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Comparison between players of ball and racket games in their physical and physiological profile

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Abstract
The purpose of this was to compare the physical and physiological traits of Ball and Racket games players. For accomplish the study total 50 players were selected from each discipline. A total 100 players were selected through random sampling technique. 50 players were selected from Basketball (Ball game) and 50 were selected from Badminton (Racket game). Speed and strength were selected as Physical variables and blood pressure and VO_2 max were selected as Physiological components to compare the traits of both selected games. To compare the obtained result *t* test was used as statistical technique and level of confidence was set at 0.05.

Keywords: basketball ball, badminton, $VO_{2\ max}$

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 inathletics 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. 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, conceited 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 organized the first game of basketball 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.
Scientist and physiologist have been of the view that physiological parameters of an athlete have a lot to do with their performance more than the techniques and tactics of the player. Most of the games demand a greater amount of speed, strength, endurance, agility, and flexibility etc. Fitness from the stand point of the football players means that the player must have a high standard of physical and physiological condition, which makes possible through the perfect functioning of the organs of locomotion and circulation and of nervous system, the maximum possible use and application of his physical and mental capabilities and knowledge of football. The existing literature in the field of soccer shows that endurance, speed, agility, maximum leg strength, upper body strength, leg power, muscular endurance, flexibility, coordination and reaction time are important pre-requisite for efficient soccer performance, and whereas excess body fate proves to be a hindrance. The game of soccer requires tremendous physical fitness as the duration of the game is longer in time in which basic management such as different skills are involved. The researcher therefore, has made an attempt to compare the selective physical fitness and physiological parameters of the soccer game.

2. Material and Methods
A total 100 subjects were selected from the different universities of Haryana. Out of 100 subjects, 50 were from the Ball game (Basketball) and 50 were from the Racket games (Badminton). The age of the subject were ranged from 18 to 25 years. Physical test includes 50 meter dash for speed and standing broad jump for strength. Physiological test includes $VO_{2\ max}$ for maximal oxygen consumption and blood pressure. For physiological fitness components the subjects were tested on 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, strength, 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 take into consideration while taken tested on 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.

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3. Results

Table 1: Descriptive Statistics of Ball games players

Basketball	Mean	SD	SE
Speed	7.09	.532	.075
Strength	226.56	22.38	3.16
Systolic	132.32	12.85	1.81
Diastolic	79.5	6.42	.908
$VO2_{max}$	43.96	8.85	1.25

Table 2: Descriptive Statistics of Racket games Players

Badminton	Mean	SD	Mini.
Speed	6.96	.483	.068
Strength	225.80	20.43	2.88
Systolic	122.06	8.71	1.23
Diastolic	76.32	8.41	1.19
$VO2_{max}$	49.24	7.63	1.08

Table 3: showing *t* value and its significance

Variable	Game	t	Sig.
speed	Basketball	1.361	.177
	badminton		
Strength	Basketball	.177	.860
	badminton		
Systolic pressure	Basketball	4.672*	.000
	badminton		
Diastolic pressure	Basketball	2.123*	.000
	badminton		
$VO_{2\ max}$	Basketball	3.195*	.002
	badminton		

Significant at.05 level of significance with df 98

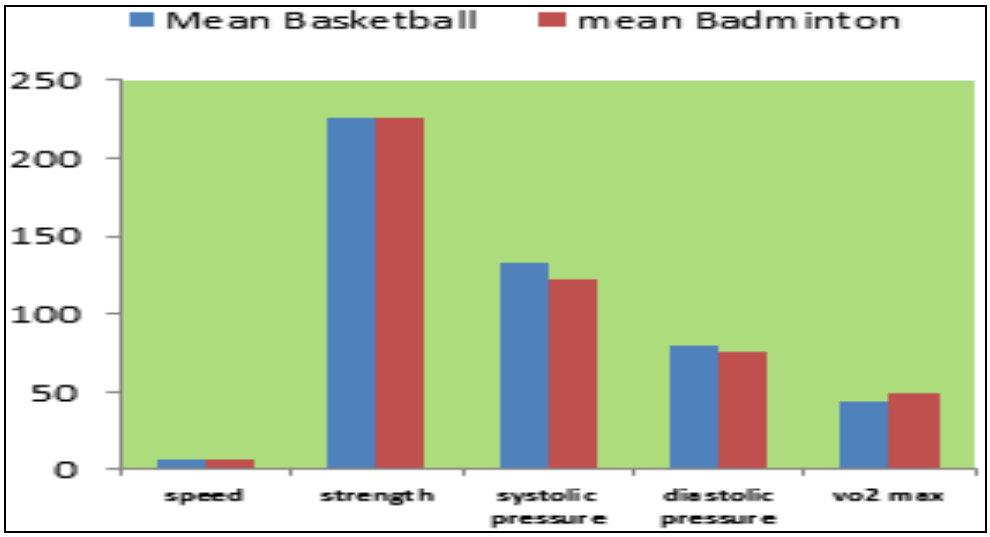

Fig 1: Means difference of Ball and Racket games in their selected physical and physiological components

Table 1 is showing the descriptive statistics of obtained results of ball game players. the mean and SD of basketball players in their speed is 7.09±.532, and in strength is 226.56±22.38, and in systolic pressure is 132.32±12.85, and in diastolic pressure is 79.5±6.42, and in $VO_{2\ max}$ is 43.96±8.85

Table 2 shows the descriptive results of badminton players. The mean and standard deviation values of speed are 6.96±.483, for strength are 225.80±20.43, for systolic pressure are 122.06±8.71, for diastolic pressure are 76.32±8.41 and for $VO_{2\ max}$ are 49.24±7.63 respectively. The mean difference has been shown with the help of diagrams.

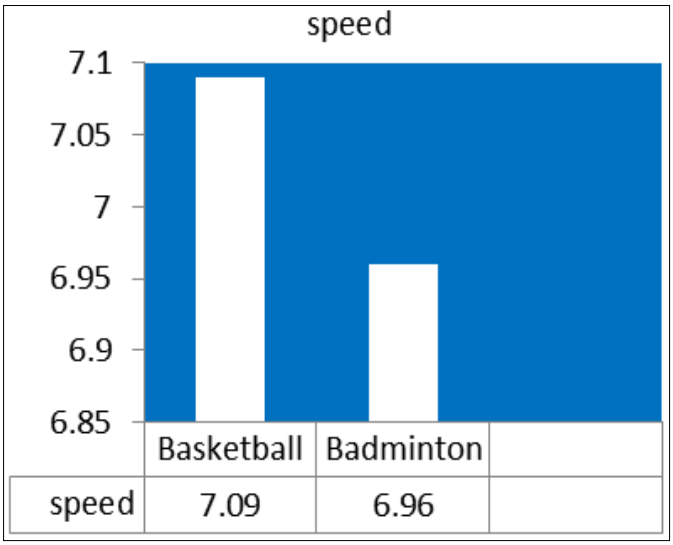

Fig 2: Mean difference of speed between basketball and badminton players

Table 3 evident the values of t ratio. The obtained *t* ratio on speed is 1.361, it is not significant at 0.05 level of significance and *df* 98. This shows that there is no significant difference between ball and racket games in their speed.

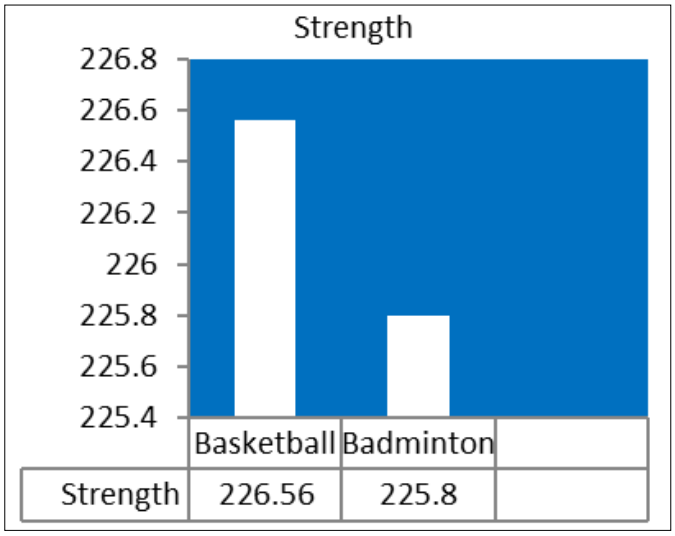

Fig 3: Mean difference of strength between basketball and badminton players

The obtained t ratio on strength is.177 which is also not significant at 0.05 level with df 98. It means there is no significant difference between ball and racket games in their strength.

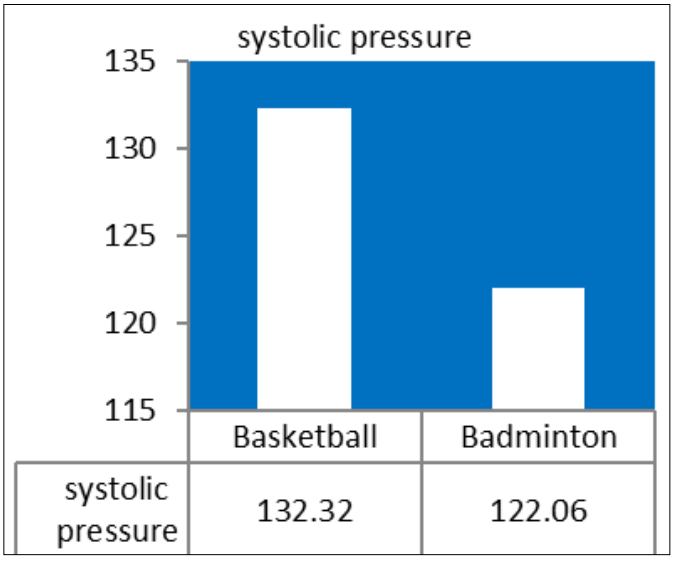

Fig 4: Mean difference of systolic pressure between basketball and badminton players

The obtained t ratio on systolic blood pressure is 4.672 which is higher than the table value. This mean there is a significant difference found between ball and racket games in their systolic blood pressure.

The obtained t ration on diastolic pressure is 2.123 which is significant at 0.05 level of significance. This mean there is a significant difference between ball and racket games in their diastolic blood pressure.

The last obtained t value on $VO_{2\ max}$ is 3.195 which is higher than the table value and significant according to SPSS results because the value of significance is.002 which is lower than the 0.05. This mean the obtained value of $VO_{2\ max}$ is significant at 0.05 level. So we can say that the oxygen consumption during maximum load of badminton players is higher than the basketball players.

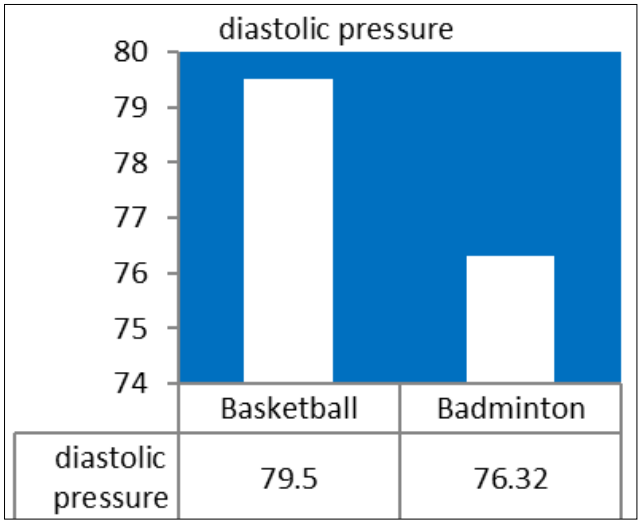

Fig 5: Mean difference of diastolic pressure between basketball and badminton players

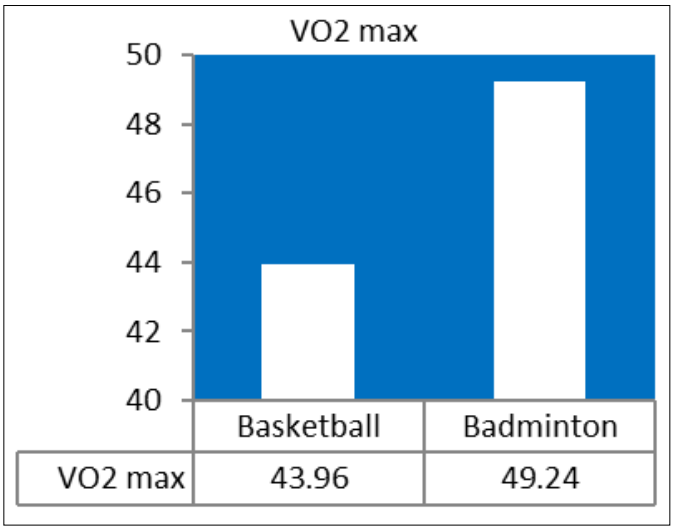

Fig 6: Mean difference of $VO_{2\ max}$ between basketball and badminton players

4. Discussion

As the purpose of the study was stated earlier to find out the difference between the players of ball game and racket game in their physical and physiological profile. Obtained results of the study reveals that there is a significant difference exist between basketball and badminton as for as systolic and diastolic blood pressure is concern. There is also a significant difference found in their maximal oxygen consumption ($VO_{2\ max}$). However, there is no significant difference found between ball and racket games players in there speed and strength profile.

5. Conclusions

In present study, the statistical analysis of physical and physiological fitness components revealed that in the parameters such as systolic blood pressure, diastolic blood pressure and $VO_{2\ max}$ have significant difference between ball and racket games players of different universities of Haryana and there is no significant difference observed in their speed and strength profile.

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