

## A STUDY OF CARDIOVASCULAR ENDURANCE AMONG NATIONAL LEVEL PLAYERS OF DIFFERENT GAMES

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**Abstract** - The purpose of present study was to compare cardiovascular endurance among different games. To achieve the purpose of the study, sixty (n=60) national level male players of different games (20 for each game i.e., football, hockey and volleyball) from Chandigarh age range between 19-26 years were selected as subjects of the study by using purposive sampling technique. To assess the cardiovascular endurance of the subjects Cooper's 12 minutes run/walk test was used. To find out the significance difference among national level players on cardiovascular endurance, analysis of variance (ANOVA) was applied with the help of SPSS software. For testing hypothesis, the level of significance was set at 0.05. Results of the study revealed that there was significant difference found among the different games i.e. football, hockey and volleyball in relation to their cardiovascular endurance, after that it can be observed that football and hockey have highly significant difference and footballer have better cardiovascular endurance than volleyball and football players.

**Keywords** - Cardiovascular Endurance, Football, Hockey And Volleyball

### I. INTRODUCTION

Success of sports and games are depended on several factors i.e. physical fitness, physiological and psychological fitness etc. All factors are important and depend on each other. Be deficient in any factor exercises. It may be defined as the ability of heart and lungs to take in and to transport adequate amount of oxygen to working muscles for activities (that involves large muscles masses)and to be performed over long periods of time (Fox et al., 1993). Cardiovascular endurance is related to moderate work or contractions of large muscle groups over a long period of time that is placed stress on the respiratory system and circulatory system of the body to supply adequate amount of blood and oxygen to the muscles during any moderate kind of physical activity (Kumara, 2016). The success of most games are depends on cardiovascular fitness. If a player wants to play with good mental and physical abilities he also has to be elite in his cardiovascular fitness.

Aerobic power helps an athlete sustain a challenging exercise pace over time. When he gets tired, his movements are no longer fluid and efficient. He is more likely to make mistakes or get injured. At that time cardiovascular exercise can be benefit for athletes to do their skills properly for long time. (University Sports Medicine, 2003).VO<sub>2</sub>max is defined as the highest attainable rate of aerobic metabolism during the performance of dynamic work that exhausts the subject within 5–10 min and it is internationally accepted as an index of one's cardiorespiratory fitness or cardiovascular fitness. Among the different indirect field tests for prediction of VO<sub>2</sub>max, Cooper's 12-minute run test (CRT) is a popular one and requires only a measuring tape to

can affect a player's performance. Cardiovascular endurance is one of the important components of physical fitness and also importantly required in motor fitness components. Cardiovascular endurance is physiologically related to heart and lungs and can be improved by aerobic determine the distance covered in 12 min. (Bandyopadhyay, 2015).

### II. OBJECTIVE OF THE STUDY

The objective of the study was to compare the cardiovascular endurance among different games.

### III. MATERIALS AND METHODS

For the purpose of the study, sixty (n=60) national level male players of different games (20 for each game i.e., football, hockey and volleyball) from Chandigarh between 19-26 years were selected as subjects of the study by using purposive sampling technique. To assess the cardiovascular endurance of the subjects Cooper's 12 minutes run/walk test was used. To find out the significance difference among national level players on cardiovascular endurance, analysis of variance (ANOVA) was applied with the help of SPSS software. For testing hypothesis, the level of significance was set at 0.05.

### IV. RESULTS OF THE STUDY

The comparison among different games on cardiovascular endurance of national level players of different games was analyzed using ANOVA test. The data pertaining to the same is presented in Table 1 to 3.

Games	N	Mean	Std. Deviation	Std. Error
Football	20	2567.95	141.066	31.543
Hockey	20	2368.5	285.404	63.818
Volleyball	20	2510.5	205.284	45.903

**Table: 1** Descriptive analysis of selected different games on cardiovascular endurance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	421632.033	2	210816.017	4.407	.017
Within Groups	2726442.950	57	47832.332		
Total	3148074.983	59			

**Table 2:** Comparison of cardiovascular endurance among selected national level male football, volleyball and hockey players

\*Significant at .05 level

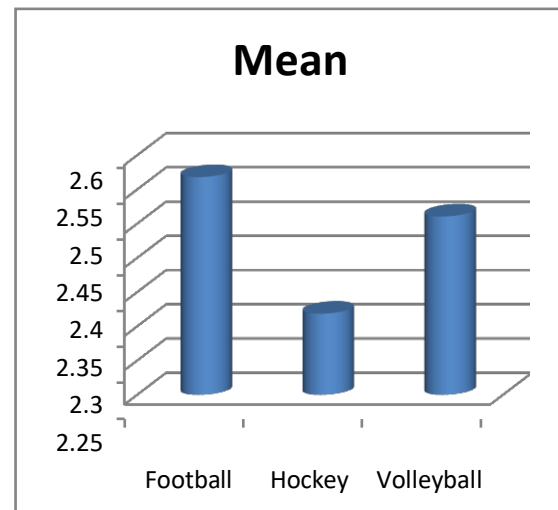
F .05 (2, 57) = 3.16

Table 2 clearly indicates that there was significant difference found among selected national level male football, volleyball and hockey players since the F obtained at .05 level was 4.407 whereas, the value needed to be significant was 3.16 for 2 and 57 degree of freedom at .05. Since the ANOVA was found significant, the Scheffe's Post-hoc test was applied to find out which of the difference of the means amongst the group were statistically significant. The data related to this are presented in table-3.

Group			Mean Difference	Sig.
Football	Hockey	Volleyball		
2.568	2.368		199.45*	.021
	2.368	2.5105	142.00	.131
2.568		2.5105	57.45	.710

**Table-3:** Significant differences between the paired means of cardiovascular endurance among football, volleyball and hockey players

Table 3 clearly indicates that the significant differences existed between football & hockey players, hockey & volleyball players and football & hockey players on cardiovascular endurance since the value obtained were 199.45000, 142.00000 and 57.45000 respectively. Mean scores among selected national level male football, hockey and volleyball players on cardiovascular endurance is graphically depicted in figure-1.



**Fig 1:** Graphical representation of mean scores of cardiovascular endurance among selected national level male football, hockey and volleyball players

## V. DISCUSSION OF FINDINGS

The analysis of data reveals that there is significant difference in cardiovascular endurance among different games (football, hockey, and volleyball) was obtained and football players have better cardiovascular endurance than volleyball and hockey players. The significant difference may be due to the different nature of games in playing situations. Usually hockey players, football players, volleyball players are employed several different movements while taking part in their game. Kerketta and Singh (2015) reveals the similar results in their study that there was significant difference found between male soccer and hockey players of Guru Ghasidas Vishwavidyalaya, Bilaspur. On the basis of the findings they concluded that the male soccer players had more cardiovascular endurance than male hockey players.

## VI. CONCLUSION

With the limitations of the study it may be concluded that, there was significant difference found among the different games i.e. football, hockey and volleyball in relation to their cardiovascular endurance. After that it can be also observed that football and hockey have

highly significant difference. Further study also revealed that football player has better cardiovascular endurance than volleyball and hockey players.

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