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Comparison of cardiovascular endurance between male soccer and hockey players of G.G.V. Bilaspur

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Abstract

The purpose of present study was to investigate the cardiovascular endurance between male soccer and hockey players of Guru Ghasidas Vishwavidyalaya (GGV), Bilaspur. For the present study total thirty male soccer and hockey players (15-15 each) from Guru Ghasidas Vishwavidyalaya, Bilaspur were selected randomly as the subjects for the study. The age of the subjects were ranging from 19-25 years. The variables selected for the present study were cardiovascular endurance (12 min. run/walk test). For comparing means of cardiovascular endurance, descriptive analysis and independent t-test were applied at 0.05 level of significant. The result of the study showed that there was significant difference found between male soccer and hockey players of Guru Ghasidas Vishwavidyalaya, Bilaspur. On the basis of the findings it was concluded that the male soccer players have more cardiovascular endurance than male hockey players.

Keywords: Cardiovascular endurance, Soccer, Hockey, 12 min. run/walk test.

1. Introduction

Cardiovascular endurance is one of the most significant components of general physical fitness. It may be defined as the ability of heart and lungs to take in and to transport adequate amounts oxygen to the working muscles for activities (that involve large muscle masses), to be performed over long periods of time. (Fox *et al.*, 1993) ^[3] The cardiovascular endurance has many synonyms like cardio-respiratory endurance, circulatory-respiratory endurance, and cardio-pulmonary endurance aerobic power etc. the cardiovascular endurance involves moderate contraction of large muscle groups for long periods of time during which maximum adjustments of circulatory-respiratory system are necessary as in continuous brisk walking, running, swimming, climbing, hiking, aerobics, bicycling and the like. (Clarke and Clarke, 1987) ^[1]

Football, as it is seen today has undergone a tremendous improvement since its birth; the game of football is one of the most popular games in the world. The game began in England in the 12th century but Edward II banned it in 1324. Considering the growing popularity of the game, delegates from seven nations met on May 21, 1904 to form the Federation International de Football Association (FIFA) (Giulianotti, 1999) ^[4]. Soccer refers to a number of sports that involve, to varying degrees, kicking a ball with the foot to score a goal. The most popular of these sports worldwide is association football, more commonly known as just "football" or "soccer". In soccer game cardiovascular endurance plays an important role for long time playing.

Hockey is a dynamic field game, played by male and female, requiring high level skills, excellent conditioning and well co-ordinated team efforts (Dubey, H.C.1999) ^[2]. Hockey is one of the most popular and attractive sports in the world. Hockey is a sport with many complex techniques and tactics that can be seen speed, power, endurance and movement frequently in it (Ahmad Yaghoobi & Bijan Goodarzi, 2014) ^[9].

2. Methodology

For the present study 15 male soccer players and 15 male hockey players were taken as subjects. The subjects were randomly selected and the age of the subjects ranged from 19-25 years from Guru Ghasidas Vishwavidyalaya, Bilaspur. The subjects were tested in order to t. order to find out the cardiovascular endurance.

2.1. Administration of test

2.1.1. 12 minute run/walk test: The 12 min. cooper run/walk test was used to estimate the cardiovascular endurance of the subjects (distance covered measure in meter). (Kansal. D. K., 2008) [5, 6]

2.1.2. Purpose: To measure the cardiovascular endurance.

2.1.3. Equipment: Flat oval or running track, cones/flags, lime powder, stop watch, whistle, measuring tape, recording sheet.

2.1.4. Test Administration: The subjects asked to stand at starting line, after a brief explanation about 12 minute run/walk test. At the signal Ready Go, the subject run and covers as much distance as possible in 12 minutes. Just after 12 minute run/walk stop signal given by the tester and subjects have to stop running or walking and stand where they were at that time.

2.1.5. Scoring: Total distances covered (in 12 minute run/walk) by subjects were score of the subject using this formula:

$$VO_2 \text{ Max.} = (\text{Covered distance in meter} - 504.9)/44.73$$

2.1.6. Criterion measure

Sr. No.	Variables	Test item	Unit of measure
01.	Cardiovascular Endurance	12 minute run/walk test	In meters

2.1.7. Statistical Analysis

Descriptive statistic, Mean, Standard Deviation and Independent t-test were applied to compare the cardiovascular endurance between male soccer and hockey players. The level of significance was set at 0.05.

3. Results of the Study

The scores were obtained by using the 12 minute run/walk test as suggested by Kenneth H. Cooper, 1968. All the individual 12 minute run/walk test score was used to judge the level of cardiovascular endurance.

Table 1: Comparative and descriptive table of male soccer and hockey players in relation to cardiovascular endurance

Game	N	Mean	SD	MD	SE	t-value
Soccer	15	2479.07	63.46	55.80	22.07	2.528*
Hockey	15	2423.27	57.27			

*significant at 0.05 level (df 28 = 2.048)

Table-I indicates that the calculated t-value 2.528 on cardiovascular endurance observed “t” value are compared with the critical value 2.048, 28 degree of freedom. It was observed that the value 2.528 was found as higher than the table value 2.048. This confirms that significant difference exists between the means of male soccer and hockey players in relation to cardiovascular endurance.

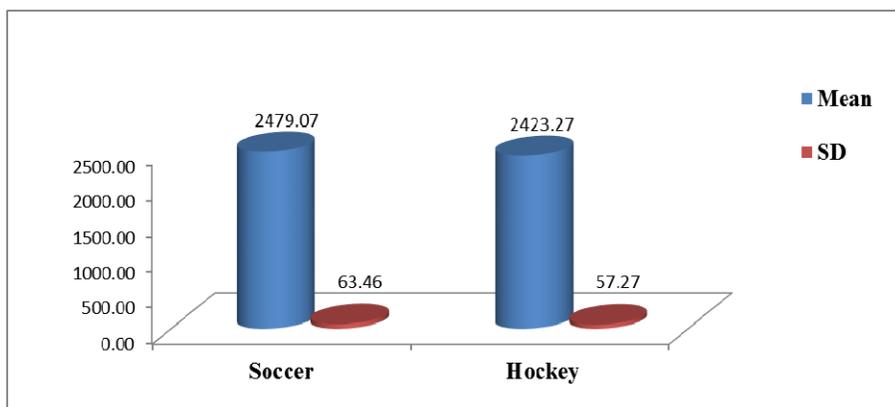


Fig 1: Graphical representation of Mean and SD of male soccer and hockey players in relation to cardiovascular endurance

As the fig.-I, shows that the mean and standard deviation score of soccer players (2479.07 and 63.46) was greater than the mean and standard deviation score of hockey players (2423.27 and 57.27). So it revealed that the male soccer players have more cardiovascular endurance than the male hockey players.

4. Conclusions

On the basis of result following conclusions have been made –

1. Significant difference was found between the male soccer players and male hockey players of Guru Ghasidas Vishwavidyalaya, Bilaspur in relation to cardiovascular endurance.
2. Male soccer players were having greater cardiovascular endurance than male hockey players.

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