International Journal of Physical Education and Sports Sciences

Vol. VI, Issue No. II, January-2014, ISSN 2231-3745

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AN INTERNATIONALLY INDEXED PEER REVIEWED & REFEREED JOURNAL

www.ignited.in

International Journal of Physical Education and Sports Sciences
Vol. VI, Issue No. II, January-2014, ISSN 2231-3745

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

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Abstract – The objective of the study was to compare anxiety, interest and sports achievement motivation between basketball and handball players. For the purpose of the study 30 (15basketball and 15 handball) male players who represented their university in respective competitions were selected as the subjects of the study.

Age of the selected subjects was ranged from 17 to 26 years. Anxiety, Interest and Sports achievement motivation of subjects were measured through standard questionnaire. Independent t-test was used to compare basketball and handball players on the selected psychological variables further the level of significance was set at 0.05.

The results of the study revealed that there was insignificant difference existed between basketball and handball players in anxiety, interest and sports achievement motivation. The present study found that there has no difference between basketball and handball players in relation to anxiety, interest and sports achievement motivation.

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INTRODUCTION:-

Physical fitness is an inseparable part of sports performance and achievements. The quality of its utilization value is directly proportional to the level of performance. That means the greater the level of fitness, the greater will be the ability of a person to attain higher level of performance. Players are required to have good physical fitness that will enable successful performance at the competitive level.

The sport specific technical skills in sports are predominant factors. The physical fitness of a player however can be a decisive determinant of success during competition (Smekal et al., 2001). A player would need to develop higher levels of the basic physical qualities to be able to compete effectively. Chin et al (1995) recommend that if a player wants to achieve reasonable success in competitions at higher level, improvements in physical fitness needs to be emphasized in addition to skill training. In sport theory and practice, the level of motor abilities is the key factor in majority of sports achievements (Kasa, 2003). The scientists collected the data of athlete physical characteristics and fitness, and based on the data, they provided the profiles of the top- ranked athletes in specific sports events.

Basketball and Handball players require well-developed muscular strength, power and endurance, speed, agility, and flexibility, and have a high level of jumping ability, fast reaction time and swift movements. Lower body power, speed, and agility are important indicators of Basketball and Handball performance (Vescovi & Mcguigan, 2008).

Volleyball requires athletes to be explosive in the lower limbs; this is especially emphasized in the front row hitting positions when attacking on offense or blocking on defense. Vertical jump emphasizes lower body power, and it is known that Power = (Force x Distance)/Time. Vertical jump is an anaerobic explosive movement that requires recruitment of the highest threshold motor units (Amasay, 2008). The body needs to apply large amounts of muscular force over the largest amount of distance in the smallest amount of time in order to produce the highest vertical jump. Jumping height is decisive for the execution of techniques and tactics in Basketball and Handball. Among all the physical performance indicators, speed is also of the most important one. Speed is the trend of development in modern Basketball and Handball sport. Speed requires the

athletes to be able to move quickly to the optimal place on the court.

Speed and agility in tactics, as the key factors, work together to make suddenness the feature of modern Basketball and Handball sport.

The behavioral pattern of spots persons is also different from that of the general people. So, the athletes have different physical, physiological & behavioral profile than the normal population (Kornspan, 2009). Psychologists explore such concepts as perception, cognition, attention, emotion, phenomenology, motivation, brain functioning, personality, behavior and interpersonal relationships. Psychologists of diverse stripes also consider the mind. Psychologists employ empirical methods to infer causal and correlation relationships between psychosocial variables. In addition, or in opposition, to employing empirical and deductive methods, some especially clinical and counseling psychologists at times rely upon symbolic interpretation and other inductive techniques. Psychology has been described as a “hub science”, with psychological findings linking to research and perspectives from the social sciences, natural sciences, medicine, and the humanities, such as philosophy (Urbina, 2014). While psychological knowledge is often applied to the assessment and treatment of mental health problems, it is also applied to understanding and solving problems in many different spheres of human activity. The majority of psychologists are involved in some kind of therapeutic role, practicing in clinical, counseling, or school settings. Many do scientific research on a wide range of topics related to mental processes and behaviour, and typically work in university psychology departments or teach in other academic settings. Some are employed in industrial and organizational settings, or in other areas such as human development and aging, sports, health, and the media, as well as in forensic analysis and other aspects of law. Sports performance is determined by a combination of physiological factors, technical skill, tactical insight and state of mind. All four factors are critical to peak performance. One could argue however that the last of these is the executive function, as it is the mind which determines whether or not what you have trained in over the past few years, is brought out on the day. Yet it is this aspect of sports performance which has traditionally been paid the least attention in preparation for competition. Hence, in a world where many athletes are physically, technically and tactically increasingly similar, it is the mind which offers perhaps the greatest scope for a competitive advantage. The role of mind has become even more important with the rapidly increasing commercialization of sport, which has presented new pressures for athletes across many levels and ages. Fortunately, like the other three factors, the mind can be improved through training. The more the mental skills are learned and practiced, the better and the more consistent the performances become. There is little doubt that in future, proper mental preparation will become as routinely integrated into training and competition as the other factors already are. The objectives of the present study were to measure anxiety, interest and sports achievement motivation of basketball and handball players and further to compare anxiety, interest and sports achievement motivation between basketball and handball players.

Sports an integral part of the society has an important and valuable effect on many spheres of social life. Similarly the whole social pattern of a society may be reflected in its sports. Sports, unlike the other activities, are not an end product.

It is undertaken essentially for its own sake. If we want to know why people play, the first answer is that they primarily play for fun, enjoyment or satisfaction. The sport is a carrier, which encourages coaching of various sports and games along with rules and regulations governed by them and also it prepares the trainees to take active part in competitive sports. It grows out of man’s struggle for survival in a hostile world.

Sports in the present day have become extremely competitive, previous records are being broken whenever there is competition. It is not mere participation or few days practice that brings an individual victory, but the continuous hard work of training right from childhood, a strong Anthropometry variables may influenced.

Today’s sports person faces some unique challenges. The standard are higher, the competition is tougher the stakes are greater attention in these days. Coaches’ physical educationists and sports scientists have always expressed a great need to know more about those Anthropometry variables, which are helpful in improving the motor skill of the players.

Today’s world is a world of competition, the rivalry to reach top and excel each other is so much. That every aspect that contributes for the excellence is carefully looked in it one of such aspects is the selection of the right person for the right event in sports and games, normally a choice of selection is given to that the player or the athletes. The players without knowing their inherent potential made wrong choices because of his wrong selection the individual concern is not able to reach the top of the ladder.

Basketball and Handball is a game of skill. But it's also a game of athletic ability and movement. To be a good player, not only do you have to know the game and have good basketball and Handball skills, but you also have to be extremely agile. Improving your ability to move quickly around the court and you'll be a better player. The game is all about movement: whether it's driving by a player on offense, sliding to defend a dribbler, or going after a loose

ball...increasing your quickness and agility gives you an edge over the competition.

Basketball and Handball is an athletic game involving its participants in a range of demanding motor skills. These skills vary in kind from, being able to run quickly with precision and good timing on a small, sometimes congested, court area, to, the fine hand eye coordination skills of catching and dribbling, or, shooting. Basketball and Handball, above all else, is a game about decision making, which implies that its players need to be able to apply their skills in the quickly changing and very variable environment that is the essence of the activity.

PHYSIOLOGICAL VARIABLES OF BASKETBALL AND HANDBALL PLAYERS

Among all the factors, the physiological variables play an important role for the attainment of high level sports performance. Physiological variables may be defined as those variables which are directly linked with various physiological systems such as heart rate, blood pressure, vital capacity, respiratory rate and hemoglobin.

Physiological variables such as cardiovascular efficiency, percentage of fat, reaction time, vital capacity and other should be taken into consideration while selecting volleyball players. Cardio-respiratory endurance denoted capacity of individual to work effectively with the help of oxygen which is collected, transported and utilized by lungs, blood and muscles respectively. Any work as daily task or form of physical activity is directly related to energy supplying system which in turn is the cardiorespiratory endurance. Cardio-respiratory endurance varies from individual to individual and one of the important variables for establishing top class performance in Basketball and Handball as the game involves work of long duration/endurance type.

Physiologically, Basketball and Handball l is an intermittent sport that requires players to participate in frequent short bouts of high-intensity exercise, followed by periods of low-intensity activity. The high intensity bouts of exercise, coupled with the total duration of the match, requires players to have well-developed aerobic and anaerobic a lactic (ATP-CP) energy systems. Considerable demands are also placed on the neuromuscular system during the various sprints, jumps (blocking and spiking), and high-intensity court movement that occurs repeatedly during competition. As a result, volleyball players require well-developed speed, agility, upper body and lower body muscular power, and maximal aerobic power (VO2max). Several studies have documented the physiological and anthropometric characteristics of Basketball and Handball players, with the fitness of players typically increasing as the playing standard is raised. Smith et al. (1992) compared physical, physiological, and performance characteristics of national and college standard Basketball and Handball players and found significantly higher block and spike jumps, 20-m speed, and VO2max in the national standard players, suggesting that physiological capacities play an important role in the preparation and selection of elite Basketball and Handball players.

The physiological variables involved in sports performance have long been of interest to players, coaches, sport physiologists and sports scientists. From a physiological point of view, the lung function tests, like other physiological tests must be of the utmost importance for measuring the fitness of an athlete. There is also a need to develop respiratory capacities, which pertains to the ability of the body to supply the oxygen. Respiratory parameters vary from individual to individual and one of the important variables for establishing top class performance in Basketball and Handball as the game involves work of long duration.

METHODOLOGY

Research is a purposeful, scientific and pointed deliberation. It is necessary to adopt and revolve a systematic procedure to collect required data. After selection, definition and delimitations of the problem, the adaptation of suitable measures become imperative. It is the nature of the problem under investigation which determines the adaptation of a particular method and procedure. There is needed to make judicious selection of the techniques, keeping in view the aims and objectives of the study, time factor, availability of the subjects and other resources at the disposal of investigator.

Subjects –

The present study were conducted on 30 female Basketball and Handball players (Basketball: 15 and Handball: 15) of 17-24 years age. The subjects were randomly selected from different Basketball and Handball academies and they volunteered to participate in the study.

Selection of Variables - Physiological Variables -

- Heart Rate
- Lung Capacity
- Systolic Blood Pressure
- Diastolic Blood Pressure

Tools used for data collection-

The criterion measure was used to collect the data in a deal and systematic way to record in a correct unit and style for each test item.

- Heart rate of the subjects was measured with the help of
- stopwatch and measurement was in number of pulse /
- minute. The basal pulse rate was measured for the study.
- Systolic blood pressure was also be measured by using
- digital blood pressure apparatus and the unit was
- measured in MM of Hg.
- Diastolic blood pressure was also be measured by using
- digital blood pressure apparatus and the unit was
- measured in MM of Hg.
- Lung capacity of the subjects was measured by Peak flow
- meter test in liter.

DATA ANALYSIS

Mean and standard deviation were calculated in order to study the selected physiological variables of female Basketball and Handball players. 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.

Variable	Area	Mean	S.D	't*
Heart rate	female Basketball player	69.00	1.30	4.02
	female Handball player	67.26	1.09	
Lung Capacity	female Basketball player	79.26	12.23	4.42
	female Handball player	92.26	4.57	
Systolic Blood Pressure	female Basketball player	1.10	6.56	4.58
	female Handball player	1.02	5.49	
Diastolic Blood Pressure	female Basketball player	78.66	2.52	6.07
	female Handball player	72.80	2.07	

Significant at 0.05 levels
't' 0.05 = 1.66

Table 1: Comparison of Physiological Variable of female Basketball and Handball Players.

Table-1: shown the comparison of Physiological variables of the players of the female Basketball and Handball players. The mean values of the heart rate of the female Basketball and Handball players were 69.00 and 67.26 respectively. The mean values of lung capacity of the female Basketball and Handball players were 79.26 beats/min and 92.26 beats/min respectively. The mean values of systolic blood pressure of the players of the female Basketball and Handball players were 1.10 and 1.02 respectively. The mean values of diastolic blood pressure of the players of the female Basketball and Handball players were 78.66 and 72.80 respectively.

The't' value of the Heart rate, Lung capacity, (Systolic and Diastolic) blood pressure of the female Basketball and Handball players were 4.02*, 4.42*, 4.58* and 6.07* respectively which was tested at the level of significant at .05 level and the tabulated value of't'=1.66, which showed that significant difference in mean value of Heart rate, Lung capacity, (Systolic and Diastolic) blood pressure was found and our hypothesis was accepted.

DISCUSSION

The analysis of data for physiological variables like Heart rate, lung capacity, and Systolic and Diastolic blood pressure revealed that there was significant difference between Basketball and Handball players and our hypothesis revealed to the above variables was accepted.

CONCLUSION

Human sports performance is determined by a combination of several physical, anthropometrical, physiological, and psychological factors. The relative importance of each of these depends on the nature of the sports. Basketball and Handball game is an intermittent exercise that requires the players to perform frequently short bouts of high-intensity activities such as jump and spike, followed by periods of low-intensity activities. In Basketball and Handball, technical and tactical skills, anthropometric characteristics and individual physical performance capacities are most important factors that contribute to the success of a team in competitions.

The data showed that the mean scores of female Basketball players for physiological variables (Heart rate, Lung capacity, Systolic and Diastolic) were better than female Handball players.

REFERENCES

Amasay, T. (2008) Static block jump techniques in volleyball: Upright versus squat starting positions. Journal of Strength and Conditioning Research, 22(4): pp. 1242-1248.

Bayios IA, Bergeles NK, Afostolidis NG, Nontsor KS, Koskolon MD. (2006). Anthropometric, Body Composition and Somatotype Difference of Greek Elite Female Basketball, Volleyball and Handball Players. The Journal of Sports Medicine and Physical Fitness, published by Miner Medical; 46(2).

Boyd CAR, Noble D. (2003). The Logic of Life: The Challenge of Integrative Physiology. Oxford University Press, Oxford.

Chin, M.K., Kurt, S., Raymond, C. H. So, Christopher R. C. and Alison, S. K. W. (1995). Physiological profiles and sport specific fitness of Asian elite squash players. Br J Sports Med, 29: pp. 158-164.

Kasa, J. (2003). Diagnostics of motor prerequisites. Trencin University Alexandra, Institute of natural and humane sciences, pp. 127-128.

Kornspan, A.S. (2009). *Fundamentals of Sport and Exercise Psychology.* USA: Human Kinetics.

Smekal, G., Von, S.P., Rihacek, C., Pokan, R., Hofmann, P., Baron, R., Tschan, H. and Bachi, N. (2001) A physiological profile of tennis match play. Medicine and science in sports and exercise, 33 (6): pp. 999-1005.

Urbina, S. (2014).*Essentials of Psychological testing (*2nd Ed). New York: Harper & Row Publishers.

Vescovi, J. and Mcguigan, M. (2008). Relationships between sprinting, agility, and jump ability in female athletes. Journal of Sports Sciences, 26(1): pp. 97-107.