



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2022; 8(1): 389-392
www.allresearchjournal.com
Received: 20-11-2021
Accepted: 18-12-2021

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A comparative study on selected motor fitness components of hockey and football male players of inter: Collegiate level

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Abstract

The purpose of the study was to compare selected motor fitness components of intercollegiate level football and hockey male players of the colleges in Chandigarh affiliated to Panjab University. To achieve the objective of the study, 52 intercollegiate level male players (26 hockey, 26 football) were selected as subjects by using purposive sampling technique. The age of the subjects ranged between 18-24 years. The study was confined to selected motor fitness components namely speed, abdominal strength, agility and cardiovascular endurance. The data were recorded by different measures namely 50 meter dash, sit ups, shuttle run (4×10m), 600 meter run as prescribed in Test Evaluation Accreditation Measurements and Standards by Kansal (2018). To find out the significance difference between hockey and football male players on selected motor fitness components, 't' test was applied at 0.05 level of significance. The results of the study revealed that there was significance difference attained on speed and agility. Football players were performed better than hockey players in speed and agility. There was no significant difference obtained on abdominal strength and cardiovascular endurance.

Keywords: Abdominal strength, agility, cardiovascular endurance, speed

Introduction

The term physical fitness and motor fitness are often used for each other. Motor fitness is a limited phase of physical fitness, and can be more concretely defined as a readiness or preparedness for performance with special regard for big muscle activity without undue fatigue. It concerns the capacity to move the body efficiently with force over a reasonable length of time (Kamlesh, 2011) [3]. Football is probably the world's most popular sport played in practically every nation at varying levels of competence (Reilly, 1995) [8]. As we know hockey is also a popular sport as well as played in most of the countries. Both hockey and football have been considered as highly competitive sports worldwide. A player is required an appropriate level of health related physical fitness and motor fitness to play these sports. To perform the basic skills of these sports like dribbling, shooting, juggling, passing etc. in a precise and quick manner motor fitness is very important. Motor abilities contribute independently and interdependently for successful performance of skill (Barrow and McGee, 1979) [2]. Any dynamic sports skill performance is directly related to motor fitness level of the player. For the betterment of the players, it is very necessary to know their motor fitness level for further making appropriate strategies to improve it.

Sen and Bhagat (2013) [9] conducted a study on 128 male players (64 football, 64 hockey) of school state level to know the differences in their selected motor fitness components i.e. strength (upper body, abdominal, explosive), agility, speed and endurance. The results of the study revealed that the hockey players were significantly better than football players in abdominal strength. But the football players were significantly better in explosive strength than hockey players. No significant differences were observed in upper body strength, agility, speed and endurance between football and hockey players.

Singh (2015) [13] compared the volleyball and handball players, who participated in inter-university tournament, on the selected physical fitness variables (endurance, agility, flexibility and explosive strength). The final results indicated that the explosive strength was significantly higher in volleyball players than handball players.

But the flexibility was significantly higher in handball players than volleyball players. There was no significant difference found in endurance and agility between volleyball and handball players.

Ajayaghosh (2017) ^[1] carried out a study to compare the intercollegiate football and hockey male players on selected physical fitness variables i.e. speed, agility and lower body strength. The results showed that the football players were significantly better than hockey players on all the selected physical fitness variables.

Singh (2017) ^[11] investigated selected motor fitness components (explosive strength, speed, endurance, agility and flexibility) between inter-college and inter-university male Kabaddi players. Researcher found that the inter-university level players were significantly better in explosive strength, speed, agility and flexibility than inter-college level players. However, no significant difference was observed in endurance.

Singh and Kumar (2018) ^[10] explored the difference on selected physical fitness components i.e. speed, explosive leg strength and cardiovascular endurance between inter college level football and hockey players of Punjabi University, Patiala. The researchers concluded that the football players were significantly better in speed, explosive leg strength and cardiovascular endurance as compared to hockey players. Shukla, Dogra, Pant and Chakraborty (2020) ^[14] compared physical fitness variables i.e. muscular endurance, muscular strength, speed and agility among soccer, cricket and hockey intercollegiate male players. The results indicated that there were no significant differences existed among all team game players in muscular endurance, speed and agility. But significant differences were found among all team game players in muscular strength. Cricket players had better muscular strength as compared to hockey and soccer players.

Objectives of the study

The study was carried out with following objectives-

1. To compare the hockey and football male players of intercollegiate level on speed.
2. To compare the hockey and football male players of intercollegiate level on abdominal strength.
3. To compare the hockey and football male players of intercollegiate level on agility.
4. To compare the hockey and football male players of intercollegiate level on cardiovascular endurance.

Methodology

Sample

For this study, 52 intercollegiate level male players (26 football, 26 hockey) of the various colleges in Chandigarh affiliated to Panjab University, Chandigarh during 2021-22 session were selected by using purposive sampling technique. Age of the subjects was ranging between 18 to 24 years.

Variables and Tools

The study was confined to the following selected motor fitness variables and tools-

Motor Fitness Variables	Tools Used
Speed	50 meter dash
Abdominal Strength	Sit ups
Agility	Shuttle run (4×10m)
Cardiovascular Endurance	600 meter run

Administration of tools

All the tools used in this study were administrated as prescribed in Test Evaluation Accreditation Measurements and Standards by Kansal (2018) ^[4] in Panjab University football ground when the various colleges teams played preparatory matches for inter college tournament.

50 meter dash: It was used to measure the speed. A starting line and a finish line were marked in the ground. After the warm up, the subjects were instructed to take the standing position behind the starting line in pairs. The starter gave a start with the help of a clapper. In case the subject started before the clapper sound, was asked to restart. As the subjects crossed the finish line, the respective time keeper switched off his stopwatch. The time was noted down in ten thousandth of a second.

Sit ups: This tool was used to measure abdominal strength. The subject was instructed to lie on back with knee bent less than 90 degree, feet on the floor with heels not more than 12 inches from the buttocks and hands with fingers clasped behind the neck. The subject was asked to bring his head and elbows forward by tightening the abdominal muscles and to touch the elbows with knees. This process counted as one sit up. A demonstration of the stance and execution of sit up was given to the subjects. The tester recorded the correctly executed number of sit ups in 60 seconds by the subject.

Shuttle run: It was used to measure the agility of the subjects. Two parallel lines were marked 10 meter apart on the ground and two small wooden blocks were placed behind the line opposite to the starting line. As the starter commanded, the subjects started running towards the wooden blocks, picked up one block, runned back to the starting line, placed the block behind the starting line and then he again runned, picked the second wooden block, came back to the starting line. As he placed the second block on the ground, the time keeper stopped the watch and time was recorded in ten thousandth of a second.

600 meter run: This tool was used to measure cardiovascular endurance. It was conducted in athletic track. The subjects were instructed to take a standing start position behind the starting line in a group of 8 to 10 persons. The groups were already formulated by the tester. As the starter gave a start the time keepers switched on their watches and when the subjects crossed the finish line, the respective time keepers recorded the time in minutes and seconds.

Statistical techniques used

To find out the significance difference between hockey and football male players of intercollegiate level on motor fitness variables namely speed, abdominal strength, agility, cardiovascular endurance, 't' test was applied at 0.05 level of significance.

Findings of the study

Table 1: shows the mean, standard deviation and t value of intercollegiate level hockey and football male players on selected motor fitness components

Variables	No. of Subjects	Group	Mean	SD	't'
Speed	26	Hockey	7.2662	0.3630	2.9276*
	26	Football	6.9931	0.3074	
Abdominal Strength	26	Hockey	45.19	5.36	1.0190
	26	Football	46.88	6.56	
Agility	26	Hockey	11.0704	1.1939	3.2169*
	26	Football	10.2142	0.6452	
Cardiovascular Endurance	26	Hockey	2.2312	0.1149	0.8173
	26	Football	2.1958	0.1885	

* Significant at .05 level

't' .05 (50)= 2.0085

Speed

The mean and SD values of hockey male players on variable speed 7.2662 and 0.3630 respectively. Football male payers had mean and SD value as 6.9931 and 0.3074 respectively. The t value 2.9276 as shown in the table 1 above was found statistically significant, while comparing the mean values of both groups it has been observed that football players have demonstrated better speed than hockey players as shown in Fig. 1.

Abdominal Strength

The mean and SD values of hockey male players on variable abdominal strength as 45.19 and 5.36 respectively. Football male payers had mean and SD values as 46.88 and 6.56 respectively. The t value 1.090 as shown in table 1 above was found statistically insignificant, but while comparing the mean values of both groups it has been observed that football players performed better than hockey players as shown in fig. 2.

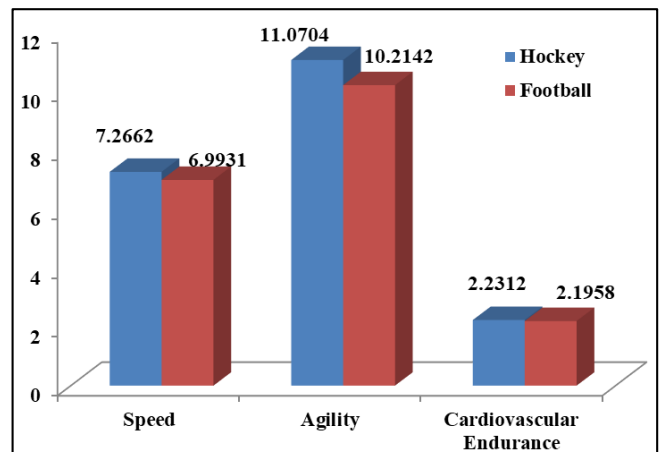


Fig 1: shows the comparison of mean scores of speed, agility, cardiovascular endurance between hockey and football male players of intercollegiate level

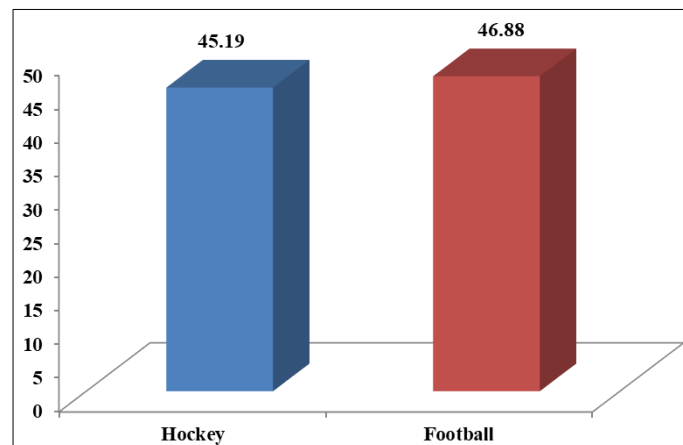


Fig 2: Shows the comparison of mean scores of abdominal strength between hockey and football male players of intercollegiate level

Agility

The mean and SD values of hockey male players on variable agility as 11.0704 and 1.1939 respectively. Football male players had mean and SD values as 10.2142 and 0.6452 respectively. The t value 3.2169 as shown in table 1 above was found statistically significant, while comparing the mean values of both groups it has been observed that football players have demonstrated better agility than hockey players as shown in fig. 1.

Cardiovascular Endurance

The mean and SD values of hockey male players on variable endurance as 2.2312 and 0.1149 respectively. Football male players had mean and SD value as 2.1958 and 0.1885

respectively. The t value 0.8173 was found statistically insignificant as shown in table 1, but while comparing the mean values of both groups it has been observed that football players performed better than hockey players as shown in fig. 2.

Discussion of the findings

The findings of the study clearly showed that there was a statistically significant difference between football and hockey male players in speed. The football male players had more speed than hockey male players. This finding is supported by Pandey and Sardar (2015)^[6], Pawar (2016)^[7], Ajayaghosh (2017)^[11] and Singh and Kumar (2018)^[10] in their studies. Football players had significantly more agility

as compared to hockey players. This finding is supported by the studies of Muralirajan and Sudarsan (2015)^[5], Singh and Kaur (2016)^[12] and Ajayaghosh (2017)^[11]. The nature of the football sport is very fast and aggressive. The footballers use their lower body muscles to kick and passing the ball more than hockey players. These may be the reasons behind the footballers had more speed and agility. There was no significant differences found in cardiovascular endurance and abdominal strength between football and hockey male players. The finding on cardiovascular endurance is supported by the study of Sen and Bhagat (2013)^[9]. Almost equal midsection strength and endurance are developed through playing football and hockey. It probably the cause of no significant difference between football and hockey male players.

Conclusions

- A statistically significant difference was observed in speed and agility between hockey and football male players of intercollegiate level. Football players performed better than hockey players in speed and agility.
- A statistically insignificant difference was observed on abdominal strength and cardiovascular endurance. But football players performed slightly better than hockey players in both abdominal strength and cardiovascular endurance.

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