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## A cross-sectional analysis of selected physical fitness variables between pitcher and hitter of baseball

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### Abstract

The aim of the study is to compare the selected Physical fitness variables between male Pitcher and Hitter from baseball game. A total of 30 ( $N^1=15$ ; Pitchers and  $N^2 =15$ ; hitters) state level male subjects age ranged between 20-25 years were selected for this study from Punjab state. The purposive sampling method was used to obtain the objective of the study. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. The t- test was employed to find out the significant differences between male Pitchers and Hitter. To test the hypotheses, the level of significance was set at 0.05. The results revealed significant differences between Pitcher and Hitter on the all selected physical fitness variables i.e. speed, strength and muscular endurance and on agility, cardiovascular endurance variables result revealed insignificant.

**Keywords:** pitchers, hitter, speed, strength, agility, muscular endurance and cardiovascular endurance

### Introduction

Baseball is a bat-and-ball game played between two opposing teams who take turns batting and fielding. The game proceeds when a player on the fielding team, called the pitcher, throws a ball which a player on the batting team tries to hit with a bat. The objectives of the offensive team (batting team) are to hit the ball into the field of play, and to run the bases having its runners advance counter clockwise around four bases to score what are called "runs". The objective of the defensive team (fielding team) is to prevent batters from becoming runners, and to prevent runners' advance around the bases. A run is scored when a runner legally advances around the bases in order and touches home plate (the place where the player started as a batter). The team that scores the most runs by the end of the game is the winner. Baseball is essentially a game of skill but fitness gives the edge. There are two things that matter in baseball i.e. ability and fitness. Physical fitness variables are the most important contributing factors for better performance in all sports and games so is in baseball. The game of baseball requires considerable amount of physical fitness and mastery of skills. A baseball player ought to possess specific speed, strength, power, agility flexibility & endurance in abundance so as to learn & master the techniques of the game.

For a player striving for success in baseball there are there vital components in preparing

1. Physical fitness
2. Technique practice
3. Proper mental preparation

Physical fitness lays the foundation for both technique practice and mental preparation. Poor physical condition can predispose one to premature tiredness and cause a loss in concentration, resulting in a lesser performance. Therefore, this study had been deigned to compare the physical fitness variable between male pitcher and hitter from baseball game.

### Method and procedure

Selections of subjects for the study were selected purposively from the Punjab state. For the purpose of the study 15 Pitchers and 15 Hitters age ranged between 20- 25 were selected randomly. The Pitchers and Hitters both the groups were measured on the selected physical fitness variables namely, speed, strength, agility, muscular endurance and cardiovascular

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endurance.

**Selection of test**

The Pitchers and Hitters Speed was assessed by 50m dash test in seconds, Strength was measured by Pull- ups in numbers, Agility was assessed by shuttle run test in seconds, Muscular endurance was measured by sit-ups test in numbers and Cardiovascular endurance was measured by 600 meter run test in minutes.

**Statistical Analysis**

Descriptive statistics such as mean and standard deviation of the variables i.e. Speed, strength, agility, muscular endurance and cardiovascular endurance were calculated. Independent t- test was employed to compare between male baseball game players Pitchers and Hitters. The level of significance was set at 0.05 levels. The statistical analysis was conducted by using SPSS 16 software.

**Results**

**Table 1:** shows the Mean, Standard Deviation, Standard Error of the Mean, t- value and p- value of Pitchers and Hitter

Variables	Baseball Pitchers (N-15)			BASEBALL HITTERS (N-15)			T	P
	Mean	SD	SEM	Mean	SD	SEM		
Speed (50 M DASH)	6.7193	0.0523	0.0135	6.5367	0.1195	0.0309	5.4234	0.0001
Strength (Pull-ups)	6.53	0.64	0.17	7.20	0.68	0.17	2.7735	0.0098
Agility (Shuttle Run)	9.9327	0.1370	0.0354	9.7707	0.3798	0.0981	1.5541	0.1314
Muscular Endurance	36.87	0.92	0.24	35.73	1.83	0.47	2.1442	0.0408
Cardiovascular endurance (600 M run)	1.5127	0.0505	0.0130	1.5493	0.0482	0.0124	2.0348	0.0514

\* Significant at .05

**Speed**

The descriptive statistics shows the mean and SD value of Pitchers on the variable of speed as 6.7193 and .0523 respectively. However, Hitter had mean and SD values as 6.5367 and 0.1195 respectively. The ‘t’ value 5.4234 as shown in the table above was found statistically significant (P<.05).

**Strength**

The descriptive statistics shows the mean and SD value of Pitchers on the variable of strength as 6.53 and 0.64 respectively. However, Hitter had mean and SD values as 7.20 and 0.68 respectively. The ‘t’ value 0.0098 as shown in the table above was found statistically significant (P<.05).

**Agility**

The descriptive statistics shows the mean and SD value of Pitchers on the variable of Agility as 9.9327 and 0.1370 respectively. However, Hitters had mean and SD values as 9.7707 and 0.3798 respectively. The ‘t’ - value 1.5541 as

shown in the table above was found statistically insignificant (P>.05).

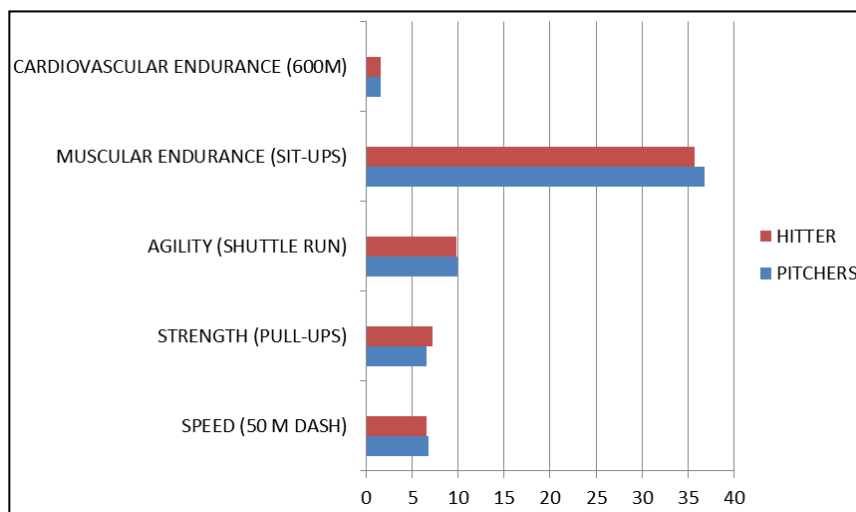
**Muscular endurance**

The descriptive statistics shows the mean and SD value of Pitchers on the variable of Muscular endurance as 36.87 and 0.92 respectively. However, Hitters had mean and SD values as 35.73 and 1.83 respectively. The ‘t’ - value 2.1442 as shown in the table above was found statistically significant (P<.05).

**Cardiovascular endurance**

The descriptive statistics shows the mean and SD value of Pitchers on the variable of cardiovascular endurance as 1.5127 and 0.0505 respectively. However, Hitter had mean and SD values as 1.5493 and 0.0482 respectively. The ‘t’ value 2.0348 as shown in the table above was found statistically insignificant (P>.05).

The comparison of mean scores of both the groups has been presented graphically in figure:



**Fig 1:** Graphical representation of mean scores of Pitchers and Hitters on the variables i.e. Speed, strength, agility, muscular endurance and cardiovascular endurance

**Conclusion**

It is concluded from the above findings that the significant difference was found in speed, Strength, Muscular endurance,

but on Agility and Cardiovascular endurance variables results were found insignificant. By Mean of performance results showed that in speed, strength and agility Baseball hitters

performed better than pitchers but in cardio-endurance and muscular-endurance pitchers were found to be better than hitters.

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