International Journal of Physical Education and Sports Sciences

Vol. IX, Issue No. XVI, January-2016, ISSN 2231-3745

COMPARATIVE STUDY OF SELECTED ANTHROPOMETRIC, PSYCHOLOGICAL AND PHYSIOLOGICAL VARIABLES BETWEEN WOMEN HANDBALL AND BASKETBALL PLAYERS

AN INTERNATIONALLY INDEXED PEER REVIEWED & REFEREED JOURNAL

www.ignited.in

International Journal of Physical Education and Sports Sciences
Vol. IX, Issue No. XVI, January-2016, ISSN 2231-3745

Comparative Study of Selected Anthropometric, Psychological and Physiological Variables between Women Handball and Basketball Players

Rajinder Kaur

Research Scholar, Kurukshetra University, Haryana

Abstract – Basketball and Handball is probably the most popular game worldwide but there is still limited scientific information available concerning the physique and performance qualities of elite Indian Basket ballers and Hand ballers. Team games are sports where size, shape, body composition and fitness all play an important part in providing distinct advantages for specific playing positions.

Hence an attempt has been made to study the various anthropometric parameters, sports ability and physiological profiles of the different Indian national club Basketball and Hand ballers and also to compare the above parameters with their international counterparts.

Keywords: Anthropometric, Physiological, Fitness

----------♦----------

INTRODUCTION:-

Sports fitness is a present aptitude for physical skills, includes strength and co-ordination enriches today's Manpower in player's performance. The study focuses on selected sports fitness components to ensure the playing ability among College/State level and University/National Level Basketball and Handball players.

This study represents an initial attempt to define the physical and physiological characteristics of Basketball and Handball players performing at the professional level, thereby establishing a base line to which future investigations can be compared. The present study, the scholar wanted to investigate new scientific approach for boosting up performance of Basketball and Handball players. Therefore, he took up this comparative study of psychological and physiological variables among categorized skilled Basketball and Handball players from different teams participated to know the contribution of psychological and physiological variables among Basketball and Handball players from different performance.

The study of psychological and physiological variables with respect to the performance of players will result in better understanding of various factors that will help the coaches and trainers to decide better. Such studies will also result in development of pre-existing knowledge about the performance of a player.

Among the sports ability and physiological qualities only flexibility, agility and VO2 max were significantly different among the Basketball and Hand ballers of different national clubs ($p<0.01$).

Genetic factors may be the cause of smaller body size of the subject of the present study as compare to their international counterparts. So, it can be concluded that the differences among the Basketball and Hand ballers of present study with their international counterparts and specific playing position is probably the cause of hereditary factors and differences in activity in the game.

Physical fitness is a state of well-being that comprises skill and health-related components. Fitness is a condition in which an individual has sufficient energy to avoid fatigue and enjoy life. It is necessary for elderly people to maintain and improve their physical fitness in order to satisfy healthy, high quality of daily life (Tanaka et al., 2012).

Skill- related physical fitness refers to an individual's athletic ability in sports such as Basketball and Handball and encompasses skill- related attributes like dynamic balance, power, speed and agility; the health-related aspect is a measure of cardiovascular endurance, muscle strength, endurance and flexibility and body composition (Hopkins & Walker, 2008).

Anxiety is measured by functional tests that are specific and usually normative-based, rather than criterion- based, thereby leaving unanswered as to how much of a specific fitness factor (e.g. muscular endurance) is required for a good quality of life (Chia et al., 2010). There are numerous factors which are responsible for the performance of sportsmen.

Darden (2009) considers the sport of Basketball and Handball in terms of abilities and skills, [Abilities are dependent upon genetic characteristics and environmental experiences. Darden defined skill as a specific practice which is dependent upon the presence of abilities. The higher the skill level of the athlete, the more important it is for practice to resemble actual competition. The practice of exact movements will enhance positive transfer of the skill for the athlete.

Darden (2009) further stated that the physiological variables of Vital capacity, Achievement motivation, Blood pressure, Anxiety. The most effective methods for developing these variables are not related to the performance of skills in Basketball and Handball.

Darden (2009) believes an exercise that incorporates strength with a Basketball and Handball skill would do more harm for the athlete than help. The closer the resemblance of the activity to the Basketball and Handball skill the worse it would be for the acquisition of the Basketball and Handball skill.

"Strength training, as well as other conditioning movements, should differ from Basketball and Handball skill practice as much a6 possible in control, meaning, form, method of execution and environment. It is this indifferent transfer of strength training that furnishes the stamina and conditioning necessary for the positive transfer from practice to competition." (Darden, 2009).

Schultz studied the effects of Vital capacity and Achievement motivation on selected sports performance tests, Six training approaches were used to study the effectiveness upon performance in four selected test of sports skills, speed, coordination's and power.

Achievement motivation is the ability to change the direction of body or its parts rapidly' is dependent on strength, reaction time, speed of movement and muscular coordination. Quick start and stops and quick changes in direction are fundamental to good performance in Basketball and Handball (Nabhendra Singh, 2010)

Vital capacity is not only an athletic event itself, but it is an important factor in almost all court and field games it can result the difference in whether a performer is able to gain an advantage over his/her opponent.(Nabhendra Singh, 2010)

Blood pressure is involved to some degree with all sports performances and some performances heavily depend upon balance.

Blood pressure and anxiety both are of great importance in all body contact sports such as sports and games athletics, Basketball and Handball, Basketball and Handball, baseball and hockey. (Nabhendra Singh, 2010)

REVIEW OF RELATED LITERATURE

Vital capacity is extremely important in all performances, requiring quick response. It has special significance in events in which an individual depends on each other and thereby respond to each other's movement. (Nabhendra Singh, 2010)

Achievement motivation is an essential part of preparing for sports competition. If training for Basketball and Handball is to be effective it must be related to the demands of the game. Achievement motivation for the sport assumes that the player is capable of meeting these demands; otherwise he or she may not be able to cope with the physiological stress of match-play.

In this instance the player has to raise fitness levels or risk not being selected. (Thomas Reilly, 2011)

Despite the world- wide popularity of the game of association Basketball and Handball (soccer), comparatively little scientific information is available concerning the physiological characteristics of the professional participant; although, some information is available concerning the amateur player (Bell and Rhodes, 2011; Caru et al.,2010; Fardy, 2009).

Basketball and Handball players must combine Vital capacity, Achievement motivation, Blood pressure, Anxiety as basic variables before the individual skills inherent to the playing of Basketball and Handball can be utilized. The understanding of the physical and the mental demands of the sport will enable a more scientific approach to the training of Basketball and Handball players than has been prevalent heretofore. (Raven et al., 2011)

The contemporary status of research on physical fitness is an outcome of the vast literature available on physical fitness: comparison of physiological and psychological variables like Vital capacity, Achievement motivation, Blood pressure, Anxiety. This study involves the literature pertinent to the construction and standardization of specific test for soccer players, yet, pertinent literature, and though peripheral to physical fitness, deemed to be relevant and that which are effective for the meaningful study was also incorporated.

A sincere and exhaustive attempt has been made by the researcher to present in this study some relevant

and useful studies and references covering different areas after exploring all possible sources and the findings and conclusions of those studies and references have been carefully extracted and cited below in order to make a comparison with the present study and interpretation thereon.

Basketball and Handball is probably the most popular game worldwide but there is still limited scientific information available concerning the physique and performance qualities of elite Indian Basketball and Hand ballers. Not many sports physiologist have been attracted to examine the Basketball and Hand baller in details because of the lack of adequate experimental models to study the games in the laboratory (Reilly et al, 2010).

The game comprises activities like sprint and jumps in attack and defense. It also requires aerobic capacity as the game lasts one and half hour, sometimes even longer than the official time. These short and long lasting activities are performed over the entire game, so, both aerobic and anaerobic capacities are very important to exhibit better performance (Malcovic et al., 2012).

Basketball and Handball is a team game. Team games are sports where body size, shape, body composition and level of fitness, all play an important part in providing distinct advantages for specific playing positions particularly at the highest levels of performance where there is a high degree of player specialization (Bale, 2011).

Specific positional roles within each code may demand unique physiological attributes (Reilly et al., 2010). These are reflected in the physical and physiological fitness of the Basketball and Handball players (Reeves *et. al.,* 2009).

The database of physique and performance qualities of the players of the renowned clubs throughout the country is very important to make a National Team. It is a fact that in India there is still limited information of club Basketball and Hand ballers regarding physique, physiological profiles and performance except a study on Indian University Basketball and Hand ballers (Kansal et al., 2010a) in this regard. Hence an attempt has been made to study the physique and physiological qualities of the Indian national club Basketball and Hand ballers.

RESEARCH STUDY

The subjects were randomly assigned to groups and groups to treatments, short period of training or cessation of training did not affect performance. Except in case of zigzag run. Direct practice of the zigzag run was found to be superior to both weight training and repetitive sprinting in the performance over a nine weed period.

The purpose of the Stockton's study was to investigate the effect of selected conditioning methods on physical fitness level of ninth and tenth grade girls. Conclusions were aerobic conditioning produced significant progress in cardio-vascular efficiency; calisthenics conditioning produced greater performance in muscular strength and muscular endurance.

Lyle conducted a study to compare physical fitness in the San Diego City State. The study concluded that physical fitness performance mean were significantly higher in case of physical education student that of military science student on the test such as sit - ups , pull – ups , standing broad jump , 50 yard dash , 12 minutes run and softball throw.

Lane related the Blood pressure and Anxiety before and after a physical fitness programme for high State girls. The AAPHER youth fitness test and the Humistor Sports Ability test were administrated to 69 girls. He concluded that the group improved on both test and correlation between physical fitness and sports ability was higher after the planned fitness programme.

Physical fitness is a complex phenomenon consisting of various factors such as speed, strength, flexibility, agility, cardio-vascular endurance etc. The measurements of various dimensions of human body have long been used by different researchers all over the world for different purposes. In their simplest form measurements are used to describe the human body and to evaluate the increase in the size of the human body during various stages of post natal development i.e. from birth to old age and also to study the changes during pre-natal period of growth i.e. from conception to birth.

The researchers in the field of human growth and development Axiological Anthropometry as it is referred to at present uses these anthropometric measurements to study precisely the age specific charges in the main body segments. Through these changes the amount and rate of growth can be assessed for a specific child or a group of individuals at community or national level to formulate the respective health standards to assess the growth of children at both the levels. We the Indians are very much concerned with the performance and status of the athletes at different levels. But the performance is final output and the status includes various other aspects in addition to the performance.

Data analysis of table1 shows that significant difference was found between mean scores of high and low performing Basketball and Handball players

of State, Inter-college, University and National levels with regard to achievement motivation.

DATA ANALYSIS

Table1 shows, that mean scores of high performing State level Basketball and Handball players is 24.71, S.D. 2.11, the mean scores of low performing group is 22.10, S.D. 2.26, t' ratio 3.78 was found significant at 0.05 level of confidence at State level.

Table 1: Mean Scores, S.D and t- ratio of Anthropometric Variables between Women Handball and Basketball Players at Different Levels

Level of Participation	Performance	Subjects	Mean	S.D.	M.D.	S.E.	t-ratio
State Level	High	N=200	24.71	2.11	2.61	0.691	3.78*
	Low	N=200	22.10	2.26			
Inter-college Level	High	N=200	25.67	2.37	2.31	0.732	3.16*
	Low	N=200	23.36	2.26			
University Level	High	N=200	27.36	2.69	2.43	0.818	2.96*
	Low	N=200	24.93	2.48			
National Level	High	N=200	27.96	2.93	2.52	0.952	2.26*
	Low	N=200	25.10	2.64			

*Significant at 0.05 level of confidence

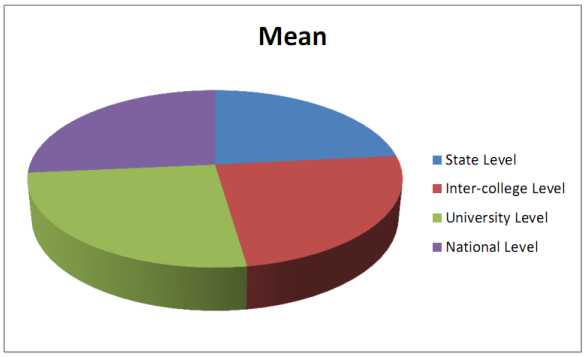

Fig 1: Mean Scores of Anthropometric Variables of high performing Basketball and Handball players at State, Inter-college, University and National Level.

In the case of Inter-college level, Basketball and Handball players the mean scores of high performing Basketball and Handball players is 25.67, S.D. 2.37, the mean scores of low performing group is 23.36, S.D. 2.26, the 't' ratio 3.16 was found significant at 0.05 level of confidence.

At University level, the mean scores of high performing Basketball and Handball players is 27.36, S.D. 2.69, the mean scores of low performing players is 24.93, S.D. 2.48, the 't' ratio 2.96 was again found significant at 0.05 level of confidence.

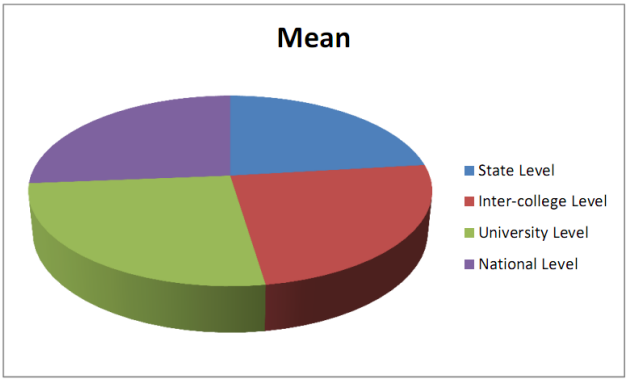

Figure 2: Mean Scores of Anthropometric Variables of low performing Basketball and Handball players at State, Inter-college, University and National Level.

At National level, the mean scores of high performing Basketball and Handball players is 27.96, S.D. 2.93, the mean scores of low performing players is 25.10, S.D. 2.64, the 't' ratio 2.26 was again found significant at 0.05 level of confidence.

Data analysis of table2 shows that significant difference was found between mean scores of high and low performing Basketball and Handball players of State, Inter-college, University and National levels with regard to competitive anxiety.

Table 2: Mean Scores, S.D and t- ratio of Psychological Variables between Women Handball and Basketball Players at Different Levels

Level of Participation	Performance	Subjects	Mean	S.D.	M.D.	S.E.	t-ratio
State Level	High	N=200	36.13	3.10	3.11	1.090	2.95*
	Low	N=200	39.24	3.76			
Inter-college Level	High	N=200	31.56	2.77	3.05	0.898	3.40*
	Low	N=200	34.61	2.91			
University Level	High	N=200	23.45	1.96	0.94	0.646	1.45*
	Low	N=200	24.39	2.12			
National Level	High	N=200	15.18	0.67	0.53	0.451	0.94*
	Low	N=200	12.12	1.57			

*Significant at 0.05 level of confidence

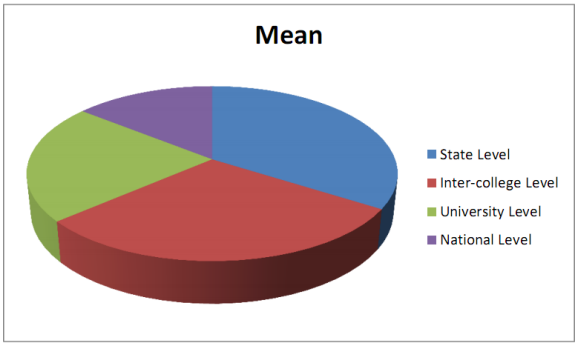

Figure 3: Mean Scores of Psychological Variables of high performing Basketball and Handball players at State, Inter-college, University and National Level.

The mean scores of high performing State level Basketball and Handball players is 36.13, S.D. 3.10. The mean scores of low performing group is 39.24, S.D.3.76 and 't' ratio 2.95 was found significant in favor of high performing group.

In the case of Inter-college level Basketball and Handball players, the mean score of high performing Basketball and Handball players is 31.56, S.D. 2.77. The mean score of low performing group is 34.61, S.D. 2.91 and 't' ratio 3.40 was found significant in favor of high performing group.

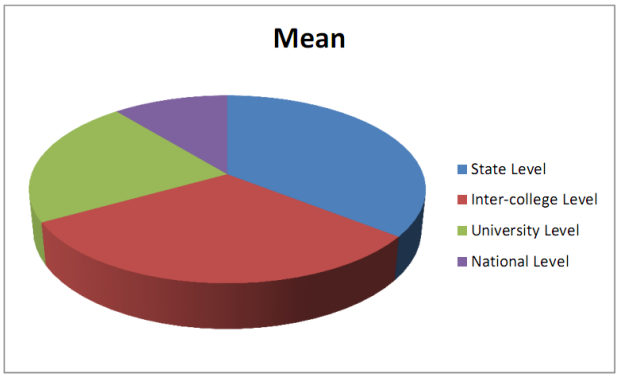

Figure 4: Mean Scores of Psychological Variables of low performing Basketball and Handball players at State, Inter-college, University and National Level.

At University level, the mean score of high performing Basketball and Handball players is 23.45, S.D. 1.96. The mean scores of low performing players is 24.39, S.D. 2.12 and 't' ratio 1.45 was found significant in favor of high performing group.

At National level, the mean score of high performing Basketball and Handball players is 15.18, S.D. 0.67. The mean scores of low performing players is 12.12, S.D. 1.57 and 't' ratio 0.94 was found significant at 0.05 level of confidence.

Table 3: Mean Scores, S.D and t- ratio of Physiological Variables between Women Handball and Basketball Players at Different Levels

Level of Participation	Performance	Subjects	Mean	S.D.	M.D.	S.E.	t-ratio
State Level	High	N=200	32.13	2.06	2.52	0.516	3.45*
	Low	N=200	30.24	2.02			
Inter-college Level	High	N=200	33.16	2.73	2.41	0.694	2.80*
	Low	N=200	30.61	2.18			
University Level	High	N=200	34.45	2.92	2.37	0.842	2.45*
	Low	N=200	31.39	2.28			
National Level	High	N=200	35.18	3.10	2.15	0.947	1.94*
	Low	N=200	32.10	2.53			

*Significant at 0.05 level of confidence

Data analysis of table3 shows that significant difference was found between mean scores of high and low performing Basketball and Handball players of State, Inter-college, University and National levels with regard to vital capacity.

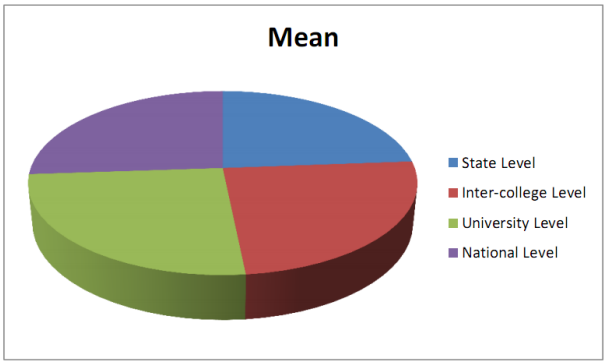

Figure 5: Mean Scores of Physiological Variables of high performing Basketball and Handball players at State, Inter-college, University and National Level.

The mean score of high performing State level Basketball and Handball players is 32.13, S.D. 2.06. The mean scores of low performing group is 30.24, S.D. 2.02 and 't' ratio 3.45 was found significant in favor of high performing group.

In the case of Inter-college level Basketball and Handball players, the mean scores of high performing Basketball and Handball players is 33.16, S.D. 2.73. The mean scores of low performing group is 30.61, S.D. 2.18 and 't' ratio 2.80 was found significant in favor of high performing group.

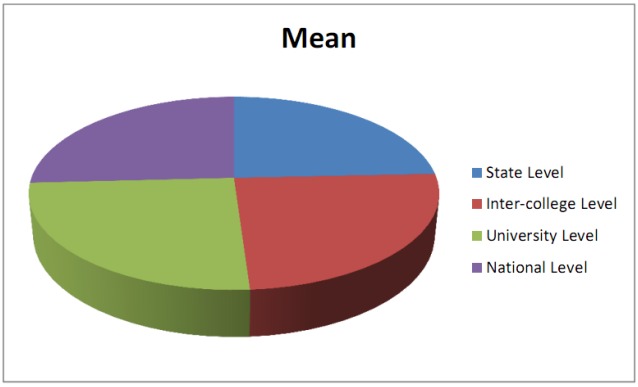

Figure 6: Mean Scores of Physiological Variables of low performing Basketball and Handball players at State, Inter-college, University and National Level.

At University level, the mean scores of high performing Basketball and Handball players is 34.45, S.D. 2.92. The mean scores of low performing players is 31.39, S.D. 2.28 and 't' ratio 2.45 was found significant in favor of high performing group.

SIGNIFICANCE OF THE STUDY

The proposed research work will hold an immense value in the field of physical education and sports. The research will be used as a helpful tool for the Basketball and Handball coaches, physical trainer, sports professionals and enthusiasts and for preparing the Basketball and Handball players for various competitive sports.

The psychological & physiological variables may be used as a tool for the selection of players according to the game in which the players can excel. The selector may use the findings of the study as a directional tool for the players of the game and for the performance at their different level.

The research work will prove to be extremely helpful for those who seek to research or explore more in this specific field. Hence, the proposed research work is of great value.

The findings of the present study will be of immense value in the field of physical education and sports. The study when completed will be used as a helpful tool for the Basketball and Handball coaches, physical trainer and for preparing the Basketball and Handball players for the competitive sports.

CONCLUSION

The psychological & physiological variables may be used as a tool for the selection of players according to the game in which the players can excel. The selector may use the findings of the study as a directional tool for the players of the game and for the performance at their different level.

The findings of the study will also have a great importance for further research in the field of physical education and sports for selecting sports persons in different games and sports.

Physical Education including games and sports plays a tremendous role in the development of our youth. Research supports the importance of movement in educating both mind and body. Physical education contributes directly to development of physical competence and fitness. It also helps students to make informed choices and understand the value of leading a physically active lifestyle.

The benefits of physical education can affect both academic learning and physical activity patterns of students. The healthy, physically active student is more likely to be academically motivated, alert, and successful. Sport provides a significant moral function both for the individual and for society at large. It does so first because it provides participants a vehicle for self-expression, and a means of self-respect and self-development.

REFERENCES

"Maximal aerobic and anaerobic muscular power in football players." J. Sports Med. Phys. Fitness, 10: pp. 100-103.

Akgun N 2011. Physiology of Exercise, Volume 1, 6th edition. I.zmir, Turkey: Ege University Press. [In Turkish]

APOR, P. (2008). Successful formulae for fitness training. In T. Reilly; A. Lees; K. Davids & W.J. Murphy (Eds.), Science and Football (95-107). London: E & FN Spon.

ARMSTRONG, N. & WEISMAN, J.R. (2012). Assessment and interpretation of aerobic fitness in children and adolescents. In J.E. Holloszy (Ed.), Exercise and Sport Science Review (435-476). Philadelphia, PA: Williams & Wilkins Publications.

BALE, P. (2011). A review of the physique and performance qualities, characteristics of game players in specific positions on the field of play. Journal of Sports Medicine and Physical Fitness, 20: pp. 109-121.

Bell W and Rhodes.G.2011. "The morphological characteristics of the association football player." British JSports Med, 9: pp. 200- 200.

BELL, W. & RHODES, G. (2011). the morphological characteristics of the association football player. Journal of Sports Medicine & Physical Fitness, 20: pp. 200-200.

Bloomfield J and Wilson G. 2008. Flexibility in sport. In Training in Sport: Applying Sport Science (edited by B.Elliott), pp. pp. 239–285. Chichester: Wiley.

BLUME, D.D. (2008). Zu einigen wesentlichen theoretischen Grundlagen für die Untersuchung der koordinativen Fahigkeiten. Theorie und Praxis der Korperkultur, 1: pp. 29-36.

Bompa TO 2012. Theory and Methodology of Training, 3rd edition. Iowa, USA: Kendall/Hunt Publishing, USA.

BOUCHARD, C.; SHEPHARD, R.J. & STEPHENS, T. (2012). Physical activity, fitness, and health. Champaign, IL: Human Kinetics.

Braun LT. 2011. Exercise physiology and cardiovascular fitness. Nurs.Clin.North.Am, (1); pp. 135-47.

Brown L, Ferrigno, VA. And Santana, JC. 2010. Training for Speed, Agility and Quickness. Champaign, IL: Human Kinetics.

Carl E. Willgoose. 2011. Evaluation in Health Education and Physical Education, (New York: McGraw Hill Book Co., p. 16.

Caru BL, Lecoultre P. Aghenis and Pinera Limas F, 2010.

CARU, B.; LECOULTRE, L.; AGHEMO, P. & PINERA, L.F. (2010). Maximal aerobic and anaerobic muscular powerin football players. Journal of Sports Medicine & Physical Fitness, 10: pp. 100-103.

CHATTERJEE, S. & CHAKROBORTY, B. (2011). Comparative study of maximal aerobic capacity by three ergo metrics in untrained college women. Japanese Journal of Physiology, 36: pp. 151-162.

Cox MH. 2011. Exercise Training programs and cardio respiratory adaptation. Clin.Sport.Med. 10(1) pp. 19-32.

DE ROSE, E.H. (2011). Determination of the ideal body weight and corporal composition of 16 professional soccer players. Questions of athlete's nutrition: Abstract of the reports of the international symposium. Leningrad: Leningrad Institute of Physical Culture.

DOUGE, B. (2008). Football: the common threads between the games. In T. Reilly; A. Lees; K. Davids & W.J. Murphy (Eds.), Science and Football (pp. 3-19). London: E & FN Spon.

Fardy PS. 2009. "Effects of soccer training and detraining upon selected cardiac and metabolic measures."Res.Q.Am.Assoc.Health Phys. Educ, 40: pp. 502-508.