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Comparative study of selected physical fitness components between hockey and soccer players of university level

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Abstract
The purpose of our research was to find out the comparison of selected physical fitness components (speed, explosive leg strength, flexibility and cardiovascular endurance) between hockey and soccer players of Punjabi university inter college level. For this study we were selected the 50 soccer players and 50 hockey players of Punjabi University, Patiala. The age of the players was selected between 18 to 25years old. To collect the data of selected physical fitness components we will use the following procedure. After that the data was analyzed with the help of "two-tailed T test". The significant of the study wassetat0.05.We concluding the following result.

Keywords: hockey players, soccer players, physical fitness

Introduction
Physical fitness is the most important factor for the progress in the general life as well as, field of sports if the citizens of the country want to improve in any field may be sports or general life. Physical fitness is essential. It is therefore the responsibility of every country to promote physical fitness of its citizens because physical fitness is the basic requirements for the tasks to be under taken by an individual in his life. There is not any measurement of physical fitness and no single way of achieving it. But there are four major qualities which contribute to overall fitness; they are speed, strength, stamina and flexibility. "The achievement of total fitness depends upon combining these four main strands strength, speed, stamina and flexibility"
The 11 components of general fitness are comprised of 5 components that are considered the "most important" for being healthy and physically fit and 6 components that are more skill-related. The 5 components of physical fitness that are most important, directly related to one's health, and can be directly measured are: cardiovascular endurance, explosive strength, muscular endurance, flexibility, and agility. These Health-related components of physical fitness are used to measure clients 'fitness levels in order to prescribe the appropriate exercise program for each individual. Then there are 6 components of physical fitness that are more skill-related and/or sports - related. These include: agility, balance, coordination, power, reaction time, and speed. These skills - related components of physical fitness are directly related to sports and daily activities.

Hockey
Hockey is a team sport that includes a total body workout that adds both aerobic and anaerobic components. The development of motor skills, speed, body balance, stamina, and strength are possible through effective instruction in the sport of field hockey. The natural tempo of hockey is fast which offers interval aerobic and anaerobic activities.

Soccer
Physical fitness is one of the most important aspects of Soccer performance. A skillful player will perform a long way in the sport, but without the fitness part of their game they will not become a complete player. The major components of fitness for Soccer players are endurance, strength, speed, flexibility and power. The Soccer player invests considerable time and effort to get a significant 'return' for his efforts that is an improvement in performance.

Material and methods
Selection of subjects
The subject was chosen from different colleges of Punjabi university, Patiala. To achieve the purpose of the study, 4 colleges were selected. In the present study lottery system was adopted for selection of colleges.
1. Govt. Rajindra college, Bathinda - 25 hockey players
1. Govt. Barjindra College, Faridkot - 25 hockey players
2. Multani Mall Modi College, Patiala - 25 soccer players
3. Govt. Ranbir College, Sangrur - 25 soccer players

Selection of Variables
In the light of the expert's opinion, administrative feasibility, availability of subjects, availability of testing equipment and materials, the following selected physical fitness Components are selected for the purpose of this:
1. Speed
2. Explosive Leg Strength
3. Cardiovascular Endurance

Tools & Technique

Aahper Youth Fitness

In educational research norm referred testes are mostly used. Norm referenced research is also more appropriate and useful in the field of physical education. Thus the AAHPER, Youth Fitness Test was selected for the purpose of the study. This test measures most of the physical fitness components satisfactorily. Moreover, the items were not complicated but were simple and easy to be operated upon the subjects.

Table 1: Selected physical fitness components, tests and unit of Measurement

Sr. No.	Fitness Components	Tests	Unit of Measurement
1	Speed	50 Meter Dash	Time in Seconds
2	Explosive Leg Strength	Standing Broad Jump	Distance in Meters
3	Cardiovascular Endurance	600 Meter. Run/Walk	Time in Seconds

Administration of the testing procedures

Speed

To measure speed of the subject 50 meter dash test was applied. First of all, a distance of 50m., flat and straight, having starting line and finishing line was marked. The subjects were allowed to take short warming up so as to avoid injury and get better results. The subjects were free to take standing or sitting start behind the starting line. Time keepers were placed at the finishing line. The subjects were given command "on your mark", and at the striking of clapper they had to run towards the finishing line with maximum speed. The time keeper took the timings at the finishing line and recorded. Duration of time between the starters signal and the instinct the subject closed the finishing line was recorded to the nearest 1/10th of the second.

Explosive leg strength

To assess legs explosive power of the subject standing broad jump test was administered.The subject is asked to stand behind the starting line with the feet parallel to each other. He is instructed to jump as fastest as possible by bending knees and swinging arms to take off for the broad jump in the forward direction. The subject is given three trials. The distance between the starting line and the nearest point of landing provides the score of the test. The best trial is used as the final score of the test.

Cardiovascular Endurance

First of all, a distance of 600m., having starting line and finishing line was marked. The subjects were allowed to take short warming up so as to avoid injury and get better results. The subjects were free to take standing or sitting start behind the starting line. Time keepers were placed at the finishing line. The subjects were given command "on your mark", and at the striking of clapper they had to run towards the finishing line with running, jogging or walking. The time keeper took the timings at the finishing line and recorded. Duration of time between the starters signal and the instinct the subject closed the finishing line was recorded to the nearest 1/10th of the second

Statistical Analysis

For the purpose of analysis of data on selected physical fitness components descriptive statistics the mean, standard deviation and standard error of mean were obtained through the Statistical Package for Social Studies, (SPSS, Version 20, Inc., Chicago, Illinois). To check the difference of mean scores of Study group and Control group, the Independent Samples. 'T' test was applied. The level of significance was set at 0.05.

Results

The findings pertaining to the physical fitness components of male hockey and soccer players at university level

Table 2: Shows the Comparison of Speed Parameter between Hockey and Soccer Players

Sr. No.	Game	N	Mean	Standard Deviation	Standard Error of mean	t-value
1	Hockey	50	6.213	0.297	0.042	4.115*
2	Soccer	50	6.006	0.196	0.027	

*= Significance 0.05 Tabulated value at (98df) =1.99

According to Table 2 statistically represent that the Mean and Standard Deviation with regard to Hockey players is 6.213 and 0.297 where as in case of Soccer players is 6.006 and 0.196 respectively. The calculated t-value (4.115) which is more than the tabulated 't' value (1.99) at 0.05 levels.

In this table it is concluded that Soccer players shows better speed as compare the Hockey players.

So, it indicates that there is significant difference between Hockey and Soccer players for their Speed parameter.

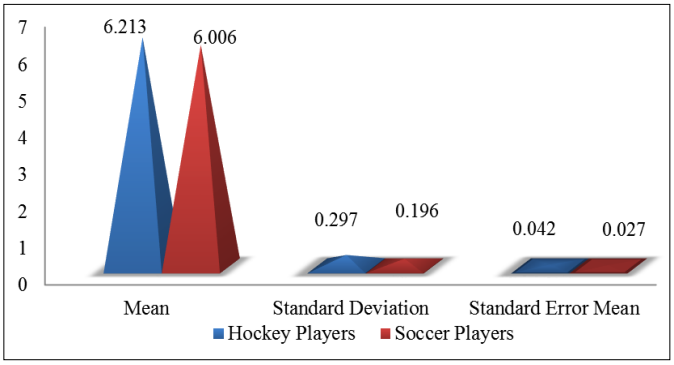

Fig 1: Shows the Comparison of Speed Parameter between Hockey and Soccer Players

Table 3: Shows the Comparison of Explosive Leg Strength Parameter between Hockey and Soccer Players

S. No	Game	N	Mean	Standard Deviation	Standard Error of mean	t-value
1	Hockey	50	2.777	0.108	0.015	10.249*
2	Soccer	50	3.008	0.116	0.016	

*= Significance 0.05 Tabulated value at (98df) =1.99

According to Table 3 statistically represent that the Mean and Standard Deviation with regard to Hockey players is 2.777 and 0.108 where as in case of Soccer players is 3.008 and 0.116 respectively. The calculated t-value (10.249) which is more than the tabulated 't' value (1.99) at 0.05 levels.

In this table it is concluded that Soccer players shows better explosive leg strength as compare the Hockey players. So, it

indicates that there is significant difference between Hockey and Soccer players for their Explosive Leg Strength parameter.

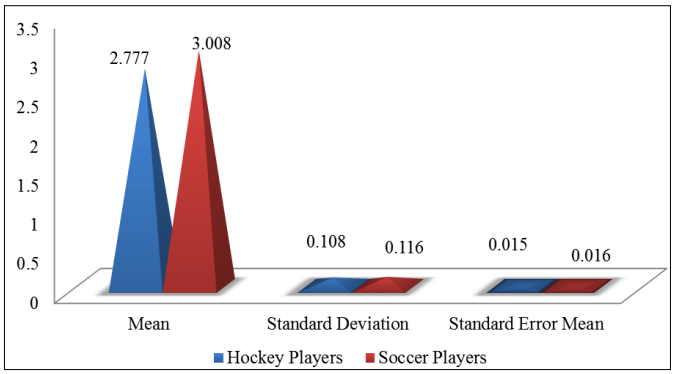

Fig 2: Shows the Comparison of Explosiveleg Strength Parameter between Hockey and Soccer Players

Table 4: Shows the Comparison of Cardiovascular Endurance Parameter between Hockey and Soccer Players

S.no	Game	N	Mean	Standard Deviation	Standard Error of mean	t-value
1	Hockey	50	1.215	0.033	0.004	10.212*
2	Soccer	50	1.153	0.026	0.003	

*= Significance 0.05 Tabulated value at (98df) =1.99

According to table 4 statistically represent that the Mean and Standard Deviation with regard to Hockey players is 1.215 and 0.033 where as in case of Soccer players is 1.153 and 0.026 respectively. The calculated t-value (10.212) which is more than the tabulated 't' value (1.99) at 0.05 levels.
In this table it is concluded that Soccer players demonstrate better cardiovascular endurance as compare the Hockey players. So, it indicates that there is significant difference between Hockey and Soccer players for their Cardiovascular Endurance parameter.

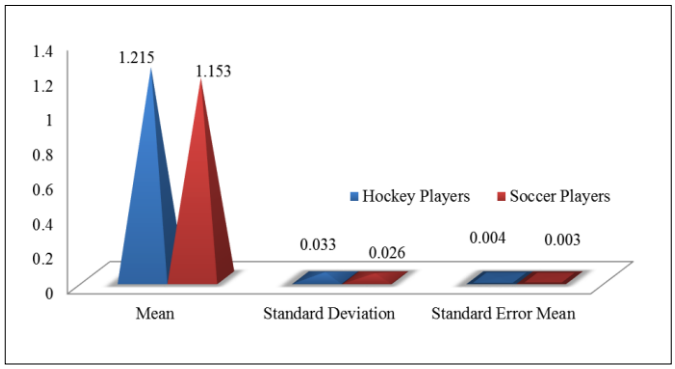

Fig 3: Shows the Comparison of Cardiovascular Endurance Parameter between Hockey and Soccer Players

Discussion of Findings

Speed

The result of the study informs that there was significant difference between university level Hockey and Soccer Players for their Speed. But while comparing the mean values of both the groups, it has been observed that Soccer players have demonstrated better Speed than the Hockey players.

Explosive Leg Strength

The result of the study informs that there was significant difference between university level Hockey and Soccer Players for their Leg Strength. But while comparing the mean values of both the groups, it has been observed that Soccer players have demonstrated better Leg Strength than the Hockey players.

Cardiovascular Endurance

The outcome of the research informs that there was significant difference between university level Hockey and Soccer Players for their Cardiovascular Endurance. But while comparing the mean values of both the groups, it has been observed that Soccer players have demonstrated better Cardiovascular Endurance than the Hockey players.

Conclusions

Based on the results of the study the following conclusions were drawn by the investigator:

1. The results strongly confirm that, the soccer player is better speed as compare to hockey player.
2. The result authenticated that, the soccer player is much better Explosive Leg Strength as compare to hockey player.
3. The result authenticated that, the soccer player is much better Cardiovascular Endurance as compare to hockey player.

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