation of Gymnastics (FIG) was founded in 1881, and it remains the governing body of international gymnastics. The organization initially included only three countries and was called the European Gymnastics Federation until 1921, when the first non-European countries joined and it was reorganized into its present form.

Gymnastics was included in the 1896 Summer Olympics, but female gymnasts were not allowed to participate in the Olympics until 1928. The World AG Championships, held since 1903, were only open to men until 1934. Since then, two branches of AG have developed: Women's AG (WAG) and men's AG (MAG). Unlike men's and women's branches of many other sports, WAG and MAG differ significantly in technique and in apparatuses used at major competitions.

As a team event, women's gymnastics entered the Olympics in 1928 and the World Championships in 1950. Individual women were recognized in the all-around as early as the 1934 World Championships. The current women's program—all-around and event finals on the vault, uneven bars, balance beam, and floor exercise—was introduced at the 1950 World Championships and at the 1952 Summer Olympics.

Physical activity in childhood was considered to be crucial for the development and acquirement of correct movement patterns in most youth sports—that is to say, those sports where a performance peak is achieved at a relatively young age. AG and rhythmic gymnastics (RG) are age-dependent. Gymnastics training develops, indeed, strength, flexibility, concentration, balance, grace, and speed, among others, in young athletes. Both RG and AG are international sports, recognized by the FIG. Both these two forms of gymnastics share many similar attributes but differ in terms of events, rules, and style. For females, AG events include performances on different equipment (e.g., vault, uneven bars, balance beam, and floor), while RG events are all performed on the same equipment—a padded floor, that can vary according to the specific support utilized (e.g. rope, hoop, ball, clubs, and ribbon).

Russo *et al.* (2021). study was Selected components of physical fitness in rhythmic and artistic youth gymnast. RG and AG are very popular female sports. These two disciplines share some common points but, at the same time, they display some relevant differences in terms of physical and technical characteristics. The aim of this study was as follows: (1) to clarify how gymnastic training background over the years could lead to the development and motor learning of the motor skills and (2) to highlight differences of conditional skills achieved by RG and AG athletes.

## 2. METHODOLOGY

### 2.1. Aim

To find out the agility between artistic gymnast of Hyderabad and Ranga Reddy district of Telangana state.

### 2.2. Tools

Shuttle run is used to collect the data for the agility.

### 2.3. Shuttle Run

#### 2.2.1. Purpose

This is a test of agility, which is important in many sports.

#### 2.2.2. Equipment required

Wooden blocks, marker cones, measurement tape, stopwatch, non-slip surface.

#### 2.2.3. Procedure

This test requires the person to run back and forth between two parallel lines as fast as possible. Set up two lines of cones 30 feet apart or use line markings, and place two blocks of wood or a similar object behind one of the lines. Starting at the line opposite the blocks, on the signal “Ready? Go!” the participant runs to the other line, picks up a block, and returns to place it behind the starting line, then returns to pick up the second block, then runs with it back across the line.

#### 2.2.4. Scoring

Two or more trials may be performed, and the quickest time is recorded. Results are recorded to the nearest tenth of a second.

**Table 1:** Showing the mean values and independent samples test of shuttle run test for agility between Hyderabad district gymnast and Ranga Reddy district gymnast

Variables	Group	Mean	SD	t
Shuttle Run	Artistic gymnast of Hyderabad District	11.80	1.114	2.214
	Artistic gymnast of Ranga Reddy District	12.15	1.737	

\*Significant at 0.05 level

## 3. RESULTS AND DISCUSSION

In Table 1 the Mean Values of is Artistic gymnast of Ranga Reddy District is 12.15 and Artistic gymnast of the Artistic gymnast of Hyderabad District is 11.89. The Standard Deviation of Artistic gymnast of Ranga Reddy District is 1.737 and Artistic gymnast of Hyderabad District is 1.114 and *t* is 2.214.

The mean values of Artistic gymnast of Hyderabad District are in Shuttle Run is 11.80 and Artistic gymnast of Ranga Reddy District is 12.15. The Artistic gymnast of Hyderabad District is more agile than Boxers.

## 4. CONCLUSIONS

Fitness is very important in the success of an Artistic Gymnast need excellent levels stamina, speed, agility, and power. In order to their performance, you should be testing and monitoring your fitness levels and adjusting your training so you can fully reach your potential. The components that are most highly rated are analytic ability and motivation along with the physical attributes in Artistic Gymnast.

## 5. RECOMMENDATIONS

The following suggestions are made for the benefit of players, coach’s academicians, and sports scientists. The researcher suggests the part of the coach to use the above-said development of the program for Gymnast. The study helps the physical educationist and coaches for selecting the athletes.

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# A Study on Cardiovascular Endurance and Strength among Rural and Urban Cricket Players of Gulbarga District

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## ABSTRACT

The purpose of the study is to compare the cardiovascular efficiency and strength—leg, back, and grip of urban and rural Gulbarga District cricket players. Cardiovascular efficiency was estimated with the help of the Harvard step test, leg and back strength were measured with the help of dynamometer and grip strength was measured using grip dynamometer.

## 1. INTRODUCTION

Both strength and cardiovascular efficiency are influenced by age, sex, habits, and style of life. People mostly live in either urban area or rural area. The geographical and environmental factors and the nature of life may influence the development and maintenance of strength and cardiovascular efficiency, especially among the Gulbarga District cricket players. Therefore, the author was motivated to undertake a study on this aspect.

## 2. METHODOLOGY

The study on hand purpose to make a comparison of cardiovascular efficiency and selected strength aspects between rural and urban Gulbarga District cricket players.

### 2.1. Estimation of Cardiovascular Efficiency

Cardiovascular efficiency of the subjects was measured as explained in the Harvard step test.

### 2.2. Measurement of Grip Strength

Grip strength was measured with the help of grip dynamometer.

### 2.3. Samples

Seventy-five rural and 75 urban Gulbarga District cricket players were selected as a subject.

### 2.4. Analysis of Data [Tables 1 and 2]

**Table 1:** Mean and *t*-value of cardiovascular efficiency

Statistic	Rural	Urban
Mean	48.71	44.25
<i>t</i> -value	3.188	

Significant at 0.01 level

## 3. CONCLUSION

1. The mean cardiovascular efficiency index of rural Gulbarga District cricket players is better than that of urban Gulbarga District cricket players. This fact indicates that rural Gulbarga District cricket players have better cardiovascular efficiency, which fact reflects the better status of health-related physical fitness
2. In the area of grip strength, the urban Gulbarga District cricket players were found to be marginally superior to the rural Gulbarga District cricket players. However, the statistics is not significant to say that the urban sampling is superior
3. In the leg strength and back strength aspects also though the figures are not statistically significant the

**Table 2: Statistics of strength of urban and rural cricket players**

Statistic	Right hand grip strength		Left hand grip strength		Leg strength		Back strength	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Mean	22.45	22.64	19.83	20.21	152.75	151.07	74.43	73.55
t-value	0.176		0.336		0.284		0.24	

Significant at 0.01 level

rural Gulbarga District cricket players are found to be having an edge over the urban Gulbarga District cricket players.

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# Historical Perspective and Development of Pro-Kabaddi - A Study

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## ABSTRACT

The Pro Kabaddi League (PKL) has given the ancient Indian sport of Kabaddi a fresh lease on life (PKL). The League's overwhelmingly excellent reaction by the Indian audience has given the promoters the option to bring the league back for a second season, despite it being a game pioneered and dominated by India since its start. The PKL was a huge success for both the game and the promoters since it was loved and followed by millions of people across the country. For a long time, Kabaddi was regarded to be a game only played in our country's rural parts, with city dwellers showing little interest in the sport. India had to battle hard to keep the Asian Games alive since they were created in 1990, despite not being fit to compete in the Olympics. India's all-conquering team has won seven gold medals in a row in the sport. After the idea for a Kabaddi league was born, it drew not only the attention of the Indian public but also film stars and corporate franchises, who eagerly participated in the bidding process for teams and players.

**Keywords:** Infrastructure, Performance, Pro kabaddi league.

## 1. INTRODUCTION

The sport has a long history dating back to pre-historic times. It was probably invented to ward off croup attacks by individuals and vice-versa. The game was very popular in the southern part of Asia played in its different forms under different names. A dramatized version of the great Indian epic, the "Mahabharata" has made an analogy of the game to a tight situation faced by Abhimanyu, the heir of the Pandava kings when he is surrounded on all sides by the enemy. Buddhist literature speaks of the Gautam Buddha playing Kabaddi for recreation. History also reveals that princes of yore played Kabaddi to display their strength and win their brides. Hu-Tu-Tu in Western India, Ha-Do-Do in Eastern India and Bangladesh, Chagdud in Southern India, and Kaunbada in Northern India are all variations of the same game. Modern Kabaddi is a fusion of the game as it has been played in many forms and under numerous titles. Kabaddi is renowned as the "GAME OF THE MASSES" because of its widespread popularity, simplicity, and easy-to-understand rules. Because the

game does not require any technical equipment, it is a popular leisure in developing countries. It is typically an outdoor sport played on a clay court, but it has lately been successfully played indoors on a synthetic surface. The game lasts 45 min for men and 45 min for junior boys, with a 5-min break in between for the teams to switch sides. For women, girls, Sub-Junior boys, and Sub-Junior girls, the games will last 35 min with 5 min rests in between.

Kabaddi is a combative team game, played on a rectangular court, either outdoors or indoors with seven players on the ground for each side. Each side takes alternate chances of offence and defence. The basic idea of the game is to score points by raiding into the opponent's court and touching as many defence players as possible without getting caught on a single breath. During play, the players on the defensive side are called "Antis" while the player of the offense is called the "Raider." Kabaddi is perhaps the only combative sport in which attack is an individual attempt while defence is a group effort. The attack in Kabaddi is known as a "Raid." The antis touched by the raider during the attack

are declared “out” if they do not succeed in catching, the raider before he returns to home court. These players can resume play only when their side scores point against the opposite side during their raiding turn or if the remaining players succeed in catching the opponent’s raider. Yoga, the Indian science to control body and mind through meditation and self-control plays an integral part of Kabaddi. The raider has to enter the opponent’s court chanting the word “Kabaddi” while holding his breath and has to continue to do so until he returns to his home court. This is known as “cant,” which is closely related to “Pranayama” of yoga. While Pranayama is about withholding breath in order to exercise internal organs, cant is the means to withhold breath with vigorous physical activity. This is one of the rare sports that incorporates yoga with strenuous physical activity. Agility, strong lung capacity, muscle coordination, mental presence, and quick responses are all required in this game. Taking on seven opponents as a single player is no easy undertaking; it needs courage as well as the ability to concentrate and anticipate the opponent’s next move.

### 1.1. Significance of the Study

The study will provide information to the teachers of physical education, coaches, trainees, official’s sports organizations of the country, regarding some of hindrances which impede the progress of Kabaddi in India. The study will bring the light outstanding performance of the Kabaddi players and the teams to the past. So that due reorganization and honours may be given to them. The study will help in comparing the existing standards of the game with the performance of the previous years and it may, in turn, help in determine the future of the game. The information presented in the study will act as a source of reference for teachers of physical education, coaches and professional students in the field of physical education.

## 2. METHODOLOGY

Design of the Study As per the requirement and nature of the study, a case study was designed to explore the Pro Kabaddi, the development of Indian Kabaddi through Pro Kabaddi league (PKL). A case study was considered appropriate to explore in-depth information on various aspects of the case which is the subject matter of the study, designed in which historical, analytical and interpretive methods were utilized to collect the relevant data.

Secondary Source In addition to the above, the data was also collected from secondary sources. Brief information of Indian Kabaddi was got by secondary source, such as - Internet, newspaper, TV channels, Wikipedia, and magazine.

### 2.1. History and Development of the Game Kabaddi in India

Kabaddi is one of the most popular games in India, played mainly among people in village. It is regarded as a team contact sports as a recreational form of combat training. The word Kabaddi might have been derived from the Tamilnadu word “KAI-PIDI” meaning to hold hands. There are four forms of Kabaddi played in India are (1) Amar (2) Suranjeevi (3) Huttuttoo (4) Gaminee. Suraneevi is the form used in international matches generally and played in Asian games. Kabaddi received international exposure during the 1936 Berlin Olympics. The game was included for the first time in Asian games in Beijing in 1990 and won the gold medal and has also won gold at the following six Asian games in Hiroshima 1994, Bangkok 1998 Busanin 2002, Doha in 2006 and Guangzhou in 2010. India won the Kabaddi world championship in 2007 beating Iran 29-19.

### 2.2. Kabaddi Federations in India

The Kabaddi Federation of India (KFI) was founded in 1950, and it compiled a standard set of rules. The Amateur KFI (AKFI) was founded in 1973. The AKFI has given new shape to the rules and it has also the right of modification in the rules. The Asian Kabaddi Federation (AKF) was founded under the chairmanship of Sharad Pawar. The Governing body of Kabaddi in Asia is AKF headed by Mr. Janardan Singh Gehlot. AKF is affiliated to Olympic Council of Asia. Parent body to regulate the game at the international level is International Kabaddi Federation. India won the world cup in December 2013 by defeating Pakistan in the finals at Punjab. In 1979, a return test between Bangladesh and India was held at different places of India including Mumbai, Hyderabad, and Punjab. The Asian Kabaddi Championship was successfully arranged in 1980 and India emerged as the champion and Bangladesh as the runners-up. Bangladesh became runners-up again in 1985 in Asian Kabaddi Championship held in Jaipur, India. The other teams included in the tournament were Nepal, Malaysia and Japan. Kabaddi was played as a demonstration sport at the 1936 Summer Olympics in Berlin. The game was included for the first time in Asian Games held in Beijing in 1990. Eight countries

took part including India, China, Japan, Malaysia, Sri Lanka, Pakistan and Bangladesh. India won the gold medal and has since won gold at the following three Asian Games in Hiroshima in 1994, Bangkok in 1998, Bussan in 2002, and in Doha 2006.

### 2.3. History of PKL

The PKL was first held in 2014; its founder, Charu Sharma, was influenced by the popularity of the Kabaddi tournament at the 2006 Asian Games, which utilized an indoor version of the game played on a court. Sharma cited the Indian Premier League as an influence on the overall formatting of the competition, noting that “mere sport works well (in India), but if you package it better, it works better.” The PKL uses a franchise-based model; the league began with eight teams, each of which having paid fees of up to US\$250,000 to join. There were doubts over whether the PKL would be successful, noting that there were many leagues attempting to emulate the IPL’s business model and success and that unlike cricket, there were relatively fewer well-known players in Kabaddi. However, it was also noted that Kabaddi was widely played in grassroots community settings, and could thus attract a wide variety of rural and metropolitan viewers for advertisers to target if the league gained significant traction. The inaugural season was seen by a total of 435 million viewers, placing it just behind the total season viewership of the 2014 Indian Premier League season, while the inaugural championship was seen by 86.4 million viewers. Star Sports, the PKL’s broadcaster, subsequently announced in 2015 that it would acquire a 74% stake in the league’s parent company Marshal Sports. For the 2017 season, the PKL added four new teams, and changed its format to split the teams into two divisions known as “zones.”

### 3. IMPACT OF PKL ON MASS MEDIA

The new season of Kabaddi is even giving the national cricket team a run for its money. By some audience analysis, it earned 3 times as many viewers as the recent Indian/Sri Lanka series. Kabaddi audience growth has been nothing short of phenomenal. In the opening match of its 138-fixture season, it attracted a viewership which was a 10<sup>th</sup> of its audience for the entire 2014 season. The Sri Lanka series may have ended but filling each of India’s top five sports programme slots in a week, as PKL 5 has, is nevertheless impressive. Our data (Chart) shows that the most recent iteration of the PKL has already attracted a cumulative audience which outstrips the whole of season four. The competition’s format of

high-intensity 40-min matches lends itself to a strong viewer proposition, so much so that the league has been extended to take in extra matches and teams this season.

PKL can point to a growth in the length of time people are watching too. Viewing duration is up 26% from 19 min per match last season, to 24 min per match. For sponsors, including mobile phone manufacturer vivo, the PKL is turning into a gold rush. Because broadcaster STAR, owned by 21<sup>st</sup> Century Fox, is also the league’s major shareholder, sponsors are offered enviable opportunities to intertwine in-venue and in-broadcast spots. That permits a level of impact that cannot easily be replicated in other sports where there can often be clashes between TV advertisers and title, team and venue sponsors. PKL’s ability to offer sponsors synchronicity across these mediums is driving a return on investment that other sports will struggle to match. Similarly, broadcaster STAR, with its shareholding in soccer’s Indian Super League (ISL), will be able to offer the same supercharged sponsorship opportunities in football as PKL provides to partners. That has seen 10-s advertising slots increase in price to 160,000 INR (€2,100/\$2500) this season (compared to 612,000 for IPL), a reflection of the fact that despite its rustic roots, Kabaddi’s audience is now split almost 50/50 between urban and rural areas. STAR has now shown with PKL and ISL a unique model can offer unique acceleration.

### 4. CONCLUSION

The format of the competition and the evening schedule has managed to raise the profile of the game to a whole new level. The sky is the limit from here with an increasing interest in schools and colleges across both urban and rural markets. One of the unintended benefits of the PKL is also the increasing possibility of showcasing the sport for an Olympic entry in the years to come. An inclusion in the demonstrative schedule for Tokyo in 2020 could be a good short-term goal for the administrators of the sport. The backing of the Indian and Continental federations running Kabaddi augurs well both for the league and the sport overall. But a lot remains to be done in terms of widening and deepening the sport across the country. Despite the immense success of the league, the sport remains a shallow pursuit limited to small sections of the country. PKL presents a transformational opportunity for the sport in terms of arousing interest and drawing more children to the sport.

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# Effect of Circuit Training on Vertical Jumping Ability Among Volleyball Players in V<sup>th</sup> Zone Social Welfare Residential Degree College of Telanagana

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## ABSTRACT

The purpose of the present study is to find out the effect of Circuit training for the development of Vertical Jumping ability among female volleyball players of social welfare residential degree college. The subject was chosen at random from a group of girls between the ages of 19 and 21 years old.  $n = 20$  Experimental Group I and  $n = 20$  Control Group II are included in the study's sample. Vertical jump test was utilized in the study as a pre-test and post-test to determine vertical jumping in both groups. Experiment group I received Circuit training on alternate days for eight weeks, while control group II received general warm-up training. The experimental group's performance on the Vertical jump improved from pre-test to post-test. It is concluded that significant effect in experimental group I t whereas the control group exhibits a reduction in their performance.

**Keywords:** Circuit training, Vertical jump, Volleyball.

## 1. INTRODUCTION

Volleyball is a team sport in which two teams of six players are separated by a net. Each team tries to score points by grounding a ball on the other team's court under organized rules. It has been a part of the official program of the Summer Olympic Games since Tokyo 1964. Beach Volleyball was introduced to the program at the Atlanta 1996. The adapted version of volleyball at the Summer Paralympic Games is sitting volleyball.

The complete set of rules is extensive, but play essentially proceeds as follows: a player on one of the teams begins a "rally" by serving the ball (tossing or releasing it and then hitting it with a hand or arm), from behind the back boundary line of the court, over the net, and into the receiving team's court.<sup>[3]</sup> The receiving team must not let the ball be grounded within their court. The team may touch the ball up to three times to return the ball to the other side of the court, but individual players may not touch the ball twice consecutively. Typically, the first two touches are used to set up for an attack. An attack is an attempt to direct the ball back over the net

in such a way that the team receiving the ball is unable to pass the ball and continue the rally, thus, losing the point. The team that wins the rally is awarded a point and serves the ball to start the next rally.

Circuit training is a form of body conditioning that involves endurance training, resistance training, high-intensity aerobics, and exercises performed in a circuit, similar to high-intensity interval training. It targets strength building and muscular endurance. An exercise "circuit" is one completion of all set exercises in the program. When one circuit is completed, one begins the first exercise again for the next circuit. Traditionally, the time between exercises in circuit training is short and often with rapid movement to the next exercise.

Moraru et al. "Alexandru Ioan Cuza" University, Iasi, Romania (2019) efficient effects in the development of motor qualities, mainly strength and resistance. The purpose of this paper was to demonstrate the efficiency of training in the circuit in the development of this motor quality. The sample within the research comprised 30 women aged 25–35 and who practiced 3 practices per

week for 6 months. The independent variable included circuits for beginners (30" workout - 30" pause), circuits for middle level (45" workout - 30" pause), and circuits for advanced (50" workout - 30" pause). The tests applied concerned the strength and resistance of abdominal muscles, of the back, of the legs and of the arms. Findings in the test for the strength and resistance of abdominal muscles, the values of the average and of standard deviation were  $13.8 \pm 1.52$  initially and  $15.2 \pm 1.08$  finally; concerning the strength and resistance of the back muscles, the values increased from  $21.46 \pm 1.684$  initially to  $23.53 \pm 1.641$  finally; in the strength and muscles of the legs, the values ranged between  $14.86 \pm 1.767$  initially and  $16.80 \pm 1.473$ ; in the strength and muscles of the arms, the values recorded an increase from  $14.40 \pm 0.985$  initially to  $16.26 \pm 0.961$  finally. The present research demonstrated that the use of circuit workout can improve the motor qualities of strength and it can also improve the motor qualities of strength and resistance, which confirms the purpose of the paper.

### 1.1. Objective of the Study

The objective of the study is to find out the effect of Circuit Training on the development of vertical jumping ability among volleyball players of social welfare residential degree college Telangana.

### 1.2. Hypothesis

It was hypothesized that there would be a significant difference in Circuit Training development vertical jumping ability among volleyball players of social welfare residential degree college Telangana.

## 2. METHODS

The purpose of the present study is to find out the effect of Circuit training for the development of vertical jumping ability among volleyball players of social welfare residential degree college Telangana. The subject was chosen at random from a group of girls between the ages of 19 and 21 years old.  $n = 20$  Experimental Group I and  $n = 20$  Control Group II are included in the study's sample.

### 2.1. Tools

#### 2.2.1. Vertical jump

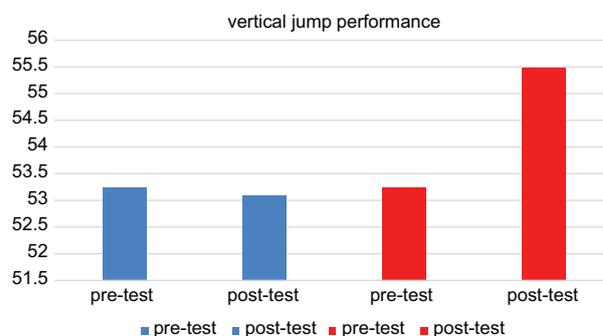
Purpose of the Test: to measure vertical jumping ability.

## 3. RESULTS

### Paired samples statistics

Vertical Jump	Mean	n	Std. Deviation	Std. Error Mean
Control group				
Pre-test	53.2500	20	1.12974	0.25262
Post test	53.1000	20	1.29371	0.28928
Experimental Group				
Pre-test	53.2500	20	1.12974	0.25262
Post-test	55.4750	20	0.99307	0.22206

The analysis of the data reveals that the subjects with the circuit training have shown improvement in the performance of vertical jump test from pre to post-test Mean S. D Experimental group pretest result shown (53.2500) and Controlled group (53.2500) after 8 weeks of Specific of Circuit Training there is Improvement in the subject's Experimental Group (55.475), and Controlled group (53.1000).



The above graph clearly shows the performance of volleyball players pretest and post-tests, The Blue bar represents the Control Group shown no improvement in the vertical jump test in other side red bar showed the significance improvement in the vertical jump test after the circuit training for 6 weeks.

## 4. CONCLUSION AND RECOMMENDATION

As for the practicality of this study which may applied when designing the Effective circuit training programmed for young volleyball players. I clearly mention that the circuit training has shown excellent effect in the improvement in vertical jumping ability. Coaches will be able to analyzed the results and be able to enhance the future performances. At such feedback is very crucial for the improvement in performance

athlete. I concluded the assessment process can be conducted every 3 months and 6 months to update the progress of players performance and to ensure that it is up to date with the players training needs requirements. It is recommended that coaches assess their player's performance on a regular basis in order to ensure better compliance with the training program. The aim of formulating the effect of circuit training exercise to betterment and enhance their performance as well as guide line for athlete coaches at various level in preparing and designing quality and effective training programmes.

#### 4.1. Recommendations

The following suggestions are made for the benefit of players, coach's academicians, and sports scientists. The researcher suggests the part of the coach to use the above-said development of the Circuit Training program for volleyball players. The study helps the physical educationist and coaches for selecting the athletes.

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# A Comparative Study of Explosive Power Among Long Jumpers and Sprinters

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## ABSTRACT

Long jump is a track and field event in which athletes combine speed, strength and agility in an attempt to leap as far as possible from a take off point. Sprinting is running over a short distance in a limited period of time. There are three sprinting events which are currently held at the Summer Olympics and outdoor World Championships: the 100 m, 200 m, and 400 m. The objective of this study was to find out the Explosive power among Long Jumpers and Sprinters of Hyderabad District in Telangana, India. The sample for the Study consists of 30 Male sprinters and 30 Male Long Jumpers. The Standing Broad Jump Test was conducted to find out the explosive Power among sprinters and Long Jumpers and the statistical techniques that will be utilized for the investigation will be descriptive statistics to find out the significant results of the study. The Mean of sprinters is 2.60 and Mean of Long jumpers is 3.33 in Standing Broad Jump Test hence the Long Jumpers are having better Explosive Power compared to Sprinters. Explosive power is very important for jumpers and sprinters

**Keywords:** Explosive power, Long Jumpers, Sprinters.

## 1. INTRODUCTION

The long jump is a track and field event in which athletes combine speed, strength, and agility in an attempt to leap as far as possible from a take-off point. Sprinting is running over a short distance in a limited period of time. There are three sprinting events which are currently held at the Summer Olympics and outdoor World Championships: the 100 m, 200 m, and meters. The long jump has been part of modern Olympic competitions since the inception of the Games in 1896. In 1914, Dr. Harry Eaton S has recommended the "running broad jump" as a standardized track and field event for women.

Sprinting is running over a short distance in a limited period of time. It is used in many sports that incorporate running, typically as a way of quickly reaching a target or goal, or avoiding or catching an opponent. Human physiology dictates that a runner's near-top speed cannot be maintained for more than 30–35 s due to the depletion of phosphocreatine stores in muscles, and

perhaps secondarily to excessive metabolic acidosis as a result of anaerobic glycolysis. In athletics and track and field, sprints (or dashes) are races over short distances. They are among the oldest running competitions.

### 1.1. Previous Studies

Chaouachi et al. (2013), investigated the effective of plyometric training and combination of plyometric and balance training with children. Subjects were equally assigned to three groups plyometric ( $n=14$ ) combination of balance and plyometric training ( $n=14$ ), and a control group ( $n=12$ ). Before and following an 8-weeks training period, tests assessed lower body strength (1 repetition maximum leg press), power (horizontal and vertical jumps, distance to triple hop, reactive strength, leg stiffness), running speed (10 m and 30 m sprint), static and dynamic balance (standing stork test and star excursion balance test), and agility (shuttle run).

The results showed that the combination of balance and plyometric training boost to a greater level; activities such as 10 m sprints and shuttle runs.

Combination of balance and plyometric training could be an important consideration for reducing the high-velocity impacts of plyometric training for children.

Michailidis et al. (2013), conducted a study to determine whether preadolescent boys exhibit plyometric trainability or not and improve muscle ability to generate explosive power. Forty-five soccer playing children with the average age range between 16 and 17 years were randomly assigned to two groups, namely, control group ( $n=21$ ) which participated only in regular soccer practice and plyometric training group ( $n=24$ ). Both groups trained twice a week for 12 weeks. The subject was measured at baseline, mid training, and post training. The results indicate that prepubertal boys reveal considerable plyometric trainability and when soccer practice is supplemented with plyometric training. They showed a greater performance on muscle ability to generate explosive power.

## 2.2. Research Objectives

The objective of this study was to find out the Explosive Strength among Long Jumpers and Sprinters of Hyderabad District in Telangana, India.

## 2.3. Scope of the Study

### 2.3.1. Scope on contents

The objective of this study was to find out the Explosive Strength among Long Jumpers and Sprinters of Hyderabad District in Telangana, India.

### 2.3.2. Scope on population

The sample for the Study consists of 30 Male sprinters and 30 Male Long Jumpers.

## 2. RESEARCH METHODOLOGY

The sample for the study consists of 30 male sprinters and 30 male long jumpers. The Standing Broad Jump Test was conducted to find out the explosive power among sprinters and Long Jumpers.

## 2.1. Standing Long Jump Test (Broad Jump)

The standing long jump also called the Broad Jump, is a common and easy to administer test of explosive leg power. Purpose: to measure the explosive power of the legs. Equipment required: tape measure to measure distance jumped, non-slip floor for takeoff, and soft-landing area preferred. Commercial Long Jump Landing Mats are also available. The take-off line should be clearly marked.

## 2.2. Procedure

The athlete stands behind a line marked on the ground with feet slightly apart. A two-foot take-off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backward. Three attempts are allowed.

## 2.3. Scoring

The measurement is taken from take-off line to the nearest point of contact on the landing (back of the heels). Record the longest distance jumped, the best of three attempts.

## 3. RESULTS

In Table 1 the mean scores of the Sprinters is 2.60, Standard Deviation is 0.221, and Standard Error 0.040, and Mean score of the Long Jumpers is 3.33, Standard Deviation is 0.255 and Standard Error is 0.47 The  $t$ -values are  $-16.80$ . The Mean of sprinters is 2.60 and Mean of Long jumpers is 3.33 hence the Long Jumpers are having better Explosive Strength compare to Sprinters.

## 4. DISCUSSION

As for the practicality of this study which may applied when designing the A Comparative Study of Explosive Power among Long Jumpers and Sprinters. I clearly mention that the explosive power is very important to enhance performance improvement. Coaches will be able to analyzed the results and be able to enhance future

**Table 1:** The mean of standing broad jump test of long jumpers and sprinters

Standing broad jump	$n$	Mean	Std. Deviation	Std. Error Mean	$t$	df	Sig. (2-tailed)
Sprinters	30	2.60	0.221	0.040	$-16.80$	58	0.000
Long Jumpers	30	3.33	0.255	0.047			

performances. At such feedback is very crucial for the improvement in performance athlete. I concluded the assessment process can be conducted every 3 months and 6 months to update the progress of players performance and to ensure that it is up to date with the players training needs requirements. It is recommended that coaches assess their player's performance on a regular basis in order to ensure better compliance with the training program.

## 5. CONCLUSIONS

It is concluded that long jumpers are having better explosive strength compare to Sprinters.

## 6. RECOMMENDATIONS

- It is recommended the explosive strength training must be given to the Sprinters and Long Jumpers
- It is recommended the explosive strength training must be given to the Athletes
- Similar studies can be conducted in Female Athletes

- Similar studies can be conducted in different age groups
- This study is helpful to coaches, trainers to plan the coaching program to improve the motor abilities among Sprinters and Long Jumpers.

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# Effect of Strength Training for Development of Endurance among Middle Distance Runners of Osmania University

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## ABSTRACT

The objective of this study is to study the effect of strength training for development of endurance among middle distance runners of Osmania University, which will be helpful to coaches and trainers to develop the endurance ability. The sample for the present study consists of experimental group IN = 15 and controlled group II N-15 of Osmania University. Strength training was given to experimental group on alternate days for 8 weeks along with general training to control group. Pre-test and Post-test were conducted for 12 min Cooper test to assess the endurance of both the groups. This study shows that the experimental group has got rapid improvement due to strength training compare to control group. It is concluded that due to strength training there is an improvement of endurance. It is recommended that the coaches must include strength training programs to athletes for development of endurance.

**Keywords:** Cooper test, Endurance etc., Middle distance runners, Strength training.

## 1. INTRODUCTION

Middle- and long-distance runners, and all athletes, must develop general endurance as well as the endurance which is specific to the energy demands of their event. This endurance comes from correctly developing the energy systems. The training that is described in this section is also suitable for the race walking events. There are the three metabolic energy systems operating in our bodies. These energy systems operate continuously and it is how long and how hard do we do whatever physical activity that determines which systems contributes most. The longer the race the greater the emphasis on aerobic endurance, the shorter the race the greater the emphasis shifts to the lactate system endurance.

Strength training or resistance training involves the performance of physical exercises which are designed to improve strength and endurance. It is often associated with the use of weights. It can also incorporate a variety of training techniques such

as calisthenics, isometrics, and plyometrics. When properly performed, strength training can provide significant functional benefits and improvement in overall health and well-being, including increased bone, muscle, tendon, and ligament strength and toughness, improved joint function, reduced potential for injury, increased bone density, increased metabolism, increased fitness, and improved cardiac function. Training commonly uses the technique of progressively increasing the force output of the muscle through incremental weight increases and uses a variety of exercises and types of equipment to target specific muscle groups. Strength training is primarily an anaerobic activity, although some proponents have adapted it to provide the benefits of aerobic exercise through circuit training.

Kris Beattie *et al.* (2016) study was the effect of strength training on performance indicators in distance runners. Running economy (RE) and velocity at maximal oxygen uptake ( $v\text{VO}_2\text{ max}$ ) are considered to be the best physiological performance indicators in elite distance

**Table 1: Paired samples statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Control Group				
Pre-test	2163.7333	15	101.13893	24.63036
Post-test	2158.9333	15	101.67944	24.51172
Experimental Group				
Pre-test	2332.2000	15	54.45600	14.06046
Post-test	2443.1222	15	77.96044	20.12922

runners. In addition to cardiovascular function, RE and  $vVO_2$  max are partly dictated by neuromuscular factors. One technique to improve neuromuscular function in athletes is through strength training. The aim of this study was to investigate the effect of a 40-week strength training intervention on strength (maximal- and reactive-strength),  $vVO_2$  max, economy, and body composition (body mass, fat, and lean mass) in competitive distance runners. Twenty competitive distance runners were divided into an intervention group ( $n = 11$ ;  $29.5 \pm 10.0$  years;  $72.8 \pm 6.6$  kg;  $1.83 \pm 0.08$  m) and a control group ( $n = 9$ ;  $27.4 \pm 7.2$  years;  $70.2 \pm 6.4$  kg;  $1.77 \pm 0.04$  m). During week 0, 20, and 40, each subject completed three assessments: Physiology ( $v_2$ mmol/L BLa,  $v_4$ mmol/L BLa, RE,  $vVO_2$ max, and  $VO_2$ max), strength (1RM back squat; countermovement jump, and 0.3 m drop-jump), and body composition (body mass, fat mass, overall-lean, and leg-lean). The intervention group showed significant improvements in maximal- and reactive-strength qualities, RE, and  $vVO_2$ max, at weeks 20 ( $P < 0.05$ ) and 40 ( $P < 0.05$ ). The control group showed no significant changes at either time point. There were no significant changes in body composition variables between or within groups. This study demonstrates that 40 weeks of strength training can significantly improve maximal- and reactive-strength qualities, RE, and  $vVO_2$ max, without concomitant hypertrophy, in competitive distance runners.

## 2. OBJECTIVE OF THE STUDY

The objective of the study is to find out the effect of strength training on the development of endurance among middle-distance runners of Hyderabad district.

## 3. HYPOTHESIS

It was hypothesized that there would be a significant difference in strength training development of endurance among middle distance runners of Hyderabad district.

## 4. METHODS

$n = 30$  at the top middle-distance runners between the ages of 21 and 23 were chosen at random and divided into two groups: Experimental group I  $n = 15$  (Strength Training) and controlled group II  $n = 15$  (General Training). The criteria for selection were based on their achievements at various levels such as state, inter-university, and national levels. Explained the training schedule and training plan with subjects before the session started.

### 4.1. Tools

Cooper Test

Purpose of the Test: To measure the endurance ability.

## 5. RESULTS AND DISCUSSION

The experimental group and the controlled group were given pre- and post-tests to see if there was an improvement in endurance capacity after 8 weeks of strength training, whilst the controlled group received general training.

Table 1 showing the mean values of experimental group in pre-test is 2332.2000 and Post-Test is 2443.1222 there is improvement of mean distance up to 110.9222 due to strength training pre-test and post-test mean values of 12 min Run Cooper Test for control group showing the mean values of control group in pre-test is 2163.7333 and post-test is 2158.9333 there is decrease of mean distance up to 4.8 due to general training.

The strength, speed, and endurance are the important abilities for successful performance. The dominant ability is the one from which the sport requires higher contribution to achieve the high success in the sports and games. Endurance fitness plays very important role in the sports for efficiently performance long period under the conditions of fatigue efficiently.

## 6. CONCLUSIONS

It is concluded that due to the strength training develops the endurance ability. It also improves the strength condition and promotes in developing the aerobic fitness. In this study, it is concluded that due to the strength training the endurance fitness develops a lot in the middle-distance runners.

## 7. RECOMMENDATIONS

Similar studies can be conducted among females and in other sports and games. This study is useful to the coaches to prepare the conditioning program to improve the endurance condition ability in the middle-distance runners.

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# Determination of Athletic Ability on Speed and Resting Pulse Rate of NITW College Boys

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## ABSTRACT

The objective of the present study is to investigate the random group athletic ability as the criterion variable speed and resting pulse rate. The selected 50 college boys who have participated at inter NIT athletic meets were measured of their speed and resting pulse rate. To determination of athletic ability of the subjects, the norm prescribed by the (SATS) sports authority of Telangana was used and the scores of the selected tests were converted into standard scores. The obtained data were analyzed using Pearson correlation coefficient to find out the relationship between athletic ability and selected criterion variables. Multiple regression analysis used to predict the athletic ability of the NIT college boys from selected anthropometric, physical fitness, and physiological variables. In all cases, 0.05 level.

**Keywords:** Ability, Speed and resting pulse rate.

## 1. INTRODUCTION

When we discuss about the athletic ability as the criterion variable speed and resting pulse rate. We must know the motto of this event. The prime objective of these events to score points by speed and resting pulse rate into the opponent's track and field as many athletics players as possible without being caught and returning to his track and field events. Similarly, the athletes however, they lack the skills necessary to assess the psychological factors that have been proven to have a significant impact on athletic performance. (Dudaand Nicholls, 1992) and athletic coping skills inventory-28 (Smith *et al.*, 1995) were administered to measure the task and skills of athletes. The hypothesis of the present study was that task and ego orientation would be significantly correlated with the coping skills of the college athletes.

## 2. OBJECTIVES OF THE STUDY

1. The objectives of this study would determine the athletic ability of the college boys through selected anthropometric, physical fitness, and physiological variables.

2. In doing so, this investigation would make a present state of college boys' anthropometric levels, height, hand span, arm girth and arm length, physical fitness variables, hand grip strength, speed, leg strength and endurance and physiological variables, vital capacity, resting pulse rate, mean arterial blood pressure, and breath holding time.
3. Thus, the study would determine an equation based on which athletic ability of college boys can be determined.

## 3. STATEMENT OF THE PROBLEM

The purpose of this study was to determination of athletic ability on speed and resting pulse rate of college boys.

### 3.1. Delimitations

1. This study was confined only 50 to college boys in NITW Telangana.
2. The subjects selected were in the age group between 18 and 21 years.
3. Variables selected for this study were speed and resting pulse rate.

### 3.2. Limitations

1. The students were from different social, economic, and cultural status which were taken as a limitation for this study.
2. Heredity and environmental factors which contribute to performance have not been controlled.
3. No effect would be made either to control or to assess the quality of the food ingested, lifestyle, and effect of metabolic functions as these are recognized as a limitations for this study.

## 4. SELECTION OF VARIABLES

### 4.1. Dependent Variable

Athletic ability of college boys.

### 4.2. Independent Variables

1. Speed
2. Resting pulse rate.

**Table 1:** The variables, tests/tools, and the measured units

S. No.	Variables	Test/tools administered	Unit of measurement
1.	Speed	50 m run	Seconds
2.	Resting pulse rate	Manual	Beats/min

**Table 2:** The reliability coefficient of the subjects in anthropometric, physical, and physiological variables by test and retest method

S. No.	Test items	Coefficient of correlation
1.	Speed	0.86*
2.	Resting pulse rate	0.72*

Table value is  $r=(0.05)(2.7)=0.735$ . \*Significant at 0.05 level

**Table 3:** Descriptive statistics on selected physical fitness variables of the subjects

S. No.	Variables	n	Mean±SD	Range
1.	Speed (s)	50	8.63±0.30	7.17–8.09

**Table 4:** Results on correlation coefficient between athletic ability and selected physical fitness variables of college boys

S. No.	Athletic ability versus anthropometric variables	n	Mean	Obtained “r”	Significance
1.	Speed (s)	50	8: 63	0:076	NS

Table “r” value to be significant at 0.05 level with  $df(1.99)=0.164$ ., NS: Not-significant, Sig: Significantat 0.05 levels

## 5. RESEARCH DESIGN

The purpose of the study was used with athletic ability as the criterion variable speed and resting pulse rate. The selected 50 college boys who have participated at inter NIT athletic meets were measured of their speed and resting pulse rate. To determination of athletic ability of the subjects, the norm prescribed by the sports authority of Telangana was used and the scores of the selected tests were converted into standard scores. The obtained data were analyzed using Pearson correlation coefficient to find out the relationship between athletic ability and selected criterion variables. Multiple regression analysis used to predict the athletic ability of the college boys from selected anthropometric, physical fitness, and physiological variables. In all cases, 0.05 level.

Table 1 shows the variables selected, the tests and tools used for measurement and the unit of measurement. The inter NIT correlation coefficient obtained by test; retest method is presented in Table 2.

Table 3 shows the mean values, standard deviation, and the range for selected physical fitness variables of the subjects. The mean of the speed was 8.63 with standard deviation of  $\pm 0.40$ .

The correlation coefficient between athletic ability and the selected physical fitness variables was computed through Pearson correlation coefficient and the results are presented in Table 4.

The results presented in Table 4 showed that there was no significant relationship between speed and athletic ability. A 0.076 as the obtained “r” values was greater than the required table “r” value to be significant at 0.05 levels.

Table 5 shows the descriptive statistics on selected physiological variables of the subjects.

Table 5 shows the physiological variables of the subjects. The mean of the resting pulse rate was 75.20 with standard deviation of  $\pm 2.83$ .

**Table 5:** Descriptive statistics on selected physiological variables of the subjects

S. No.	Variables	n	Mean±SD	Range
1.	Resting pulse rate (in beats/min)	50 c	75.20±2.83	71–81

**Table 6:** Results on correlation coefficient between athletic ability and selected physiological variables of college boys

S. No.	Athletic ability versus anthropometric variables A	n	Mean	Obtained “r”	Significance
1.	Resting pulse rate (in beats/min)	50	76:20	0:191	Sig :

Table “r” value to be significant at 0.05 level with df (1.99)=0.164.  
NS: Not-significant, Sig: Significant at 0.05 level

The correlation coefficient between athletic ability and the selected physiological variables was computed through Pearson correlation coefficient and the results are presented in Table 6. The results presented in Table 6 showed that there was a significant relationship between athletic ability and resting pulse rate (r: 0.191) and athletic ability as the obtained “r” values were greater than the required table “r” value to be significant at 0.05 level.

## 6. CONCLUSIONS

Within the limitation and delimitation of the present research study, it was concluded that:

1. Athletic ability of college boys was significantly related with physiological variables, resting pulse rate.
2. The athletic ability could be best predicted from following variables, namely, resting pulse rate.
3. Speed was not good predictors of athletic ability of college boys. For the above factors, null hypothesis was accepted

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# Comparative Study of Self-Confidence between Athletic Players and Hockey Female Players

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## ABSTRACT

The purpose of the present study was to comparative study of self-confidence between athletic players and hockey female players. Total 40 subjects were randomly selected (15 from Athletic and 15 from Hockey) from Karnataka state Akkamahadevi Women's University, Vijayapura, Karnataka was taken as a sample. The data were collected during inter-collegiate competition organized by Department of Studies in Physical Education and Sports Sciences, Karnataka. The age of subject ranged between 19 and 23 years. Self-confidence tests were used to measure the selected psychological variable of players. All the subjects were informed about aim and methodology of the study and they volunteered to participate in this study. "T" test independent was used to analysis the data, level of confidence was set at 0.05 level. Study concluded that insignificant difference found between the means of selected psychological variable such as self-confidence.

**Keywords:** Athletic Players, Hockey, Female players, Psychological Variable, Self-Confidence.

## 1. INTRODUCTION

Self-confident person was defined as one who perceived himself as socially competent emotionally capable successful, satisfied, divisive, optimistic, independent, self-assured, forward moving, fairly assertive, having leadership qualities, and as having positive and constructive self-feeling and evaluation. In general, self-confidence refers to an individual's ability to and effectively in a situation to overcome abstracts and to get thins to go all right. According to the Symonds (1951)

Basavanna (1975) 11 "In general terms, self-confidence refers to an individual's perceived ability to act effectively in a situation to overcome obstacles and to get things go all right."

"Athletics offer the greatest opportunity for character development of any activity, the fundamental of character is gained though participation in sport under right leadership and a person who lacks these fundamentals may be sensitive, refined, and cultural but will lack the vital characters, qualities most needed and esteemed by the society" (Hussey, 1983).

Field hockey is an extraordinary team game played by millions of men, women, and youth in more than 118 countries and member associations worldwide. Whether you are a novice or an experienced field hockey player, you will appreciate the game more as you improve your skills and your understanding of strategy. The popularity of field hockey comes from the immense challenge the game demands for successfit1 play Elizabeth (2008).

### 1.2. Objective of the Study

Objective of the present study is to compare self-confidence between athletic players and hockey female players.

### 1.3. Hypothesis

Self-confidence of the hockey female players is better than athletics female players.

## 2. SAMPLES

Total 40 subjects consisting of 15 hockey female players and 15 athlete female players were randomly selected for

the present study. All the players were the participants of inter-collegiate university tournaments organized by Karnataka state Akkamahadevi Women's University, Vijayapura, Karnataka.

### 2.1. Tools

For the present study, the questionnaire of self-confidence questionnaire developed by M. Basavanna is used.

In statistical analysis, descriptive, and comparative, both analyses have been done successively. In descriptive analysis, we have measured mean and S.D. and in comparative analysis. For comparative analysis, we have used *t*-test.

### 2.2. Procedure

For the present study from the given observational data on self-confidence of two groups. For the present study based on self-confidence, the collected the data by questionnaire method from different groups, where each groups were given proper meaning of each questions. Scoring has been done according to the method prescribed by the M. Basavanna.

### 2.3. Analysis of the Data

In the present study applied descriptive statistics for analyzing the data. In which, the calculated mean, S.D., and comparative analysis (*t*-test) were done to analyzed the data with the help of MS Excel 2007.

## 3. RESULTS AND DISCUSSION

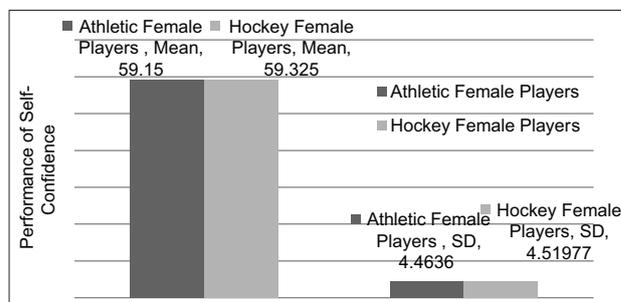
Table 1 indicates that a mean and standard deviation values with regard to athletic female players on self-confidence variable were 59.1500 and 4.46360 whereas in case with hockey female players the same were recorded as 59.3250 and 4.51977, respectively. There was no significant difference between athletic female players and hockey female players were found as the calculated *t*-value (1.78) was less than tabulated *t*-value (2.042) at .05 level. Graphically representation of above table is made in Figure 1.

The Figure 1 indicates that self-confidence performance mean scores a different the graphs showing of comparison of athletic female players and hockey

**Table 1:** Statistical comparison of self-confidence between athletic female players and hockey female players

Group	Number	Mean	S.D	" <i>t</i> "
Athletic	15	59.1500	4.46360	<b>1.78</b>
Hockey	15	59.3250	4.51977	

\*Significance at 0.05 Tab value=2.042



**Figure 1:** Mean scores and standard deviation of self-confidence of athletic female players and hockey female players

female players with to self-confidence performance scores.

The mean self-confidence scores of athletic female players and hockey female players are 59.9500 and 60.1000, SD are 15.74292 and 15.96674, respectively. It means that the self-confidence performance of hockey female players is better than athletic female players.

## 4. CONCLUSION

A comparative study on self-confidence of hockey female players is better than the self-confidence of athletic female players.

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# Effect of Yoga on Resting Pulse Rate of Secondary School Girls Students

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## ABSTRACT

The purpose of the present study was to find out the effect of yoga on resting pulse rate of secondary girls students. For this purpose, 30 subjects from Government Urdu High School (RMSA), Dawlatkoti Vijayapura District, from Karnataka were selected as subjects and they were divided into two equal groups with 15 each as experimental and control group. Experimental group underwent selected of yoga training daily morning 60-min included 10 min of warm-up and the control group not given any special training. The training period for this study was 8 weeks in a schedule of 5 days in a week. The pre- and post-test was conducted before and after the training program on the selected physiological variable of resting pulse rate. The mean, standard deviation, and *t*-value were assessed both experimental and control group separately and thereby significant level was analyzed. The significant level was fixed at 0.05 levels. The result of the study revealed that the experimental group shown the significant improvement in selected variable where as in resting pulse rate and the control group were not shown any improvement. The results revealed the effect of yoga on resting pulse rate of secondary school girls students.

**Keywords:** Physiological variable, Resting pulse rate, Secondary school girls students, Yoga training.

## 1. INTRODUCTION

“Yoga” originates from the Sanskrit root yuj, which signifies “association.” In the spiritual sense, yoga implies association of the mind with the heavenly intelligence of the universe. Yoga points through its practices to liberate an individual from the contentions of duality, which exists in each living thing and from the impact of the gunas, the characteristics of widespread energy that is available in each physical thing (Muller, 2012).

Yoga basically implies the reconciliation of personality at all levels: Physical, mental, social, intellectual, emotional, and spiritual (Gharote, 1990). Yoga is a technique by which one can acquire control of one's dormant powers. It offers the entire intends to self-realization (Sreekumar, 1968).

Yoga is a complete science of life that originated in India many thousands of years ago, which reached the common man around third century B.C, through Maharishi

Patanjali in the form of grant called Yoga sutra where yoga philosophy is described as Astanga yoga. It is the oldest system of personality development in the world encompassing body, mind, and spirit. The ancient yogis had a profound understanding of man's essential nature and of what he needs to live in harmony with himself and his environment. They perceived that the physical body is a vehicle, with mind as a driver, the soul as man's true identity, and action, emotion, and intelligence as the three forces which pull the body vehicle.

### 1.1. Objectives of the study

The core aim of the present study was to find out the effect of yoga on resting pulse rate of secondary school girls students.

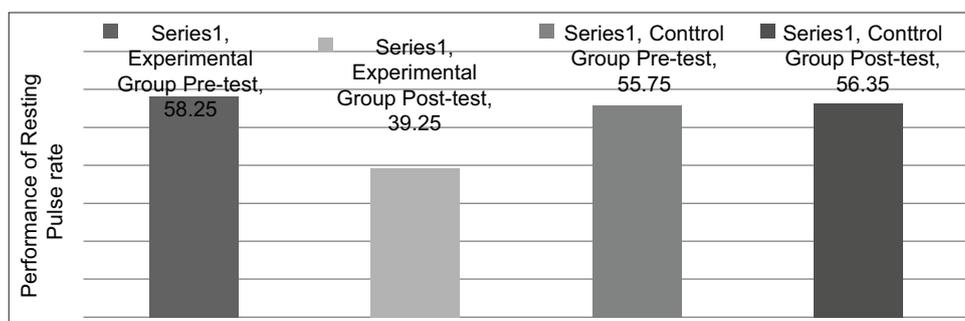
## 2. METHODOLOGY

For the purpose of this study, 30 school girls students were selected as subjects from a Government Urdu High

**Table 1:** The Mean, Standard Deviation and “t”- value of Pre-test and Post-test for Yoga training Experimental Group and Control Group on Resting Pulse Rate Performance

Variable	Group	Test	Mean	SD	t-value
Resting Pulse Rate	Experimental Group	Pre-test	58.2500	5.19995	7.495*
		Post-test	39.2500	10.40180	
	Control Group	Pre-test	55.7500	18.47865	-0.177
		Post-test	56.3500	16.57924	

The level of significant 0.05=Table value=2.04



**Figure 1:** The pre-test and post-test for yoga training experimental group and control group on resting pulse rate performance

School (RMSA), Dawlatkoti Vijayapura District, from Karnataka. The subjects were divided into two groups equally with 15 each as experimental and control group. Experimental group underwent 60 min in the morning yoga training included 10 min of warm-up before the yoga training. The 1 h yoga training includes 11 Yogasanas. The yogasanas are Padmasana, Sarvangasana, Halasana, Bhujangasana, Matsyasana, Chakarasana, Dhanurasana, Ardhamatsyenderasana, Vajrasana, Sirashasana, and Savasana. The tests were carried out with standardized procedure. The pre- and post-test was conducted on selected physiological variable of resting pulse rate. The physiological parameters were assessed through standardized procedures (Radial Pulse).

### 2.1. Statistical Procedure

The collected data of experimental and control groups were statistically analyzed using mean standard deviation and t-test and presented in Table 1. The level of significance was fixed at 0.05 level of confidence with the table value of 2.04. The t-values of 2.04 and above were considered significant in this study. In the tables, it was denoted by star (\*) which indicates 0.05 significant level.

### 3. RESULTS AND DISCUSSIONS

Table 1 indicates that the “t”- value is more than the table value, that is, 2.04, hence it is significant.

The pre-test mean value is 58.2500 and the post-test mean value is 39.2500. The post-test mean value is less than pre-test mean value. It shows significant improvement in the resting pulse rate performance of school girls students due to the 6 weeks yoga training. The pre-test mean value is 55.7500 and the Post-test mean value 56.3500. The post-test mean value is more than the pre-test mean value. It is shows no improvement in the resting pulse rate performance of school girls students subjects control group did not undergo any kind of training program the same as displayed in the Figure 1.

The Figure 1 indicates that the post-test values of experimental group significantly improved the performance of resting pulse rate and also the post-test values of resting pulse rate were less than the pre-test values due to 8 weeks of yoga training. The control group pre-test and post-test performance of resting pulse rate shows no improvement.

#### 4. CONCLUSIONS

The results of the present study indicate the effect of yoga on resting pulse rate of secondary school girls students. In the experimental group, the selected variables were significantly improved in the teach us that yoga training is useful to everyone in particularly sports persons to achieve the higher performance level because the selected variables in the study were more related to the sports men too. Further the control group post-test means score indicates that the yoga training not improvement.

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# Explosive Strength between Volleyball and Basketball Players: A Comparative Study

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## ABSTRACT

The purpose of the present study was to compare the Explosive Strength among basketball and volleyball male players. Total of twenty-four subjects were randomly selected (12 from volleyball and 12 from basketball) from BLDE (Deemed to be University) Shri B.M.Patil Medical College, Vijayapura, district; Karnataka was taken as a sample. The data were collected during Inter-Phase competition organized by Department of Sports and Physical Education, Karnataka. The age of subject ranged between 19 and 20 years. Explosive Strength tests were used to measure the selected Motor abilities variable of players. All the subjects were informed about aim and methodology of the study and they volunteered to participate in this study. “t” test independent was used to analysis the data, level of confidence was set at 0.05 level. Study concluded that insignificant difference found between the means of selected motor abilities variables such as Explosive Strength.

**Keywords:** Basketball, Explosive strength, Male players, Motor abilities, Volleyball.

## 1. INTRODUCTION

Explosive strength is the specific motor ability which is used as combined terminology of strength and speed. It can be defined as the ability to overcome resistance with high speed (Singh, 1995). Explosive strength is a fundamental requirement where the athletic movements are performed with greater force in minimal possible time. The explosive strength performance is always combined with the specific load and movement structure of an exercise or motor action (Nazarudeen, Singh, Chandrasekar and Anand, 2017).

Volleyball is a versatile type of sport in terms of changing pace, which requires certain motor qualities such as speed, explosive power, agility, quickness (reaction) coordination, and muscular endurance as fitness qualities in complex playing situation. Involvement in systematic and scientific programs of conducting the training will bring about desirable changes in physical and physiological variables.

Basketball and Volleyball sports are associated with jumping movements vastly. A basketball player required

good jumping ability as in the action of shooting, rebounding, stealing, interception; and a volleyball player also required high level of jumping qualities for spiking, blocking, etc. which required more and more anaerobic power in lower extremity. It can also define as explosive strength which can be stated as the ability of a player to reach out the maximum force in minimum possible time. Vertical jump in the single effort by pushing the floor is depend on the combination of strength and speed. Various studies were conducted to know the effect of anaerobic power and explosive strength of basketball and volleyball players at different levels (Nazarudeen, Singh, Chandrasekar and Anand, 2017; Dhake, 2017; Ramkumar, 2014; Rani, Chauhan and Kalsi, 2013). However, no similar study is available to know the status and comparative graph of explosive power or strength of basketball and volleyball players of engineering stream who are participating at inter IIT level competitions. This may be helpful to know the performance and fitness status of players and it also makes the choice of methods easier for the coach, along with the process of planning and programming (Aksovic and Beric, 2020).

### 1.1. Hypothesis

There would be no significance difference of Explosive Strength between Volleyball and Basketball players.

### 1.2. Objective of the Study

The study deals with immediate objectives and certain goals as follows:

- To compare the Explosive Strength of basketball and volleyball player
- To find out the dominance of Explosive Strength between basketball and volleyball.

### 1.3. Significance of the Study

The finding of this study is likely to provide criteria for transfer of training. It would help physical instructor to develop sound training programs. The study will help to know the better Explosive Strength among the players. The present study will be helpful to know the relation in training between Volleyball and Basketball players.

## 2. METHODOLOGY

### 2.1. Selection of Subjects

A sample of 24 male players was selected as subjects 12 Volleyball and 12 Basketball player studying in BLDE (Deemed to be University) Shri. B.M.Patil Medical College, Vijayapura, district, Karnataka. The age of subjects was ranged between 19 and 20 years.

### 2.2. Selection of Variables

For the data collection, following tests were used.

- Standing Broad Jump.

### 2.3. Method of Analysis

To analysis collected data “t” test was applied to find out the significant difference.

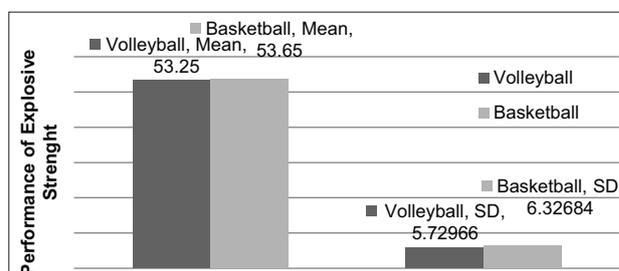
## 3. DISCUSSION AND FINDINGS

Table 1 indicates that a mean and standard deviation values with regard to Volleyball on Explosive Strength variable were 53.2500 and 5.72966 whereas in case with Basketball the same were recorded as 53.6500 and 6.32684 respectively. There were no significant differences between Volleyball and Basketball players were found as the calculated t-value (1.40) was less

**Table 1: Statistical comparison of explosive strength between volleyball and basketball male players**

Group	Number	Mean	SD	“t”
Volleyball	12	53.2500	5.72966	1.40
Basketball	12	53.6500	6.32684	

\*Significance at 0.05 Tab value = 2.179, SD: Standard deviation



**Figure 1: (a) Showing mean scores and standard deviation of explosive strength of male volleyball and basketball male players**

than tabulated t-value (2.179) at .05 level. Graphically representation of above table is made in Figure 1.

Figure 1: (a) The above figure indicates that explosive strength performance mean scores a different the graphs showing of comparison of male volleyball and basketball male players with to explosive strength performance scores.

The mean explosive strength scores of male volleyball and basketball male players are 53.2500 and 53.6500, Standard deviation are 5.72966 and 6.32684, respectively. It means that the Explosive strength Performance of Basketball Male players is better than Volleyball Male players.

## 4. CONCLUSION

The researcher had undertaken study titled as “Explosive strength between Volleyball and Basketball players a comparative study.” There was no significant difference noticed. Therefore from the statistical analysis the following inferences were derived: No significant differences were observed in the Explosive Strength variable of Volleyball and Basketball players.

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# Effect of Aerobic Exercises on Stress of Postgraduate Male Students

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## ABSTRACT

The purpose of the present study was to find out the effect of aerobic exercises on stress of Postgraduate Male Students. For this purpose, 40 subjects from Basaveshwar Commerce College Bagalkot, District, from Karnataka were selected as subjects and they were divided in to two equal groups with 20 each as experimental and control group. Experimental group underwent selected Aerobic Exercises daily morning 60-min included 10 min of warm-up and the control group not given any special training. The training period for this study was 6 weeks in a schedule of 5 days in a week. The pre and post test were conducted prior and after the training programme on the selected psychological variable of stress. The mean, standard deviation, and t-value were assessed both experimental and control group separately and thereby significant level were analyzed. The significant level was fixed at 0.05 levels. The result of the study revealed that the experimental group shown the significant improvement in selected variable whereas in Stress and the Control group were not shown any improvement. The results revealed the Effect of Aerobic Exercises on Stress of Postgraduate Male Students.

**Keywords:** Aerobic exercises, Postgraduate male students, Psychological variable, Stress.

## 1. INTRODUCTION

Aerobic exercise is physical exercise of relatively low intensity that depends primarily on the aerobic energy-generating process. Aerobic literally means "living in air," and refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. In general, light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time. Aerobic exercise provides cardiovascular conditioning. The term aerobic actually means "with oxygen," which means that breathing controls the amount of oxygen that can make it to the muscles to help them burn fuel and move.

Singer (1972) stated that the exercise records seem to be widely used in schools as a means of stimulating students to keep up with the pace and perhaps perform a maximum of activity with a minimum of conscious pairs.

Bucher (1985) stated that aerobic exercises are any physical activity that requires your heart rate to reach

at least sixty percent of your maximal heart rate for an extended period of time. Anaerobic dance program contributes to physical fitness by providing aerobic exercise and improving cardio respiratory endurance, strength, flexibility, and muscular endurance.

### 1.1. Objectives of the Study

The core aim of the present study was to find out the Effect of Aerobic Exercises on Stress of Postgraduate Male Students.

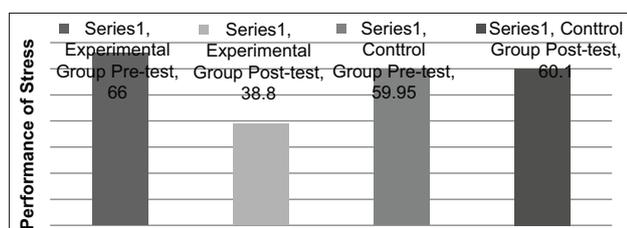
## 2. METHODOLOGY

For the purpose of this study, 40 college Male students were selected as subjects from a Basaveshwar Commerce College Bagalkot, District, from Karnataka. The subjects were divided into two groups equally with 20 each as experimental and control group. Experimental group underwent 60 min in the morning Aerobic Exercises included 10 min of warm-up before the Aerobic Exercises. The 1 h Aerobic Exercises

**Table 1:** Shows the Mean, Standard Deviation, and “t”-value of pre-test and post-test for aerobic exercises experimental group and control group on stress performance

Variable	Group	Test	Mean	SD	t-value
Stress	Experimental Group	Pre-test	66.0000	18.45050	7.549*
		Post-test	38.8000	10.88021	
	Control Group	Pre-test	59.9500	15.74292	-0.029
		Post-test	60.1000	15.96674	

The level of significant 0.05=Table value=2.02, SD: Standard deviation



**Figure 1:** The pre-test and post-test for aerobic exercises experimental group and control group on stress performance

includes seven Aerobic Exercises. The Aerobic Exercises are Mambo Cha-Cha-Cha, Basic left, Basic right, L-Step, Grapevine, I-Step, and V-Step. The tests were carried out with standardized procedure. The tests were carried out with standardized procedure. The pre and post-test were conducted on selected psychological variable of Stress. The psychological parameters were assessed through standardized questionnaire Developed by Z. Akthar.

### 2.1. Statistical Procedure

The collected data of experimental and control groups were statistically analyzed by using mean standard deviation and t- test and presented in Table 1. The level of significance was fixed at 0.05 level of confidence with the table value of 2.02. The t-values of 2.02 and above were considered significant in this study. In the tables, it was denoted by star (\*) which indicates 0.05 significant level.

## 3. RESULTS AND DISCUSSIONS

Table 1 indicates that the “t”-value is more than the table value that is 2.02, hence it is significant.

The pre-test means value is 66.0000 and the post-test mean value 38.8000. The post-test mean value is less than pre-test mean value. It shows significant improvement in the Stress performance of male owing to the 6 weeks Aerobic Exercises. The pre-test mean

value is 59.9500 and the Post-test mean value 60.1000. The post-test mean value is more than the pre-test mean value. It shows no improvement in the Stress performance of Male subjects control group did not undergo any kind of training Programme the same as displayed in the Figure 1.

The above Figure 1 indicates that the post-test values of Experimental group significantly improved the performance of Stress and also the post-test values of Stress were less than the pre-test values due to 6 weeks of Aerobic Exercises. The Control group pre-test and post-test performance of Stress show no improvement.

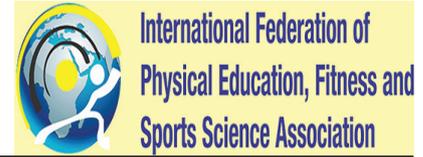
## 4. CONCLUSIONS

The results of the present study indicate the Effect of aerobic exercises on Stress of Postgraduate Male Students. In the experimental group, the selected variables were significantly improved in the teach us that Aerobic Exercises is useful to everyone in particularly sports persons to achieve the higher performance level because the selected variables in the study were more related to the sports men too. Further the control group post-test means score indicates that the Aerobic Exercises not an improvement.

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# The Impact of COVID-19 on Physical Fitness and Well-being

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## ABSTRACT

The impact of this pandemic is massive, and the only strategy to curb the rapid spread of the disease is to follow social distancing. The imposed lockdown, resulting in the closure of business activities, public places, fitness, and activity canter, and overall social life has hampered many aspects of the lives of people including routine fitness activities of fitness freaks, which has resulted in various psychological issues and serious fitness and health concerns. In the present article, aimed at understanding the unique experiences of fitness freaks during the period of lockdown due to COVID-19. The article also intended to explore the ways in which alternate exercises and fitness activities at home helped them deal with psychological issues and physical health consequences. Semi-structured telephone interviews were conducted with 20 adults who were regularly working out in the gym before the COVID-19 pandemic but stayed at home during the nationwide lockdown. The analysis revealed that during the initial phase of lockdown, the participants had a negative situational perception and a lack of motivation for fitness exercise. They also showed psychological health concerns and overdependence on social media in spending their free time. However, there was a gradual increase in positive self-perception and motivation to overcome their dependence on gym and fitness equipment and to continue fitness exercises at home. The regular fitness workout at home during the lockdown greatly helped them to overcome psychological issues and fitness concerns.

**Keywords:** COVID-19, Exercise, Gym workout, Lockdown, Physical fitness.

## 1. INTRODUCTION

The COVID-19 pandemic is an unprecedented time all across the world. Worldwide, extensive social distancing policies are put into place, restricting people's daily activities and worldwide pleas from governments asking people to stay safe and stay at home. This of course means that most people will spend much of their time (if not all) at home.

These social distancing measures mean that people have far fewer opportunities to be physically active, especially if activities such as walking or cycling as transportation, or taking part in a leisurely activity (e.g. jogging, walking the dog, and going to the gym) are being restricted. Furthermore, these drastic measures also make it so much easier to be sedentary at home for long periods of time.

The impact of this physical inactivity may very likely be seen in many areas such as health and social care and the mental well-being of people all across the globe.

Although these social distancing measures are important and needed in a time such as now, our bodies and minds still need physical activity (PA) and the many benefits thereof.

### 1.1. Definition of PA

PA is defined as any bodily movement produced by skeletal muscles that require energy expenditure. There are two components to PA that need to be considered:

#### 1.1.1. Aerobic fitness

This usually includes moderate to vigorous activity that makes you feel a bit warm and causes an increase in

your breathing rate, breathing depth, and your heart rate.

### **1.1.2. Strength and balance**

This is often the forgotten component of PA but it is an essential part and has many benefits.

### **1.1.3. PA may include**

- Active recreation
- Sports participation
- Cycling
- Walking
- Play
- Dance
- Gardening
- House cleaning
- Carrying heavy shopping
- During the COVID-19 pandemic, it is even more important for all people to be physically active. Even if it is only a short break from sitting at your desk and doing some walking or stretching. Doing something as simple as this will:
  - Ease muscle strain
  - Relief mental tension
  - Improve blood circulation
  - Improve muscle activity
  - Create some routine to your day in these unprecedented times.

### **1.1.4. Benefits of PA**

There are many benefits of PA. These include:

- Strengthening and maintaining your immune system strength - being less susceptible to infections
- Reduces high blood pressure
- Weight management
- Reduces the risk of heart disease
- Reduces the risk of diabetes
- Reduces the risk of stroke
- Reduces the risk of certain cancers
- Improves bone and muscle strength
- Improves balance
- Improves flexibility
- Improves fitness
- Improves mental health
- Reduces the risk of depression
- Reduces the risk of cognitive decline
- Delays the onset of dementia
- Improves overall feeling of well-being
- In children PA may:
  - Support healthy growth and development
  - Reduce the risk of disease in later life
  - Help in development of fundamental movement skills.

## **2. METHODS**

In order to gain a rich and extensive understanding of experiences into people's lives during this pandemic and their efforts to maintain a healthy lifestyle, a qualitative approach was adopted for the study.

## **3. RESULTS**

All the recorded interviews were transcribed. These transcripts were then analyzed using the Interpretative Phenomenological Analysis framework to identify the participants' experiences of lockdown, their alternative choice to continue their fitness routine and its impact on their health.

## **4. DISCUSSION**

- The present study was conducted with individuals for whom going to the gym was a routine activity so as to explore their experiences in terms of their perceptions of the pandemic situation and their ways of coping with COVID-19-induced uncertainties and health issues.
- Individuals learn to adopt to situations in healthy and positive ways. Participants reported experiencing a significant change in their sleeping pattern, unexplained laziness, and mental fatigue, and having a general feeling of fear, anxiety, stress, and frustration due to home confinement, which impacted their motivation to find alternate ways to continue fitness exercises.
- Other factors found responsible for the lack of fitness motivation were the absence of gym partners and the lack of gym environment, which were also considered as potential sources of gym motivation

### **4.1. The Importance of PA during the COVID-19 Pandemic**

In light of the current situation worldwide, certain benefits of PA may be specifically pertinent to the COVID-19 Pandemic. These benefits are:

- PA enhances immune function and reduces inflammation therefore it could reduce the severity of infections.
- PA improves common chronic conditions that increase the risk for severe COVID-19 (i.e., Cardiovascular Disease, Diabetes).
- PA is a great stress management tool by reducing symptoms of anxiety and depression.
- PA helps bring cortisol levels in balance. Stress and distress (such as during a pandemic) creates

an imbalance in cortisol levels and this negatively influences immune function and inflammation.

## 5. CONCLUSION

The findings of this study have demonstrated that if performed regularly, physical exercise has the potential to mitigate the ill physical as well as psychological effects of the COVID-19 pandemic. The findings of this study, therefore, could be extended to the common public to also persuade them to engage in physical fitness exercises, which would result not only in a better physical health but also in an enhanced psychological health and well-being. The findings of this study strengthen the recommendations made by researchers and organizations.

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# An Analytical Study of Selected Anthropometric, Physical Fitness Variables between Softball and Cricket Players

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## 1. INTRODUCTION

Physical fitness refers to the organic capacity of the individual to perform the normal task of daily living without undue tiredness or fatigue having reserve of strength and energy available to meet satisfactorily any emergency demands suddenly placed upon him. Softball is a sport requiring high levels of physical fitness. It is one of those rare games which demands not only speed but agility, strength, power, and endurance. Softball players need a combination of technical, tactical, and physical skills in order to succeed. Improving aerobic capacity and overall fitness boosts performance on the Softball field. Cricket is a deceptively demanding sport; players spend a long day on their feet, there are periodic fast sprints when batting, chasing down a ball, and bowling, plus various dynamic movements such as leaping, throwing, and turning quickly. It really is vital that all players should increase their base levels of fitness because that will allow them to realize their potential. It will allow them to maintain their level of performance for longer, increasing their concentration and endurance, and that is something each player will have to do if they want to do themselves justice on the world's biggest cricketing stage.

Fitness is important at all levels of the game, whilst being essential for top-level players; it is beneficial for beginners who will improve both their effectiveness and enjoyment through good standards of fitness. Fitness enables a player to cope with the physical demands of the game as well as allowing the efficient use of his various technical and tactical competencies throughout the match.

Games and sports had become an integral part of human beings; it rose to its greatest height in Greece, which is

called "Golden Era" in the history of games and sports (Singh, 2014). Anthropometry is the measurement of body size and proportions. The measurements include body weight, height, circumference, skinfold thickness, and bony widths and lengths. Anthropometry is a branch of science concerned with comparative measurements of the human body, its parts, and its proportions and composition. It is the study of measurement of the human body in terms of the dimensions of bone, muscle, and adipose tissue. Anthropometry has been used to assess gross structure and function. There are numerous factors that are responsible for the performance of a sportsman. The physique and body composition, including the size, shape, and form are known to play a significant role in this regard. At present, sportsman for superior performance in any sports is selected on the basis of physical structure and body size.

### 1.1. Statement of the Study

The problem is entitled as "An analytical study of Selected Anthropometric, Physical Fitness Variables between Softball and Cricket Players."

### 1.2. The Objective of the Study

The purpose of this study is to compare selected Anthropometric, Physical fitness variables between Softball and Cricket players of Nizamabad District.

### 1.3. Hypothesis

There may not be any significance difference between Softball and Cricket Players in relation to their Physical Fitness Variables of Selected Anthropometric measurement.

## 2. MATERIALS AND METHODS

The subjects for the present study consist of softball and cricket players. Softball and cricket players who had participated in state-level competition. Total of 60 players have been selected for the research (softball-30 and cricket-30). The subjects were the players of the Nizamabad district, within the age group ranging from 14 to 18 years.

### 2.1. Tools Used

The following independent variables that seem to contributing to the performance of softball and cricket players were selected as variables for the study.

- Anthropometric variables-Body Mass Index (BMI), Upper arm length, Forearm length, Hand length, Leg length, and Foot length.
- Physical Fitness variables- Speed (50 m. dash), Strength (Softball throw), Flexibility (Sit and reach) and Agility (Shuttle Run).

## 3. RESULT AND DISCUSSION

The Mean Value and Standard deviation (SD) Value of Selected Anthropometric, Physical Fitness Variable of Softball and Cricket Players.

The above Table 1 shows the statistically depict that the mean and SD of Softball and Cricket boys players

anthropometric variables on BMI  $18.617 \pm 1.424$  and  $19.040 \pm 1.519$ , in Upper Arm length (cm) has been found  $34.503 \pm 1.637$  and  $34.747 \pm 1.529$ , in Fore Arm Length (cm) has been found  $27.127 \pm 1.181$  and  $26.600 \pm 1.341$ , in Hand length (cm) has been found  $18.963 \pm 0.983$  and  $19.500 \pm 0.892$ , in Leg length (cm) has been found  $87.117 \pm 4.622$  and  $89.633 \pm 4.277$ , in Foot length has been found  $25.197 \pm 0.986$  and  $25.500 \pm 0.820$ . Physical fitness variables on Speed (sec.) has been found  $8.1407 \pm 1.0024$  and  $8.7873 \pm 1.1639$ , in Strength(meters) has been found  $41.7170 \pm 6.0389$  and  $44.5840 \pm 5.0146$ , in Flexibility ( ) has been found  $9.520 \pm 2.443$  and  $9.833 \pm 2.213$ , in Agility (sec.) has been found  $10.8497 \pm 1.2021$  and  $11.7423 \pm 1.4287$ . Psychological variable on Depth perception has been found  $6.73 \pm 29.98$  and  $-2.47 \pm 37.14$ . The 't' value of BMI 1.1134, Upper Arm length 0.5949, Fore Arm Length 1.6145, Hand length 2.2146, Leg length 2.1890, Foot length 1.2950, Speed 2.3058, Strength 2.0005, Flexibility 0.5206, and Agility 2.6187.

### 3.1. Findings of the Study

Descriptive statistics indicated the differences between level of Anthropometric, Physical Fitness Variables between Softball and Cricket State Level boys Players. Analysis of student *t*-test showed the significant difference between softball and cricket state level boys players. In anthropometric variables, cricket boys players are better than softball boys players viz BMI, Upper arm length, Hand length, Leg length, and Foot

**Table 1:** The statistically depict that the mean and SD

Variables	Softball players (Mean)	Cricket players (Mean)	Softball players (SD)	Cricket players (SD)	Softball players (SEM)	Cricket players (SEM)	t-value
BMI	18.617	19.040	1.424	1.519	0.260	0.277	1.1134
Upper Arm Length	34.503	34.747	1.637	1.529	0.299	0.279	0.5949
Fore Arm Length	27.127	26.600	1.181	1.341	0.216	0.245	1.6145
Hand Length	18.963	19.500	0.983	0.892	0.179	0.163	2.2146
Leg Length	87.117	89.633	4.622	4.277	0.844	0.781	2.1890
Foot Length	25.197	25.500	0.986	0.820	0.180	0.150	1.2950
Speed	8.1407	8.7873	1.0024	1.1639	0.0890	0.2125	2.3058
Strength	41.7170	44.5840	6.0389	5.0146	1.1026	0.9155	2.0005
Flexibility	9.520	9.833	2.443	2.213	0.446	0.404	0.5206
Agility	10.8497	11.7423	1.2021	1.4287	0.2195	0.2608	2.6187

SD: Standard deviation

length but in Forearm length Softball players are best. In Physical fitness variables Softball boys players are better than cricket boys players viz Speed and Agility but in Strength and Flexibility cricket players are best. In psychological variable cricket boys, players have better perception than softball boys players viz Depth Perception.

#### 4. CONCLUSIONS

Based on the results of the study the following conclusions were drawn by the investigator: The result showed that there was a significant difference between softball and cricket state level boys players for their hand length, leg length, speed, agility, strength, and no significant difference for their BMI, upper arm length, fore arm length, foot length, and flexibility. Fitness is important at all levels of the game, at the same time as being essential for top level players; it is beneficial for beginners who will improve both their effectiveness and enjoyment through good standards of fitness. Fitness enables a player to cope with the physical demands of the game as well as allowing the efficient use of his various technical and tactical competencies throughout the matches.

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# Analysis of Intercollege Women Basketball and Handball Players' Cardiovascular Endurance and Respiratory Rate

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## ABSTRACT

The purpose of the study was to analysis of Intercollege women basketball and handball players cardiovascular endurance and respiratory rate. To achieve the purpose of the study the investigator randomly selected 50 players (i.e., 25 players in basketball and 25 players in handball) from SN VanitaMaha Vidyalaya. The criterion variable selected for this study was one mail run and Manual test. The collected data were analyzed by using the independent “*t*” test, to interpret the results. The level of confidence was fixed at 0.05 levels. It was concluded that there was no significant difference found on cardiovascular endurance and respiratory rate between intercollegiate women basketball and handball players of SN VanitaMaha Vidyalaya.

**Keywords:** Basketball, Cardiovascular endurance, Handball, Reparatory rate and independent *t*-test.

## 1. INTRODUCTION

The aerobic capacity of the athlete is referred to as cardiovascular fitness. The effectiveness and efficiency of the body's ability to supply oxygen throughout the body is referred to as aerobic capacity. This is frequently seen in the individual's ability to perform at a sustained effort for an extended period of time. When most people think of Cardiovascular Fitness, they envision a long distance runner as an example of this type of fitness activity. For basketball players, this can be thought of as the ability to move up and down the court at the speed and consistency required to compete at the level demanded.

Handball, primarily an aerobic exercise, improves agility and flexibility, muscle tone, stamina, burns calories and fat, and promotes cardiovascular health. Handball has anaerobic and musculoskeletal benefits due to the intermittent high-intensity moments during competition.

The respiratory system must supply enough oxygen to working muscles during exercise (basketball), and those muscles must absorb enough oxygen to generate the energy needed to compete. Because the muscles work harder during exercise, the body uses more oxygen and produces more carbon dioxide. The increased breathing rate also allows oxygen to enter the bloodstream and be transported to the working muscles.

## 2. METHODOLOGY

The purpose of the study was to analyze the reaction time between the intercollegiate women basketball and handball players of SN VanitaMaha Vidyalaya. To achieve the purpose of the study, 50 intercollegiate players were selected as subject randomly from basketball and handball game. The subject was selected from the inter-collegiate women basketball and handball players who participated in the intercollegiate tournament of Osmania University. The age of the subjects was ranged from 18 to 22 years. The researcher selected cardiovascular endurance and respiratory rete as variables for the study. The investigator conducted one mail run test and Manual test for both variables for all the subject for both basketball and handball players and the obtained data were analyzed statistically using independent “*t*”-test to find out the significant difference between the basketball and handball players. The result was tested at 0.05 level of confidence.

## 3. RESULTS

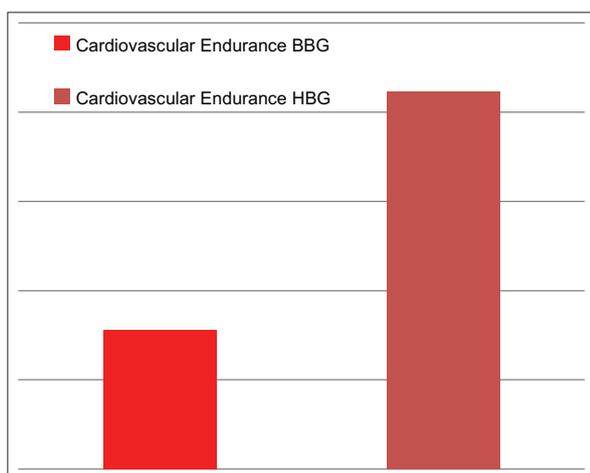
The above Table 1 reveals:

1. The mean of cardiovascular endurance for intercollegiate women basketball players was 2628.0 with a standard deviation of 222.95 and handball players was 2761.60 with a standard deviation of

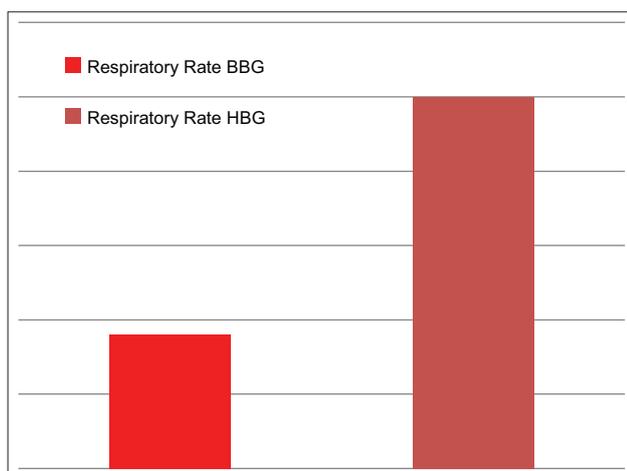
**Table 1:** Computation of 't' ratio on cardiovascular endurance and respiratory rate between the inter collegiate women basketball and handball players

S. No	Parameters	n	Groups	Pre-test		t ratio	Sig.
				Mean	SD		
1.	Cardiovascular Endurance	25	BBG	2628.0	222.95	2.07	0.93
			HBG	2761.60	233.87		
2.	Respiratory Rate	25	BBG	14.24	1.71	0.31	0.65
			HBG	14.40	1.94		

\*Significant at 0.05 levels, SD: Standard deviation



**Figure 1:** Bar diagram showing the mean difference between the intercollegiate women volleyball and hockey players on cardiovascular endurance



**Figure 2:** Bar diagram showing the mean difference between the intercollegiate women volleyball and hockey players on respiratory rate

233.87. The obtained 2 tailed "t" value 2.07 was found to be greater than the required table value of 2.05 at 0.05 level of confidence for 48degrees of freedom. This indicates that there was a significant

difference on cardiovascular endurance between the intercollegiate women basketball and handball players.

- The mean of respiratory rate for intercollegiate women basketball players was 14.24 with a standard deviation of 1.71 and handball players was 14.40 with a standard deviation of 1.94. The obtained "t" value 0.31 was found to be less than the required table value of 2.05 at 0.05 level of confidence for 48 degrees of freedom. This indicates that there was insignificant difference found on respiratory rate between the intercollegiate women basketball and handball players.

#### 4. DISCUSSION AND CONCLUSION

The results of the study reveal that there was a significant difference found on cardiovascular endurance between the inter collegiate women basketball and handball players and also when comparing the mean values of one mail test.

There was insignificant difference found on respiratory rate between the intercollegiate women basketball and handball players and also when comparing the mean values of manual test for the intercollegiate basketball and handball players the intercollegiate basketball players were slightly better than handball players.

Based on the results of the study it was concluded that there was a significant difference found in both groups on cardiovascular endurance but in respiratory rate, the results were shown no significant difference SN VanitaMaha Vidyalaya.

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# Effect of Hatha Yoga for Development of Flexibility among School Students of Medchal District

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## ABSTRACT

The purpose of the present study is to find out the effect of hatha yoga for the development of flexibility among school Girl's 8<sup>th</sup> to 10<sup>th</sup> of Medchal district. The subject was chosen at randomly.  $n = 25$  Experimental Group I and  $n = 25$  Control Group II are included in the study's sample. Sit and reach test was utilized in the study as a pre-test and post-test to determine flexibility in both groups. Experiment group I received Hatha Yoga training on alternate days for 8 weeks, while control group II received general warm-up training. The experimental group's performance on the Sit and Reach improved from pre-test to post-test. It is concluded that significant effect in the experimental group it, whereas the control group exhibits a reduction in their performance.

**Keywords:** Flexibility, Hatha yoga, Sit and reach test.

## 1. INTRODUCTION

Haṭha yoga is a branch of yoga. The Sanskrit word  $\text{हठ}$  haṭha literally means "force" and thus alludes to a system of physical techniques. In India, haṭha yoga is associated in popular tradition with the Yogis of the Natha Sampradaya through its traditional founder Matsyendranath, who is celebrated as a saint in both Hindu and Buddhist tantric and haṭha yoga schools. Almost all Hatha yogic texts belong to the Nath Siddhas, and the important ones are credited to Matsyendranath's disciple, Gorakhnath or Gorakshanath. According to the Dattatreya Yoga Sastra, there are two forms of haṭha yoga: One practiced by Yajñavalkya consisting of the eight limbs of yoga, and another practiced by Kapila consisting of eight mudras. The oldest dated text so far found to describe haṭha yoga, the 11<sup>th</sup>-century Amṛtasiddhi, comes from a tantric Buddhist milieu. The oldest texts to use the terminology of Hatha are also Vajrayana Buddhist. Later Haṭha yoga texts adopt the practices of haṭha yoga mudras into a Saiva system, melding it with Layayoga methods which focus on the raising of kuṇḍalinī through energy channels and chakras. In the 20<sup>th</sup> century, a development of haṭha yoga, focusing particularly on asanas (the physical postures), became popular throughout the world as a

form of physical exercise. This modern form of yoga is now widely known simply as "yoga."

In India, Haṭha yoga is associated in popular tradition with the Yogis of the Natha Sampradaya through its traditional founder Matsyendranath, who is celebrated as a saint in both Hindu and Buddhist tantric and haṭha yoga schools. Almost all Hatha yogic texts belong to the Nath Siddhas, and the important ones are credited to Matsyendranath's disciple, Gorakhnath or Gorakshanath. According to the Dattatreya Yoga Sastra, there are two forms of haṭha yoga: one practiced by Yajñavalkya consisting of the eight limbs of yoga, and another practiced by Kapila consisting of eight mudras. The oldest dated text so far found to describe haṭha yoga, the 11<sup>th</sup>-century Amṛtasiddhi, comes from a tantric Buddhist milieu. The oldest texts to use the terminology of Hatha are also Vajrayana Buddhist. Later haṭha yoga texts adopt the practices of haṭha yoga mudras into a Saiva system, melding it with Layayoga methods which focus on the raising of kuṇḍalinī through energy channels and chakras.

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**Table 1:** This study shows that experimental Group I flexibility are having better flexibility compare to the control group in sit and reach test sit and reach test measured in near inches

Variable	Sample	Group	Mean	SD	Std error mean	t value
Sit and reach test	n=25	Experimental group Pre test	6.0470	3.19620	13539	8.652
		Experimental group Post test	7.7560	3.35912		
Sit and reach test	n=25	Control group Pre test	6.8400	3.66224	10212	1.332
		Control group Post test	6.8300	3.44336		

\*Significant at 0.05 level, SD: Standard deviation

Mugberia Gangadhar Mahavidyalaya, Purba Medinipur, West Bengal, India (2015) study was to investigate the effect of Hatha yoga, Aerobic training and combination of hatha yoga and aerobic training on physical fitness of college level students. Method: Subjects were divided into four equal groups on random basis (Groups A, B, C, and D) consisting of 25 subjects in each group. Three out of the four groups were given experimental treatments, i.e., aerobic training (Group-A), Hatha yoga (Group-B), and combination of hatha yoga and aerobic training (Group C) and while the remaining one group (Group-D) was designated as control group. Results: Aerobic training, hatha yoga, and combination of aerobic and hatha yoga is found to be more significant difference in physical fitness of college mail students. Conclusion: The aerobic training is found to be more effective in changing the physical fitness in comparison to the effect of Hatha yoga training and combination of Hatha yoga and aerobic training on aforesaid physical fitness. Keywords: hatha yoga, aerobic training, physical fitness, college male students.

## 2. OBJECTIVES OF THE STUDY

The objective of the study is to find out the effect of Effect hatha yoga for development of flexibility among school Girl's 8<sup>th</sup> to 10<sup>th</sup> standard of Medchal district.

## 3. HYPOTHESIS

It was hypothesized that there would be significant difference in effect of hatha yoga for development of flexibility among school Girl's 8<sup>th</sup> to 10<sup>th</sup> standard of Medchal district.

## 4. METHODOLOGY

This study was concluded to find out the Effect of hatha yoga Training for the Development of Selected physical fitness flexibility among School Girls. This was an experimental study. For concluded this study,  $n = 50$

school students of 8<sup>th</sup> to 10<sup>th</sup> standard were selected as subjects'= 50 divided into two groups experimental Group I and Controlled Group II.

### 4.1. Tools

Sit and Reach Test

Purpose: to measure the flexibility.

### 4.2. Equipment Required

Sit and Reach box (or alternatively a ruler can be used, and a step or box).

## 5. RESULTS AND DISCUSSION

In Table 1 the Mean Value Sit and Reach test of Experimental Group pre-test 6.0470 and post-test 7.7560 and control group pre-test 6.8400 and post-test 6.8300 is the average mean of experimental group in Sit and Reach test is more than the control group.

It was found that the experimental group are having good flexibility compare to the control group Hence, it is also concluded that Hatha yoga exercise is very important to improve their performance.

## 6. CONCLUSIONS AND DISCUSSION

The result of the study clearly showed that the effect of hatha yoga training on school Girl's level students were positively significant. The result proved that hatha yoga is very helpful to improve physical fitness of the students and designing quality and effective training program.

## 7. RECOMMENDATIONS

This type of study is useful to the coaches and physical education teachers to train the students as per the requirement of the performance variable for the better performance in sports. Conducting a similar study, by

adding other performance factors such as goal setting, achievement motivation, and concentration.

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# Effect of Speed Training Program on Selected Skill Related Physical Fitness Variables of Inter-collegiate Men Kho-Kho Players

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## ABSTRACT

This study was designed to investigate the effect of speed training program on selected skill-related physical fitness variables of inter-collegiate men kho-kho players. To achieve the purpose of the study thirty men Kho-Kho players were selected from Sri Venkateswara B.P.Ed College Dubbak. Their age ranged between 18 and 25 years. The subjects were randomly assigned into two equal groups ( $n = 15$ ). Group-I underwent speed training (Experimental group) and Group- II was acted as a control group ( $n = 15$ ). The speed training was given to the experimental group for 3 days per week (Monday, Wednesday, and Friday) for the period of eight weeks. The control group was not given any sort of training except for their routine work. The speed (50 meters dash), agility (shuttle run rest) cardiorespiratory endurance (12 mins cooper's run and walk test) were measured by standardized tests. The data collected from the subjects were statistically analysed with "t" ratio, to find out significant improvement if any at 0.05 level of confidence. The result of the speed, agility, and cardiorespiratory endurance improved significantly due to speed training with the limitations of diet, climate, lifestyle status, and previous training. The results of the present study coincide with the findings of the investigation done by different experts in the field of sports sciences.

**Keywords:** Agility and cardiorespiratory endurance, Speed training, Speed.

## 1. INTRODUCTION

Speed will be outlined as "the ability to finish a movement among a short period of time." Therefore, to improve speed, players should develop the ability to accelerate and slow down. To enhance these abilities, players and coaches should take three elements into consideration: Reaction speed the ability to reply quickly to different types of signals. Contraction speed of the muscles-the ability of the muscles to make explosive movements. Frequency of body movements the ability to execute body movements correctly at different speeds Agility is a quality that is often thought to be at a premium among "talented" players. (Wilmore Costill 1994) Speed is that the quickness of movement of a limb, whether this is the legs of a runner or the arm of the shot putter. Speed is an integral part of each sport and may be expressed as

anyone of, or combination of, the following: most speed, elastic strength (power), and speed endurance. Speed is influenced by the athlete's mobility, special strength, strength endurance, and technique (Doug Lentz and Jay Dawes 2005).

The hypothesis argued in this paper is that inter-collegiate men Kho-Kho players can significantly improve the parameters of Speed (50 meters dash), agility (shuttle run rest) cardiorespiratory endurance (12 mins cooper's run and walk test) by combining normal technical and tactical sessions with a speed training program over a consecutive 8 weeks period. Till date no study has been therefore, the object of this study was to investigate the changes in the parameters produced during 8 weeks of speed training in 30 inter-collegiate men Kho-Kho players.

## 2. DESIGN

The evaluated physical parameters were speed was assessed by 50 meters dash and the unit of measurement was in seconds, Agility was assessed by shuttle run rest and the unit of measurement was in seconds and cardiorespiratory endurance was assessed by 12 mins cooper’s run and walk test and the unit of measurement was in meters. The variables were measured at baseline after 8 weeks of speed training were examined.

## 3. METHODS

### 3.1. Experimental Approach to the Problem

We selected 30 inter-collegiate men kho-kho players from Sri Venkateswara B.P. Ed College Dubbak. The subjects were randomly assigned into two equal groups namely, speed training (experimental group) ( $n = 15$ ) and control group ( $n = 15$ ). The speed training was given to the Experimental group for 3 days per week (alternate days) for the training period of eight weeks. The control group was not given any type of training except their routine.

### 3.2. Statistical Analysis

The collected data on the above said variables due to the effect of speed training after regular physical exercise was statistically analyzed with “t” test to find out the significant improvement between pre and post-test. In all cases, the criterion for statistical significance was set at 0.05 level of confidence ( $P < 0.05$ ).

### 3.3. Training Programme

The training program was lasted for 45 min for a session in a day, 3 days, in a week for a period of 8 weeks duration. These 45 min included 5 min warm-up, 15 min regular physical exercises, speed training for 20 min and 5 min warm down. Every two weeks of training 5% of the intensity of load was increased from 65% to 80% of the workload. The volume of speed training is prescribed based on the number of sets and repetitions. The speed training exercises are modified push-up, modified sit-up, sit-ups for abdominal muscles, and back lift for strengthening back, and squats for thigh. Speed Squats, Ladder drills, Hurdle drills, Agility Ball drills, Cone drills, Box drills, Medicine ball drills, and bounding exercise.

Table 1 reveals the computation of mean, standard deviation and “t” ratio on selected skill-related physical fitness variables, namely, speed, agility, and cardiorespiratory endurance of the experimental group. The obtained “t”

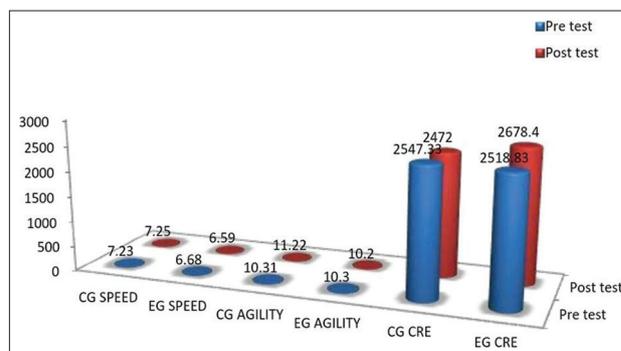
**Table 1:** Computation of “t” ratio on selected skill-related physical fitness variables of inter-collegiate men kho-kho players on experimental group and control group (Scores in numbers)

Group	Variables		Mean	Standard deviation	Mean Difference	Standard error mean	t-ratio
Experimental Group	Speed	Pre test	6.68	0.30	0.09	0.023	4.14*
		Post test	6.59	0.30			
	Agility	Pre test	11.2247	1.53121	1.016	.28489	3.566*
		Post test	10.2087	.69005			
	Cardio respiratory endurance	Pre test	2518.83	349.25952	-159.5667	48.42120	3.295*
		Post test	2678.40	392.3719			
Control group	Speed	Pre test	7.23	0.33	0.018	0.034	0.51
		Post test	7.25	0.31			
	Agility	Pre test	10.3173	.74193	0.0126	.23340	0.054
		Post test	10.3047	.59136			
	Cardio respiratory endurance	Pre test	2547.33	369.873	75.3333	52.90483	1.424
		Post test	2472.00	378.520			

significant level 0.05 level (degree of freedom 2,14,1 and 14)

ratio on speed, agility, and cardiorespiratory endurance were 3.44, 3.56, and 3.29, respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained “t” values were greater than the table value it was found to be statistically significant.

Further the computation of mean, standard deviation, and “t” ratio on selected skill-related physical fitness variables, namely, speed, agility, and cardiorespiratory endurance of control group. The obtained “t” ratio on speed, agility, and cardiorespiratory endurance was 1.53, 0.054, and 1.42, respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained “t” values were lesser than the table value it was found to be statistically not significant.



Bar diagram showing the mean value on selected skill-related physical fitness variables of inter-collegiate men Kho-Kho players on experimental and control group.

#### 4. DISCUSSION AND FINDINGS

The present study experimented the effects of speed training program on speed, agility, and cardiorespiratory endurance of inter-collegiate men kho-kho players. The results of this study indicated that endurance training improved speed and muscular strength and endurance. The findings of the present study had similarity with the findings of the investigators referred in this study. Gokul Parmar et al., (2014) effect of Playing Kho-Kho on improving the speed, endurance, flexibility, agility, and strength of adolescence boys. Manikandan (2014) efficacy of Speed and Endurance Training on improve speed and strength endurance of University Women Handball Players. Bloomfield et al., (2007) Effective Speed and Agility Conditioning Methods improve speed and agility parameters.

From of result of the present study, it is speculated that the observed changes in speed, agility, and cardiorespiratory endurance may properly be designed speed training which are suitable for men kho-kho players at intercollegiate level.

#### 5. CONCLUSIONS

Based on the results of the study following the conclusion has been arrived.

1. It was concluded that 8 weeks of speed training program produced significant improvement in speed of men Kho-Kho players.
2. 8 weeks of speed training program produced significant improved the agility of men Kho- Kho players.
3. It was also concluded that 8 weeks of speed training program produce significant improvement in cardiorespiratory endurance of men Kho-Kho players.

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# Innovative Teaching Methods in Physical Education for Better Learning

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## 1. INTRODUCTION

Physical education (PE) program has been creating, implementing, and evaluating in promoting lifelong wellness among the school children. Students learn how to make healthy food choices, reduce time playing video games, and watching television.<sup>[1]</sup> Previously, the PE program has been removed from the school curriculum as schools everywhere strive to improve the academic performance of their students, many have cut PE and recess periods to leave more time for sedentary classroom instruction.<sup>[2]</sup> Over the years, researchers and educators have revised their PE curriculum, equipment's, and training programs to meet the six National Association of Sport and PE (NASPE) guidelines. In India, the Central Board of School Education has made PE an elective subject in school curriculum. The idea of including PE class in school is to make the students healthy and teach them a healthy lifestyle. The aim of the study is to highlight the latest strategies, age-appropriate equipment's, new curriculum, used in the field of PE program for better learning and developing health among young children through physical activity. For this purpose, new PE activities, equipment's, PE curriculum in the field of PE obtained through Google search, with the keywords PE curriculum, PE equipment's, age-appropriate PE program, assessment in PE, strategies in PE, and curriculum guidelines for PE; as well the experience by researchers were expressed in this article.

### 1.1. Innovative Program in PE

Until date, the PE program in some schools in India has not really changed its methodology, wherein children play a particular sport by sharing one ball in a huge group. Moreover, the drawback is that not every child gets the opportunity to play. With the introduction of new curriculum, age-appropriate equipment's, teaching techniques, etc., the PE class has become more

interesting, attractive, and more valuable for the students. Researchers and educators are trying to revise their PE curriculum and training programs to meet the six NASPE (National Association of Spore standing of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities, (1) demonstrates competency in motor skills and movement patterns needed to perform a variety of physical activities, (2) demonstrates unachieved and maintains a health-enhancing level of physical fitness, (3) participates regularly in physical activity, (4) at and PE) standard guidelines: (5) exhibits responsible personal and social behavior that respects self and others in physical activity settings, and (6) values physical activity for health, enjoyment, challenge, self-expression, and/or social interaction. Sports, Play, and Active Recreation for Kids (SPARK), a pioneer organization in the United States, has been contributing in the systemic reform of PE since 1989. In addition to the six guidelines of NASPE, SPARK supports Healthy People Goals 2010: (a) PE classes make every effort to engage students in moderate to vigorous physical activity (MVPA) at least 50% of their class time without sacrificing academic achievement or student enjoyment of PE, (b) SPARK focus on positive health outcomes of students. These include physical fitness and sports skills, (c) SPARK programs include strategies that promote behaviour and environmental change techniques, and (d) SPARK also follows As soon as possible (ASAP) activity to avoid the lengthy instruction in PE class (SPARK).<sup>[3]</sup> In India, many organizations such as LEAPSTART (FIT-KIDS), EDUSPORTS, KOOH SPORTS, SPORTS MENTOR, PE Foundation of India, Youth Affairs and Sports, National Association of PE and Sports Science, and all the physical educators and health educators are also taking initiatives to develop PE program to meet the standard guidelines. Recently, Sports Authority of India in collaboration Global Trust has launched a new scheme in India called the School Sports Promotion

Foundation in five sports discipline, namely, athletics, football, volleyball, basketball, and cricket for talent identification in school children. Its main objective is to provide sports education in children from the grassroots level. Sports education includes basics movement skills, locomotion, basic skills of the games, rules and regulations of the games, nutritional knowledge, and team cohesion.<sup>[4]</sup>

## 1.2. Teaching Strategies

New teaching strategies such as ASAP active games were introduced in PE class to keep the students active ASAP, which is one of the physical educator's objectives. In many traditional PE classes, students arrive at the activity area only to stand or sit and listen to lengthy instructions (SPARK). This wastes valuable activity time and should, therefore, be done sparingly. This section includes a variety of enjoyable activities to begin activity immediately. ASAP activities use little or no equipment, are fun and challenging, and promote health-related fitness. They quickly involve all students in MVPA with few instructions or rules to slow them down. It reduces wasting of time in giving lengthy instruction in the class. Playground expectation cards, skills cards, task cards, etc., were also used on the play field to reduced lengthy instructions. Another strategy used in PE class is 80/20 rules, which means that the PE teacher tries to keep the students active 80% of class duration. Music is also used in PE classes to make more fun activities which interest the students and are also used as start and stop signals. Limited space activities like BINGO GAMES are introduced which allowed the PE class to run in limited space since space constraint is one of the most common issues in today's school environment. Whether it be inclement weather (rainy day, smog warnings, extreme heat, etc.) or the usual activity area is unavailable (assembly in the gym, a book fair in the multipurpose room, the blacktop is getting re-paved, etc.), every so often, the only choice of space for PE is a classroom or other small area. To involve the parents in PE activities, HOME-PLAY games were introduced in PE class which keep the child active at home and during vacation. It is a take-home page with interesting facts on 1 side, and fun challenges on the other. MVPA is also introduced during the PE classes to keep the students ready for the next challenges. For example, chasing and fleeing skills are used in many of the most popular games played by children. By changing the locomotor skill, the method of tagging, the task students perform to re-enter the game after being tagged, and/or the ways in which they may seek safety, you can create enough

tag games to last a lifetime. Chasing and fleeing games are usually short in duration (5–10 min), and use little or no equipment. The games in this unit provide opportunities for students to develop chasing, fleeing, and spatial awareness skills while promoting health-related fitness in enjoyable ways. The activities are designed to include and challenge all students' physical skills, while maintaining enjoyable, healthpromoting, moderate-to-vigorous physical activity during class.

## 1.3. Latest Equipment's

The equipment is one of the backbones of PE classes. In PE classes, it should be age-appropriate and safe to use for the child. Bevans et al. suggested that age-appropriate equipment increases pain-free practice, increases students' chances for active participation in the class, and maximizes the amount of time devoted to PE during which children are physically active. Children get maximum activity when every child has a piece of equipment and does not have to wait a turn. For early childhood, equipment's such as scarf and balloon are used in learning catching and throwing lessons. In K-2 grade students, bean bags and fluff ball are used which falls quickly to gravity and the movement becomes fast. A foam ball is another equipment introduced to teach kicking and trapping in K-2 and 3-6 children. Fun activities such as parachute and manipulative games which teach them teamwork and develop their upper body strength were introduced to them. All the objects are safe to play and does not hurt the child.

## 1.4. Latest Curriculum

The NASPE is now endorsing the concept of Comprehensive School Physical Activity Programs (CSPAP) that are designed to increase daily levels of physical activity for all school-age children and youth. This new CSPAP curriculum model called Health Optimizing PE (HOPE) that can be used to help Primary to High School (P-12) students to acquire knowledge and skills for lifelong participation in physical activity that contributes to optimal health benefits. A CSPAP intends to provide expanded opportunities for physical activity beyond regularly scheduled PE time-including before, during, and after school, as well as opportunities outside of school (e.g., at home and in the community. HOPE aims at developing the public health goal for students to accrue adequate amounts of current physical activity and be prepared for an active lifestyle in adulthood. It involves all the socioecological factors that affect the child so as to achieve the optimal health benefits. They

are individual, interpersonal, organizational, community, and public policy. Another teaching curriculum called Teaching Games for Understanding (TGFU) is developed in America to elicit the players'/students' tactical awareness and skill development from situated learning experience enabled by the Teacher/Coach/PE ist. Naomi Hart (2010) discussed the model of TGFU as (a) game participation: The learning in PE starts with games participation in a modified game or real games. At this stage the formative assessment takes place, (b) Game appreciation: Through gameplay students are given the chance to enjoy and experience learning, (c) tactical awareness: Through gameplay students are encourage to identify attacking and defending strategies and implement successful tactical action, (d) making an appropriate decision: In a dynamic situation, students make real-time decisions. These could be with or without the ball, (e) skill execution: Do the students have the ability to convert their decisions into actions? Can they execute the correct skill to enable their team to succeed? (f) Performance: Students take part in full or modified game applying all new knowledge and skills. This is the time for summative assessments. A detail on TGFU was described by Stolz and Pill<sup>[9]</sup> and Griffin et al. (2005) in the PE Review journals.

## 2. DISCUSSION

According to the U.S. Olympic Committee, the university's athletes are dominating the U.S. Olympic Team in which the U.S. has competed since 1912. These Olympians are not born, but they are made through their lifetime participation in research-based PE program from school. In the west, children are taught the importance of PE from the grassroot level. A progressive structure is being followed so as to inculcate the basic techniques of movements, skills, and a sense of fitness right from early childhood. PE program has its unique benefits and its program fits into each other. An example of how a progressive structure PE curriculum intertwine and integrate one into other from early childhood, kindergarten, and grade 3–6 program can be explained by teaching the skills of throwing and catching. In early childhood, a child would be exposed to the throwing and catching of a balloon. The weight of descent is slower and gives time to the child to reflex while trying to catch the balloon. As the child gets more comfortable with the balloon, the object is replaced with a scarf. Since the scarf falls quicker to gravity, the personal space of the child is maintained and safely guarded. In the program for the age group ranging from kindergarten to Grade 2, a slightly heavier object (e.g.,

a fluff ball) is used. Since the fluff ball is heavier, it will fall faster, which is again age-specific and is safer for the child. Therefore, instead of using a big ball to teach children of this age group, a fluff ball is safer and will save their finger from getting hurt. The primary focus is to inculcate gross motor skills in this age group. This activity is a progression of the movement techniques learned by the children in their early childhood. In this level, the movement is more precise and prepares them to learn higher techniques as the basic techniques of movements will help them in formulating to a better motor program. In the curriculum for the age group of grades 3–6, the action is more defined into a more appropriate throwing action. At this stage, tennis ball is used. As they get more comfortable with the tennis ball, the children can be introduced to partners so that the skills of the children are groomed and developed to improve their potential, similar to that of playing cricket wherein the ball is actually thrown back and forth to learn catching and throwing skills. By the time, the child goes to the entire progression through the PE program and the child skills are hold at the highest level to be implemented in the future.

## 3. CONCLUSIONS

New curriculum, age-appropriate equipment's, teaching techniques, etc., should be introduced in all the schools to make the child engage in physical activity for at least 60 min/day. However, the use of innovative equipment's, strategies, and curriculum in PE classes must be research-based and need for the children. PE program should be one of the major subjects in school's curriculum since the physical educator has a great role to play in the grassroot level to groom a child into making a potential and highly skilled professional.

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# A Comparative Study of Agility and among Long Jumpers and Sprinters of Gulbarga District

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## ABSTRACT

Long jump is a track and field event in which athletes combine speed, strength and agility in an attempt to leap as far as possible from a take off point. Sprinting is running over a short distance in a limited period of time. There are three sprinting events which are currently held at the Summer Olympics and outdoor World Championships: The 100 meters, 200 meters, and metre Objective of this study was to find out the Agility and among Long Jumpers and Sprinters of Hyderabad District in Telangana, India. The sample for the Study consists of 30 Male sprinters and 30 Male Long Jumpers. Agility Shuttle Run Conducted to find out the agility among sprinters and Long Jumpers a. The statistical technique that will be utilized for the investigation will be descriptive statistics to find out the significant results of the study. The Mean of Sprinters is 12.35 and Mean of Long jumpers is 13.75 in Shuttle Run Agility Test hence the Sprinters are having better agility compare to the long jumpers. Speed and Agility are very important for Sprinters and Long Jumpers.

**Keywords:** Agility, Long jumpers, Shuttle run, Sprinters.

## 1. INTRODUCTION

The long jump is a track and field event in which athletes combine speed, strength and agility in an attempt to leap as far as possible from a take off point. Sprinting is running over a short distance in a limited period of time. There are three sprinting events which are currently held at the Summer Olympics and outdoor World Championships: the 100 meters, 200 meters, and 400 meters.

The long jump has been part of modern Olympic competition since the inception of the Games in 1896. In 1914, Dr. Harry Eaton S has recommended the "running broad jump" as a standardized track and field event for women.

Sprinting is running over a short distance in a limited period of time. It is used in many sports that incorporate running, typically as a way of quickly reaching a target or goal, or avoiding or catching an opponent. Human physiology dictates that a runner's near-top speed cannot be maintained for more than 30–35 s due to the

depletion of phosphocreatine stores in muscles, and perhaps secondarily to excessive metabolic acidosis as a result of anaerobic glycolysis.

In athletics and track and field, sprints (or dashes) are races over short distances. They are among the oldest running competitions.

Chaouachi *et al.* (2013), investigated the effective of plyometric training and combination of plyometric and balance training with children. Subjects were equally assigned to three groups plyometric (n-14) combination of balance and plyometric training (n-14), and a control group (n-12). Before and following an 8-weeks training period, tests assessed lower body strength (1 repetition maximum leg press), power (horizontal and vertical jumps, distance to triple hop, reactive strength, leg stiffness), running speed (10 m and 30 m sprint), static and dynamic balance (Standing Stork Test and Star Excursion Balance Test), and agility (shuttle run).

The results showed that the combination of balance and plyometric training boost to a greater level; activities

**Table 1: The mean of shuttle run of long jumpers and sprinters**

Shuttle Run	N	Mean	Standard Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Long Jumpers	30	13.75	0.319	0.058	22.50	58	0.000
Sprinters	30	12.35	0.167	0.030			

such as 10 m sprints and shuttle runs. Combination of balance and plyometric training could be an important consideration for reducing the high velocity impacts of plyometric training for children.

### 1.1. Objectives of the Study

The objective of the study is to find out the a comparative study of agility among long jumpers and sprinters of Gulbarga district.

### 1.2. Sample

The sample for the Study consists of 30 Male sprinters and 30 Male Long Jumpers.

## 2. RESEARCH METHODOLOGY

The sample for the Study consists of 30 Male sprinters and 30 Male Long Jumpers. The Shuttle Run Test was conducted to find out the Agility among sprinters and Long Jumpers.

### 2.1. Agility Shuttle Run Test

This test describes the procedure as used in the President's Challenge Fitness Awards. The variations listed below give other ways to also perform this test.

### 2.2. Purpose

this is a test of speed and agility, which is important in many sports.

Equipment required: Wooden blocks, marker cones, measurement tape, stopwatch, non-slip surface.

### 2.3. Procedure

This test requires the person to run back and forth between two parallel lines as fast as possible. Set up two lines of cones 30 feet apart or use line markings, and place two blocks of wood or a similar object behind one of the lines. Starting at the line opposite the blocks, on the signal "Ready? Go?" the participant runs to the other

line, picks up a block and returns to place it behind the starting line, then returns to pick up the second block, then runs with it back across the line.

Scoring: Two or more trails may be performed, and the quickest time is recorded. Results are recorded to the nearest tenth of a second.

## 4. RESULTS

In Table 1 the Mean Scores of the Long jumpers is 13.75, Standard Deviation is. 319 and Standard Error. 058 and Mean score of the Sprinters is 12.35, Standard Deviation is. 167 and Standard Error is 0.30. The t value is 22.50.

The Mean of Sprinters is 12.35 and Mean of Long Jumpers is 13.75 hence the Sprinters are having better agility compare to the long jumpers.

Agility is defined as an athlete's ability to change direction quickly and appropriately while maintaining maximal speed, balance and power.

Agility and footwork drills will also make you quicker as a basketball player, the more efficient your movements are the quicker you will be. Learn how to not waste movement and become light on your feet with the footwork/agility workouts below.

## 5. DISCUSSION

The Mean of Sprinters is 12.35 and Mean of Long jumpers is 13.75 in Shuttle Run Agility Test hence the Sprinters are having better agility compared to the Long Jumpers.

## 6. CONCLUSIONS

It is concluded that Sprinters are having the better agility compare than Long Jumpers. I clearly mention that agility is very important fitness component to enhance the performance not only in the field of athletics, agility paly curial role in all the sports and games.

## 7. RECOMMENDATIONS

- It is recommended the agility training must be given to the sprinters and Long Jumpers
- It is recommended the agility training must be given to the Athletics Events
- Similar Studies can be conducted in Female Athletes
- Similar Studies can be conducted in different age groups
- This Studies is helpful to Coaches, Trainers to plan the coaching Programme to improve the motor abilities among Sprinters and Long Jumpers.

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# Ascendancy of Pranayama Practices to Improve Breath Holding Time among Hockey Players

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## ABSTRACT

The purpose of the study was to find out the Ascendancy of pranayama practices to improve breath-holding time among hockey players. For this purpose, 20 Female college students aged 18–22 were randomly selected from the Gymkhana ground, Hyderabad, Telangana, India. The selected participants were divided into two groups of ten each. Group A “pranayama practice” training and Group B’ acted as the control group. Group “A” underwent yoga pranayama practices 5 days a week, and each session lasted for an hour for 4 weeks. The Control group was not exposed to any specific training, but they participated in regular activities. The Nostril clip method was used to assess Group A’s breath-holding test as variables. The pre and post-test data were collected on selected criterion variables before and immediately after the training program. The pre and post-test scores were statistically examined by the Analysis of Co-Variance (ANCOVA) for the selected variable. It was concluded that the pranayama practice training group had shown significant improvement in breath-holding time. However, the control group had not shown any significant progress on any selected variables, such as breath-holding.

**Keywords:** Breath holding, Pranayama.

## 1. INTRODUCTION

In Bhagavad Gita, Sri Krishna explains to Arjuna the meaning of Yoga as a deliverance from contact with pain and sorrow. It is said when mind, intellect, and self (Ahankāra) are under control, freed from restless desire so that they rest in the spirit within, a man becomes one in communion with God. A lamp does not flicker in a place where no winds blow, so it is with a yogi who controls his mind, intellect, and self-being, absorbed in the spirit within.

### 1.1. Prāṇāyāma

Prāna means breath, respiration, life, vitality, wind, energy or strength. It is also generally used to indicate vital breaths. It is the force in all things, whether animate (living) or inanimate (non-living).

Āyāma means length, expansion, restraint, or stretching. Thus, Prāṇāyāma is an extension of breath and its

control. It controls overall breathing functions, namely inhalation, retention or holding the breath and exhalation. The different practices of Prāṇāyāma involve various techniques.

These practices bring control over the respiratory impulses, which form one of the flow channels of autonomic nerve impulses. Holding the breath for a prolonged and comfortable time is an essential technique of Prāṇāyāma. However, in the initial practice, the breath-holding phase is completely avoided, and the emphasis is on the controlled inhalation and exhalation with a time ratio of 1:2 between them.

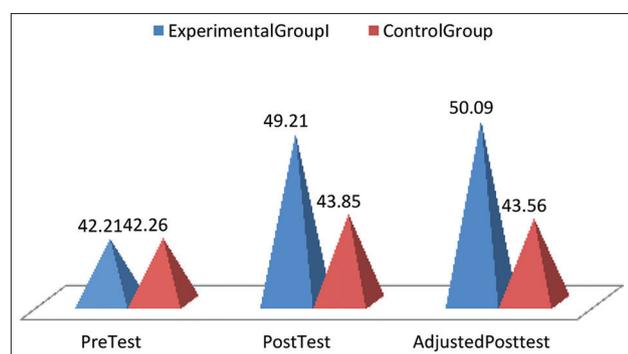
The exhalation phase is so controlled that the following inhalation phase is not affected in its slow and controlled inhalation.

There are many varieties of prāṇāyāmas which use different permutations and combinations of breathing techniques through one or two nostrils or sometimes inhalation through the mouth.

The Anuloma, Viloma pranayama are described in the Hatha Yoga Pradipika.

### 1.2. Benefits of Prāṇāyāma

Prāṇāyāma regulates the breath, relaxes the body and provides proper oxygen to all parts of the body and removes body toxins. Prāṇāyāma develops concentration and clarity of thought. It helps in increasing the psychological and physical powers. It is the path to more profound relaxation and meditation. It is a scientific method of controlling the breath. It gives completely relaxes the nervous system. It provides relief from pain caused by the compression of nerve endings. It helps in increasing oxygen supply to the brain, which in turn helps to control the mind.



**Figure 1:** Pre-test, post test and adjusted post test mean values of experimental group and control group on breath holding time

**Table 1:** Means and dependent “t”-Test for the pre and post tests on breath holding of experimental and control groups (in seconds)

Criterion variables	Mean	Experimental group	Control group
Breathholding	Pretest	42.21	42.26
	Posttest	49.21	43.85
	“t” test	12.46*	1.28

\*Significant at 0.05 level. (Table value required for significance at 0.05 level for “t”-test with df 9 is 2.26)

**Table 2:** Computation of mean and analysis of covariance on breath holding time of experimental and control groups

	Experimental group	Control group	Source of variance	Sum of squares	df	meansquare	F
Breathholding (adjusted post mean)	50.09	43.56	BG	58.39	1	58.39	25.17*
			WG	39.44	17	2.32	

\*Significant at 0.05 level. Table value for df 1, 4.45

## 2. PURPOSE OF THE STUDY

The purpose of the study was to find the impact of pranayama practices on breath-holding duration among hockey players.

## 3. METHODOLOGY

Twenty female college students aged 18–22 were randomly selected as subjects from the Gymkhana Ground, Hyderabad, Telangana, India. The selected participants were randomly divided into two groups. Group “A” Anuloma Viloma pranayama practice training and Group “B” acted as the control group. Group “A” underwent pranayama practice for 5 days a week, and each session lasted for an hour for 4 weeks. However, the control group was not exposed to any specific training, but they participated in the regular schedule.

In the Anuloma Viloma pranayama technique, we sit in Sukhasana, left hand in Chin mudra and right hand in Naasikagra mudra, close the right nostril with the thumb finger, inhale through the left nostril slowly and deeply. Then open the right nostril and close the left nostril with the ring finger and exhale through the right. Once again, inhale through the right nostril and exhale through the left nostril. It completes one cycle. Each set has twenty such processes.

The breath-holding was assessed by the Nostril Clip method test as variables. The pre and post-test data were collected on selected criterion variables before and immediately after the training program. The pre and post-test scores were statistically examined by the ANCOVA for the selected variable. The level of significance was fixed at a 0.05 level of confidence, which was considered appropriate.

## 4. ANALYSIS OF DATA

From table I, the dependent “t”-test values of breath-holding time between the pre and post-tests means of experimental groups were more significant than the table

value 2.26 with df nine at 0.05 level of confidence, it is concluded that the experimental group had significant improvement in the breath-holding time compared to control group.

#### 4.1. Computation of Analysis of Covariance

The descriptive measures and the results of analysis of covariance on the criterion measures are given in the following tables.

The above table indicates that the adjusted mean value on the breath-holding time of experimental and control groups were 50.09 and 43.56, respectively. The obtained F-ratio of 25.17 for the adjusted mean was more significant than the table value 4.45 for the degrees of freedom 1 and 17 required for significance at a 0.05 level of confidence. The result of the study indicates that there was a significant difference among experimental and control groups on breath holding time.

### 5. CONCLUSIONS

1. There was a significant improvement in breath-holding time due to the impact of Pranayama practice on breath holding time and also remarkable improvement in playing ability seen among the Experimental group hockey players.

Active, deep pranayama practice is a very effective cardiorespiratory exercise. It can recruit up to 89 muscles, 36 spinal nerves, and several peripheral and central chemoreceptors, volume receptors. Even possibly the adrenal and thyroid glands (in releasing epinephrine and thyroid hormones). Thus, the heart's health improves, and the heart rate and blood pressure are bound to reduce with the prolonged practice of pranayama.

2. However, the control group had not shown any significant improvement on any of the selected variable.

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# Effect of Selected Yogic Exercises on Holistic Health among School Level Volleyball Players

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## 1. INTRODUCTION

Volleyball is a game played all over the world. It is the one of the more popular game. Since it is well known game, it demands one to be physically and mentally fit in order to perform well in the game. A lot of varied skills are involved in the game of volleyball such as the serve, passing, and blocking... yoga is very beneficial in the flexibility and concentration of players, and therefore, it can be a boost in enhancing every individual's game. It has a focus on both mental and physical fitness. In highly tense situations it is difficult for the mind to focus and in such a case, proper breathing that helps the player to stay focused is essential.

## 2. YOGA

The word yoga comes from the Sanskrit word. It is meaning "yoke" or "union." It's a group of physical, mental, and spiritual practice or disciplines. Yoga has all kinds of benefits for volleyball athletes, which is so many players who have reached the highest level of the game work it into their routine, whether it is in the morning after they wake up, before or after practice, or as a part of meditation in the evening.

## 3. HOLISTIC HEALTH

The term holistic health is used many times in literature with a variety of different connotations. Holism also has its origin in the Greek word holos, which means "whole." Holism is not about any cult or religion, rather, it is an approach that looks at things in a total perspective. As far as we know, it was first used in 1926 by Jan Smuts, in his book Holism and Evolution. The super specialization of scientific disciplines has created a silos mentality-leading to a myopic understanding

of knowledge and compromising our ability to deal with the most obstinate problems. Although Jan Smuts used evolution as an example to explain his concept of holism, this book actually became a trigger for systems thinking, and complex, interdisciplinary, and integrative approaches in science.

## 3. METHODOLOGY

The purpose of the study is to find out the effect of selected yogic exercises on holistic health among school-level volleyball players. To achieve the purpose of the study, thirty school boy's randomly selected from ZphsKonthanpally, Shivampet, Medak District, Telangana state, India were selected as subject for this study. They play volleyball at inter-school level competitions. Their age ranged between 13 and 15 years. They were further divided into two equal groups of fifteen, namely, group I (yogic exercises) group II (control group). Group I underwent yogic exercises and group II underwent control group. The experiment or yogic exercises group participated the training for a period of 6 weeks to find out the outcome of the training exercises and the control group did not participate in any training program. The variable to be used in the present study was collected from all subjects before they have to treat with the respective treatments. After completion of treatment, they were tested again as it was in the pre-test on all variables used in the present study. This test was assumed as post-test. Paired "t" test was applied to test the significance of mean gains made in each of the variables by the experimental groups to test the experimental groups. To test the obtained results on variables, level of significance 0.05 was chosen and considered as suffering for the study.

The above Table 1 shows that the mean values of pre-test and post-test of control group on breath holding

**Table 1:** Analysis of “t” ratio for the pre-tests and post-tests of control and experimental group on breath holding time

Variables	Group	Mean		SD		“t” ratio
		Pre	Post	Pre	Post	
Breath Holding Time	Control	41.59	42.01	8.79	7.31	0.106
	Experimental	42.26	44.4	9.09	7.46	2.12*

\*Significance at .05 level of confidence, SD: Standard deviation

time were 41.59 and 42.01, respectively. The obtain “t” ratio was less than the required table value of 2.15 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically insignificant. The mean value of pre-test and post-test of the experimental group on breath holding time were 42.26 and 44.4 respectively. The obtained ‘t’ ratio was 2.12 since the obtained “t” ratio was greater than the required table value of 2.15 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The results of

the study showed that there was a significant difference between pre-test and post-test in breath holding time.

#### 4. CONCLUSION

The results of the study showed that the experimental group improved in breath holding time and their holistic health significantly after the 6 week yogic exercises among school level boys’ volleyball players.

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# A Case Study on an Eminent Cricketer and Coach Sunil Bandacharya Joshi His Personality and Achievements

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## ABSTRACT

The purpose of the case study on an eminent cricketer and coach Sunil Bandacharya Joshi his personality and achievements research in sports related themes is relatively a neglected field of study. It is only in recent years that games and sports are given their due. Moreover, sports, other than cricket, have got their due. Cricket has been our important game in our country but very few researches, thesis has been written. It is with this objective that I have selected Sunil Bandacharya Joshi as my research topic, who was an eminent sports personality.

## 1. INTRODUCTION

Cricket is the most popular sport in India by far, and is played almost everywhere. The Indian National cricket team won the 1983 Cricket World Cup, the 2007 International Cricket Council (ICC) World Twenty 20, the 2011 Cricket World Cup, the 2013 ICC Champions Trophy, and shared the 2002 ICC Champions Trophy with Sri Lanka. The 2021 ICC Men's Twenty20 World Cup and 2023 Cricket World Cup will be hosted by India. The domestic competitions include the Ranji Trophy, the Duleep Trophy, the Vijay Hazare Trophy, the Deodhar Trophy, the Irani Trophy, and the NKP Salve Challenger Trophy. In addition, the Board of Control for Cricket in India (BCCI) conducts the Indian Premier League, a Twenty20 competition, which is also one of the biggest sports leagues in the world and the biggest cricket league in the world. The Indian cricket team is also accredited with the honor of winning all the ICC tournaments under MS Dhoni's captaincy, which is a world record. While cricket is by far the most popular sport in the country, it is not the country's national sport since India has no national sport. Cricket is an important part of the culture of India. The Indian team shares a rivalry with the Pakistani team, and India-Pakistan matches are some of the most anticipated matches, and most watched television broadcasts in the country. Cricket is one of many games in the "club ball" sphere that basically involves hitting a ball with a

hand-held implement; others includes baseball (which shares many similarities with cricket, both belonging in the more specific bat-and-ball games category, golf, hockey, tennis, squash, badminton, and table tennis. In cricket's case, a key difference is the existence of a solid target structure, the wicket (originally, it is thought, a "wicket gate" through which sheep were herded), that the batsman must defend. The cricket historian Harry Altham identified three "groups" of "club ball" games: The "hockey group," in which the ball is driven to and from between two targets (the goals); the "golf group," in which the ball is driven toward an undefended target (the hole); and the "cricket group," in which "the ball is aimed at a mark (the wicket) and driven away from it."

### 1.1. Early and Life of of Sunil Bandacharya

Sunil Bandacharya Joshi was born June 6, 1970 is an Indian former cricketer and the present Chief Selector of the Indian National Cricket Team. He is an all-rounder who bowls slow left arm spin and bats left-handed. Sunil Joshi was appointed as Chief Selector of the India national cricket team on March 4, 2020. Joshi was born in a Deshastha Brahmin family on June 6, 1970 in Gadag, Karnataka, India. He used to travel 40 miles (64 km) to Hubballi each morning for practice, and then returned to his native town of Gadag in time for school. Such was his desire and passion for cricket. At state level he played for Karnataka throughout his career. In

the 1995–1996 season of the Ranji Trophy, he achieved the impressive double of scoring 500 runs and capturing 50 wickets. He also played briefly for the Bedfordshire County Cricket Club in England during the 2004 season. Joshi represented Royal Challengers Bangalore in the 2008 and 2009 season of the Indian Premier League and was under contract till 2010. On June 21, 2012, Joshi formally announced his retirement from international as well as first-class cricket.

## **1.2. Achievements of Sunil Bandacharya Joshi**

### **1.2.1. International career**

Joshi played both test and 1 day international (ODI) cricket for India between 1996 and 2001. His usual role in the team was to provide runs from the lower order and act as a secondary spin bowler to support the likes of Anil Kumble. Despite being a regular in the national team during this period, he was not selected for the 1999 Cricket World Cup. His most famous bowling performance for India came in an ODI match against South Africa in the LG cup in 1999. He returned figures of 10–6–6–5 helping India to victory in that match. Three years later, the performance was rated in the Wisden 100 as the seventh best ODI bowling performance to that date.

### **1.2.2. Coaching career**

Joshi has taken up the cricket coach. He has coached for Hyderabad cricket team and much recently is a coach for Jammu and Kashmir cricket team. Joshi even tasted early success with J and K by beating the Ranji giants Mumbai cricket team, in the prelim rounds of Ranji Trophy in 2014/15. Earlier, he coached his team to enter super league Ranji Trophy Quarter-finals in his debut season as coach from Plate. Hyderabad team is in second round of Vijay Hazare Trophy. In December 2015, Joshi was named the spin bowling coach of Oman cricket team ahead of the ICC World Twenty20 that is to be played in India in March 2016. In July 2016, Joshi was named as head coach of Assam cricket team next two Ranji Trophy season. He replaces his state mate Sanath Kumar as head coach of Assam cricket team. In August 2017, Joshi was named as spin bowling consultant of Bangladesh cricket team. In July 2019, he was appointed as the spin bowling coach of the United States national cricket team on a short-term basis. He was appointed as spin bowling coach for Kings XI Punjab the BCCI on March 4, 2020 announced the appointment of former India spinner Sunil Joshi as the new chief selector of Indian men's cricket team.

## **2. METHODOLOGY**

Exploratory and descriptive case studies often answer research questions that address who, what, when, and where. Explanatory case studies, however, give answer to questions about how and why. Most case studies in sport management are focused on answering the how and why research questions. Thus, a sport management case study is a research strategy built on theory and involving multiple sources of data collection (e.g., interviews, observations, and documents). Even though a case study involves only one unit the research process engages many variables and requires data collection and integrative interpretation of information from multiple sources, such as interviews with sport management personnel, observations of fans, archival data from organizational files, historical information, surveys of sport event participants, and analysis of documents (e.g., sport marketing plans, team budget and financial reports, newspaper articles, and advertisements).

### **2.1. Statement of Problem**

1. To have in-depth study about the qualities of Sunil Bandacharya Joshi as a Player
2. To have in-depth study about the qualities of Sunil Bandacharya Joshi as a Coach
3. To assess the motivational factors that made him flourishes in sports
4. To study the social traits specific to him
5. To find out his leadership qualities
6. To study the personality traits, specific to him
7. To study the achievements, specific to him.

### **2.2. Delimitations**

1. The study was delimited to the distinguished features of Sunil Bandacharya Joshi life
2. The study is confined to the contributions and achievements of Sunil Bandacharya Joshi in the field of sports
3. The study is restricted only to Sunil Bandacharya Joshi personality and his leadership qualities.

### **2.3. Limitations**

1. The study is limited to the interviews of Sunil Bandacharya Joshi and the materials presented by him
2. The study confined to the interviews of the family members, colleagues, players, and friends of Sunil Bandacharya Joshi.

### 3. CONCLUSION

1. The present study will be significant toward the contributions made by Sunil Bandacharya Joshi, as an eminent sportsman of National repute in cricket and that made him a legendary coach
2. The study would add to the professional literature on cricket
3. Findings of this study would provide source of inspiration to the present and future sports personalities including cricket players
4. This study will also be useful for the sports organizers and managers in various camps
5. This study will be a valid document of the past and would reveal historical perspective for the coming generations in the field of cricket, particularly coaching
6. Findings of this study will provide useful tips, material for coaches, administrators, sports

departments, players, and others who are required to boost up the level of sports.

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# A Comparative Study on Cardio Respiratory Fitness among Endurance Trained and Resistance Trained Male Athletes of Jawaharlal Nehru Technological University Kakinada Andhra Pradesh

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## ABSTRACT

This study was framed to establish the relationship between cardio respiratory fitness among endurance trained and resistance trained male athletes, the subject was selected randomly  $n = 25$  male athletes endurance trained group and  $n = 25$ . Resistance male athlete age about 19–22 years both groups received the training for a period 6 weeks was chosen for the study from the Jawaharlal Nehru Technological University, Kakinada. The subjects were randomly assigned to two equal groups, each group was measured by cooper 12 min run and walk test. To determine, the significance of difference of cardio respiratory fitness of this study was concluded that endurance trained athletes have better cardio respiratory fitness level by comparing with resistance trained male athletes.

## 1. INTRODUCTION

Aerobic training is well known to induce structural and functional adaptations of the cardiovascular and musculoskeletal systems. During exercise, increased stress is placed on the respiratory system to meet the metabolic demands of the activity. The respiratory system consists of airways, lungs, blood vessels, and muscles. This network of organs and tissues is responsible for gas exchange between inspired air and the circulatory system where oxygen is delivered to the blood, as well as the elimination of carbon dioxide from the blood to the lungs. Cardio respiratory fitness refers to the ability of the circulatory and respiratory systems to supply oxygen to skeletal muscles during sustained physical activity. Regular exercise makes these systems more efficient by enlarging the heart muscle, enabling more blood to be pumped with each stroke, and increasing the number of small arteries in trained skeletal muscles, which supply more blood to working muscles. Exercise improves the respiratory system by increasing the amount of oxygen that is inhaled and distributed to body tissue.

Hackett (2020) study was diverse exercise-induced adaptations following aerobic endurance compared to strength-training programs are well documented; however, there is paucity of research specifically focused on adaptations in the respiratory system. The aim of the study was to examine whether differences in lung function and respiratory muscle strength exist between trainers predominately engaged in endurance compared to strength-related exercise. A secondary aim was to investigate if lung function and respiratory muscle strength were associated with one-repetition maximum (1 RM) in the strength trainers and with VO<sub>2</sub> max and fat-free mass in each respective group. Forty-six males participated in this study, consisting of 24 strength-trained ( $26.2 \pm 6.4$  years) and 22 endurance-trained ( $29.9 \pm 7.6$  years) participants. Testing involved measures of lung function, respiratory muscle strength, VO<sub>2</sub> max, 1RM, and body composition. The endurance-trained compared to strength-trained participants had greater maximal voluntary ventilation (MVV) (11.3%,  $P = 0.02$ ). The strength-trained compared to endurance-trained participants generated greater maximal inspiratory pressure (MIP) (14.3%,  $P = 0.02$ ) and maximal expiratory pressure (MEP) (12.4%,  $P = 0.02$ ). Moderate-strong relationships were found between

strength-trained respiratory muscle strength (MIP and MEP) and squat and deadlift 1RM ( $r = 0.48-0.55$ ,  $P \leq 0.017$ ). For the strength-trained participants, a strong relationship was found between MVV and VO<sub>2</sub> max ( $\text{mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ ) ( $r = 0.63$ ,  $P = 0.003$ ) and a moderate relationship between MIP and fat-free mass ( $r = 0.42$ ,  $P = 0.04$ ). It appears that endurance compared to strength trainers has greater muscle endurance, while the latter group exhibits greater respiratory muscle strength. Differences in respiratory muscle strength in resistance trainers may be influenced by lower body strength.

### 1.1. Objective of the Study

The objective of the study is to find out the differences on cardio respiratory fitness among endurance trained athletes and resistance trained male athlete of Jawaharlal Nehru Technological University, Kakinada.

## 2. METHODOLOGY

Fifty male trained athletes from Jawaharlal Nehru Technological University, Kakinada were randomly selected as subjects and their age was between 19 and 22 years. The subjects were randomly assigned to two groups as group I (endurance trained male athletes) and group II (resistance trained male athletes).

### 2.1. Tools

Cooper 12-min tests walk and run test. The test designed by Kenneth H. Cooper in the year 1968.

### 2.2. Purpose

To measure the Vo<sub>2</sub> max/Endurance capacity.

## 3. RESULTS AND DISCUSSION

Table 1 is showing mean standard deviation standard error and *t*-test of cardio respiratory fitness of endurance trained and resistance trained male athletes.

**Table 1:** Mean standard deviation standard error and *t*-test

Subjects	<i>n</i>	Mean	Std-D	Std-error Mean	<i>t</i> -test
Endurance trained athletes	25	2290	390.50	65.97	3.70
Resistance trained athletes	25	1914	312.65		

\*Significance at 0.05 levels, Tab-T 0.05=2.000

Table 1 showing the mean values of endurance trained athletes 2290 and resistance trained male athlete is 1914 due to resistance tanning it shows of endurance trained athletes did better in Cooper test compare to resistance trained athletes The strength, speed, and endurance are the important abilities for successful performance. The dominant ability is the one from which the sport requires higher contribution to achieve the high success in the sports and games.

## 4. DISCUSSION AND CONCLUSION

To find out mean difference, the researcher was using *t*-test to find out whether the mean difference was significant or not. Data collected from the subjects were randomly assigned to two groups as group I (endurance trained male athletes) and group II (resistance trained male athletes). From the table, it is clear that the computed *t*-value (3.70) is higher than tabulated value (2.000) at 0.05 level of confidence. Hence, we can say that endurance trained athletes were significantly better the cardio respiratory fitness level than the resistance trained athletes.

Aerobic fitness plays very important to role in playing the bBadminton game for playing efficiently for long period under the conditions of fatigue efficiently. Endurance trained athletes having better aerobic fitness can perform better in the competitions. Cardio respiratory also develops strength in legs which is very important to hit the smashes and also to move in the higher speed to achieve the good results.

## 5. RECOMMENDATIONS

1. Similar studies can be conducted on other games such as hockey, football players, and events and among all
2. Similar studies can be conducted on other women's athletes and other events athletes
3. This study also helps the physical educators and coaches to improve their training regimeto excel in athletes.

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# Sport and Exercise Pedagogy: A Review on Learning

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## ABSTRACT

An important challenge and difficulties ahead for sport and exercise pedagogy (SEP) researcher scholars are to consider fresh questions about learning. Learning in the fields of sport, physical activity, physical literacy, and physical education (PE) is a particularly more involved business. Most existing theories of learning are defined cognitively; yet, learning in sport and physical activity contexts is also practical and is linked to the powerful wider social cultural contexts of sport and related areas such as health. Moreover, fitness even though learning in these contexts is particularly complex, practitioners rarely draw on specific learning theories to ask questions about practice, and researchers in SEP have tended to focus on content and issues of teaching and coaching instead of using learning theories as a way to explore learning or investigate learning. This paper draws on data from a project in Sweden on learning in PE to illustrate the ways in which a learning theory framework can be used to guide research questions, offer important insights into the learning process, and make a contribution to the wider literature on learning theory. We also argue that research design grounded in learning theories has the potential to result in greater coherence across studies, thereby offering a more valuable service to practitioners.

**Keywords:** Exercise pedagogy, Learning, Sports pedagogy.

## 1. INTRODUCTION

Within what we delineate in this special edition as the field of sport pedagogy, or perhaps more appropriately sport and exercise pedagogy (SEP) (Armour and Chambers, 2014), numerous scholars have discussed issues of learning based on behaviorist, constructivist, situated, or didactic theories of learning (e.g., Kirk and Macdonald, 1998; Light, 2011; Pope, 2005; Ward and Lee, 2005; for overviews see Amade-Escot, 2006; Rovegno, 2006; and Rovegno and Dolly, 2006). Kirk, Macdonald, and O'Sullivan (2006) define the field of physical education (PE) and sport pedagogy as being framed by three intertwined key elements: Learning, teaching, and curriculum. As these authors note, although learning is clearly central to pedagogy, sport pedagogy research over the past 20 years or so has focused mainly on content (curriculum) and issues of teaching or coaching. Moreover, those studies that do focus on learning tend to discuss learning rather than analyze the learning that actually takes place in the context of a clear theoretical perspective rooted in theories of learning (cf. also Ward and Lee, 2005). Instead of looking at what

the learners—athletes or students—do, research tends to focus on what the teacher or coach does (cf. Rink, 2001 and Rovegno, 2006). Where they are included in research, learning theories tend to be used to provide guidance for curriculum development, curriculum models, or teaching or coaching strategies (Rovegno and Dolly, 2006).

## 2. LEARNING

Is at the heart of pedagogy, and PE teachers as well as sport coaches are essentially pedagogues. Pedagogy is, however, a complex concept; indeed Alexander (2008, p. 183), in line with several scholars within sport pedagogy (e.g., Evans, Davies, and Rich, 2009; Kirk, 2006; Rink, 2001), highlighted the “extraordinary richness of pedagogy as a field of intellectual exploration and empirical enquiry.” Moreover, as Akkerman and Van Eijck (2013, p. 60) remind us, the learner at the center of our pedagogical practices is multi-faceted, and has to be recognized as a “whole person who participates in school as well as in many other practices.” We can conclude from this that the number of variables operating

in any pedagogical encounter is vast (Leach and Moon, 1999 and Light, 2008, 2011), so to study learning, we require clear frameworks simply to make sense of what is happening. Ball (2012, p. 283) has challenged researchers to “move away from research designed as mere “demonstrations of knowledge” toward research that has the power to close the knowing-doing gap in education.” The illustrations we use in this paper offer one way in which a more explicit focus on learning in SEP research, underpinned by explicit theories of learning, could offer something of value in closing the research–practice gap.

In the paper, we will first discuss theories of learning with a point of departure in Anna Sfard’s (1998) division of learning theories in two metaphors for learning. Second, with the use of Sfard’s insights, we will consider four key challenges to be addressed in framing research in SEP around learning theories. Finally, we will empirically illustrate the ways in which SEP research could contribute new perspectives to the practice field using different learning theories to analyze learning in contexts of coaching, PE, and youth sport.

### 3. LEARNING THEORY

Given the centrality of learning in pedagogy, it is pivotal to consider questions about the nature of learning and also how we as researchers, or for that matter teachers or coaches, know that somebody has learned anything. At its simplest level, learning can from a behavioral perspective be defined as changes in observable behavior, whereas from theories that are more cognitively oriented, learning is understood in terms of concept development and mental structures. Of course, every perspective and/or theory of learning we assume or use makes a whole plethora of different assumptions about, for example, knowledge, knowing, the role of the learner, the role of the environment, or where learning takes place. It is difficult to imagine, therefore, how we have been able to conduct any meaningful research in SEP that does not make transparent these assumptions about learning. This is not to suggest that learning theories are uncontested, as is illustrated below. Importantly for this paper, it is the critical distinctions between learning theories, and the ways in which they allow us to frame, analyze, and understand practice differently, that underpins our arguments about their centrality in research on pedagogy.

On the other hand, understanding learning as participation involves exploring knowledge as an aspect of a practice

or activity where learning is about becoming a “member” of a particular practice, activity, or discourse (Sfard, 1998; in sport pedagogy research notable in the use of situated learning, e.g., Kirk and Macdonald, 1998). This involves a shift in understanding from knowledge to learning, as well a shift from knowledge as having to knowledge as doing. From this perspective, learning is never separated from the relations and contexts in which the learner is situated, and the learner is considered to be dynamic as she moves from context to context. This view of learning is, according to the Sfard (1998), found in sociocultural learning theories using concepts such as communities of practice, legitimate peripheral participation, and apprenticeship (cf. Rogoff, 1990 and Lave and Wenger, 1991), research using the works of John Dewey and also in more recent efforts to theorize learning in education in terms of “learning as becoming” (Hodkinson, Biesta, and James, 2007, 2008) and learning as discourse change (Wickman and Östman, 2002).

Even a superficial scan of the learning theory, literature illustrates the potential riches that it offers to researchers and practitioners. For example, Shulman (1987) proposed a knowledge base of teaching with seven categories: Content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts and of educational ends, and purposes and values. It is interesting to consider what could be learnt from an analysis of a pedagogical encounter in PE using these categories as an analytical framework. In another example, Daniels (2012) reminds us of the classic work by Bernstein and the recontextualizing principle in pedagogic discourse which “selectively appropriates, relocates, refocuses, and relates other discourses to constitute its own order” (p. 7). With notable exceptions (e.g., Evans, Davies, and Penney, 1996, Evans, De Pian, Rich, and Davies, 2011; Evans et al., 2009; Penney, 2013; and Penney, Brooker, Hay, and Gillespie, 2009), rather few researchers have drawn on this theory to frame an analysis of practice. Of course, our specific field is not alone in failing to exploit and develop learning theory. Thompson, Windschitl, and Braaten (2013, p. 609) studied novice teacher learning and whether and how novices developed “ambitious” pedagogies and practice. Their findings led them to argue for “a more robust theory of teacher learning that accounts for how participation in different communities—that project different messages about instruction and learning—shapes the language and practices of novice teachers.”

#### 4. UNDERSTANDING LEARNING WITHIN SEP

As several scholars have pointed out elsewhere (cf. Hodkinson et al., 2008; Jess, Atencio and Thorburn, 2011; Light, 2008; Ovens, Hopper and Butler, 2013; and Quennerstedt, Öhman and Öhman, 2011), exploring and thus understanding, learning is a complex business generally, involving several theoretical as well as methodological challenges. It could be argued that learning in the fields of sport, physical activity, and PE is a particularly complex matter. Most existing theories of learning are defined cognitively; however, learning in sport, physical activity, and PE contexts is also, to a large extent, practical, and embodied, an aspect where SEP most certainly can make a contribution to the wider literature on learning in terms of how to dissolve the dualism between body and mind so common in many studies of learning (cf. Evans et al., 2009).

Learning in SEP contexts is also connected to wider cultural contexts such as professional/elite sport and related areas such as health. This means that understanding learning in these contexts includes learning content and direction as well as learning process, and also individual as well as social and institutional/cultural aspects of learning (cf. Hodkinson et al., 2008). As Hodkinson and colleagues (2007) argues: "Learning entails the embodied engagement with practice" (p. 417).

- First, there are considerable challenges in seeking to understand learning not only as cognition grounded in cognitive and constructivist theories in both the acquisition and participation metaphors, but also as practical and embodied
- Second, studies of learning undertaken using an explicit or implicit participation metaphor, and scholars using situated theories of learning need to

acknowledge individuals' learning and individual differences

- Third, there is the challenge of including wider institutional, social, and cultural influences on the learning situation instead of concentrating only on what happens at the particular learning site under investigation. This challenge is often disregarded in the acquisition metaphor of learning and is sometimes underplayed in situated theories in the participation metaphor
- Fourth, there is a major challenge in ensuring that issues of power relations and inequalities within and beyond the particular learning site are made visible in cognitive theories in the acquisition metaphor, and also didactic theories in the participation metaphor.

Of course, these challenges are not the only challenges SEP researchers need to consider when analyzing learning. Yet, it is interesting to consider the impact that addressing these challenges would have on framing pedagogy research in our field.

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# Impact of Yogic Practice and Its Effects on Flexibility of Secondary School Children

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## ABSTRACT

Yoga is an ancient Indian science that teaches us how to live in unity within ourselves and with those around. It is considered as one of the most prominent and valuable heritages of India. More than 2000 years ago, our sages and saints developed it to bind the body, mind, and spirit, as a harmonious whole. Yoga has been growing in popularity with incredible rapidity over the years. These days we are seeing that the whole world is looking toward yoga for answers to the various problems which the modern man is facing. The word "Yoga" is derived from the Sanskrit root "Yuj" which means joining, harnessing, union, merging, contact, or connection. It is union between the individual awareness and the universal awareness. It is the merging of a healthy body with a disciplined mind for the purpose of spiritual growth. Yoga is also pleasurable contact with the supreme soul, higher than the highest of the known elements. It harnesses the underlying internal power of somebody, as well as emerged from the broad natural forces. Yoga is an integral part of Indian life and culture. It has come to us since ancient times with an unbroken tradition. The purpose of the study was to find out the "Impact of yogic practice and its effects on flexibility of secondary school children". To achieve this purpose, 80 female school children were selected in the age group ranging from 14 to 16 years studying in Iqra English medium High School, Vijayapur District of Karnataka state were selected randomly as subjects. The following yogic practice was selected for 6 weeks of training for 80 subjects. Criterion variable health-related fitness variable was selected measured using flexibility. It was used for pre-test and post-test. The result shows that the 6 weeks of yogic practice develop flexibility.

**Keywords:** Yogic practice, Bhujangasana dhanurasana tadasana nukasana halasana makarasana and flexibility.

## 1. INTRODUCTION

Yoga is a systematic practice for the awareness of higher perceptions. It is the science of life and an ideal way of living provides rhythm to the body, peace to the mind, harmony to the soul, and thus offer symphony to life. In other words, yoga is a way to achieve complete health, peace, bliss, and wisdom. Physical, mental, and spiritual aspects of yoga help one to make one's life purposeful, useful, and noble. Thus, yoga is an art, science, and philosophy, which affects the life of an individual at each level. That is why the effect of yoga must be felt in every movement of our day-to-day lives.

Yoga is a way of life, an integrated system of education for the body, mind, and inner spirit. This art of good

living was initiated in India thousands of years ago but, as yoga deals with universal truths; its principles are valid today as they were in the ancient times. Truly speaking, yoga is a practical aid, does not belong to one religion but originated by lord Shiva Annant Bharti (2012) and its techniques could be practiced by the Hindus, Buddhists, Jews, Christians, Muslims, and the Atheists alike. Yoga is union with soul to the universe Kindersley, (1996). It brings peace to the human beings by physical and mental practices with or without a toner on spiritualism.

## 2. METHODOLOGY

The procedure adopted in the present research work is related to the selection of subjects, selection of variables,

selection of test, and statistical technique involved in the study.

### 2.1. Selection of Subjects

The purpose of the study was to find out “Iqra English medium High School, Vijayapur District of Karnataka state.” To achieve this purpose, 80 female school children were selected in the age group ranging from 14 to 16 years studying in Iqra English medium High School, Vijayapur District of Karnataka state were selected randomly as subjects. The following yogic practice was selected for 6 weeks of training for 80 subjects. Criterion variable health-related fitness variable was selected measured using flexibility. It was used for pre-test and post-test.

### 2.2. Selection of Test

The test item and measurement:

S. No.	Test item and tool	Variable	Criterion measurement
01	Sit and Reach test	Flexibility	Ruler or measurement tape

### 2.3. Statistical Techniques

Standard deviation was used to find out significant mean difference in pre-test and post-test score of different groups with respect to each parameter. Standard deviation was used to find out significant mean, “t” value difference of two groups with respect to each parameter.

The statistical analysis was carried out with help of the software package of social science 15.0 versions for SPSS packages.

Pre- and post-test data were gathered on flexibility and the same as described in the following Table 1.

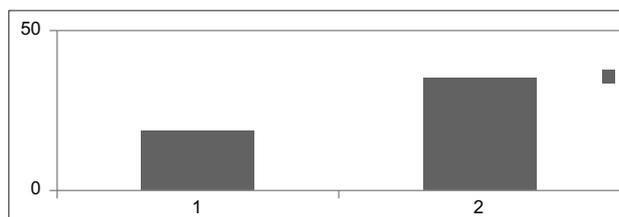
Table 1 indicates that the “t”-value is more than the table value, that is, 2.704, hence it is significant.

The pre-test mean value is 18.6750 and the post-test mean value is 35.1750. The post-test mean value is more than pre-test mean value. It shows significant improvement in the flexibility performance of high school female due to the 6 weeks yoga training the same as displayed in the Figure 1.

**Table 1:** The mean, standard deviation and ‘t’-value of pre-test and post-test for yoga training experimental group on flexibility performance

Variable	Test	N	Mean	SD	t-value
Flexibility	Pre-test	40	18.6750	4.92710	11.063*
	Post-test	40	35.1750	7.65569	

The level of significant 0.05=Table value=2.704



**Figure 1:** The mean, standard deviation and “t”- value of pre-test and post-test for yoga training experimental group on flexibility performance

The above Figure 1 clearly indicates that the 6 weeks yoga training performance is drastically improved the flexibility of the subjects.

## 3. SUMMARY

The purpose of the study was to find out the “Iqra English medium High School, Vijayapur District of Karnataka state”. The researcher selected flexibility for health-related fitness variable. Six weeks of yoga training were given to 80 subjects before training the researcher conducted pre-test performance on health-related fitness variable. The performance of the pre-test was recorded. After the 6 weeks of yogic practice, the post-test performance was recorded on flexibility performance. The result of the post-test performance indicates significant improvement.

Six weeks of yogic practice have shown significant improvement on flexibility of subjects.

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# Physical Activity, Physical Fitness and Health Fitness: Some Field Evidence from Telangana

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## ABSTRACT

Physical fitness is typically developed through consistent training. The current study looks into whether there are any differences in the overall muscular fitness levels of students from various branches of technical education from selected institutions in Telangana state. Using a convenient sampling method, the primary data was collected from 250 respondents belonging to five branches of technical education, representing two colleges from the Nalgonda district of Telangana State. In this study, simple ratios and ANOVA are used to identify differences in the physical fitness levels of technical education students. The results of the study found a significant difference in the physical fitness levels of the students from branch to branch. The study would shed light on the muscular fitness levels of students in educational institutions and it would also throw light on the pitfalls of physical education and sports programs in educational institutions in general. It is highly suggested that students of all ages, especially those in higher education institutions such as engineering colleges and universities, engage in study-related physical work.

## 1. INTRODUCTION

Much of the fitness research around the world has shown that fitness and health are interconnected. Physical fitness improves one's health, yet it is made up of various sub-components. Physical education's goal is to promote individuals' health and overall development through scientifically planned and executed physical activities. Individuals can develop in the physical, mental, emotional, spiritual, and social domains concurrently. This being the primary goal of physical education, there have been numerous aims. The physical realm and the development of the physical functions of people are vital to human development. Physical fitness can be defined not only in terms of observable physical components but also in terms of the physiological capacities of individuals, which is more suitable and scientific. Although it has been stated that improved physical fitness is vital for improved illness prevention, additional information is required to back this up. Aside from physical fitness, other aspects that may impact an individual's health include food habits, metabolic efficiency, stress exposure, and emotional wellness.

## 2. REVIEW OF LITERATURE

Work or employment could affect physical activity and fitness trends. The same may be true for students' courses or studies. It is difficult to identify and determine the reasons for differences, hence more inquiry is required. Students studying different courses or specialties may be exposed to a varied physical environment. However, it would be erroneous to assume that simply studying a given specialization in a certain physical location inherently enhances physical and mental fitness. Several research evaluated if the physical environment of students' studies or workplaces influenced their fitness. However, having low levels of physical fitness may not be optimum for an individual's health, so it is necessary to ensure that a student's profession or study gives enough levels of physical fitness as indicated by exercise specialists.

Kalinin Yobas *et al.* (2015) evaluated the fitness and health habits of nursing students. The correlation study looked at 335 nursing students' cardiovascular fitness, total fitness, and mental health. True, healthy students

can finish nursing school and work as professional nurses. However, their research indicated that the study's nursing students had poor to moderate physical and cardiovascular fitness. Although the nursing students had to walk a lot during their internship, their fitness was insufficient. Their psychological predilection towards physical activities was low, as was their degree of physical activity. Regular physical activity increased physical fitness and cardiovascular health. University students' physical environments differ due to topic specialization, peer pressure, and other variables. Similarly, university study provides considerable opportunities for physical activity due to the university's resources. Students may participate in physical activities if they so wish. Likewise, university students may confront time restrictions owing to academic pressure and other problems. Before determining the fitness levels of university students, all of these forces must be considered.

Deliens and Deforche (2015) researched university students in Belgium. The changes in body composition, physical fitness, weight, leg strength, flexibility, and cardiorespiratory fitness of university students were studied for one and a half years. They studied 172 university students, both male and female. The study found that both male and female students gained weight, but that male students gained more lean body mass than female students. They discovered that handgrip strength rose but that other physical fitness features such as flexibility remained same. The results demonstrated no difference in cardiorespiratory fitness between the sexes. The university study in Belgium had an adverse influence on cardiovascular fitness and some health fitness indicators including body fat percentage.

There have been studies comparing the college and university life and to that of the school life of students. In one such key study, Deforche and Van Dyck (2015) aimed to determine the changes in the lifestyle and physical characteristics that might influence the health status of students from school to the university stage. Their findings showed that both boys and girls gained weight, but that boys gained more weight than girls. Both boys and girls ate fewer fruits and vegetables. Sports and physical exercise engagement among both boys and girls changed significantly. Sports participation dropped significantly. They concluded that the transition from high school to university appeared to influence the increase in adverse alterations in young adults' physical fitness and health. The earlier studies have not covered the various aspects of fitness among technical education

students in India in general and Telangana State in particular. Therefore, the present study is focused on this aspect.

### 3. THE OBJECTIVE OF THE STUDY

The present study was conducted to find out whether there were any differences in the muscular fitness levels of the different branches of technical education students from the selected institutions in Telangana state.

### 4. METHODOLOGY

Using a convenient sampling method, the primary data was collected from 250 respondents belonging to five branches of technical education representing two colleges from the Nalgonda district of Telangana State. The five branches of students are, namely, civil engineering, mechanical engineering, ECE, computer science, and biotechnology engineering. In this study, simple ratios and ANOVA are used to identify differences in the physical fitness levels of technical education students.

### 5. RESULTS AND DISCUSSION

#### 5.1. Analysis on the Muscular Strength (Upper Body) Measured by 1 RM Bench Press Test

According to Table 1, the study's Mechanical engineering students had the highest upper body muscular strength (83.67) as measured by the Brzycki's equation of  $1 \text{ R.M} = \text{Weight (in kgs)} / (1.0278 - (0.0278 \times \text{number of repetitions at the selected weight}))$  (78.77). This average is the greatest weight lifted in 1RM compared to the individuals' total body weight. The mechanical and civil engineering students had higher upper body strength as evaluated by the 1RM bench press test regimen. The variance in the table is within acceptable limits, indicating that the data is not diverse in terms of divergence from the average value of the groups. Figure 1 illustrate the same conclusion using a bar diagram for clarity.

The analysis of variance was used since the descriptive analysis did not clearly explain whether the visible mean differences among the groups in upper body strength as measured by the 1RM bench press protocol were significant or not. Table 2 shows the study's variance analysis for the bench press findings. The analysis shows that there is.

**Table 1:** Average, variance and standard deviation for bench press test

	Groups				
	Civil	Mech	ECE	CS	Biotech
N	50	50	50	50	50
$\Sigma X$	4163.22	4183.65	3993.55	3931.91	4053.91
Mean	83.26	83.67	79.87	78.77	81.07
$\Sigma X^2$	347094.88	350980.84	319431.34	310578.31	329279.52
Variance	9.1179	18.8198	9.4204	5.6501	12.1285
Std Dev	3.0196	4.3382	3.0693	2.377	3.4826
Std error	0.427	0.6135	0.4341	0.3362	0.4925

Source: Author estimation form field data

**Table 2:** Analysis of variance for bench press test protocol

Source	SS	df	MS	F	P
Treatment (between Groups)	896.7	4	224.17	20.33	<0.0001
Error	2701.7	245	11.03		
Total	3598.41	249			

The table shows a significant difference in upper body strength across the five study groups ( $F = 20.33$ ,  $P 0.0001$ ). A group-wise comparison test (Table 3) is used to compare all of the study's groups. The mechanical and civil engineering groups have much higher bench presses. The study's strengths surpass its disadvantages when compared to the other three groups: biotechnology, ECE, and CS.

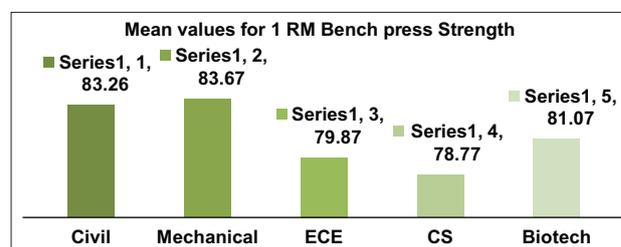
Between the Mechanical Engineering and Civil Engineering groups, there is no significant difference in 1 RM bench press strength (0.41, not significant at 0.05 level for HSD of 1.83), indicating both groups of students have equivalent upper body strength as measured by the bench press test protocol. The Biotech group had stronger 1 RM bench press strength than the CS group (2.3 significant at 0.05 level for HSD = 1.83) whereas the Biotech and ECE groups had no significant difference (1.2 not significant at 0.05 level for HSD of 1.83). Also, the ECE and CS groups have the same 1RM bench press strength (1.1, not significant at 0.05 level for HSD of 1.83).

The analysis of variance was used since the descriptive analysis did not clearly explain whether the visible mean differences among the groups in upper body strength as measured by the 1RM bench press protocol were significant or not. Table 2 table shows a significant difference in upper body strength across the five study groups ( $F = 20.33$ ,  $P 0.0001$ ). A group-wise comparison test (Table 3) is used to compare all of the study's

**Table 3:** Tukey HSD test at 0.05 the significant difference = 1.83

Groups/ Means	Civil 83.26	Biotech 81.07	ECE 79.87	CS 78.77
Mechanical 83.67	0.41 N. Sig	2.6 Sig	3.8 Sig	4.9 Sig
Civil 83.26	-	2.19 Sig	3.39 Sig	4.49 Sig
Biotech 81.07	-	-	1.2 N. Sig	2.3 Sig
ECE 79.87	-	-	-	1.1 N. Sig

Source: Author estimation form field data

**Figure 1:** Source: Author estimation form field data.

groups. The mechanical and civil engineering groups have much higher bench presses. The study's strengths surpass its disadvantages when compared to the other three groups: biotechnology, ECE, and CS. Between the Mechanical Engineering and Civil Engineering groups, there is no significant difference in 1 RM bench press strength (0.41, not significant at 0.05 level for HSD of

1.83), indicating both groups of students have equivalent upper body strength as measured by the bench press test protocol. The Biotech group had stronger 1 RM bench press strength than the CS group (2.3 significant at 0.05 level for HSD = 1.83) whereas the Biotech and ECE groups had no significant difference (1.2 not significant at 0.05 level for HSD of 1.83). Also, the ECE and CS groups have the same 1RM bench press strength (1.1, not significant at 0.05 level for HSD of 1.83).

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bench press strength (1.1, not significant at 0.05 level for HSD of 1.83).

## 6. CONCLUSION AND SUGGESTIONS

The study found that the ECE, Computer Science, and Biotechnology student groups had significantly stronger upper body muscular strength than the ECE, Computer Science, and Biotechnology student groups. The study's civil engineering students had much stronger lower body physical strength than the other four categories. Students need to do more study or curriculum-related work to boost their physical activity levels, even in higher education institutions. It is highly suggested that students of all ages, especially those in higher education institutions like engineering colleges and universities, engage in study-related physical work.

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# Comparison of Speed and Leg Power among Badminton Players and Lawn Tennis Players of Gulbarga District in India

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## ABSTRACT

The Purpose of the study is to find the Speed and Leg Power among Badminton Players and Lawn Tennis Players of the Gulbarga District in India. The Sample for the Study consists of 20 Badminton and 20 Lawn Tennis Players of Gulbarga District between the age group of 18–20 Years. To assess the speed the 50 M Run Test and to assess the Leg Power the Standing Broad Jump Test is conducted by the Technical Officials. It was found Lawn Tennis Players are having good speed compared to Badminton Players and Badminton Players are having good Leg Power compare to Lawn Tennis Players. Hence, it is recommended that conditioning Programme must be included by Coaches of Badminton and Lawn Tennis to improve the performance among the Players.

**Keywords:** Speed, Leg power, Conditioning.

## 1. INTRODUCTION

Badminton is a racquet sport played using racquets to hit a shuttlecock across a net. Although it may be played with larger teams, the most common forms of the game are “singles” (with one player per side) and “doubles” (with two players per side). Badminton is a popular fast-paced indoor sport. To be successful in badminton you need excellent court speed and agility, with a good background of endurance. The fitness training for badminton should focus on speed, agility, and endurance, with also strength and flexibility also important. The game of tennis has evolved from the wooden-racket era of long, crafty points based on style and finesse, to the current fast paced, explosive sport based on power, strength, and speed, where 210 km/h serves are common. This evolution over the past 20 years has led to an increased interest in tennis research. Badminton players need to possess a variety of fitness capabilities to be successful. Cardiovascular fitness, flexibility, agility, power, and strength are all desirable traits that can be developed with regular training. Strength training for badminton should be as sports-specific as possible, and your program should reflect the demands of your sport while still leaving sufficient time and energy for playing

practice. Badminton Players need to have strong legs in order to produce a better and faster foot work. Once the physical fitness is there, a player can concentrate more on other aspects of the training such as skill, speed, and power.

### 1.1. Purpose of the Study

The purpose of the study is to find the Speed and Leg Power among Badminton Players and Lawn Tennis Players of the Gulbarga District in India.

## 2. METHODOLOGY

The sample for the study consists of 20 Badminton Players and 20 Lawn Tennis Players of Gulbarga District between the age group of 18–20 Years. To assess the speed of the 50 M Run Test and to assess the Leg Power the Standing Broad Jump Test is conducted by the Technical Officials.

### 2.1. 50 M Run

**Purpose:** The aim of this test is to determine acceleration and speed.

**Table 1:** The mean values and independent samples test of standing broad jump between badminton players and lawn tennis players

Variables	Group	Mean±SD	t	P value
Standing Broad Jump	Badminton Players	2.22±0.157	3.50	0.001
	Lawn Tennis Players	2.15±0.159		

\*Significant at 0.05 level

**Table 2:** Mean values and independent samples test of 50 M Run between badminton players and lawn tennis players

Variables	Group	Mean	SD	t	P value
50 M Run	Lawn Tennis Players	7.33	0.262	4.50	0.000
	Badminton Players	7.80	0.408		

\*Significant at 0.05 level

## 2.2. Standing Broad Jump

The Standing long jump also called the Broad Jump, is a common and easy to administer test of explosive leg power purpose: To measure the explosive power of the legs.

## 3. RESULT AND DISCUSSION

Table 1 showing the mean values and independent samples test of standing broad jump between badminton players and lawn tennis players.

In Table 1 the The mean values of Badminton Players in Standing Broad Jump is 2.22 and Lawn Tennis Players is 2.15 in Standing Broad Jump. Hence the Badminton

Players are having good Leg Power compare to Lawn Tennis Players.

In Table 2 the Mean Values of Lawn Tennis Players in 50 M Run is 7.33 and Badminton Players is 7.80. Hence the Lawn Tennis Players are having good speed compare to Badminton Players.

## 4. CONCLUSIONS

Competitive tennis athletes need a mixture of anaerobic skills, such as speed, agility, and power, combined with high aerobic capabilities. The speed of the tennis player is very important because he has to do movement with the racket which weighs less than half a Kilogram and to move in different directions in minimum time. Physical toughness, namely, strength and endurance plays a major role in badminton and tennis to stay longer in the game.

## 5. RECOMMENDATIONS

Similar studies can be conducted among females and in other sports and games. This study is useful to the Coaches to prepare the conditioning program to improve their skills in Tennis and Badminton.

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# A Study on Relationship between Self Confidence and Physical Fitness Tests Performance of Hockey Players

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## ABSTRACT

To achieve the purpose of the study one hundred twenty (60) men Hockey players participated in the inter-collegiate Hockey tournament, served as subjects for the present study. All the selected subjects were administered to SES scale and Self-confidence questionnaire (SCQ). The subjects were divided into "High" and "Low" groups in both the variables according to the scoring key manual and then the A.A.H.P.E.R. and French Bobbing physical fitness tests were administered on both the groups. There is a significant difference in physical fitness performance between high self-confidence and low self-confidence. There is a positive and significant correlation between the self-confidence and physical fitness performances.

**Keywords:** Self-confidence, Physical fitness, Hockey, Performance.

## 1. INTRODUCTION

Sports are highly specialized activities, the participation in sports warrants a fundamental desire to compete and surpass others in performance, and since any sports activity involves competition. However, winning in a competition surely depends on performance. Better the performance, greater the chance of winning. Nevertheless, the quality of performance displayed by the Hockey players in competitive events is determined by several aspects. In modern competitive sports, the psychological preparation of a team is as important as teaching them the different skills of a game with scientific methods. In these days, the teams are prepared not only to play but to win the games. And for winning the games, it is not only the proficiency in the skills, which matters but also the spirit and attitude of the Hockey players with which they play.

The mental attitude of each individual athlete, as well as of the team can help or hinder their performance. Most of the coaches agree that the physical characteristics, skills, and training of the Hockey players are extremely important, but they also feel that good mental or psychological preparation for competition is a necessary component for success.

In the present study, the researcher main objective is to analyze the relationship between socio-economic status, self-confidence, and physical fitness test performances.

## 2. CONCEPT OF PERFORMANCE

The nature of sports performance has been insufficiently explored because sports performance is a complicated multi-dimensional process of tackling a sports task. Its exploration further needs an integrated effort on the part of various science disciplines theory and methods of specific sports.

### 2.1. Objectives of the Study

The following are the objectives of the present study:

- To study the impact of self-confidence on the performance of Hockey players.
- To analyze the relation between self-confidence and physical fitness tests performance.

## 3. MATERIALS AND METHODS

The purpose of the present investigation is to study the relation between self-confidence with physical fitness test performances. The investigator has come across

many questionnaires that would measure the level of socio-economic status and self-confidence. After a thorough search and examination of the literature on the various psychological studies, it was decided by the investigator to administer Self-confidence Inventory (SCI) developed by M.Basavanna (1975), A.A.H.P.E.R. and French Bobbing physical fitness tests.

### 3.1. Sample

Sixty (60) men Hockey players, participated in the inter-collegiate hockey tournament, served as subjects for the present study. These 60 subjects together represented the sample for the present study.

### 3.2. Test Administration and Collection of Data

To collect necessary data pertaining to the present study, all the selected subjects were administered to Self-confidence Inventory (SCI) during the inter-collegiate Hockey competition. The data were in the form of answer given by the subjects in response to the various questions of the questionnaire.

The subjects completed answering the questionnaire within the stipulated time after which the questionnaires were collected back and the standard scoring manual was used to get the score.

After the scoring of the completed questionnaire, the subjects were divided into “High” and “Low” groups in the self-confidence variable according to the scoring key manual and then the A.A.H.P.E.R. and French Bobbing physical fitness tests were administered for both the groups.

### 3.3. Tools

1. Self Confidence Inventory (SCI).
2. A.A.H.P.E.R. and French Bobbing physical fitness tests.

### 3.4. A.A.H.P.E.R. and French Bobbing Physical Fitness Tests

S. No.	Motor ability	Test	Unit of measurement
1.	Speed	50 yard dash	Time
2.	Endurance	12 min. Run and Walk	Distance
3.	Agility	Shuttle run 10 × 4 yards	Time
4.	Strength	Pull Ups	Score
5.	Flexibility	Sit and Reach test	Inches

The procedure and scoring of selected physical fitness tests are done as per the norms given in the manual of tests and scales.

### 3.5. Statistical Analysis

To meet the objective of the study mean, standard deviation, t-value, and correlation were used to calculate and analyze the data.

## 4. RESULTS AND DISCUSSIONS

Table 1 shows the mean scores of five physical fitness performances of Hockey players in low and high self-confidence. This also shows that the high self-confidence Hockey players have taken less time to complete the given task (Speed and Agility test) than the low self-confidence Hockey players. In endurance test, the high self-confidence Hockey players have covered more distance in the given task than the low self-confidence participants. In pull-ups (Strength) test the high self-confidence Hockey players have scored more in the given task than the low self-confidence Hockey players. Inflexibility (French Bobbing) test the high self-confidence Hockey players have reached more range of motion or scored more in the given task than the low self-confidence Hockey players. The t-values were significant at 0.01 level which states that there is a significant difference in the physical fitness performance between the two self-confidence levels. Thus, the self-confidence proves to be significant influencing factor in increasing performance. Therefore, the results indicated that there is an influence of self-confidence on the physical fitness performance.

**Table 1: Physical fitness performance of hockey players in two levels of SC**

Performance	SC	Mean	SD	t- value
Endurance	Low	2025.9	161.9	8.69**
	High	2312.8	164.6	
Speed	Low	11.42	1.77	5.81**
	High	10.12	1.43	
Agility	Low	15.32	1.82	6.76**
	High	12.41	1.69	
Strength	Low	11.47	2.78	8.09**
	High	15.60	2.18	
Flexibility	Low	2.14	1.69	4.05**
	High	3.52	1.76	

\*\*Significant at 0.01 level. SC: Self confidence

**Table 2: Correlation between the Variables**

S. No.	Variables	r-values
1.	SC and Strength	0.687**
2.	SC and Speed	0.612**
3.	SC and Endurance	0.567**
4.	SC and Flexibility	0.462**
5.	SC and Agility	0.344**

\*\*Significant at 0.01 level

Table 2 shows the r-values of the variables of the study. It can be seen that all the r-values were significant at 0.01 level to indicate the significant relationship between the variables of the study. Thus, the results clearly speak the fact that there is a positive and significant relationship between the self-confidence and physical fitness performance.

## 5. CONCLUSIONS

- The significant difference in physical fitness performances between high and low self-confidence groups. High self-confidence group has significantly higher performance in physical fitness tests than the Low self-confidence group.
- The positive and significant relation between self-confidence of Hockey players with all the physical fitness test performances.

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# Effect of Physical Activity and Behaviour on the Performance of University Basketball Players

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## 1. INTRODUCTION

Physical activity is a collection of behaviors that involve movement, all with different skill requirement and energy expenditure demands. Thus, personality would conceivably link to certain physical activity behaviors more than others.

Personality is defined as 'distinctive patterns of behaviors (including thoughts and emotions) that characterize each individual's adaptation to the situation's of his or her life.

Personality is shaped by in born potential as modified by experience common to the cultural and sub cultural group (such as sex roles) and by the unique experiences that affect the person as an individual. Theories about personality can be grouped into those, which emphasize traits, motivation learning and the self. The corresponding approaches to the understanding of personality are: trait, psychoanalytic, social learning, and humanistic theories.

## 2. PURPOSE OF THE STUDY

We all know that being physically active is good for our bodies. But our physical health and mental health are closely linked so physical activity can be very beneficial for our mental health and well-being too. Lots of us do not get enough exercise to stay healthy, but physical activity is particularly important if you have a mental health problem. This is because people with mental health problems are more likely to have a poor diet, smoke or drink too much alcohol, or be overweight/obese. Measure the well being physical fitness.

## 3. METHODOLOGY

There is significant variation in personality dimensions and well being/physical activity of the sports persons. There is a significant influence of personality of well being/physical activity of the sports persons. The demographic factors such as age and sex have significant bearing on well-being/physical activity of sports persons. There is a significant correlation between independent and dependent variables.

## 4. PHYSICAL ACTIVITY

This can describe anything we do that involves moving our bodies.

## 5. EXERCISE

Any physical activity could be considered exercise, when we talk about doing exercise we usually mean activities we do deliberately for fitness or training, rather than something that's part of our daily routine.

## 6. STATEMENT OF THE PROBLEM

To study the personality and physical activity behavior of University Sports Persons.

### 6.1. Objectives

To study the psychological well-being/physical activity of sports person.

To assess the effect of personality dimensions on the well-being/physical activity of sports persons.

**Table 1: Showing 'r' value between variables (n=250)**

Variables	r – value
Age x well-being/physical activity	0.306*
Sex x well-being/physical activity	0.262*
Extroversion x well-being/physical activity	0.264*
Neuroticism x well-being/physical activity	0.157*
Psychoticism x well-being/physical activity	0.208*

Significance at 0.05 level

**Table 2: The influence of independent variables on well-being/physical activity (ANOVA) (Fratio) (n=250)**

	SOS	DF	MS	F
Personality	4845.27	1	16150.9	3.453**
Age	4471.71	0.5	4471.71	5.446**
Sex	4642.65	0.5	4642.65	5.483**

Significant at 0.01 level

To study the effect of demographic factors (age and sex) on the sample.

## 7. RESULT AND DISCUSSION

The sample of the study consists of 250 sports persons selected from various colleges. The players who have participated in inter university level are considered as sports person. The sample was matched for age and gender. The personality inventory and well-being/physical activity scale were administered to the sample. The dimension of personalities such as psychoticism, extraversion, and neuroticism were considered in the present study.

## 8. CONCLUSION

It seems that the increasing acceptance of the complexities involved in human behavior renders the current linear phase stage approach to understanding PA behaviors incongruous. What has now become apparent within the past twenty years is that changing health behavior is a complex and multifaceted phenomenon that has multiple levels of influences [8, 52]. Since ecological approaches towards health behavior focus on individual influences as well as social, policy researchers have now embraced the use of such frameworks to inform their interventions. However, there is a lack of models available that provide specific mechanisms through

which particular influences may interact and influence behavior. Researchers are now faced with the daunting task of relying upon detailed cross-sectional evidence to develop and test hypothesis in order to enhance further our understanding of the determinants of PA. It seems that the field of PA research is at the embryonic stage of a paradigm shift towards improving our understanding of complex behaviors through the application of complex ecological interventions. Recently the health domain has embraced the use of nonlinear dynamical approaches, such as complexity theory to the study of complex behaviors. In the PA domain, there is no unified model of research and practice which integrates both ecological and complexity theories. Forthcoming PA models should begin to consider the advantages of incorporating the principles of complexity theories into future intervention programs. This domain of future work promises to be a worthwhile endeavor in tackling current obesity and inactivity levels and should help generate further understanding of the complexities involved in PA behavior.

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# Effect of Psychological Factors on the Performance of University Kho-Kho Players

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## 1. INTRODUCTION

The word psychology refers to the study of human behavior, and sports psychology denotes subcategory of psychology that deals with the behavior of athletes and teams engaged in competitive sports. Sports psychology is that branch of psychology which is intimately connect with human behavior on the playfield, both under practice and competitive situations. Sport psychology is an interdisciplinary science that draws on knowledge from many related fields including biomechanics, physiology, kinesiology, and psychology. It involves the study of how psychological factors affect performance and how participation in sport and exercise affect psychological and physical factors.

Educational sports psychologists instruct their clients on the use of psychological techniques such as goal setting, energy management, relaxation skills, self-talk, and positive imagery in order to maximize performances. They usually possess background training in kinesiology and become certified through organizations such as the Association for Applied Sport Psychology (AASP).

## 2. PURPOSE OF THE STUDY

Researchers might start by observing human behavior and then describing a problem. By understanding what is happening, psychologists can then work on learning more about why the behavior happens and even how to change it.

The actual performance is the psyco-socio-biological process. The nature of sports performance can be understood completely only by studying this process. The study of this process will field variable information

about the structure of performance thereby giving valuable information having implications about training. Therefore, it is of most importance to understand the sports performance as a unity of movement and its result.

The sports performance is defined as “unity of execution and result of sports action or a complex sequence of sports actions measured or evaluated according to agreed and socially determined names” (Schnabel, 1981).

## 3. METHODOLOGY

### 3.1. Statement of the Problems

To asses the effect of psychological factors on the performance of university Kho-Kho players.

Psychological variables:

1. Anxiety
2. Self Confidence
3. Socio Economic Status
4. Gender - Male and Female
5. Age – 18–25 Years
6. University Players

### 3.2. Objectives

1. To asses the effect of anxiety on the performance of University Kho-Kho players.
2. To examine the effect of self confidence on the performance of the University Kho-Kho players.
3. To asses the effect of Socio Economic Status on the performance of the University Kho-KHO players.
4. To examine the difference on sports performance of sample sub-group of demographic variables.

#### 4. RESULTS

Keeping the major objectives of the study in view, the appropriate design is followed. The study is on the sample of 300 sports persons (Both Male and Female) selected randomly from the University participating players. Attempts are made to categorize sample into different equal sub-groups for the comparison. The factors like psychological taken into account to assess the effect on performance of sports persons.

#### 5. DISCUSSION

The study makes an attempt to examine impact of the different psychological factors to compare their ability to exhibit the outstanding performance during their participation in inter university competitions.

The nature of sports performance has been insufficiently explored because sports performance is a complicated multi-dimensional process of tackling a sports task. Its exploration needs an integrated effort on the part of various training science disciplines and theory and methods of specific sports.

#### 6. CONCLUSION

1. It is concluded that mental training are very important to improve the performance of KhoKho players.

2. It is also concluded that not only Kho-Kho game but also plays a vital role in all game's sports.
3. It is also concluded that male as well female too required for mental training to improve their performance.

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# A Comparative Analysis on Selected Psychomotor Abilities between Bidar and Hasan Districts Collegiate Men Basketball Players

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## ABSTRACT

The main aim of the present study is to compare selected psycho-motor abilities of Bidar and Hasan district collegiate men basketball players. To achieve the purpose study 60 men collegiate basketball players were selected from Bidar and Hasan districts ranging between 20 to 25 years of age. The selected psycho-motor abilities were administered to the subjects. It is concluded there is a significant difference in Speed and Agility test scores between Bidar and Hasan district collegiate men basketball players. There is a significant difference in Strength, Balance, and Endurance test scores between Bidar and Hasan district collegiate men basketball players. Psycho-motor abilities are supposed to be the basis of successful sports performance. The psycho-motor profile of a sports person is comprised of different types of abilities. The results of the study help the coaches and physical fitness trainers to prepare the advanced coaching and training programs according to their level of psycho-motor abilities.

**Keywords:** Psycho-motor abilities, Speed, Agility, Strength, Balance, Endurance.

## 1. INTRODUCTION

Psychomotor is a combination of mind and motor system of the body and movement. Psychomotor plays an important role in the field of sports and games. Perception, Kinesthetic sense, and some other factors are involved in this. Every action before execution needs some degree of mental alertness. This leads to the further movement of the motor organs to perform the specific movement. Psychomotor domain is concerned with movements and other closely related factors that influence it. Proficiency in any sport requires an ideal integration of numerous abilities developed to an ideal degree. However, performance measures of these abilities do vary from activity to activity. Fleishman identified the dimensions underlying human performance into the physical proficiency (fitness) area and the psychomotor area. The factors of strength, power, stamina, flexibility, coordination, and balance constituted proficiency whereas reaction-time, speed of movement, arm-hand steadiness, visual perception,

manual dexterity, and rate control were the abilities considered under psychomotor domain. Psychomotor variables act as the medium for the realization of cognitive and affective domains of learning and motor behavior. All these domains of learning are inseparable identities and work in perfect harmony and unison with one another. The psychomotor variables are primarily concerned with muscular contraction. Performance of motor skills involves neural, physiological, and psychological aspects and is a continuum that runs the gamut from physical to cognitive and there is always integration between these aspects of human behavior.

Psychomotor fitness of an individual is a perfect blending of physical as well as motor fitness and goes a long way in fielding the excellent outcomes. The nations exhibiting excellence in international sports do attach great significance to the total fitness level of their players. Different sports activities call for different levels of fitness. The level of fitness varies depending upon the level of competition as well. Participation in

the top-notch competitive Basketball requires the player to be in a state of optimum fitness. Modern Basketball is a fast game, characterized by incredible athletic performances by athletes. In fact, modern Basketball players are able to perform many different moves, jumps, running, change of directions, and technical movements in a very short time and with an order determined by the tactical situation. Running with and without the ball; in line and with different paths; jumping; throwing and passing and receiving in motion or during flight represents the technical characteristics of modern top Basketball. Then, to excel at the highest levels, it is important that training methodologies are developed on a simple basis: specificity. The closer to the demands of the performance, the better the training is.

### 1.2. Objective of the Study

The aim of this study is to find out the significant differences of selected psychomotor abilities between collegiate basketball players of Bidar and Hasan districts.

## 2. MATERIALS AND METHODS

To achieve the purpose of the study a group of sixty (N=60) boys subjects aged between 20 and 25 years, who participated in the Karnataka Veterinary, Animal and Fisheries Sciences University Inter-Collegiate Basketball tournament were selected on the random sampling method from Bidar and Hasan districts. 50 Meter Dash was administered to determine acceleration and speed. The score is the time recorded to the nearest 1/100<sup>th</sup> of a second. Push-ups test was administered to determine strength. The score is the total number of push-ups performed by the subjects. Illinois agility test was administered to test the running

agility. The score is recorded to the nearest 1/10<sup>th</sup> of a second. Stork balance stand test was administered to assess the ability to balance on the ball of the foot. The score is the total time recorded in seconds. 800 meter run test was too administered to determine cardiovascular endurance. The score is the time recorded to the nearest 1/100<sup>th</sup> of a second. The data is collected during the Karnataka Veterinary, Animal, and Fisheries Sciences University Inter-Collegiate Basketball tournaments.

### 2.1. Statistical Technique

The student's t-test and ANCOVA statistical techniques is applied to find out the significant differences on psychomotor abilities between collegiate men basketball players of Bidar and Hasan districts.

## 3. RESULTS AND DISCUSSIONS

### 3.1. Pair 1, Pair 2, Pair 3, Pair 4 and Pair 5

- It can be seen from the Table 1 that the value t-statistics 4.36 and 4.62 of paired samples test between Bidar and Hasan district collegiate men basketball players in Speed and Agility tests respectively. The t-values are significant as the p-values (.000 and .001) are <0.05. Thus, it can be concluded that the mean values of Speed test between Bidar (6.96) and Hasan (7.57) and Agility test between Bidar (24.56) and Hasan (18.24) are not similar. In other words, there is significant difference in Speed and Agility test scores between Bidar and Hasan district collegiate men basketball players.
- It can be also seen from the Table 1 that the value t-statistics 6.54, 5.03, and 2.78 of paired samples

**Table 1:** Differences in psychomotor abilities of Bidar and Hasan districts collegiate men Basketball players

Pairs	Players	Variable	Paired Samples Statistics				t-value	Sig. (2-tailed)
			Districts	Mean	N	Std. Deviation		
Pair 1	BASKETBALL	SPEED	Bidar	6.96	30	0.76	4.36*	.000
			Hasan	7.57	30	0.89		
Pair 2		STRENGTH	Bidar	24.56	30	5.02	6.54*	.000
			Hasan	18.24	30	4.12		
Pair 3		AGILITY	Bidar	16.54	30	1.08	4.62*	.001
			Hasan	20.26	30	1.56		
Pair 4		BALANCE	Bidar	09.12	30	6.02	5.03*	.002
			Hasan	12.42	30	8.16		
Pair 5		ENDURANCE	Bidar	3.52	30	0.52	2.78*	.001
			Hasan	5.12	30	0.66		

Significant at 0.05 level

test between Bidar and Hasan district collegiate men basketball players in Strength, Balance and Endurance tests, respectively. The t-values are not significant as the p-values (0.000, 0.002 and 0.001) are <0.05. Thus, it can be concluded that the mean values of Strength test between Bidar (24.56) and Hasan (18.24), Balance test between Bidar (9.12) and Hasan (12.42), and Endurance test between Bidar (3.52) and Hasan (5.12) are not similar. In other words, there is a significant difference in Strength, Balance, and Endurance test scores between Bidar and Hasan district collegiate men basketball players.

#### 4. CONCLUSION

- It is concluded there is a significant difference in Speed and Agility test scores between Bidar and Hasan district collegiate men basketball players.
- There is a significant difference in Strength, Balance, and Endurance test scores between Bidar and Hasan district collegiate men basketball players.
- Psycho-motor abilities are supposed to be the basis of successful sports performance. The psycho-motor profile of a sports person is comprised different types of abilities.
- The results of the study help the coaches and physical fitness trainers to prepare the advanced coaching and training programs according to their level of psycho-motor abilities.

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# A Study of Relationship between Leadership behavior and Emotional Intelligence of North Karnataka Sports Students

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## ABSTRACT

The study attempts to find out the impact of the relationship between the Emotional Intelligence and Leadership Behavior of the North Karnataka sports students. Through this study, the researcher aims at understanding and studying the relationship between Emotional Intelligence and Leadership Behavior of the students. The researcher has collected data from 250 sports students of North Karnataka. The researcher has taken up this study as there are very less evidences present in the review related literatures that study the relationship or the interaction between the variables of Emotional Intelligence and Leadership Behavior. The study has attempted to bridge the gaps between various variables in the sports field. Through this study, we have known that Emotional Intelligence is an independent variable whereas Leadership Behavior is a dependent variable. The researcher has used standard tools to measure the variables. In pursuance of the objective of the study, the researcher has used Pearson's Product Moment Correlation and ANOVA Technique. The study has discovered a positive relationship between both the variables. Emotional Intelligence has significant impact on the Leadership Behavior. It has been conceptualized like a solution interpreter for victory in the sports performance. In other words, the researcher through this study has found out that good Emotional Intelligence among the sports students makes them a better Leader and further enhances their performance. In order to achieve success, it is very important to be mentally strong. Emotional Intelligence influences Leadership Behavior. If Leader relates to work with Emotional Intelligence then it will give positive and good results.

## 1. INTRODUCTION

### 1.1. What is Emotion?

Emotion is nothing but a feeling and thoughts which have both psychological and biological states, and ranges of impulses to act. According to the Oxford English Dictionary, Emotion refers to any agitation or disturbance of mind, feeling, passion; any vehement or excited mental state. There are, many long-lasting debates regarding the emotions that should be considered under primary or if there is an existence of any sort of primary emotions or not. There is an argument regarding the set of core emotions based on the surveys that state there are four universally recognized face expressions which are; Anger, Fear, Sadness, and Enjoyment. This universal recognition of emotions by facial expressions was first noted by Darwin, who found it to be evident

that these facial expressions are already set up into the nervous system of human beings. Emotional Intelligence includes the perfect or appropriate management, awareness, and expression of these scales of the listed emotions. Affective self-regulation is the key capacity of Emotional Intelligence. To be emotionally intelligent means having the personal skills that features a balanced and rich and good personality. According to the words of Aristotle, emotional intelligence is the rare ability to be angry with the right person, to the right degree, at the right time, for the right purpose, and in the right way. In other words, we can say that emotional intelligence refers to the skill of getting angry when its required, get angry only to the required limit, get angry at the correct time, and for the right objective, and in get angry but in the right manner. The components of Emotional Intelligence are classified into five main areas Self Awareness, Managing Emotions, Motivating Oneself,

Recognizing Emotions in others, Empathetic in nature and Interpersonal Effectiveness.

### 1.2. What is Leadership?

An individual can be truly called as a leader when he/she can find the right way, walk that way and show that right way to his team members which will help them achieve success. A leader is the one who needs to search the way towards the glory of his team members then later he has to himself/herself examine if it's the right way to walk through and then finally after everything is favorable then the leader has to present it before his teammates. And a true leader always shows what to do and does not only tell. A Good leader believes in team first and keeps his objectives clear, leadership behavior is a totally understanding, keeping it very single engaging personality. A leader is said to be a good leader only when he has a clear vision, fellowship, and a good influence. One of the unique skills of leadership is good communication. A leader should have totally positive thoughts, with a creative mind, and should also motivate other team members towards goals and for good result leader takes own feedback. A positive capacity towards goal to translate vision into reality is actual leadership. A good leader has the qualities such as decision-making, good communicator, always supportive, believes in teamwork. Leader has to take all the responsibilities, as he contributes towards team and goals a leader has the quality to influence others and has to do the work under ethics. A leader is not the person who is the captain of the team but is an individual with extraordinary qualities than the other member who can lead the team. So in other words we can say that an individual who leads the team and guides them is to be called as a leader.

### 2. PURPOSE OF THE STUDY

- To study the relationship between leadership behavior and emotional intelligence of North Karnataka sports students.
- To determine the relative efficiency between leadership behavior and emotional intelligence of North Karnataka sports students.
- To investigate the effect of emotional intelligence on the leadership behavior of North Karnataka sports students.
- To investigate the interaction affect of leadership behavior and emotional intelligence of North Karnataka sports students.

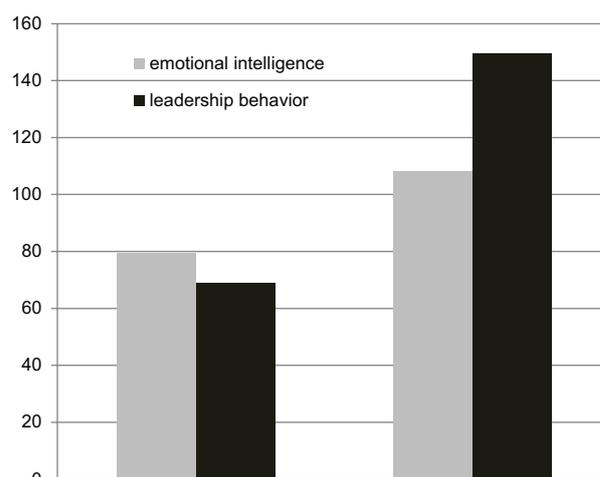
### 3. METHODOLOGY

The study attempts at finding the relationship between Emotional Intelligence and Leadership Behavior of North Karnataka Sports Students. The Data was been collected through a questionnaire. Researcher has taken questionnaire about leadership behavior scale made by EA Fleschman 1973 and emotional intelligence constructed by Anukul Hyde and Sanjot Pethe 2001. Firstly they have done so many types of research on this questionnaire after that they have found that this is suitable test for these variables. 250 responses were been taken from the North Karnataka Sports students. Further, ANOVA and Correlation method was used to analyze the data. And the result was been prepared.

### 4. RESULTS

There is positive relationship between emotional intelligence and leadership behavior of North Karnataka Sports Students.

	Emotional intelligence	Leadership behavior
Average	79.38	68.7
Variance	108.1080321	149.375502



### 5. DISCUSSION

Through this study, the researcher has found out that there is a close relationship between the emotional intelligence and leadership behavior of the North Karnataka sports students. For a player to perform well it is very important to have good mental strength as well as leadership qualities. A leader is one who leads the team. A leader plays a significant role in the performance of

the team. Without good emotional intelligence, a leader cannot take the right decisions and be mentally strong during stressful situations.

## 6. CONCLUSION

The study attempted to find the relationship between Emotional Intelligence and Leadership Behavior of North Karnataka sports Students. We collected responses from 250 sports students from North Karnataka. The study has proved that there is a great impact of Emotional Intelligence on Leadership Behavior. The students who have strong emotional intelligence have good leadership behavior which further improves their sports performance.

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# Effect of Plyometric and Circuit Training on Selected Physical Variables among Volleyball Players of Hyderabad District of Telangana State

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## ABSTRACT

The purpose of the study was to find out the effect of plyometric and Circuit training on selected physical variables among Volleyball players of Hyderabad District in Telangana State. To achieve this purpose, forty-five Volleyball players in the age group of 19–22 years those who have participated in the inter college tournaments for the year 2019 were taken as subjects. The selected forty-five subjects were divided into three equal groups of fifteen each as two experimental groups and one control group, in which Group I (n=15) underwent plyometric training for three days per week for Twelve weeks, Group II (n=15) underwent the Circuit Training for three days per week for Twelve weeks and Group III (n=15) acted as control who are not participate any training apart from their regular activities. The selected Physical variables such as abdominal strength, speed, and leg explosive power were assessed before and after the training period. Sit up test, 50 M Dash, and Standing Broad Jump are the Tests that were used to conduct the pretest and post for Measuring the Physical Variables such as Abdominal Strength, Speed, and explosive power of legs. The results of the study it was found that there was a significant difference of performance due to Plyometric and circuit training when compared with the control group. Keywords: Volleyball players, Plyometric, Circuit Training etc.

## 1. INTRODUCTION

Plyometrics includes explosive exercises to activate the quick response and elastic properties of the major muscles. It was initially adopted by Soviet Olympians in the 1950s, and then by sportspeople worldwide. Sports using plyometrics include basketball, tennis, badminton, squash, and volleyball as well as the various codes of football. The term “plyometrics” was coined by Fred Wilt after watching Soviet athletes prepare for their events in track and field. He began a collaboration with trainer Michael Yesses to promote plyometrics.

Circuit Training is developed by the Scientist Morgan R.E. and Adamson G.T. at the University of Leeds in the year 1957. This is Resistance to develop the motor abilities such as strength, speed, and endurance. Circuit training is an exercise “circuit” which consists of prescribed exercises which includes for the upper body, lower back, abdomen, and Lower body. It can be

done with own body weight and using the resistance exercises such as Barbells, and Medicine Balls. Circuit training improves all-round physical fitness, as opposed to fitness for a specific sport.

D. Asheervatham *et al.* (2019) the principle of the study was to access to effect of plyometric training and aqua plyometric training on muscular endurance and explosive power among junior long jumpers. Forty-five long jumpers from the Chennai region at age ranged between 14 and 17 years. The selected subject was assigned into three equal groups with fifteen subjects with each group. The experimental group-I plyometric group, experimental group-II aqua plyometric training, and control group. The experimental groups were under 12 weeks of training and control group was not under experimentation. Muscular endurance was measured by sit-ups test and explosive power was measured by standing broad jump was taken for both groups. The initial and the final readings derived from

the experimental and the control group underwent a procedure of statistical analysis using ANCOVA. The confidence level was 0.05. These findings suggest that the plyometric training and aqua plyometric training program has a statistically significant influence in developing the selected criterion variables.

## 2. RESEARCH OBJECTIVES

The Objective of this study was to find out the effect of plyometric and Circuit training on selected physical variables among Volleyball players of Hyderabad District in Telangana State.

## 3. HYPOTHESIS

It was hypothesized that there would be a significant difference in the effect of plyometric and Circuit training on selected physical variables among Volleyball players of Hyderabad District in Telangana State.

## 4. METHODOLOGY

To achieve this purpose, forty-five Volleyball players in the age group of 19–22 years those who have participated in their inter college tournaments for the year 2019 taken as subjects. The selected forty-five subjects were divided into three equal groups of fifteen each as two experimental groups and one control group, in which Group I (n=15) underwent plyometric training for three days per week for twelve weeks, Group II (n=15) underwent the Circuit Training for three days per week for six weeks and Group III (n=15) acted as control who are not participate any training apart from their regular activities. The selected Physical variables such as abdominal strength, speed, and leg explosive power were assessed before and after the training period. The

following Plyometric Training given for Experimental Group I for 12 weeks on alternate days.

### 4.1. Tools

The following tests were conducted at in pre-test and post test for measuring the physical variables.

1. Sit ups – Abdominal muscular strength
2. Standing broad jump – Explosive power of legs
3. 50 M dash – Acceleration and speed.

## 5. ANALYSIS OF DATA

The data collected prior to and after the experimental periods on abdominal strength, leg explosive power and speed plyometric training group, circuit training, and control group were analyzed and presented in the following Table 1.

## 6. RESULTS

The results of the study also shown circuit training group has significantly improved in Setup's from Pre-Test Mean Score of 37.30 to 42.22 compare to the Plyometric training Group is 37.20 to 39.14 and control group is 37.13 to 37.34. Hence Circuit Training is effective for the development of abdominal Strength. The results of the study also shown circuit training group has significantly improved in Standing Broad Jump from Pre-Test Mean Score of 1.922 to 2.141 compare to the Plyometric training Group is 1.918 to 2.078 and control group is 1.916 to 1.919. Hence, Circuit Training is effective for the development of Explosive Power in the legs. The results of the study also shown circuit training group has significantly improved in 50 M Dash from Pre-Test Mean Score of 6.90 to 6.49 compare to the Plyometric training Group is 6.89 to 6.59 and control group is 6.90 to 6.88. Hence Circuit Training is effective for the development of Speed.

**Table 1:** Analysis of covariance with means and 'f' ratio for sit ups, Standing broad jump and 50 Meter dash for plyometric training, circuit training, and control group

Variable Name	Group Name	Control Group	Plyometric Group	Circuit Training Group	'F' Ratio
Sit ups (in numbers)	Pre-test mean±S.D	37.13±1.15	37.2±1.25	37.3±1.21	0.001
	Post-test Mean±S.D.	37.34±1.16	39.14±1.31	42.22±1.36	3.935*
Standing broad jump (in meters)	Pre-test Mean±S. D	1.916±0.12	1.918±0.135	1.922±0.13	0.003
	Post-test Mean±S.D.	1.919±0.12	2.078±0.22	2.141±0.31	3.034*
50 M dash (in seconds)	Pre-test Mean±S. D	6.90±0.008	6.89±0.0089	6.90±0.0083	0.006
	Post-test Mean±S.D.	6.88±0.0081	6.59±0.0092	6.48±0.0097	6.766*

\*Significant at .05 level of confidence. (The table value required for significance at .05 level of confidence with df 2 and 43 and 2 and 42 were 3.21 and 3.22 respectively)

## 7. CONCLUSIONS

From the analysis of the data, the following conclusions were drawn.

1. There was a significant improvement due to the plyometric training and Circuit Training on abdominal strength, explosive power, and speed when compared with the control group.
2. There was a significant improvement due to the Circuit Training compared to the Plyometric Training for the development of abdominal strength, explosive power, and speed.

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# Personality and Self Confidence among Girls and Boys

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## ABSTRACT

Personality may be described as the most characteristic integration of an individual's structure, modes of behavior attitudes, capacities, abilities, and aptitudes. Most theorists agree that personality is an internal, mental, and emotional pattern of response to the environment – a pattern of thought, feeling, and behavior that affects every aspect of a person's life. Personality can also be defined in terms of characteristics (traits) of the individual which are directly observable in the behavior. It is a quality that makes a person stand out from other, it is whatever makes a person unique.

## 1. INTRODUCTION

In a rapidly developing psychological field, different psychologists on diverse fields, for example., clinical, experimental, educational, interpersonal, occupational, and vocational many other have made different, temporary and semi-popular factor analytical experiments for misusing personality of person.

Basavanna (1971) studied self confidence as an attribute of self-concept. An inventory developed for the purpose of measuring self-confidence was standardized by using traditional psychometric procedures on a group of 300 students.

## 2. STATEMENT OF THE PROBLEM OF THE STUDY

The problem formulated for the present study was to find out the difference of personality traits and self-confidence among girls sportspersons and boys sportsperson.

### 2.1. Hypothesis

1. There is a significant difference in personality traits among girls sportsperson and boys sportspersons.
2. There is a significant difference in self-confidence level among girls sportspersons and boys sportspersons.

## 3. METHODOLOGY

The sample of the study consists of total 100 sportspersons drawn randomly made two sex groups one girls group and boys group equally in Kalaburagi District. There were an equal number of samples. The respondents were administered 16 personality factors scale and self-confidence scale to determine the extent of personality and self-confidence levels between the girls group and boys group of sportspersons.

### 3.1. Tools

Following standardized questionnaires were used in the present study to measure personality traits,

1. Chattel's 16 PF questionnaire consist of 105 items
2. Self-confidence scale.

### 3.2. Data Analysis

Table 1 indicates that girls sportsperson have relatively high score than the boys sportspersons significant at 0.01 level. This says that girls sportspersons are outgoing, worm, easygoing, are kind, participative and likes people, abstract tinkers, trusty, balance minded, relaxed, practical, hard to tool dominative good leadership than boys sportspersons.

Table 2 shows that the girls sports persons are score low and the boys sportspersons are score higher than girls players but low score indicates a high level of

**Table 1: Personality factors of girls and boys of Kalaburagi District**

Factors	Girls		Boys		t-value
	Mean	SD	Mean	SD	
A	6.26	1.44	3.95	1.47	8.31**
B	6.03	1.5	3.71	1.91	7.4**
C	6.53	1.79	3.88	1.32	8.68**
E	6.25	1.36	3.98	1.28	9.01**
F	6.45	1.75	3.9	1.61	7.83**
G	5.68	1.17	4.1	1.8	5.79**
H	5.26	1.02	4.9	2.42	1.04*
I	4.5	1.09	5.73	1.2	5.68**
L	4.33	1.09	5.66	1.14	6.1**
M	4.35	1.2	5.43	1.14	6.02**
N	3.96	1	4.5	1.09	3.12**
O	4.06	1.25	4.98	1.61	3.31**
Q1	5.58	1.69	4.15	1.92	5.54**
Q2	6.16	1.04	4.5	1.12	7.2**
Q3	6	1.85	5.03	1.65	3.59**
Q4	4.48	1.15	5.1	1.55	2.46**

Significant level 0.01 level

**Table 2: Self confidence**

Groups	Mean	N	SD	t-value
Girls	32.40	50	4.54456	8.97**
Boys	39.30	50	2.33212	

self-confidence and high score indicates low self-confidence, so the girls sportspersons are more confident than the boys sportspersons.

#### 4. CONCLUSION

The following conclusions:

1. There is a significant difference in the personality traits among girls and boys sportspersons of Kalaburagi District.

2. There is a significant difference in self-confidence level among girls and boys sportspersons.

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# Effect of Psychological Factors on Sports Performance

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## 1. INTRODUCTION

Psychology of sport is a branch of psychology that examines various aspects of sports activities and physical culture. It also studies the psychological aspects of the athlete; personality. It develops diagnostic techniques for selecting persons of specific sporting events and effective training method, Sports psychology examines the athlete psychic states in various complex situations. Sports psychology is also designed to develop the psychological foundations of sporting skills by teaching optimal Locomotor habits and proper control one's body and by fostering the athlete's will power and all round development.

## 2. LOCUS OF CONTROL (LOC) IN SPORTS

LOC is another psychological variable influencing sports' performance. LOC is related to the measurement the extent to which an individual is sub-motivated, directed, or controlled (internal frame of reference) and the extent to which the environment (Luck, Chance, etc.) influence his behavior. Thus LOC is related to the placement of responsibility for the outcome of events.

Therefore, LOC appears to be a key factor in the outcome of individual's efforts. This is also true in case of sports persons who field in any competitive event. His sports performance appears to be function of LOC that he places for his play activities. Therefore it is important to study the impact of LOC on sports performance of athletes.

## 3. METHODOLOGY

Keeping major objectives of the study in view, appropriate design is adopted. The study was conducted on 300 sports persons selected from various colleges of Gulbarga. The criterion of selection was participation in sports at least at intercollegiate level. Thus the sample selected was categorized equally on variables such

as age and sex. The distribution of sample is given in Table 1.

The sample so selected was administered the scales, viz, locus of control. This is done to examine the differences between the sample' sub-groups on psycho- factor and subsequently, the sample was categorized based on the scores. Because the sports performance is rather influenced by the psycho factor of the participants.

### 3.1. Objectives of the Study

1. To study the influence of locus of control on sports performance of persons.
2. To study the variation of psychological factors in two age groups and their influence on sports performance.
3. To examine the sex difference in sports performance.

### 3.2. Statement of the Problem

To study the effect of psychological factors on sports performance.

### 3.3. Hypothesis

1. There would be significant differences in psycho factors between the two sample sub-groups of age and sex.
2. There is an influence of locus of control on sports performance-higher the internal locus of control greater the sports performance.
3. There are sex differences in the sports performance of sample sub-groups.
4. There will be significant difference in sports performance between two age groups.

## 4. RESULTS

Table 2 presents the data of male and female respondents in respect of Locus of control - a psychological variable.

**Table 1: Distribution of sample**

Age	Men	Women	Total
15–20 Years (Gr. 1)	75	75	150
21 and above Years (Gr. 2)	75	75	150
Total	150	150	300

**Table 2: Mean, SD, and t-value of locus of control in male-female sub-group (n=300)**

Sex	Internal LOC	External LOC	t-value
Male			
Mean	67.7	41.5	**15.9
SD	10.92	9.08	
n	88	62	
Female			
Mean	59.9	48.7	1.23
SD	10.01	9.02	
n	67	83	
t-value	4.61**	4.70**	

\*\*Significant at 0.01 level

Again both male and female sample (n=300) is divided into two categories - internal and external of locus of control. As per the norms of the LOC scale, (Roma and Pal 1985), one who scores above 35 is categorized as belonging to external LOC while one who scores below 35 is considered to be of internal LOC. Accordingly, there are 88 males with internal LOC and 62 with external LOC while there are 67 females with internal LOC and 83 with external LOC. It can be noticed that the males have significantly higher internal LOC than their counterparts.

Table 3 demonstrates the means, SD, and t values of sports performance in three events of 100 meters, 200 m, and 400 m speed of sports persons in two age groups (Juniors and Seniors). It can be noticed that in the event of 100 m run the performances of juniors is better than those of senior athletes. The juniors have scored a mean of 13.60 while the seniors have a mean of 15.91. It is clear that the juniors have taken less time in the event of 100 meters speed test. The obtained t-value of 2.83 is significant at 0.01 level which reveals that there are significant differences in the athletic performance between the two sample sub-groups. Obviously, the athletes belonging to the age group of 15-20 have significantly higher performance than their counterparts.

The means SD's and t-values of sports performance are presented in Table 4. As can be seen, the mean score

**Table 3: Mean SD and t-values of Sports Performance of Track event in Two Categories of Age (n=300)**

Category	100 mtrs.	200 mtrs.	400 mtrs.
Juniors Age-Group-1			
Mean	13.60	30.69	59.12
SD	998	2.19	3.76
n	151	151	151
Seniors age-Group-2			
Mean	15.91	33.22	63.72
SD	9.96	2-75	4.61
N	149	149	149
t-value	2.83**	8.78**	9.45**

\*\*Significant at 0.01 level

**Table 4: Mean, SD and t-value of sports performance of track event in male-female sub-group (n=300)**

Category	100 mtrs.	200 mtrs.	400 mtrs.
Male			
Mean	13.93	30.95	59.84
SD	1.15	2.69	4.45
n	150	150	150
Female			
Mean	15.57	32.95	62.97
SD	9.97	2.15	4.61
n	150	150	150
t-value	2.606**	6.660*	5.985*

\*Significant at 0.05 level, \*\*Significant at 0.01 level

of male athletes in 100 meters event (13.93) is lower than the mean score of females (15.75). This shows that the males have taken significantly lower time than their counterparts in this event as the t-value of 2.606 which is significant at 0.05 level implies. Thus the performance of male athletes is found to be higher than that of females.

## 5. CONCLUSIONS

1. The male respondents are found to have possessed more internal LOC than those of females.
2. There are significant differences in LOC between the two sample sub-groups of age.
3. The respondents with an internal locus of control have performed significantly higher on all the three events than those with external LOC.
4. There is a significant independent influence of psycho factors locus of control on the sports performance in 100 meters track event.

5. The factors like age and sex have significantly influence performance of athletes in 100 meters motor test.
6. The performance of players in 200 meters event is significant and independent/influenced by psycho factors locus of control.
7. The performance of athletes in 400 meter run is significantly and independent<sup>^</sup> influenced by factors of age and sex.

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# A Theoretical Research Study on Sports and Mental Toughness

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## ABSTRACT

Research on mental toughness in sport and exercise has focused largely on individual differences, in which mental toughness is viewed as a relatively stable characteristic. However, classic previous research on animals has suggested that “toughening up” can be achieved through exposure to stressful conditions. Although this finding does not necessarily transfer to human subjects, there are distinct parallels with various techniques commonly used as interventions in sport and exercise environments.

**Keywords:** Mental toughness, Sports, Sports psychology.

## 1. INTRODUCTION

There are certain moments during competition that appears to carry great psychological significance, when the momentum starts to shift in one direction or another. These situations require athletes to remain completely focused and calm in the face of difficult circumstances. Tennis players talk of the “big” points during a tight match, such as a fleeting chance to break serve; for an athlete, it could be the final triple jump in the competition after seriously underperforming; for a footballer, it could be how you react to a perceived bad refereeing decision or to going behind in a match your team are expected to win. Think about times when things have not gone quite to plan and how you reacted. The journey toward peak performance is rarely a perfectly smooth road and we learn from our mistakes – or should do. Do setbacks shake your self-belief and lower your motivation or act as a catalyst for even greater effort.

Even great athletes and teams suffer setbacks. Olympic athlete Steve Backley is a prime example. In his book, *The Winning Mind*, Backley cites his psychological strengths and, at times, his weaknesses as major determinants of whether he performed near to or below his own strict targets in competition.<sup>[1]</sup> He talks of the transition from young up-and-coming javelin thrower to

major international competitor when, after experiencing success so often as a junior, he found himself underprepared for the mental hurdles and barriers created by higher-level competition. Backley says that psychological strategies were the key to helping him to deal with this competitive stress.

Most top athletes and coaches believe that psychological factors play as crucial a role as physical attributes and learned skills in the make-up of champions. When physical skills are evenly matched – as they tend to be in competitive sport – the competitor with greater control over his or her mind will usually emerge as the victor. Mental strength is not going to compensate for lack of skill, but in close contests, it can make the difference between winning and losing.

A key question for sport and exercise psychologists is whether champions have simply inherited the dominant psychological traits necessary for success or whether mental toughness can be acquired through training and experience. Recent research has attempted to explore the concept of mental toughness in sport more thoroughly, and it appears that, while some people are naturally more tough-minded than others, people can be “toughened-up” with the correct approach to training.

What do we mean by mental toughness? It is probably easiest to define in terms of how it affects behavior and performance. A mentally tough athlete is likely to achieve relatively consistent performances regardless of situational factors; retain a confident, positive, optimistic outlook, even when things are not going well, and not “choke” under pressure; deal with distractions without letting them interfere with optimal focus; tolerate pain and discomfort; remain persistent when the “going gets tough”; and have the resilience to bounce back from disappointments.

## 2. THE INFLUENCE OF PERSONALITY

These characteristics are obviously related to success in most life situations. However, it seems that some of us may be tougher than others because of personality traits and learned ways of coping.

Personality research has always stirred up controversy usually because researchers have not been able to agree on the correct approach to studying it. Some have taken what is known as the “trait” approach, which views personality as stable and enduring, based on individual characteristics. However, others see personality as shaped by environmental influences, while “interactionists” view individual traits and the environment as codeterminants of behavior. In recent times, this latter position has tended to predominate, based on the view that personality structure involves both a stable core of attitudes, values, and beliefs about self that remains relatively unchanged after early childhood, and more changeable, dynamic behaviors that are influenced by our environment.

Research on the relationship between stress and illness has revealed that some people have characteristics that act as buffers against stressors, making them less likely to succumb to ill health in difficult times. The leading researcher Suzanne Kobasa showed in one study that a personality characteristic known as “hardiness” was a key factor in whether or not highly stressed executives succumbed to illness. The hardy executives, who avoided illness, tended to perceive stressors as “challenges” rather than threats, so maintaining a sense of control over events.

Kobasa suggested that hardiness incorporates three key elements:

### 2.1. Control

The perceived ability of the individual to exert influence rather than experience helplessness.

### 2.2. Commitment

That is, a refusal to give up easily.

### 2.3. Challenge

Involving a person’s ability to grow and develop rather than remain static, and to view change rather than stability as the norm.

Until recently, few studies had attempted to transfer the concept of hardiness to sport and exercise settings, but it seems very similar to the idea of mental toughness outlined earlier in this article. One study on the relationship between hardiness and performance in basketball showed that seven out of eight season-long performance indicators were significantly correlated with a total hardiness score. This finding needs to be interpreted with caution, however, since correlations do not necessarily reflect causation.

More recently, a team of researchers at Hull University have taken the idea of hardiness a step further by proposing a model of mental toughness in sport. A key development has been the development of a questionnaire to assess mental toughness that can be used to assess its influence in experimental studies.

The Hull researchers carried out two studies to show how mental toughness was related to performance and cognitive appraisal. In the first study, 23 volunteers performed 30 min static cycling trials at three different intensities of 30, 50, and 70% of their maximum oxygen uptake, rating the physical demands of the trials at 5 min intervals.

Participants were classified as having either high or low mental toughness based on their responses to the above-mentioned questionnaire and, as predicted, those with higher levels of mental toughness reported significantly lower perceived exertion at 70% of maximum. No significant differences were noted at lower levels of exertion which, as the researchers acknowledged, is consistent with the cliché that “when the going gets tough, the tough get going.” The observed differences at higher levels of exertion could reflect a tendency of the more tough-minded to somehow act on the incoming stimuli before it reaches the level of perception, to reduce the perception of strain. Mentally tough exercisers might perceive themselves as having greater control during such conditions or interpret the higher intensity as a challenge rather than a threat.

The second study, on 79 participants, considered the influence of mental toughness on resilience in adverse

situations. Participants were given either positive or negative feedback after completing a variety of motor tasks and then asked to perform a planning task which was used as the objective performance measure. The key question for the researchers was how participants would respond to feedback that could alter their confidence. As predicted, mentally tough participants performed better on the planning task, delivering relatively consistent performances whether their feedback had been negative or positive. However, those with lower levels of mental toughness performed significantly worse after negative feedback, confirming the greater resilience of those with high levels of mental toughness.

### 3. THE “4CS” MODEL OF MENTAL TOUGHNESS

Building on the work of Kobasa, the Hull team proposed that confidence (as well as control, commitment, and challenge) was a key element of mental toughness. This has given rise to the “4Cs” model of mental toughness.

Research on mental toughness in sport and exercise has focused largely on individual differences, in which mental toughness is viewed as a relatively stable characteristic. However, classic previous research on animals has suggested that “toughening up” can be achieved through exposure to stressful conditions.

Although this finding does not necessarily transfer to human subjects, there are distinct parallels with various techniques commonly used as interventions in sport and exercise environments. For example, a technique known as “stress inoculation training” gradually exposes the individual to more threatening situations while self-control is acquired as a means to combat learned helplessness. The stress response is gradually diminished as exposure renders the situation less threatening and the individual experiences a growing sense of control.

Of particular importance here is the idea that exposure to stress in controlled situations is much more powerful than stress reduction or removal, which will not help an individual cope with future exposure to the same stressor. One researcher has proposed four major influences on toughening, as follows:

#### 3.1. Early Life Experiences

Both human and animal studies have shown links between exposure to stressors in early life and reduced fear or emotionality when exposed to threats in adulthood.

#### 3.2. Passive Toughening

Intermittent exposure seems to protect against depletion of “stress hormones” and is linked with their quicker returns to baseline levels. In other words, people become less sensitive and more tolerant of stress.

#### 3.3. Active Toughening

Physical fitness gained through aerobic conditioning is thought to be an important means of self-toughening. This could be related to the application of control.

#### 3.4. Aging

This has the opposite effects to the other three, tending to make people more sensitive to and less tolerant of stress.

Clearly, active and passive toughening is the most relevant manipulations for athletes and can be applied in a number of practical ways. Stress inoculation training is an obvious application, but this is probably best approached with the aid of a sport psychologist. Since I am a sport psychologist, I will give some examples of how mental overload may be applied to training sessions to achieve some degree of toughening.

Rod Laver, the Australian tennis legend, has described how he used practice sessions to simulate “tough” match conditions. Laver felt that fatigue placed great strain on the concentration which was crucial to success in long matches. To simulate these conditions, Laver forced himself to concentrate and work even harder during the latter stages of training sessions, when he was tired, so that he became used to the mental strain of such conditions. He has cited this as one of the key factors in his long-lasting success.

Simulation training is a great way to prepare mentally for the challenges of competition, and this can include mental as well as physical stressors. For example, a tennis player could increase the mental pressures in a practice match by starting each service game 0–15 down and thus getting used to “rebounding” after losing the first point. Alternatively, a player with an over-reliance on his first serve could be restricted to one serve only and be forced to become extremely focused and accurate with what is, in effect, a second serve.

To enhance the stress still further, players could practice by playing tiebreakers or play practice matches in front of an audience. The coach might use bad line calls or spectator noise as a way of exposing players

intermittently to distractions and giving them practice at dealing with them.

Tennis is a game with plenty of breaks between plays that allow time for dwelling on past events or self-doubting. Using imagery and positive self-talk during dead time to remain calm and in control can be an effective strategy. Mentally tough competitors are likely to use strategies that reinforce their self-belief at times of crisis. Moreover, these strategies can be rehearsed in practice situations.

With a little invention, simulation training can be used for most athletes, and the opportunity to deal with

mental stressors in controlled situations can be an invaluable way to toughen up in preparation for the very real challenges of competition.

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# An Analysis on Emotional Intelligence of former Indian Olympian Basketball Player Mr. G. Dilip

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## ABSTRACT

A sportsman always is vital and stands out of the crowd, prominent, and healthy, both mentally as well as physically. Sports always develop the leadership qualities in one's personality. Personality; a term used to characterize the individual that emerges as a person grows, matures, and reacts to the thousands of environmental stimuli that surround him. The learning of social values, and particularly sportsmanship, must be a part of the purpose of the individual; its results must be recognized and be made satisfying if learning is to take place. The present investigation is to analyze the emotional intelligence of former Indian Olympian Basketball player Mr. G. Dilip. To collect necessary data pertaining to the present case study through questionnaire. The subject was administered to the emotional intelligence scale. It is concluded that he has undisciplined self-conflict and has significant control of his emotions and general behavior. Inclination to be socially aware and careful and he has lot of self-respect and high regard for social reputation. He is sedate, relaxed, composed, and satisfied person. He has high self-awareness, empathy, self-motivation, emotional stability, managing relations, integrity, self-development, value orientation, commitment, and altruistic behavior and he belongs to middle class socio-economic status family.

**Keywords:** Basketball, Emotional intelligence, Player.

## 1. INTRODUCTION

Sports activities affect the process of personality development in ways more than one. Social and environmental pressures, biological factors, frustration, and tension in life are to be managed with full attention to develop mature form of personality. The psychological approach of teaching, in this regard, has been suggested as that of a coach who, while training his athletes tries to understand their personal and emotional problems, motivates their behavioral tendencies, and inspires the best of their personality to come out. It has been propounded that only an individual centered culture can nurture the utmost level of personality development but such a pre-condition seems rarely possible.

Sports psychology (2010), sports activity has been acclaimed for stimulating the real soul out. A sportsman always is vital and stands out of the

crowd, prominent, and healthy, both mentally as well as physically. Sports always develop the leadership qualities in one's personality. Personality; a term used to characterize the individual that emerges as a person grows, matures, and reacts to the thousands of environmental stimuli that surround him. The learning of social values, and particularly sportsmanship, must be a part of the purpose of the individual; its results must be recognized and be made satisfying if learning is to take place.

Experts of personality theories such as Allport (1937) and Eysenck (1951), who have made substantial studies, consider that every individual is unique in himself. Personality has been called as a mirror of the culture. For the growth and development of an individual's mind and personality, genetic and environmental circumstances play a major roles. Eventually, personality development is the outcome of a process of interaction between genetic inclinations

and environmental conditions. The human being by nature first tries to accommodate himself with the environment around him; and then, he starts striving to establish his superiority over it.

### 1.1. Purpose of the Study

The present investigation is to analyze the emotional intelligence of former Indian Olympian basketball player Mr. G. Dilip.

### 1.2. Objective of the Study

The aim of the study was to analyze the emotional intelligence of Mr. G. Dilip.

## 2. MATERIALS AND METHODS

As per the objective laid down in the present study, the investigator collected the data and information related to the present study in the following methods,

### 2.1. Methods and Tools

#### 2.1.1. Methods

1. Illustrative case studies
2. Explorative (or pilot) case studies.

##### 2.1.1.1. Illustrative case study

These are primarily descriptive studies. They typically utilize one or two instance of an event to show what a situation is like. Illustrative case studies serve primarily to make the unfamiliar familiar and to give readers a common language about the topic in question.

##### 2.1.1.2. Explorative (or pilot) case studies

These are condensed case studies performed before implementing a large scale investigation. Their basic function is to help identify questions and select types of measurement before the main investigation. The primary pitfall of this type of study is that initial findings may seem convincing enough to be released prematurely as conclusions.

#### 2.1.2. Tool

Emotional intelligence scale (EIS).

#### 2.1.3. Test administration and collection of data

To collect necessary data pertaining to the present case study through questionnaire. The subject was administered to the EIS.

## 3. RESULTS AND DISCUSSION

Through psycho-sociological questionnaire to assess the emotional intelligence of Mr. G. Dilip is assessed.

### 3.1. The Analysis of Emotional Intelligence of Mr. G. Dilip and Findings of the Factors

#### 3.1.1. Self-awareness

Mr. G. Dilip has high ability to empathize with, feel comparison for, validate, motivate, inspire, encourage, and soothe others. He has high (more) ability to make intelligent decisions using a healthy balance of emotions and reason. He was neither too emotional nor too rational. He has high ability to manage and take responsibility for one own emotions, especially the responsibility for self-motivation and personal happiness.

He has high ability of recognizing and naming one's own emotions and he has high knowledge of the causes of emotions and has high ability of recognizing the difference between feelings and actions.

#### 3.1.2. Mood management

Mr. G. Dilip has high frustration tolerance ability and anger management, eliminates verbal pull downs, fights and group disruptions, better able to express anger appropriately without resorting to violence, fewer, suspensions or expulsions, less aggressive or self-destructive behavior, more positive feelings about self, school, and family, and better at handling stress.

#### 3.1.3. Self-motivation

Mr. G. Dilip was more responsible, better able to focus on task at hand and pay attention, less impulsive, more self-controlled, and improved scores on achievement tests.

#### 3.1.4. Empathy

Mr. G. Dilip was afflicitive person and he make good companion because he was pleasant and agreeable. Others feel comfortable him and like him in other words, affiliative persons have superior emotional and social skills in dealing with others, derive gratification and reward from their interpersonal contacts, and tend to be source of happiness to others.

#### 3.1.5. Managing relations

Mr. G. Dilip was more popular and outgoing; friendly and involved with peers, more sought out by peers,

more concerned and considerate, more “prosocial” and harmonious in groups, more sharing, cooperation and helpfulness, and more democratic in dealing with others.

### 3.2. Emotional Intelligence Factors Level in Mr. G. Dilip

- a. High self-awareness
- b. High empathy
- c. High self-motivation
- d. High emotional stability
- e. High managing relations
- f. High integrity
- g. High self-development
- h. High value orientation
- i. High commitment
- j. High altruistic behavior.

## 4. CONCLUSIONS

- He has undisciplined self-conflict and has significant control of his emotions and general behavior. Inclination to be socially aware and careful and he has lot of self-respect and high regard for social reputation. He is sedate, relaxed, composed, and satisfied person
- He has high self-awareness, empathy, self-motivation, emotional stability, managing relations, integrity, self-development, value orientation, commitment, and altruistic behavior and he belongs to middle class socio-economic status family.

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# Comparative Analysis on Selected Physical Fitness Factors of Ballary and Kalaburagi District Sports Hostel Boy's Athletes

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## ABSTRACT

The investigator aimed to study a comparative analysis on selected physical fitness factors of Ballary and Kalaburagi district sports hostel boy's athletes. To achieve the purpose of the study, 64 samples were selected on random sampling method. The data were collected from Ballary and Kalaburagi districts on the selected physical fitness parameters such as strength, speed, agility, flexibility, endurance, and explosive strength with their respective tests. The results found that there is no significant difference in the upper body strength between Ballary and Kalaburagi district sports hostel boy's athletes. Further the results shown significant difference in speed, agility, flexibility, endurance, and explosive strength tests between Ballary and Kalaburagi district sports hostel boy's athletes.

**Keywords:** Agility, Endurance and explosive strength, Flexibility, Speed, Strength.

## 1. INTRODUCTION

Athletes require the specific fitness with reference to strength, speed, flexibility, and coordination. Fitness training equips the sports person to face the physical and physiological challenges that come his way in his competitive sports career. Specific physical fitness characteristics enable the player to perform the unusual movements required by the concerned sport. Physical fitness characteristics measurement plays an important role on the successful athlete's performances. These parameters further help to predict talents and finance on the potentially of best athletes for each sport.

Sports have emerged as a discipline not merely to discuss performance, techniques, or records but also to study it as a means by which greater societal forces may be analyzed and through which various problems may be remedied.

Physical parameters are very essential in athletics where the athletes have to perform with endurance and strength endurance for a longer period with breathing

mechanism and along with lot of concentration attention and mental toughness. The athletes need to have greater physical fitness and mental toughness for effective physical fitness characteristics play an important role in deciding the performance level and also they have their importance in the field of athletics. Somewhat or altogether physical fitness parameters have definite effects on the performance of athletes.

Application of science and technology has greatly influenced modern sports. Sports performances are reaching to newer heights and success in sports performance today is not only a chance. Based on the knowledge of modern sports sciences, scientific principles of training and coaching, and application of sophisticated modern testing and measuring techniques, it has now become possible to predict performance of the athletes at different levels of competitions.

One of the challenges confronting the coaches and sport scientists is to understand the physical fitness factors contributing to successful athletes.

### 1.1. Statement of the Problem

The problem formulated for the present study is “comparative analysis on selected physical fitness factors of Ballary and Kalaburagi District sports hostel boy's athletes.”

### 1.2. Purpose of the Study

Physical parameters are very essential in athletics where the players have to perform with endurance and strength endurance for a longer period with breathing mechanism. Based on these facts, the present research study aims to analyze comparatively on selected physical fitness factors of Ballary and Kalaburagi district sports hostel boy's athletes. Furthermore, the present study analyzes the differences in the physical fitness parameters on selected physical fitness factors of Ballary and Kalaburagi district sports hostel boy's athletes. Hence, the present study is taken into consideration to bring the changes in the present scenario of coaching and training means and methods for effective performance.

### 1.3. Objectives of the Study

The objectives of the study are as follows:

- To analyze the differences in the selected physical fitness parameters among Ballary and Kalaburagi district sports hostel boy's athletes
- To suggest the better training means and methods for effective performance.

## 2. MATERIALS AND METHODS

The methodological aspects related to the present investigation have been described. The procedure and methods applied in sample selection, selection of subjects, selection of variables, selection of tests, instrument reliability of data, orientation of the subjects, collection of data, test administration, experimental design, and statistical technique are present in this chapter.

### 2.1. Selection of Subjects

The total 40 samples from Ballary and Kalaburagi districts were selected by random sampling method [Table 1].

### 2.2. Statistical Analysis

Descriptive statistics and paired *t*-test for comparison of selected physical parameters of sports hostel boy's athletes.

**Table 1: Sample design**

Districts	No. of Subjects	Total
Ballary	20	40
Kalaburagi	20	

## 3. RESULTS AND DISCUSSION

Analysis of physical fitness parameters among Ballary and Kalaburagi districts sports hostel boy's athletes [Table 2]:

It is shown from Table 2 that the value *t*-statistics 4.24 of paired samples test between Ballary and Kalaburagi district sports hostel boy's athletes, respectively. The *t*-value is not significant as the *P*-value (.000) is <0.05. Thus, it can be concluded that the mean values of the upper body strength test between Ballary (6.82) and Kalaburagi (3.96) are not similar. In other words there is significant difference in the upper body strength between Ballary and Kalaburagi district sports hostel boy's athletes.

It is shown from Table 3 that the value *t*-statistics 3.02 of paired samples test between Ballary and Kalaburagi district sports hostel boy's athletes, respectively. The *t*-value is significant as the *P*-value (.000) is <0.05. Thus, it can be concluded that the mean values of speed test between Ballary (7.06) and Kalaburagi (9.32) are not similar. In other words, there is significant difference in speed between Ballary and Kalaburagi district sports hostel boy's athletes.

It is shown from Table 4 that the value *t*-statistics 6.94 of paired samples test between Ballary and Kalaburagi district sports hostel boy's athletes, respectively. The *t*-value is significant as the *P*-value (0.000) is <0.05. Thus, it can be concluded that the mean values of endurance test between Ballary (2654.28) and Kalaburagi (2560.32) are not similar. In other words, there is significant difference in endurance between Ballary and Kalaburagi district sports hostel boy's athletes.

It is shown from Table 5 that the value *t*-statistics 7.32 of paired samples test between Ballary and Kalaburagi district sports hostel boy's athletes, respectively. The *t*-value is significant as the *P*-value (0.000) is <0.05. Thus, it can be concluded that the mean values of agility test between Ballary (21.54) and Kalaburagi (27.42) are not similar. In other words, there is significant difference in agility between Ballary and Kalaburagi district sports hostel boy's athletes.

It is shown from Table 6 that the value t-statistics 6.02 of paired samples test between Ballary and Kalaburagi district sports hostel boy's athletes, respectively. The t-value is significant as the *P*-value

(0.000) is <0.05. Thus, it can be concluded that the mean values of flexibility test between Ballary (29.02) and Kalaburagi (26.14) are not similar. In other words, there is no significant difference in

**Table 2: Differences in the upper body strength among Ballary and Kalaburagi districts sports hostel boys athletes**

Paired samples statistics						
Variable	Athletes	Mean	<i>n</i>	Std. Deviation	<i>t</i> -value	Sig. (2-tailed)
Upper Body Strength	Ballary	6.82	20	1.74	4.24*	0.000
	Kalaburagi	3.96	20	0.86		

Significant at 0.05 level

**Table 3: Differences in speed among Ballary and Kalaburagi districts sports hostel boys athletes**

Paired samples statistics						
Variable	Athletes	Mean	<i>n</i>	Std. Deviation	<i>t</i> -value	Sig. (2-tailed)
Speed	Ballary	7.06	20	1.56	3.02*	0.000
	Kalaburagi	9.32	20	1.64		

Significant at 0.05 level

**Table 4: Differences in endurance among Ballary and Kalaburagi districts sports hostel boys athletes**

Paired samples statistics						
Variable	Athletes	Mean	<i>n</i>	Std. Deviation	<i>t</i> -value	Sig. (2-tailed)
Endurance	Ballary	2654.28	20	532.42	6.94*	0.000
	Kalaburagi	2560.32	20	495.34		

Significant at 0.05 level

**Table 5: Differences in agility among Ballary and Kalaburagi districts sports hostel boys athletes**

Paired samples statistics						
Variable	Athletes	Mean	<i>n</i>	Std. Deviation	<i>t</i> -value	Sig. (2-tailed)
Agility	Ballary	21.54	20	5.38	7.32*	0.000
	Kalaburagi	27.42	20	4.36		

Significant at 0.05 level

**Table 6: Differences in flexibility among Ballary and Kalaburagi districts sports hostel boys athletes**

Paired samples statistics						
Variable	Athletes	Mean	<i>n</i>	Std. Deviation	<i>t</i> -value	Sig. (2-tailed)
Flexibility	Ballary	29.02	20	5.02	6.02*	0.000
	Kalaburagi	26.14	20	4.54		

Significant at 0.05 level

**Table 7: Differences in explosive strength among Ballary and Kalaburagi districts sports hostel boys athletes**

Paired samples statistics						
Variable	Athletes	Mean	<i>n</i>	Std. Deviation	<i>t</i> -value	Sig. (2-tailed)
Explosive Strength	Ballary	14.26	20	3.62	5.06*	0.001
	Kalaburagi	09.54	20	5.12		

Significant at 0.05 level

flexibility between Ballary and Kalaburagi district sports hostel boy's athletes.

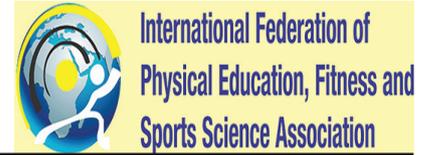
It is shown from the Table 7 that the value t-statistics 5.06 of paired samples test between Ballary and Kalaburagi district sports hostel boy's athletes, respectively. The t-value is significant as the P-value (0.001) is more than 0.05. Thus, it can be concluded that the mean values of explosive strength test between Ballary (14.26) and Kalaburagi (9.54) are not similar. In other words, there is significant difference in explosive strength between Ballary and Kalaburagi district sports hostel boy's athletes.

#### 4. CONCLUSIONS

1. There is significant difference in the upper body strength between Ballary and Kalaburagi district sports hostel boy's athletes
2. There is significant difference in speed between Ballary and Kalaburagi district sports hostel boy's athletes
3. There is significant difference in endurance between Ballary and Kalaburagi district sports hostel boy's athletes
4. There is significant difference in agility between Ballary and Kalaburagi district sports hostel boy's athletes
5. There is significant difference in flexibility between Ballary and Kalaburagi district sports hostel boy's athletes
6. There is significant difference in explosive strength between Ballary and Kalaburagi district sports hostel boy's athletes
7. It is suggested from the study that core muscle exercise training is very much essential to keep the optimum level of performance.

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# Influence of Self-confidence and Physical Fitness on the McDonald Soccer Skill Test Performance of Collegiate Men Football Players of Bidar District

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## ABSTRACT

The purpose of the study is to assess the influence of physical fitness and self-confidence on the McDonald soccer skill test performance of collegiate men football players of Bidar district. Keeping the objectives in view, total 64 football players were drawn from various degree colleges of Bidar district (64) for the present study ranging between 18 and 25 years of age. To collect necessary data pertaining to the present study, total 64 subjects were administered to selected physical fitness and self-confidence tests. Based on the obtained data, the subjects were divided into two equal groups of high and low physical fitness and self-confidence. Further, the McDonald soccer skill test is administered for predicting the game proficiency of football players. There is a significant difference between the high and low physical fitness and self-confidence football players group on McDonald soccer skill test performance of Bidar district football players.

**Keywords:** Football, McDonald soccer skill, Performance, Physical fitness, Self-confidence.

## 1. INTRODUCTION

The aim of higher sports in this age of competition is to win in international meets or to attain peak performance in competition. Moreover, it is on this factor that the coaches try to concentrate. To reach the target and accomplish the social expectation, the players also work hard, ignoring their comforts in their daily lives, and practice for many hours a day. Unless the players are prepared mentally and psychologically for the contest, they are not able to achieve the desired results. The psychological training has to be provided to the players by the coaches to face stressful situation occurring during the competition.

Initially, the most of the research work in physical education and sport was carried out in science related sub disciplines such as exercise physiology, bio-mechanics, nutrition, physical fitness, and anthropometry. Researchers in these fields were of the opinion that factors present in these areas were responsible for performance of a sportsman in competitive sport.

As regards the role of socio-psychological factors in sport performance, it was comparatively overlooked and under emphasized. The participation in modern sports is influenced by various physical, physiological, sociological, and psychological factors. During training, besides good physique and fitness of the athlete, main emphasis is laid on the development of various types of skills involved in the game as well as on teaching the strategies, techniques, and tactics of the game.

Until recently, the coaches have been paying inadequate attention to the social and psychological factors which although have been proved to contribute to performance in events in the higher competitive sports. It is only recently that sports administrators and coaches have realized the importance of the psychological preparation and training of players to enable them to bear the strain and stresses inherent in sports participation.

Hence, now the sports trainer and coaches have started giving more importance to the psychological conditioning or the building the mental make-up of

the players before their contents in the national and international competitions. It is critically important that those studying the psychological and physical fitness concepts as they apply to the area of physical education and coaching be carefully attentive to the fact that social and cultural forces are operating constantly and a meticulous understanding of these is absolutely necessary in any attempt to unravel many factors causing and revealing behavior and its changes in sports setting.

### 1.1. The Purpose of the Study

The purpose of the study is to assess the influence of self-confidence and physical fitness on the McDonald soccer skill test performance of collegiate men football players of Bidar district.

### 1.2. Objectives of the Study

The objectives of the study are as follows:

- To assess the influence of physical fitness on performance of collegiate men football players of Bidar district
- To assess the influence of self-confidence on performance of collegiate men football players of Bidar district
- To analyze the ability of predicting the game proficiency of collegiate men football players of Bidar district.

## 2. MATERIALS AND METHODS

### 2.1. The Sample

The total 64 football players were drawn as samples for the study from various degree colleges of Bidar district ranging between 18 and 25 years of age. Keeping the objectives in view, the following research design is followed.

Sample design		
Category	District	Football Players
Men	Bidar	64

### 2.2. Tools and Test

#### 2.2.1. Mahesh Bhargava's achievement motive test

The present test is intended to measure the N Ach score of the person. It is based on the lines following the pattern of Bishwanath Mukherji and the method of sentence completion test. The test consists of 50 items of incomplete sentences/item/which are to be completed

by the subject by putting a check-mark on any one of the three alternative responses given against each item. The subject is instructed about what they have to do and are required to check the item by choosing one of the alternative responses which indicate his/her true feelings with respect to the point asked through a particular item. It is expected and believed that the subject who is engaged in the process of checking the item would consider all the possible aspects which may be thought of about the item at that time. Thus, his/her check on the alternative responses (which he/she chooses so) would indicate his/her true feelings. In this way, all the items are to be checked indicating his/her responses on the whole test. Another special feature of the test is that items are repeated more than once to know the level of consistency with which the subject is answering the test. Similar responses on similar test items indicate the consistency in responding to the test. This has been done so as to avoid the time interval gap effect which is usually present where test, retest is done allowing a time gap. Care has been taken to cover as many aspects as are conveniently permissible and possible from administration point of view. The usual time which is needed for administering the test is 30 min including the time needed for giving the instructions to the subjects.

#### 2.2.2. McDonald soccer skill test (1951)

This skill test constructed for college men, junior varsity, and varsity soccer players as subjects, for the purpose of predicting game proficiency. The test consists of kicking a soccer ball at a kickboard 11 ½ feet in height by 30 feet long from a distance of 9 feet in front of the kickboard. The score is the number of volleys performed in a 30-s period. The validity coefficient of the test ranged from 0.63 to 0.94. However, the test with a 9 feet retraining distance provided the highest validity coefficient and is in common use for soccer skill testing.

### 2.3. Test Administration and Collection of Data

To collect necessary data pertaining to the present study, total 64 subjects were administered to selected physical fitness and self-confidence tests. Based on the obtained data, the subjects were divided into two equal groups of high and low physical fitness and self-confidence. Further, the McDonald soccer skill test is administered two groups for predicting the game proficiency of football players. The data were in the form of performance given by the subjects in response to the McDonald soccer skill test. The subjects completed McDonald soccer skill test within the stipulated time after which the data were collected back for the comparison of scores.

**Table 1:** Mean and SD scores of Mc Donald soccer skill test of Bidar district collegiate men football players at two levels of self-confidence

Test	Physical fitness level	Mean	SD	Total
McDonald soccer skill test	High	27	0.78	12.21**
	Low	19	0.69	

\*\*Significant at 0.005 level

**Table 2:** Mean and SD scores of McDonald soccer skill test of Bidar district collegiate men football players at two levels of physical fitness

Test	Physical Fitness level	Mean	SD	Total
McDonald soccer skill test	High	25	0.68	10.24**
	Low	18	0.62	

\*\*Significant at 0.05 level

#### 2.4. Statistical Methods

1. Descriptive statistics
2. *t*-test.

### 3. RESULTS AND DISCUSSION

Based on the statistical data analysis, the following tables were drawn and discussions were made.

Table 1 presents the mean and SD scores of McDonald soccer skill test of high and low self-confidence collegiate men football players group of Bidar district. The mean score of high self-confidence football players group (27) is higher than the and low physical fitness football players group (19). The *t*-value (12.21) is significant at 0.05 level. The mean values and *t*-value reveal that there is a significant difference in the performance of high and low self-confidence collegiate men football players groups in the McDonald soccer skill test. In other words, it is interpreted that the high self-confidence football players group are having very good football game proficiency than the low physical fitness players group.

Table 2 presents the mean and SD scores of McDonald soccer skill test of high and low physical fitness collegiate men football players group of Bidar district. The mean score of high physical fitness football players group (25) is higher than the and

low physical fitness football players group (18). The *t*-value (10.24) is significant at 0.05 level. The mean values and *t*-value reveal that there is a significant difference in the performance of high and low physical fitness collegiate men football players groups in the McDonald soccer skill test. In other words, it is interpreted that the high physical fitness football players group is having very good football game proficiency than the low physical fitness players group.

### 4. CONCLUSIONS

1. There is a significant difference in the performance of high and low high self-confidence collegiate men football players groups in the McDonald soccer skill test
2. There is a significant difference in the performance of high and low physical fitness collegiate men football players groups in the McDonald soccer skill test
3. The high physical fitness and self-confidence football players groups are having very good football game proficiency than the low physical fitness players group.

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# An Analytical Study on Socio-cultural Deprivation and Achievement Motivation Level among Rural and Urban Men Athletes

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## ABSTRACT

To measure the impact of socio-cultural deprivation on the level of achievement motivation of men athletes, the investigator has selected total 200 samples and among them 50% rural and 50% urban both deprived and non-deprived groups. The investigator adopted personalized interview method for the collection of information related to personal and socio-demographic status of the respondent. There is a significant difference of achievement motivation between the high and low deprived rural and urban athletes. The low deprived rural and urban athletes were found to have high achievement motivation than the high deprived rural and urban athletes.

**Keywords:** Achievement motivation, Athletes, Rural, Socio-cultural deprivation, Urban.

## 1. INTRODUCTION

The deprived is found everywhere including the rural and urban setup of Indian society. The effects of deprivation interfere with the smooth and rapid development of psychological and non-psychological processes and limit the behavioral efficiency of the individuals. Environmental and socio-cultural deprivations are found to hamper the cognitive development and affect adversely the personality development. Poverty can be considered the major component of deprivation. The fact that socio-cultural conditions are at the core of human behavior and would affect the performance of the sportsmen. This phenomenon has attracted the large number of investigators during 60s to ascertain effects of socio-cultural deprivation on human behavior. According to them, deprivation includes many parameters. It cannot be caused by any one parameter such as caste, class, social, cultural economic conditions, life styles, and living standards. There are many people in every society who are deprived of one or the other of these factors.

Psychologically, poverty is conceived in many ways. It can be viewed both as a structure and as a product of a

given system. It has multidimensional impact on human behavior, which results in the form of deterioration and improper behavioral growth and development. Harrington (1962) suggested that poverty should be defined as a psychological in the context of the very poor people who are almost aliens to the society in which they live and who invariably almost always develop such negative attitudes as would prevent them from making use of new opportunities. According to the Oscar Lewis (1996), "the culture of poverty is both an adaptation and reactions of the poor to their marginal position in a class-structured and highly individualized capitalist society." It represents an effort to cope with the feeling of hopelessness, despair that develops from the realization of the improbability of achieving success in terms of values and goals of the larger society.

### 1.1. Statement of the Problem

An analytical study on socio-cultural deprivation and achievement motivation level among rural and urban men athletes.

## 1.2. Objectives of the Study

The objectives of the study are as follows:

1. To study the nature of relation between socio-cultural deprivation and achievement motivation of high and low deprived rural and urban men athletes
2. To examine the level of achievement motivation between the high and low deprived rural and urban men athletes.

## 2. MATERIALS AND METHODS

The present research is undertaken in the perceptual framework. It is the correlation study within the ex-post-facto research design. The particulars of the sample size, tools, instructions, scoring, statistical tools, collection of data, and statistical analysis are given below.

### 2.1. Sample

To measure the impact of socio-cultural deprivation on the level of achievement motivation of men athletes, the investigator has selected total 200 samples. Among them, 50% rural and 50% urban both deprived and non-deprived groups.

### 2.2. Tools

1. The prolonged deprivation scale (PDS) developed and standardized by Mishra and Tripathi
2. Achievement motivation test developed by Dr. Beena Shah.

### 2.3. Data Collection

The investigator adopted personalized interview method for the collection of information related to personal and socio-demographic status of the respondent. Before the collection of data, the investigator briefed the respondents for a while about the purpose of the study and ensured them that their information would be used only for the research purpose. This process helped to establish rapport with the respondents. To meet the objectives of the present study, the data were collected by administering personal-bio-data schedule PDS and achievement motivation scale at the two stages. At the first stage, PDS was administered to the respondents participated in 80<sup>th</sup> All India Inter University Athletics Championship 2019-2020 organized by Rajiv Gandhi University of Health Sciences and Alva's Education Foundation held at Swaraj Maidan, Moodbidri from January 2, 2020 to January 6, 2020 to categorize the

participants into deprived and non-deprived groups taking the first and the third quartile as cutoff points, respectively. At the second stage, the achievement motivation scale was administered to the respondents to measure their level of achievement. After the completion of the perceptual evaluation, the scales were collected from them.

### 2.4. Statistical Analysis

To meet the objectives of the study and to verify the formulated hypotheses, the data were analyzed. As the purpose of the study was to find out the impact of socio-cultural deprivation on the achievement motivation level of sportsmen and sportswomen, the mean and SD were calculated, "*t*" values were calculated to test the significant difference between the samples.

## 3. RESULTS AND DISCUSSION

Researchers on socio-cultural deprivation have discovered several important dimensions of socio-cultural relations capable of producing wide-ranging physical and physiological effects. Each of it is capable of causing profound changes in the physical, mental, and social functioning of the individual. When taken together, their effects are likely to be far greater and far more profound: Not only the individual but also the society is greatly affected by it. Widespread prolonged socio-cultural deprivation would, therefore, produce substantial changes in the social structure and social process of the affected group. Moreover, the nature of changes under socio-cultural deprivation will by and large be unfavorable to the individual and the group both.

That is what emerges from socio-cultural deprivation research even when the term is narrowly used. From this, it follows that social and cultural conditions not only affect man's behavior but also because of his behavior. Precise understanding of this interconnection between socio-cultural deprivation and human behavior, therefore, requires (1) precise understanding of historicity of the two and (2) analysis of their bases. Historical and evolutionary character of social and cultural structure and processes can be ignored only at the cost of scientific precision. It would be historically as well scientifically incorrect to treat all groups, societies of all ages as equal. It has already been stated that the term social reflects of all possible relations and interconnection of relations between mode of production and productive forces which give rise to various social

groups reflecting varying degree of social processes. Such consideration would include family, society, and state as a part of given social structure reflecting same social processes, although of different quality and intensity. It will also involve its consideration in class context for all the groups of a given society acquire meaning only in their class context.

Therefore, to meet the objectives of the present study to find out the nature of relationship, the effects and interactional effects of independent variable, that is, socio-cultural deprivation on dependent variable, that is, achievement motivation of athletes the “*t*” test was applied. The obtained results were tested for their significance.

The above Table 1 shows the mean, SD, and *t*-values of achievement motivation of rural and urban athletes. The rural athletes have the mean scores of 256.32 and the urban athletes have the mean score of 306.14. The obtained *t*-value is 7.02\*\*, which is significant at 0.01 level, shows the significant difference of achievement motivation between the rural and urban athletes. The comparison of the mean scores of both groups suggests that the urban athletes have more achievement motivation than the rural athletes. Therefore, the above hypothesis is accepted and validated.

Table 2 shows the mean, SD, and *t*-values of need for academic success of rural and urban athletes. It can be seen in the above table that the rural athletes have the mean score of 22.61 and the urban athletes have the mean score of 24.30. The obtained *t*-value is 3.29 which is significant at 0.01 level indicates the significant

difference between need for academic success between rural high deprived and urban low deprived athletes. The difference in the mean scores of both groups suggests that the urban low deprived athletes have high need for academic success than the rural high deprived athletes. Therefore, the above hypothesis has been validated and accepted.

Table 3 presents the mean, SD, and *t*-values of need for social achievement of rural and urban athletes. The rural and urban athletes have the mean score of 22.05 and 22.76, respectively. The comparison of the mean score shows no big difference in need for social achievement of rural and urban athletes. The obtained *t*-value is 1.21 which is not significant suggests that there is no significant difference in need for social achievement between rural and urban athletes. The rural athletes have been successful in having the high need for social achievement on par with the urban athletes due to their high social ability, positive personality traits, good inter personal skills, and quality interactions with the members of the society. Therefore, the hypothesis that urban athletes have high need for social achievement than the rural athletes is not accepted and therefore rejected.

Table 4 reveals the mean, SD, and *t*-values of need for vocational achievement of rural and urban athletes. The rural and urban athletes have the mean score of 24.28 and 24.78, respectively. The obtained *t*-value is 0.412 which is not significant, suggests that there is no significant difference in need for vocational achievement between rural and urban athletes. The comparisons of the mean scores also suggest that there is no significant difference between need for vocational achievement of rural and urban athletes. Therefore, the hypothesis that the urban

**Table 1:** The mean, SD, and *t*-values of achievement motivation of rural and urban athletes

Variables	Rural athletes	Urban athletes
Mean	256.32	306.14
SD	58.16	72.13
<i>t</i> -value	7.02**	

\*\*Significant at 0.01 level

**Table 2:** The mean, SD, and *t*-values of need for academic success of rural high deprived and urban low deprived athletes

Variables	Rural athletes	Urban athletes
Mean	24.64	26.46
SD	2.45	2.86
<i>t</i> -value	4.12**	

\*\*Significant at 0.01 level

**Table 3:** The mean, SD, and *t*-values of need for social achievement of rural and urban athletes

Variables	Rural Athletes	Urban Athletes
Mean	23.12	23.56
SD	2.84	3.12
<i>t</i> -value	1.40	

**Table 4:** The mean, SD, and *t* values of need for vocational achievement of rural and urban athletes

Variables	Rural athletes	Urban athletes
Mean	24.28	24.78
SD	2.64	2.86
<i>t</i> -value	0.412	

**Table 5:** The mean, SD, and *t*-values of need for skill achievement of rural and urban athletes

Variables	Rural athletes	Urban athletes
Mean	23.56	23.98
SD	2.86	3.74
<i>t</i> -value	0.520	

athletes have high need for vocational achievement than the rural athletes has not been accepted.

Table 5 reveals the mean, SD, and *t*-values of need for skill achievement of rural and urban athletes. The rural and urban athletes have the mean score of 23.56 and 23.98, respectively. The obtained *t*-value is 0.520 which is not significant suggests that there is no significant difference between need for skill achievement of rural and urban athletes. Hence, considering the insignificant *t*-value, the hypothesis that the urban athletes have high need for skill achievement than the rural athletes is not accepted and rejected.

#### 4. CONCLUSIONS

1. There is a significant difference of achievement motivation between the high and low deprived rural and urban athletes. The low deprived were found to have high achievement motivation than the high deprived rural and urban athletes
2. There is a significant difference of need for academic success between high and low deprived rural and urban athletes. The low deprived athletes have high need for academic success than the high deprived rural and urban athletes
3. There is no significant difference of need for social achievement between high and low deprived rural and urban athletes. The need for social achievement

is high among the low deprived and low among the high deprived rural and urban athletes

4. There is no significant difference of need for vocational achievement between high and low deprived rural and urban athletes. The low deprived athletes have high need for vocational achievement than the high deprived rural and urban athletes
5. There is no significant difference of need for skill achievement between high and low deprived athletes. The need for vocational achievement is found to be high among the low deprived than the high deprived athletes.

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# Influence of Achievement Motivation on the Goal Kicking Ability and Game Proficiency of Collegiate Men Football Players of Dharawad District

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## ABSTRACT

The aim of higher sports in this age of competition is to win in international meets or to attain peak performance in competition. Moreover, it is on this factor that the coaches try to concentrate. To reach the target and accomplish the social expectation, the players also work hard, ignoring their comforts in their daily lives and practice for many hours a day. Unless the players are prepared mentally and psychologically for the contest, they are not able to achieve the desired results. The psychological training has to be provided to the players by the coaches to face stressful situation occurring during the competition. The purpose of the study is to assess the influence of achievement motivation on the Australian rules football (AFL) combine goal kicking test performance and game of collegiate men football players of Dharawad district. Keeping the objectives in view, total 62 football players were drawn from various degree colleges of Dharawad district (62) for the present study ranging between 18 and 25 years of age. To collect necessary data pertaining to the present study, total 62 subjects were administered to selected achievement motivation tests. Based on the obtained data, the subjects were divided into two equal groups of high and low achievement motivation and achievement motivation. Further, the AFL combine goal kicking test and McDonald soccer skill test were administered for predicting the football kicking accuracy and game proficiency under different conditions of football players. There is a significant difference between the high and low achievement motivation football players group on AFL combine goal kicking and McDonald soccer skill test performance of Dharwad district football players. The high achievement motivation football players groups are having very good football kicking accuracy and game proficiency under different conditions than the low achievement motivation players group.

## 1. INTRODUCTION

The participation in modern sports is influenced by various physical, physiological, sociological, and psychological factors. During training, besides good physique and fitness of the athlete, main emphasis is laid on the development of various types of skills involved in the game as well as on teaching the strategies, techniques, and tactics of the game. Until recently, the coaches have been paying inadequate attention to the social and psychological factors which although have been proved to contribute to performance in events in the higher competitive sports. It is only recently that sports

administrators and coaches have realized the importance of the psychological preparation and training of players to enable them to bear the strain and stresses inherent in sports participation.

Hence, now the sports trainer and coaches have started giving more importance to the psychological conditioning or the building the mental make-up of the players before their contents in the national and international competitions.

It is critically important that those studying the psychological and physical fitness concepts as

they apply to the area of physical education and coaching be carefully attentive to the fact that social and cultural forces are operating constantly and a meticulous understanding of these is absolutely necessary in any attempt to unravel many factors causing and revealing behavior and its changes in sports setting.

The aim of higher sports in this age of competition is to win in international meets or to attain peak performance in competition. Moreover, it is on this factor that the coaches try to concentrate. To reach the target and accomplish the social expectation, the players also work hard, ignoring their comforts in their daily lives, and practice for many hours a day. Unless the players are prepared mentally and psychologically for the contest, they are not able to achieve the desired results. The psychological training has to be provided to the players by the coaches to face stressful situation occurring during the competition.

Initially, the most of the research work in physical education and sport was carried out in science related sub disciplines such as exercise physiology, bio-mechanics, nutrition, physical fitness, and anthropometry. Researchers in these fields were of the opinion that factors present in these areas were responsible for performance of a sportsman in competitive sport. As regards the role of socio-psychological factors in sport performance, it was comparatively overlooked and under emphasized.

### 1.1. The Purpose of the Study

The purpose of the study is to assess the influence of achievement motivation on the on the goal kicking ability and game proficiency of collegiate men football players of Dharwad District.

### 1.2. Objectives of the Study

The objectives of the study are as follows:

- To assess the influence of achievement motivation on performance of collegiate men football players of Dharwad district
- To analyze the ability of football kicking accuracy under different conditions of collegiate men football players of Dharwad district
- To assess the ability of game proficiency under different conditions of collegiate men football players of Dharwad district.

## 2. MATERIALS AND METHODS

### 2.1. The Sample

The total 62 football players were drawn as samples for the study from various degree colleges of Dharwad district ranging between 18 and 25 years of age. Keeping the objectives in view, the following research design is followed.

Sample Design		
Category	District	Football players
Men	Dharwad	62

### 2.2. Tools and Tests

#### 2.2.1. Mahesh Bhargava's achievement motive test

The present test is intended to measure the N Ach score of the person. It is based on the lines following the pattern of Bishwanath Mukherji and the method of sentence completion test. The test consists of 50 items of incomplete sentences/item/which are to be completed by the subject by putting a check-mark on any one of the three alternative responses given against each item. The subject is instructed about what they have to do and are required to check the item by choosing one of the alternative responses which indicate his/her true feelings with respect to the point asked through a particular item.

It is expected and believed that the subject who is engaged in the process of checking the item would consider all the possible aspects which may be thought of about the item at that time. Thus, his/her check on the alternative responses (which he/she chooses so) would indicate his/her true feelings. In this way, all the items are to be checked indicating his/her responses on the whole test. Another special feature of the test is that items are repeated morwe than once to know the level of consistency with which the subject is answering the test. Similar responses on similar test items indicate the consistency in responding to the test. This has been done so as to avoid the time interval gap effect which is usually present where test, retest is done allowing a time gap. Care has been taken to cover as many aspects as are conveniently permissible and possible from administration point of view. The usual time which is needed for administering the test is 30 min including the time needed for giving the instructions to the subjects.

#### 2.2.2. Australian rules football (AFL) combine goal kicking test

This is a test of AFL goal kicking skill test and was added in 2012 to the AFL draft combine. This goal kicking test

was developed by retired Bulldog Brad Johnson, and assesses a player's ability to kick accurately from set shots, tight angles, and on the run.

### 2.3. Purpose

Provide analysis of football kicking accuracy under different conditions.

### 2.4. Equipment Required

Grass or Mud field with goal posts, footballs, measuring, marker cones, and stopwatch.

### 2.5. Procedure

This test assesses a player's ability to kick accurately from set shots, tight angles, and on the run. Players have five shots at goals – two set shots from 35 m out in either pocket, two snaps from 20 m in front of each foot, and a running shot from 40 m out directly in front. Players will have to kick with the left and right feet and need to complete the test in 70 s.

### 2.6. Test Administration and Collection of Data

To collect necessary data pertaining to the present study, total 62 subjects were administered to selected achievement motivation tests. Based on the obtained data, the subjects were divided into two equal groups of high and low achievement motivation. Further, the AFL combine goal kicking test is administered two groups for predicting the football kicking accuracy under different conditions of football players. The data were in the form of performance given by the subjects in response to the AFL combine goal kicking test. The subjects completed AFL combine goal kicking test within the stipulated time after which the data were collected back for the comparison of scores.

### 2.7. Statistical Methods

1. Descriptive statistics
2. *t*-test.

## 3. RESULTS AND DISCUSSION

Based on the statistical data analysis, the following tables were drawn and discussions were made.

Table 1 presents the mean and SD scores of AFL combine goal kicking test of high and low achievement motivation collegiate men football players group of

**Table 1:** Mean and SD scores of AFL combine goal kicking test of Dharwad district collegiate men football players at two levels of achievement motivation

Test	Achievement motivation level	Mean	SD	Total
AFL combine goal kicking test	High	5.20	0.68	5.62**
	Low	2.96	0.52	

\*\*Significant at 0.05 level

**Table 2:** Mean and SD scores of McDonald soccer skill test of Dharwad district collegiate men football players at two levels of achievement motivation

Test	Physical fitness level	Mean	SD	Total
McDonald soccer skill test	High	26	0.92	11.36**
	Low	19	0.80	

\*\*Significant at 0.005 level

Dharwad district. The mean score of high achievement motivation football players group (5.20) is higher than the and low achievement motivation football players group (2.96). The *t*-value (5.62) is significant at 0.05 level. The mean values and *t*-value reveal that there is a significant difference in the performance of high and low achievement motivation collegiate men football players groups in the AFL combine goal kicking test. In other words, it is interpreted that the high achievement motivation football players group is having very good football kicking accuracy under different conditions than the low achievement motivation players group.

Table 2 presents the mean and SD scores of McDonald soccer skill test of high and low achievement motivation collegiate men football players group of Dharwad district. The mean score of high achievement motivation football players group (26) is higher than the and low physical fitness football players group (19). The *t*-value (11.36) is significant at 0.05 level. The mean values and *t*-value reveal that there is a significant difference in the performance of high and low achievement motivation collegiate men football players groups in the McDonald soccer skill test. In other words, it is interpreted that the high achievement motivation football players group is having very good football game proficiency than the low physical fitness players group.

## 4. CONCLUSIONS

1. There is a significant difference in the performance of high and low achievement motivation collegiate

men football players groups in the AFL combine goal kicking test

2. The high achievement motivation football players groups are having very good football kicking accuracy under different conditions than the low achievement motivation players group
3. There is a significant difference in the performance of high and low high achievement motivation collegiate men football players groups in the McDonald soccer skill test
4. The high physical fitness and achievement motivation football players groups are having very good football game proficiency than the low physical fitness players group.

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# A Comparative Study on the Performance of Kalaburagi and Ballary District High School Handball Players

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## ABSTRACT

The major purpose of the present study is to compare the performance of Kalaburagi and Ballary district handball players participated in the division level handball tournaments. To collect necessary data pertaining to present study, the jump shoot, accuracy throw, and obstacle dribble tests were administered to all the 120 high school handball players. Attempt is made to divide the samples into two groups of Kalaburagi and Ballary district. Results shown that there is a significant difference in the jump shoot, accuracy throw, and obstacle dribble performance of the high school handball players.

**Keywords:** Accuracy throw, Handball, Jump shoot, Obstacle dribble.

## 1. INTRODUCTION

Initially, the most of the research work in physical education and sport was carried out in science related sub disciplines such as exercise physiology, bio-mechanics, nutrition, physical fitness, and anthropometry. Researchers in these fields were of the opinion that factors present in these areas were chiefly responsible for performance of a sportsman in competitive sport.

Handball is a rapid game of continuous action, requiring fitness, and endurance as well as flexibility and balance. Good passing and catching skills enable a team to keep possession of the ball and thus go into the attack to score. Teams score goals by getting the ball into their opponent's goal. A high technical skill level with the support of solid physical fitness base will often bring success for a team even if its strategies are weak. The key to success in handball, as in a great many sports, lies in good fundamental skills. Since very limited research in the area of skills in handball has been done, the researcher felt the need to take up this study.

### 1.1. Statement of the Problem

The present study aims to compare on the performance of Kalaburagi and Ballary district high school handball

players. It also attempts to find out the differences in the performance among Kalaburagi and Ballary district high school handball players.

### 1.2. Objectives of the Study

The aim of the study was to find out the differences in the performance of jump shoot, accuracy throw, and obstacle dribble tests among Kalaburagi and Ballary district high school handball players.

## 2. MATERIALS AND METHODS

The study was conducted on the sample of 120 district level handball players selected from the Kalaburagi and Ballary districts of Karnataka State region [Table 1]. The sample design is given in the following tables.

### 2.1. Tools

Jump shoot, accuracy throw, and obstacle dribble tests.

### 2.2. Test Administration and Collection of Data

To collect necessary data pertaining to present study, the performance of jump shoot, accuracy throw, and

obstacle dDribble test results of the total subjects was taken.

### 2.3. Statistical Analysis

To meet the objectives of the study, the data were analyzed using the following statistical technique. “*t*” test to compare the sample sub groups.

## 3. RESULTS AND DISCUSSION

Table 2 presents mean, standard deviation, and *t*-values of Ballary and Kalaburagi district handball players in the first stage of jump throw, accuracy throw, and dribble tests performance. It can be observed from the table that the mean score of Kalaburagi district handball players is 30.12, 38.42, and 32.41 and Ballary district handball players are 26.24, 31.54, and 45.23 in the first stage of jump throw, accuracy throw, and dribble tests,

**Table 1:** Distribution of Sample

AM	Category	Total
	Boys	
Kalaburagi	60	120
Ballary	60	

**Table 2:** Performances of Ballary and Kalaburagi district handball players in the first stage of jump throw, accuracy throw, and dribble tests

Tests	Districts	<i>n</i>	Mean	SD	<i>t</i> -value
Jump Throw	Kalaburagi	60	30.12	5.14	4.56**
	Ballary	60	26.24	4.96	
Accuracy Throw	Kalaburagi	60	38.42	8.12	8.24**
	Ballary	60	31.54	6.02	
Dribble	Kalaburagi	60	32.41	4.84	12.46**
	Ballary	60	45.23	6.12	

Significant at 0.05 level

**Table 3:** Performances of handball players in the second stage of jump throw, accuracy throw, and dribble tests at different levels of self-confidence

Tests	Districts	<i>n</i>	Mean	SD	<i>t</i> -value
Jump Throw	Kalaburagi	60	32.18	5.86	10.24**
	Ballary	60	26.32	4.84	
Accuracy Throw	Kalaburagi	60	38.56	8.28	9.02**
	Ballary	60	30.48	6.04	
Dribble	Kalaburagi	60	33.54	5.46	11.26**
	Ballary	60	42.76	6.84	

Significant at 0.05 level

respectively. The *t*-values (4.56, 8.24, and 12.46) were significant at 0.05 level.

Hence, in other words, Kalaburagi district handball players were scored more than Ballary district handball players in the first stage of jump throw and accuracy throw tests, respectively. Whereas, Kalaburagi district handball players were taken less time as compare to the Ballary district handball players to complete the task of dribble test.

Table 3 presents mean, standard deviation, and *t*-values of Ballary and Kalaburagi district handball players in the first stage of jump throw, accuracy throw, and dribble tests performance. It can be observed from the table that the mean score of Kalaburagi district handball players is 32.18, 38.56, and 33.54 and Ballary district handball players are 26.32, 30.48, and 42.76 in the second stage of jump throw, accuracy throw, and dribble tests, respectively. The *t*-values (10.24, 9.02, and 11.26) were significant at 0.05 level.

Hence, in other words, Kalaburagi district handball players were scored more than Ballary district handball players in the first stage of jump throw and accuracy throw tests, respectively. Whereas, Kalaburagi district handball players were taken less time as compare to the Ballary district handball players to complete the task of dribble test.

## 4. CONCLUSIONS

1. Kalaburagi district handball players were performed well as compare to than Ballary district handball players in the first and second stage of jump hrow and accuracy throw tests, respectively
2. Whereas, Kalaburagi district handball players were taken less time as compare to the than Ballary district handball players to complete the task in both stages of dribble test.

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# A Comparative Analysis on Differences in the Basketball Performance of Inter-district Junior and Senior Basketball Players of Karnataka State

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## ABSTRACT

The major purpose of the present study is to compare the differences in the basketball performances of inter-district junior and senior basketball players selected from six districts basketball teams which are participated in the district level basketball tournaments of Karnataka state. To achieve the purpose of study, total 240 district level junior (120) and senior (120) basketball players were selected from six districts and Kalaburagi division level competitions held in respective districts of Karnataka state. To collect necessary data pertaining to present study, the total number of layup shot and successful layup shot scores scored by each district of basketball players was taken during the matches. The results highlight the fact that there are a significant differences in the inter-district basketball players belongs to junior and senior age group categories in the layup shot performance. In points scoring, the Ballary and Kalaburagi district players have outscored than the players of the other districts.

**Keywords:** Basketball, Layup shot, Performance, Socio economic status.

## 1. INTRODUCTION

The nature of sports performance has been insufficiently explored because sports performance is a complicated multi-dimensional process of tackling a sports task. Its exploration further needs an integrated effort on the part of various training science disciplines and theory and methods of specific sports. Human movement and human performance are a subject for such varied sciences as exercise, physiology, neuro-physiology, biomechanics, psychology, human cybernetics, etc. (Brook and Whiting, 1975).

The sports performance is a process-the process of tackling a given motor task. The degree, to which this task has been fulfilled, is the result of the process of tackling the motor task. Therefore, the concept of sports performance should include the actual process of tackling the task.

The sports performance is defined as, “unity of execution and result of sports action or a complex sequence of sports actions measured or evaluated according to the

agreed and socially determined names” (Schnabel, 1987).

The concept of sports performance and its various aspects has been developed by Schnabel (1981). The sports performance is the result of the interpreted action of various control and regulatory process, taking place at various levels of the central nervous system and consciousness. These processes determine the level of motor coordination and find expression in the movement structure and in various qualities and characteristics of sports movement.

### 1.1. Statement of the Problem

A comparative analysis on differences in basketball performance of inter-district junior and senior basketball players of Karnataka state.

### 1.2. Objectives of the Study

The aim of the study was to assess the differences in the inter-district junior and senior basketball players lay-up shot and score performance.

## 2. MATERIALS AND METHODS

The study was conducted on the sample of 240 district level basketball players selected from the district and Kalaburagi division level competitions held in respective districts and Kalaburagi district. The sample design is given in the following table.

### 2.1. Test Administration and Collection of Data

To collect necessary data pertaining to present study, the investigator noted down the total number of layup shot attempted by the each district basketball players and total success layup shot scores were taken during the district level basketball tournaments. The performance results of the total subjects who are participated in the basketball tournament were taken during and after the completion of competition. The performances of basketball players were taken in the form of layup shots and scoring.

### 2.2. Statistical Analysis

To meet the objectives of the study, the data were analyzed using the following statistical techniques. The “*t*” test to compare the sample of sub groups.

## 3. RESULTS AND DISCUSSION

### 3.1. Inter-team Differences in Basketball Performance

An attempt is made in this section to examine differences in basketball performance of various district teams. As has been stated earlier, the sample of the study consists of six district teams, namely, Kalaburagi (KA), Ballary (BA), Raichur (RC), Koppal (KP), Yadgir (YG), and Bidar (BD). It is assumed that the basketball performance differs from one team to another, because of several factors such as basketball skill of the players, facilities available, expertise of the coach, and so on. Hence, it is necessary to examine the relative standing of various high school district teams on basketball performance. The data are arranged accordingly and presented for each layup shot and scoring separately in Tables 1 and 2.

Means, SD’s, and *t*-values of various district teams of basketball layup shots performances are presented in Table 2. It is observed that there is a variation in layup shot playing ability in different district teams. The mean score for layup shot is higher in Ballary team (68) followed by Kalaburagi (62), Raichur (54), Bidar (50), Yadgir (46), and Koppal (42). This clearly indicates that the basketball performance of Ballary team is relatively higher than rest of the district teams, followed by Kalaburagi team. The obtained *t*-values are significant which indicate that there are significant differences in basketball layup shot performance ability between the district teams. Thus, the teams of Ballary and Kalaburagi districts have shown.

### 3.2. Significantly Higher Performance than the Rest of the Teams

It appears that there are more facilities for sports training in these teams as a result of which these teams have exhibited higher basketball performance. The basketball teams of Ballary and Kalaburagi have shown an outstanding performance in layup shot which reveals the fact that the skill development in these two teams is relatively superior. However, it is the basketball team players of Ballary district exhibited an outstanding performance in layup shot. Hence, the results highlight the fact that there are significant variations in the basketball performance among various district teams. The study also highlights the fact that promotive measures need to be taken-up to improve the performance of the district teams, which are relatively weak.

Means, SD’s, and *t*-values of various district teams of basketball scoring performances are presented in Table 3. It can be noticed that there is a difference in points scoring ability in different district teams. The mean score for scoring is higher in Ballary team (110) followed by Kalaburagi (122), Raichur (96), Yadgir (84), Bidar (86), and Koppal (78).

This reveals that the basketball performance of Ballary team is relatively higher than rest of the district teams, followed by Kalaburagi team. The obtained *t*-values are significant which indicate that there are significant

**Table 1:** Distribution of samples on district and age-wise of basketball teams

Category	Districts						Total
	Kalaburagi	Ballary	Raichur	Yadgir	Bidar	Koppal	
U-16-18	20	20	20	20	20	20	120
18 years and above	20	20	20	20	20	20	120
Total	40	40	40	40	40	40	240

**Table 2: Mean, SDs, and *t*-value of basketball performance (Layup shot) of six district teams (*n*=240)**

Teams	KA (1)	BA (2)	RC (3)	YG (4)	BD (5)	KP (6)
Mean	62	68	54	46	50	42
SD	11.23	12.06	10.54	9.56	10.02	8.42
N	40	40	40	40	40	40
<i>t</i> -values	7.54* (1 and 2)	10.23* (2 and 3)	11.58* (3 and 4)	3.57* (4 and 5)	7.42* (5 and 6)	
	12.32* (1 and 3)	14.12* (2 and 4)	10.45* (3 and 5)	5.54* (4 and 6)		
	9.42* (1 and 4)	11.64* (2 and 5)	14.52* (3 and 6)			
	15.23* (1 and 5)	17.56* (2 and 6)				
	19.28* (1 and 6)					

\*Significant at 0.05 level

**Table 3: Mean, SDs, and *t*-value of basketball performance (Scoring) of district teams (*n*=240)**

Teams	KA (1)	BA (2)	RC (3)	YG (4)	BD (5)	KP (6)
Mean	110	122	96	84	86	78
SD	8.76	9.12	7.56	7.14	7.32	6.56
N	40	40	40	40	40	40
<i>t</i> -values	9.14* (1 and 2)	10.79* (2 and 3)	11.23* (3 and 4)	3.12* (4 and 5)	7.32* (5 and 6)	
	11.42* (1 and 3)	14.45* (2 and 4)	10.24* (3 and 5)	11.23* (4 and 6)		
	12.54* (1 and 4)	15.36* (2 and 5)	12.54* (3 and 6)			
	17.13* (1 and 5)	19.41* (2 and 6)				
	22.54* (1 and 6)					

\*Significant at 0.05 level

differences in the scoring ability between the district basketball teams.

Thus, the teams Ballary, Kalaburagi, Raichur, and Bidar have significantly higher performance than the other teams. It is true more facilities for sports training results in higher basketball performance. The basketball teams of Ballary and Kalaburagi districts have shown higher performance in points scoring which reveals that the skill development in these two teams is relatively greater. Further, it is the Ballary basketball team that exhibited an outstanding performance in securing points.

Hence, the results highlight the fact that there are significant variations in the basketball performance among various district teams. The study also indicates that promotive measures are to be taken-up to improve the performance of the weaker district teams.

#### 4. CONCLUSIONS

- The basketball teams of Ballary and Kalaburagi have shown an outstanding performance in layup shot which reveals the fact that the skill development in these two teams is relatively superior. However,

it is the basketball team players of Ballary district exhibited an outstanding performance in layup shot

- The teams Ballary, Kalaburagi, Raichur, and Bidar have significantly higher performance than the other teams. It is true more facilities for sports training results in higher basketball performance. The basketball teams of Ballary and Kalaburagi districts have shown higher performance in points scoring which reveals that the skill development in these two teams is relatively greater. Further, it is the Ballary basketball team that exhibited an outstanding performance in securing points.

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# An Analytical Study on the Locus of Control among Handball Players of Kalaburagi Division

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## ABSTRACT

The present study aims to explore the locus of control among handball players of Kalaburagi division at different levels of performance. To achieve the purpose of the study, 120 handball players of Kalaburagi, Ballary, Raichur, Koppal, Bidar and Yadgir districts of Kalaburagi Division in the Karnataka state were selected from different levels of performance and participation. The Sanjay Vohra's Locus of Control Scale was used to measure the personality traits of handball players. The results are shown significant gender difference among handball players on locus of control-P, C, and I. There is significant difference among handball players on locus of control-P, C, and I. There is significant difference in the order of birth of handball players on locus of control P, C, and I. There is significant difference in the family composition handball players on locus of control P, C, and I.

**Keywords:** Locus of Control, Handball, Performance, Players.

## 1. INTRODUCTION

The psychology of sports, intending "the study of behavior," has been proved more useful and relevant today for success in sports. It has been observed that the participants of diverse sub-groups carry certain differences in many respects. Studies made so far in this aspect indicate that such differences have psychological correlation. Sports and games are parts of physical education and essential elements for the growth and development of physical, mental, and psychological aspects of an individual. Kamlesh (1993) considers that education aims to improve and develop the total personality of individual. However, the role of play, in this process, is not of less significance "No other activity is wholesome as play. In the absence of play from the human life, living would be dull and drab, most uninteresting, and uninspiring." Physical activities and movements in sports, games, and competitive events increase the worth and charm of life, enlighten new vistas besides increasing development of human organs, tissues, nerves, muscles, and bones etc.

Since its introduction (Phares, 1957), the concept of internal-external control has proved to be a highly useful personality dimension for understanding the

role of reinforcement in a wide variety of behavior situations. A comprehensive review of the work on the development, validity, and reliability of the scale which measure attitudes of internal-external control has been reported in a monograph by Rotter (1966). Differences in attitudes of internal external control between ethnic groups and social classes have been reported in several studies of non-college populations. Almost all the previous studies indicate that Negro and lower class individuals generally have higher external scores than Whites and middle-class individuals.

### 1.1. Statement of the Problem

Analysis of locus of control among handball players of Kalaburagi division at different levels of performance.

### 1.2. Objectives of the Study

The objectives of the study are as follows:

1. To find out the difference in locus of control of handball players at different levels of performance.
2. To analyze the gender difference in locus of control of handball players at different levels of performance.

3. To assess the difference in locus of control of handball players at different levels of performance due to their order of birth.
4. To unearth the difference in locus of control of handball players at different levels of performance, due to their family composition.

## 2. MATERIALS AND METHODS

The review of the literature has shown that the research in the sports psychology, has studied men and women separately, not much interest has been focused on the handball players locus of control. Hence, the present investigator has felt necessary to conduct a comparative study of locus of control of handball players of six districts of Kalaburagi division at different levels of performance.

### 2.1. Samples and Sample Design

The present study was conducted on 120 handball players of Kalaburagi, Ballary, Raichur, Koppal, Bidar, and Yadgir districts of Kalaburagi division in Karnataka state.

Keeping in view of objectives of the present study, handball players were selected from different levels of performance and participation. The following table gives the details of the levels of participation and composition of participation.

S. No	Handball players	No. of Handball players
1.	Pre. University level handball players	40
2.	College level handball players	40
3.	University level handball players	40

### 2.2. Tool

The following standardized questionnaire was used in the present study to measure achievement motivation of handball players.

Sanjay Vohra's Locus of Control Scale.

## 3. RESULTS AND DISCUSSION

### 3.1. Locus of Control of Handball players at Different Levels of Performance

The obtained raw data were subjected to appropriate statistical analysis to find out answers to the objectives

posed and to find out the possible differences among pre-university level, college level, and university level handball players have been stated. To find out, the differences between the mean scores of handball players on locus of control and 'F' ratio were calculated. For the samples, sub group difference due to the gender, order of birth, and family composition, analysis of variance has been done. The major concern of the study was to examine the differences in locus of control of handball players at different level of performance. Accordingly, data were processed and presented in the following sections.

Results given in Table 1 reveal variety of attribution processes by the sample groups. It is observed that university level sample has a mean score of 24.70 in locus of control-P, of 24.02 in locus of control-C, and of 29.10 in locus of control-I. The college level group has a mean of 24.72, 26.14 and 27.54 in locus of control-P, locus of control-C, and locus of control-I, respectively. Similarly, pre-university level group has a mean of 26.14, 26.62, and 26.32 in locus of control-P, locus of control-C, and locus of control-I, respectively. This reveals that university level believes in ability to explain in causes of behavior. Whereas other groups differ. The behavior of the lower levels (pre-university and college level) is greatly controlled by other persons, chance factors, and so on in comparison in the higher level group. Thus, the higher level group does not believe in chance or fate and other people controlling its behavior. It mainly believes in one's ability to control the behavior and not on any other factors. The f-values also speak of this aspect.

Results given in Table 2 clearly reveal significant gender differences in locus of control. The mean score

**Table 1: Mean, SD, and F-values of locus of control in three levels of performance**

Levels	LOC-P	LOC-C	LOC-I
Pre-university level			
Mean	26.14	26.62	26.32
SD	4.69	4.28	4.81
College level			
Mean	24.72	26.14	27.54
SD	4.02	0.81	1.93
University level			
Mean	24.70	24.02	29.10
SD	4.36	3.47	2.68
F-value	2.25**	4.19**	4.41**

Significant at 0.01 level, SD: Standard deviation

**Table 2: Mean, SD, and F-values of locus of control in two categories of gender**

Levels	LOC-P	LOC-C	LOC-I
Male			
Mean	24.45	25.35	28.10
SD	3.88	4.28	4.33
Female			
Mean	26.77	27.22	26.82
SD	5.18	4.32	4.48
F-value	3.86**	3.46**	2.28**

Significant at 0.01 level, SD: Standard deviation

**Table 3: Mean, SD, and F-values of locus of control in different order of birth**

Order of birth	LOC-P	LOC-C	LOC-I
First born			
Mean	25.75	26.22	28.03
SD	3.95	4.10	3.98
Later born			
Mean	24.21	25.18	26.52
SD	4.50	4.41	4.64
F-value	3.14**	2.12*	3.02**

Significant at 0.01 level, SD: Standard deviation

of male is 24.45, 25.35, and 28.10 in locus of control-P, locus of control-C, and locus of control-I, respectively. Females have a mean of 26.77, 27.22, and 26.82 in locus of control-P, locus of control-C, and locus of control-I, respectively. The f-values are significant. This indicates significant gender difference in locus of control. Females are found to be more fatalistic and externality oriented than males.

Table 3 gives the results of locus of control in two order of birth of the sample. The mean score of first born group is 25.75, 26.22, and 28.03 in locus of control-P, locus of control-C, and locus of control-I, respectively. The last born group has a mean score of 24.21, 25.18, and 26.52 in locus of control-P, locus of control-C, and locus of control-I, respectively. The F-values are all significant at 0.01 level. This reveals that last born group is less fatalistic and ability dependent. The later born own the responsibility of their behavior and attribute to themselves and not to any external origin.

Results of Table 4 clearly speak that there are significant differences between the groups. The nuclear family group has a mean score of 24.59, 24.63, and 27.94 in locus of control-P, locus of control-C, and locus of control-I, respectively. The

**Table 4: Mean, SD, and f-values of locus of control in two types of family composition**

Family composition	LOC-P	LOC-C	LOC-I
Nuclear family			
Mean	24.59	24.63	27.94
SD	4.16	4.35	4.18
Joint family			
Mean	26.81	26.53	29.71
SD	4.90	4.18	4.84
F-value	3.31**	3.22**	2.68*

joint family type has a mean of 26.81, 26.53, and 29.71 in locus of control-P, locus of control-C, and locus of control-I, respectively. The f-values are all significant. Thus, members of nuclear family have more belief in one's ability and are aware of their own behavioral consequences. They are not fatalistic; chance factors oriented have mistrust in supernatural power. However, people of joint family type do not have this belief, they are more fatalistic. Thus, family composition is also a factor that produces significant differences in locus of control.

#### 4. CONCLUSIONS

In modern competitive sports, world sports psychology plays a very important role in making successful and tough minded sportsmen and women. The development of sportsmen to enable him to achieve which is not only confine to physical process of physical fitness rather it is accepted phenomena that psycho-social traits are also required to maintain the balance. The involvement of psychology in sports has largely arisen from interest in areas such as personality, emotional status, motivation, and many other psychological factors.

- There is significant gender difference among handball players on locus of control-P, C, and I.
- There is significant difference among handball players on locus of control-P, C, and I.
- There is significant difference in the order of birth of handball players on locus of control P, C, and I.
- There is significant difference in the family composition handball players on locus of control P, C, and I.

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# An Analysis on the Influence of Aggression on the Performance among Hockey Players of Karnataka State

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## ABSTRACT

The purpose of the study was to analyze the influence of aggression on the performance of hockey players of Karnataka state. To achieve the purpose of the study, total 80 hockey player's samples were drawn for the study from various SAI sports hostels of Karnataka state ranging between 14 and 16 years of age. The AAPHER aggression tests and SAI hockey skill test (1992) were administered to the subjects. The results of the study concluded that the high aggression hockey players groups are having very good shooting skills, ball balancing, and controlling ability in the hockey game than the low aggression players group.

**Keywords:** Aggression, Shooting, Goal, Balance, Control, Hockey.

## 1. INTRODUCTION

In hockey as in many other sports and games, a player can attain excellence at an early age only if he starts his career in early boyhood. An early starter, like an early rider, has time for the acquisition of manifold athletic abilities, fundamental skills, and tactics which are essential for becoming a grand player. In the advanced countries, training of athletes and players starts quite early in life. Learning individual tactics lead to the acquisition of group and team tactics.

The methodology of teaching tactics may vary. However, young trainees should know more than what they are able to practically demonstrate at any given moment. Weaknesses and short one coming should be analyzed and removed during the learning process to create a sound base.

The aim of higher sports in this age of competition is to win in international meets or to attain peak performance in competition. Moreover, it is on this factor that the coaches try to concentrate. To reach the target and accomplish the social expectation, the players also work hard, ignoring their comforts in their daily lives, and practice for many hours a day. Unless the players are prepared mentally and psychologically for the contest, they are not able to

achieve the desired results. The psychological training has to be provided to the players by the coaches to face stressful situation occurring during the competition. It is critically important that those studying the psychological concepts as they apply to the area of physical education and coaching be carefully attentive to the fact that social and cultural forces are operating constantly and a meticulous understanding of these is absolutely necessary in any attempt to unravel many factors causing and revealing behavior and its changes in sports setting. To reach optimum performance in hockey games, the different components of physical and motor fitness such as endurance, power, strength, speed, agility, flexibility, and balance are pre-requisite. A player will not be able to perform his best during training and competitions unless optimum development takes place. A youngster with all-round technical and tactical training has good chance of becoming an excellent player (Elferink-Gemser, Visscher, Lemmink, and Mulder, 2004; Pienaar, Spamer, and Steyn 1998; Regnier, Salmela, and Russell 1993; Reilly, Williams, Nevill, and Franks 2000).

### 1.1. Statement of the Problem

The purpose of the study was to analyze the influence of aggression on the performance of hockey players of Karnataka state.

## 1.2. Objectives of the Study

The objectives of the study are as follows:

1. To study the effect of aggression on balancing the ball, moving with ball, and goal shooting performance among hockey players.
2. To find out relationship between the aggression and balancing the ball, moving with ball, and goal shooting performance among hockey players.

## 2. MATERIALS AND METHODS

### 2.1. The Sample

The total 80 hockey player's samples were drawn for the study from various SAI sports hostels of Karnataka state ranging between 14 and 16 years of age. The sample design as under:

Sample Design

Category	Variables	Hockey Players	Total
Boys	Low aggression	40	80
	High aggression	40	

### 2.2. Tools

#### 2.2.1. Aggression inventory (Buss–Durkee, 1957)

This inventory consists of 60 items. The scoring is done as per the key given in the manual for every positive answers 1 and for every negative answers 0 score will be given and individual can be categorized as either high or low on aggression depending on the score he gets. The reliability and validity of the scale are claimed to be significant.

#### 2.2.2. SAI hockey skill test (1992)

- a. Shooting on target
- b. Balancing the ball on stick
- c. Moving with the ball.

### 2.3. Test Administration and Data Collection

Prior testing the purpose of the study was explained to the players and coaches as well, during the process requirement of the testing procedures, demonstration, and explanation of various game skill tests to be administered was given to acquaint them with the requirement of the study.

All the players voluntarily participated in the study, their coaches exhorted them as well to put in their best effort in this scientific investigation, though no

special motivational technique was used yet the players were very enthusiastic and cooperative throughout the process of data collection.

## 3. RESULTS AND DISCUSSIONS

Based on the statistical data analysis, the following tables were drawn and discussions are presented below.

Table 1 presents the mean and SD scores of shooting on target skill test of high and low aggression 14–16 years hockey players group of Karnataka state. The mean score of high aggression hockey players group (8.56) is higher than the and low aggression hockey players group (5.28). The *t*-value (4.84) is significant at 0.05 level. The mean values and *t*-value reveal that there is a significant difference in the performance of high and low aggression 14–16 years hockey players groups of Karnataka state in the shooting on target skill test. In other words, it is interpreted that the high aggression hockey players group is having very good shooting skills in the hockey game than the low aggression players group.

Table 2 presents the mean and SD scores of balancing the ball on stick skill test of high and low aggression 14–16 years hockey players group of Karnataka state. The mean score of high aggression hockey players group (92.34) is higher than the and low aggression hockey players group (70.26). The *t*-value (24.68) is significant at 0.05 level. The mean values and *t*-value reveal that

**Table 1:** Mean and SD scores of shooting on target skill test of 14–16 years hockey players of Karnataka state at two levels of aggression

Test	Aggression level	Mean	SD	Total
Shooting on Target Skill Test	High	8.56	0.91	4.84**
	Low	5.28	0.73	

\*\*Significant at 0.05 level, SD: Standard deviation

**Table 2:** Mean and SD scores of balancing the ball on stick skill test of 14–16 years hockey players of Karnataka state at two levels of aggression

Test	Aggression level	Mean (in secs.)	SD	Total
Balancing the ball on stick skill test	High	92.34	9.02	24.68**
	Low	70.26	7.24	

\*\*Significant at 0.05 level, SD: Standard deviation

**Table 3:** Mean and SD scores of moving with the ball skill test of 14–16 years hockey players of Karnataka state at two levels of aggression

Test	Aggression level	Mean (in secs.)	SD	Total
Moving with the ball skill test	High	120.24	16.23	28.56**
	Low	148.46	10.12	

\*\*Significant at 0.05 level, SD: Standard deviation

there is a significant difference in the performance of high and low aggression 14–16 years hockey players groups of Karnataka state in the shooting on target skill test. In other words, it is interpreted that the high aggression hockey players group is having very good ball balancing ability in the hockey game than the low aggression players group.

Table 3 presents the mean and SD scores of moving with the ball skill test of high and low aggression 14–16 years hockey players group of Karnataka state. The mean score of high aggression hockey players group (120.24) is higher than the and low aggression hockey players group (148.46). The *t*-value (28.56) is significant at 0.05 level. The mean values and *t*-value reveal that there is a significant difference in the performance of high and low aggression 14–16 years hockey players groups of Karnataka state in the shooting on target skill test. In other words, it is interpreted that the high aggression hockey players group is having very good ball controlling ability in the hockey game than the low aggression players group.

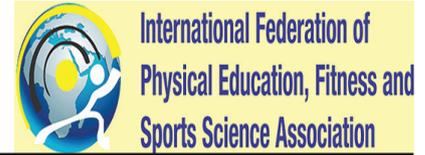
#### 4. CONCLUSIONS

1. The high aggression hockey players groups are having very good shooting skills in the hockey game than the low aggression players group.

2. The high aggression hockey players groups are having very good ball balancing ability in the hockey game than the low aggression players group.
3. The high aggression hockey players groups are having very good ball controlling ability in the hockey game than the low aggression players group.

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# A Study on Locus of Control of Inter-collegiate Kabaddi and Non-Kabaddi Players

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## ABSTRACT

The purpose of the study was to find out the difference in locus of control among kabaddi players and non-kabaddi players and to analyze the gender difference in locus of control among kabaddi players and non-kabaddi players. To measure the locus of control of kabaddi players and non-kabaddi players, the Sanjay Vohar's locus of control scale was administered to students of four major colleges affiliated to Gulbarga University, Gulbarga. The kabaddi players sample consisted of 140 UG students who were studying in one or the other UG courses and has participated in the inter-collegiate or university level cricket tournaments. The non-kabaddi players sample consisted of those students who were studying in the same course as that of kabaddi players, but who did not participate in any of the sports activities. There is a significant difference between kabaddi players and non-kabaddi players on locus of control-P, C, and I and also there is significant gender difference between kabaddi players and non-kabaddi players on locus of control-P, C, and I.

**Keywords:** Locus of control (P-powerful others, C-chance control and I-Individual control).

## 1. INTRODUCTION

The participation in modern sports is influenced by various physical, physiological, sociological, and psychological factors. During training, besides good physique and fitness of the athlete, main emphasis is laid on the development of various types of skills involved in the game as well as on teaching the strategies, techniques, and tactics of the game. Until recently, the coaches have been paying inadequate attention to the social and psychological factors which although have been proved to contribute to performance in events in the higher competitive sports. It is only recently that sports administrators and coaches have realized the importance of the psychological preparation and training of players to enable them to bear the strain and stresses inherent in sports participation. Hence, now the sports trainer and coaches have started giving more importance to the psychological conditioning or the building the mental make-up of the players before their contests in the national and international competitions.

### 1.1. Objectives of the Present Study

The objectives of the study are as follows:

- To find out the difference in locus of control among kabaddi players and non-kabaddi players.
- To analyze the gender difference in locus of control among kabaddi players and non-kabaddi players.

## 2. MATERIALS AND METHODS

### 2.1. Sample Design

For the purpose of present study, a total number of 140 kabaddi non-kabaddi players were selected from various educational institutions/colleges affiliated to Gulbarga University, Gulbarga. The samples were drawn on the principle of random sampling technique. Subjects were equally matched on their education and course of study. The kabaddi players sample group consisted of those students who have actively participated in cricket tournaments and also participated either inter-collegiate or university level in their respective game. The matching sample of

non-kabaddi players group was selected from those students who did not take part in any of the sports activities. The subjects were in the age range of 18–23 years with mean age of 20.5 years.

## 2.2. Test Administration

To measure the locus of control of kabaddi players and non-kabaddi players the Sanjay Vohar's locus of control scale (LOS) were administered to students of four major colleges affiliated to Gulbarga University, Kalaburagi. The kabaddi players sample consisted of 140 UG students who were studying in one or the other UG courses and has participated in the inter-collegiate or university level cricket tournaments. The non-kabaddi players sample consisted of those students who were studying in the same course as that of kabaddi players, but who did not participate in any of the sports activities.

Sanjay Vohara's LOC questionnaires were issued to each student in the group and they were asked to go through the instructions given in the front page of the questionnaire and also all subjects were asked to fill in the front side of the questionnaire, that is, personal data. The subjects were informed to be fair in working their responses. The questionnaire was administered in a group of 25 students in a good and permissive atmosphere and it was maintained throughout the administration to all the groups of kabaddi players and non-kabaddi players samples. They were also informed that the test is neither a test of proficiency nor their intelligence. While they were answering the questions, supervision was done to know whether they were following instructions in answering or not, personal data were also checked to know whether they have filled in all the information that was given on the questionnaire.

## 2.3. Tools

Following questionnaire was used in the present study to measure locus of control of kabaddi and non-kabaddi players.

- Sanjay Vohara's LOC.

## 2.4. Statistical Analysis

The obtained raw data were subjected appropriate statistical analysis to find out the answer to the problems posed under objectives. The statistical techniques used are mean, standard deviation "t" test, F test, and Scheffe's *post hoc* analysis.

**Table 1:** Significance of Mean Difference between Locus of Control (P) of Kabaddi players and Non-kabaddi players

Groups	Mean	Standard Deviation	t-value
Kabaddi players	24.12	8.54	5.84**
Non-kabaddi players	18.32	7.21	

\*\*Significant at 0.001 level

**Table 2:** Significance of mean difference between locus of control (C) of kabaddi players and non-kabaddi players

Groups	Mean	Standard Deviation	t-value
Kabaddi players	16.45	7.42	4.12**
Non-kabaddi players	19.48	9.02	

\*\*Significant at 0.001 level

**Table 3:** Significance of mean difference between locus of control (I) of kabaddi players and non-kabaddi players

Groups	Mean	Standard Deviation	t-value
Kabaddi players	22.56	6.84	5.06**
Non-kabaddi players	18.46	8.16	

\*\*Significant at 0.001 level

## 3. RESULTS AND DISCUSSION

Table 1 reveals that there is significance difference in locus of control by powerful others between kabaddi players and non-kabaddi players. The obtained *t*-value more than the table value 1.64. Hence, there is significant difference between kabaddi players and non-kabaddi players on locus of control (P).

Table 2 reveals that there is a significant difference in chance control between kabaddi players and non-kabaddi players as the obtained *t*-value is greater than the table value 1.64. The non-kabaddi players were found to be with higher scores than kabaddi players in chance control.

Table 3 reveals that there is significant difference in individual control between kabaddi players and non-kabaddi players, as the obtained *t*-value is greater than the table value 1.64. The kabaddi players were found to be with higher scores than non-kabaddi players in individual control. Thus, the kabaddi players and

non-kabaddi players difference significantly on locus of control-P, C, and I.

#### 4. CONCLUSIONS

- Significant differences between kabaddi players and non-kabaddi players on locus of control, that is, powerful others, chance control, and individual control.
- Significant gender differences between kabaddi players and non-kabaddi players on locus of control, that is, powerful others, chance control, and individual control.

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# Influence of Yogic Exercises Training Intervention on Strength Development of Kabaddi Players

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## ABSTRACT

Yogic exercises not only increase the general strength but also tone up the muscles because these exercises stretch out the muscles and due to their slow stretch and hold nature along with breathing mechanism improves the muscular tone and strength of the muscles. To achieve the purpose of the study, 6 weeks yoga training was administered and Kraus–Weber test is framed to find out the minimum muscular strength required to participate in the training program and also to find out the improvement in muscular strength after the training program. The 70 kabaddi (boys) who represented Raichur district in the state level athletic meet ranging from 14 to 16 years of age were drawn as subjects. The results clearly indicated that the 6 weeks yoga training was improved muscular strength. Hence, it is concluded that there is a positive and significant effect of yogic exercises in the improvement of muscular strength of kabaddi.

**Keywords:** Yogic Exercises, Muscular Strength, Kabaddi.

## 1. INTRODUCTION

The person who is physical fit will be able to carry out the essential of his job without undue fatigue. Fitness is characterized by man's ability to function efficiently with in his potentialities. Fitness implies not only the acquisition of certain physical skills but also the ability to withstand the emergency demands training and competitions.

The high level of strength is essential to good performance in all-athletic games and in some events strength is of almost important. Greater strength often results in better performance. Its relative significance various depending of the nature of the particular activity.

A person having muscular fitness can carry out his daily routine efficiently and effectively with least effort and strain. Muscular fitness plays an important role in all aspects of athlete's performance improvement.

### 1.1. Yogic Exercises

Yogic practices not only make the internal organs fit but also strengthen the muscles. Yogic exercises increase the general strength and tone up the muscles because these exercises stretch the muscles, due to their slow movement and held position with breathing mechanism improves the muscle tone.

### 1.2. Training

The word "Training" has been a part of human language since ancient times. It denotes the process of preparation for some task. This process invariably extends to a number of days and even months and years.

### 1.3. Objectives of the Study

The objectives of the study are as follows:

- The purpose of the study is to assess the selected yogic exercises intervention on strength (muscular strength) development among the kabaddi.
- To study the effect of yogic exercises on the muscular strength of the kabaddi.

## 2. MATERIALS AND METHODS

The Kraus–Weber test consists of six tests; the first five tests were used to find out the muscular strength and the last one to indicate the flexibility. All the six tests, namely, abdominal psoas (A+), abdominal minus psoas (A-), psoas and lower abdomen (P), upper back (UB), lower back (LB), and length of back and hamstring muscles (BH) are modified and were used to test 70 kabaddi ranging from 14 to 16 age group. The modified Kraus–Weber test was conducted on the kabaddi; the pre-training performance of kabaddi is recorded. After the training, again the Kraus–Weber test was administered to find out the improvement in the muscular strength of the kabaddi.

### 2.1. Test Administration

To assess the muscular strength of the subjects, the modified Kraus–Weber tests were administered and are given below.

### 2.2. Tests

- Abdominal Plus Psoas muscles (A+)
- Abdominal Minus Psoas muscles (A-)
- Psoas and Lower abdomen (P)
- UB
- LB
- BH

### 2.3. Apparatus

- Wrestling mat
- Stop watch
- Yogic exercises
- The yogic training consists of the following selected yogic exercises.

### 2.4. Sitting Yogic Exercises

- Paschimotanasana (The Posterior Stretch)
- Ardha Matsyendrasanas

- Padmasana (The lotus Posture)
- Sawankasana (The Hare Posture)
- Standing yogic exercises
- Talasana (Palm Tree posture)
- Trikonasana (The Triangle Posture)
- Padahastanasana (The Feet and Hands Posture)
- Utkatasana.

### 2.5. Procedure

The modified Kraus–Weber tests were administered to the kabaddi. The each test item is demonstrated correctly to the kabaddi and then asked them to do the same. The yogic exercises are also demonstrated correctly and asked them to do the same.

### 2.6. Statistical Technique

Mean, standard deviation, and *t*-value were used to compute the data.

## 3. RESULTS AND DISCUSSION

From the data obtained, the flowing is tabulated for analysis.

Table 1 and graph show the mean scores of pre- and post-training performance in modified Kraus–Weber test. It clearly shows the significance difference in the performance of the kabaddi in two conditions. Thus, yogic asanas introduced to the kabaddi are responsible for bringing improvement in the muscular strength. The yogic exercises influence that the muscular strength in the kabaddi is proved.

## 4. CONCLUSIONS

- The selected yogic exercises intervention improved the strength (muscular strength) among the kabaddi.
- The positive and significant effect of yogic exercises on the muscular strength of the kabaddi.

Weeks	Training schedule	
	Morning	Evening
1 <sup>st</sup> week	Sitting yogic exercises 30 min	Standing yogic exercises 30 min
2 <sup>nd</sup> week	Sitting yogic exercises 40 min	Standing yogic exercises 40 min
3 <sup>rd</sup> week	Sitting and standing yogic exercises 50 min	Sitting and standing yogic exercises 50 min
4 <sup>th</sup> week (6 days)	-do-	-do-
5 <sup>th</sup> week (6 days)	Sitting and standing yogic exercises 40 min	Sitting and standing yogic exercises 40 min
6 <sup>th</sup> week (Alternate one session each day)	Sitting and standing yogic exercises 40 min	Sitting and standing yogic exercises 40 min

**Table 1: Pre- and Post-training performance of kabaddi**

Training	A+ (in 1 mt.)	A-(in 1 mt.)	P (in secs)	UB (in secs)	LB (in secs)	BH (in secs)
Pre-training						
M	26	30	14	12	13	14
SD	3.6	3.9	2.4	2.9	2.8	3.4
Post-training						
M	32	39	16	18	16	18
SD	5.1	4.3	3.6	4.1	3.1	3.9
t-value	10.02*	11.24*	6.04*	5.21*	4.08*	5.22*

\*Significance at 0.05 level

The selected yogic exercises because of their slow movement and held position improve the muscular tone. This improved muscle tone of the abdominal, LB, UB, and back and hamstrings is responsible for the improvement of muscular strength of the kabaddi.

## 5. RECOMMENDATIONS

- The results of the survey taken of the muscular fitness of the kabaddi should be great concern to the coaches and trainers in the welfare of the kabaddi.
- The results bring out the weakness of the kabaddi and also suggest the importance of including suitable yogic exercises for the improvement of muscular fitness.
- A larger scale of study may be conducted on state, national, and international kabaddi and also on different genders for longer periods.

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# A Theoretical Study on Cognitive Intervention with Elite performers: Reversal Theory

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## ABSTRACT

Noticeable in the literature associated with the application of psychology to the area of sport and sports performance in particular has been the increasing frequency of references to the use of cognitive intervention in the sports context. At present utilized in clinical psychology and behavioral medicine, and receiving increasing attention in sports psychology, are a number of intervention techniques primarily oriented toward altering the individual's level of arousal. These techniques, which have been advocated for use by sports performers as an aid to adapting and coping during competition, have been largely concerned with arousal reduction. This paper presents an alternative approach, the case of reversal theory, a new general theory of psychology concerned with motivation, and emphasizes the conceptual implications of this new approach for the use of cognitive intervention techniques in sport.

**Keywords:** Anxiety, Cognitive intervention, High arousal, Relaxation, Reversal theory.

## 1. INTRODUCTION

Beginning a paper with a cautionary note may be unusual; nevertheless, in this case, it seems warranted. It should be pointed out that some of the papers found in the growing literature on proposals for cognitive interventions in sport are positively biased, especially in the claims made with respect to improving sports performance. Some of the reports make claims that in reality cannot be justified and the concerns of some other authors in this respect should not be ignored. As Mahoney (1984), writing about cognitive interventions, points out, it is imperative that a cognitive skills advocate remain both cautious and accountable in making assertions about what an athlete or coach "should" do to improve performance. Thus, the remarks which follow and those that appear in subsequent sections should be viewed as intervention possibilities rather than direct or confident recommendations. They hardly exhaust the list of possible cognitive skills strategies that might assist athletic performance, and it goes without saying that they are in need of controlled experimental evaluation."

Along similar lines, Heyman (1984) states "cognitive interventions are derived from clinical approaches. They

are more than just 'techniques' they were developed as part of therapeutic approaches to psychological and behavioral change. It is not always easy to determine when a sport participant's problems are only related to sport or are more comprehensive, and when the application of a cognitive intervention to the sport problem may be inappropriate."

Whilst the use of cognitive interventions in sport provides a new and exciting challenge for those involved in sports psychology, the different concerns of Mahoney and Heyman, reflected above, should be kept in mind. Indeed, it is worth noting that some psychologists working in other areas of psychology have yet to be convinced of the value of cognitive interventions (Wolpe 1976a and 1976b, and Skinner, 1977).

Although sports competitors and coaches have for a longtime considered that arousal levels may be an important factor with respect to sports performance, empirical evidence is both contradictory and confusing. This situation has led to rather broad and largely unhelpful generalizations being made about which level of arousal is appropriate for particular sports events, for example, Oxendine (1984), Landers and

Boutcher (1986). The only clear conclusions arising out of research reports and theoretical papers are the individual variations, particularly in mental state, and the nature of the sports events are crucial elements in the arousal-performance relationship.

An example of a rather less generalized approach to the psychological preparation of top level performer's is provided by the work of Rushall (e.g. 1982). He has attempted to formulate detailed strategies and competition specific plans aimed at the enhancement of competitive performance. These strategies and plans are based on research and the results of evaluations of the behavior of sports performers, the nature of specific sports situations and the characteristics of the sports and their participants.

The mental state of the athlete or performer is considered especially crucial and Rushall is one of those who advocate the use of "on-site" intervention techniques should it be necessary. This would occur when the mental state of the performer was thought to be inappropriate for the demands of the particular competition environment. Whilst the competition-specific focus of the work is praiseworthy, its "behaviorist" foundation may mean that the confidence with which his ideas are advocated may not be shared by other researchers. One particularly enduring notion is that of over-arousal, the idea that the individual performer's level of arousal becomes so high that it interferes negatively with performance. As a result of this, sports psychologists have turned to techniques utilized in arousal control and specifically arousal reduction in an attempt to assist sports competitors to improve the consistency of and increase their performance.

These intervention techniques were already being used in clinical psychology and behavioral medicine to help patients relax. Progressive relaxation and autogenic training, along with systematic desensitization, are well-established. The idea of relaxation incorporated in these techniques is used synonymously with the idea of arousal reduction. Biofeedback and transcendental meditation are almost always used with relaxation and the lowering of the individual's level of arousal in mind.

This lowering of arousal, however, need not always be an appropriate strategy to use. There are some authors (e.g. Mahoney, 1984 and Railo, 1982) who are recognizing the importance of some sports performers achieving high levels of arousal before and during competition. Several recent research studies (e.g., Caudill *et al.*, 1983) have

indicated those increasing subjects' arousal levels or "psyching up" facilitated performance. Stallings states:

"The fact that arousal is, to a large extent, qualitatively specific to the individual may appear to the practitioner to be an insurmountable barrier to the selection of arousal-producing techniques. However, since many of the methods discussed in the section on reducing arousal are designed to increase the individual's awareness of physiological states (e.g., degree of muscle tension), their possible use to teach an individual to increase arousal should be considered." (Stallings, 1982).

In addition, elite athletes interviewed by Garfield and Bennett (1984) reported a number of characteristic sensations associated with top performance. These reported sensations included feelings of "joy," "ecstasy" and "intensity" and the feeling of being "highly energized."

Reversal theory (Apter, 1982) postulates that the motivation of many people for participating in sport is found in the pleasant experience of high arousal, which is intrinsic to many sports activities (Kerr, 1985).

Before attempting to describe the alternatives that reversal theory proposes for cognitive intervention, it is only sensible that a short description of reversal theory be included to assist in understanding the concepts involved. However, this description is by no means exhaustive; readers are referred to Apter's 1982 text for a comprehensive description.

## 2. THE THEORY OF PSYCHOLOGICAL REVERSALS: A DESCRIPTION

The theory of psychological reversals is a phenomenological theory of motivation and, consequently, the importance of the individual and the individual's experience is a central feature of its conceptual stance. It is, however, rather different to other phenomenological theories because it attempts to examine human action in a systematic manner and provide a structure to the way in which individuals experience their own motivation. Put succinctly, "structural phenomenology focuses on the different ways in which the contents of experience are interpreted by the individual, rather than on the contents themselves" (Apter, 1982, p. 16).

This individual interpretation means that cognitive and emotional factors play an important role in reversal

theory, as does the underlying principle that the behavior of any individual is inconsistent when considered over time. In other words, there will often be occasions when an individual's behavior is not consistent with the way they behave in general.

From what has been said so far, it may seem, given the theory's position on the inconsistency of behavior and its attempt to provide a structure to the individual's experience of motivation that forming a conceptual basis for reversal theory is extremely difficult, if not impossible. This might well be the position, except that a number of novel concepts have been proposed by reversal theory which enables it to tackle these difficulties.

The first of these reversal theory concepts has its origins in cybernetics and comes from a development in cybernetics concerned with the understanding of action by means of system models. One specific class of "multistable" systems is characterized by having a variety of alternative preferred or stable states. The bistable system is one type of multistable system and, as its name suggests, has two alternative preferred stable states between which the system finds itself operating at any 1 time. It is the notion of bistability which has been incorporated into reversal theory to overcome the limitations of the homeostatic system construct currently prevalent in psychology. The homeostatic notion argues that organisms have only one preferred stable state, a fundamental element in a number of other theoretical approaches, for example, optimal arousal theory. However, serious questions have been raised about the usefulness of the homeostatic system approach (e.g., Harlow, 1953; Allport, 1960 and Frankl, 1969).

A very simple example of a bistable system is a light switch which can be either "on" or "off," either of which are stable positions, but any position in between these two is unstable. Bistability in reversal theory means that for an individual, the particular conditions pertaining at the time, such as aspects of the environment or biological functioning, are thought to govern which of the two states is preferred.

The idea of bistability is tied in with two other concepts referred to within the theory as "metamotivational states" and "reversals." Metamotivational states are phenomenological states characterized by the manner in which an individual interprets some aspect(s) of his or her motivation. Four sets of metamotivational states have been identified and have been linked together as opposing pairs (telic-paratelic, negativism-conformity,

autocentric-alloentric, sympathy-mastery). The reason they are linked together as paired opposites may become more obvious if we examine what psychologists usually mean by the word "state" and consider a practical example of how reversal theory encapsulates the notion of metamotivational states.

Murgatroyd (1985) points out that, "The term 'state' in psychology is used to describe something about a person at a given moment in time. States can change quickly; can last for varying durations of time (from seconds to days) and can be affected by environmental cues, interpersonal transactions, cognitive processes, biological changes, and motivation." From this description, it is apparent that a state is a somewhat temporary situation and that in time this position will change. This is precisely what is thought to occur between pairs of metamotivational states in reversal theory, with the change which takes place between them known as a "reversal." Take for example the telic-paratelic pair, which is especially relevant to the topic of the motivation and mental states of elite sports performers. In the telic state, the individual is usually serious-minded; planning oriented and has a preference for low arousal. Conversely, an individual would tend to be spontaneous, playful and present-oriented, preferring high arousal and the pleasure of immediate sensation whilst in the paratelic state [Table 1].

The special relationship that exists between the experience of felt arousal and hedonic tone when in the telic or paratelic states is shown graphically in Figure 1.

The dotted line indicates the single curve of optimal arousal theory (from Apter, 1982).

The four words "excitement," "anxiety," "boredom" and "relaxation," common in everyday speech, capture the feelings associated with high or low felt arousal in the telic and paratelic states.

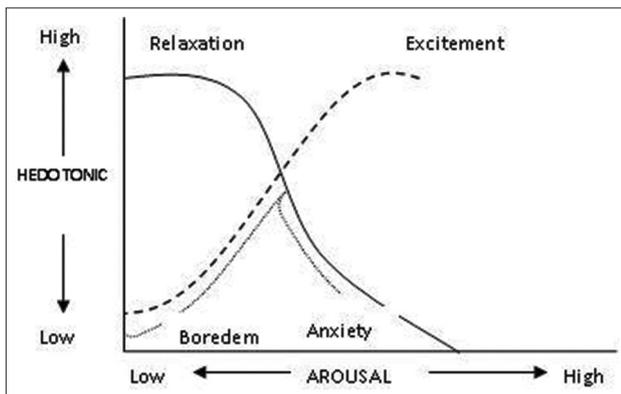
Apter (1982) uses the example of swimming to illustrate an activity that is often undertaken in the paratelic state,

"As one swims, one experiences the feeling of surging movement, of water streaming over one's skin and the impression of temporary escape from gravity and freedom to move in any direction. All these may be intense experiences of exactly the kind which are relished in the paratelic state."

Nevertheless, it is dangerous to associate any particular behavior with any specific mental state. Here, for

**Table 1: Contrasting characteristics of the telic and paratelic states (from Apter, 1982 p. 52)**

	<b>Telic</b>	<b>Paratelic</b>
Mean-Ends Dimension	Essential goals Imposed goals Unavoidable goals Reactive Goal-oriented End-oriented	No essential goals Freely chosen goals Avoidable goals Proactive Behavior oriented Process-oriented
Time Dimension	Attempts to complete activities Future-oriented “Points beyond itself” Planned Pleasure of goal anticipation High significance preferred	Attempts to prolong activity Present-oriented “Sufficient unto itself” Spontaneous Pleasure of immediate sensation Low significance
Intensity Dimension	Low intensity preferred Synergies avoided Generally realistic Low arousal preferred	High intensity preferred Synergies sought Make-believe prevalent High arousal preferred



**Figure 1:** The relationship between arousal and hedonic tone for the telic state (solid line) and the paratelic state (broken line)

example, the activity of swimming for the elite swimmer, working towards and competing in high level competition is likely to take on a telic orientation. The concern then is with training schedules, “split-times” and “personal bests.”

Incidentally, individuals are thought to have a preference for either of the two metamotivational states and are said to be either telic or paratelic “dominant.” This represents an individual bias in the experience of metamotivational states and a scale has been developed to measure this tendency, known as the Telic Dominance Scale (Murgatroyd, 1985). A person categorized as telic dominant is considered to spend more time in the telic state than in the paratelic state. It should be noted that “dominance” is a rather different notion to that of “trait” common in other personality measures. The idea of a personality trait suggests that

the individual’s behavior tends to be consistent and that there is a predisposition to act in a particular way. For example, when an individual is classified as “extrovert,” this indicates that extroverted behavior is a regular and stable characteristic of that individual’s personality. The difference is subtle, but important in reversal theory because of its phenomenological base and view of human behavior as fundamentally inconsistent. In brief, the suggestion from reversal theory is that a person could react in one of two ways, in this instance either telic or paratelic, depending on his/her metamotivational state at the time, with the possibility of switching or reversing between them. So that “the term ‘dominant’ reflects the ascendancy of one state over another. for a particular person rather than that person’s desire to be telic or paratelic: it is the description of what the person actually tends to experience over time rather than a statement about how he or she might wish to be.” (Murgatroyd, 1985, p.20)By incorporating the innovative concepts outlined above into the reversal theory approach, a unique interpretation of human action becomes viable. The phenomenological framework underpinning reversal theory allows a number of alternative cognitive intervention possibilities to be considered.

### 3. POSSIBILITIES FOR THE USE OF COGNITIVE INTERVENTION TECHNIQUES WITH ELITE SPORTS PERFORMERS

Where cognitive intervention techniques have been used in clinical psychology, the emphasis has been on arousal reduction. Treatment involving the reduction of arousal levels has proved effective with some patients

who have problems controlling anxiety; however, the use of this type of intervention technique may not be effective in all cases.

Recent research undertaken by Heide and Borkovec (1983) and Budzinski *et al.* (1980) has shown that some subjects are unable to achieve a state of low arousal and for others relaxation training can paradoxically induce anxiety.

The general concern amongst sports psychologists is that athletes should be able to control arousal levels to find a so-called optimal level of arousal which they consider will be of most benefit in enhancing performance.

Here again, the emphasis has been on using arousal reducing techniques and currently not much attention is being given to other possibilities. Reversal theory, however, suggests that arousal reduction is not the only intervention possibility and that there are three other equally effective methods open to the therapist (Svebak and Stoyva, 1980; Kerr, in press).

These alternative strategies, which could be used to change or cause a reinterpretation of arousal levels are outlined in Figure 2.

Reversal theory proposes four possible strategies. These are:-

### 3.1. High Arousal

1. Reducing the level of high arousal, experienced as unpleasant, by utilizing one of the techniques described above, for example progressive relaxation
2. Causing a reinterpretation of unpleasant high arousal by bringing about a metamotivational reversal (i.e., telicto paratelic).

### 3.2. Low Arousal

3. Increasing the level of low arousal, experienced as unpleasant by, for example, utilizing an innovative biofeedback technique

4. Causing a reinterpretation of unpleasant low arousal by bringing about a metamotivational reversal (i.e., paratelic to telic).

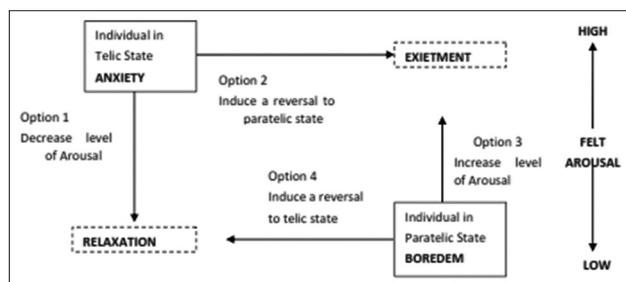
Although for the individual in the telic state arousal reduction would be appropriate, resulting in unpleasant feelings of anxiety being changed to pleasant feelings of relaxation, it would be inappropriate for the individual in the paratelic state. Here, low levels of arousal are experienced as unpleasant boredom, so what is required is an increase in arousal level which would then be experienced by the individual as excitement. How might this be achieved? One possibility is the suggestion made by Svebak and Stoyva (1980) that biofeedback, one of the self-regulatory techniques, could be used. Subjects would learn to voluntarily increase arousal rather than the opposite. By effecting metamotivational reversals, two other possibilities for the use of intervention present themselves.

These would result in a reinterpretation of arousal, as perceived by the individual, thus changing the hedonic tone. A reversal from paratelic to telic would allow unpleasant feelings of boredom to be reinterpreted as relaxation. On the other hand, high arousal in the telic state, experienced as unpleasant, could be changed to feelings of excitement following a reversal to the paratelic state.

It is imperative, especially before or, depending on the event, during competitive performance, to be able to recognize when inappropriate metamotivational states are operative. A “state” type self-report scale, the telic.

Dominance Scale, state version, has been constructed which could be used for this purpose. Sports psychologists, or perhaps coaches who know their team or individual competitors well could be taught to recognize when an inappropriate metamotivational state is operative. It also seems likely that the sports performers themselves could through experience learn to identify when their operative mental state was not consistent with their usual pre-competitive meta motivational state. It would then be necessary to bring about a reversal.

Reversal theory proponents consider that once the need for a reversal has been pinpointed, an individual, in this case the elite sports performer, could bring about an environmental change in such a way to trigger a reversal. In addition, it is thought that elite performers could induce a reversal by means of a cognitive restructuring or imaging strategy. A recent publication



**Figure 2:** Possible options for affecting felt arousal (from Kerr in press)

by Murgatroyd and Apter (in press) examines methods for inducing reversals and their usefulness as a means of psychotherapeutic intervention.

#### 4. CONCLUSION

In putting forward the case of reversal theory and its implications for the use of cognitive interventions in sport, the words of caution made at the beginning of the paper are still relevant. Not only is the use of cognitive interventions in sport in its infancy, but so too is reversal theory. In terms of its growth, the first major publication came out in 1982.

There is still a considerable amount of work to be undertaken. The empirical and other research investigations carried out, to date have been supportive.

Reversal theory, like the application of cognitive intervention to the context of sport, holds a great deal of promise; therefore, it is important that those people involved with enhancing the performance of elite sports competitors performing at the highest level should be made aware of the possibilities opened up by this new approach.

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# A Study on Six Volleyball Skill Tests as a Predictor of Game Performance among Sports Hostel Volleyball Players of Bidar and Yadgir Districts

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## ABSTRACT

The purpose of this study was to investigate the relationship of six selected volleyball skill tests to actual volleyball game performance. The six skill test items were administered to 24 subjects, who were all members of a college level introductory volleyball course. Based on the ratings of a panel of experts, subjects were rated during game play as good, average, or poor performers. The stepwise discriminant analysis was used to analyze the relationship between skill tests and game performance. Four of the six skill tests were identified as significantly contributing to group membership. These tests, of the magnitude of their standardized discriminant function coefficients, were as follows: (1) Brumbach Serve Test, (2) AAHPER Wall Volley test, (3) AAHPERD Wall Spike Test, and (4) AAHPERD Serve Test. It was concluded that a volleyball skill test battery consisting of these four items would objectively measure volleyball playing ability and discriminate between players of various skill levels. The results of this test battery could be used for classification, diagnosis, motivational purposes, and grading.

**Keywords:** Skill, Test, Volleyball, Serve, Spike, Volley test

## 1. INTRODUCTION

Volleyball is one of the most popular team sports in the world. In many countries, volleyball is the number one ranked indoor competitive sport. Worldwide, it ranks third in the number of participants (Welch, 1966). In the United States, the game has always been popular, but it has experienced a tremendous growth in popularity since 1984. One indication of Volleyball's success is its increasing popularity in the school's physical education curriculum (Anthony, 1973). With the sport's increased importance in the school's curriculum has come an increased need for evaluation tools of student performance. Verducci (1980) believes "one of the major objectives of physical education is the development of Sports skills." To determine if this objective has been met, a measurement tool is needed. The evaluation of volleyball ability is typically measured by the administration of one or more individual skill tests. Athletic skill tests, including volleyball skill tests, have been in use since the early 1900s. The problem then, as now, is the usefulness of these tests.

Does an individual skill test score reflect a person's ability to perform during a game?

### 1.1. Statement of the Problem

This study was conducted to determine if a predictive relationship exists between performance on six volleyball skill tests (Appendix A) and a player's actual game performance. Significance of study.

According to Hopkins (1979), "One of the greatest problems that have confronted the physical education and coaching professions has been that of evaluating sports skills test results and their relationship to levels of playing ability." This study could prove useful to the physical education teacher and volleyball coach attempting to distinguish different playing levels among individual players. Miller (1988) notes that sports skill tests are also used for classification of teams, diagnosis, motivation, practice, and program accountability. These are all noteworthy goals which could be enhanced with an accurate assessment of the worth of sports skills tests.

## 2. MATERIALS AND METHODS

### 2.1. Selection of Subjects

The subjects used in this study were students of sports hostel of Bidar and Yadgir districts selected in the academic year 2021–2022 for the volleyball game discipline. The students were oriented by the investigator, and the purpose and methods of the study were explained to the students. Students who agreed to participate completed the informed consent form in Appendix C.

### 2.2. Selection and Administration of Skill Tests

Lamp (1954) conducted a review of the literature concerning the fundamental skills of volleyball. She found that the most commonly mentioned skills were the serve, the volley (overhead pass), the spike, and the underhand (forearm hump) pass. Of these four skills, the volley pass, more commonly referred to as the overhead pass, is the most difficult for a beginning player to master. In fact, a vast majority of beginning players (such as those in this study) cannot perform the skill at an acceptable game play level. The other three major skills (the serve, the spike, and the underhand pass/forearm pass) are the focus of this research. To evaluate the individual's ability to serve, three tests were administered: The AAHPER Serving Test (Appendix D), the AAHPERD Serving Test (Appendix E), and the Brumbach Serve Test (Appendix F).

The review of literature found only two objective evaluations of a player's spiking ability. The Helman Wall Spike and the AAHPERD Wall Spike are very similar exams. The AAHPERD Wall Spike (Appendix G) was used to test spiking ability. The forearm pass evaluation involves AAHPER Wall Valley (Appendix H) and the tests. The AAHPERD Pass to Self (Appendix I) was administered to each subject to evaluate forearm passing ability. During March 1992, the six skill tests were administered to the subjects. The same procedure was followed each day. Class began with a general warm-up and stretching period of approximately 5 min. The subjects then performed an event-specific warm-up. Partner passing, for 5 min. After the warm-up, the students were introduced to the tests for that day. The test was described and then demonstrated. Scoring procedures and scoring criteria for the event were also discussed. For the passing tests, each subject was allowed one practice trial. For the serving tests, each subject was allowed three practice trials. The tests were administered in four class periods. On the 1<sup>st</sup> day, the

AAHPERD Serving Test and the AAHPERD Pass-to-Self test were administered.

The 2<sup>nd</sup> day, the two wall tests (the AAHPERD Wall Spike and the AAHPER Wall Volley test) were administered to the subjects. On the 3<sup>rd</sup> day, the Brumbach Serving Test was administered. The AAHPER Serving Test was given on the 4<sup>th</sup> day. Students who missed a skill test were tested during a make-up session. The tests were administered to the subjects by the investigator. The subjects were assigned to testing squads of eight persons. The students worked with a partner who was another student in the class. As one student performed the skill test, the partner monitored the performance and recorded the scores achieved. At the end of each test, the partners reported their individual scores to the investigator. Development and use of the volleyball 1 rating scale to determine and rank an individual player's actual game performance, the volleyball rating scale (VRS) was developed by the investigator. The VRS (Appendix B) evaluates performance of three individual skills: Serving, spiking, and the forearm pass. These three skills were designed to reflect the basic skills needed by an individual to successfully participate in a volleyball game. The other two major individual skills, the overhead pass and blocking, were omitted for various reasons. Blocking was eliminated because it is a skill which is only effective when used in conjunction with an effective team defense. The relatively low level of team defensive skills and opposing team's spiking skills in this beginner class limit the use, effectiveness, and importance of the block. The overhead pass was eliminated for two reasons. First, the skill is the most difficult individual skill to learn. To become an effective passer with this method takes many months, and possibly years to master. Second, due to the importance of setting (a variation of the overhead pass) in evaluation of another player's spiking skill, the investigator chose to use designated, experienced setters for each team. In each of the three skills areas, the VRS was subdivided into three ability levels. These three rating areas of good, average, and poor performance include criteria for distinguishing among players at each skill level in each critical area.

The criterion for a rating is based on technique used in performing the skill. Based on an individual's score in the three different skills, an overall rating was assigned to each player. A "good" player was determined to be those individuals who had rated "good" on at least two of the three skill areas. An "average" player had to achieve a ranking of "average" in at least two skill areas. A "poor" player was an individual who failed to score "average" or

“good” in more than one area. A panel of three experts was selected by the investigator to use the VRS to evaluate and rank the game play of study participants. These experts were chosen for their experience with and knowledge of the game of volleyball. The panel was also experienced with working with beginning level volleyball players. Subjects were assigned to a six person team and given numbered jerseys to wear for identification purposes during game play. The team composition consisted of an experienced setter who was a non-member of the class, one or two higher skilled players, two medium skilled players, and one or two lower skilled players. The team assignments were based on the instructor’s previous observations of the individual’s game performance.

The panel of experts viewed the subjects on one occasion during the week following the completion of the skill testing phase. Observations were made of the subjects playing a gains to common opponent team. The common opponent team was selected by the investigator and played against every subject. This team consisted of non-class members with volleyball experience. The common opponent team was used to allow the experts to evaluate all players under as similar as possible conditions. The games were played on a regulation court using the official net height for men’s games. To allow the experts to accurately evaluate each player, the normal serving pattern was altered. Each player, regardless of the outcome of the previous point, served 3 times in a row. For example, Player #1 on the subject team served 3 times. The next three serves were by Player #1 on the common opponent team. The third server in the game was Player #2 for the subject team who also served 3 times. This pattern was follow, throughout the entire rating period. The second exception to USVBA rules was a slight alteration in the rotation pattern. Due to the necessity to keep the designated setter on the front row during the subject team’s play, players skipped the middle front position. Individuals rotated directly from the left front position to the right front position.

### 2.3. Statistical Analysis

The statistical analysis of the data focused on the ability of the skill test scores to predict game play performance.

To accomplish this, a stepwise discriminant analysis procedure was used to interpret the skill test scores and VRS rating data. As analysis was performed with the use of the Statistics Program for Social Sciences. In addition, the VRS was evaluated as to its reliability in rating game play. The judges’ ratings were analyzed for reliability using the intraclass correlation coefficient is coefficient was calculated with the statistical analysis system.

### 3. RESULTS AND DISCUSSION

There is in fact a significant relationship between a player’s performance on skill tests and game performance. Four of the six skill tests contributed to the ability of the discriminant function to differentiate among players of the varying ability levels. These four skill tests, in order or the magnitude of their standardized discriminant function coefficients were as follows: The Brumbach Serve Test, the AAHPRR Wall Valley Test, the AAHPERO Wall Spike Test, and the AAHPERD Serve Test. The contribution of the four variables is very similar with no one single dominant test factor. This relationship is numerical proof of what logic would seem to say success on a variety of sub-skills provides a basic structure for success in the total game. Those players who had difficulty performing the skill “alone” would logically have even more difficulty performing the skill when placed on the court with other people. The discriminant function, however, does not allow for a perfect prediction rate of success [Table 2]. Again, this is a logical extension of what we know about the complexity of volleyball as a team sport. Success in the game relies not only on individual technique but is also influenced by experience, opponents’ skills, teammates’ skills, and the individual’s mental concentration to name but a few other factors. The predictive relationship is strongest when identifying those players at either end of the performance spectrum. The success rate for identifying low and high performers was 75% and 62.5%, respectively. The success rate drops off dramatically to 50% for the average group. Reliability of the VRS as a scoring instrument was established by an analysis to the

**Table 1: Canonical discriminant function**

S. No.	Function Eigen value	Percent variance	Canonical variance	Wilks’ lambda	Chi-Square	Significance
1.	1.2245	94.12	0.7621	0.52162	56.014	0.000*
2.	0.08326	7.32	0.2814	0.93417	6.742	0.1724

Significant at 0.05 level

**Table 2: Group classification**

Actual group	# of cases	Predicted group (%)		
		1	2	3
Group 1	8	6 (75)	2 (25)	0 (0)
Group 2	8	3 (37.5)	4 (50)	1 (12.5)
Group 3	8	1 (12.5)	2 (25)	5 (62.5)

**Table 3: VRS intraclass correlation coefficient**

Skill	Mean square among Msa	Mean square within Msw	Intraclass correlation coefficient (R)
Serve	0.182	0.821	0.79
Spike	1.326	0.712	0.52
Pass	1.852	0.654	0.71

**Table 4: Judges scoring comparison**

Skill	Judges scoring (%)		
	3 of 3 degree	2 of 3 degree	No degree
Serve	4 (50)	3 (37.5)	1 (12.5)
Spike	2 (25)	5 (62.5)	1 (12.5)
Pass	2 (25)	4 (50)	2 (25)

intraclass correlation coefficient for each of the three skill areas. The intraclass correlation coefficient for the three skill areas was lower than anticipated [Table 4]. Baumgartner and Jackson (1991) have noted that low correlation coefficients are probable when the group is homogeneous in ability. The homogeneity of skill of the subjects in this study probably contributed to the low coefficients for the VRS. When analyzed by a different method, the VRS proved to be of acceptable scoring

reliability. With 195 possible evaluation opportunities (24 subjects rated on three different areas), the judges reached complete agreement on a player's rating 55% of the time. Among the three judges agreed on a player's rating, 68.2% of the time is means that the judges were able to agree (Agreement defined as at least two of the three judges reaching the same rating of a player) on the subject's rating is over 98% of the observations.

#### 4. CONCLUSION

Conclusion for this particular population, there is a significant relationship between a subject's performance on volleyball skill tests and game performance.

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# A Study on the Effect of Stress and Anxiety on Mental Health of PG Students of Gulbarga University

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## ABSTRACT

The present study aims to investigate the effect of stress and anxiety on the mental health of PG students of Gulbarga University. To achieve the purpose of the study the investigator selected 80 PG students from various departments were selected on random basis. The subjects were divided into two groups on the basis high and low stress and anxiety with the help of questionnaire scoring manual. The subjects were administered to Singh Personal Stress Source Inventory and Sinha's Comprehensive Anxiety Test based on the scores the subjects were equally divided into two groups of high and low stress and anxiety. Further both high and low stress and anxiety groups were administered to Mental Health Inventory. All of them are having the same environment and were also taking part in routine academic programs as per the schedule of the University. The results of the study concluded that the low-level stress and anxiety group of students are having positive self-evaluation, perception of reality, integration of personality, autonomy, group-oriented attitudes, and environmental competence. The results clearly speak the fact that there is a positive and significant relationship between the stress, anxiety, and mental health of the students.

**Keywords:** Stress, Anxiety and mental health, Students

## 1. INTRODUCTION

Mental health is the successful performance of mental function which results in productive activities, fulfilling relationships with other people, and an ability to cope with adversity and adapt to change (Kahn and Fawcett, 2004). A person is called mentally healthy when he understands himself and his own feelings, motivation, drives, and wishes. Good mental well-being includes and ability to get through the interactions of daily life without experiencing excessive emotional or behavioral incapacity and the person is able to be flexible and adaptive with a positive self-esteem.

Mental health means the ability to balance in one's daily living. In other words, it is the ability to face and balance the reality of life (Bhatia, 1982). Mental health is a complex phenomenon and depends on a set of familiarly personal, psychological, and social variables. Mental health is as an important feature as the physical health of a person to make him complex with balance mental disposition of the children to cope with life more effectively and productively. Good mental health

depends on the good state of both mind and body. Each exerts a direct influence on the other but owing to the power of matter, good mental health is of supreme importance. According to Hadfield (1952), mental health is the harmonious functioning of the whole personality.

When mental health deteriorates, problems can arise in a wide variety of areas such as low self regard, anxiety, depression, anger, distortion of reality, heightened physiological reactivity, reduced competence, etc. (Punjab Heritage, 2005). Emotional upsets, tension, anxiety, a rapid social change, struggle for existence, and chronic personal conflict are all important factors in aggravating and even initiating mental health problems.

Mental health refers to the capacity to think rationally and logically, cope effectively with stress and challenges that arise in situations and throughout the life course, and demonstrate emotional stability and growth.

Anxiety is a feeling of uneasiness and worry, usually generalized and unfocused as an overreaction to a situation that is only subjectively seen as menacing.

It is often accompanied by muscular tension, restlessness, fatigue and problems in concentration. Anxiety can be appropriate, but when experienced regularly the individual may suffer from an anxiety disorder.

People facing anxiety may withdraw from situations which have provoked anxiety in the past. There are various types of anxiety. Existential anxiety can occur when a person faces against, an existential crisis, or nihilistic feelings.

### 1.1. Statement of the Problem

The present study aims to investigate the effect of stress and anxiety on mental health of PG students of Gulbarga University.

### 1.2. Objectives

- To assess the effect of stress on the mental health of PG students
- To assess the effect of anxiety on the mental health of PG students
- To find out the relationship between stress, anxiety, and mental health among PG students.

## 2. MATERIALS AND METHODS

### 2.1. Sample

In the present study, the investigator selected 80 PG students from various departments were selected on random basis. The subjects were divided into two groups on the basis high and low stress and anxiety with the help of questionnaire scoring manual. All the subjects were almost from the same socio-economic group and were found to be physically and mentally fit for the type of assessment they were subjected.

### 2.2. Sample Design

Students	Age	Total
PG	22-25	80

Students	High stress and anxiety	Low stress and anxiety
PG	40	40

### 2.3. Procedure

The subjects were administered to Singh personal stress source inventory and Sinha's comprehensive anxiety test based on the scores the subjects were equally divided into two groups of high and low stress and anxiety. Further both high and low stress and anxiety groups were administered to mental health inventory. All of them are having the same environment and were also taking part in routine academic programs as per the schedule of the University.

## 3. RESULTS AND DISCUSSION

Based on the analysis of data the following interpretations were made and presented in the following tables.

Table 3 presents the scores of PG students on mental health at two levels of stress. The mean score (140.74) of high-level stress group indicates that they are having low mental health and the mean score (196.42) of low-level stress group reveals that they are having very good mental health. In other words, it is interpreted that the low-level stress group students are having positive self-evaluation, perception of reality, integration of personality, autonomy, group-oriented attitudes, and environmental competence.

Table 4 presents the scores of PG students on mental health at two levels of anxiety. The mean score (142.36) of high-level anxiety group indicates that they are having low mental health and the mean score (198.72) of low-level anxiety group reveals that they are having very good mental health. In other words, it is interpreted that the low-level anxiety group students are having positive self-evaluation, perception of reality, integration of

**Table 3: Scores of PG students on mental health at two levels of stress**

S. No.	Stress	N	Mean	SD	t-value
1.	High	40	140.74	12.62	16.46*
2.	Low	40	196.42	7.32	

Significant at 0.05 level

**Table 4: Scores of PG students on mental health at two levels of anxiety**

S. No.	Anxiety	n	Mean	SD	t-value
1.	High	40	142.36	13.02	17.46*
2.	Low	40	198.72	9.54	

Significant at 0.05 level

**Table 5: Correlation between the variables**

S. No.	Variables	r-values
1.	Stress and Mental Health	0.712**
2.	Anxiety and Mental Health	0.783**

\*\*Significant at 0.01 level

personality, autonomy, group-oriented attitudes, and environmental competence.

Table 2 shows the r-values of the variables of the study. It can be seen that all the r-values were significant at 0.01 level to indicate the significant relationship between the variables of the study. Thus, the results clearly speak the fact that there is a positive and significant relationship between the stress, anxiety, and mental health of the students.

#### 4. CONCLUSION

The low-level stress and anxiety group of students are having positive self-evaluation, perception of reality, integration of personality, autonomy, group-oriented attitudes, and environmental competence. The results clearly speak the fact that there is a positive and significant relationship between the stress, anxiety, and mental health of the students.

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# Imagery - Impact on Sports Performance: A Review

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## ABSTRACT

Since the conceptualization of imagery use forwarded by Paivio (1985) till now lot attention by researchers and coaches and athletes were reaping the benefits of this method, it can be motivational or specific skill training. The imagery mediates behavior through earlier cognitive or motivational mechanisms which effect specific or general response system in order to improve the desired outcome from the athlete. The research findings on impact of imagery in various games and sports also given with year wise publications. It is an effort to review the research been done till this year, it helps the researchers and sports concern fraternity to read and help them to progress in their desired activity of sports.

**Keywords:** Imagery, Performance, Athlete

## 1. INTRODUCTION

Imagery is simply a mental technique that programs the mind and body to respond optimally. Mentally rehearsed imagery, methods practiced all refers to creating or recreating an experience in mind, this recreation is from memory, Imagery is actually a form of stimulation. It is similar to real sensory experience in the mind. Using imagery as a mental training tool, athletes have the capacity to see and believe, which gives them the confidence and focus to perform successfully. In fact, many athletes use imagery, but they do not use it systematically and often are unable to control their images.

Imagery involves the athletes' imagery themselves in a specific environment or performing a specific activity. Hence, elite and numerous athletes are turning toward imagery to take their game to the next level. Different uses of imagery in sport include: Mental practice (MP) of specific performance skills, improving confidence, and positive thinking, problem solving, controlling arousal and anxiety, performance review and analysis, preparation for performance, and during imagery (Plessenger, 2009).

Sport psychologists have attempted to understand the exact mechanism that causes imagery to work. Evidence supports the effectiveness of imagery in improving sport performance, but only through a controlled systematic

practice, (Murphy, 2005). Numerous theories exist to support that imagery is a veritable tool in enhancing sport performance.

One of the more comprehensive lists was given by Murphy *et al.* (2006). They suggested that imagery could be used for motor control, emotional and motivational management (i.e., enhancing motivation, changing arousal, and affect), and cognitive reasons (problem solving and understanding through strategy and planning, memorizing, confidence and self-efficacy, artistic, and healing functions).

Imagery has been demonstrated to assist in improving wellness and overall functioning, but they can also be applied towards non-health issues as well. It simply can provide an opportunity for people to see themselves completing any difficult task that may feel undefeatable or life challenging. For example, it has been demonstrated to be extremely useful in improving athletic ability. Thelwell and Greenless (2003)<sup>[9]</sup> found that performance endurance, performance motivation, and pain management were enhanced in athletes through the use of imagery. In addition, Eddy and Mellalieu (2003) elaborated that the use of imagery techniques to imagine performing a specific sports skill has been shown to improve the physical performance of that. Using the mind, an athlete can register positive images over and over, enhancing the skill through repetition or rehearsal, and similar to physical practice (PP).

Therefore, with mental rehearsal, minds and bodies become trained to actually perform the skill imagined. Imagery is the development of creating a mental image or goal of what he/she wants to happen or feel. Research by Newmark (2012) supports visualization was first applied to sports performance after the 1984 Olympics, when Russian researchers studying Olympic athletes found that Olympians who had employed visualization techniques experienced a positive impact on their biological outcomes and performance. Several studies with imagery and sports have been documented in the past decades. Since the 1984 study, the technique has been used extensively in the United States and has found acceptance by neuroscientists and sports psychologists who have found that subjective training can cause the body to respond more favorably to consciously desired outcomes (Newmark, 2012). Past studies have shown that internal visualization of specific movements forms neural patterns in the brain, which help advance neuromuscular coordination. Since the brain instructs the muscles how to move, stronger neural patterns result in clearer, and stronger movement. The previous functional MRI brain research has also indicated it supports IMAGERY, since images in the brain have shown that during visualization, a shift in activity from the left to the right hemisphere occurs (Newmark, 2012). In terms of functioning, the right hemisphere is correlated with creative imagination, while the left hemisphere is correlated with logical thinking. Using the creative part of the brain over the logical part has been shown to enhance the visual imagery and, therefore, performance. This is useful in the mental training of athletes because the imaginative skill of the right brain helps make imagery sessions more vivid (Newmark, 2012).

## **2. HOW IMAGERY WORKS TO FACILITATE PERFORMANCE**

There are many theories and body of literature that tried to explain how imagery works but the most popular amongst them are Psychoneuromuscular, symbolic, and bioinformational theories.

### **2.1. Psychoneuromuscular Theory**

This theory states that as athletes engage in sport movement, their brains are constantly transmitting impulse to the muscles for execution of the movement. Similar impulses occur in the brain and muscles when athletes imagine the movements without actually performing them. Thus, the psychoneuromuscular

theory asserts that vivid imagined events produce innervations in our muscles similar to that produced by the actual physical execution of the event. Coaches and athletes should know that imagery strengthens their muscle memories by having the muscle respond in the correct sequence without actually executing the movement, (William, 2009).

### **2.2. Symbolic Learning Theory (Mental Coding)**

In this theory, imagery may function as a coding system to help athletes acquire or understand movement patterns. All movements that we make must first be encoded in our central nervous system; we must have a blue print or code their movement into symbolic components, thus making the movement more familiar and perhaps more automatic. For example, a gymnast can use imagery to cue himself, on the temporal and spatial elements involved in performing a balance beam routine (Smith, 2009, William, 2009).

### **2.3. Bioinformational Theory**

This theory assumes that a mental image is an organized set of propositions or characteristics stored in the brain's long-term memory (Wrisberg, 2000). When individuals engage in imagery, they activate stimulus characteristics that describe the content of the image for them and response characteristics that describe what their responses are to the stimuli in that situation. For example, imagining shooting a basketball free throw in the final seconds of a close game would involve the stimulus characteristics of the feel of the ball in the hand, the sight of the basket, and the sound of the crowd. The response characteristics of this image might include muscular tension in the shooting arm, increased perspiration, feelings of anxiety, and the joyous sight of the ball swishing through the net.

According to bio informational theory, for imagery to facilitate athletic performance, response characteristics must be activated so they can be modified, improved and strengthened. By repeatedly accessing response characteristics for a particular stimulus situation and modifying these responses to represent perfect control and execution of a skill, imagery is predicted to enhance performance, (Smith, 2000, Hecker, 2008).

### **2.4. Symbolic Learning Theory**

The symbolic learning theory was proposed by Sackett (1934), and it suggests that imagery works as

a coding system in the brain, which helps one to get an understanding of one's own movement. When practicing imagery the mental movement patterns will get stronger, which in turn, will help the imager to get familiar with a particular movement, and with time the movement can become automatic (Martin *et al.*, 1999). According to Suinn (1997), symbolic learning theory assumes that "mental practice gains are more due to the opportunity to practice the symbolic elements of a motor task than to muscle activation itself". Imagery makes it possible to get access to the information that requires performing a particular movement (Johnson, 1982).

Ryan and Simons (1981) tested the symbolic learning hypothesis. The participants were involved in one motor task and one cognitive task (physically and cognitively). In the study, a stabilometer and the dial-a-maze were used and all the subjects were tested in both of them. In the task with the stabilometer, the subjects would stand on a platform and hold it as still as possible. The subjects were divided into three conditions; PP, MP, or no practice (NP). Before all the subjects were tested, some of them were asked to first perform on both tasks. To decide whether the tasks involved muscle activation or reasoning and thoughts, the subjects would rate on a 5-point scale. All subjects rated that the dial-a-maze was more involved in the cognitive, and the stabilometer was higher rated as more involved in the motor component.

In the motor task, no differences in learning could be found in MP and NP condition, whereas PP condition increased in learning. In the cognitive task, both PP and MP were superior to NP condition. They found that imagery can enhance the cognitive aspects of a certain skill more than it enhances the motor aspects which support the idea of the symbolic learning theory (Ryan and Simons, 1981).

### 3. PURPOSE OF LITERATURE REVIEW

The purpose of this literature review is to examine previous and current studies of impact of imagery on performance of the athletes, results from past studies and present studies, possible benefits to using imagery, concerns with imagery, and to introduce the study at hand. As stated earlier in the introduction (Plessenger, 2009), imagery is a process based on visualizing images in the brain to help the athletes to create sensory-rich images in their minds to promote relaxation, concentration and body awareness. A major misconception with imagery is that it relies solely on the sense of sight. However, to capture the best results from imagery you will need to

use more than just one of the five senses possible five senses.

Imagery uses language that involves one or more of the senses, which may lead clients to be more mindful of their senses and environment not only in sessions, but in their daily lives as well (Kress *et al.*, 2013). Imagery is currently defined as incorporating as many senses as possible to create and recreate an experience in one's mind (Vealy and Walter, 1993; Templin and Vernacchia, 1995, p. 42). Orlick (1986) argued that the theory behind these findings implies that the more stimuli present from the model or image, the more realistic the experience is to the observer's mind. Imagery involves a combination of multiple senses; such as visual (images and pictures), auditory (music or audience), and kinesthetic (how the body feels), along with emotions, to produce positive changes in participant responses. Researchers have found that the imagery technique that involved a combination of multiple senses and emotions was of greater benefit than to a person that only implemented visual images. An example regularly used to explain this imagery technique is to imagine eating a fruit in great detail. Take an orange for instance. Imagine not only the color of the orange, but the texture, smell, and taste of the orange. While imaging the smell of the orange, see yourself taking a bite of the orange, feeling the juice squirting in your mouth, and leaving a citrus taste marinating into the taste buds on your tongue. Many people begin to salivate and crave an orange when they imagine that scenario. This exercise alone demonstrates how the mind and body are connected and how, to the body, images formed in the mind can be nearly as real as actual external events. Cognitive techniques are all based on the mind and body connection, so using multiple senses contributes more to facilitating feelings of empowerment to manage certain difficulties in a person's life.

The mind and body principle is a key principle but another important principle that helps with the process of imagery being in and the altered state of mind. In an alternate state of mind a person experiences temporary change from their normal state of mind without being considered unconscious (Naparstek, 2000). During altered consciousness a person is capable of prompt and intense learning, performance, and healing (Naparstek, 2000). Brainwave activity and biochemistry change, which cause cognition and moods to alter (Naparstek, 2000). Here a person begins to become more creative, intuitive, and so confident that at times they feel invincible (Naparstek, 2000). He or she begins to do

things they typically would not do in a normal state of mind such as: lifting heavy debris that fell on someone; writing an astonishing song or poem, running away from a wild animal to escape life-threatening danger; replacing anxiety and fear with a calmness and optimism during public speaking, subsiding a venomous histamine response to a snake bite (Naparstek, 2000). Research by Naparstek (2000) supports, at best, the altered state is a state of relaxed focus, a kind of calm but energized alertness, and a highly functional form of focused reverie. The altered state can be viewed as the heart and power cell of imagery. When consciously applied, it becomes an awesome ally, a prodigious source of internal strength and skill (Naparstek, 2000). To have an altered state of mind a person must have a great sense of control.

Having a great sense of control can be measured by figuring out an individual's locus of control. Locus of control refers to the degree to which individuals believe they can control events affecting them (Rotter, 1966). People with an external locus of control believe that their own behavior does not matter much and that rewards in life are generally outside of their control (Rotter, 1966). Those with an internal locus of control believe that their own actions determine the rewards that they obtain (Rotter, 1966).

Having a strong internal locus of control is a vital element to IMAGERY and when an individual has a strong sense of being in control, in and of itself, can help a person to feel better and do better. Feeling in control is associated with higher optimism, self-esteem, and ability to tolerate pain, ambiguity, and stress (Naparstek, 2000). Not having any form of control can cause a person to have lower self-esteem, which could create the person to feel helpless. Decades of research in ego psychology inform us that we feel better about ourselves and perform better when we have a sense of mastery over the environment (Naparstek, 2000). IMAGERY is an entirely internal activity, and the individual can decide when, where, how and if it is applied, it has the beneficial effect of helping one feel they have control.

### **3.1. Imagery and Improved Sports Performance Case Studies**

Individuals in practically all sports, at all levels of play, have extensively used the imagery exercise and several cases have proved that it benefits the athletes. For example, one case, as described by Newmark (2012), involved a seventeen year old, Caucasian female, high

school gymnast. Her problem was she kept experiencing high anxiety prior to her competitive meets. She would perform excellent in practice, but never performed well during competition when it mattered the most. During competition her heart would race fast, she would sweat and tremble, and completely lose focus. To reverse this issue she had to gain control of her thoughts. So first, the patient had to specifically describe every detail in her warm up routine from beginning to end. This even included saluting the judges' right before starting her routine. The imagery therapy began by using the progressive muscle relaxation technique. This technique helped because it focused on tightening and relaxing each group of muscles one at a time until her whole body was in a relaxed state. Once her muscles were relaxed, she was then ordered to engage her visual, auditory, and tactile senses to picture a competitive meet. She then specifically gave a description out loud in detail as she imagined herself going through the movements for each routine while in her team colors, and hearing the noise of the fans screaming. Every detail was vital because when she saluted the judges during competition it was implied that gesture would cue her to feel focused and relaxed. This exercise was practiced several times during therapy sessions, and she was also instructed to practice at her house. After 12 weeks she felt less stress and more relaxed and focused. Her relaxation and focus was to the point to where she was having more fun during competition. With this happening, results were achieved and she improved her scores/performance during competition.

Another case, as described by Newmark (2012) involved a 24 year old, Caucasian male semi-professional golfer who felt his golf skills were declining and particularly his putting. He was stressed, not because of anxiety, but from being stuck in a rut with his game play. Therefore, the patient was first asked to focus on letting go of any tension in his muscles from the top of his head to his feet. While doing so with his eyes closed, instantaneously it was recommended to the patient to control his breathing by allowing it to become deeper and slower. The expected outcome of this relaxation technique was to become calmer. While the muscles were relaxed, he was instructed to imagine and describe in detail what he would see if he were playing in a round of golf. Using visual, auditory, and tactile senses to picture this he imagined the golf clubs he could be holding, green golf course, and the sound of the breeze cutting through the air. At this point, it was proposed to him that when he putted, he would see the white golf ball following an imaginary dotted line into the hole. It was also proposed that as he

puts the ball it would become “laser-like” in accuracy as it moved along in a straight line. After 1 month, during which time the golfer practiced visualizations at home, this intervention helped the golfer improve his focus and game (Newmark, 2012). The golfer also conveyed that he was now capable of getting considerably closer to the hole on long or lag putts.

One case study that has been given a great deal of feedback involved the sport of basketball. Dr. Biasiotto, professor at the University of Chicago, conducted a study on sports visualization (Haefner *et al.*, 2014). His famous basketball experiment used free throws as a way to gauge the effectiveness of visualization and imagery in sports. He first separated people into three different groups and tested each group on how many free throws they could make. He then had the first group practice every day for an hour, the second group only visualized themselves making free throws, and the third group did not practice or use visualization. After 30 days, he tested all three groups again. The first group improved by 24% and the second group increased by 23%, without even touching the basketball. The third group, as predicted, did not show any improvement. Besides wanting to prove the possible effectiveness of visualization in sports, it was stated that the goal of this study was to show individuals how much success could be achieved if they applied both imagery techniques and practice. Although it did show beneficial results of imagery, it did have a group that used both techniques.

## 4. TECHNIQUES TO IMPROVE THE IMAGERY EXPERIENCE

### 4.1. The PETTLEP-Model

The PETTLEP-model is an imagery model, specifically to imagery and it has been developed by Holmes and Collins (2001). PETTLEP consists of different items: Physical, environment, task, timing, learning, emotion, and perspective. PETTLEP is grounded on neuroscientific evidence of functional equivalence. Functional equivalence refers to the common neural correlates of an imagined physical performance (Wakefield and Smith, 2009). Brain imaging techniques have made it possible to identify the brain areas activated in imagery, motor preparation, and execution (Holmes and Collins, 2001). For example, similar activation of the cortical brain areas has been shown in both imagery and execution of a unilateral hand movement Beisteiner *et al.* (1995). In the use of imagery, PETTLEP might help the imager to create more effective imagery (Holmes and Collins, 2001).

The physical item of PETTLEP includes an athlete’s physical experience in a sport situation. The imagery should include all appropriate senses that would be experienced in physical performance. To make the imagery as physical as possible, the athlete can wear his or her own sportswear during the time of imagery (Smith *et al.*, 2007).

According to Smith *et al.*, 2007, environment item refers to the imagined environment whereas sports performance occurs. It should be as alike the real environment to get a more similar motor representation (Smith *et al.*, 2007). When it is difficult to imagine the right environment in imagery athletes can use environmental cues. Environmental cues can include different photographs and videos of that particular environment (Holmes and Collins, 2001).

The task item states the importance of the imagery to be similar to real activity. Therefore, one should include individual responses such as feelings, thoughts, and actions that would be experienced in real sports performance (Smith *et al.*, 2007).

The time item is the amount of time that is enough to make imagery effective. In sports performance the time is important and therefore the imagery would be most effective using the right pace (Smith *et al.*, 2007). According to Holmes and Collins, 2001, the physical component in imagery (e.g., the weight of a basketball) can contribute to a more similar time to the performance in reality.

The learning item of PETTLEP refers to the adjustment of performance due to the imagery. When motor representations change the imagery should change according to that. This can help an athlete to learn a particular skill or technique (Smith *et al.*, 2007).

The emotion item includes the emotions that are central to the achievement of functional equivalence and should be included in imagery. It should also include positive emotions and not negative thoughts because positive emotions can motivate and give the athlete more self-confidence (Smith *et al.*, 2007).

At last, the perspective item refers to what perspective is used when imaging (Holmes and Collins, 2001). It has been suggested that athletes should both use internal and external perspectives to make the imagery more effective. The better an athlete becomes in imagery the easier it will be to switch from an internal to an external perspective and contrariwise (Smith *et al.*, 2007).

## 4.2. Visuo – Motor Behavior Rehearsal

Visualization plays a key role in imagery strategies and interventions. One of the most common visualization techniques is Visuo-Motor Behavior Rehearsal (VMBR), which was developed by Suinn, 1976. VMBR involves (a) an initial relaxation phase, (b) visualizing performance (imagery) during a specific stressful situation, and (c) performing the skill during a simulated stressful situation (Weinberg *et al.*, 1981). The visual aids applied in VMBR techniques include: photos, photo slides, and/or video-recorded visual information. These visual aids help locate where the faults are in the movements and help one understand the correct standards of performance. The aims of VMBR are to help with confidence and skill enhancement, preparation for competition, attention focus control, improvement in technique, error analysis and correction, and injury rehabilitation. The goal of VMBR is to recognize errors in motor performance and to adjust them with visualization practice and correction. Past studies have continued to provide valuable information on the effectiveness of VMBR within the society and how it has compared to other imagery techniques.

Research by Weinberg *et al.* (1981) attempted to determine if imagery and relaxation combined (VMBR) was more effective in facilitating karate performance than either relaxation or imagery alone. There were four different groups that were tested: VMBR group, imagery group, relaxation group, and the placebo-control group. Measures of trait anxiety, state anxiety, and performance were all used to help determine the effectiveness of each of the four groups. Trait anxiety tests were administered at the start and the end of the 6-week test period. In addition, performance tests were run at the end of the testing period along with precompetitive state anxiety. Trait anxiety scores showed that all subjects, in all four groups, displayed a decrease in trait anxiety over the course of the testing period. State anxiety scores showed that the VMBR and relaxation groups demonstrated significantly lower levels of state anxiety than the imagery and attention-control groups. Performance was broken down into three subareas: Skill, combinations, and sparring (actual competition). The results only indicated an effect for sparring, with VMBR group exhibiting better performance than all other groups. However, the VMBR group did not perform better than the other three groups on the performance measures of combinations and skill.

The results of this investigation provided only partial support for the effectiveness of VMBR in enhancing karate performance (Weinberg *et al.*, 1981). In addition,

because none of the experimental groups performed significantly better than the attention-placebo control group on skill and combinations it is possible that expectancy effects need to be considered in assessing the effects of cognitive strategies on motor performance (Weinberg *et al.*, 1981). Noel (1980) argued that future studies need to assess other variables besides anxiety, such as ability, which may mediate the relationship between cognitive strategies and motor performance. Although the results of the karate performance study did not have significantly high validity, it still showed signs of effectiveness during competition, which could be beneficial for other sports.

Recent technological developments in applied sport psychology that utilize videotaping and playback techniques to enhance athletic performance have become increasingly attractive to coaches, athletes, and sports psychologists. According to Suinn (1972), VMBR should be useful as a technique to practice an athletic skill or to manage the stress associated with an athletic event (Noel, 1980). The ability to manage high levels of acute stress is an important determinant of success performance in many occupations (Shipley and Baranski, 2002).<sup>[40]</sup> In athletic competitions, for example, the ability to stay calm can mean the difference between winning and losing (Shipley and Baranski, 2002). For several years, studies have been implemented to determine how beneficial VMBR is to athletes. One woman who has a track record of evidence that VMBR can be highly effective is a psychologist, Barbara Kolonay. In her 1977 master's thesis at New York's Hunter College, Kolonay showed that the success rate of eight New York area college basketball foul shooters had significantly improved — from 68.3% to 74.8% — after a 6-week program of relaxation and imagery exercises (Bricker, 1982). She attempted to demonstrate that VMBR, which combined imagery and relaxation, was more effective than either imagery or relaxation alone in facilitating basketball free throw shooting (Noel, 1980). Basketball teams in the VMBR group listened to a 10-min relaxation and free-throw imagery audiotape before each of 15 basketball practice sessions, while other teams listened to the relaxation tape alone, the imagery tape alone, or engaged in irrelevant activity, Kolonay (1977) concluded that the VMBR training led to an increase in free-throw percentage accuracy, since this group's pre- and post-test percentages differed significantly while the other groups did not.

Due to the effectiveness of her study, she went on to work with professional teams and other NCAA division-1

collegiate teams. Years later, VMBR is now not only used with college athletes, pro athletes, and amateur athletes of all sports, but is used in other occupations as well.

In recent studies, VMBR has also been implemented in other occupations, such as policing, as a method of reducing acute stress, and improving police officer performance. In a study of 54 the Ontario Provincial Police Force training program, 54 trainees were randomly assigned to a treatment and non-treatment condition before undergoing a highly stressful, critical event-training scenario involving live-fire exercise (Shiple and Baranski, 2002). Shiple and Baranski's results from this study showed no differences between the VMBR and the control group in the physical manifestations of anxiety (blood pressure, heart rate, perspiration, muscle tension, and breathing rate) or in overall self-confidence, but the VMBR subjects did show lower levels of cognitive anxiety (i.e., their thought process were clearer, less negative, and less distractible), and most importantly — they showed better actual performance on the critical event scenario; that is, they achieved significantly higher scores on “assailant hits” during the live-fire exercise (as cited in Miller, 2008). VMBR is the art of practicing without practicing. All it takes is discipline, concentration, and imagination. It is a method that can be used anywhere and anytime.

### 4.3. Imagery with Music

Besides visual images, music is another key factor that has been applied and associated with imagery. For instance, past studies have demonstrated how implementing music during imagery interventions has alleviated biopsychosocial distress associated with ill health. Imagery and Music (IMAGERYM) is a therapeutic practice that implements music to create an atmosphere in which one can experience personal insights that provide guidance and solutions for important life issues. Pickett (2002) stated that IMAGERYM refers to all forms of music-centered imaging in an altered state of consciousness and facilitates explorations of consciousness that can lead to transformation and wholeness (as cited in Lin *et al.*, 2010, p. 1140). Applying music to imagery has been used as a problem-solving method for a wide range of issues. It has been found to be beneficial for people looking for help with health problems such as addictions, depression, relationship issues, career changes, sexual abuse, anxiety, stress related problems, goal setting, and clarity about life experiences. Not only has it helped

with health issues but it has proven to help with athletes in competitive competition that suffer from high levels of anxiety and stress.

Several athletes, from high school to the professional level, face a common issue of anxiety and stress before and/or during competitive competition. However, another common factor most athletes share is listening to music during training and/or during pregame warm ups. An athlete listening to music metaphorically gets an injection of adrenaline to the body that boosts drive and increases motivation. Past studies have shown that adding music with imagery can be useful to athletes because it helps promote recollection of physical relaxation and can be used as a vehicle for inner exploration and insight. It also can help with lowering cortisol levels, which play a role in the nervous system and stress response. When the cortisol levels are lowered that means stress levels are lowered. When stress levels are lowered that means anxiety reduces and the fear of failure diminishes. Music has not only been demonstrated to be useful as a relaxation technique but has also proven to work as a motivation technique. For any athlete, having the right mind-set is a key to high-level performances. The highest level of basic motivation is known as flow. Csikszentmihalyi (2000)<sup>[46]</sup> described optimal experiences as flow, a state of total immersion in the activity as well as a process that does not require conscious intervention for individuals to function at their best. This then forms a state in which the individual is basically rewarded by the movement patterns involved; it is the ultimate experience among sport participants generally known as being “in the zone.” When a person is in the zone, that person is you are so intensely focused that self-consciousness is lost and nothing else matters but the task at hand. The individual typically feels enjoyment due to the feeling of overcoming challenges and accomplishing the goal targeted. The theory of flow suggests three conditions that have to be met to attain a flow state.

Nakamura and Csikszentmihalyi (2002)<sup>[46A]</sup> stated that the three proximal conditions conducive to flow are challenge-skills balance, clear goals, and unambiguous feedback. For instance, before training or competitive competition, clear goals are commonly set by an individual to meet a desired goal. During training or competitive competition immediate unambiguous feedback is needed to help the individual make any changing demands, which allows the person to fine-tune their performance to maintain the flow state.

Farmer (2013)<sup>[47]</sup> explained to help get into this optimal flow or zone, many athletes listen to music prior to competition to relax, mentally prepare, and concentrate on the task at hand and to facilitate a state of flow.

## 5. WHY IMAGERY WORKS

### 5.1. Seeing Is Believing

Before we can believe in a goal, we first must have an idea of what it looks like. To paraphrase the old adage: We must see it before we can believe it.

This is where visualization comes in, which is simply a technique for creating a mental image of a future event. When we visualize our desired outcome, we begin to “see” the possibility of achieving it. Through visualization, we catch a glimpse of what is, in the words of one writer, our “preferred future.” When this happens, we are motivated and prepared to pursue our goal.

Visualization should not be confused with the “think it and you will be it” advice peddled by popular self-help gurus. It is not a gimmick, nor does it involve dreaming or hoping for a better future. Rather, visualization is a well-developed method of performance improvement supported by substantial scientific evidence and used by successful people across a range of fields.

Take athletes, for example, studies show that visualization increases athletic performance by improving motivation, coordination, and concentration. It also aids in relaxation and helps reduce fear and anxiety. In the words of one researcher, “visualization helps the athlete just do it and do it with confidence, poise, and perfection.”

Former NBA great Jerry West is a great example of how this works. Known for hitting shots at the buzzer, he acquired the nickname “Mr. Clutch.” When asked what accounted for his ability to make the big shots, West explained that he had rehearsed making those same shots countless times in his mind. Other sports legends such as Michael Jordan, Larry Bird, Tiger Woods, and pitcher Roy Halladay have also used visualization to improve their performance and achieve their personal best.

According to research imagery works because neurons in our brains, those electrically excitable cells that transmit information, interpret imagery as equivalent to a real-life action. When we visualize an act, the

brain generates an impulse that tells our neurons to “perform” the movement. This creates a new neural pathway -- clusters of cells in our brain that work together to create memories or learned behaviors -- that primes our body to act in a way consistent to what we imagined. All of this occurs without actually performing the physical activity, yet it achieves a similar result.

### 5.2. Putting It All Together

Remember, you don’t have to be an elite athlete to benefit from visualization. Whether you’re a student, businessperson, parent or spouse, visualization will keep you tethered to your goal and increase your chances of achieving it. The power of visualization is available to all people.

There are two types of visualization, each of which serves a distinct purpose, but for greatest effect, they should be used together. The first method is *outcome visualization* and involves envisioning yourself achieving your goal. To do this, create a detailed mental image of the desired outcome using all of your senses.

For example, if your goal is to run your first marathon, visualize yourself crossing the finish line in the time you desire. Hold that mental image as long as possible. What does it feel like to pass under the finishing banner, looking at your watch, the cool air on your overheated body? Who is there to greet you as you finish? Your family? Friends? Other runners? Imagine the excitement, satisfaction, and thrill you will experience as you walk off the lactic acid and fall exhausted into their arms.

Some people find it useful to write their goal down, and then, in as much detail as possible, translate it into a visual representation. It could be a hand-drawn picture, a photograph or a diagram. The media does not matter, just as long as it helps you create a vivid mental image and stay motivated.

The second type of visualization is *process visualization*. It involves envisioning each of the actions necessary to achieve the outcome you want. Focus on completing each of the steps you need to achieve your goal, but not on the overall goal itself.

Back to the marathon example: Before the race, visualize yourself running well -- legs pumping such as pistons, arms relaxed, and breathing controlled. In your mind, break the course into sections and visualize how you will run each part, thinking about your pace, gait and split time. Imagine what it will feel like when you

hit “the wall,” that point in the race where your body wants to stop, and more importantly, what you must do to break through it.

You may never run a marathon. However, you can use the same principles to achieve any goal -- create a vivid mental picture of yourself succeeding, envision what you must do during each step of the process and, like a runner pushing through “the wall,” use positive imagery to stay focused and motivated when you experience obstacles or setbacks.

Visualization does not guarantee success. It also does not replace hard work and practice. But when combined with diligent effort (and, I would add, a strong support network), it is a powerful way to achieve positive, behavioral change, and create the life you desire.

## 6. MATERIALS AND METHODS

The studies were searched through online websites such as Google scholar, and PubMed the studies were selected for the purpose was again scrutinized by exclusion and inclusion criteria. This review was based on a systematic literature search, done during period 2000–2021. Only documents in English language were taken into consideration.

Table 1 shows the studies which examined the effect of imagery intervention on sports performance.

## 7. DISCUSSIONS OF THE REVIEW STUDIES

From Table 1, the athletes who underwent imagery training showed improved imagery abilities and consequently improved athletic performance, but the actual effect was limited. This finding is inconsistent with that in the literature (Hsiao *et al.*, 2021). Imagery training uses images or videos, coupled with coaching and guidance, to enhance athletes’ adaptability to the competition environment, improve their individual technical proficiency, and increase performance.

Rodes *et al.* 2021 in their studies from couch to ultramarathon, 30 subjects were given training with imagery to come out of the physical ailment for 5 months, this regular imagery to be fit and healthy in the imagery process, they could observe the changes in their physical ability to move and the psychological changes in resilience, self-confidence. Similar observation were

found in the group of athletes trained for 2 years with imagery, the psychological skills and performance enhancement was also recorded by Toth *et al.* 2020.

Rhodes *et al.* (2020) work concluded in improving the mental skills with the help of imagery, in their study, 30 soccer players were given 15 weeks of training to image their skills to improve, they could perform very well with penalty shot performance. The above results explain the use of imagery which allows athletes to link everyday cues with imagery activation and immediate implementation action plans. The model has been developed over the past few years and preliminary evaluations of its use have been published recently in professional (Rhodes *et al.*, 2018, 2020) and recreational adult sport (Rhodes *et al.*, 2021), and healthcare (Turner *et al.*, 2020). The imagery can be motivational as well to improve the direction and effort of the players Solberg *et al.* 2019 given training to 141 adults for 3 months with motivational imagery, surprising results were recorded with decreasing the weights and decrease in their waists.

To be more effective in imagine the desired outcome of the performance of an athlete, the effective tool is PETTLEP model increased the imagery ability (Bhaguna, 2017), the group of archers was given training imagery for 6 weeks with 3 sessions per week has seen a great improvement in self-confidence and performance with drastic decrease in somatic and cognitive anxiety levels (Joafna and Kassin, 2016) in the competition. These studies support the idea of the decrease in the anxiety levels with the control of arousal to give the peak performance of an athlete.

The above studies examine the effect of imagery intervention on psychological variables and sports performance. It is evident that most of the studies are agreeable with the fact imagery intervention can enhance the performance in sports (Philip *et al.*, 2012; Nicholls *et al.*, 2013; Balamurugan *et al.*, 2016).<sup>[4,14,19]</sup> The study done by Seif *et al.*<sup>[55]</sup> revealed that 12 weeks of cognitive imagery improves the successful passing in football on youth players but the training program could not enhance the passing ability of the adults. Olsson *et al.* examined the effect of internal imagery training in active high jumpers. They chose failed attempts, take off angle, jumping height, and bar clearance as dependent variable. The results of the study shows that 6 weeks of internal imagery program couldn’t alter the variables except the bar clearance. Ekeocha conducted a study on effect of visualization and imagery ability on basketball players’ free throw ability. The study reveals that 5 days

**Table 1:** Review studies examined the impact of imagery on psychological variable and sports performance

Author	Year	Subjects	Duration	Method	Dependent variable	Results	Title
Lin <i>et al.</i>	2021	55 fin swimmers	More than 2 weeks	Imagery	Anxiety, performance	Anxiety decreased performance increased	Influence of Imagery Training on Adjusting the Pressure of Fin Swimmers, Improving Sports Performance and Stabilizing Psychological Quality
Rhodes <i>et al.</i>	2021	30	5 months	Imagery	Attention resilience, self-efficacy grit	increased	From couch to ultra-marathon: Using functional imagery training to enhance motivation
Turner <i>et al.</i>	2020	Postural orthostatic tachycardia syndrome (POTS)	12 weeks	Imagery	Depression and anxiety	Decreased	An interdisciplinary approach to improving the quality of life in postural orthostatic tachycardia syndrome: A case study. Case Studies in Sport and Exercise Psychology
Toth <i>et al.</i>	2020	Athletes	2 years	Imagery	Cognition, performance	increased	Does mental practice still enhance performance? A 24 year follow-up and meta-analytic replication and extension
Simonsmeier <i>et al.</i>	2020	Players		Imagery	Motor performance, motivational outcome, injury rehabilitation	Improvement	The effects of imagery interventions in sports: A meta-analysis
Rhodes <i>et al.</i>	2020	30 soccer players	15 weeks	Imagery	Penalty performance	Increased	Penalty success in professional soccer: A randomized comparison between imagery methodologies
Solbrig <i>et al.</i>	2019	141 adults	Every 2 weeks for 3 months	Imagery	Weight and waist reduction, behavioral change	Decrease in weight and waist.	Functional imagery training versus motivational interviewing for weight loss: A randomized controlled trial of brief individual interventions for overweight and obesity
Spindler <i>et al.</i>	2019	54 cyclists (38 men, 16 women)		Motivational imagery	Happiness and dejection	Increased happiness, decreased level of dejection	Motivational-general arousal imagery does not improve decision-making performance in elite endurance cyclists

(Contd....)

**Table 1: (Continued)**

Author	Year	Subjects	Duration	Method	Dependent variable	Results	Title
Pocock <i>et al.</i>	2019	5 foot ball academy elite players	6 weeks	PETTLEP imagery	Performance of the players	Increased	Using an imagery intervention to train visual exploratory activity in elite academy football players
Rollnick <i>et al.</i>	2019			Guilford Publications			<i>Coaching athletes to be their best: Motivational interviewing in sports</i>
Anuar <i>et al.</i>	2018	52 participants (28 female, 24 male,		PETLLEP imagery	Vividness of external visual imagery, internal visual imagery, and kinesthetic imagery of movements	Increased Increased	Comparing PETTLEP imagery against observation imagery on vividness and ease of movement imagery
Rhodes <i>et al.</i>	2018	24	18 weeks	Imagery	Grit, performance	Increased	Enhancing grit through functional imagery training in professional soccer
Hsu <i>et al.</i>	2017			psychologically informed practice approach	Fear of injury	Decreased	Fear of reinjury in athletes: Implications for rehabilitation
Spino and Straub	2014	74	8 weeks	Event rehearsal imagery Internal imagery	Running performance	Improved, time reduced	Effect of mental training on the performance of college age distance runners
Seif <i>et al.</i>	2013 [7]	N=44 Youth=22 Adult=22	12 weeks	Cognitive imagery	Successful passing in football	Youth improved Adults have no change	Effect of imagery on performance elite athletes in youth and adult age group; a randomized study
Philip <i>et al.</i>	2012 [4]	4	15 week	Imagery training through scripts	Thousand yard swimming performance	Improved performance	Effect of imagery training on swimming performance: an applied investigation
Olsson <i>et al.</i>	2008		6 week	Internal imagery program	Failed attempts Take off angle Jumping height Bar clearance	No change No change No change improved	Internal imagery training in active high jumpers
Ekeocha	2015 [15]	n=67	5 Consecutive days	Imagery	25 free throws	n=34 improved n=26 decreased n=9 no change	Effects of visualization and imagery in sports performance
Nicholls <i>et al.</i>		4	12 Weeks	Individualized imagery	Golf performance Flow state	Improved Improved	The effects of individualized imagery interventions on golf performance and flow states

(Contd....)

Table 1: (Continued)

Author	Year	Subjects	Duration	Method	Dependent variable	Results	Title
Gagimageryoli	2013 [19]	60	4 Weeks	Imagery	Coordination Movement accuracy	Improved Improved	Benefits of combined mental and physical training in learning a complex motor skill in basketball
Barimagery <i>et al.</i>	2012	69	8 weeks	Video aided cognitive imagery	Perfect soccer pass	Pass rate increased	The effect of an ecological imagery program on soccer performance of elite players
Balamurugan <i>et al.</i>	2016 [14]	30	6 week	Auditory tape and visual aided imagery	Serving ability Passing ability	Improved Improved	Effect of imagery training on selected skill performance variables of male volleyball players
Jaafa and Kassim	2016 [13]	60	6 weeks 3 sessions/ week	Imagery training through audio	Cognitive anxiety Somatic anxiety Self confidence performance	Decreased Decreased Improved Improved	The effectiveness of imagery training on anxiety levels and performance amongst athletes in archery
Baughman	2017 [16]	5	5 week	Pettlep imagery intervention	30 yard shot Imagery ability	Accuracy decreased Increased	The effect of a PETTLEP imagery intervention based pre performance routine on golfers short game performance
Buck	2016 [6]	20	3 Day	Structured imagery protocol, video recording	Self-efficacy Front squat performance	Increased Improved	The effects of imagery with video modeling on self-efficacy and maximum front squat ability
Yahya <i>et al.</i>	2016 [12]	48	3 Weeks	Practice in mind training (imagery)	Self confidence Anxiety level tolerance Kicking performance	Increased Improved Improved	The idea of using practice in mind training program for rugby players to improve anxiety and kicking performance
Mousavi and Meshkini	2011 [9]	50		Imagery	Anxiety Performance	Reduced Increased	Effect of imagery upon the reduction of athletes anxiety during sport performance
Rattanakoses <i>et al.</i>	2012 [11]	66	10 weeks	Imagery practice program	Imagery ability	Improved	Effect of imagery practice program on imagery ability in Thailand
Besiktas and Bicer	2013 [18]	120	1 Week	Imagery exercise training program	Imagery skills	Improved	Imagery training program implementation and measurement for elite athletes

of imagery program enhance 34 players free throw score, same time decreases 26 players performance, and 9 players show no change in their free throw shooting.

Table 1 gives you the results of the research work done with the intervention of imagery on the athletes, which examine the effect of imagery training on both psychological variables and sport performance. Most of the studies reveals that imagery interventions can alter the psychological variables with improvement in sports performance (Jaafa and Kassim, 2016; Radhakrishnan, 2008; Hammond, 2010; Baughman, 2017; Buck, 2016; Yahya *et al.*, 2016; Mousavi and Meshkini, 2011).<sup>[1,2,6,9,12,13,16,17]</sup> Besiktas and Bicer, 2016,<sup>[18]</sup> and Rattanakoses *et al.*, 2012,<sup>[11]</sup> determined the effect on psychological variables. The results of their studies show that the imagery can improve the imagery ability and imagery skills.

Visualization refers to the representation of an object or phenomenon (in its absence). The use of visualization techniques dates back thousands of years ago and has significantly progressed in recent decades (Utay and Miller, 2006). Visualizations involve accessing an altered state of consciousness: Biochemistry and brain waves modify, and the participant becomes able to speed up healing and performance (Naparstek, 2000).

Researchers highlight that, through the use of imagery, performance motivation, pain management, endurance, physical performance, and self-confidence are enhanced in athletes (Thelwell and Greenless 2003; Eddy and Mellalieu, 2003). Using mental rehearsal (for different technical and tactical actions), both body and mind are trained. Associating physical effort with mental effort is the most important step toward success, considering the athletes' road to achieve the desired performance. Top athletes have long understood that, while the human body has its natural limits, the mind has unlimited potential. And researchers emphasized that brain health (linked to neurotrophic factors and cognitive function) can be improved by practicing martial arts - taekwondo, karate, judo, and kung fu (Zou *et al.*, 2018).

The physical exercise can improve the muscle memory, emotional memory, strength, speed reaction cannot be increased with imagery.

The imagery can work only for particular skill and controllable things can be improved. One must not get confused with the imagery and shall not enter into dogma of imagery can do everything.

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# Effect of Interval Training on the Performance of Middle-distance Runners of Hyderabad District

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## ABSTRACT

The objective of this study is to study the effect of interval training on the performance of middle-distance runners of Hyderabad district which will be helpful to coaches and trainers to enhance the performance. The sample for the present study consists of experimental group I  $n = 15$  and controlled group II  $n = 15$  of Hyderabad district. Interval training was given to experimental group on alternate days for 8 weeks along with general training to control group. Pre-test and post-test were conducted on 800 M run to assess the performance of both the groups. This study shows that the experimental group has got rapid improvement due to interval training compare to control group. It is concluded that due to interval training there is an improvement in performance.

**Keywords:** Interval training, Middle distance runners, Performance ability.

## 1. INTRODUCTION

Middle- and long-distance runners, and all athletes, must develop general endurance as well as the endurance which is specific to the energy demands of their event. This endurance comes from correctly developing the energy systems. The training that is described in this section is also suitable for the race walking events. There are the three metabolic energy systems operating in our bodies. These energy systems operate continuously and it is how long and how hard we do whatever physical activity that determines which systems contribute most. The longer the race the greater the emphasis on aerobic endurance, the shorter the race the greater the emphasis shifts to the lactate system endurance.

Interval training is a type of training exercise that involves a series of high-intensity workouts interspersed with rest or relief periods. The high-intensity periods are typically at or close to anaerobic exercise, while the recovery periods involve activity of lower intensity. Varying the intensity of effort exercises the heart muscle, providing a cardiovascular workout, improving aerobic capacity, and permitting the person to exercise for longer and/or at more intense levels. Interval training can refer to the organization of any cardiovascular workout (e.g.,

cycling, running, and rowing). It is prominent in training routines for many sports, but is particularly employed by runners.

Dr. W Vinu Assistant Professor, Department of Physical Education and Sports Sciences, Annamalai University, Tamil Nadu, India (2016), study was to investigate the effect of interval training on the performance of middle-distance runners. To accomplish this, 30 men students were selected from graduate and postgraduate courses of Annamalai University. An initial test was administered on them in the event of 800 M running to know their timings before training. The performance in the initial test was recorded and on the basis of timing they were divided into two equal groups randomly. One group was kept as controlled group which was not given any kind of interval training. The second group was kept as experimental group which was given interval training. The rest interval given according to the heart rate during recovery during recovery when the athlete acquires 120 beats/min pulse, he was permitted to do the next repetition. The pulse was checked at the carotid artery in the neck or at the radial artery of the wrist. The pulse has been taken for 10 s and was multiplied into six to convert it to 1 min. The investigator was convinced with the results that the athletes participated

in interval training regularly and sincerely have attained an improvement in their performance.

### 1.1. Objective of the Study

The objective of the study is to find out the effect of interval training on the performance of middle-distance runners of Hyderabad district.

### 1.2. Hypothesis

It was hypothesized that there would be a significant difference in interval training on the performance of middle-distance runners of Hyderabad district.

## 2. METHODS

$n = 30$  at the top middle-distance runners between the ages of 19 and 22 were chosen at random and divided into two groups: Experimental group I  $n = 15$  (Interval Training) and controlled group II  $n = 15$  (General Training). The criteria for selection were based on their achievements at various levels such as state, inter-university, and national levels. Explained the training schedule and training plan with subjects before the session started.

### 2.1. Tools

Test administration. Middle distance performance.

### 2.2. Purpose

The purpose of the test was to measure middle-distance performance of the subjects.

### 2.3. Equipment

Two stop watches and score sheet.

## 3. RESULTS AND DISCUSSION

The experimental group and the controlled group were given pre- and post-tests to see if there was an improvement in performance capacity after 8 weeks of interval training, while the controlled group received general training.

Table 1 shows that the concern value obtained by the experimental group in pre-test is 135.58 s and 129.37 s, respectively. The mean difference of the experimental group is 6.21 s. This shows that the experimental

**Table 1**

Groups	Test	$n$	Mean	St. Deviation	$t$ -value
Experimental group	Pre-test	135.58	15	2.22	1.02
	Post-test	129.37	15	2.24	
Controlled Group	Pre-test	135.70	15	2.20	0.08
	Post-test	135.40	15	2.05	

group by doing interval training has improved their performance by 6.21 s. The obtained “ $t$ ” value for the experimental group in 1.02 at 0.05 level of confidence. The obtained mean value for the control group in pre-test and post-test is 135.70 s and 135.40 s, respectively. The mean difference for control group in 0.30 s. This shows that the control group without doing interval has developed their performance only by 0.30 s. The obtained “ $t$ ” value for control group is 0.08 at 0.05 level of confidence.

## 4. CONCLUSION

As for the practicality of this study which may applied when designing the effective training programmed for young middle-distance runners, I clearly mention that both the interval training have shown excellent effect in the improvement in performance. Coaches will be able to analyzed the results and be able to enhance the future performances. At such feedback is very crucial for the improvement in performance athlete. The assessment process can be conducted every 3 months and 6 months to update the progress of player’s performance and to ensure that it is up to date with the players training needs requirements. It is recommended that coaches assess their player’s performance on a regular basis to ensure better compliance with the training program. The aim of formulating the effect of interval training to betterment and enhance their performance as well as guide line for middle-distance coaches at various level in preparing and designing quality and effective training program.

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# Effect of Circuit Training for Development of Core Strength among Men Wrestlers of Warangal District

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## ABSTRACT

The purpose of the present study is to find out the effect of circuit training for development of core strength among men wrestlers of Warangal district. The subject was chosen at random from a group of boys between the ages of 21 and 23 years old.  $n = 20$  experimental group I and  $n = 20$  control group II are included in the study's sample. Sit ups test was utilized in the study as a pre-test and post-test to determine core strength in both groups. Experiment group I received circuit training on alternate days for 8 weeks, while control group II received general warm-up training. The experimental group's performance on the sit ups improved from pre-test to post-test. It is concluded that significant effect in experimental group I whereas the control group exhibits a reduction in their performance.

## 1. INTRODUCTION

Wrestling is a combat sports involving grappling type a combat sport techniques such as clinch fighting, throws and takedowns, joint locks, pins, and other grappling holds. The sport can either be genuinely competitive or sportive entertainment (see professional wrestling). Wrestling comes in different forms such as folkstyle, freestyle, Greco-Roman, catch, submission, judo, sambo, and others. A wrestling bout is a physical competition, between two (sometimes more) competitors or sparring partners, who attempt to gain and maintain a superior position. There is a wide range of styles with varying rules, with both traditional historic and modern styles. Wrestling techniques have been incorporated into other martial arts as well as military hand-to-hand combat systems. The term wrestling is attested in late Old English, as *wræstlung* (glossing *palestram*).

Circuit training is a form of body conditioning that involves endurance training, resistance training, high-intensity aerobics, and exercises performed in a circuit, similar to high intensity interval training. It targets strength building and muscular endurance. An exercise "circuit" is one completion of all set exercises in the program. When one circuit is completed, one begins the first exercise again for the next circuit. Conventionally,

the time between exercises in circuit training is short and often with rapid movement to the next exercise.

Cristina-Elena Moraru "Alexandru Ioan Cuza" University, Iasi, Romania *et al.* (2019) efficient effects in the development of motor qualities, mainly strength and resistance. The purpose of this paper was to demonstrate the efficiency of training in the circuit in the development of this motor quality. The sample within the research comprised 30 women aged 25–35 and who practiced three practices per week for 6 months. The independent variable included circuits for beginners (30" workout – 30" pause), circuits for middle level (45" workout – 30" pause), and circuits for advanced (50" workout – 30" pause). The tests applied concerned the strength and resistance of abdominal muscles, of the back, of the legs, and of the arms. Findings in the test for the strength and resistance of abdominal muscles, the values of the average, and of standard deviation were  $13.8 \pm 1.52$  initially and  $15.2 \pm 1.08$  finally; concerning the strength and resistance of the back muscles, the values increased from  $21.46 \pm 1.684$  initially to  $23.53 \pm 1.641$  finally; in the strength and muscles of the legs, the values ranged between  $14.86 \pm 1.767$  initially and  $16.80 \pm 1.473$ ; in the strength and muscles of the arms, the values recorded an increase from  $14.40 \pm 0.985$  initially to  $16.26 \pm 0.961$  finally. The present research demonstrated that

the use of circuit workout can improve the motor qualities of strength and it can also improve the motor qualities of strength and resistance, which confirms the purpose of the paper.

### 1.1. Objective of the Study

The objective of the study is to find out the effect of circuit training on the development of core strength among wrestlers of Warangal district.

### 1.2. Hypothesis

It was hypothesized that there would be a significant difference in circuit training development core strength among wrestlers of Warangal district.

## 2. METHODS

The purpose of the present study is to find out the effect of circuit training for development of core strength among men wrestlers of Warangal district. The subject was chosen at random from a group of boys between the ages of 21 and 23 years old.  $n = 20$  Experimental group I and  $n = 20$  control group II are included in the study's sample.

### 2.1. Tools

- Sit Ups
- Purpose of the test: To measure core strength.

## 3. RESULTS AND DISCUSSION

The experimental group and the controlled group were given pre- and post-tests to see if there was an improvement in core strength after 8 weeks of circuit training, whilst the controlled group received general training.

Paired samples statistics ( <i>t</i> -test)				
Sit Ups Wrestlers' players	Mean	<i>n</i>	Std. Deviation	Std. Error Mean
Control Group				
Pre-test	31.4500	20	0.97196	0.21734
Post-test	31.7500	20	0.98004	0.21915
Experimental Group				
Pre-test	31.8750	20	1.02435	0.22906
Post-test	35.4000	20	1.48323	0.33166

The analysis of the data reveals that the subjects with the circuit training have shown improvement in the performance of sit ups test from pre- to post-test mean S.D experimental group pre-test result shown (31.8750) and controlled group (31.4500) after 8 weeks of specific of circuit training there is improvement in the subject's experimental group (35.4000) circuit training, and controlled group (31.7500).

## 4. CONCLUSIONS

After the 8 weeks of circuit training, there is improvement in experiment group, as it was analyzed in the results mention that the circuit training has shown excellent effect in the improvement core strength. The aim of formulating the effect of circuit training to the betterment and enhance their performance as well as a guideline for wrestlers coaches at various level in preparing and designing quality and effective training program.

## 5. RECOMMENDATIONS:

The following suggestions are made for the benefit of players, coach's academicians, and sports scientists. The researcher suggests the part of the coach to use the above-said development of the circuit training program for wrestlers players. The study helps the physical educationist and coaches for selecting the athletes.

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# Effect of Hill Running for Development of Cardio Vascular Endurance among Cricket Players of Rajamahendravaram Club Cricketers

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## ABSTRACT

The objective of this study is to study the effect of hill running in development of cardio vascular endurance among cricket players of Rajamahendravaram club cricketers which will be helpful to coaches and trainers to develop the endurance ability. The sample for the present study consists of 20 male cricket players of Rajamahendravaram club cricketers out of which ten are experimental group and ten are controlled group. Hill running training such as short hills, medium hills, long hills, and mixed hills running was given to experimental group on alternate days for 6 weeks along with general training of cricket and control group was given the general training of cricket. Pre-test and post-test were conducted for 12 min Cooper test to assess the cardio vascular endurance of both the groups. This study shows that the experimental group has got rapid improvement due to hill running compare to control group. It is concluded that due to hill running there is an improvement of aerobic fitness. It is recommended that the coaches must include the hill running programs to cricket players for development of cardio vascular endurance.

**Keywords:** Cardio vascular endurance, Cricket players, Hill running.

## 1. INTRODUCTION

Cricket is a bat-and-ball game played between two teams of 11 players on a field at the center of which is a 22-yard (20-m) pitch with a wicket at each end, each comprising two bails balanced on three stumps. The game proceeds when a player on the fielding team, called the bowler, "bowls" (propels) the ball from one end of the pitch toward the wicket at the other end. The batting side's players score runs by striking the bowled ball with a bat and running between the wickets, while the bowling side tries to prevent this by keeping the ball within the field and getting it to either wicket, and dismiss each batter (so they are "out"). Means of dismissal include being bowled, when the ball hits the stumps and dislodges the bails, and by the fielding side either catching a hit ball before it touches the ground, or hitting a wicket with the ball before a batter can cross the crease line in front of the wicket to complete a run. When ten batters have been dismissed, the innings ends

and the teams swap roles. The game is adjudicated by two umpires, aided by a third umpire, and match referee in international matches.

Cardio vascular endurance is essential for cricket. Exercise involves the heart and lungs transporting oxygen and food energy to the working muscles. These help to promote recovery from exercise as well as restoring muscle energy supplies for the next bout of activity. A player with good cardio vascular endurance will be able to play very hard without getting as tired as a less fit opponent. Once a player is tired then mistakes will become more frequent and, as a consequence, cardio vascular endurance is likely to be closely related to success in long games. Good cardio vascular endurance is also likely to mean a player can do more training over prolonged periods of time. In this way, aerobic fitness, like strength, underlies all training activities. A common concern about endurance training is that it will cause a player to become slow. This is because continuous

endurance training is usually performed at fairly low intensity (i.e., a speed that can be continued for 30 min). A lot of continuous endurance training could certainly detract from speed and agility but appropriate endurance training involved a range of activities and training intensities and should not result in decreased movement speed.

Running on hills is a form of strength training that can improve the endurance on the track and road. Hill running increases the intensity of training and builds strength because of the resistance they offer when running. Hill running has a strengthening effect as well as boosting the athlete's power and is ideal for athletes who depend on high running speeds. To reduce the possibility of injury, hill training should be conducted once the athlete has a good solid base of strength and endurance.

### 1.1. Review of Literature

Nigatu worku, Dr. Aschenaki Taddese, (2017) studied the effect of 12 weeks hill training on the performance of middle- and long-distance athletes. The study used a longitudinal and controlled quasi-experimental design. To test the hypotheses, pre- and post-filed tests were conducted on VO2 max, resting heart rate, SE, race performance improvement, consistency of the improved performance, and status of injury. Thirty-two athletes divided randomly into control and experimental group ( $n = 32$ ;  $18.8 \pm 3$  years,  $51.3 \pm 5.2$  kg,  $1.68 \pm 0.05$  m) and passed through 12 week of intervention with two session of 40'-60' hill workout a week to the commutative of 16-24 h. During week 0, 6, and 12, each subject completes three assessment testes, two records, and additional three tests for experimental group at week 16, to assess the consistency of performance. Although the subjects were similar in all aspects before the pre-test was performed; 12-min cooper test (VO2 max), resting heart rate (mean of three 15 s. Rhr. count  $\times$  4), speed endurance (300 m anaerobic threshold test), race time records (from 4<sup>th</sup> to 16<sup>th</sup> weeks), and injury report records (from 2<sup>nd</sup> to 12<sup>th</sup> week) were administrated. The intervention group shows significant improvement in VO2 max, resting heart rate, speed endurance at week 6 ( $P = 0.00$ ,  $\alpha = 0.05$ ) and 12 ( $P = 0.00$ ,  $\alpha = 0.05$ ), and race time but the developed performance at week 16 have showed insignificant change. The control group showed insignificant change at either time points. There was no significant change in injury records between and within groups ( $P = 0.381$  and  $\alpha = 0.05$ ). The study demonstrated that 12 weeks of hill training can significantly improve

VO2 max, Rhr., speed endurance, and race performance in club level middle- and long-distance athletes and the developed performance is consistent over 4-week period and hill training by itself was not cause of athletic injury. Index terms – hill training, Vo2 max, resting heart rate, and speed endurance.

### 1.2. Hill Training Offers the Following Benefits

- Helps develop power and muscle elasticity
- Improves stride frequency and length
- Develops coordination and encouraging the proper use of arm action during the driving phase and feet in support phase
- Develops control and stabilization as well as improved speed (downhill running)
- Promotes strength endurance
- Develop maximum speed and strength (short hills)
- Improves lactate tolerance (Mixed hills).

### 1.3. Objectives of the Study

The objective of the study is to determine the effects of the hill running for development of cardio vascular endurance among cricket players of Rajamahendravaram club cricketers between the age group of 18 and 25 years.

## 2. METHODOLOGY

The sample for the present study consists of 20 male cricket players of Rajamahendravaram club cricketers between the age group of 18 and 25 years out of which ten are experimental group and ten are controlled group. Hill running training such as short hills, medium hills, long hills, and mixed hills running was given to experimental group on alternate days for 6 weeks along with general training of cricket and control group was given the general training of cricket. Pre-test and post-test were conducted for 12 min Cooper test to assess the cardio vascular endurance of both the groups.

### 2.1. Tools: Cooper 12-min Run Test

The Cooper 12-min run is a popular maximal running test of aerobic fitness, in which participants try and cover as much distance as they can in 12 min.

### 2.2. Purpose

The purpose of the study was to test cardio vascular endurance (the ability of the body to use oxygen to power it while running).

**Table 1:** Pre-test and post-test mean values of 12 min run Cooper test for cricket players experimental group

**Hill training experimental group on Cooper test 12 min run**

Cricket Players	Mean	n	Std. Deviation	Std. Error Mean	t	Sig
Pre-test	2291.83	10	102.57	18.72	-49.001	0.000
Post-test	2478.50	10	109.11	19.92		

**Table 2:** Pre-test and post-test mean values of 12 min run Cooper test for cricket players control group

**Hill training control group on Cooper test 12 min run**

Cricket Players	Mean	N	Std. Deviation	Std. Error Mean	t	Sig
Pre-test	2248.33	10	85.29	15.57	5.355	0.000
Post-test	2223.33	10	87.53	15.98		

### 2.3. Equipment Required

Flat oval or running track, marker, recording sheets, and stop watch.

### 2.4. Procedure

Place markers at set intervals around the track to aid in measuring the completed distance. Participants run for 12 min and the total distance covered is recorded. Walking is allowed, though the participants must be encouraged to push themselves as hard as they can to maximize the distance covered.

## 3. RESULTS AND DISCUSSION

Table 1 showing the mean values of experimental group in pre-test is 2291.83 and post-test is 2478.50; there is improvement of mean distance up to 186.67 due to hill running.

Table 2 showing the mean values of control group in pre-test is 2248.33 and post-test is 2223.33; there is decrease of mean distance up to 0.25 due to general training.

The strength, speed, and endurance are the important abilities for successful performance. The dominant ability is the one from which the sport requires higher contribution to achieve the high success in the sports and games.

Cardio vascular endurance plays a very important role in playing the cricket game for playing efficiently for long period under the conditions of fatigue efficiently. Cricket player having better cardio vascular endurance can perform better in the match. Hill running also develops strength in legs which is very important to hit the smashes and also to move in court in the higher speed to achieve the good results.

## 4. CONCLUSIONS

The hill running develops the strength and power in the legs. It also improves the coordination in the arms and legs and promotes in developing the aerobic fitness. In this study, the hill running the aerobic fitness develops a lot in the cricket players.

## 5. RECOMMENDATIONS

Similar studies can be conducted among females and in other sports and games. This study is useful to the coaches to prepare the conditioning program to improve the motor abilities of the cricket players.

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# A Study on Impact of Advance Equipment in Track and Field (Athletics)

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## ABSTRACT

The purpose of our paper is to show how technology is helping to develop knowledge sport. Some of the technical equipment's used in international games are photo finish, anemometer, shot pull measurement, and stop watches. The technology has been rapidly developing since a decade where there are numerous advantages in day-to-day life of human begins. The technology has also developed in field and track events which give competitors, athletics a precise decision in results. From international games such as Olympics to state level games, the equipment's used has improved the accuracy of the results. In past, there were a greater number of referees for the judgment but now due to the development of technology in devices the work force of the judges has been reduced and a smaller number of referees are present.

## 1. INTRODUCTION

The advancement in technology has made fewer burdens in sports like declaring results is more accurate and it became easy for referees as work number of work force has reduced. The participants wear wearable devices such as smart watches which show accurate SPO2, heart rate moment, and calories burned by this the athletics can closely monitor their health and track records. There are various softwares available in market that are build and designed for fitness and nutrition professionals to organize their data and produce results. Due to the film industry and development in media live, telecasting has become more popular from past two decades. All this devices and instruments have changed the future of sports and games by providing a precise results and data. Track and field differ from most other sports because it is solely measured in meters and seconds. A fraction of a second can make all the difference in track. Because of that, the technology that records data from track and field races must be as precise and accurate as possible. Technology involved in track and field ranges from personal gear, to equipment for track events, to the technology in the track, itself.

Before the 2012 London Summer Olympics, a number of technological advancements were unveiled to improve the sport. One example includes electronic starting

blocks. The previous model of starting blocks had approximately 5 mm of error. The new starting blocks can detect more than just an athlete's movement, but the pressure applied to the blocks. The detection of pressure ensures that all athletes partaking in a race will have an equal start. The pressure and force applied to a runner's heel are detected to determine if the sole of the shoe left the block before the race start. Along with pressure and force detection; lasers, video recording, and timers were implemented to fix the previous block's errors.

An electronic starter pistol is another innovation employed to improve the start of track events. This model imitates the standard pistol used in track events. Where it differs, is when the trigger is pulled. Rather than working like a standard pistol, this one transmits a signal that results in the sound of a gunshot being played over a loudspeaker at the starting line of the race. To simulate the standard pistol, smoke is emitted from the electronic one. Furthermore, a light flash from the electronic pistol to complete the simulation and start the race time.

## 2. EQUIPMENT'S USED

### 2.1. Photo Finish

When conducting sports race with multiple participants they cross the line almost at the same time which is

difficult for a human naked eye to determine who has crossed the finishing line first and to determine the rankings so here we use equipment called photo finish. The photo finish equipment is kept near the finish line, it takes precise photo and video referee can conclude who crossed the line first. By this, it makes less difficult for referees to declare the winner in a dead heat race in athletics; the results should be precise to hundredths or even thousandths of second. In international games such as Olympics games and common wealth games, a charged device is installed to make sure that there is fair decision on the results. The first photo finish was used in Olympics games in 1912. Since then, this electronic equipment has been in a great demand. The latest photo finish device in 2008 can take up to 3000 photos/s when compared to 1996 device which takes only 1000 photos/s.

## 2.2. Anemometer (Wind Gauge)

The wind plays a major role in running races like even a slight wind will affect the performance of runner differently while participating in races. While giving results the number indicates the wind speed in meters per second. There are indications for that, if there is plus sign that means the runners performance was assisted by a tailwind to some extent and if there is a minus sign that says that the headwind has slowed participants.

The wind speed is measured by a wind gauge or anemometer during the competition. The wind gauges are controlled by two types; one is by manual and another is by remote control.

There are certain limitations for results declarations if the participant's performance is assisted by tailwind to some extent that is +2.0 m/s then that result is legal. While the result is declared when the wind is at +2.0 m/s because all the participants experience same pressure but these results are not recorded for the future tournaments.

## 2.3. Shot-put Measurement

The optical distance measuring measurement is used many track fields such as javelin throw, discus throw, and in short pull. The instrument exactly measures the distance when the light is emitted and reflected by the object (shot pull). The distance between the measuring device and the target object can be determined on the basis of the speed of light and the measured time of flight of the light from the light source (emitter) to the

object and back to the detector. The device is weighted approximately 7 kg and the measuring range between 2 m and 300 m and the battery backup will be around 10 h depending on the environment.

## 2.4. Stop Watch

The stop watches play a crucial role in athletics, be it training or competition, the stop watches make life easy for athletics and referees. While training, the competitors practice by evaluating their capabilities and improving them periodically, in running races like 100 m, 200 m, and 500 m timing plays a major role to maintain their speed so the stop watches are used.

## 3. CONCLUSION

A positive impact of technology which is helping the sport grow is the ability to be able to instantly watch replays of runs, jumps, and throws. This was not previously possible because if you did film the event you would have to wait till may be the next day to see the video. Videos of track and field are now easily available through the internet, this benefits a lot of athletes worldwide because they can learn from the best improving their own skills and knowledge. Technology has helped improve the length of professional athletes' careers by the use of recovery tool which previously was not used. Because athletes depend on their bodies as a source of income this is a crucial advancement in technology for track and field athletes especially, because most athletes retire due to injury. Finally, best positive impact from technology within the sport is the application of science to the running technique. Before the use of science in track and field, athletes did not know how best use their bodies in their desired events to get the best performance.

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# A Critical Study on Comparison of Motor Ability among Kabaddi and Kho-Kho Womens Players in North Telanagana Region

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## ABSTRACT

The purpose of the present study was to find out the motor ability (speed) among kabaddi and kho-kho women's players of North Telangana region. The sample for the present study consists of 20 female kabaddi and 20 female kho-kho players of North Telangana region age about 19–22 years. To assess the motor ability (Speed), the 50 m run test was conducted among kabaddi and kho-kho. It was found that kho-kho players are having good speed compare to the kabaddi players. Hence, it is also concluded that kabaddi required more speed compared to kho-kho. It is recommended that the speed training must be given to kabaddi and kho-kho to enhance the performance.

**Keywords:** Kabaddi, Kho-Kho, Speed.

## 1. INTRODUCTION

Kabaddi is a contact team sport. Played between two teams of seven players, the objective of the game is for a single player on offence, referred to as a "raider," to run into the opposing team's half of a court, touch out as many of their defenders as possible, and return to their own half of the court, all without being tackled by the defenders, and in a single breath. Points are scored for each player tagged by the raider, while the opposing team earns a point for stopping the raider. Players are taken out of the game if they are touched or tackled, but are brought back in for each point scored by their team from a tag or tackle. It is popular in the Indian subcontinent and other surrounding Asian countries. Although accounts of kabaddi appear in the histories of ancient India, the game was popularized as a competitive sport in the 20<sup>th</sup> century. It is the national sport of Bangladesh. It is the state game of the Indian states of Andhra Pradesh, Bihar, Haryana, Karnataka, Kerala, Maharashtra, Odisha, Punjab, Telangana, and Uttar Pradesh.

Kho-Kho is a traditional Indian sport that is one of the oldest outdoor sports, dating back to ancient India. It

is played by two teams of 12 nominated players out of 15, of which nine enter the field who sit on their knees (Chasing Team), and three extra (Defending Team) who try to avoid being touched by members of the other opposing team. It is one of the two most popular traditional tag games in the Indian subcontinent, the other being kabaddi. The sport is widely played across South Asia and has a strong presence in South Africa and England.

### 1.1. General Motor Ability

The concept that an athlete's ability to perform different motor skills is determined by one general ability. Thus, a person with high general motor ability would tend to learn motor skills more quickly than a person with low general motor ability. This concept is disputed by those who believe that an athlete has a large number of specific independent motor abilities.

Mrs. Shivaleela, \*Dr. K. P. Martin, Dr. Anilkumar Edward (2017) the need of primitive man was quite simple and basic but not of complex nature. He was supposed to have a certain amount of physical fitness to

indulge in some activities such as hunting animals and fish the fighting; the animal was essential for his survival. The learning of such important skills was his basic and first education and development of conditioning body through vigorous physical activity. The process of strengthening body and skills continued through the centuries serving is a vital skill for the effective living of man. Although it is a matter of fact that primitive man recognized, the physical fitness is necessary to his survival. However, it does not that the importance of physical fitness has been diminished to the modern man. The modern man cannot afford to be complacent and forget its importance is not only maintains his efficiency and happiness but also it is the way of his survival in a highly competitive environment. The right kind and right amount of physical exercise develops organic and muscle power stamina, vigor, and the activity skills related to his development. There is a direct relationship between physical exercise and physical fitness. The kho-kho players have better performance in motor components such as speed, endurance, flexibility, and agility than kabaddi players whereas in strength component kabaddi players are have high strength than performance. The kho-kho players are has better cardiovascular efficiency than the kabaddi players. In psychological variable aggression, the kabaddi players are having more aggression than kho-kho players. In anxiety variable, kabaddi players are having high anxiety than kho-kho players. The hypothesis which drawn for present study is found significance.

### 1.2. Objective of the Study

The objective of the study is to comparison of motor ability (speed) among kabaddi and kho-kho female players of North Telangana region.

## 2. METHODOLOGY

The purpose of the present study was to find out the speed among kabaddi and kho-kho of women's players of North Telangana region. The sample for the present study consists of 20 female kabaddi and 20 female kho-kho players age about 19–22 years. To assess the speed, the 50 m run test was conducted among kabaddi and kho-kho. It was found that kho-kho players are having good speed compare to the kabaddi players. It is recommended that the speed training must be given to kabaddi and kho-kho players for performance enhancement.

### 2.1. Assessment of Performance

The objective of the study was to find out the speed between the kabaddi and kho-kho players based on the study conducted the 50 m dash run. The three chances given to all the subjects the best performance recorded of all the kho-kho and kabaddi players which help to find the speed condition ability among the kho-kho and kabaddi players.

### 2.2. Tool

50 m Dash Run or Sprints.

The dash run helps to know the speed condition ability in the athlete also called as sprints race.

### 2.3. Purpose

To measure the speed.

### 2.4. Equipment Required

Measurement tape to measure and mark the distance, non-slip floor to takeoff, whistle to start, and cones for visible marking. The most important is stop watch to record the performance.

## 3. RESULTS AND DISCUSSION

This study shows that kho-kho female players are having better speed compare to the kabaddi in 50 m run.

In Table 1, the mean values of 50 m run of kho-kho are 8.22 and kabaddi is 8.59. The average mean of kho-kho players in 50 m run is lesser than the kabaddi players.

In kho-kho and kabaddi require speed to do well in the tournament. It was found that kho-kho players are having good speed compare to compare to the kabaddi. Hence, it is also concluded that speed of running is very important in the game.

**Table 1: Mean values and independent samples test of 50 m run between kabaddi and kho-kho players**

Variables	Group	Mean	SD	T	P-value
50 m run	Kho-Kho	8.22	0.265	4.59	0.000
	Kabaddi	8.59	0.455		

\*Significant at 0.05 level

#### 4. CONCLUSION

1. Kho-kho players are having better speed than kabaddi players
2. Conditioning exercises play a major role for the improvement of speed among kabaddi and kho-kho players
3. Sprint training is not all about running fast. It is important to have a good fitness base to build speed on, and to have the capacity to train regularly.

#### 5. RECOMMENDATIONS

1. Similar studies can be conducted on other events and among male and female
2. This study also helps the physical educators and coaches to improve their training regime to excel in cricketers.

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# Impact of Mental Toughness Motor Components of Table Tennis Player

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## ABSTRACT

A long with other game in table tennis, the mental factors additionally assume a critical part in presentation assurance. Positive or negative mental factors can lead a member toward the high or low exhibition. Table tennis rivalry requests members to perform at their best, under extreme pressing factor and explicit conditions. Exceptional measures of preparing are needed to perform well and the achievement relies on the physical and mental sturdiness.

## 1. INTRODUCTION

Mental sturdiness can be deciphered as a contributing component that prompts upgrade execution in a serious circumstance. Mental sturdiness requests to keep fixed on progress, disregarding interruption, and pushing through every difficult second. Depicts mental sturdiness as perhaps, the most abused yet least comprehended terms in applied sports brain science showed that a more significant level of mental durability was identified with the experience of not so much pressure but rather more control in the game circumstance. Concurred psychological strength incorporates mindfulness control of thought, remaining on track utilizing long haul objective as inspiration source, pushing to defeat difficulties, and having a solid certainty. Reported psychological durability might have more to do with winning than physical characteristics such as speed and force. Mental strength empowers a game individual to be intellectually solid to adapt to the difficulties of sports (preparing contest and way of life) better than their rivals.

### 1.1. Purpose of the Study

The mental toughness model of game execution indicates a reverse connection between psychopathology and game execution. The concept suggests that when a competitor's mental toughness decreases or increases, execution should decrease or increase correspondingly,

and there is now compelling evidence to support this viewpoint. Ineffective rivals can be identified using general mental proportions of character building and mind-set status, which is better than chance but insufficient to pick competitors.

## 2. METHODOLOGY

### 2.1. Statement of Problem

The aim of the study was to assess the impact of psychological factors and physical fitness of table tennis players.

### 2.2. Psychological Variables

1. Independent variables
  - a. Mental toughness
  - b. Gender: Male and Female
  - c. University Level 21–25 years and inter collegiate 18–20 years
2. Dependent variables  
Motor ability test:
  - a. Speed
  - b. Strength
  - c. Endurance
  - d. Agility
  - e. Flexibility.

### 2.3. Objectives

The following are the study's primary objectives:

1. To investigate the effect of mental power on the performance of university level and inter-collegiate athletes table tennis players
2. To assess the impact of sports tension on the presentation of university level and inter-collegiate table tennis players.

### 2.4. Hypothesis

The following are the study's hypotheses, which are being attempted to prove:

1. There is a critical effect of mental strength on sports execution of university level and inter-collegiate table tennis players
2. There is a critical impact of game tension on the exhibition university level and inter-collegiate table tennis players.

### 2.5. Statistical Analysis

To achieve the study's objectives and to validate the theory that have been developed the information would be broke down utilizing the accompanying measurable strategies:

1. "t" test to analyze the example sub gathering
2. Correlation "r" test to analyze the connection between the factors.

### 2.6. Tools

- a. Mental toughness
- b. Motor ability test.

### 2.7. The Sample

Keeping the significant goals of study in see, the suitable plan is followed. The investigation was conducted on the example of 180 of university level and inter-collegiate table tennis players from different schools of Gulbarga University was done on the model of level of cooperation. Endeavors were made to order the example into various equivalent sub gathering for the examination. The factors such as mental durability, uneasiness, self-certainty, and engine capacity test were considered to assess their impact on the presentation of table tennis players. The segment factors such as age and sex were gathered.

Level of participation	Male	Female	Total
University level	45	45	90
Inter-collegiate	45	45	90
		Total	180

### 2.8. Delimitation

1. The research is restricted to table tennis players
2. Study is delimited to 180 samples
3. Study is delimited to male and female table tennis players
4. Study is delimited to 21–25 years university level and 18–20 years inter-collegiate level of age players
5. Study is delimited to table tennis players of various institution of Gulbarga Jurisdiction.

### 2.9. Limitations

1. The response of the subjects toward the tools and techniques
2. Questionnaire research has limitations and the participant reaction on their behalf may be one of them
3. The motor ability test is limited to subjects.

### 2.10. Reliability of Proportion of Various Instruments

S. No.	Variable	Test	Reliability
1.	Mental toughness	Mental toughness questionnaire	0.85

### 2.11. Significance of Study

It is surely known mental factors to work on the exhibition of table tennis players. This application is important to the field of sports according to the sports execution and their degree of support.

## 3. RESULTS

The significant goals of the investigation have been to inspect the job of mental factors such as mental durability, tension, self-certainty, and engine capacity test on the presentation of table tennis players on their game exhibition. The game exhibition was estimated on engine tests such as speed, adaptability, perseverance, nimbleness, and strength by observing accessible standard standards in the field of sports.

The mean scores, standard deviations, and *t*-values of motor tests performed to subjects at two levels of depressive toughness are shown in Table 1. The mean scores of high mental toughness group are 5.25 (speed), 5.40 (agility), 1234.87 (endurance), 5.42 (strength), and 3.42 (flexibility). Similarly, mental toughness group has mean of 6.21 (speed), 6.35 (agility), 1069.80

**Table 1: Mean, SD, and *t*-values of motor ability of table tennis players in two groups of university and inter-collegiate level mental toughness (*n*=180)**

Mental toughness	Speed	Agility	Endurance	Strength	Flexibility
HMT ( <i>n</i> =90)					
M	5.25	5.40	1234.87	5.42	3.42
SD	1.26	1.00	106.57	1.51	1.15
<i>t</i> -value	3.57	4.54	7.19	7.19	6.65
LMT ( <i>n</i> =90)					
M	6.21	6.35	1069.80	3.07	1.96
SD	1.30	1.06	111.17	1.59	1.00

\*\*Significant at 0.01 level

**Table 2: r-values between psycho factors and sports performance**

Psycho factors	Speed	Agility	Endurance	Strength	Flexibility
Mental Toughness	0.256	0.306	0.236	0.209	0.306

\*\*Significant at 0.01 level

(endurance), 3.07 (strength), and 1.96 (flexibility). The *t*-values between any of these two groups are statistically significant at the 0.01 level, suggesting that there is a substantial difference in athletic performance between the high mental toughness and low mental toughness groups. The high mental toughness group performed considerably better in all insulating layer assessments than the low mental toughness group. This shows clearly that mental toughness is a key component in improving physical activity in table tennis mental toughness speaks about the conditions prevailing in the life situation of the players. The high mental toughness consists of high income, prestigious parental occupation, and higher educational level. All these provide more facilities for the development of sports skills in the players who belong to high mental toughness level. On the contrary, low mental toughness players would not get all such facilities; and therefore, they are poor in sports expressions. Thus, mental toughness is a prominent factor in determining the success of table tennis players. Earlier studies are in agreement with this finding.

### 3.1. Relationship between Independent Variables and Sports Performance

An attempt is made to investigate the link between the study results independent factors and dependent variables. All psycho-physical factors are included as independent variables (anxiety) and demographic (age and gender) factors. These all are believed to have relationship with performance of motor tests of the student sample. Hence, *r*-test (association tests) was carried out and is presented in tables.

Table 2 gives *r*-values between psycho factors and motor tests performance. It can be seen that sport performance of table tennis sample is correlated with psycho variable. The *r*-values between psycho-physical variables and all motor tests (speed, agility, endurance, strength, and flexibility) are all significant. This clearly shows that there is a strong link between psychological variables and athletic performance.

## 4. CONCLUSIONS

The accompanying are the conclusions:

- The university level of table tennis players has considerably higher levels of mental toughness than those at the inter-collegiate level
- The higher age group has significantly higher mental toughness than the lower age groups
- Mens are higher execution than the female table tennis players
- There is a huge impact of psycho factors on physical fitness tests
- There is a significant correlation between independent variables level of participation age, gender, and dependent variable mental toughness
- There is an effect of level of participation age gender on mental toughness of table tennis players.

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# Effects of Plyometric Training for the Development of Explosive Strength among the Kabaddi and Kho-Kho Players of Osmania University Hyderabad Telangana State

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## ABSTRACT

This study was concluded to find out the effect of plyometric training for the development of explosive strength. This was an experimental study. For concluded this study,  $n = 45$  university players were selected as subject age about 19–22 years. The selected 45 subjects were divided into three equal groups of 15 each as two experimental groups and one control group, in which experimental group – I ( $n = 15$ ) underwent plyometric training (Male kabaddi players) for 3 days/week for 8 weeks, group – II ( $n = 15$ ) underwent the plyometric training (Male kho-kho players) for 3 days/week for 8 weeks and group – III ( $n = 15$ ) acted as control who are under general training. The experimental group's performance on standing broad jump improved from pre-test to post-test mean S.D. After 8 weeks of plyometric training, it is concluded that significant effect in experimental group I and II whereas the control group exhibits stagnation in their performance.

**Keywords:** Explosive strength, Plyometric training, Standing broad jump.

## 1. INTRODUCTION

Plyometrics, also known as jump training or plyos, are exercises in which muscles exert maximum force in short intervals of time, with the goal of increasing power (speed-strength). This training focuses on learning to move from a muscle extension to a contraction in a rapid or “explosive” manner, such as in specialized repeated jumping. Plyometrics are primarily used by athletes, especially martial artists, sprinters, arm wrestlers, and high jumpers, to improve performance and are used in the fitness field to a much lesser degree.

Kabaddi is a contact team sport. Played between two teams of seven players, the objective of the game is for a single player on offence, referred to as a “raider,” to run into the opposing team's half of a court, tag out as many of their defenders as possible, and return to their own half of the court, all without being tackled by the defenders, and in a single breath. Points are scored for each player tagged by the raider, while the opposing

team earns a point for stopping the raider. Players are taken out of the game if they are tagged or tackled, but are brought back in for each point scored by their team from a tag or tackle.

It is the popular in the Indian subcontinent and other surrounding of Asia countries. Although accounts of kabaddi appear in the histories of ancient India. The game was popularized as a competitive sport in the 20<sup>th</sup> century. Game of Andhra Pradesh, Bihar, Haryana, Kerala, Maharashtra, Odisha, Punjab, Tamil Nadu, Telangana, and Uttar Pradesh.

Kho-Kho is a traditional Indian sport that is one of the oldest outdoor sports, dating back to ancient India. It is played by two teams of 12 nominated players out of 15, of which nine enter the field who sit on their knees (Chasing Team) and three extra (Defending Team) who try to avoid being touched by members of the other opposing team. It is one of the two most popular traditional tag games in the Indian subcontinent, the

**Table 1:** Analysis of covariance with means and “f” ratio for, standing broad jump and for plyometric training, experimental group I (Male kabaddi players) experimental group II (Male kho-kho players), and control group

Variable Name	Group Name	Control Group	Experimental Group I (Kabaddi players)	Experimental Group II (Kho-Kho players)	“F” Ratio
Standing Broad Jump (in Meters)	Pre-test Mean±SD	1.916±0.12	1.918±0.135	1.922±0.13	0.003
	Post-test Mean±SD	1.919±0.12	2.078±0.22	2.141±0.31	3.034*

\*Significant at 0.05 level of confidence

other being kabaddi. The sport is widely played across South Asia and has a strong presence in South Africa and England.

### 1.1. Objectives of the Study

The objective of the study is to find out the effect of plyometric training for the development of explosive strength.

### 1.2. Hypothesis

It was hypothesized that there would be significant difference in effect of plyometric training for the development of explosive strength.

## 2. METHODOLOGY

This study was concluded to find out the effect of plyometric training for the development explosive strength. This was an experimental study. For concluded this study,  $n = 45$  university players aged about 19–22 years were selected as subjects'  $n = 45$  divided into three groups experimental group I, experimental group II, and controlled group III.

### 2.1. Assessment of Performance

The experimental groups were engaged with an intervention based on plyometric, which was employed for 8 weeks with three sessions per week. At the same time, the controlled group engaged in general training, they were tested on standing broad jump before the intervention and the performance variable was retested again after the 8-week intervention.

### 2.2. Tools

Standing Broad jump.

### 2.3. Purpose of the Test

To measure the explosive strength.

## 3. RESULTS

The experimental groups and the controlled group were given pre- and post-tests to see if there was an improvement in explosive strength after 8 weeks of plyometric training, while the controlled group received general training (Table 1).

The analysis of the data reveals that the subjects with the plyometric training experimental group I and experimental group II have shown improvement in the performance of standing broad jump test from pre- to post-test mean S.D. Experimental group I (Male kabaddi players) pre-test result shown ( $1.918 \pm 0.135$ ) and experimental group II (Male kho-kho Players) pre-test ( $1.922 \pm 0.13$ ) and control group III pre-test ( $1.916 \pm 0.12$ ) after 8 weeks of specific of plyometric training post-test results has shown improvement in the performance experimental group I (Kabaddi players) post-test result shown ( $2.078 \pm 0.22$ ) and experimental group II (Kho-kho Players) post-test ( $2.141 \pm 0.31$ ) and control group III pre-test ( $1.919 \pm 0.12$ ).

## 4. DISCUSSION AND CONCLUSIONS

Based on our study results, it was concluded that there was significant alteration in explosive strength due to 8 weeks of plyometric training compared with controlled group. Further there is significant improvement in explosive strength. I concluded that the assessment process can be conducted every 3 months and 6 months to update the progress of players performance and to ensure that it is up to date with the players training needs requirements. It is recommended that coaches assess their player's performance on a regular basis to ensure better compliance with the training program.

## 5. RECOMMENDATIONS

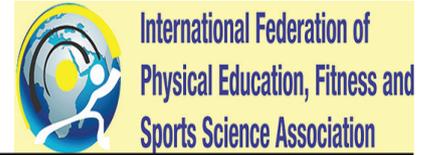
Based on the findings of the present study, the following recommendations have been made.

1. Similar studies may be conduct in female section
2. Similar studies may be conduct between individual and team sports

3. This study also helps the physical educators and coaches to improve their training regime to excel in kabaddi and kho-kho games.

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# Effect of Psychological Factor and Physical Fitness of Table Tennis Player

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## ABSTRACT

Elite competitors guarantee that 90% of their prosperity comes from mental preparing and capacity. In pro athletics, there are not tremendous contrasts between competitors as far as potential, preparing, or actual capacity. The deciding components of achievement, accordingly, life in the mental domain. Self-assurance, inspiration, passionate control, and focus are the most influential mental aspects in sports and fitness. These aspects are expressed by anxiety, self-confidence, and mental toughness during the game in this research work is focused on the anxiety parameters in particular with table tennis players.

## 1. INTRODUCTION

We overall believe that regular workout directly helps our health. Moreover, studies show that activity is beneficial to our psychological well-being, contributing to improved capacity to concentration, collaboration, and personality. Both internal and external considerations are taken into account. The point at which a competitor's attention is drawn to events inside her own biology is referred to as internal attention contemplations, interior exchange, sentiments, and developments. External attention is the moment at which a competitor's focus shifts away out of her own bodily. Hence, you need to turn into a table tennis champion? Next to the essential specialized and physical preparing, fruitful competitors should likewise shelter ace their own feelings and musings. Numerous capable players have discovered this to be their significant obstacle in accomplishing tip top status. The psychological uneasiness is characterized as the psychological part of nervousness and in sport it is usually showed by regrettable assumptions for playing out an undertaking and in this way adverse self-assessment. There is a negative direct connection between psychological uneasiness and execution.

### 1.1. Purpose of the Study

The games competition anxiety examination is the most well-known advanced sport-explicit nervousness test,

and its purpose is to survey unique contrasts in sports severe quality stress or the inclination to seek after rivalry conditions, as compromise, and/or to respond. Improving dexterity. A superb game of table tennis stimulates mind sharpening and concentration, as well as cerebral astuteness. Reflexes are being improved. Because of the game's fast pace and short distances, both motor and cognitive muscle skills are enhanced. It is easy on the joints. Table tennis is an excellent choice for people who have undergone knee surgery, have a history of back difficulties, or are just tired of twisting their knees when participating in other sports. It consumes calories. Disdain going to the exercise center.

## 2. METHODOLOGY

### 2.1. Statement of Problem

The aim of the study was to assess the impact of psychological factors and physical fitness of table tennis players.

### 2.2. Psychological Variables

Independent variables:

- Sports anxiety
- Gender: Male and Female
- University level 21–25 years and inter-collegiate 18–20 years.

### 2.3. Dependent Variables

Motor ability test:

- Speed
- Strength
- Endurance
- Agility
- Flexibility.

### 2.4. Objectives

The following are the study's primary objectives:

- To investigate the effect of self-assurance on the presentation of inter-collegiate and university-level Table Tennis players
- To inspect contrast in sports execution of test sub-gatherings of different segment factors.

### 2.5. Hypothesis

The following are the study's hypotheses, which are being attempted to prove:

- There is a critical impact of game tension on the exhibition university level and inter-collegiate table tennis players
- There is a positive impact of self-certainty on execution of university level and inter-collegiate table tennis players.

### 2.6. Statistical Analysis

To achieve the study's objectives and to validate the theory that has been developed the information would be broke down utilizing the accompanying measurable strategies:

- "*t*" test to analyze the example sub gathering
- Correlation "*r*" test to analyze the connection between the factors.

### 2.7. Tools

- Sports anxiety test
- Motor ability test.

### 2.8. The Sample

Keeping the significant goals of study in see the suitable plan is followed. The investigation was conducted on the example of 180 of university level and inter-collegiate table tennis players from different schools of Gulbarga University was done on the model of level of cooperation. Endeavors were made to order the example into various equivalent sub gathering for the examination.

Level of participation	Male	Female	Total
University level	45	45	90
Inter-collegiate	45	45	90
		Total	180

### 2.9. Delimitation

The present study is summarized in the following report:

- The research is restricted to table tennis players
- Study is delimited to 180 samples
- Study is delimited to male and female table tennis players
- Study is delimited to 21–25 years university level and 18–20 years intercollegiate level of age players
- Study is delimited to table tennis players of various institution of Gulbarga Jurisdiction.

### 2.10. Limitations

- The response of the subjects toward the tools and techniques
- Questionnaire research has limitations and the participant reaction on their behalf may be one of them
- The motor ability test is limited to subjects.

### Reliability of proportion of various instruments

S.No.	Variable	Test	Reliability
1.	Anxiety	Sport anxiety test	0.79

### 2.11. Significance of Study

The study's significance is that it attempts to assess the influence of several sport anxiety profile and engine capacity tests on the performance of table tennis players.

## 3. RESULTS

An endeavor is made to discover the distinctions in sports execution between the example sub gatherings. The example sub gatherings are made dependent on the rule of every one of psycho-physical factors test/scales are determined for looking at contrasts in sports execution the outcome so pre-arranged is introduced in the tables.

The mean scores, standard deviations, and *t*-values of motor tests performed to individuals at two degrees of anxiety are shown in Table 1. The mean scores of high anxiety group are 6.19 (speed), 6.09 (agility), 1117.09 (endurance), 3.29 (strength), and 2.09 (flexibility). Similarly low anxiety group has mean of 5.57 (speed),

**Table 1: Mean, SD, and t-values of motor ability in table tennis players with two degrees of university and inter-collegiate level sports anxiety (n=180)**

Anxiety	Speed	Agility	Endurance	Strength	Flexibility
High anxiety (n=90)					
M	6.19	6.09	1117.09	3.29	2.09
SD	1.06	0.88	137.32	1.55	0.84
t-value	2.92	4.91	2.36	5.22	5.40
Low anxiety (n=90)					
M	5.57	5.20	1184.91	4.91	2.96
SD	0.95	0.84	134.95	1.47	0.76

\*\*At the 0.01 level, this is significant

**Table 2: r-values between psycho factors and sports performance**

Psycho factors	Speed	Agility	Endurance	Strength	Flexibility
Anxiety	0.252	0.27	0.253	0.256	0.310

\*\*Significant at 0.01 level

5.20 (agility), 1184.91 (endurance), 4.91 (strength), and 2.96 (flexibility). The *t*-values between these two groups are crucial at the 0.01 level, indicating that there is a significant difference in sports performance between high anxiety and low anxiety groups.

Thus, anxiety is found to affect negatively the sports performance of players. Although minimum anxiety is necessary for sports performance, the higher degree of anxiety is certainly unwanted in the field of sports. In any competitive game, high anxiety is harmful for success. Higher the anxiety, lower will be the performance. Thus, anxiety is found to affect negatively the sports performance of players. Although minimum anxiety is necessary for sports performance, the higher degree of anxiety is certainly unwanted in the field of sports. In any competitive game, high anxiety is harmful for success. Higher the anxiety, lower will be the performance.

### 3.1. Relationship between Independent Variables and Sports Performance

An attempt is made to investigate the link between the study results independent factors and dependent variables. All psycho-physical factors are included as independent variables (anxiety) and demographic (age and gender) factors. These all are believed to have relationship with performance of motor tests of the student sample. Hence, *r*-test (association tests) was carried out and is presented in tables.

Table 2 gives *r*-values between psycho factors and motor tests performance. It can be seen that sport

performance of table tennis sample is correlated with psycho variable. The *r*-values between psycho-physical variables and all motor tests (speed, agility, endurance, strength, and flexibility) are all significant. This clearly shows that there is a strong link between psychological variables and athletic performance.

## 4. CONCLUSIONS

The accompanying are the conclusions:

- The university level of table tennis players has exhibited higher anxiety than the inter-collegiate level participation
- There is a huge impact of psycho factors on speed test
- There is a huge impact of psycho factors on readiness test
- There is a huge impact of psycho factors on perseverance test
- There is huge impact of psycho factors on quality test
- There is a huge impact of psycho factors on adaptability test
- There is an effect of level of participation age gender and on anxiety of table tennis players.

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# A Study on the Effect of Stress and Anxiety on Mental Health of PG Students of Gulbarga University

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## ABSTRACT

The present study aims to investigate the effect of stress and anxiety on mental health of PG students of Gulbarga University. To achieve the purpose of study, the investigator selected 80 PG students from various departments was selected on random basis. The subjects were divided into two groups on the basis high and low stress and anxiety with the help of questionnaire scoring manual. The subjects were administered to Singh personal stress source inventory and Sinha's comprehensive anxiety test based on the scores; the subjects were equally divided into two groups of high and low stress and anxiety. Further both high and low stress and anxiety groups were administered to mental health inventory. All of them are having the same environment and were also taking part in routine academic program as per the schedule of the university. The results of the study concluded that the low level stress and anxiety group of students are having positive self-evaluation, perception of reality, integration of personality, autonomy, group-oriented attitudes, and environmental competence. The results clearly speak the fact that there is a positive and significant relationship between the stress, anxiety, and mental health of the students.

**Keywords:** Anxiety and mental health, Stress, Students.

## 1. INTRODUCTION

Mental health is the successful performance of mental function which results in productive activities, fulfilling relationships with other people and an ability to cope with adversity and adapt to change (Kahn and Fawcett, 2004). A person is called mentally healthy when he understands himself and his own feelings, motivation, drives, and wishes. Good mental well-being includes and ability to get through the interactions of daily life without experiencing excessive emotional or behavioral incapacity and the person is able to be flexible and adaptive with a positive self-esteem.

Mental health means ability to balance in one's daily living. In other words, it is the ability to face and balance the reality of life (Bhatia, 1982). Mental health is a complex phenomenon and depends on a set of familiarly personal, psychological, and social variables. Mental health is as an important feature as the physical health of a person to make him complex with balance mental disposition of the children to cope with life more effectively and productively. Good mental health

depends on the good state of both mind and body. Each exert a direct influence on the other but owing to the power of matter, good mental health is of supreme importance. According to the Hadfield (1952), mental health is the harmonious functioning of the whole personality.

When mental health deteriorates, problems can arise in wide variety of areas such as low self-regard, anxiety, depression, anger, distortion of reality, heightened physiological reactivity, and reduced competence (Punjab Heritage, 2005). Emotional upsets, tension, anxiety, a rapid social change, struggle for existence, and chronic personal conflict are all import factors in aggravating and even initiating mental health problems.

Mental health refers to the capacities to think rationally and logically, cope effectively with stress and challenges that arise in situations and throughout the life course, and demonstrate emotional stability and growth.

Anxiety is a feeling of uneasiness and worry, usually generalized and unfocused as an overreaction to a



situation that is only subjectively seen as menacing. It is often accompanied by muscular tension, restlessness, fatigue, and problems in concentration. Anxiety can be appropriate, but when experienced regularly the individual may suffer from an anxiety disorder.

People facing anxiety may withdraw from situations which have provoked anxiety in the past. There are various types of anxiety. Existential anxiety can occur when a person faces against, an existential crisis, or nihilistic feelings.

### 1.1. Statement of the Problem

The present study aims to investigate the effect of stress and anxiety on mental health of PG students of Gulbarga University.

### 1.2. Objectives

The objectives of the study are as follows:

- To assess the effect of stress on the mental health of PG students
- To assess the effect of anxiety on the mental health of PG students
- To find out the relationship between stress, anxiety, and mental health among PG students.

## 2. MATERIALS AND METHODS

### 2.1. Sample

In the present study, the investigator selected 80 PG students from various departments was selected on random basis. The subjects were divided into two groups on the basis high and low stress and anxiety with the help of questionnaire scoring manual. All the subjects were almost from the same socio-economic group and were found to be physically and mentally fit for the type of assessment they were subjected.

### 2.2. Sample Design

Table 1

Students	Age	Total
PG	22-25	80

Table 2

Students	High stress and anxiety	Low stress and anxiety
PG	40	40

### 2.3. Procedure

The subjects were administered to Singh personal stress source inventory and Sinha's comprehensive anxiety test based on the scores; the subjects were equally divided into two groups of high and low stress and anxiety. Further both high and low stress and anxiety groups were administered to mental health.

Inventory. All of them are having the same environment and were also taking part in routine academic program as per the schedule of the university.

## 3. RESULTS AND DISCUSSION

Based on the analysis of data, the following interpretations were made and presented in the following Tables 1 and 2.

Table 3 presents the scores of PG students on mental health at two levels of stress. The mean score (140.74) of the high level stress group indicates that they are having low mental health and the mean score (196.42) of the low level stress group reveals that they are having very good mental health. In other words, it is interpreted that the low level stress group students are having positive self-evaluation, perception of reality, integration of personality, autonomy, group-oriented attitudes, and environmental competence.

Table 4 presents the scores of PG students on mental health at two levels of anxiety. The mean score (142.36) of the high level anxiety group indicates that they are having low mental health and the mean score (198.72) of the low level anxiety group reveals that they are having very good mental health. In other words, it is interpreted that the low level anxiety group students are

Table 3: Scores of PG students on mental health at two levels of stress

S.No	Stress	n	Mean	SD	t-value
1.	High	40	140.74	12.62	16.46*
2.	Low	40	196.42	7.32	

Significant at 0.05 level

Table 4: Scores of PG students on mental health at two levels of anxiety

S.No	Anxiety	n	Mean	SD	t-value
1.	High	40	142.36	13.02	17.46*
2.	Low	40	198.72	9.54	

Significant at 0.05 level

**Table 5: Correlation between the variables**

S. No.	Variables	r-values
1.	Stress and Mental Health	0.712**
2.	Anxiety and Mental Health	0.783**

\*\*Significant at 0.01 level

having positive self-evaluation, perception of reality, integration of personality, autonomy, group-oriented attitudes, and environmental competence.

Table 5 shows the r-values of the variables of the study. It can be seen that all the r-values were significant at 0.01 level to indicate the significant relationship between the variables of the study. Thus, the results clearly speak the fact that there is a positive and significant relationship between the stress, anxiety, and mental health of the students.

#### 4. CONCLUSIONS

The low level stress and anxiety groups of students are having positive self-evaluation, perception of reality, integration of personality, autonomy, group-oriented attitudes, and environmental competence. The results clearly speak the fact that there is a positive and significant relationship between the stress, anxiety, and mental health of the students.

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# Effect of Psychological Factor and Physical Fitness of Table Tennis Player

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## ABSTRACT

Elite competitors guarantee that 90% of their prosperity comes from mental preparing and capacity. In pro athletics, there are not tremendous contrasts between competitors as far as potential, preparing, or actual capacity. The deciding components of achievement, accordingly, life in the mental domain. Self-assurance, inspiration, passionate control, and focus are the most influential mental aspects in sports and fitness. These aspects are expressed by anxiety, self-confidence, and mental toughness during the game in this research work is focused upon the anxiety parameters in particular with table tennis players.

## 1. INTRODUCTION

We overall believe that regular workout directly helps our health. Moreover, studies show that activity is beneficial to our psychological well-being, contributing to improved capacity to concentration, collaboration, and personality. Both internal and external considerations are taken into account. The point at which a competitor's attention is drawn to events inside her own biology is referred to as internal attention contemplations, interior exchange, sentiments, and developments. External attention is the moment at which a competitor's focus shifts away out of her own bodily. So you need to turn into a Table Tennis champion? Next to the essential specialized and physical preparing, fruitful competitors should likewise shelter ace their own feelings and musings. Numerous capable players have discovered this to be their significant obstacle in accomplishing tip top status. The psychological uneasiness is characterized as the psychological part of nervousness and in sport, it is usually showed by regrettable assumptions for playing out an undertaking and in this way adverse self-assessment. There is a negative direct connection between psychological uneasiness and execution.

### 1.1. Purpose of the Study

The games Competition Anxiety Examination is the most well-known advanced sport-explicit nervousness

test, and its purpose is to survey unique contrasts in sports severe quality stress or the inclination to seek after rivalry conditions, as compromise, and/or to respond. Improving dexterity. A superb game of Table Tennis stimulates mind sharpening and concentration, as well as cerebral astuteness. Reflexes are being improved. Because of the game's fast pace and short distances, both motor and cognitive muscle skills are enhanced. It's easy on the joints. Table Tennis is an excellent choice for people who have undergone knee surgery, have a history of back difficulties, or are just tired of twisting their knees when participating in other sports. Its consumes calories. Disdain going to the exercise center.

## 2. METHODOLOGY

### 2.1. Statement of Problem

To assess the impact of psychological factors and physical fitness of Table Tennis players.

### 2.2. Psychological Variables

#### 2.2.1. Independent variables

(a) Sports anxiety (b) Gender: Male and Female (c) University Level 21–25 years and inter collegiate 18–20 years.

### 2.2.2. Dependent variables

Motor ability test: (a) Speed (b) Strength (c) Endurance (d) Agility (e) Flexibility.

### 2.3. Objectives

The following are the study's primary objectives:

1. To investigate the effect of self-assurance on the presentation of intercollegiate and university-level table tennis players.
2. To inspect contrast in sports execution of test sub-gatherings of different segment factors.

### 2.4. Hypothesis

The following are the study's hypotheses, which are being attempted to prove:

1. There is a critical impact of game tension on the exhibition University Level and Inter-Collegiate Table Tennis players.
2. There is a positive impact of self-certainty on the execution of University Level and Inter-Collegiate Table Tennis players.

### 2.5. Statistical Analysis

To achieve the study's objectives and to validate the theory that has been developed the information would be broke down utilizing the accompanying measurable strategies:

1. "t" test to analyze the example sub gathering.
2. Correlation 'r' test to analyze the connection between the factors.

### 2.6. Tools

(a) Sports anxiety test (b) Motor ability test.

### 2.7. The Sample

Keeping the significant goals of study in seeing the suitable plan is followed. The investigation was conducted on the example of 180 of University Level and Inter-Collegiate Table Tennis Players from different schools of Gulbarga University was done on the model of level of cooperation. Endeavors were made to order the example into various equivalent sub gathering for the examination.

Level of participation	Male	Female	Total
University level	45	45	90
Inter collegiate	45	45	90
		Total	180

### 2.8. Delimitation

The current study is summarized in the following report:

1. The research is restricted to Table Tennis players.
2. Study is delimited to 180 samples.
3. Study is delimited to male and female Table Tennis players.
4. Study is delimited to 21–25 years University Level and 18–20 years Inter Collegiate Level of age players.
5. Study is delimited to Table Tennis players of various institutions of Gulbarga Jurisdiction.

### 2.9. Limitations

1. The response of the subjects towards the tools and techniques.
2. Questionnaire research has limitations, and the participant reaction on their behalf may be one of them.
3. The motor ability test is limited to subjects.

#### Reliability of proportion of various instruments

S. No	Variable	Test	Reliability
1.	Anxiety	Sport anxiety test	0.79

### 2.10. Significance of Study

The study's significance is that it attempts to assess the influence of several sport anxiety profile and engine capacity tests on the performance of Table Tennis players.

## 3. RESULTS

An endeavor is made to discover the distinctions in sports execution between the example sub gatherings. The example sub gatherings are made dependent on the rule of every one of psychophysical factors test/scales are determined for looking at contrasts in sports execution the outcome so pre-arranged are introduced in the tables.

The mean scores, standard deviations, and *t*-values of motor tests performed to individuals at two degrees of anxiety are shown in Table 1. The mean scores of the High anxiety group are 6.19 (speed), 6.09 (agility), 1117.09 (endurance), 3.29 (strength) and 2.09 (flexibility). Similarly, the low anxiety group has mean of 5.57 (speed), 5.20 (agility), 1184.91 (endurance), 4.91 (strength), and 2.96 (flexibility). The *t*-values between these two groups are crucial at the 0.01 level, indicating that there is a significant difference in sports

**Table 1: Mean, SD, and *t*-values of motor ability in table tennis players with two degrees of the university and intercollegiate level sports anxiety (*n*=180)**

Anxiety	Speed	Agility	Endurance	Strength	Flexibility
High anxiety ( <i>n</i> =90)					
M	6.19	6.09	1117.09	3.29	2.09
SD	1.06	0.88	137.32	1.55	0.84
<i>t</i> -value	2.92	4.91	2.36	5.22	5.40
Low anxiety ( <i>n</i> =90)					
M	5.57	5.20	1184.91	4.91	2.96
SD	0.95	0.84	134.95	1.47	0.76

\*\*At the 0.01 level, this is significant, SD: Standard deviation

**Table 2: *R*-values between psycho factors and sports performance**

Psycho factors	Speed	Agility	Endurance	Strength	Flexibility
Anxiety	0.252	0.27	0.253	0.256	0.310

\*\*Significant at 0.01 level

performance between high anxiety and low anxiety groups.

Thus, anxiety is found to affect negatively the sports performance of players. Although minimum anxiety is necessary for sports performance, the higher degree of anxiety is certainly unwanted in the field of sports. In any competitive game, high anxiety is harmful for success. Higher the anxiety, lower will be the performance. Thus, anxiety is found to affect negatively the sports performance of players. Although minimum anxiety is necessary for sports performance, the higher degree of anxiety is certainly unwanted in the field of sports. In any competitive game, high anxiety is harmful for success. Higher the anxiety, lower will be the performance.

### 3.1. Relationship between Independent Variables and Sports Performance

An attempt is made to investigate the link between the study results independent factors and dependent variables. All psycho-physical factors are included as independent variables (anxiety) and demographic (age, gender,) factors. These all are believed to have relationship with the performance of motor tests of the student sample. Hence, *r*-test (association tests) was carried out and are presented in tables.

Table 2 gives *r*-values between psycho factors and motor tests performance. It can be seen that sport performance of Table Tennis sample is correlated with psycho variable. The *r*-values between Psycho-physical variables and all motor tests (speed, agility, endurance, strength, and flexibility) are all significant. This clearly

shows that there is a strong link between psychological variables and athletic performance.

## 4. CONCLUSIONS

The accompanying is the conclusions:

- The university level of Table Tennis players has exhibited higher anxiety than the intercollegiate level participation.
- There is a huge impact of psycho factors on speed test.
- There is a huge impact of psycho factors on readiness test.
- There is a huge impact of psycho factors on perseverance test.
- There is huge impact of psycho factors on quality test.
- There is a huge impact of psycho factors on adaptability test.
- There is an effect of level of participation age gender and on anxiety of Table Tennis players.

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# Effect of Weight Training for Development of Speed among Men Kho-Kho Players of Bidar District

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## ABSTRACT

The purpose of the present study is to find out the effect of Weight training for the development of Speed among men Kho-Kho players of Bidar District. The subject was chosen at random from a group of boys between the ages of 21 and 23 years old.  $n = 15$  Experimental Group I and  $n = 15$  Control Group II are included in the study's sample. 30 M Dash Run was utilized in the study as a pre-test and post-test to determine Speed in both groups. Experiment Group I received Weight training on alternate days for 6 weeks, while control Group II received general warm-up training. The experimental group's performance on the 30 M Dash Run improved from pre-test to post-test. It is concluded that significant effect in experimental group I whereas the control group exhibits a reduction in their performance.

**Keywords:** Kho-Kho and "t" ratio, Speed, Speed, Agility and quickness training.

## 1. INTRODUCTION

Kho-Kho is a traditional Indian sports game, being one of the oldest outdoor sports dating back to ancient India. It is one of the two most popular traditional tag games in the Indian subcontinent, the other being Kabaddi. Kho-Kho is played by two teams of twelve nominated players out of fifteen, of which nine enter the field who sit on their knees (Chasing Team), and three extra (Defending Team) who try to avoid being touched by members of the other opposing team.

The sport is widely played across South Asia and has a strong presence in South Africa and England. It is played most often by school children in India and Pakistan and is a competitive game. It is a sport that helps to increase stamina and aids in motor, social and mental development of school children. Playing Kho-Kho keeps children well, strong, motivated, enthusiastic and young, aiding in better coordination, speed, and flexibility.

Weight training is a common type of strength training for developing the strength and size of skeletal muscles. It uses the force of gravity in the form of weighted bars, dumbbells, or weight stacks in order to oppose the force generated by muscle through concentric or eccentric contraction. Weight training uses a variety of specialized equipment to target specific muscle groups and types of movement.

Miss. Marina Rai, Dr. P. Yoga (2020) Study was effect of speed, agility, and quickness (SAQ) training on speed among Kho-Kho players SAQ are the most demanded skill-related fitness components in every sport. All of these three components are equally responsible to execute great performance during the matches. Whether they belong to Kho-Kho game or any other game, every athlete needs to develop these all-fitness components to take pleasure of achievement in their respective game. This study puts an effort to encounter the effect of SAQ training on speed among Kho-Kho male players. To conclude the justification of the study thirty Kho-Kho players were preferred from Aliquippa University College of Physical Education Karaikudi, Tamil Nadu, India. The subject's age ranges from 18 to 25 years. The selected subject was then categorized into two identical groups comprised 15 men students, respectively, namely, the experimental group and control group. The experimental group experienced SAQ training program at morning time for 7 weeks for 1-h, i.e., 7.00–8.00 am. In contrast, the control group did not contribute in any training during the course of study. Speed was taken as criterion variable in this investigation.

The nominated subjects were screened on speed and was measured through (50 mats dash) test. Pre-test was taken prior to the training period and post-test was measured straight away following the 7 weeks training period. Statistical technique "t" ratio was employed

to analyze the means of the pre-test and post-test data of the experimental and control group. The results disclosed that there was a significant variance found on the criterion variable. The result is found due to SAQ training given to the experimental group on speed when compared to control group.

## 2. MATERIALS AND METHODS

The sample for the present study consists of 30 male Kho-Kho players out of which 15 are experimental group and 15 are controlled group of Bidar district. Weight exercise training is giving 3 times a week for 6 weeks for the experimental group and general training giving to controlled group.

Assessment of Performance: the objective of the study to find out the effect of weight training for the development of speed on the study conducted the 30 m dash run. The three chances given to all the subjects the best performance recorded of all the Experimental and controlled group to find out the improvement in speed.

### 2.1. Tool

30 m Dash Run or Sprints. The Dash run helps to know the Speed condition ability in the athlete also called as sprints race.

### 2.2. Purpose

To measure the Speed.

### 2.3. Equipment Required

Measurement tape to measure and mark the distance, non-slip floor to take off, Whistle to start and cones for visible marking. Most important is stop watch to record the performance.

## 3. RESULTS AND DISCUSSION

This study shows the improvement in the experimental group in 30 m dash run.

In Table 2 the Mean Values of 30 M Run of Pre-test of Experimental group ( $5.61 \pm 0.294$ ) and controlled

**Table 1: Weight training programme**

<b>Monday</b>	<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>	<b>Week 5</b>	<b>Week 6</b>
Bench Press	2×5	2×8	2×10	2×10	2×12	2×14
Back press	2×5	2×8	2×10	2×10	2×12	2×14
Bent Over Rowing	2×5	2×8	2×10	2×10	2×12	2×14
Sit Ups	2×5	2×8	2×10	2×10	2×12	2×14
Leg Press	2×5	2×8	2×10	2×10	2×12	2×14
<b>Wednesday</b>	<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>	<b>Week 5</b>	<b>Week 6</b>
Wrist Curl	2×5	2×8	2×10	2×10	2×12	2×14
Dumbbell Press	2×5	2×8	2×10	2×10	2×12	2×14
Half squats	2×5	2×8	2×10	2×10	2×12	2×14
Heel Raising	2×5	2×8	2×10	2×10	2×12	2×14
Sideward bending	2×5	2×8	2×10	2×10	2×12	2×14
<b>Friday</b>	<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>	<b>Week 5</b>	<b>Week 6</b>
Push Ups	2×5	2×8	2×10	2×10	2×12	2×14
Hack squat	2×5	2×8	2×10	2×10	2×12	2×14
Triceps	2×5	2×8	2×10	2×10	2×12	2×14
Back Press	2×5	2×8	2×10	2×10	2×12	2×14

**Table 2: Mean values and independent samples test of 30 M Run between the experimental group and controlled group players**

<b>Variables</b>	<b>Group</b>	<b>Pre test</b>	<b>Post test</b>	<b>t</b>	<b>P-value</b>
30 M Run	Experimental Group	5.61±0.294	5.33±0.262	4.58	0.000
	Controlled Group	5.74±0.376	5.74±0.408		

\*Significant at 0.05 level

group ( $5.74 \pm 0.376$ ) and post-test Experimental is 8.22 and Kabaddi is 8.59 The Average Mean of Kho-Kho players in 50 M Run is lesser than the Kabaddi players.

In Kho-Kho require speed to do well in the tournament. It was found that Kho-Kho players are having good speed after specific weight training. Hence, it is also concluded that speed of running is very important in the game.

#### 4. CONCLUSIONS

It was concluded that after the 6 weeks of Weight Training, there is improvement in Experiment Group, as it was analyzed in the results mention that the weight training has shown excellent effect in the improvement Speed. The aim of formulating the effect of weight training to the betterment and enhance their performance as well as a guideline for Kho-Kho coaches at various levels in preparing and designing quality and effective training program.

#### 5. RECOMMENDATIONS

The following suggestions are made for the benefit of players, coach's academicians, and sports scientists. The researcher suggests the part of the coach to use the above-said development of the Weight Training program for Kho-Kho players. The study helps the physical educationist and coaches for selecting the athletes.

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# Effects of Roasted Garlic with and without Moringa on Mean Atrial Pressure, Thyroid Stimulating Hormone and Testosterone among Sedentary Men

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## ABSTRACT

The purpose of the study was to investigate “Effects of Roasted Garlic with and Without Moringa on Mean Atrial Pressure, Thyroid Stimulating Hormone (TSH) and Testosterone Among Sedentary Men.” Selection of Variables: The following variables were selected for this study. (I) Dependent Variables: Mean Atrial Pressure, TSH, and Testosterone. (II) Independent Variables: (1). Roasted Garlic With Moringa Oleifera, (2). Roasted Garlic, (3). Control Group. Experimental Design: Forty-five subjects were selected for this study through the random group design consisting of pre- and post-test, forty-five men randomly divided into three groups, the group was assigned as an Experimental Group I Experimental Group II and control group. The groups are: (1). Roasted garlic with moringa oleifera, (2). Roasted Garlic, (3). Control Group. Training Schedules: During the training period, the experimental group underwent their training program period of 8 weeks for all days. The experimental groups underwent training for 45 min of duration in evening hours between 4:30 and 5:30 pm for 7 days per week. Statistical Technique: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. If the adjusted post-test results were significant, the scheffe’s post hoc test was used to determine the paired mean significant difference. thirumalaisamy (2004). Result: After Incorporate Statistical Technique, It Was Found That A Significant Decrease Mean Atrial Pressure and TSH And Testosterone In Experimental Group I (Roasted Garlic With Moringa Oleifera), when compared with experimental II and this change due to 8 weeks Of training among sedentary men.

## 1. HEALTH BENEFITS OF GARLIC

(1). Roasting garlic concentrates the sugars, transforming it into a caramelized, spreadable, buttery texture, with sweet, deep complex flavors, removing all the sharpness, pungency, and bite. (2). Its easier to digest for many people. (3). It gives sweetness and depth to the dishes you are already making soups stews, mashes, dressings, marinades, and sauces. (4). It is a great way to preserve garlic.5.However, it smells amazing and will make you and your family feel cozy and happy. I am not kidding.

## 2. HEALTH BENEFITS OF MORINGA

Moringa has many important vitamins and minerals. The leaves have seven times more Vitamin C than oranges and 15 times more potassium than bananas. It also has calcium, protein, iron, and amino acids, which

help your body heal and build muscle. It is also packed with antioxidants, substances that can protect cells from damage and may boost your immune system. There is some evidence that some of these antioxidants can also lower blood pressure and reduce fat in the blood and body.

It is traditionally been used as a remedy for such conditions as: (1). Diabetes (2). Long-lasting inflammation (3). Bacterial, (4). Viral, and (5). Fungal infections (6). Joint pain (7). Heart health

## 3. EXPERIMENTAL DESIGN

Forty-five men were selected as a subject for this study and the subject were selected for this study through the random group design consisting of pre and post-test, forty five men were randomly divided into three groups, the group was assigned as an experimental Group I

experimental Group II and control group. The groups are (1). Roasted Garlic, (2). Roasted Garlic with Anuloma Viloma Practice, and (3). Control Group.

#### 4. TRAINING SCHEDULES AND SUPPLEMENTATION

During the training period, the experimental group underwent their training program period of 8 weeks for all days with Roasted Garlic with Moringa., Statistical Technique: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. thirumalaisamy (2004). Computation of Analysis of Covariance: The following tables illustrate the statistical results of Effects of Roasted Garlic with Anuloma Viloma Practice on Mean Atrial Pressure among Men and ordered adjusted means and the difference between the means of the groups under study [Table 1 and Figure 1].

#### 5. DISCUSSION ON FINDINGS OF MEAN ATRIAL PRESSURE

From these analyses, it is found that the results obtained from the experimental groups had a significant reduction in the Mean Atrial Pressure level when compared with the one from the control group. This is due to the inclusion of Roasted Garlic with Moringa and roasted garlic in the analyses on experimental groups.

It is interesting to note that the results obtained from Experimental Group I had more effect than Experimental

Group II on the reduction of Mean Atrial Pressure level. This is due to the implementation of Roasted Garlic With Moringa in Experimental Group II. It is concluded that the Mean Atrial Pressure was reduced after the implementation of Roasted Garlic With Moringa supplementation and the blood capillaries were more positively relaxed and the pressure was greater reduction. So that the pressure level was reduced from its high level to moderate level when compared to the pre-test [Table 2 and Figure 2].

#### 6. DISCUSSION ON FINDINGS OF THYROID STIMULATING HORMONE (TSH)

From these analyses, it is found that the results obtained from the experimental groups had significant reduction in the TSH and greater increase moderately when compared with the one from the control group. This is due to the inclusion of Roasted Garlic With Moringa in the analyses on experimental groups.

It is interesting to note that the results obtained from Experimental Group I had more effect than Experimental Group II on the greater maintenance of TSH level. This is due to the implementation of Roasted Garlic With Moringa in Experimental Group I. It also plays an important role in regulating your weight, body temperature, muscle strength, and even your mood. TSH is made in all the glands in the brain. When thyroid levels in your body are low, the pituitary gland makes more TSH. When thyroid levels are high, the pituitary gland

**Table 1: Analysis of Covariance of Mean Atrial Pressure**

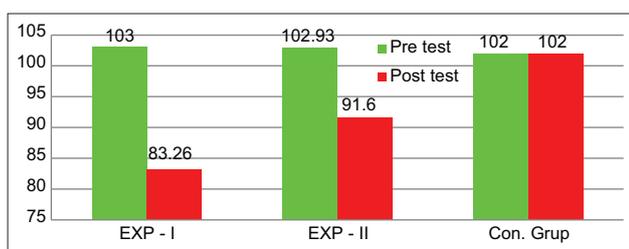
Means	EXP-I	EXP-II	Con. Grup	S. V	S. S	D. F	M. S	O. F
Pre test mean	103	102.93	102	B	9.37	2	4.68	0.40
				W	492.93	42	11.736	
Post test	83.26	91.6	102	B	2642.71	2	1321.35	77.02
				W	720.53	42	17.15	
Adj. Post test	83.18	91.53	102.14	B	2666.93	2	1333.46	78.74
				W	694.35	41	16.93	

**Table 2: Computation of analysis of covariance of TSH**

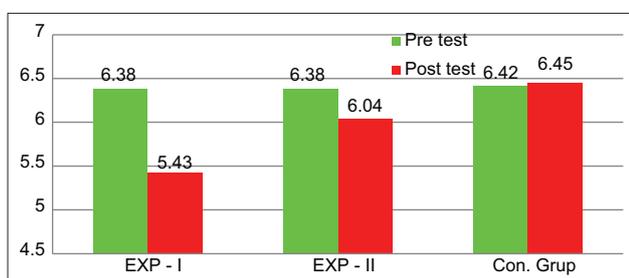
Means	EXP-I	EXP-II	Con. Grup	S. V	S. S	D. F	M. S	O. F
Pre test Mean	6.38	6.38	6.42	B	460.18	2	230.09	0.34
				W	10.89	57	0.19	
Post test	5.43	6.04	6.45	B	409.91	2	204.95	71.94
				W	6.58	57	0.11	
Adj.Post test Mean	5.43	6.04	6.44	B	13.01	2	6.50	71.13
				W	6.13	56	0.10	

**Table 3:** Computation of analysis of covariance of testosterone

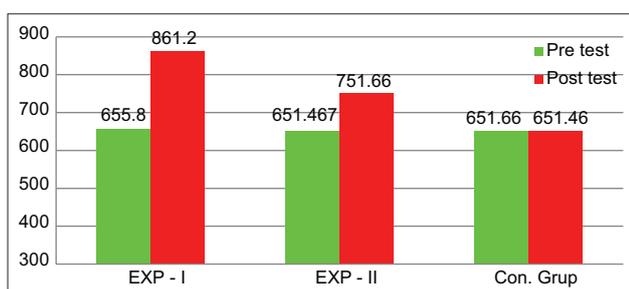
Means	EXP-I	EXP-II	Con. Grup	S. V	S. S	D.F	M. S	O. F
Pre test	655.8	651.467	651.66	B	179.51	2	89.75	0.21
				W	18175.46	42	432.74	
Post test	861.2	751.667	651.46	B	330128.31	2	165064.15	154.85
				W	44771.46	42	1065.98	
Adj.Post test	860.9416	751.805	651.58	B	326552.97	2	163276.48	150.03
				W	44619.07	41	1088.27	



**Figure 1:** Final mean difference of mean atrial pressure



**Figure 2:** Final mean difference of TSH



**Figure 3:** Final mean difference of testosterone

makes less TSH. So it concluded that when the Roasted Garlic With Moringa is having the potential effect to produce the right level of pituitary gland secretion so it will be full control on TSH [Table 3 and Figure 3].

## 7. DISCUSSION ON FINDINGS OF TESTOSTERONE

From these analyses, it is found that the results obtained from the Experimental Groups had significantly in

Testosterone level when compared with the one from the control group. This is due to the inclusion of Roasted Garlic With Moringa in the analyses on Experimental Groups. It is interesting to note that the results obtained the value of testosterone from Experimental Group I had greater increase from its lower level to maximal level than the Experimental Group II on the improvement of Testosterone.

This is due to prescription of the natural supplemented to boost the volume of testosterone in the Experimental Groups I. It is concluded that the experimental groups had greater improvement in volume of Testosterone in men, due to influence of Roasted Garlic with anulom viloma Practice.

## 8. RESULTS

Within the limitations of the study, the following conclusions were drawn: After incorporate statistical technique, it was found that a significant decrease Mean Atrial Pressure and increase Iron TSH and Testosterone in experimental group I (Roasted Garlic With Moringa), this change due to 8 weeks of Roasted Garlic With Moringa among sedentry Men.

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# Sports Pedagogy for Early Identifying the Good Sports Person and Guide the Player at School Level

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## ABSTRACT

The main aim of the study is to understand what is pedagogy and how it can be related to the sports and in what way it can be useful to improve the quality of players and coaching methods and techniques in all sports and games. How to identify the players potential and how to train the team to perform in the competition, and showing the right path to give the best in the game he/she would like to play, using few methods of pedagogy we can be able to motivate the team and players to give their best in the competition and improve their performance, their performance can be evaluated and can put the load to improve their performance, the basic qualities of the sports person at school level is agility, speed, endurance, flexibility, balance, good reflection or fast body movements, strength and speed with the use of pedagogy we would be able to improve the following components as this are the main factors or qualities to become the sports person. Playing sports helps children learn to control their emotions and channel negative feeling in a positive way. It also helps children to develop patience and understand that it can take a lot of practice to improve both their physical skills and what they do in school. Their energy can be channelized and can be used to make them the better player to represent the country.

## 1. INTRODUCTION

The word pedagogy is a derivative of the Greek (Paidagogos), paidagōgia from itself a synthesis of (ago), "I lead," and "child," hence "to lead a child." most commonly understood as the approach to teaching, is the theory and practice of learning, and how this process influences, and is influenced by, the social, political and psychological development of learners. Pedagogy, taken as an academic discipline, is the study of how knowledge and skills are imparted in an educational context, and it considers the interactions that take place during learning. Both the theory and practice of pedagogy vary greatly, as they reflect different social, political, and cultural contexts.

Pedagogy is often described as the act of teaching. The pedagogy adopted by teachers shapes their actions, judgments, and other teaching strategies by taking into consideration theories of learning, understandings of students and their needs, and the backgrounds and interests of individual students. It is a method of teaching and learning transaction in the class room.

The primary goals and objective of pedagogy are to promote students learning and enrich the overall system of education. They need to put into operation the methods strategies and approaches in a well-organized manner.

### 1.1. Sports Pedagogy

As a discipline sports pedagogy is concerned with learning, teaching, and instruction in sports, physical education, and physical activity. It is the academic field of study which is the intersection between sports and education. It is mostly regarded as a sub-discipline of sports science, In North America frequently referred to as kinesiology.

While research in sport pedagogy and research in the field of physical education continue to overlap, sport pedagogy is now seen to be the overarching academic discipline, informing learning, teaching, and instruction in a wide range of sport, physical activity, and exercise contexts. At the center of the inquiry is the pedagogical encounter between the teacher/coach/instructor and the learner/participant. In this, it is the purpose of sport pedagogy "to support the needs of learners in sport, and other forms

of physical activity, wherever and whenever they seek to learn through the life-course.” To achieve this end, sport pedagogy researchers should be encouraged to engage in inter-disciplinary work, in order to transcend the respective academic silos that sometimes exist between the distinct sub-disciplines in sport science. Sports pedagogy can help the player to understand the concept as it is the interactive mode of teaching and the demo is shown in such a way that it is easily understandable to player most of the pedagogy plans are experiential learning methods.

## 2. PURPOSE OF THE STUDY

Is to understand how sports pedagogy is useful for the player who is learning the basic at the school level and to train them and guide the in such a way that in near future they should be able to showcase their skill and knowledge on the game and bring fame to the country. As school is the grass root level where the students are more energetic and can be molded as a great player with their interest and commitment and even the trainer/physical educational trainer/coach plays a major role and they should have the strategies to implement for better training. The instructor should judge the player based on is physical fitness and components such as strength, endurance, flexibility, agility, balance, and speed with the help of that components the P E teacher/coach should guide the player in which game and what position is the suitable for, if not he will not be able to perform well with is wrong selection of game because of peer companion, his interest on sports may be decreases and the country will be losing the upcoming player.

## 3. METHODOLOGY

### 3.1. Student-Centered Method

This method is interactive, experiential learning where the coach is the facilitator, here everything is learned by experience. Coach will be only guiding them and the rest will be done by players. Player has to be given the chance to talk, with proper planning and method the training can be executed players have to be given a chance to talk and express their view and an opportunity to explore.

### 3.2. Teacher Centered Method

This method can also call a demo method where the coach will be explaining the rules and regulation, showing video analysis of the previous matches, showing the skill and how to execute it properly, teacher is the only person who is doing all the work.

For example:

1. The player with good endurance and strength has to be suggested to be long-distance running events so that he can give his best.
2. The player with good flexibility, speed, agility can be suggested to become a hockey goal keeper.

Note: You can only suggest when you observe them or battery test or in some cases, skin fold test will also be done.

## 4. RESULT

The result of doing this will help the school student not to lose confidence on him/her and will try to achieve the best if he is identified earlier by the coach or Physical Educational teacher most of the students have left playing the sports and games because of that reason which majorly happens at the school level. This major problem has to be rectified.

## 5. DISCUSSION

Not every player can represent the country but the one who can represent has to identify by the coach or physical education teacher at school level and proper training has to be given to the team or players to perform well at the competition. If one best player lose hope on himself then that is the drawback of poor planning and methodology.

## 6. CONCLUSION

Identify the qualities and fitness components of the player and the suggest and guide the player or student and give him the options in which he can perform and can give his best, planning has to be done perfectly so that the player has to be motivated to get the success.

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# Sports Injuries Seen in Basketball Players: Assessment of Injuries, Areas, and Types

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## ABSTRACT

The aim of this study is to investigate sports injuries seen in basketball players according to injuries areas, and types. A total of 50 basketball players (Male-25, Female-25) participated in the study. The age of the players was 16–23 years. A questionnaire was used to assess the disability of the athletes. The results were evaluated using frequency distribution and percentage distribution. The highest frequency of injury was seen in the foot-ankle ( $n = 17$ ), ( $n = 10$ ) in knee, and ( $n = 07$ ) in back regions. It is seen that the biggest ratio in injuries is sprain, strain, and muscle pain. It is found that a large portion of injuries occurs in the practice sessions. The most common injuries were observed in the foot, hat is, knee, ankle, and back regions. It can be said that sports scientists can organize training programmers according to the anatomical structures and physical characteristics of the athletes by taking care of good warm up exercises before starting the trainings and competitions and in this case they can minimize the risk of injuries and disabilities.

**Keywords:** Basketball, Disabilities, Sports injuries.

## 1. INTRODUCTION

Basketball was introduced in the year 1891, December in Massachusetts, USA. He designed a game to be played as indoor so that the players can keep themselves fit even during the winter season. It is a sport which is generally played with 5 players on each side. The aim of the game is to shoot the ball in the opponents' rim which is 10 m above the ground. The court measures 28 m in length and 15 m in width which is divided in two halves by the centerline called half court line. The teams choose their sides and their main motive is to prevent the opponents from making a basket and scoring points. Sports injuries have become more common now a days because of lack of knowledge about the importance of warm up. Sports injuries are injuries that occur when you are engaged in a sports activity. They can occur due to overtraining, lack of conditioning, and improper form of technique. Failing to warm up increases the risk of injuries. Bruises, sprains, strains, tears, and broken bones are the results of sports injuries. Poor training methods, structural abnormalities, weakness in muscles, tendons, ligaments all are the causes of injuries. In general, sports injuries are a common name

given to any kind of damage that occurs as a result of encountering resistance that cannot be met by tissues in whole or in part of the body. These damages can occur during daily sports activities as well as during training or competition. It is possible to divide sports disability into two groups as individual factors and environmental factors. These individual factors such as age, gender, joint restriction, anatomical problems, previous injuries, inadequate training and lack of flexibility, inequality of force distribution, overload and malnutrition, inadequate body preparation, inaccurate technique, and psychological (concentration) 40% of sports injuries. Environmental factors include sports ground and areas, equipment, heat, seasons, humidity, wind, climate management, competition management, wrong training technique, and misdirection of trainers. The type and regions of injury vary according to the physical structure and age of the athlete. For this condition, which affects the lives of athletes negatively, physicians and sports health professionals should know the type of disability and appropriate treatment method and apply a treatment plan accordingly. In line with this information, the aim of our study is to investigate the injury regions and types of basketball players.

## 2. METHODOLOGY

Fifty (25 female, 25 male) basketball players participated to the study voluntarily who play in national and university Teams. The age of players was 16–23 years. The Questionnaire was used for assessing the injuries of players which had been proven reliability and valid before. In the survey, nine body parts were divided into the neck, shoulder, elbow, wrist, back, waist, hip, thigh, knee, foot, and ankle. The questionnaire was filled in by personal interview method. The questionnaire questions the injuries experienced by the athlete in their previous years.

## 3. RESULTS

From the Table 1, it is clearly seen that most injuries occur in foot ankle then knee and then back. And through the questionnaire, it has also been observed that most injuries are due to strain, sprain, and muscle pain and which mostly occurred in practice sessions.

## 4. DISCUSSION

As the characteristics and likelihood of disability are not the same for all sports, it is true for all sports to know how the disability occurs, to prevent disability and to encourage other athletes to play fair. In general, too many injuries occur in the lower extremity in sports, respectively in the knee, ankle, and hip. The causes of these injuries are generally reported as muscle bruises, muscle tears, tendon and ligament tears, fractures, and dislocations in the bones. In our study, when the injured parts of the players were evaluated, the most injuries

were ( $n = 17$ ) ankle-foot, ( $n = 10$ ) knee, and ( $n = 07$ ) back parts. According to the total frequency of injuries, it is seen that the biggest ratio is strain, sprain, and muscle pain. Injuries occur in basketball were found during training. The most common injuries in the trainings are seen in the foot-ankle, knee, and back regions. Foot ankle and knee injuries are the most common causes of injuries. One-third of the injuries were seen in the lower extremity, especially in the knee and back. We found that ankle sprain is the most common injury and this injury is due to lack of sports shoes or strength. Kocaman *et al.* in their study that one of the most injured areas of the athletes was the back. In a study by Ergün *et al.*, while the majority of the injuries were seen in the lower extremities, thigh, hip/groin, and waist injuries were the most common localizations of injuries and the regions followed respectively as the ankle, knee, calf and neck, lower leg, chest, and foot. Hawkins and Fuller (19) found that 391 injuries during the competition were 37% injury, 21% sprains, 4% fractures, and 2% tissue ruptures. These injuries were determined to be in regions of 23% thigh, 15% knee, 12% leg, 7% foot, 6% trunk, 3% head, 2% upper extremity, and 3% hip. Acak *et al.* stated that the most injuries occur U-19 athletes had 55% in technical-tactical studies and 38.7% in condition exercises; U-21 athletes 53.4% in technical-tactical studies and 38.4% in fitness exercises. Taking necessary measures to reduce this ratio, they suggested that the training plans should be revised according to the existing athletes, field, and material opportunities. In this study, the upper extremity injury rate of the athletes is 28.6%. The ratio of lower extremity injury regions was 71.4%. Accordingly, when the lower extremity regions are examined, ankle injuries, 16% lower legs, 15.15% upper legs, and 15.2% knee injuries are prominent. As the main reason for the occurrence of these injuries; collision, loss of balance, air ball struggle, and uncontrolled intervention. In the study of Bayraktar *et al.* these were reported to have been injured as 78.8% of the athletes during the competition in the lower extremity, 21.2% other regions; 82.1% of the lower extremities during training 19.9% of the other region injuries. Şeker reported that 56.97% of the injuries occurred in training and 43.03% of the injuries occurred in matches. Similar to these studies, Häggglund reported that the injuries were 46% in the competition and 54% in training. Junge and Dvorak reported that the frequency of injuries of athletes mostly occurred in the lower extremity with 70%, followed by head and neck with 13%, and upper extremity with 10%. They reported that the most common areas of disability occur in the leg with 11%, ankle sprain with 10%, and

**Table 1:** Evaluation of the frequency of injuries in body parts

S. No	Body parts	n
1.	Neck	1
2.	Right Shoulder	2
3.	Left Shoulder	1
4.	Both shoulder	0
5.	Elbow	1
6.	Right-hand wrist	3
7.	Left-hand wrist	1
8.	Back	7
9.	Waist	2
10.	Hip-thigh	5
11.	Knee	10
12.	Ankle	17

inguinal pain with 8%. Hoff and Martin found that 24.3% of athletes should receive medical assistance after injury and in general 66.6% of injuries were caused by physical contact between players. In another study, it was found that the ankle was the most intensely injured area due to intense one-to-one contact with the competing athlete in the game. When all these studies are examined, it is seen that although the athletes are in different branches, it is similar to our study in terms of the high incidence of injury during training. In many studies, the ankle is the most common type of injury. Fong *et al.* The study examined 227 sports injuries. Seventy different sports from 38 countries were examined and it was found that the ankle was the most easily injured area. Studies have shown that the ankle is referred to be the most frequently injured place after the knee and sprains are the most common in the wrist. Kauzlaric reported 26% of athletes foot pain. In Maehlum's study, it was found that 24% of ankle sprains were the most common injuries. In another study, it was found that a large proportion of the injuries occurred in the lower extremities and occurred in the ankle region with a maximum rate of 35%. Tenvergert *et al.* reported that lower extremity injuries occur mostly in the ankle and foot region. In many countries; found that the majority of sports injuries occur in the fingers (50%) and the ankle (15%). In order to determine the causes of injuries, 543 male and 436 female students were found to have the most knee and ankle regions in which they encountered injury. Chomiak *et al.* reported that 29% of the injuries were in the knee region. It has been reported in their study that the highest probability of injury for the athletes were in the ankle and knee regions. Researches show that the type of sport involved (contact-contactless), the duration of the sporting activity, the role of the opponent and his teammates affect the injuries. In this study, it was observed that

the number of athletes applying to health centers was higher in branches where contact with competing athletes was higher. In this respect, we think that there is a similarity between the literature and our study.

## 5. CONCLUSION AND RECOMMENDATIONS

As a result, it was found that most of the Basketball players were injured from foot-ankle, knee, and back regions, the majority of these injuries and injuries occurred during training and they applied to health institutions about these issues. Sports Scientists are advised to organize their training programs according to the anatomical structure and physical characteristics of athletes by taking care of good warm-up exercises before starting the training and competitions, and it can be said that they can minimize disability. Strength training to strengthen the muscle structure to be performed in the regions where the most disability occurs in the basketball should take place as a separate part of the training. Trainers and players had better pay attention to the level of load during training, especially overloading these areas should be avoided. Injuries to the lower extremities are the most prevalent with foot and ankle problems being the worst offender. Whether it's rolling an ankle, getting awkwardly hit in a scramble for the ball, or accidentally getting stepped on, basketball naturally leaves athletes more open to these types of injuries.

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# Comparative Study of Self-confidence between Athletic Players and Hockey Female Players

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## ABSTRACT

The purpose of the present study was to comparative study of self-confidence between athletic players and hockey female players. Total 30 subjects were randomly selected (15 from athletic and 15 from hockey) from Karnataka state Akkamahadevi Women's University, Vijayapura, Karnataka was taken as a sample. The data were collected during inter-collegiate competition organized by Department of Studies in Physical Education and Sports Sciences, Karnataka. The age of subject ranged between 19 and 23 years. Self-confidence tests were used to measure the selected psychological variable of players. All the subjects were informed about aim and methodology of the study and they volunteered to participate in this study. "t" test independent was used to analysis the data, level of confidence was set at 0.05 level. Study concluded that insignificant difference found between the means of selected psychological variable such as self-confidence.

**Keywords:** Psychological Variable, Self-confidence, Athletic Players, Hockey, Female Players.

## 1. INTRODUCTION

Self-confidence person was defined as who perceived himself as socially competent emotionally capable successful, satisfied, divisive, optimistic, independent, self-assured, forward moving, fairly assertive, having leadership qualities, and as having positive and constructive self-feeling and evaluation, in general, self-confidence refers to "an individual's ability to and effectively in a situation to overcome abstracts and get thins to go all right." According to Symonds (1951)

Basavanna (1975), "In general terms, self-confidence refers to an individual's perceived ability to act effectively in a situation to overcome obstacles and to get things go all right."

"Athletics offer the greatest opportunity for character development of any activity the fundamental of character are gained though participation in sport under right leadership and a person who lacks these fundamentals may be sensitive, refined, and cultural but will lack the vital characters, qualities most needed and esteemed by the society." (Hussey, 1983)

Field hockey is an extraordinary team game played by millions of men, women, and youth in more than 118 countries and member associations worldwide. Whether you are a novice or an experienced field hockey player, you will appreciate the game more as you improve your skills and your understanding of strategy. The popularity of field hockey comes from the immense challenge the game demands for successful play Elizabeth (2008).

## 2. OBJECTIVE OF THE STUDY

Objective of the present study is to compare self-confidence between athletic players and hockey female players.

### 2.1. Hypothesis

Self-confidence of the hockey female players is better than athletics female players.

### 2.2. Samples

Total 30 subjects consisting of 15 hockey female players and 15 athlete female players were randomly selected for

the present study. All the players were the participants of Inter-Collegiate University tournaments organized by Karnataka state Akkamahadevi Women's University, Vijayapura, Karnataka (KSAWU).

### 2.3. Tools

For the present study, the questionnaire of self-confidence questionnaire developed by M. Basavanna is used.

In statistical analysis, descriptive and comparative both analyzes have been done successively. In descriptive analysis, we have measured mean and S.D. and in comparative analysis. For comparative analysis, we have used *t*-test.

### 2.4. Procedure

For the present study, from the given observational data on self-confidence of two groups. For the present study based on self-confidence, the collected the data by questionnaire method from different groups, where each groups were given proper meaning of each questions. Scoring has been done according to the method prescribed by the M. Basavanna.

### 2.5. Analysis of the Data

In the present study applied descriptive statistics for analyzing the data. In which the calculated mean, S.D., and comparative analysis (*t*-test) were done to analyze the data with the help of MS Excel 2007.

## 3. RESULTS AND DISCUSSION

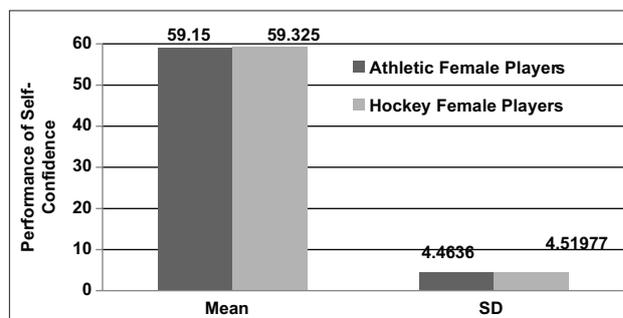
Table 1 indicates that a mean and standard deviation values with regard to athletic female players on self-confidence variable were 59.1500 and 4.46360 whereas in case with hockey female players the same were recorded as 59.3250 and 4.51977, respectively. There was no significant difference between athletic female players and hockey female players were found as the calculated *t*-value (1.78) was less than tabulated *t*-value (2.042) at 0.05 level. Graphically representation of above table is made in Figure 1.

Figure 1 indicates that self-confidence performance mean scores a different the graphs showing of comparison

**Table 1:** Statistical comparison of self-confidence between athletic female players and hockey female players

Group	Number	Mean	S.D	" <i>t</i> "
Athletic	15	59.1500	4.46360	1.78
Hockey	15	59.3250	4.51977	

\*Significance at 0.05 Tab value=2.042



**Figure 1:** Mean scores and standard deviation of self-confidence of athletic female players and hockey female players

of athletic female players and hockey female players with to self-confidence performance scores.

The mean self-confidence scores of athletic female players and hockey female players are 59.1500 and 59.3250, SD are 4.46360 and 4.51977, respectively. It means that the self-confidence performance of hockey female players is better than athletic female players.

## 4. CONCLUSION

A comparative study on self-confidence of hockey female players is better than the self-confidence of athletic female players.

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# Effect of Core Strength Training for the Development of Abdominal Strength among Kabaddi Players of Osmania University

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## ABSTRACT

The objective of this study is to study the effect of Core Strength training for the development of Abdominal Strength among kabaddi players of Osmania University which will be helpful to Coaches and Trainers to Enhance the Performance. The sample for the present study consists of experimental group I  $n = 20$  and controlled group II  $n = 20$  of Osmania University. Core strength training was given to the experimental group on alternate days for 8 weeks along with general training to control group. Pre-Test and Post-Test were conducted on Sit-Ups to assess the performance of both the groups. This study shows that the experimental group has got rapid improvement due to Core Strength training compare to control group. It is concluded that due to Core Strength training there is an improvement in Abdominal Strength.

**Keywords:** Abdominal strength, Core strength training, Sit ups.

## 1. INTRODUCTION

Kabaddi is a contact team sport played between two teams of seven players, the objective of the game is for a single player on offence, referred to as a “raider,” to run into the opposing team’s half of a court, touch out as many of their defenders as possible, and return to their own half of the court, all without being tackled by the defenders, and in a single breath. Points are scored for each player tagged by the raider, while the opposing team earns a point for stopping the raider. Players are taken out of the game if they are touched or tackled, but are brought back in for each point scored by their team from a tag or tackle. It is popular in the Indian subcontinent and other surrounding Asian countries. Although accounts of Kabaddi appear in the histories of ancient India, the game was popularised as a competitive sport in the 20<sup>th</sup> century. It is the national sport of Bangladesh. It is the state game of the Indian states of Andhra Pradesh, Bihar, Haryana, Karnataka, Kerala, Maharashtra, Odisha, Punjab, Telangana, and Uttar Pradesh.

Core stability refers to a person’s ability to stabilize their core. Stability, in this context, should be considered as an ability to control the position and movement of the core.

Thus, if a person has greater core stability, they have a greater level of control over the position and movement of this area of their body. The body’s core is frequently involved in aiding other movements of the body, such as the limbs, and it is considered that by improving core stability a person’s ability to perform these other movements may also be improved, that is., core stability training may help improve someone’s running ability. The body’s core region is sometimes referred to as the torso or the trunk, although there are some differences in the muscles identified as constituting them. The major muscles involved in core stability include the pelvic floor muscles, transversus abdominis, multifidus, internal and external obliques, rectus abdominis, erector spinae (Sacro spinalis), especially the longissimus thoracis, and the diaphragm. Notably, breathing, including the action of the diaphragm, can significantly influence the posture and movement of the core; this is especially apparent in regard to extreme ranges of inhalation and exhalation. On this basis, how a person is breathing may influence their ability to control their core.

Some researchers have argued that the generation of intra-abdominal pressure, caused by the activation of the core muscles and especially the transversus abdominis, may serve to lend support to the lumbar spine. One way

in which intra-abdominal pressure can be increased is by the adoption of a deeper breathing pattern. In this case, and as considered by Hans Lindgren, “The diaphragm. Performs its breathing function at a lower position to facilitate a higher IAP.” Thus, the adoption of a deeper breathing pattern may improve core stability. Typically, the core is associated with the body’s center of gravity (COG). In the “standard anatomical position” the COG is identified as being anterior to the second sacral vertebrae. However, the precise location of a person’s COG changes with every movement they make. Michael Yessis argues that it is the lumbar spine that is primarily responsible for posture and stability and thus provides the strength and stability required for dynamic sports.

Dr. S. Sivamani, Dr. S. Thirumalai Kumar, Dr. S. Manikandan, and Dr. A. Manoj Kuma (2019) Study was Core Stability Training On Muscular Endurance Among Novice Badminton Player Core stability training is a structure of training to increase an endurance and neuromuscular control. Its role is to improve the fitness level of strengthening body core muscles as well as core stability training on muscular endurance among novice badminton players. The current research report was to discover Core-stability training on Muscular Endurance among novice badminton players. Thirty badminton men players were selected from Adukalam Badminton Academic, Pondicherry, and the participant level age categories in between 17 and 22 years. The total numbers of participants 30 numbers were categorized into two groups and were erratically assigned as Experimental and Control group. The Experimental group undergone Muscular-endurance training program and Control group does not “r” involve any sort of training program. Muscular endurance was assessed by push-ups. The data were collected the fore and after 8 weeks of training program. Further, this result reveals there is no significance were found and increased in the core stability Muscular endurance was analysis for the control group in the present study. Index Terms: Badminton, Core stability training, Fatigue, Injury prevention, Muscular Endurance, Novice, and Skeletal structure.

### 1.1. Objective of the Study

The objective of the study is to find out the effect of Core Strength Training for the development of abdominal strength among Kabaddi players of Osmania University.

### 1.2. Hypothesis

It was hypothesized that there would be a significant difference in Core Strength Training for the development

of abdominal strength among Kabaddi players of Osmania University.

## 2. METHODS

$n = 40$  at the top Middle-distance runners between the ages of 19 and 22 were chosen at random and divided into two groups: Experimental group I  $n = 20$  (Core Strength Training) and Controlled group II  $n = 20$  (General Training). The criteria for selection were based on their achievements at various levels such as state, inter-university, and national levels. Explained the training schedule and training plan with subjects before the session started.

### 2.1. Tools

Sit Ups.

### 2.2 Purpose of the Test

To measure Core strength.

## 3. RESULTS AND DISCUSSION

The experimental group and the Controlled group were given pre-and post-tests to see if there was an improvement in Core Strength after 8 weeks of Circuit training, whilst the Controlled group received general training.

### Paired samples statistics (t-test)

Sit ups Wrestlers' players	Mean	n	Std. Deviation	Std. Error Mean
Control Group				
Pre-Test	32.4500	20	0.97198	0.21730
Post Test	32.7500	20	0.98006	0.21910
Experimental Group				
Pre-test	32.8750	20	1.02437	0.22904
Post-test	36.4000	20	1.48324	0.33160

The analysis of the data reveals that the subjects with the Core strength Training have shown improvement in the performance of Sit Ups test from pre to post-test Mean S. D Experimental group pre-test result shown (32.8750) and Controlled group (32.4500) after 8 weeks of Specific of Core Strength Training there is Improvement in the subject’s Experimental Group (36.4000) Core strength Training, and Controlled group (32.7500).

#### 4. CONCLUSIONS

It was concluded that after the 8 weeks of Core strength Training, there is improvement in the Experiment Group, as it was analyzed in the results mention that the core strength Training has shown excellent effect in the improvement Core Strength. The aim of formulating the effect of Core strength Training to the betterment and enhance their performance as well as a guideline for Kabaddi coaches at various levels in preparing and designing quality and effective training program.

#### 5. RECOMMENDATIONS

The following suggestions are made for the benefit of players, coach's academicians, and sports scientists. The researcher suggests the part of the coach to use the above-said development of the Core Strength Training program for Kabaddi players. The study helps the physical educationist and coaches for selecting the athletes.

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# Isolated and Combined Effect of Yoga and Endurance Exercise on Dribbling Skill among Football Players

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## ABSTRACT

The purpose of the study was to find out the combined effect of Yoga and Endurance exercises on performance-related parameter among inter-collegiate football players. To achieve the purpose of the study, forty-five ( $n = 45$ ) men inter-collegiate Football players studying in various Engineering Colleges in Rayalaseema Region, affiliated to Jawaharlal Nehru Technological University Anantapur, Andhra Pradesh state, India during the academic year 2019–2020 were selected randomly as subjects and their ages ranged between 18 and 21 years. The subjects were randomly divided into three groups of fifteen each, namely yoga training ( $n = 15$ ), endurance exercise ( $n = 15$ ), and combined Yoga and endurance exercise ( $n = 15$ ) respectively. The training period was limited to 6 weeks. The criterion variable selected for this study was football dribbling skills. The selected parameter was assessed using selected testing protocol before and immediately after the training period. The analysis of covariance was used to analyze the significant differences, if any, among the groups. Since three groups were compared, whenever the obtained 'F' ratio for adjusted post-test was found to be significant, the Scheffe's test was used to find out the paired mean differences, if any. The 0.05 level of confidence was fixed as the level of significance to test the "F" ratio obtained by the analysis of covariance, which was considered appropriate.

**Keywords:** Rayalaseema region, Engineering students, Endurance, Yoga training, Dribbling, "F" ratio.

## 1. INTRODUCTION

*"Enjoy the game and chase the dreams. Dreams do come true."*

*-Sachin Tendulkar*

Yoga is an excellent method of enhancing the performance of sports participants. Salient feature of yoga is the combination of both physical conditioning and focused concentration. One of the most essential elements for athletic performance is balance. Physical fitness is a must for any good performance in sports. Different sports require different types of fitness emphasizing a particular fitness factor. However, general level of physical fitness is necessary for every sportsman. The law of use and disuse suggests that if you want to be fit you must exercise. The routine of exercise differs from individual to individual according to purpose. Sportsmen also select different routines of participation. This can be attained excellently by indulging in Yogic routine.

Yogic exercises deal with the vital organs of the body on which health depends. The precursor of physical fitness lies in the efficient working of the vital organs of the body and Yoga aims at it. The various selected Asanas giving different movements to the spine, controlled respiration, relaxation technique, and concentration practice as a whole form an excellent routine to taking care of the health of the vital organs of the body.

This is vital for the sportsperson who otherwise develops the muscular system but puts too much stress and strain on the other systems leading to failure sooner than later. In Yoga, all possible body positions are explored and the body is exercised standing, sitting, lay-down (front, side, and back). This creates an acute awareness of the entire body, strengthens the body systems, and develops flexibility of the body that is not present in most sportspersons. Excellent performance in any sport is governed by several factors of physical fitness.

Endurance exercise is the act of exercising to increase stamina and Endurance. The term "Endurance exercise"

generally refers to training the aerobic system as opposed to Anaerobic. The need for endurance in sports is often predicated as the need for cardiovascular and simple muscular endurance, but the issue of endurance is far more complex. Endurance can be divided into two categories: General endurance and specific endurance. It can be shown that endurance in sport is closely tied to the execution of skill and techniques. A well-conditioned Athlete can be defined as the Athlete who executes his or her technique consistently and effectively with the least effort (Yessis, 2008).

The increased ability to perform is mainly accomplished through an increase in maximal oxygen uptake ( $Vo_{2max}$ ) and an increased ability of the skeletal muscle to generate energy via oxidative metabolism without improvements in muscle strength. Strength training, which represents the other extreme of physical activity, encompasses short-duration activity at high or maximal exercise intensities, increases the capacity to perform high-intensity, high resistance exercise of a single or relatively few repetitions such as Olympic weightlifting, powerlifting, and throwing events in track and field. Improved strength-related performance is accomplished through neuromuscular learning and increased fiber-recruitment synchronicity, muscle cell hypertrophy, and, possibly, hyperplasia without changes in  $Vo_{2max}$  or in the capacity to generate ATP via Oxidative Metabolism (Fletcher *et al.*, 2001).

## 2. MATERIALS AND TOOLS

To achieve the purpose of the study, forty-five ( $n = 45$ ) men football players studying in various Engineering Colleges in Rayalaseema Region (Zone-IV), Andhra Pradesh State, India during the academic year 2019–20 were selected randomly as subjects and their ages ranged between 18 and 21 years. The subjects were randomly divided into three groups of fifteen each, namely, Yoga training ( $n = 15$ ), endurance exercise ( $n = 15$ ), and combined Yoga and Endurance exercise ( $n = 15$ ), respectively.

## 3. RESULTS

The analysis of covariance on dribbling of the pre, post, and adjusted test scores of Yoga training, endurance exercise, and combined Yoga and Endurance exercise group have been analyzed and presented in Table 1.

Table value for df (2, 42) at 0.05 level = 3.22 Table value for df (2, 41) at 0.05 level = 3.23

The above table shows that the pre-test mean and standard deviation values on dribbling of experimental groups “A,” “B” and “C” group were 18.88, 18.90 and 18.90 and  $\pm 0.32$ ,  $\pm 0.03$  and  $\pm 0.30$  respectively. The obtained “F” ratio of 0.03 for pre-test scores was lesser than the table value of 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on dribbling.

The post-test mean and standard deviation values on dribbling of experimental groups “A,” “B” and “C” group were 18.58, 18.50 and 18.30 and  $\pm 0.30$ ,  $\pm 0.28$ , and  $\pm 0.29$  respectively. The obtained “F” ratio of 3.63 for post-test scores was greater than the table value of 3.22 for degrees of freedom 2 and 42 required for significance at 0.05 level of confidence on dribbling.

The adjusted post-test means on dribbling of experimental groups “A,” “B” and “C” group were 18.59, 18.50, and 18.29, respectively. The obtained “F” ratio of 388.36 for adjusted post-test mean was greater than the table value of 3.23 for degrees of freedom 2 and 41 required for significance at 0.05 level of confidence on dribbling.

The results of the study indicated that there was a significant difference between the adjusted post-test means of Yoga training, endurance exercise, and combined Yoga and Endurance exercise group on dribbling.

Since three groups were compared, whenever the obtained “F” ratio for adjusted post-test was found to be significant, the Schiff’s test was used to find out the paired mean difference and it is presented in Table 2

The above table shows that the mean difference values of experimental group “A” and experimental group “B,” experimental group “A” and experimental group “C” group and experimental group “B” and experimental group “C” were 0.09, 0.30 and 0.21 respectively, which were greater than the confidence interval value of 0.03 on dribbling at 0.05 level of confidence. The results of the study showed that there was a significant difference between experimental group ‘A’ and experimental group ‘B’, experimental group “A” and experimental group “C” group and experimental group “B” and experimental group “C”. The above data also reveal that combined yoga and endurance exercise group had better dribbling scores.

The above data also reveal that the combined yoga and endurance exercise group were better than the Yoga group and the Endurance exercise group on dribbling.

**Table 1: Analysis of covariance of the data on dribbling of pre, post, and adjusted scores of experimental groups (In Seconds)**

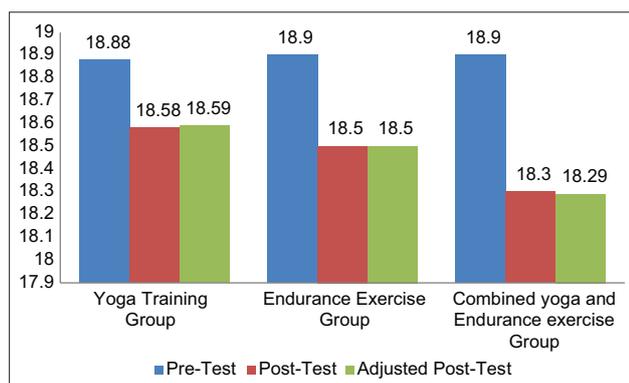
Test	Yoga Training Group (Group-I) Expt. Group 'A'	Endurance Exercise Group (Group-II) Expt. Group 'B'	Combined Yoga and Endurance Exercise Group (Group-III) Expt. Group 'C'	Source of variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-test SD ( $\pm$ )	18.88 $\pm$ 0.32	18.90 $\pm$ 0.03	18.90 $\pm$ 0.30	Between Groups	0.005	2	0.002	0.03
				Within Groups	3.94	42	0.09	
Post-test SD ( $\pm$ )	18.58 $\pm$ 0.30	18.50 $\pm$ 0.28	18.30 $\pm$ 0.29	Between Groups	0.61	2	0.31	3.63*
				Within Groups	3.55	42	0.08	
Adjusted post-test	18.59	18.50	18.29	Between Sets	0.71	2	0.35	388.36*
				Within Sets	0.04	41	0.001	

\*Significant at 0.05 level of confidence

**Table 2: Scheffe's test for the difference between paired means on dribbling**

Yoga training group (Group-I) Expt. Group "A"	Endurance exercise (Group-II) Expt. Group "B"	Combined yoga and endurance exercise group (Group-III) Expt. Group "C"	Mean Difference	Confident interval value
18.59	18.50	---	0.09*	0.03
18.59	---	18.29	0.30*	
---	18.50	18.29	0.21*	

\*Significant at 0.05 level of confidence



**Figure 1:** The pre, post, and adjusted mean values of yoga training, endurance exercise, and combined yoga and endurance exercise group on dribbling

The pre, post, and adjusted mean values of Yoga training, endurance exercise, and combined Yoga and Endurance exercise group on dribbling are graphically represented in Figure 1.

#### 4. CONCLUSIONS

From the analysis of the data, the following conclusions were drawn.

1. There was a significant difference among Yoga training, Endurance exercise, and combined Yoga and Endurance exercise on selected Football performance parameters as dribbling among intercollegiate Football players.
2. The significant improvements were noticed on selected Football performance parameters such as dribbling, passing, and shooting due to yoga training, endurance exercise, and combined Yoga and Endurance exercise.
3. Among the experimental groups, combined Yoga and endurance exercise group had shown significant improvement on the selected dependent variable, namely, Football dribbling, then that of Yoga training and Endurance exercise groups.

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# Combined Effect of Swiss Ball and Aerobic Exercise Training for the Development of Flexibility and Agility among Interscholastic Girls

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## ABSTRACT

The purpose of the study was to investigate the combined Effect of Swiss ball and aerobic exercise training for the development of flexibility and Agility among interscholastic girls. To achieve the purpose of the study the researcher randomly selected 30 intercollegiate girls and their age ranged between 11 and 14 years age. The criterion variables selected for this study were sit and reach test for flexibility and shuttle run test for agility, pre-test was conducted before starting the training, and post-test was conducted after 6-weeks of respected training. In order to find out the effect of training on the dependent variables paired sample *t*-test was used. The level of confidence was fixed at 0.05 levels. According to the result it can be concluded that 6 weeks of combined Swiss ball and aerobic exercise training significantly increases flexibility and agility in interscholastic girls.

**Key words:** Swiss ball, Aerobic exercise, Flexibility, Agility and *t*-test

## 1. INTRODUCTION

The Swiss ball, otherwise called an activity ball or a rec center ball, is a preparation help pointed basically at the extending and fortifying of the stomach, crotch, lumbar (lower) back, and upper leg muscles of the body. The improvement of these designs is regularly alluded to as the structure and keeping up with center strength, a significant settling highlight in any game.

The Swiss ball allows a scope of activities that depend on the capacity of the client to move with the movement of the ball while playing out the activity, utilizing the ball to both help the body during the development just as to give a proportion of protection from the muscles utilized in the development. The exemplary Swiss ball practices include the abs, with relating reactions from the crotch and the stabilizers of the lower back, the angled muscles that run corresponding to the spine over the pelvis. The competitor, situated on top of the Swiss ball, can take the abs through a total scope of movement through the presentation of crunches (a movement that brings of the upper thighs and the sternum [breastbone]

toward each other, to fortify the abs); turning crunches, where the chest area turns in inverse ways during the mash to broaden the solid impact across the midsection; and the flexion of the thoracic spine, the vertebrae of the mid-back to work on in general adaptability.

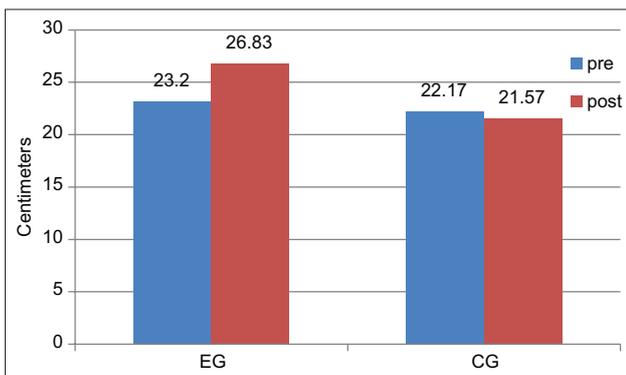
A program of regular aerobic exercise can help you avoid serious health problems, such as heart disease, hypertension, stroke, diabetes, and some cancers. It can also lower blood pressure, build stronger bones, improve muscle strength, endurance and flexibility, and improve your balance and reduce the risk of falling.

## 2. METHODOLOGY

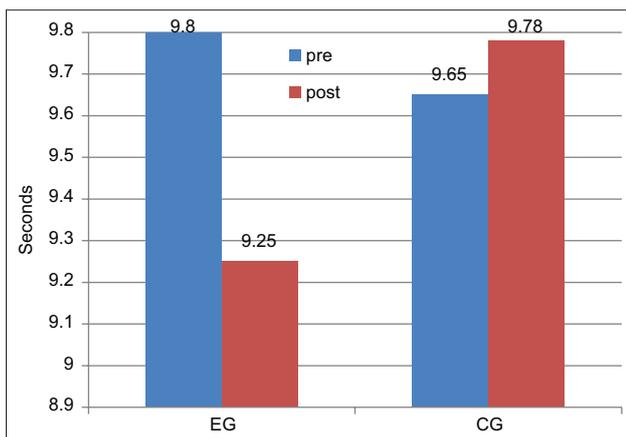
The purpose of the study was to investigate the combined effect of 6-Weeks swiss ball and aerobic training for the development on selected variables (flexibility and agility) among the intercollegiate girls, ZPHS Girls High School, Nagarkurnool District, Telangana. To achieve the purpose of the study the investigator randomly selected 30 intercollegiate girls and their ages ranged between 11 and 14 years age. The criterion

variables selected for this study was sit and reach test for flexibility and shuttle run test for Agility, pre-test was conducted before starting the training and post-test was conducted after 6-weeks of respected training. In order to find out the effect of training on the dependent variables paired sample *t*-test was used. The level of confidence was fixed at 0.05 levels.

Table shows the variation of Mean, Standard Deviation, and *t* value of inter interscholastic girls.



**Figure 1:** Bar diagram showing the mean difference between pre-test and post-test of the interscholastic girls on flexibility



**Figure 2:** Bar diagram showing the mean difference between pre-test and post-test of the interscholastic girls on agility

1. The above table reveals that the pre-test mean of flexibility in experimental group for interscholastic girls was 23.20 with the standard deviation of 1.78 and post-test mean was 26.83 with the standard deviation of 2.08. The obtained *t*-ratio 6.96 was found to be greater than the required table value of 2.05 at 0.05 level of confidence for 29 degrees of freedom. This indicates that there was a significant difference on the flexibility of experimental group between the pre and post-test of interscholastic girls, but the mean and standard deviation of control group from pre-test to post-test there was no significant improvement occurred, this indicates to compare the control group the experimental group shown significant improvement.
2. The above table reveals that the pre-test mean of agility in the experimental group for interscholastic girls was 9.80 with the standard deviation of 0.32 and post-test mean was 9.25 with the standard deviation of 0.24. The obtained *t*-ratio 8.67 was found to be greater than the required table value of 2.05 at 0.05 level of confidence for 29 degrees of freedom. This indicates that there was significant difference on agility of experimental group between the pre and post-test of interscholastic girls, but the mean and standard deviation of control group from pre-test to post-test there were no significant improvement occurred, this indicates to compare the control group the experimental group showed significant improvement.

### 3. RESULTS AND CONCLUSION

From the present study, it is evident that the 6 weeks of training has significantly improved the flexibility and agility. Hence, on the basis of the statistical findings, it may be concluded that there is a significant improvement on the parameters (i.e. flexibility and agility) after Six weeks of combined effects of Swiss ball and aerobic training on the selected interscholastic girls. Hence, these training methods are recommended to all school-level players and coaches for improving flexibility and agility performances.

S. No	Parameters	n	Groups	Pre-test		Post-test		t ratio	Sig.
				Mean	SD	Mean	SD		
1.	Flexibility	30	EG	23.20	1.78	26.83	2.08	6.96	0.000
			CG	22.17	2.15	21.57	2.37	1.39	0.186
2.	Agility	30	EG	9.80	0.32	9.25	0.24	8.67	0.000
			CG	9.65	0.23	9.78	0.37	1.34	0.201

SD: Standard deviation, Level of significance  $P < 0.05$

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# A Study on Psychological Stress between Kho-Kho and Kabaddi Players of Hyderabad

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## ABSTRACT

The present study was conducted to investigate the possible differences of a stress level among kho-kho and kabaddi players. The sample comprised of 48 (24 kho-kho and 24 kabaddi) state and national level players between 19 and 25 years of age. The research tool used for the study was perceived stress questionnaire (PSQ) to measure the stress level of the players who participate in the competitive sport. The result indicated that the stress level of kho-kho was high than kabaddi players in the PSQ score. Statistically no significant expectations were found on stress levels between kho-kho and kabaddi players.

## 1. INTRODUCTION

Stress is the body's natural defense against predators and danger. It flushes the body with hormones to prepare systems to evade or confront danger. This is known as the "fight-or-flight" mechanism. When we are faced with a challenge, part of our response is physical. The body activates resources to protect us by preparing us either to stay and fight or to get away as fast as possible. The body produces larger quantities of the chemicals cortisol, adrenaline, and noradrenaline. These trigger an increased heart rate, heightened muscle preparedness, sweating, and alertness. All these factors improve the ability to respond to a hazardous or challenging situation. Factors of the environment that trigger this reaction are called stressors.

Stress is one of the psychological parameters which can be said to be a constant companion of sports, most athletes are the amateur or professional feel some form of stress before any competition, most times, the main source of stress may be fear of not winning. Once event stress can be seen as a sort of block for peak performance for athletes.

The present research attempts to determine the level of competitive sports stress between the kho-kho and kabaddi players of Government College of Physical Education, Hyderabad.

## 2. METHODOLOGY

### 2.1. Selection of Subjects

For this study, 48 respondents selected from Government College of Physical Education, Domalguda, Hyderabad who have participated in state and national level in kabaddi (24) and kho-kho (24).

### 2.2. Selection of Variable

The instrument used in obtaining data of each player's stress level was the questionnaire of perceived stress questionnaire (PSQ). The PSQ consists of 30 questions. The questions were in the form of statements that the subject used to describe themselves.

### 2.3. Research Design

Before administering the test, the procedure of the questionnaire and the purpose of the test were briefly explained to all the subjects for better understanding and to increase the motivation level. PSQ had 30 items out of which eight were positive questions. The subjects were instructed to respond to each item according to how they generally felt at the time of competition.

### 2.4. Scoring

Respondents indicate on a scale from 1 ("almost never") to 4 ("usually") how frequently they experience certain

stress-related feelings. Higher scores indicate greater levels of stress. A total score is found by tallying each item (questions 1, 7, 10, 13, 17, 21, 25, and 29 are positive and are scored according to the directions accompanying the scale). A PSQ index can be found by subtracting 30 from the raw score and dividing the result by 90, yielding a score between 0 and 1.

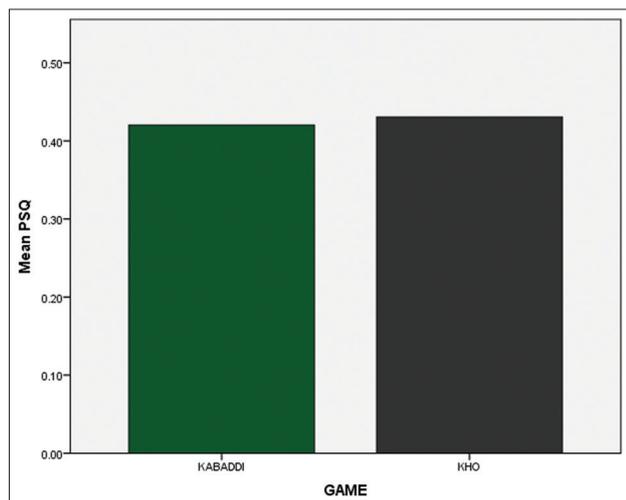
### 2.5. Statistical Analysis

For the purpose of analysis of data, descriptive statistics mean, standard deviation, and Chi-square were applied to evaluate the relationship of competition stress on kho-kho and kabaddi players. The level of significance was set at 0.05. Findings and results the mean score of stress level of kho-kho and kabaddi players under study are given in Table 1.

**Table 1:** Comparison of PSQ scores between kabaddi and kho-kho players

	Perceived stress questionnaire		$\chi^2$	Sig
	Kabaddi	Kho-kho		
Mean	0.41	0.43	23.76	0.419
SD	0.07	0.12		

SD: Standard deviation



**Graph 1:** Comparison of stress levels between kabaddi and kho-kho players.

Table 1 shows the scores of PSQ mean values between kabaddi and kho-kho players. The PSQ mean score was high in kho-kho players than kabaddi players. The kho-kho players have more stress level than kabaddi players. The statistical results of Pearson Chi-square  $\chi^2 = 23.76$  and  $P$ -value 0.419. The findings of study state that there was no significant relationship between kabaddi and kho-kho players on stress.

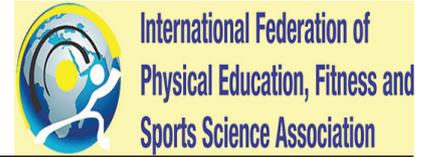
Graph shows the stress level of kabaddi and kho-kho players. The green color bar indicates the kabaddi and black color bar indicates the kho-kho players. Graph shows that the PSQ value is high in kho-kho than kabaddi players. It means that the kho-kho players have more stress level than kabaddi players.

### 3. CONCLUSIONS

It is generally defined as negative emotion characterized by feelings of apprehension and tension. Hence, the results of this study stated that there was no significant relationship found between female and male players of kabaddi as well as kho-kho players. Stress has been central concept for sports psychology. Based on this concept, the reason would be players of kho-kho that has more psychological stress due to the shortest time game as well as speed plays a key role than kabaddi where emotions play a prime role.

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# Comparison of Explosive Power among Taekwondo Players and Kick Boxers of the Hyderabad District in India

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## ABSTRACT

Participation in sports will yield optimum physical fitness and positive health for all. In the hurry scenario of modern life, people need more exercise to keep their body and mind fit to execute the day-to-day activities effectively. The purpose of the study is to find out the explosive power among taekwondo players and kick boxers of the Hyderabad District in India. The study was formulated based on the simple random sampling. The samples were collected from the 20 taekwondo players and 20 kick boxers of the Hyderabad District in the age group of 18–20 years. Hence, the taekwondo players are having good explosive power compare to kick boxers. Explosive power is more important in combat sports.

**Keywords:** Explosive power, Taekwondo, Kick boxers etc.

## 1. INTRODUCTION

“Sports” is a popular spectacle and a mass social movement of contemporary times. In the process of historical development, sports has occupied a prominent place both in the moral culture of a society. Its social significance continues to soar. In the modern days, “sports for all” become a very popular slogan. Participation in sports will yield optimum physical fitness and positive health for all. In the hurry scenario of modern life, people need more exercise to keep their body and mind fit to execute the day-to-day activities effectively. Human being is an active creature. He possesses capacities for movement. He has all the necessary neuromuscular mechanisms that make movement possible and encourage gross motor activity of the entire being. Without this basis there is not life physiologically, while man is alive, he must move in some way.

### 1.1. Explosive Power Exercises

Standard explosive exercises use large muscles movements such as squats, power cleans, weighted or unweighted vertical jumps, heavy ball throws, or even hill sprinting. Smaller muscle exercises such as bench

presses or push-ups can also be used to build power, but will limit the overall results to those muscle groups.

Exercises that help build power include:

- Plyometrics
- Squats
- Weighted/Dynamic Step Ups
- Overhead Walking Lunges
- Sprints
- Agility drills Stair Running.

Liu, J, Liu, X, and Zhang, Q (2020) studied a new training method for leg explosive power in taekwondo and its data-driven predictive models.

Mahmut Alp1 and Bahar Gorur (2019) studied comparison of explosive strength and anaerobic power performance of taekwondo and karate athletes.

### 1.2. Significance of the Study

The purpose of the study is to find out whether or not any significant difference found on selected physical fitness variables, that is, explosive power among taekwondo players and kick boxers of the Hyderabad District in India.

**Table 1:** The sample of the study

S. No.	Name of the category	Number of subjects
1.	Taekwondo players	20
2.	Kick boxers	20
	Total players	40

**Table 2:** The mean values and independent samples test of standing broad jump between taekwondo players and kick boxers

Variables	Group	Mean±SD	t	P-value
Standing broad jump	Taekwondo players	2.32±0.157	3.55	0.001
	Kick boxers	2.28±0.159		

\*Significant at 0.05 level

### 1.3. Purpose of the Study

The purpose of the study is to find out the explosive power among taekwondo players and kick boxers of the Hyderabad District in India.

## 2. METHODOLOGY

### 2.1. Sample of the Study

The study was formulated based on the simple random sampling. The samples were collected from the 20 taekwondo players and 20 kick boxers of the Hyderabad District in the age group of 18–20 years [Table 1].

### 2.2. Standing Broad Jump

The standing long jump, also called the broad jump, is a common and easy to administer test of explosive leg power.

- Purpose: To measure the explosive power of the legs
- Equipment Required: Tape measure to measure distance jumped, non-slip floor for takeoff, and soft landing area preferred. Commercial Long Jump Landing Mats are also available. The take-off line should be clearly marked.
- Procedure: The athlete stands behind a line marked on the ground with feet slightly apart. A two foot take-off and landing are used, with swinging of the arms and bending of the knees to provide

forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backwards. Three attempts are allowed.

## 3. RESULT AND DISCUSSION

In Table 2, the mean values of taekwondo players in standing broad jump are 2.32 and kick boxers are 2.28. Hence, the taekwondo players are having good explosive power compare to kick Boxers. Explosive power is more important in combat sports.

## 4. CONCLUSIONS

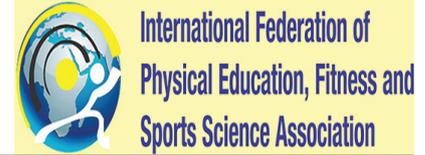
Kicking is the major way to score in a taekwondo competition which makes athletes leg power a key quality. The explosive power is important among taekwondo and kick boxing to performance better. The taekwondo players are having good explosive power compare to kick boxers. Explosive power is more important in combat sports.

## 5. RECOMMENDATIONS

Similar studies can be conducted among females and in other sports and games. This study is useful to the coaches to prepare the conditioning program to improve their skills in combat sports.

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# Effect of Fartlek Training and Weight Training for development of Endurance among long-Distance Runners of Hyderabad District

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## ABSTRACT

The purpose of the study is to find the endurance among long-distance runners of Hyderabad District. The study is delimited to the male long-distance runners of Hyderabad district those who are participated in the cross country races, road races, and other long-distance events. The subject belongs to 18–20 years of age group. The three equivalent groups of ten members as two experimental groups, that is, Fartlek training group ( $n = 10$ ) and weight training group ( $n = 10$ ) and a control group ( $n = 10$ ). The training is given 3 days a week on alternate for 6 weeks by Fartlek training method and weight training method and control group were not involved in any special training. In 12 Min, cooper test is conducted to assess the endurance. In 12 Min, run cooper test the interval training group has performed better than weight training group and control group and improved in endurance.

**Key words:** Endurance, Interval training, Weight Training, etc.

## 1. INTRODUCTION

Fartlek, which means “speed play” in Swedish, is a training method that blends continuous training with interval training. Fartlek runs are a very simple form of a long-distance run. Fartlek training “is simply defined as periods of fast running intermixed with periods of slower running.” For some people, this could be a mix of jogging and sprinting, but for beginners it could be walking with jogging sections added in when possible. A simple example of what a runner would do during a fartlek run is “sprint all out from one light pole to the next, jog to the corner, give a medium effort for a couple of blocks, jog between four light poles and sprint to a stop sign, and so on, for a set total time or distance.” The variable intensity and continuous nature of the exercise places stress on both the aerobic and anaerobic systems.

It differs from traditional interval training in that it is unstructured; intensity and/or speed varies, as the athlete wishes. Fartlek training is generally associated with running, but can include almost any kind of exercise. Fartlek running involves varying your pace throughout your run, alternating between fast segments and slow jogs. Unlike traditional interval training that involves specific timed or measured segments, Fartleks are more unstructured. Work-rest intervals can be based on how the body feels.

Prof. Rajesh Kumar (2018) studied about the effect of hill training for development of aerobic fitness among middle and long-distance runners of Hyderabad District in India. The sample for the study consists of 45 middle and long-distance runners between the age group of 18–20 years those who have participated in

many middle and long-distance events for past 3 years. The selected subjects were randomly divided into three equal groups of 15 each. Group I is experimental hill training group, Group II is experimental Fartlek training group, and Group III is control group. The experimental groups were given training alternate days for 12 weeks in addition to their normal practice on other days. The control group was given routine training. The data were collected in pre-test and post-test for all groups using the 12 min run cooper test. The collected data were analyzed statistically using ANCOVA. The results of the study shows that due to hill training and Fartlek training that there is a significant development of aerobic fitness among experimental groups.

Pradeep Kumar (2015) studied the effect of Fartlek training for developing endurance ability among athletes. Thirty athletes between the age group of 18–24 years (15 experimental group and 15 control group) were selected for the study. The 6 weeks endurance training program for experimental group were specific to experimental group which contains more sand training on alternate days and controlled group was given general training of athletics. The pre-test and post-test were proficient through cooper test for both group to estimation the effects of sand running. This study explains that the sand training has increased the endurance between the experimental groups along with physiological capacity of the athletes. It is optional that sand training is fine for the endurance development of athletes.

## 2. METHODOLOGY

The study is confined to 30 men long-distance runners those who are attending the Athletics Coaching Camps at Nizam College, Osmania University Grounds, Forest College and others grounds of Hyderabad District. The study is delimited to the male long-distance runners of students studying in Degree College of Osmania University participated in the cross country races, road races, and other long-distance events. The subject belongs to 18–20 years of age group.

The three equivalent groups of ten members as two experimental groups, that is, Fartlek training group ( $n = 10$ ) and weight training group ( $n = 10$ ) and a control group ( $n = 10$ ) passing through for 6 weeks furthermore 3 days out of every week interval training of ten members given training on weekly 3 days, that is, Monday, Wednesday, and Friday at Nizam College Grounds for 6 weeks. Weight training group of ten members given training on weekly 3 days, that is,

**Table 1:** Comparison of statistical results among all groups of long-distance runners of Osmania university in 12 min run, that is, cooper test

Name of the Group	Statistical tool	Cooper 12 min run		M.I
		Pre test	Post test	
Interval training group	Mean	2390.83	2670.5	11.98
	SD	100.85	107.28	
Weight training group	Mean	2365	2518.3	6.48
	SD	88.94	78.44	
Control group	Mean	2348.33	2293.33	-2.34
	SD	883.86	86.07	

Tuesday, Thursday, and Saturday at Gachibowli stadium for 6 weeks. Control group of ten members were given general training of Athletics at Nizam College Grounds.

## 3. RESULTS AND DISCUSSION

It shows the pre-test mean 12 min run cooper test of interval training group is 2390.83, weight training 2365.00, and control group is 2348.33 and post-test mean 12 min run test of interval training group is 2670.50, weight training 2518.30, and control group is 2293.33. In 12 Min run cooper test, there is a significant difference between the interval training group than weight training group and control group.

## 4. RECOMMENDATIONS

The following suggestions are made for the benefit of players, coach's academicians, and sports scientists. The researcher makes a suggestion on the part of the coach to use the above said development of weight training and Fartlek training programs for long-distance runners. The study helps the physical educationist and coaches for selecting the athletes.

Fartlek training results in the calf muscles learning to pact more quickly and thereby generating work at a higher rate, they become more controlling. The calf muscles get this by recruiting more muscle fibers, around two or three times as many when evaluated to running on the flat. Sand running is recommended for endurance athletes more in off season and less in season.

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# Nutritional Strategies for Ultra-Endurance Recreational Runners

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## ABSTRACT

People are involved in different types of physical exercises and sports for the functional benefit of health physical exercises in the form of running, cycling, swimming, etc., are preferred by both men and women. Especially women working in software companies usually prefer to go for cycling or marathon runs that are conducted by different organizations. These women are recreational runners. They are not professionally trained or monitored. They follow the internet or they may be self-coached or they may take the help of some coach. Most of the scientific evidence are favoring that high-intensity activities like marathon running may induce oxidative and inflammatory stress which may cause affect the immune function of the individual causing some disturbance in the functional health of the individual to minimize the negative effects of long-distance or marathon running. Several strategies and methods are to be adopted by recreational ultra-endurance runners. Following several methods like proper training protocols, and rest will help to adopt higher loads of physiological stress. For both recreational runners and professional runners, nutritional strategies are also very essential. Proper nutrition not only provides energy and nutritional elements but it also provides recovery from the inflammatory and oxidative stress of the prolonged physical exercises done by the exercising individuals.

**Keywords:** Nutritional strategies, Recreational runners, Professional runners, etc.

## 1. INTRODUCTION

In day-to-day aspect, lifestyle and fitness issues are becoming very important for both men and women. Women are trying to understand the science of fitness and healthy life. In terms of improvement of diseases and functional health, the importance of physical activity at all levels is very much recognized by women. To enhance their health, both working women and housewives invest their time and money. These days in the lives of people exercise seem to be very much an important part. To improve their health status, most women are taking up physical exercise as a part of their lifestyle program, though the women who are involved in regular exercises may not have scientific knowledge of the exercises. They are participating in several forms of exercise usually exercises, which produces positive effects on the functional health of the individual. There are exceptional circumstances, where

exercises may become fatal sometimes or may affect negatively the functional health of exercising individual. It is very important to mention the effects of cytokine and functional stress of the exercise especially due to high-intensity sustained aerobic exercises like Marathon running.

Due to high-intensity sustained aerobic exercises like marathon runs, it is very important to mention the effect of functional stress of the exercises and cytokine rush. Physical exercise enhances functional health by improving the immune function of the body, with scientific caution some form of high-intensity exercise needs to be undertaken. Heightened immense strength among the individuals could also be secured through enhanced anti-inflammatory and antioxidative capacities of the individual. Better anti-inflammatory and antioxidative capacities of the individual may be caused when exercises were conducted on moderate lines such

as moderate time and intensity. Significant differences in its impact are shown by the exercise depending on the functional metabolic health of the individual. It is highly desirable that scientific caution needs to be applied while undertaking high-intensity sustained aerobic exercises such as marathon and ultra-marathon running. Through activating the inflammatory cytokine, production inflammatory stress will be induced through physical exercises, which may further trigger to release of anti-inflammatory cytokine mechanisms causing an act to neutralize the inflammatory stress of the tissues under inflammatory stress.

Scientific studies such as exercise immunology, exercise science, and exercise endocrinology indicated that physical exercise enhances anti-inflammatory stress. This gives an opportunity to the organism to respond with the anti-inflammatory mechanism. Whereas during the high-intensity sustained aerobic physical activity such as marathon and ultra-marathon running the oxidative stress seems so high that sometimes, this may exceed the tolerable limits of the organism leading to the negative effects of this oxidative stress.

The tissues may produce quantities of oxidants during excessive oxidative stress. This may cause damage to the tissues and sometimes these oxidants may even cause mutations in the nucleus. This may bring precancerous conditions to the tissues that are under severe oxidative stress. On scientific lines to counter these severe stress effects some strategies are to be adopted. During training and also during serious competition times to incorporate there are several strategies, these strategies can be incorporated especially for those who are regularly and constantly involved in high-intensity sustained aerobic activities such as Marathon running and training for ultra-mark on running. To sustain stress rigors of the inflammatory and oxidative stress, proper recovery periods during high-intensity chronic and acute training are essential. Through rest and recovery seem ideal strategies for high-intensity training and participation in high-intensity aerobic activities, other strategies such as recovery through proper nutrition and nutritional supplementation are recognized as desirable for sustaining the acute and chronic effects of high-intensity aerobic physical activity training and participation.

Williamson E (2016) studied the various nutritional challenges, in which athletes encounter in preparing for and participating in ultra-endurance walking and running events. Special attention is paid to energy

level, performance, and recovery within the context of athletes' intake of carbohydrate, protein, fat, and various vitamins and minerals. It outlines, by way of a review of literature, those factors which promote optimal performance for the ultra-endurance athlete and provide recommendations from multiple researchers concerned with the nutrition and performance of ultra-endurance athletes. Despite the availability of some research about the subject, there is a paucity of longitudinal material which examines athletes by nature and type of ultra-endurance event, gender, age, race, and unique physiological characteristics. Optimal nutrition results in a decreased risk of energy depletion, better performance, and quicker full-recovery

## **2. RECREATIONAL MARATHON RUNNERS AND THEIR PHYSICAL CONDITION**

Slowly and steadily running has become a very passionate physical exercise among health seekers of modern times. Knowing it for health-seeking people different types of long-distance running and cycling events have been introduced. Across the world, several cities are hosting different types of Marathon runs such as Tokyo Marathon, Boston Marathon, and Airtel Hyderabad Marathon. Professional and non-professional runners who are enthusiastic about health are participating in such events. For enhancement of the functional health, many people (Hundreds and Thousands) are taking up long-distance running. As the result, not only the participation of men and women is also growing. Recreational runners comprising both men and women of any age group before their participation in such events as high-intensity aerobic physical activities may not undergo any scientific training before their participation. Lac of scientific training participation in high-intensity aerobic activities may post severe inflammatory and oxidative stress making them easily prone to negative health issues.

Based on the physiological principle which would provide enough physiological consolidation to the recreational runner, proper phase-wise exposure and conditioning are needed for the individuals to effectively half-set and neutralize the inflammatory and oxidative stress issues during such acute high-intensity aerobic activities. For the recreational runner, strong endogenous anti-inflammatory and anti-oxidative capacities are highly essential. With prolonged training and with proper nutritional strategies, these two physiological capacities can be developed.

### **3. RECREATIONAL ULTRA-ENDURANCE RUNNERS THEIR HEALTH AND PERFORMANCE**

Long-distance runs such as Marathon ultra-marathon running and marathon cycling events are high-intensity sustained physiological activities or highly stressful physiological to the participants. Participants in such events should be very careful and conscious, because they are warnable of some health complications sometimes severe health consequences; also, studies have shown that recreational marathon runners may get affected with immune-related issues such as respiratory tract infections, intestinal tissue disturbances, and rarely intestinal Canciones due to disintegration of the respiratory tract epithelial tissues disintegration and due to exposure of the high level of uncontrolled inflammatory oxidative stress may occur to the respiratory tract. Due to the very long sustained high-intensity aerobic physical activities, excessive inflammatory stress may arise ultra-endurance running may influence the integrity of the epithelial tissue of the respiratory tract. This may cause the disintegration of the tissues of the epithelial layers. This process of epithelial tissue damage seems very cogent with respect to the tissues of the upper respiratory tract epithelial tissues, where high-intensity breathing could bring such damage during the high-intensity sustained aerobic activities. The infection through proper upper respiratory infection symptom status of the infection to the respiratory tract and especially to the upper respiratory tract may be estimated. Respiratory infections could cause compromises in respiratory capacities, leading to performance reductions. Apart from this, suppressed immunity is getting affected and the general health of the individual may also be affected. These conditions could not be identified with all runners or with all the ultra-endurance activities, chronic training seems to mostly depend on factors such as conditioning levels or fitness levels, rest and recovery periods, and methods of recovery adopted such as protein intake and any more such issues. The genetics of the individual marathon

runner may also influence the issues of immune suppression due to ultra-endurance physical activities like marathon running.

### **4. DISCUSSION**

For marathon runners, nutritional strategies are highly scientific and for recreational marathon runners, it is more specific. Since their foundation training and competency interns of tolerance to such acute high-intensity sustained aerobic physical activities may be less when compared to well-trained professional ultra-endurance runners. During preparation and during competition two aspects of nutrition 1. A performance aspect and another health aspect are to be very much concentrated by the recreational marathon runners. During training and competition, the help of sports nutrition in scheming their nutritional strategies is very important for recreational marathon runners. The essential ingredient for the nutritional strategy of these runners is sufficient energy in terms of muscle and liver glycogen and circulating glucose for performance and for metabolic energy path multiple transporter carbohydrates can be included in their diet. This will help to tap these several cell signaling and glucose transporter-related glucose metabolism for a considerable energy supply for performance. The inclusion of anti-inflammatory and anti-oxidative nutrients in the daily diet of recreational marathon runners is the most essential aspect of probiotic and prebiotic diet are to be included into the regular diet of the recreational marathon runners of all ages. Excellent recovery and protection among recreational marathon runners can be provided with proper nutrition and with all essential nutrients.

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