

# A Comparative Study on selected psychomotor abilities between male baseball pitcher and cricket fast bowler

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**ABSTRACT:** The aim of this study is to find out the significant differences of selected Psychomotor Abilities between male Baseball pitcher and cricket fast bowler. A group of thirty (N=30) male subjects aged between 18-28 years, who participated in intercollege competitions organized by the Department of Sports, Guru Nanak Dev University, volunteered to participate in this study were selected for this study. The purposive sampling technique was used to attain the objectives 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. They were further divided into two groups of 15 each (i.e., N<sub>1</sub>=15; pitcher and N<sub>2</sub>=15; fast bowler). The „t“ test was applied to find out the significant differences between male Baseball pitcher and cricket fast bowler. To test the hypotheses, the level of significance was set at 0.05. The results revealed significant differences between Baseball pitcher and cricket fast bowler on the sub-variables i.e. speed, agility and Cardiovascular Endurance. However, no significant differences were noticed with regard to the sub-variables i.e. strength and static balance.

**Key Words:** Pitcher, Fast bowler, Speed, Strength, Agility, endurance and static balance.

## INTRODUCTION

Cricket and baseball are the best-known members of a family of related bat-and-ball games. Despite their similarities, the two sports also have many differences in play and in strategy. Even though cricket is one of the oldest organized sports, there are very few studies on the physical demands of the game [1-3]. Batting and bowling are intermittent in nature with the demands placed on the players being dictated by the type of match being played. Due to this stop-start nature of cricket and baseball, accurate assessments are often difficult and as such, research is sparse and as a consequence, there are few scientifically sound training programmes for cricketers. In fact, the idea that cricketers need to be well trained is a relatively new one [4]. One of the first studies which attempted to assess the energy cost of cricket calculated that the mean energy expenditure of cricketers, during a five-match test series, was 86.4 kcal.m<sup>2</sup>.h<sup>-1</sup> [5]. Fletcher's data suggested that the energy demands of cricket are only slightly more than that required to stand which led to the understanding that cricket was physically undemanding requiring more skill than "fitness" [4]. Exercises in all forms of life change the atmosphere, attitude and bring the performances into excellent rhythm to enhance of better performances on and off the field. No doubt physical fitness especially aqua aerobics and aerobic dances keep the better performances on the board. Base Ball Players have to have of good strength in their arms to pitch and throwing to the bases. A Batter needs lots of strength to hits the ball to the home run. The Batter needs to connect the pitcher pitching the ball to hit a home run. Basically one needs to have good reflexes; good vision of eye builds up good flexibility and reflection. Research on the physiological demands of bowling is sparse with the only studies available being those which included some physiological measures when assessing other aspects of these games. A key element of fast bowling is ball-release speed or peak bowling speed (V<sub>peak</sub>). Ball-release speed in fast bowlers is influenced by various anthropometric, morphological, and kinematic factors. For example, higher ball release speeds in senior bowlers has been attributed to longer limb lengths and higher approach speeds than in junior bowlers.

## MATERIAL AND METHODS

### Subjects:

Thirty (N=30) male subjects aged between 18-28 years were selected for this study. The purposive sampling technique was used to attain the objectives 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. They were further divided into two groups of 15 each (i.e., N<sub>1</sub>=15; pitcher and N<sub>2</sub>=15; fast bowler).

**Table: 1 Selection of variables**

Variables	Tests	Criterion Measure
Speed	30 meter dash	Recorded to the nearest 1/100 <sup>th</sup> Second
Strength	Push ups	Total number of push-ups performed
Agility	Illinois Agility Test	Recorded to the nearest 1/100 <sup>th</sup> Second
Cardiovascular Endurance	800 meter run	Recorded to the nearest minutes /seconds
Static Balance	Stork Balance Stand Test	Recorded to the nearest 1/100 <sup>th</sup> Second

## METHODOLOGY

50 Meter Dash was administered to determine acceleration and speed. The score is the time recorded to the nearest 1/100<sup>th</sup> of a second. Push ups test was administered to determine strength. The score is the Total number of push-ups performed by the subjects. Illinois agility test was administered to test the running agility. The score is recorded to the nearest 1/10<sup>th</sup> of a second. Stork balance stand test was administered to assess the ability to balance on the ball of the foot. The score is the total time recorded in seconds. 800 meter run test was too administered to determine cardiovascular endurance. The score is the time recorded to the nearest 1/100<sup>th</sup> of a second.

## DATA ANALYSIS

Student's t-test for independent data was used to assess the between-group differences. The level of  $p \leq 0.05$  was considered significant.

## RESULTS

The results pertaining to significant difference, if any, between baseball pitcher and cricket fast bowler were assessed using the Student's t test and the results are presented in tables-2:

**Table: 2** Mean Standard Deviation, Standard Error of the Mean, t-value and p-value of baseball pitcher and cricket fast bowler.

Variables	Mean		SD		SEM		t-value	p-value
	Fast Bowler	Pitcher	Fast Bowler	Pitcher	Fast Bowler	Pitcher		
Speed	4.23	4.49	0.18	0.22	0.05	0.06	3.42	0.0019
Strength	24.9	25.67	3.26	2.66	0.84	0.69	0.674	0.5055
Agility	15.4	15.81	0.36	0.31	0.09	0.08	3.65	0.00107
Cardiovascular Endurance	3.11	3.25	0.17	0.11	0.04	0.03	2.59	0.0152
Static Balance	25.07	25.93	1.98	2.43	0.51	0.63	1.07	0.2939

\*Significant at 0.05 level

Degree of freedom=28

### Speed

Table-2 presents the results of Baseball pitcher and cricket fast bowler with regard to the variable selected Psychomotor Abilities. The descriptive statistics shows the Mean and SD values of cricket fast bowler on the sub-variable Speed as 4.23 and 0.18 respectively. However, Baseball pitcher had Mean and SD values as 4.49 and 0.22 respectively. The Mean Difference and Standard Error Difference of Mean were 0.05 and 0.06 respectively. The, t'-value 3.42 as shown in the table above was found statistically significant ( $P < .05$ ). It has been observed that cricket fast bowler have demonstrated significantly better on speed than the Baseball pitcher. The comparison of mean scores of both the groups has been presented graphically in figure-3.

### Strength

The descriptive statistics shows the Mean and SD values of cricket fast bowler on the sub-variable Strength as 24.9 and 3.26 respectively. However, Baseball pitcher had Mean and SD values as 25.67 and 2.66 respectively. The Mean Difference and Standard Error Difference of Mean were 0.84 and 0.674 respectively. The, t'-value 0.674 as shown in the table above was found statistically insignificant ( $P > .05$ ). It has been observed that Baseball pitcher have exhibited better on Strength than the cricket fast bowler. The comparison of mean scores of both the groups has been presented graphically in figure-3.

**Agility**

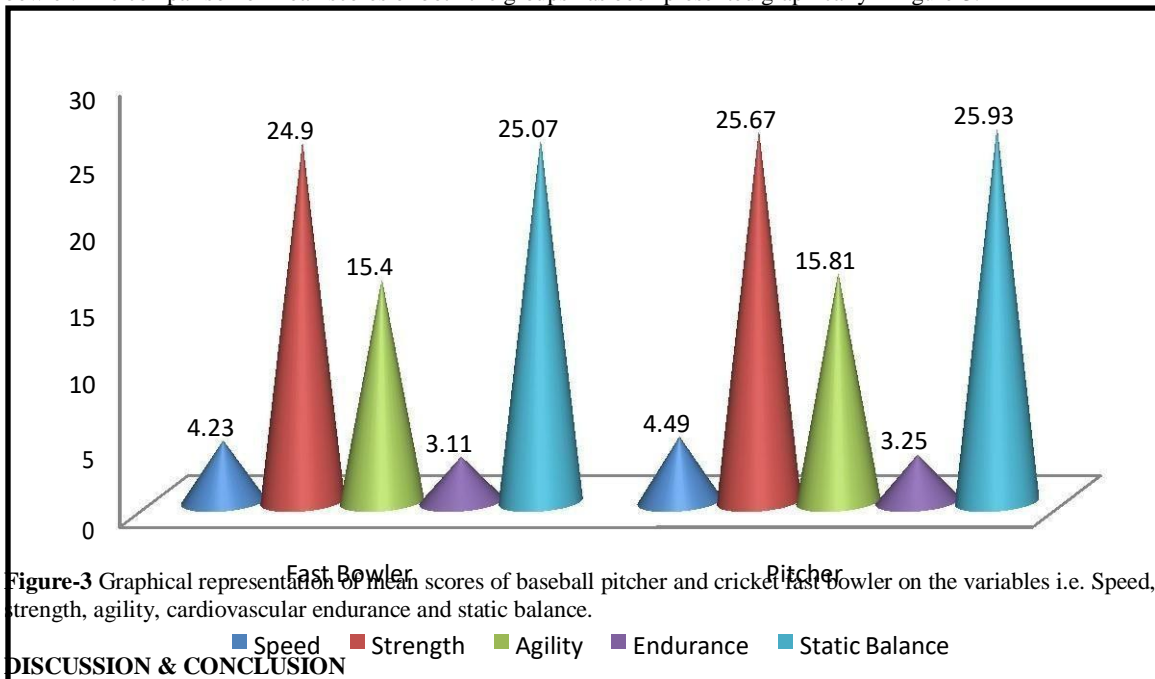
The descriptive statistics shows the Mean and SD values of cricket fast bowler on the sub-variable Agility as 15.4 and 0.36 respectively. However, Baseball pitcher had Mean and SD values as 15.81 and 0.31 respectively. The Mean Difference and Standard Error Difference of Mean were 0.09 and 0.08 respectively. The „t“-value 3.65 as shown in the table above was found statistically significant (P<.05). It has been observed that cricket fast bowler have demonstrated significantly better on Agility than the Baseball pitcher. The comparison of mean scores of both the groups has been presented graphically in figure-3.

**Cardiovascular Endurance**

The descriptive statistics shows the Mean and SD values of cricket fast bowler on the sub-variable Cardiovascular Endurance as 3.11 and 1.17 respectively. However, Baseball pitcher had Mean and SD values as 3.25 and 0.11 respectively. The Mean Difference and Standard Error Difference of Mean were 0.04 and 0.03 respectively. The „t“-value 2.59 as shown in the table above was found statistically significant (P<.05). It has been observed that cricket fast bowler have demonstrated significantly better on Cardiovascular Endurance than the Baseball pitcher. The comparison of mean scores of both the groups has been presented graphically in figure-3.

**Static Balance**

The descriptive statistics shows the Mean and SD values of cricket fast bowler on the sub-variable Static Balance as 25.07 and 1.98 respectively. However, Baseball pitcher had Mean and SD values as 25.93 and 2.43 respectively. The Mean Difference and Standard Error Difference of Mean were 0.51 and 0.63 respectively. The „t“-value 1.07 as shown in the table above was found statistically insignificant (P>.05). It has been observed that Baseball pitcher have shown better Static Balance than the cricket fast bowler. The comparison of mean scores of both the groups has been presented graphically in figure-3.



**Figure-3** Graphical representation of mean scores of baseball pitcher and cricket fast bowler on the variables i.e. Speed, strength, agility, cardiovascular endurance and static balance.

**DISCUSSION & CONCLUSION**

It is concluded from the above findings that The significant difference was found in the speed ability- 30m sprint test, the cricket fast bowler group had better speed in comparison to the Baseball pitcher group .Because fast bowler don't have the luxury of standing in one spot to deliver the ball. Fast bowlers run in, on average, 25 yards (22m) every delivery. The insignificant difference was found in the strength ability- push up test, the baseball Pitcher had better shoulder strength in comparison to the cricket fast bowler. While comparing the mean value of strength, it was found that pitcher have better shoulder strength as compared to fast bowler. The outcome of results might be due to the pitcher makes every pitch until a point where the coach replaces the tiring pitcher with a relief pitcher and a succession of pitchers may come into the game in sequence until it ends. Pitcher use their full arm strength in the practice and competition while pitching resulting which pitcher had perform better on

the push ups, while comparing the mean of fast bowler. In cricket, multiple bowlers begin the game, with those not actively bowling spending time as fielders. Bowlers alternate bowling over's of six balls each, moving to fielding positions to rest before returning to bowl again later in the game. The significant difference was found in the agility- Illinois Agility Test the cricket fast bowler group had better agility in comparison to the Baseball pitcher group. The significant difference was found in the Cardiovascular Endurance - 800 meter run Test the cricket fast bowler group had better Cardiovascular Endurance in comparison to the Baseball pitcher group. Fast bowlers run in, on average, 25 yards (22m) every delivery. In a day where a bowler sends down 15 over's (with 6 balls in each over), they've run 2250 yards (1980m). And it's not just a jog; either-every ounce of energy the bowler has goes into each delivery. The insignificant difference was found in the Static Balance - Stork Balance Stand Test the baseball Pitcher had better body Balance in comparison to the cricket fast bowler.

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#### **References:**

- [1] B. Woolmer, H. Moffett, T. Noakes, Art and Science of Cricket, Struik Publishers, (2008) Cape Town, South Africa.
- [2] C.J. Christie, G.A. King, Heart rate and perceived strain during batting in a warm and cool environment. *International Journal of Fitness*, 4 (2008) 33-38.
- [3] C.J. Christie, A.I. Todd, G.A. King, The energy cost of batting during a simulated batting work bout: a pilot study, *J Sci Med Sport*, 11 (2008) 581-584.
- [4] T.D. Noakes, J.J. Durandt, Physiological requirements of cricket, *Journal of Sports Sciences*, 18 (2000) 919- 929.
- [5] J.G. Fletcher, Calories and cricket, *Lancet*, 268 (1955) 1165-1166.

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