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# A comparative study of the strength among hockey, football and athletics players

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## Abstract

The capability of overcoming a certain resistance or at acting against it by muscular tension. He further pointed out that strength is the force that a muscle can exert against a resistance in one maximum effort (Edwin A. Fleshman, 1966) Randomly 30 players each of Hockey, football and athletics and was selected for the study. 30 Hockey players who had represented in district level Hockey tournament were selected from Ajmer District. In the same way, 30 football players who had represented district level Football tournament were selected from Ajmer District and 30 Athletics players was selected who had represented in district level Athletics competition. A programme on strength and to assess their effectiveness as measured by 'Arm strength and leg strength (chin-ups and standing broad jump).

**Key word:** Strength, Arm strength and leg strength.

## 1. Introduction

More recently it has been said that "a sound mind in a sound body" is a short but a full description of a happy sate in this world, he that has these two has little more to wish for. (John E. Nixon and Ann E. Jewett, 1969)

Sports and games are accepted as a cultural phenomenon. There is constant endeavour to achieve higher standards of performance. As a result, today's sports and games demand optimum fitness and highest degree of performance.

Since applied to sports has enabled modern youth to develop physical capacities beyond imagination. Sports has become highly competitive and and performances are being surpassed every now and then.

Every individual on earth wants to be physically fit to carry out his day to day tasks or activities. These activities of Individuals vary from sedentary office work to competitive sports. Physical fitness levels of these individuals depend upon the nature of the task and vice-versa. (H. Harrison Clarke, April 1957)

It is a well-known fact that fitness plays a vital role in the performance of all sports and team games. The word "fitness" has been discussed and explained by physical educators, coaches and medical professional in numerous ways in relation to performance in games and sports and organic health. "The literature of Fitness" has variety of interpretations of the construct.

Each one of the professionals stated above keeps in mind his own expectations from a human body and defines "fitness" in his own way. Different terminology's like "Motor Fitness", "Physical Fitness", "Total Fitness", "General Fitness", "Athletic Fitness", "Organic Fitness" and "Health Related Physical Fitness" are in practice.

Fitness especially motor fitness is regarded as an essential component even if the team consists of highly skilled, technically scored and experienced players. Motor fitness is gauged by performance and this performance is based on outcome of many factors such as strength, endurance, power, speed, agility and flexibility. Some of the factors evidently are more dominant than other and thus have a higher relationship with motor fitness, scientist and physiologists have been of the view that anthropometric measurements and physical components of an athlete have a lot to do with his performance. More than the technical and tactics of a player or a team physical and physiological characteristics help him for better performance. Most of the games demand a higher level of speed, strength, endurance, flexibility, co-ordination and optimum fitness of the organism for higher performance (Warren R. Johnson and E.R. Buskirv, 1974)

General motor ability has been considered as one's level of ability in midrange of activities. It has been thought of as an interacted composite of such individual trait as strength, endurance, power, speed, agility, reaction time and Co-ordination. Traits underlying performance in many motor Complexes. In successful motor performance these traits

function in a co-ordinate manner and in effective sequence to achieve accurate and efficient movement whether it be a single effort as in the golf drive or in a series of complexes and rapidly changing movement as in basketball (H. Harrison Clarke, 1976)

Specific motor fitness is the key to success for sportsman at higher level competitions. The development of specific fitness requires the appropriate amount f motor abilities in relation to the requirement of the game concerned. The specific motor fitness is of utmost importance to achieve higher results in games and sports.

## 2. Methodology

### 2.1 Selection of Subjects

Randomly 30 players each of Hockey, football and athletics and was selected for the study. 30 hockey players who had represented in district level hockey tournament were selected from Ajmer District. In the same way, 30 Football players who had represented district level Football tournament were selected from Ajmer District and 30 Athletics players was selected who had represented in district level Athletics competition.

### 2.2 Selection of Variables

For this study, important and dominating motor fitness component were selected for comparing Hockey, Football and Athletics. The selected variables of Physical fitness components are strength.

### 2.3 Administration of Test and Collecting of Data

The data was collected for each variable. The players were consulted personally and their sincere co-operation shall be solicited subjects or players were called at Lucknow University. For testing necessary instruction was given to the subject prior to the administration of the test for each variable. As soon as the instructions were clearly understood by them, players were asked to complete the particular test. Next for other variable was conducted after completed complete recovery.

These following standard test were selected for variable of motor fitness component.

### 2.4 Administration of the Test

#### 2.4.1 Arm Strength (Chin-Ups)

The bar was adjusted to a height that permits the students to hang free from the floor from the hanging position with reverse grip (Plain facing body) and arm straight the body was pulled upward until the chin rest over the bar and then lowered until the straightened. The movement was repeated to exhaustion. The subjects were not allowed to kick or jerk.

The number of correct completed chin-ups was scored. No fractional credit was given for incomplete or partial attempts only one trail was permitted.

#### 2.4.2 Leg Strength (Standing Broad Jump)

The subjects were asked to stand on toes on the take-off-line which was 1 meter form the pit with feet shoulder width apart and parallel to each other by flexing his knees swinging his arm back the subjects jumped out ward as far as possible.

The distance of all the jumps was measured to the nearest centimeters three trails were permitted in succession and the best was taken into account.

## 3. Result and Observation

### 3.1 Arm Strength

The analysis of variance employed to investigate difference among sports groups on the variable Arm strength has been presented in table -1

**Table-1**
**Analysis of variance between sports groups on arm strength**

| Source of variance | Degree of Freedom | Sum of Square | Mean Sum of Square | Obtained F-value | Required F-ratio |
|---|---|---|---|---|---|
| Between group | 3-1=2 | 466.03 | 233.01 | 24.65* | 3.103 |
| Within Group | 90-3=87 | 822.3 | 9.45 | | |

N=90, *Significance at 0.05 level

An examination of table-1 reveals that there was significance difference between sports groups as the obtained F-value of 24.65 was greater than the tabulated value of 3.103 required for significance at 0.05level.

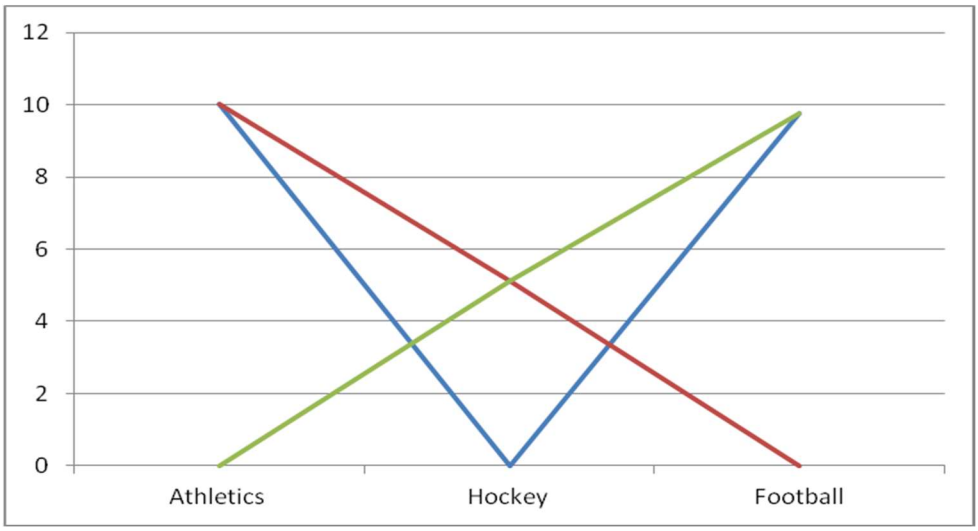
The 'F' ratio among sports groups indicated a value of 24.65 which was greater that the tabulated 'F' value of 3.103 required for significance. Indicating that the significant difference existed between the selected sport groups. To find out which of the paired sports differed significance significantly the Scheffe's Post-Hoc test was applied. The result pertaining to it are presented in table-2.

**Table-2**
**Ordered paired means and significance of difference between means of sports groups on arm strength**

| Athletics | Hockey | Football | Mean Diff. | Critical Diff. |
|---|---|---|---|---|
| 10.01 | -- | 9.76 | 0.34 | 1.96 |
| 10.1 | 5.13 | -- | 4.97* | 1.96 |
| | 5.13 | 9.76 | 4.63* | 1.96 |

Table-2 shows that the mean difference in arm between athletics and Hockey (M.D.=4.97), Hockey and Football (M.D.=4.63) were significant as the mean difference values were greater than the critical difference value of 1.96 required for significance.

The mean difference between athletics and football (M.D.=0.34) showed values lesser than the critical difference value of 1.96 required for significance thus indicating no significant difference were found between athletics and football on arm strength. Among the three sports groups the highest paired mean value was observed for the athletics group (10.1) and the lowest paired mean was observed for the Hockey group (5.13)




**3.2 Leg Strength**

The analysis of variance employed to investigate difference among sports groups o the variable leg strength has been presented in table-3.

**Table-3**

**Analysis of variance between sports groups on leg strength**

| Source of variance | Degree of Freedom | Sum of Square | Mean Sum of Square | Obtained F-value | Required F-ratio |
|---|---|---|---|---|---|
| Between Group | 3-1=2 | 8652.4 | 4321.2 | 10.79* | 3.103 |
| Within Group | 90-87 | 34835.2 | 400.40 | | |

N=90, *Significance at 0.05 level

An examination of table-3 reveals that there was significant difference between sports groups, as the obtained F-value of 10.79 was greater than the tabulated value of 3.103 required for significance of 0.05 level.

The 'F' ratio among sports indicated a value of 10.79 which was greater than the tabulated 'F' value of 3.103 required between the selected sports groups differed significantly the Scheffes Post-Hoc test was applied. The results pertaining to presented in table-4.

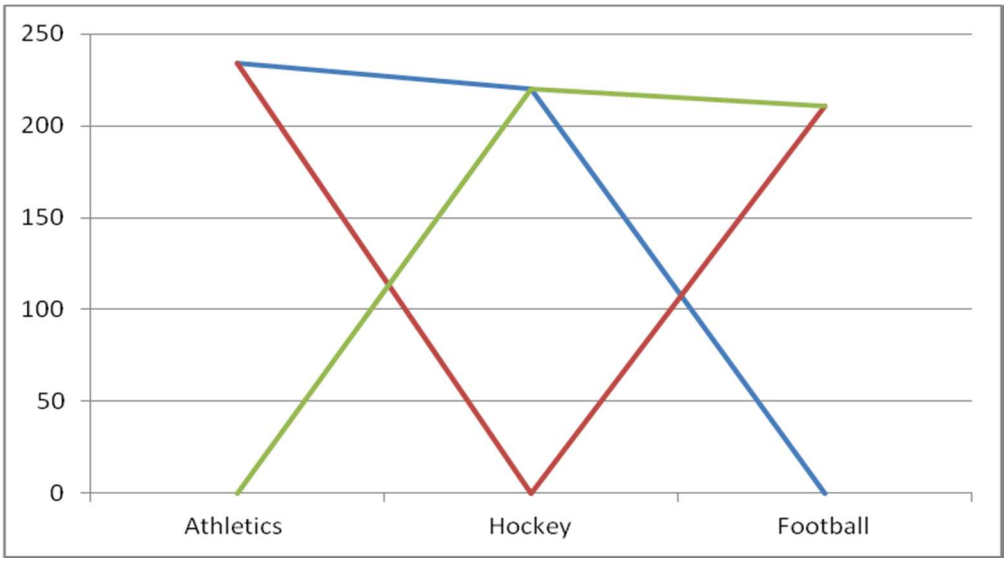
**Table-4**

**Ordered paired means and significance of difference between means of sports groups on leg strength**

| Athletics | Hockey | Football | Mean Diff. | Critical Diff. |
|---|---|---|---|---|
| 234.4 | 219.8 | -- | 14.6* | 12.79 |
| 234.4 | -- | 210.6 | 23.8* | 12.79 |
| -- | 219.8 | 210.6 | 9.2 | 12.79 |

Table-4 shows that the mean differences in leg strength between athletics and Hockey (M.D.=14.6), Athletics and Football (M.D.=23.8) were significant as the mean difference values were greater than the critical difference value of 12.79 required for significance.

The mean difference between Hockey and football (M.D.=9.2) showed values lesser than the critical difference value of 12.79 required for significance thus indicating no significant difference were found between Hockey and football on leg strength among the three sports groups the highest paired mean value was observed for the athletics group (234.45) and the lowest paired mean was observed for the football group (210.6).




## 4. Discussion of the Findings

The analysis of data using 'F' test showed that variation exist among athletics, Hockey and Football groups in all the selected motor fitness variables.

The results of the study have shown significant arm strength difference between Hockey and Football, athletics and Hockey groups. Athletics and Football groups Indicate no significant of difference on strength. This may be because of Football players nature of game is more strenuous than Hockey players. In athletics strength component is dominating factor for their performance than Hockey. Therefore, significant difference exists. Athlete scored higher than Football players. Though the difference was not significant, this may be due to their nature of game require arm strength and both the groups strength players an important role for optimum performance.

The finding of the study in relation to leg strength indicated significant difference among athletics and Hockey, athletic and Football groups. Their was no significant difference among Hockey and Football groups; This may be attributed to the nature of athletics performance which is more of explosive in nature as compare to Hockey and Football players.

Hockey scored higher than Football players, though the difference was not significant. This may be due to the factor that explosive strength was not the dominating factor for better performance in both the games.

While taking it into account, the speed variable, the analysis clearly indicated variation among sports groups that is, athletics and Football, athletics and Hockey groups.

There exists no significant difference between Football and Hockey groups. This may be attributed to nature of the athletics performance, where speed plays a vital role for optimum performance as compare the hockey and football players. Therefore, significant difference existed hockey scored higher than football players, though the difference was not significant. This may due the factor that speed is not the determining factor in both the game.

## 6. References

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