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Relationship of selected anthropometrical measurements with game performance of intercollegiate men cricket players

Vishwanath Annarao and Dr. Cr Bhairaddy

Abstract

This study examined the relationship between game performance and selected anthropometrical measurements of Cricket players who have represented intercollegiate level, their age ranged from 18-25 years. The subjects were taken from Degree Colleges studying in Bachelor Degrees in B.A., B.Sc. and B.Com. affiliated to Gulbarga University only. The anthropometrical measurements were standing height (cms), body weight (kgs), arm length, leg length and arm span (cms) were selected. The ten point rating scale was employed to assess the game performance of Cricket players during game situations. Data in the three skills namely batting, bowling and wicket keeping were rated on a scale from one to ten. The rating of the players was done by three experienced and well known judges as per the rating scale during match situations. The statistical tool used was Karl Pearson Product Moment Coefficient of Correlation. There exists a positive correlation between game performance with standing height ($r=0.398$; $P<0.01$); body weight ($r=0.258$; $P<0.01$), arm length ($r=0.342$; $P<0.01$), leg length ($r=0.335$; $P<0.01$) and arm span ($r=0.469$; $P<0.01$). It was concluded that there is a need to improve the anthropometrical characteristics to enhance the game performance of the Cricket players.

Keywords: Relationship, Anthropometrical, Game Performance, Cricket.

Introduction

The players are generating and flouting new records in today's competitive sports. The intention of sports is rapid suited with every field. The level of physical fitness is increasing day to day because of development of science and technology. Today cricket seems to be a virtual lifeline of many commonwealth nations. Cricket is a game in which each team has to bowl and bat according to certain rules and regulations. A team which scores high number of runs will be the winner. Cricket is played in many forms such as Test match, One day International match etc. The performance of cricketers is enhancing day by day, old records are broken and new records are forming; scores are reaching new heights, it is due to high intensity training of the players which help them to perform well.

Today is the modern competitive cricket era. Every cricketer is in race to excel others, and cricket competitions have become fundamental mode of human expressions as they are one of the very important functions by which national and international recognition and prestige is gained.

Anthropometry has been used to evaluate gross structure and function. There are numerous factors, which are responsible for the performance of a sportsman. The physique and body composition, including the size, shape and form are known to play a significant role in this regard. At present, sportsman for superior performance in any sports is selected on the basis of physical structure and body size. In different playing positions such as bowling, fielding and batting, a great amount of strength of the back muscles is required. Mechanical factors play an important role in the etiology of degenerative processes and injuries to the lumbar spine. Especially in fast bowling, where a player must absorb vertical and horizontal components of the ground reaction force that are approximately five and two times body weight at front-foot and rear-foot impact respectively, thus, assessment of back strength is essential (Elliott, 2000). The maximum capacity of the back muscles must be known and subsequently muscle endurance, if assessments are to be made of muscle fatigue during playing conditions

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(Mannion *et al.*, 1999). Stretch (1987) reported that provincial and international cricketers had a tall, athletic built, with definite morphological differences existing between batsmen, bowlers and all-rounders. Some previous studies shows the importance of anthropometric characteristics for different sportsmen are given as under.

In Indian context, some literature is available (Kumar *et al.*, 2007; Koley & Yadav, 2009; Koley *et al.*, 2009). Kumar *et al.* (2007) reported the differences in some anthropometric characteristics between the provinces of Punjab and Uttar Pradesh. Stuelcken *et al.* (2007) studied the anthropometric characteristics of elite cricket fast bowlers of Australia considering 7 skinfolds, 7 lengths, 6 breadths and 11 girths measurements and concluded that the male bowlers had larger length, breadth, and girth measurements than their female counterparts. Kumar and Venkatesh (2014) compared the relationship between anthropometric with performance of select cricket players. Results revealed that performance was linearly and significantly related to anthropometric variables such as Height, Weight, Arm length, Leg length and Arm span and also found weight was the major predictor of the cricket performance. Abhay Singh; Amit Kumar Singh and Hari shanker singh (2015) ^[1] tried to find out the predictive anthropometric variables which contribute towards fast bowling in cricket. It was found that bowling performance of a fast bowler was found highly correlated to height (0.4241), Forearm length (0.4573), Wrist Circumference (0.4753) and Shoulder width (0.4464), whereas it was found significantly correlated to Leg length (0.2983) and Ponderal index (0.2974). Ul Haq *et al.* (2016) ^[6] studied on the anthropometric characteristics of Pakistan U-19 and Malaysian U-19 cricket players. Results showed that Pakistan under-19 cricketers were taller, heavier, longer and wider segmental lengths than Malaysian. It was predicted, Pakistani under-19 players were superior in body segments. The longer and wider anthropometric characteristics provide biomechanical advantages to Pakistan under-19 players as a result they performed better than Malaysian under-19 players. Singh and Singh (Jan., 2017) found out the relationship of Running between the wickets performance of the Cricket players with selected Anthropometric Variables and found that there are significant relationships of running between the wickets performance with selected anthropometric variables Height, Arm Length. Saxena and Tiwari (Jan., 2017) found relationship of anthropometric measurements to playing ability of tennis players. The statistical findings of the present

study revealed that the selected anthropometric variables are not significantly related to tennis playing ability.

Anthropometry measurements play an important role in performance in various Sports and Games. Every sport has its specific requirement to perform better in it. Hence, in the present study is intended to know the relationship of anthropometric measurements and game performance of Cricket players.

Aims and Objectives of The Study

The aim of the present study is to examine the relationship of anthropometrical measurements with game performance of Cricket players.

Material and Methods

Research Method: Descriptive Survey Method

Sample: The present study was carried out on hundred male Cricket players who have represented intercollegiate level, their age ranged from 18-25 years. The subjects were taken from Degree colleges studying Bachelor Degree in B.A., B.Sc. and B.Com stream coming affiliated to Gulbarga University.

Variables selected: The anthropometrical measurements were standing height (cms), body weight (kgs), arm length, leg length and arm span (cms) were selected. The ten point rating scale was employed to assess the game performances of Cricket players during game situations such as Bating, Bowling and Wicket Keeping. The rating of the players was done by three experienced and well known judges as per the rating scale during match situations.

Statistical Analysis: Pearson's Coefficient of Correlation was applied to establish the relationship among the variables measured. Data were analyzed using SPSS (Statistical Package for Social Science) version 24.00 and MS Excel at 0.05 and 0.01 level of confidence was used to indicate statistical significance.

Analysis and Interpretation of Data

The results pertaining to the significant relationship between the selected anthropometrical measurements and game performance of Cricket players by using Karl Pearson's Product Moment Coefficient of Correlation is presented in the following table-1.

Table 1: Table shows relationship between selected anthropometrical measurements and game performance of Cricket players. (N=100, df=98)

Game Performance and Anthropometrical Measurements	Mean	Standard Deviation	'r' value and level of sig.	Sig.	
Game Performance	Standing Height	165.800	5.726	0.398**	P=0.000
	Body Weight	60.990	6.926	0.258**	P=0.000
	Arm Length	74.380	3.070	0.342**	P=0.000
	Leg Length	88.440	3.709	0.335**	P=0.001
	Arm Span	181.330	8.741	0.469**	P=0.000
	Game Performance	7.120	1.224		

** Significant at 0.01 level.

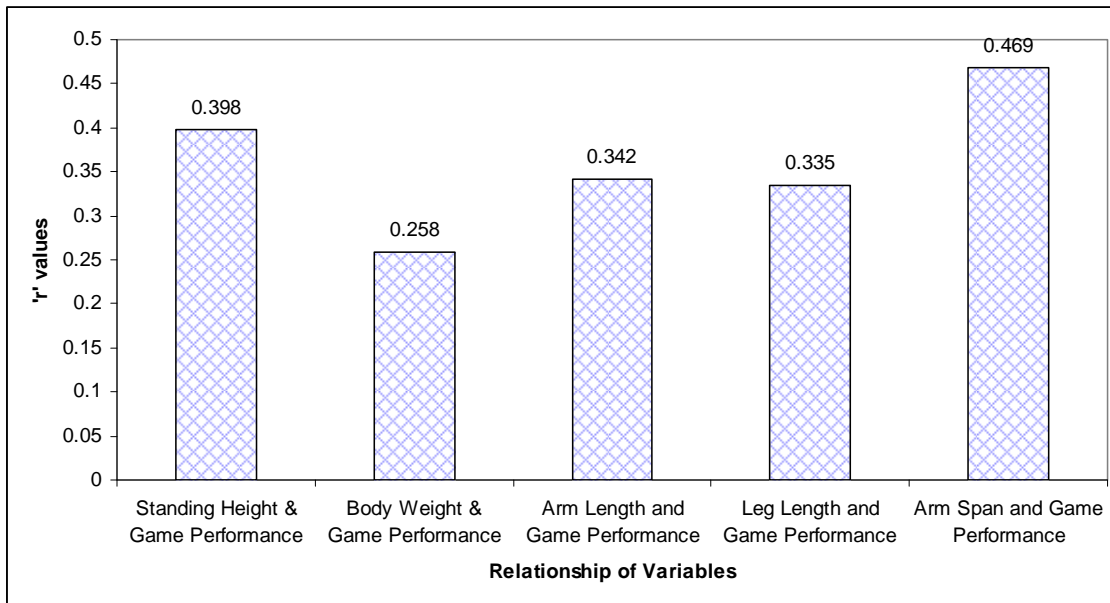


Fig 1: Bar graph shows the 'r' values between game performance and anthropometrical measurements of college level men Cricket players

The above table graph shows the analysis of the game performance with the selected physical fitness variables is represented. From the above table and graph it is clearly illustrated that there exists positive correlation between game performance with standing height ($r=0.398$; $P<0.01$); body weight ($r=0.258$; $P<0.01$), arm length ($r=0.342$; $P<0.01$), leg length ($r=0.335$; $P<0.01$) and arm span ($r=0.469$; $P<0.01$).

Discussion of Results

From the study, it was found that body weight, standing height, arm length, leg length and arm span are correlated with game performance of Cricket players. Cricket is a game of endurance and it is played throughout the year. The similar results concurred with previous studies conducted by Kumar and Venkatesh (2014); Abhay Singh; Amit Kumar Singh and Hari shanker singh (2015) ^[1]; Singh and Singh (Jan., 2017) and Saxena and Tiwari (Jan, 2017). Thus, demand of physical fitness of the players is the major and it is well established that anthropometric analysis has shown optimum performance appears to have definite physical requirements. The data presented in the present study carry huge practical application and should be useful in future investigation on player selection and training programme development.

Conclusion

On the basis of the result as shown in the above tables and discussion of results, it was concluded that Game performance of Cricket player can be performed in the best possible manner if the players have anthropometric parameters like standing height, body weight, arm length, leg length and arm span.

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