

Fast Bowling Ability and Its Relationship with Speed, Parameters in Cricket

Mr. Yeguri Rambabu^{1*} Dr. P. Jhonson²

¹ Ph.D. Research Scholar, University College of Physical Education and Sports Sciences, Acharya Nagarjuna University, AP

² Principal, University College of Physical Education and Sports Sciences, Acharya Nagarjuna University, AP

Abstract – To achieve the purpose of the study, the investigator selected 100 fast bowlers who have represented in inter-collegiate cricket tournament from four colleges affiliated to Andhra University. The subjects were from the age group of twenty to twenty five years. All the subjects had played cricket for more than five years. Only volunteer, healthy and physically fit subjects were selected for this study. The investigator selected following criterion and dependent variables for this study Speed Parameters were 5 M Sprint run, 10 M Sprint run, 20 M Sprint run and agility, and Six electronic stop watches (Casio, Japan) used to collected timing. To measure the velocity of the cricket players balling velocity the instrument used Radar Guns or Speed Guns to collect the data. To get meaningful findings the following statistics tools were used descriptive statistics mean and standard deviation, Simple correlation and multiple regression analysis was used. The findings of the study proved their was significant relationship between speed parameters 5 M sprint speed, 10 M sprint speed, with fast bowling ability.

Key Words:- Bowling Ability, Speed, Parameters, Cricket Players.

INTRODUCTION

“Cricket is a bat-and-ball game played between two teams of eleven players on a field at the centre of which is a 20-metre (22-yard) pitch with a wicket at each end, each comprising two bails balanced on three stumps. The batting side scores runs by striking the ball bowled at the wicket with the bat, while the bowling and fielding side tries to prevent this and dismiss each player. Means of dismissal include being bowled, when the ball hits the stumps and dislodges the bails, and by the fielding side catching the ball after it is hit by the bat, but before it hits the ground. When ten players have been dismissed, the innings ends and the teams swap roles. The game is adjudicated by two umpires, aided by a third umpire and match referee in international matches. They communicate with two off-field scorers who record the match's statistical information.”(David, 2000).

Speed is the ability to execute motor action under given conditions on minimum possible time. The importance of speed factor is enormous in the field of sports and games. In cricket the factor of speed is required in every item. The attainment of maximum speed is important in bowling to the cricketer, while chasing the ball, running between the wickets etc. Speed is highly specific ability, especially trained sportsmen and therefore requires fast and explosive movements. Hence the importance of speed cannot

be under estimated and ignored. A cricketer needs all types of speed abilities, especially short run speed such as 5 M sprint, 10 M sprint, 20 M sprint and agility. Speed abilities are also important because certain other abilities are inter connected to a lesser or greater extent on these abilities. Considering the above importance speed was chosen as a variable.

OBJECTIVES OF THE STUDY

The aim of this study was to find out fast bowling ability and its relationship with speed, parameters in cricket. In doing so, the investigator would assess

- (a) Speed parameters, 5 M sprint, 10 M sprint, 20 M sprint, and agility of cricket players.
- (d) To find out relationship between bowling ability and selected speed parameters of the cricket players.
- (e) To predict fast bowling ability through selected speed parameters of cricket players

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the fast bowling ability and its relationship with speed, parameters in cricket.

HYPOTHESIS

Keeping in mind the statement of the problem the following hypotheses were formulated.

1. It was hypothesized that the speed parameters, 5 M sprint, 10 M sprint, 20 M sprint, and agility would be significantly associated with fast bowling ability of cricket players.
2. It was hypothesized that the fast bowling ability could be successfully predicted through selected speed, parameters of cricket players.

METHODOLOGY

To achieve the purpose of the study, the investigator selected 100 fast bowlers who have represented in inter-collegiate cricket tournament from four colleges affiliated to Andhra University. The subjects were from the age group of twenty to twenty five years. All the subjects had played cricket for more than five years. Only volunteer, healthy and physically fit subjects were selected for this study. The investigator selected following criterion and dependent variables for this study Speed Parameters were 5 M Sprint run, 10 M Sprint run, 20 M Sprint run and agility. A repeated measure research design was used with fast bowling ability as the criterion variable and selected speed, parameters as the predictor variables. "Six electronic stop watches (Casio, Japan), non stretchable steel tapes, standard cricket balls, electronic digital dynamometer, speed gun, were used in this study and their calibrations were accepted as reliable at par with international standards. To measure the velocity of the cricket players balling velocity the instrument used Radar Guns or Speed Guns to collect the data. To get meaningful findings the following statistics tools were used descriptive statistics mean and standard deviation for the selected criterion and predictor variables were calculated separately. Simple correlation to examine the relationship between the tests – retest scores of each variable to intra class reliability of the tests conducted and to find the relationship between selected criterion variables and predictor variables, Pearson's correction coefficient was calculated. Multiple regression analysis was used to examine the relationship between the fast bowling speed of the subjects with selected speed parameters, such as 5 M sprint, 10 M sprint, 20 M sprint and agility and to predict the fast bowling ability with selected speed, power and force parameters.

DESCRIPTIVE ANALYSIS

Table I

Showing Descriptive Statistics on Speed Parameters Selected for this study

VARIABLES	MEAN	STD. DEVIATION	N
Fast Bowling Ability	1113.74	42.84	100
5 M Sprint	1.078	0.031	100
10 M Sprint	2.0102	0.064	100
20 M Sprint	3.040	0.108	100
Agility	11.0473	0.42158	100

Table I shows that the obtained mean value of the fast bowling ability of the cricket players was 1113.74 with standard deviation ± 42.83 . The mean value on 5 M sprint speed was 1.078 with standard deviation ± 0.031 . The mean value on 10 M sprint speed was 2.012 with standard deviation ± 0.064 . The mean value of 20 M sprint speed was 3.04 with standard deviation ± 0.108 . The mean value of agility was 11.04 with standard deviation ± 0.421 .

ANALYSIS OF COEFFICIENT OF CORRELATION

Table II

Showing Correlation of Coefficient between Speed Parameters and fast bowling ability of the subjects

S. No.	Variables	Correlation Coefficient	Level of Sig.
	Fast bowling ability Vs		
1	5 M sprint speed	-0.296*	<0.05
2	10 M sprint speed	-0.199*	<0.05
3	20 M sprint speed	-0.111	NS
4	Agility	-0.150	NS

Required table r value (1, 99)_{0.05} = 0.197

*Significant at 0.05 level.

The results presented in Table II proved that there was a significant relationship between fast bowling ability and 5 M sprint speed (-0.296), fast bowling ability and 10 M sprint speed (-0.199), and there were no significant relationship between fast bowling ability as the obtained 'r' values were greater than the required 'r' value of 0.197 to be significant at 0.05 level. As for remaining speed parameters, fast bowling ability has insignificant relationship with 20 M sprint speed (-0.111), fast bowling ability with agility (-0.150) as the obtained 'r' values were lesser than the

required 'r' value of 0.197 to be significant at 0.05 level.

ANALYSIS OF MULTIPLE REGRESSIONS

Having found the relationship of fast bowling ability with speed parameters selected for the study, to find out which were all the speed parameters contribute to fast bowling ability, the obtained data were subjected to statistical analysis using multiple regression analysis. The results presented in Table III.

Table III

Showing ANOVA for Variables 5 M, 10 M, 20 M and Agility

VARIANCE	SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Regression	23584.960	2	11792.480	7.237	0.001
Residual	158068.280	97	1629.570		
Total	181653.240	99			

Predictors: (Constant), 5 M sprint, 10 M sprint, 20 M sprint and Agility

Dependent Variable: Fast bowling ability

It is clear from the table III that the obtained F value of 7.237 was significant at 0.01 level. It revealed that the speed parameters selected for this study were collectively influencing the fast bowling ability of cricket players. As the F ratio was significant, multiple regressions were computed.

The stepwise multiple regressions between selected speed parameters and fast bowling ability of cricket players is presented in table IV.

Table IV

STEPWISE MULTIPLE REGRESSION BETWEEN SPEED PARAMETERS AND FAST BOWLING ABILITY OF CRICKET PLAYERS

MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD. ERROR OF THE ESTIMATE
3	0.360	0.130	0.112	40.368

A Predictors: (Constant), 5 M sprint, 10 M sprint, 20 M sprint and Agility

Table V reveals that among the speed parameters 5 M sprint and 10 M sprint speeds were very much influencing the fast bowling ability of cricket players. From R Square value it was clear that 13% of fast bowling ability of cricket players were mainly due to these speed parameters.

The variables in the equation are given in Table V.

Table V

VARIABLES IN THE EQUATION OF CRICKET PLAYERS' FAST BOWLING ABILITY

Variables	B	SE B	Beta	't'	Level of Sig.
(Constant)	1424.874	155.335		9.173	.000
5 M Sprint Speed	-591.318	155.641	-.424	-3.799	.000
10 M Sprint Speed	162.286	74.662	.242	2.174	.032

Dependent Variable: Fast bowling ability

Multiple Regression Equation (Relationship between Speed parameters Fast bowling ability)

Fast bowling ability of Cricket Players

$$= 1424.874 - 592.318 (5 \text{ M Sprint Speed}) + 162.286 (10 \text{ M Sprint Speed})$$

The independent variables not in the equation are given in **Table VI**.

Speed Parameters Not in the Equation of Cricket players' Fast Bowling Ability.

Variables	Beta in	't'	Significance
Agility	-0.025	-0.249	0.804
20 M Sprint Speed	0.134	1.101	0.274

Predictors in the Model: (Constant), 5 M sprint and 10 M sprint speed

Dependent Variable: Fast bowling ability

Table VI shows the excluded variables from the equation, as these variables were found to be lesser than the required significance of 0.05 level fixed for this study. Thus, the excluded variable from the equation speed parameters were agility and 20 M sprint speed.

DISCUSSIONS ON FINDINGS AND HYPOTHESIS

In this study, relationship between fast bowling ability with selected speed, parameters of cricket players. The fast bowling ability was determined through radar gun which was used as the criterion variable. Speed parameters 5 M sprint speed, 10 M sprint speed, 20 M sprint speed and agility were selected as predictor variables. The backward multiple regression method was used to determine the relationship between

selected speed, power and force parameters with fast bowling ability of cricket players.

“The regression selection method begins with the squared multiple correlations of all the predictor variables with criterion variables. The predictor variables are deleted from the regression equation one at a time, and the last two R square due to deletion of the variable was studied, that is, each variable was treated as if it were entered last in the equation. Thus, it was possible to find out which variables added least when entered last in the equation, and the loss in R square was compared against a criterion of meaningfulness as well as significance. Thus, when a variable does not add meaningfully or significantly to prediction it was deleted, and when no variable was deleted, the analysis was terminated.” Since the present investigation was aimed to determine the relation between selected speed, power and force parameters with fast bowling ability, backward multiple regression was analyzed for each category of variables, namely, speed parameters, power parameters and force parameters with fast bowling ability

Relationship of Speed parameters with Fast bowling ability

The simple correlation coefficient between each of the selected speed parameters with the fast bowling ability proved that 5 M sprint speed was significantly related with fast bowling ability and there were no significant relationships between fast bowling ability and 10 M sprint speed, 20 M sprint speed and agility as the obtained ‘r’ values were lesser than the required table ‘r’ value to be significant at 0.05 level.

Multiple regression analysis was made and the equation included 5 M sprint speed and 10 M sprint speed with obtained ‘t’ values greater than the required table ‘t’ value required to be significant at 0.05 level. Thus, the speed parameters 20 M sprint speed and agility were found to be excluded as the obtained ‘t’ value was lesser than the required table value to be significant at 0.05 levels. And the variables 20 M sprint speed and agility were included in the equation with the multiple correlations.

Fast bowling ability of cricket Players

$$= 1424.874 - 591.318 (5 \text{ M sprint speed}) + 162.285 (10 \text{ M sprint speed})$$

It was hypothesized that the speed parameters, 5 M sprint, 10 M sprint, 20 M sprint, and agility would be significantly associated with fast bowling ability of cricket players. The results proved that there was significant relationship between 5 M sprint speed with fast bowling ability and 10 M sprint speed with fast bowling ability and the formulated hypothesis No. 1 was accepted at 0.05 level. However, as for the remaining speed parameters 20 M sprint speed and agility there was no significant relationship and the formulated hypothesis was rejected to that extent.

Portus MR, Sinclair PJ, Burke ST, Moore DJ, Farhart PJ.(2000) made “a study on Cricket fast bowling performance and technique and the influence of selected physical factors during an 8-over spell” and established the importance in measuring fast bowling ability through radar gun to find out relationship with physical capacities such as speed. Thomas Dos’Santos, Christopher Thomas, Paul Comfort, and Paul A. Jones (2018) made “a study (1) to examine differences in change of direction (COD) performance and asymmetries between team-sports while considering the effects of sex and sport; (2) to evaluate the relationship between linear speed, COD completion time, and COD deficit. A total of 115 (56 males, 59 females) athletes active in cricket, soccer, netball, and basketball performed the 505 for both left and right limbs and a 10-m sprint test. All team-sports displayed directional dominance with, male cricketers tending to demonstrate the greatest COD deficit asymmetries between directions compared to other team-sports Differences in sprint and COD performance were observed between sexes and sports, with males demonstrating faster 10-m sprint times, male cricketers displayed shorter COD deficits compared to females of the same sport.”

Lockie Robert, G., Samuel J. Callaghan, and Matthew D. Jeffriess (2014) analyzed “the first two steps of a 10-m sprint in experienced cricketers. And suggested joint motion ranges related to longer steps. Cricketers display similar sprint kinematics regardless of fielding position, likely because players may field in the infield or outfield depending on match situation. Due to relationships with shoulder and leg motion, and the importance and trainability of step length, cricketers should target this variable to enhance acceleration.”

The findings of the study proved their was significant relationship between speed parameters 5 M sprint speed, 10 M sprint speed, with fast bowling ability. Further analysis proved that fast bowling ability can be predicted with speed, variables.

CONCLUSIONS

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that selected speed parameters 5 M sprint speed, 10 M sprint speed were significantly related with fast bowling ability of cricket players.
2. It was concluded that fast bowling ability can be successfully predicted through the following speed parameters expressed in equation.

Fast Bowling Ability of cricket players

$$= 1424.874 - 591.318 (5 \text{ M sprint speed}) + 162.286 (10 \text{ M sprint speed})$$

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Corresponding Author

Mr. Yeguri Rambabu*

Ph.D. Research Scholar, University College of Physical Education and Sports Sciences, Acharya Nagarjuna University, AP