



ISSN: 2456-0057
IJPNE 2016; 1(2): 136-139
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www.journalofsports.com
Received: 24-05-2016
Accepted: 25-06-2016

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Comparative study of physical and physiological profile of basketball and handball players

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Abstract

The purpose of study was to compare physical fitness of handball and basketball players of Jammu University, Jammu and Kashmir state. Total 30 male players (15 players of each game) were randomly selected and their age ranged from 20-25 years. The subjects were regularly practicing and competing in their respective sports. All the subjects were informed about aim and methodology of the study and they volunteered to participate in this study. The selected subjects were tested on physical fitness components such as speed by 50 yard dash, agility by shuttle run. For physiological fitness components the subjects were tested on pulse rate and blood pressure by using digital sphygmomanometer. The level of significance was set at 0.05. The result of the study showed that handball players have greater speed ability than basketball players. However, no significant difference was found between handball and basketball players for the variables of agility, pulse rate and blood pressure.

Keywords: Physical fitness, physiological fitness, sphygmomanometer

1. Introduction

Physical fitness and a healthy mind is an inevitable aspect of human life. Swami Vivekananda strongly stressed the importance of physical fitness when he said, "Be strong my young friends, that is my advice to you. You will be nearer to heaven through football than through the Gita". The performance in most of the sports is determined by such factors as physical fitness, techniques and tactics, their relative contribution varies from sport to sport. In addition to these, other factors like physique, body composition and psychological traits and physiological characteristics also have an overall effect on the performance. It has been recognized by experts and sports scientists that high level performance in athletics not only requires certain physical attributes like speed, cardiovascular endurance, explosive strength, agility, flexibility, strength etc., but also physiological features help him for his high performance. The ability of an individual to perform well in given physical activity depends on certain variables the most important of which is the magnitude of one's energy supplied and the type of energy needed. For being a good Hand Ball player, it is important to look after the health of the players and their hand-ball skills. In the modern game of hand ball, is put on the development of skills because a player has to take different positions while playing this game. A player may have to prepare a ball to shoot it in goal by dodging to opponent team. Take different positions during the hand-ball game as shooter, defender, offender, blockers etc. Take his particular position and according to situation, change his sides. Change his position as a defender; he has to do this keeping in view the offender. Defend a Group as per situation. Defend single player according to situation. Constantly concentrate on the ongoing play so that he can take accurate offensive and defensive positions as per requirements. For being a good Hand Ball player, it is important to look after the health of the players and their hand-ball skills. In the modern game of hand ball, is put on the development of skills because a player has to take different positions while playing this game. A player may have to prepare a ball to shoot it in goal by dodging to opponent team. Take different positions during the hand-ball game as shooter, defender, offender, blockers etc. Take his particular position and according to situation, change his sides. Change his position as a defender; he has to do this keeping in view the offender. Defend a Group as per situation. Defend single player according to situation. Constantly concentrate on the ongoing play so that he can take accurate offensive and

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defensive positions as per requirements. Basketball is a five aside ball game which originated in the U.S.A but is now played worldwide. The object of the game its inventor Naismith, conceived it is for one team to secure possession of the ball and to throw it into the opponents basket, while attempting to prevent the other team from securing the ball or scoring. A goal is scored when the ball enters the basket from above and remains in or passes through the feet, credit for the invention of the game basketball as played today, however must go to Canadian born Dr. Naismith, a leader at the international Y.M.C.A training school at Springfield, mass team game from a group a students working Y.M.C.A., Secretarial qualifications who had become disenchanted with compulsory formal gymnastics. Dr. Naismith formulated his first rules in December 1891 and on 20th January 1892 organised the first game of basket ball at the Y.M.C.A. gymnasium in spring field. Karpovich and Sinning (1971) activity science deals with a complex analysis of various facets of human activities affecting the human organism physically, mentally and socially. Awareness of physical features and the dynamics of motor fitness are becoming increasingly important to the physical educators and coaches with an increased scientific knowledge of sports. Edward Superlak (2008) discusses that proper multi-level selection of talented youth is one of the fundamental aspects of qualified sport. The common auto telic approach to selection in sport, based on the measurement of individual traits and abilities and excluding any pragmatic aspects of different sports seems highly insufficient today. Mehmet Pense, Behiç Serpek (2010) concluded that the physiological and biometric values of female basketball playing students are higher than the same

aged students with no activity. On the other side, it's been also founded that because of the proper content of the test, Eurofit test battery can help to choose the talents of the basketball. Allen F. Joseph J. Greene, *et al.*, (1998) found significant anthropometric and performance sex differences in a cohort of high school basketball players.

2. Materials and Methods: 30 male subjects were selected from University of Jammu, Jammu and Kashmir randomly, the age group ranged between 20 to 25 years. Data were collected during inter-university camp held at Jammu university campus. All the subjects gave an informed consent after detailed protocol of the non-invasive technique was explained to them. Physical test includes 50 yard dash for speed, shuttle run for agility. For physiological fitness components the subjects were tested on pulse rate and blood pressure by using digital sphygmomanometer.

2.1 Data Collection

Prior to data collection field marking was done. All subjects were asked to go for warm-up. The tests for speed, agility, pulse rate and blood pressure were demonstrated and instruction to complete the test was given to the subjects. When subjects were ready for the test, the data was recorded by the administering the tests. Some points must taken into consideration while taken tested on pulse rate and blood pressure, don't take medications before measuring your pulse rate and blood pressure. If you exercise after waking, take your blood pressure before exercising.

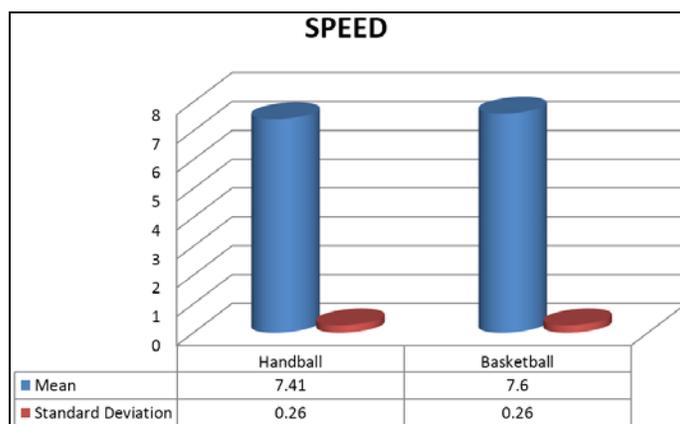
3. Results

Table 1: Descriptive Statistics of Selected Variables for Handball and Basketball Players

Variables	Mean		Standard Deviation		T Value
	Handball	Basketball	Handball	Basketball	
Speed in sec.	7.41	7.60	0.26	0.26	3.62*
Agility in sec.	14.46	14.61	0.13	0.16	1.55
Pulse Rate beats in one minute	63.80	63.66	3.09	3.55	0.18
Blood Pressure in mm.Hg.	116.10	116.20	3.55	3.70	0.12
a) Systolic	74.04	75.35	4.88	5.16	1.09
b) Diastolic					

N=30

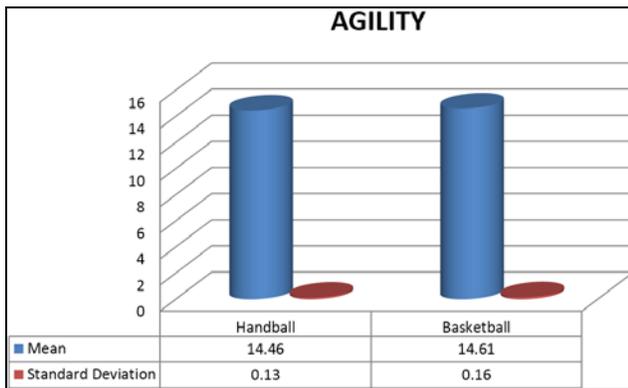
Tab t0.05 (28) =2.05



Graph 1

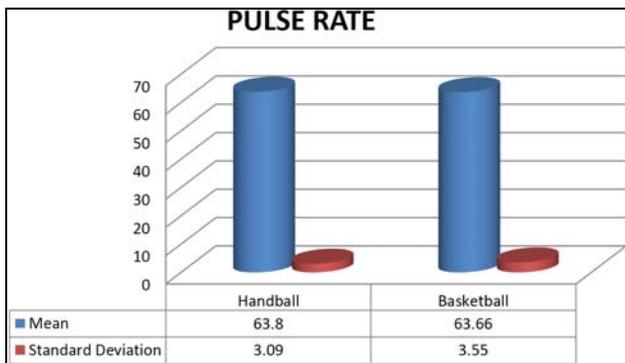
Graph-1 clearly shows that mean value of speed for handball and basketball players were 7.41 ± 0.26 and 7.60 ± 0.26 respectively. The obtained *t* ratio on speed is 3.62, which is greater than the required table value (2.05) with 28 df and at 0.05 level of confidence. This shows that there is significance

difference exist when speed is considered among handball and basketball players. This is also indicated that handball players showed greater sprinting ability when compared with basketball players.



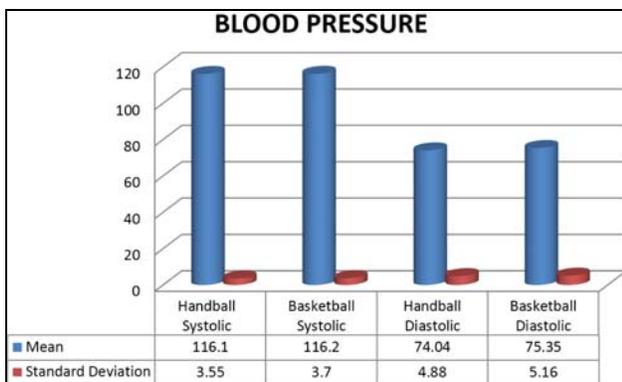
Graph 2

Graph-2 shows that that mean and standard deviation value of agility for handball and basketball players were 14.46 ± 0.13 and 14.61 ± 0.16 respectively. The obtained *t* ratio on agility is 1.55, which is less than the required table value of 2.05 with 28 df. So, there is no significant difference on agility between handball and basketball players.



Graph 3

It is evident from the above graph-3 that the mean and standard deviation scores of handball and basketball in pulse rate were 63.80 ± 3.09 and 63.66 ± 3.55 . The obtained *t* ratio on agility is 0.18, which is less than the required table value of 2.05 with 28 df. So, there is no significant difference on pulse rate between handball and basketball players.



Graph 4

3.1 Systolic blood pressure

Graph-4 reveals that that the mean and standard deviation scores of handball and basketball in systolic blood pressure were 116.1 ± 3.55 and 116.2 ± 3.7 . The obtained *t* ratio on

systolic blood pressure is 0.12, which is less than the required table value of 2.05 with 28 df. So, there is no significant difference on systolic blood pressure between handball and basketball players.

3.2 Diastolic blood pressure

Graph-4 reveals that that the mean and standard deviation scores of handball and basketball in diastolic blood pressure were 74.04 ± 4.88 and 75.35 ± 5.16 . The obtained *t* ratio on diastolic blood pressure is 1.09, which is less than the required table value of 2.05 with 28 df. So, there is no significant difference on diastolic blood pressure between handball and basketball players.

4. Discussion: As the purpose of the study was stated earlier, that to find out the difference between handball and basketball players in their physical and physiological fitness components. Obtained results of the study reveals that there is a significant difference exist between handball and basketball as for as speed is concern. However, no significant difference was found between handball and basketball players for the variables such as agility, pulse rate, blood pressure. This indicates that handball players showed greater sprinting ability. Similar types of results were reported by Cherappurath N. (2015) [4], Pawan (2005). The results of the study are in agreement with the finding of Singh *et al.* (2013) [3, 9].

5. Conclusion

In present study, the statistical analysis of physical and physiological fitness components revealed that in the parameters such as agility, pulse rate and blood pressure there were no significant difference between handball and basketball players of Jammu University, Jammu And Kashmir State and there was significant difference in the component of speed between handball and basketball players.

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