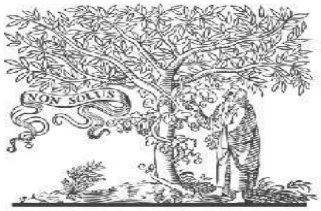
International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

COPY RIGHT



ELSEVIER SSRN

IJIEMR Transactions, online available on 26th Dec 2022. Link :http://www.ijiemr.org/downloads.php?vol=Volume-11&issue=Issue 12

10.48047/IJIEMR/V11/ISSUE 12/113

TITLE: A STUDY OF FEMALE PLAYERS WITH PHYSICAL FITNESS TOWARDS CONTACT AND NON-BODY CONTACT GAMES

Volume 11, ISSUE 12, Pages: 849-859

Paper Authors **DIPANKAR MAITY, DR. SUNIL CHATURVEDI**

USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per UGC Guidelines We Are Providing A Electronic Bar Code

International Journal for Innovative Engineering and Management Research
PEER REVIEWED OPEN ACCESS INTERNATIONAL JOURNAL
www.ijiemr.org

A STUDY OF FEMALE PLAYERS WITH PHYSICAL FITNESS TOWARDS CONTACT AND NON-BODY CONTACT GAMES

CANDIDATE NAME = DIPANKAR MAITY
DESIGNATION = RESEARCH SCHOLAR SUNRISE UNIVERSITY ALWAR
GUIDE NAME= DR. SUNIL CHATURVEDI
DESIGNATION= ASSOCIATE PROFESSOR
SUNRISE UNIVERSITY ALWAR

ABSTRACT
Sports perhaps may be viewed as that aspect of human activity, which essentially strengthens the integration of body and mind. The term sport has been coined from the word “disport" which means diverting oneself merely for fun or merry making. Recently, it has been felt that apart from the purposeful use of physical activities and games as a measure of maintenance of general health, happiness and fitness for personal factors that develop among participants, it also develops total personality. Scientific investigations, minute observations and experiences by coaches, physical education teachers and sports-oriented persons in the allied field have brought to light a variety of psychological, physiological, sociological and other factors which are found to be the outcome of participation in physical activities among athletes. Success in sports is generally attributed to the level of physical fitness, psychological variables, techniques and tactics. An achievement in sports is always a many sided phenomenon in the sense that is depends on many factors such as physique, motor fitness, techniques, tactics, physiological conditioning, personality traits, motivation level, aggression level during training and socioeconomic status etc. In today’s techno-scientific age, the world has completely changed in all aspects due to discovery and research. In the field of games and sports also, there has been a great change with the help of scientific coaching and training. The athlete are being trained on scientific guidelines with highly sophisticated means for better achievement in their concerned sport to enable the coaches to get optimum performance with minimum expenditure of energy and time. They are being exposed to the exercise and training methods, which have got beneficial effect for achieving higher standard. The main aspect to be emphasized in order to achieve high level of performance is the efficient function of the body.

KEYWORDS: Female Players Fitness, Contact and Non-Body Contact Games, physical education teachers, sports-oriented persons

INTRODUCTION

In modern world scientific approach in sports training and coaching is very essential for high performance. There are various factors affecting the success of players in the competition e.g. physical fitness, psychological makeup, environmental factors etc. Today the preparation of an athlete for top notch achievement is a completely dynamic state characterized by a high level of physical and psychological efficiency and degree of perfection of

necessary skills and knowledge, techniques and tactical preparation The modern sports training lays a greater emphasis on preparing the athletes psychologically than physically and thus lot of emphasis is being given to the psychological characteristics of the top level athletes, mental rehearsals during training task etc. Sports psychology also has helped the coaches to coach more effectively and athletes to learn more efficiently. Sport is an activity in our lives, where pursuits of excellence are achieved through the total integration of body and mind. As every sport is played as much in the mind as on the field, the importance of psychological factors in sport is becoming more and more recognized? Thus sport is a major phenomenon in modern society. Sport psychology encompasses scholarly, professional, and practical activities that provide basics for understanding and influencing the behavior of people involved in sports and exercise.

Human body is highly adaptable to exercise. The response of each system is discrete. Hard work in the heat is necessary to improve the fitness of the temperature regulatory mechanism. Each task has its major physiological components and fitness for the task required is effective functioning of the appropriate system. In competitive sports, for the selection of particular sports, one has to consider measures of human body and the physical fitness which play a dominant role at higher level of sports competitions. Scientists and physiologists have been of the view that anthropometry and physical components of an athlete have a lot to do with the performance more than the techniques and tactics of a player's team. The research finding shows that a high level of technical perfection alone has nothing to do with the success in competitive sports. Most of the game demands a greater amount of speed, strength, endurance, flexibility, co-ordination and maximum fitness of the Organism. Modern scientific methods of training players or team place greater responsibility on the coaches and physical educators. They are also responsible for the selection of team taking into consideration of physical and physiological qualities essential for the game. The performance of football and volleyball players depends upon many characteristics. The skill and physical condition play major role, but the psychological factors and games experience cannot be over-looked. There should be proper planning and implementation of the programme should be evaluated from time to time, so that the best result can be attained. To move in the above direction there should be continuous research in the field of physical education.

This dynamic field can enhance the experience of men, women and children of all ages who participate in physical activity, ranking from those who do so for personal enjoyment and to those who pursue a specific activity at an elite level. Sport psychology professionals attempt to understand psychological processes involved in motor performance, the ways that learning and performance conditions can be improved, and the manner in which psychological perceptions and outcomes can be favorably influenced. Sport psychology has its roots in the sport/movement sciences

as well as in psychology. It is an applied psychology specialization as well as a sport science. Psychology plays an important role in the game to understand the behavior of opponent and has to change strategy accordingly. The psychological factors which affect the team games and individual games directly are aggression, motivation, attitude and anxiety. Sports psychology is the branch of psychology that examines various aspects of sports activities, physical culture and it also studies the psychological aspects of athlete's personality. Coaches and physical educators must know that excellence in performance is affected not only by one's physical fitness, technical qualities but also by his psychological considerations. Psychology in the physical education and sports is not simply an academic subject at the training colleges, it is practiced by coaches and athletes coping strategies, mental skills such as imagining concentrating, focusing etc. Team interaction and chancing are all practical tasks in which athletes, coaches and sports psychologist play reciprocally. A very specific and detailed pre-competition and during competition plan for controlling emotions, developing a routine and dealing with unexpected events should be part of each athletes training and psychological skill. Training must be continued, as the athlete is involved in sports in the same way as physical skill training is conducted.

LITERATURE REVIEW

Bandhopadhyay Pathikrit and Murma Biswanath (2015) also made a study on selected physical fitness components of state level male tribal footballers. They found significant difference was found on selected physical fitness components. The study relates to the importance of physical fitness components as one of the primary factors for better performance in game / sports. The attempt is made in this study of selected physical fitness variable among athletes and football players. A physical fit player can give good performance in his game / sports for a long time. This study will be very useful to physical educators / coaches in the field of competitive performance.

Strong Clinton (2004) "Motivation Related to performance of physical Fitness test" attempted to explore the effect of six motivating conditions on the performance of VI grade children on seven physical fitness tests. Data was obtained from VI grade pupils by administering seven physical fitness. It was observed that two of the motivating conditions were found to be more effective than the other four. Motivation improved the boys performance than the girls performance. The validity of the measures of physical fitness test was dependent upon the motivation conditions under which the tests were administered.

Dr. Goswami (2007) assessed the effect of an aerobics on selected Physical fitness variable and fasting blood glucose of diabetes patients total number of 60 subjects was divided into control and experimental groups training was given to experimental group and along with the regular medical treatment. At the end of the sixteen weeks post test was conducted and data analyzed by computing ANOVA. Finding reveled significant increase in cardio vascular endurance, right shoulder flexibility, left

shoulder flexibility and trunk and hib flexibility where as fasting blood sugar was significantly decreased.

Poonam Rana and N.S. Deol (2006) made a study comparative analysis of effect of exercise on physical fitness between active and inactive females. In the present study on attempt has been to analyze the comparative effect of exercise on physical fitness between active and inactive females for this purpose 68 students wee taken as subject from Punjab university, Pattala. For the assessment of effect of exercise, weight, body mass index (B.M.I) grip strength (right and left hand), Persistence time, 12 min, run/walk test concentration of Hemoglobin were taken as criterion variables. The observation revealed that there was a significant difference between active and inactive females.

Ray (1990) conducted a study on the status of physical fitness and physiological parameter of offensive and defensive players of soccer and hockey. Who is purpose of the study is to find-out the status of selected physical fitness and physiological parameters of offensive and defensive players of Football and Hockey. Sixty inter-collegiate male offensive and defensive players of Football and Hockey were selected randomly from the Degree College of Physical Education, Amravati. Six selected physical and physiological parameters were measured and recorded. The F-ratio was computed to find out the significance differences. It was concluded that there were significance differenced in vertical jump 50 Yard Dash and pulse rate whereas, non-significant differences were observed in vital capacity, 12 min. run/walk, and blood pressure of Football and Hockey players.

Gaurav et al. (2009) the aim of the study was to investigate the significant differences of selected physical fitness variables between individual games and team games athletes. A group of 30 sportspersons A (Individual games athletes: N=15) and B (Team games athletes=15) of age group 18-25 years were selected from department of physical education (T), Guru Nanak Dev University, Amritsar, Punjab, India. It was hypothesized that there may be significant differences with regard to selected physical fitness variables among individual and team games athletes. The between-group differences were assessed by using an independent samples t-test. The level of $p=0.01$ was considered significant. An independent samples t-test revealed that team games athletes had significantly higher muscular strength, Agility (Coordinative ability), power, speed and cardiovascular endurance ($p<0.01$) than individual games athletes. Further investigations are needed on the above studied variables along with physiological variables to assess relationships among them and with performances in team games and individual games athletes.

Mahipal (2001) the purpose of the study was to compare the selected physical fitness variables among state level athletes and football players of District Panipat. A total no. of 40 male subjects in which 20 subjects from athletics discipline and 20 subjects from football discipline between the age group of 17-19 years were randomly

selected as subjects in the present study. The selected subjects were tested on speed by 50 yards dash test, explosive power by standing broad jump test, Agility (Coordinative ability) (Coordinative ability) by 6x10 meter shuttle run test and muscular strength was tested by sit ups test which was selected as criterion variable. It was hypothesized that there may be significant difference between athletes and football players on selected physical fitness variables. To find out the significant difference in physical fitness variables 't' test was applied and the level of significance was set at 0.05 level.

Deepla (2008) the Purpose of this study to find out the Physical fitness among Male Athletes and Male Foot Ball Players of Schools in Hyderabad between the age group of fourteen to sixteen years. The sample for the present study is twenty Male athletes and twenty Male Foot Ball Players from various Schools of Hyderabad in India. The AAPHER Youth Fitness Tests consisting of 50 Yard Run, 600 Yard Run, Standing Broad jump, Pull- ups, Shuttle Run and Sit ups were tested to know the status of Physical fitness among Athletes and Foot Ball Players. This study shows Foot Ball Players are having good Pull Ups, Sit-ups, Shuttle Run, Standing Broad Jump compare to Athletes who are good in 50 Yard Run and 600 Yard Run. It is concluded that Foot Ball are having good Physical fitness compare athletes. Footballers are good than athletes because that Football players are played longer duration compare to the Athletes.

Raj kumar Sharma(2006) the present investigation aim was to assess the different motor levels of women football players from various competitive levels i.e. motor fitness, physical fitness and body composition. Fifty women football players of three different competitive levels volunteered to participate in this stud were selected as the subjects from the state of Chhattisgarh. All the subjects were asked to execute the physical performance tests Haward Step Test measure cardiovascular endurance), (Medicine Ball Throw measure explosive power of arms and shoulder), (Standing Broad Jump measure explosive power of legs), (Zig-Zag Run measure Agility (Coordinative ability) and (Shuttle Run measure Agility (Coordinative ability)). Age (years) of the participants was recorded from the academic record of the schools, were weights were measures by using a digital scale (Harpenden Balance Scale), Standing heights were measured with Harpenden portable stadiometer and. Body mass Index (BMI) was calculated as weight (kg) divided by the square of the height (m). To assess the motor fitness, physical fitness, and body composition of three different level women football players, means, standard deviations and F-ratios were computed. The level of significance was set at a $p<0.05$. The statistical package for social science (SPSS 16.0 version) software package was used to analyze the data. Descriptive statistics resulted similarity in anthropometric characteristics of national level, inter-university level and state levels female Football players. One way analysis of variance (ANOVA) with physical fitness, motor fitness and BMI of women Football players of National, Inter-university and

state level `and motor fitness resulted in insignificant F-ratio for zigzag run (1.24), shuttle run (1.07), medicine ball throw(1.42) and standing broad jump(0.52). P.F.I.(1.73) and B.M.I.(0.93). Descriptive statistics resulted similarity in anthropometric characteristics but insignificant results in physical fitness, motor fitness and BMI of women Football players.

Subhas (2016) the purpose of this study was to compare physical, physiological and psychological variables between inter collegiate female volleyball and badminton players. To achieve the purpose of this study, thirty female players, that is fifteen badminton players and fifteen volleyball players were selected as subjects from various departments of Burdwan University, and their age ranged from 18 to 25 years. These subjects were tested on Speed by 50 yard dash, Agility (Coordinative ability) by Agility (Coordinative ability) test, Cardio-respiratory endurance by 12 minute run and walk, Resting Pulse Rate by Electronic sphygmomanometer, Leg strength by Standing Broad Jump, Reaction Time by Visual reaction time Direct RT computerized software, Resting Respiratory Rate by up-down movement of the lower abdomen, Vital Capacity by Spirometer, Personality (Introversion-Extroversion, Stability-Instability) by Eyzank personality inventory. The collected data was analyzed using independent 't' ratio to find out the significant difference between volleyball and badminton players. The study was concluded that there is significant difference in Speed, Agility (Coordinative ability) (Coordinative ability), Cardio respiratory Endurance, Leg strength and Resting Respiratory Rate. There was no significant difference in Reaction Time, Resting Pulse Rate, Vital Capacity and Personality between players of volleyball and players of badminton. It is concluded that both games demands greater explosive power for better performance. The nature of both games varies, although the skills like spiking and jump shot require explosive power as a result of this no difference is elicited between the groups.

Malik et al (2015) the present study was an attempt to evaluate the degree of physical fitness and compare the differences of physical fitness components among Football players. To carry out this study, 80 subjects (20 from each district) were selected randomly having representing district/college team. The age limit of players was ranged between 18 to 25 years. The samples were taken from Mohindergarh, Rewari, Rohtak and Bhiwani districts of Haryana. AAPHER Youth Fitness Test (1976) was used to measure the physical fitness variables. Mean was computed for comparison of players of different districts. To assess the significance of differences between the means in case of significant F-value, Least Significant Difference (LSD) test was applied. The level of significance was. 05. From the findings of the study it was evident that the Football players of Rohtak were better in comparison to the Football players of other districts i.e.Rewari, Bhiwani and Mohindergarh in almost all the physical fitness variables.

Kumari et al. (2015) the present study was an attempt to evaluate the degree of

components between kho-kho and Kabaddi girls' players of Haryana. To carry out this study, 100 subjects 50 from (Kho-Kho) and 50 from (Kabaddi) game. The age limit of players was ranged between 10 to 15 years. The samples were taken from Mohindergarh, Rewari, Rohtak and Bhiwani districts of Haryana. Only speed, explosive power of arms and Agility (Coordinative ability) (Coordinative ability) were used to measure the physical fitness components. The mean was computed for comparison of players of different districts. To assess the significance of differences between the means in case of significant t-values'' test was applied. The level of significance was 0.05.

Rajan et al (2015) the main purpose and objective of the present study was to compare the Volleyball and Football players on the selected physical and mental abilities. For purpose of the study fifteen players from the game of volleyball and fifteen from the football has been selected from Allahabad university ,who has participated in inter University Competition. All the subjects were regularly practicing and competing in their respective sports competition. The study was confined to physical component Height, Body weight, BMI and Physiological fitness components Speed, Explosive Strength, Cardiovascular endurance. The necessary data was collected with standardized procedure by administering selected tests as suggested by Hardyal Singh and W. Cooper. The data were collected and analyzed using the descriptive statistics and t-test. The level of significance was set at 0.05 level. When a two tailed equal group statistical significance mean comparison t‟ test was employed on both the set of data Volleyball and Football players on selected variables, the result found evident significantly in majority of the variables.

Rathod et al.(2016) the main purpose and objective of the present study is to compare the Physical Fitness Components of Kabaddi and Kho-Kho player abilities. The purpose of the study is to measure the Physical Fitness Components of one hundred players, out of hundred 50 players from Kabaddi and 50 players from Kho-Kho has been selected on purposively and randomly basis. Who has won medal/position in Vijayapura dist School Zonal, Inter-Zonal and participated in State School Games during the 2013 to 2015. All the subjects were regularly practicing and competing in their respective sports competition. The following variables were found significant at 0.05 level of such as Body Mass Index "t" value 7.11, speed test by 40m dash the "t" value mm 5.89, Standing Broad Jump the "t" value 4.24, the flexibility test- Sit & Reach "t" value 4.96, the test of Strength Endurance- 1 minute Sit-Ups the "t" value 5.29, cardiovascular endurance in form of 12min Run/Walk Test, the "t" value 5.61, which was significant at 0.05 level. The similar study may be undertaken for female players or counter part of male Kabaddi and Kho-Kho players. The similar study may be conducted by taking others important variables which affects the performance of the Kabaddi and Kho-Kho players along with others important physical variables.

Bhupendra et al (2012) the purpose of the study was to compare the Physical fitness components between Badminton and Lawn-Tennis female players of Rohtak district in Haryana. To fulfill the objective of the study total 30 male player (15 each) was selected for the study. The age of the selected subjects ranged from 19 to 25 years. Only 60 yard dash test for speed and Zig –Zag test for Agility (Coordinative ability) (Coordinative ability) were used to measure the selected physical fitness components of the players. In order to analyze the data 't'-test was used. Badminton player found significant difference than lawn tennis players.

FEMALE PLAYERS FITNESS

Athletes participate in sports for various reasons, from a hunger for physical activity and competition to the joy of belonging to a team. Coaches can improve the team's performance by finding the right motivation for each situation and player. Specific motivational theories exist that apply psychological concepts to sports for increased drive and performance. Motivation also comes from outside sources which called extrinsic motivation. Some of it is tangible, such as financial or other material rewards, including trophies or medals. Tangible extrinsic motivation is not necessarily ideal for athletes who become too focused on materialism at the expense of other aspects of sports. Intangible extrinsic motivation includes praise, recognition and achievement, which can often be enough to motivate athletes. Intrinsic motivation comes from within the athlete or player. It includes a natural desire to overcome challenges and enjoyment in the repetition of a skill. These factors can remind athletes why they participate in a certain sport -- especially during grueling practices. Intrinsic motivation is often best supported by a series of goals, whether they're enhanced skill sets or victories in competition.

Sports teams should set a range of goals that are both task- and ego-oriented to help their sports performance. It is beneficial if a sports team does not get caught up purely in wins and losses. External factors such as weather and refereeing can at times impact results, so it is preferable to focus on the overall performance. Each and every player has an untapped energy source that can be drawn upon to bring about superior results. Enhancing motivation is fundamentally about a change of attitude, developing a positive 'can do' mindset and engaging in systematic behaviors. Short-term process goals that facilitate the improvement. If you have a leadership role in sport you will have considerable influence on how motivated your athletes or team might feel. To work best, the techniques mentioned in this article need to be module around specific circumstances and the needs of individual athletes. Always strive to be original and innovative in the application of motivational techniques. Individuals who participate in sports seem to exhibit higher levels of aggression than those who do not. However, this may be because sports attract people who are naturally more aggressive than non-athletes. Some sports are more likely to be associated with violence and inappropriate aggression. When provoked, for example,

participants in contact sports reveal much higher levels of aggression than those in noncontact sports. Research also shows that aggression may give players an edge when used early in a contest, or they may show aggression if they fail in the sport. Other factors also influence aggression during sports events. For example, the presence of officials in organized sports increases the number of fouls since the athletes assume it is the referees' job to control inappropriate aggression. Hunt describes five patterns of aggressive behavior: over aroused aggression, impulsive aggression, affective aggression, predatory aggression, and instrumental aggression.

CONTACT AND NON-BODY CONTACT GAMES

1. The finding of this study was help the physical education teachers, coaches and trainers to understand the comparison of psychological variables and physical fitness components of the female players in body contact and non-body contact games.
2. The result of this study was also great significant for Indian sports women to develop their confidence and to become champion in their competitions.
3. The results of this study may help the coaches and physical education teachers to train their players considering the physical fitness and psychological factors.
4. The present study can be help the coaches to imply the psychological and physical fitness components on the players with the background of body contact and non-body contact game players.
5. The results were also helped the trainer and coaches to understand the aggression level of required for body contact and non-body contact game players.
6. The study concluded that the 'body contact female players group was found a higher level of motivation level than the non-body contact female players' group. Sports Achievement Motivation Scale Test (SAMT) was regulate to measure the motivation in relation to the body contact and non-body contact female players.
7. This study also concluded that the Standing Broad Jump, a test for explosive strength in relation to the body contact and non-body contact female players. The non-body contact players have more explosive leg strength and greater jumping ability than body contact game players. As, explosive strength ability is widely accepted physical fitness ability of non-body contact players, hence the hypothesis is accepted.

This study concluded that the 'body contact players had better muscular endurance in comparison to the non-body contact players' group. The muscular endurance ability was measured through; the subject was hanging on the bar in a position for maximum possible time test conducted by researcher. It may be due to the nature of the game and training schedule.

CONCLUSION

The present study was to compare the body contact (basketball, and ball, hockey) and non-body contact (badminton, volley ball, table-tennis) female players at different colleges and sports centre of Meerut region, who represent their colleges in various competition. Psychological and Physical Fitness abilities through the selected test items such as: motivation, aggression,

cardiovascular endurance, explosive strength, muscular endurance, muscular strength and agility (coordinative ability) abilities for the female players in body contact and non-body contact games. The body contact players had reported higher level of aggression than non-body contact players. An optimum level of aggression was observed which indicated that it was essential for the better performance to win the match. The researcher also examined that body contact and non-body contact players appeared normal level of aggression, but body contact player's remark higher level of aggression than the non-body contact game players which may be due to situational aspect and tactics of games which was major cause behind it. The muscular endurance ability was measured through Flexed Arm Hang. In this the subject was hang on the bar in a position for maximum possible time test conducted by researcher on body contact and non-body contact games of female players.

REFERENCES

Bandhopadhyay Pathikrit and Murma Biswanath(2015), "A study on selective physical fitness components of State Level male tribal footballers". International Journal of Physical education, Sports and Health 2015.1(4) p 110-112

Goswami (2007), "Effect of aerobies and selected physical fitness variables and testing blood". glucose of diabetes patient scientific journal in spots and exercise 1, 1 (PP-13-17).

Poonam Rana & N.S. Deol (2006), "Comparative Analysis of effect of exercise on physical fitness between active and inactive female, Souvenir of National seminar on emerging trends". in physical education pbi, uni, Patiala.

Ray (1990, "-Conducted a study on the status of physical fitness and physiological parameter of offensive and defensive players of soccer and hockey".

Gaurav et.al.(2009), "Comparison of physical fitness variables between individual games and team games athletes" Dept. of Physical Education, Guru Nanak Dev University, Amritsar143005, Punjab, India

Mahipal (2001), "A Comparative study of selected physical fitness variables among state level athlete and football players of district Panipat". Sports & Youth affairs Deptt. Panipat (Haryana)

Deepla(2008), "A Study on the Physical fitness among Athletes and Foot Ball Players of Schools in Hyderabad". ISSN 0975-7732Asian Journal of Physical Education and Computer Science in Sports Volume.5 No.1 pp105

Raj kumar Sharma (2002), "Assessment of Motor Fitness, Physical Fitness and Body Composition of Women Football Players at Different Levels of their Participation".

Subhas(2016), "Comparison of physical, physiological and psychological variables between female volleyball and badminton players". [Accessed Jan 30 2018].pg no12 ISSN: Impact Factor : Volume Issue 2277-3665 2.1052(UIF)

Malik et.al (2015), "A Comparative Study of Physical Fitness Variables among the Haryana's Football Players". International Journal of Applied Research 2015; 1(11): 104-106

Kumari et.al (2015), "A comparative study of physical fitness components between kho-kho and kabaddi girls players of Haryana"

Rajan et.al (2015), "A Comparative Study on Selected Physical And physiological Fitness Components of Volleyball and Football Players". Department of Physical Education university of Allahabad (U.P.).

Rathod et.al.(2016), " A comparative study on selected physical fitness components of kabaddi and kho-kho players of Vijayapur school children". International Journal of Physiology, Nutrition and Physical Education 2016;1(2): 61-63

Bhupendra et.al.(2012), "A comparative study of physical fitness components between badminton and lawn-tennis female players of Rohtak district in Haryana Raj". International Journal of Multidisciplinary Research and Development 2015; 2(3): 898-900

Vivek Kumar Singh et.al-(2015), "Comparative study of physical fitness between the players of individual and team games". Mr. Vivek Kumar Singh Assistant Professor, P.S. Rasulahan, Sevaapuri, Varanasi UP

Singh et.al-(2015), "A Comparative Study on Selected Physical And Physiological Fitness Components of Volleyball And Football Players". Department of Physical Education university of Allahabad (U.P).