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Comparison of batsman and bowler in relation to their lung function ability

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Abstract
The present study was an attempt to investigate the significant mean difference between Batsman and Bowlers in relation to their lung function ability which are participating at District level. The sample of the study comprised of 20 batsman and 20 bowlers of Jind district of Haryana state. All the players are male participants and their age ranges from 15 to 19 years. In order to test the significance of mean difference between the variables descriptive statistics was employed. The result indicates that there exist a significance difference between Batsman and Bowlers with respect to their lung function ability. Bowlers were found to be better than Batsman on this physiological variable.

Keywords: Lung function ability, Cricket, Players.

1. Introduction
The physiology of exercise, in particular sports physiology, is not a very old subject. It is however, growing very rapidly now, and one of the probable reasons of its rapid growth is the patronage it receives from the state and society. The state and society hope that development of sports physiology in the country can help in enhancing its reputation not only in the field of sports, but in other fields also. Modern sports have indeed become very demanding because of the fierce competitions involved. Human physiology is a study of various processes that go on in human body. It seeks to understand and explain the work done by the various parts of the body, and the results of the harmonious action of the several organs. Broadly speaking, physiology is the science that deals with functions the bodily organs perform.
Under physiological factors, we usually include those functions of the organisms that get affected by changes in the external environment. As sports competition create an atmosphere of psychological pressure, various organic capacities of the body such as heart rate, lung capacity, blood pressure etc. get affected, which in turn are likely to affect the performance level of individual participants or teams. Physiological factors function at the intersection of physical and biological factors. The three important physiological variables are: lung function, blood pressure and heart rate.

Lung functions
While breathing we alternately take into and expel a certain quantity of air from the lungs. With each quiet inspiration about 30 cubic inches of air enters the lungs and 30 cubic inches comes out with each expiration. The air thus going into and coming out of the lungs is called tidal air. After a ordinary inspiration, the lungs contain about 230 cubic inches of air. By taking a deep inspiration, about 100 cubic inches more can be taken in. this extra amount is called complemented air. After an ordinary expiration, about 200 cubic inches are left in the lungs, but by forced expiration about one half of this may be driven out. This is known as supplemental air. The lungs can never be entirely emptied of air and about 75 to 100 cubic inches of air always remains inside. This is known as the residual air. There are many different methods of checking the function of the lungs. However, for the purpose of the present research, we have restricted ourselves to only one of these tests, namely Peak Expiratory Flow Rate (PEFR). With this test the lung capacity of an individual can be tested to a fair degree of accuracy. In Peak expiratory flow rate test we proceed by measuring maximum ventilator volume (MVV) of the lungs. The subject breathes violently and maximally for 15 seconds into a spirometer (mechanical water sealed variety or electronically operated where available). The spirometer then shows the MVV in liters per minute. The normal value of MVV in strongly built healthy adult young males is often over 100 liters per minute.

Persons affected by inefficiency inventilatory (below) action like emphysema, asthma, kyphosis, etc. are likely to show low value of MVV. In the past, this used to be determined also by Douglas Bag.

The MVV as described above is rather an exhaustive procedure, unsuitable for old man or sick individual. Its alternative, the PEFR is relatively less cumbersome and safe. In this test, the subject exhales violently, (only a single expiration is made) and the maximum flow rate that can be sustained for 10 milli seconds is the PEFR. Evidently, in persons with weak ventilator efficiency (asthma, emphysema) the PEFR would be low. The PEFR is best measured by electronic spirometer. An alternative instrument is Wright's peak flow meter, which however gives a somewhat lower value. Normal value in healthy adult young male is around 10 liters per second (range 6 to 15 liters per second). Thus for MVV, the subject has to breath in and out for 15 seconds but for PEFR ha has to breath out only once. The PEFR is probably the single best test for the measurement of ventilator efficiency.

2. Methodology

For this study the investigator adopted survey method to collect data related to cricket players (batsman and bowlers). The subjects of the study consist of 40 cricket players i.e. 20 batsman and 20 bowlers. The age group of cricket players ranges between 15 to 19 years. All these cricket players belong to district Jind (Haryana) only.

Tools Used

Lung function test (LF)

Purpose: To measure peak expiratory flow rate (PEFR).

Equipments: A pocket peak glow meter, a mug, water, a piece of cloth, pen and a scorecard.

Procedure: The test was explained and demonstrated before the testing commenced. The subject assumed an erect standing position on the floor, held the pocket peak flow meter in one hand. Then he took a breath as deep as possible, put the peak flow meter in his mouth and blew out as hard and as fast as possible in a short sharp blast. Then after removing the meter from mouth, read the reading from the scale. Each subject was given three trials and the best reading was recorded on the chart.

Instruction: The subject was supposed to stand upright, wash the mouthpiece and shake of water before passing on to the next subject. The scale was brought at zero before use.

Scoring: The highest reading was recorded in liter per minute on the chart as the score of each subject.

Testing personnel: The help of one colleague was taken to administer this test.

Findings

The main objective of the study is to compare batsman and bowlers with respect to their lung function ability. The data collected by cricket players was arranged, tabulated and statistically analyzed. The obtained data was processed for descriptive statistics i.e. mean, S.D and Z-ratio.

Table 1 shows the results of mean scores of peak flow meter test of Batsman and Bowlers which are 527.7 lpm and 553.7 lpm respectively. The Z-ratio of the mean difference on peak flow meter test is 1.99 in favour of Bowlers. It is significant at .05 level of confidence. Hence, the difference between the mean scores of Batsman and Bowlers on peak flow meter test is significant. The peak expiratory flow rate is directly related to the lung function of the players.

Table 1:

Sr. No.	Variable	Batsman		Bowler		Z-ratio
		Mean	S.D	Mean	S.D	
1.	LF	527.7	69.31	553.7	66.45	1.99*

*Significant at .05 level of confidence

3. Discussion of Findings

The results suggested that the Bowlers have better lung function ability than the Batsman. It is obvious that a bowler has to work very hard during the match because he has to run 15 to 25 yards every time he delivers the ball. He has to bowl approximately 8 to 10 over's in a one day match and 30 to 40 over's in a test match during normal innings while Batsman has no need to run on every bowl and sometime, they got out early. Apart from that Bowlers have to field on the boundary line most of the time while Batsman is preferred to field in catching positions. Hence, there exist a significance difference between Batsman and Bowlers with respect to their lung function ability.

4. Conclusion

Based on the results of the present study the following conclusion is drawn:

There exist a significance difference between Batsman and Bowlers with respect to their lung function ability. Bowlers were found to be better than Batsman on this physiological variable.

Implications

The findings of the study have a number of implications for coaches, physical education teachers, trainers and cricket players.

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