

AN ANALYTICAL STUDY ON PONDERAL INDEX OF BATSMEN AND BOWLERS

***YOGENDRA SHARMA**

****YASH CHANDRA GANGWAR**

*****BRIJBHUSHAN SINGH**

**, **Assistant Professor*

*TMIMT College of Physical Education, Teerthanker Mahaveer University, Moradabad,
Uttar Pradesh, India Email: syogendra50@gmail.com*

***Professor Department of Physical Education, Aligarh Muslim University, Aligarh, Uttar
Pradesh, India*

ABSTRACT

A bowler is an expert at bowling and a batter makes runs with his bat. Both play a significant role in winning or losing a cricket match. This study was designed to identify the differences between the segmental fat proportions of batters and bowlers in cricket games. For a purpose of this research, a total of fifty (N=50) young (Age in between 20 to 25 years) 25 batters, and bowlers each were part of this research article. Cricketer's samples were selected from the Toss cricket academy Teerthanker Mahaveer University, Moradabad, and Sonakpur Stadium in Ram Ganga Vihar Phase 1, Moradabad, Uttar Pradesh from dated 20/04/2022 to 28/04/2022. Anthropometric parameters were measured according to a standard procedure. To find out the significant difference in the Ponderal index between batters and bowlers in cricketers. The t-test was applied at 0.05 level of significance. It was concluded that an insignificant difference was existing in the mean ponderal index of batters and bowlers of Cricket.

. Keywords: *Batter, Bowler, Cricketers, and Ponderal Index*

INTRODUCTION

In the game of cricket, there is a demand for an excellent ratio physical structure due to the specimen of the division of labor. Each player has a particular role to play. A bowler is an expert at bowling and a batsman makes runs with his bat. Both batting and bowling as a significant role in winning or losing a match [1]. The wicket-keeper knows well about his job of doing wicketkeeping while his side of fielding tries hard to save runs [2].

Ponderal Index (PI) is well designed for assessing the leanness of a sportsperson calculated as a relationship between Body mass and height. Ponderal Index was first proposed in 1921 as the "Corpulence measure" by Swiss physician Fritz Rohrer and hence is also known as Rohrer's Index. The ponderal index is an improved version of the body mass index that uses height as the second power [3].

Humans differ in many ways in terms of their physical appearance. A person can be analyzed based on his or her size, shape, and form (Sharma, 2019). When we compare particular body parts of two persons whose bodies are otherwise identical, the importance of proportion becomes evident by the difference in overall size. In proportions or ratios, one measurement is held constant between all subjects compared, and differences in the other measurements are evaluated. The Indices method is the most effective way to measure the athletes' proportionality ratios[(Sharma, 2019; Mclean, et.al. 1989; Singh, et.al. 2010).This study was designed to identify the differences between the segmental fat proportions of batters and bowlers in cricket games.

METHODOLOGY

For this research article,the researchers randomly collected fifty (N=50) cricketers which were 25 batters and bowlers. The Age of cricketers in between 20 to 25 years and they were selected from the Toss cricket academy TeerthankerMahaveerUniversity, Moradabad, andSonakpur Stadium in Ram Gangavihar Phase 1, Moradabad, Utter Pradeshon dated 20/04/2022 to 28/04/2022.Anthropometric parameters were measured according to a standard procedure as follows:

Stature (Height, cm): the maximum distance from the point vertex on the head to the ground. Stadiometer (anthropometric rod) used as an instrument.

Body Mass (Weight, Kg): The subjects were examined in clothing of known weight in Kg. in order to record nude weight with the help of weighing machine. The position of the subject was anatomical position, the palm face outward, eye looking ahead, neck and back was straight. The researcher calculated the Ponderal index for determining two body segments proportionalityratio.

$$\text{Ponderal index (PI)} = \frac{\text{Stature}}{\sqrt[3]{\text{Weight}}} \times 100$$

STATISTICAL ANALYSIS

Descriptive statistics was applied to find-out the difference between Ponderal index of batters and bowlers in cricket. t-test was applied at.05 level of significance.

RESULTS AND DISCUSSION

Table-1: Ponderal index of Bowlers and Batters

Variables	N	Mean Value	SD	Min. (PI)	Max. (PI)
Ponderal index of Bowlers	25	12.46	1.71	8.89	16.01

Ponderal index of Batters 25 12.83 1.89 9.92 16.54

Table-1 shows descriptive statistics of Ponderal index of Bowlers and Batters of given sample size. The Ponderal index of 25 Bowlers and 25 Batters was calculated. The minimum value of Ponderal index of Bowlers was 8.89 and the maximum value was 16.01. The minimum value of Ponderal index of Batters was 9.92 and the maximum value was 16.54. The mean value of Bowlers ponderal index was found to be 12.46 ± 1.71 and of Batters 12.83 ± 1.89 .

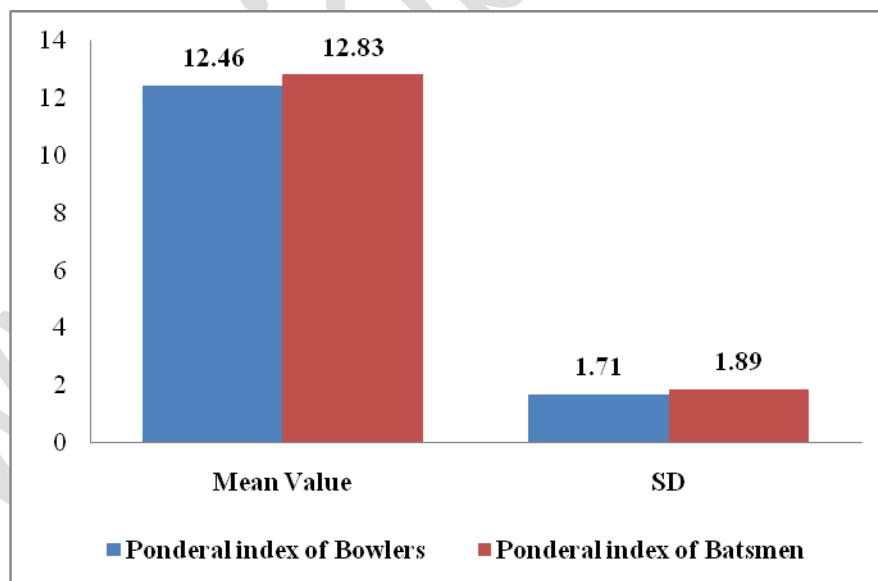
Table-2: Ponderal index of Batters and Bowlers using t-test

Variable	N	df	Mean	SD	t-value
Ponderal index of Bowlers	25	48	12.46	1.71	0.469
Ponderal index of Batters	25	48	12.83	1.89	

Level of significance at 0.05

Tab. $t_{.05}(2, 48) = 2.01$

Table-2 shows Ponderal index of Bowlers and Batters calculated using t-test. The mean value of ponderal index of Bowlers was found to be 12.46 and of Batters 12.83. The standard deviation between ponderal index of Bowlers and Batters was found to be 1.71 and 1.89, respectively. Since the calculated t-value of 0.46 was lesser than the tabulated t-value (2.01), it was concluded that an insignificant difference was existing in the mean ponderal index of bowlers and batters.



Graph, Ponderal index of batter and bowlers in Cricket

Graph represents the mean and standard deviation values of ponderal index of Bowlers (in blue box) which is lesser than Batters (in red box).

The statistical results obtained from the data indicated that there was no significant difference between bowlers and batters ponderal index in cricket games. Ponderal index is an anthropometric statistic that compares stature and weight to measure leanness in a sports person. In relation Batter's height helps them reach the ball more easily and play short balls more easily. To achieve a full-length delivery, it might be better to run with longer strides (Sharma, 2019). As a bowler, the ball should be released higher and bounce strongly. In case of fast bowling in cricket as greater height may be associated with longer limbs especially arms and legs. In both cases greater body mass generated more force it is noted for their heavy hitting and powerful realising the ball. (Singh, et. al. (2010) suggested in a result of his study, a strong natural shoulder jerk and an effective technique compensate for the height /weight requirements.

CONCLUSION

From the findings of this study, it may be concluded that the proportion ratio of ponderal index between bowlers and batters is nearly equal. It is merely a matter of chance.

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