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INFLUENCE OF SELECTED MOTOR ABILITY COMPONENTS AND ANTHROPOMETRIC VARIABLES ON SPEED OF DELIVERY AMONG MEDIUM FAST BOWLERS IN CRICKET

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Abstract

The purpose of the study was to find out the influence of selected motor ability components and anthropometric variables among medium fast bowlers in cricket. To achieve the purpose, fifty (N-50) medium fast bowlers were selected at random who represented inter university tournaments from various universities of Tamilnadu state. The subjects were meseared in their selected motor ability components namely, speed and arm explosive power and the selected anthropometric variables namely, height, body weight, arm length, and leg length. The dependent variable speed of delivery was measured by radar gun. The collected data were analysed by Pearson product moment correlation. The level of significance was fixed at 0.05. The results of the study showed that there was a significant relationship between speed of delivery and the selected independent variables namely speed, arm explosive power, height, arm length and leg length. There no relationship between speed of delivery and body weight.

Keywords: *Anthropometry, speed of delivery, medium fast bowlers and cricket*

Introduction

Cricket is a global sport played in over 100 countries with elite performers attracting multi-million dollar contracts. Cricket is a field-based sport, with each team consisting of 11 players. Although all are required to field and bat during a match, each player generally possesses a set of specific skills that defines their role and contributes to the overall performance of the team. One of these roles is fast bowling and a team will play between one and five fast bowlers in any given match. A combination of many factors determines success in fast bowling. One of these factors is the speed of the ball at release. A fast ball release speed reduces the time available for a batsman to perceive and use information about the delivery and execute an appropriate motor response. To attain high ball release speeds, the bowler's trunk must flex, extend, laterally flex, and rotate within a short period and the body must absorb ground reaction forces as high as six times body weight **(Bartlett et al. 1996).**

Modern cricket is an international sport and team sat all levels strive to develop fast bowlers who can generate high ball release speeds. The ability of bowlers to bowl with high ball release speeds contributes to the successful performance of cricket teams **(Portus et al. 2000)**, by either dismissing or

reducing the scoring ability of the opposing batsmen.

In a sample of nine male fast-medium bowlers, **Glazier et al. (2000)** reported a high correlation between ball release speed and the length of the bowling arm. Anthropometric dimensions and morphological characteristics play an important role in determining the success of a sportspersons **(Rico-Sanz, 1998; Wilmore, & Costill, 1999; Keogh, 1999).** The importance of passing, length arm has been stated by **Irwin (1971)** as athletes and players who have longer arm might do well to use the better grip because it provides better control over the skill. Chest girth and composition and body composition were significantly related to ball release speed at various times during the spell.

Fast bowling is fundamental to all forms of cricket **(Wormgoor, Harden, and Mckinon, 2010).** Chest girth and composition and body composition were significantly related to ball release speed at various times during the spell. Body size had a strong positive influence on bowling performance in a heterogenous population of different ages **(Pyne et al. 2006).**

The purpose of the study was to find out the influence of selected anthropometric and motor ability components among medium fast bowlers in cricket.

Methods

Subjects

To achieve the purpose, fifty (N-50) medium fast bowlers were selected at random who represented inter university tournaments from various universities of Tamilnadu state. Their age ranged between 18 and 28 years. The medium fast bowlers who were bowling at the speed range between 120km/h and 129 km/h were selected as subjects. To achieve the homogeneity of the group, the subjects who were bowling with side on technique only were selected for the purpose of the study.

Variables

The speed of delivery of the medium fast bowlers was selected as dependent variable. The selected anthropometric variables namely, height, body weight, arm length, and leg length and the selected motor ability components namely, speed and arm explosive power were deemed as independent variables.

The subjects were meseared in their selected anthropometric variables namely, height (Stadiometer), body weight (weighing machine), arm length, and leg length (Measuring steel tape) and the selected motor ability components namely, speed (50m test) and arm explosive power (Medicine ball throw). The dependent variable, speed of delivery was measured by radar gun. The collected data were analysed by Pearson product moment correlation with IBM SPSS version 20. The level of significance was fixed at 0.05.

Results and Discussions

Table-I

Descriptive Statistics					
Variables	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
SD (km/h)	50	121.00	130.00	126.06	2.44
S (sec.)	50	5.90	7.20	6.38	0.38
AP (m)	50	9.12	11.86	10.62	0.65

HT (cm)	50	168.00	185.00	175.70	4.53
WT (kg)	50	64.00	78.00	69.48	3.38
AL (cm)	50	73.00	81.00	76.72	2.46
LL (cm)	50	80.90	92.50	87.54	2.60

SD-Speed of Delivery, S-Speed, AP-Arm Power, HT-Height, WT-Weight, AL-Arm Length, LL-Leg Length

Table –II
Showing the obtained r values and p values of the selected motor ability components and anthropometric variables

Variables		SD	S	AP	HT	WT	AL	LL
SD	Pearson Correlation	1						
	Sig. (2-tailed)							
S	Pearson Correlation	-0.679**	1					
	Sig. (2-tailed)	0.000						
AP	Pearson Correlation	0.757**	-0.439**	1				
	Sig. (2-tailed)	0.000	0.001					
HT	Pearson Correlation	0.519**	-0.403**	0.395**	1			
	Sig. (2-tailed)	0.000	0.004	0.004				
WT	Pearson Correlation	-0.078	-0.016	-0.120	0.635**	1		
	Sig. (2-tailed)	0.592	0.911	0.406	0.000			
AL	Pearson Correlation	0.510**	-0.447**	0.399**	0.950**	0.617**	1	
	Sig. (2-tailed)	0.000	0.001	0.004	0.000	0.000		
LL	Pearson Correlation	0.469**	-0.415**	0.331*	0.820**	0.542**	0.837**	1
	Sig. (2-tailed)	0.001	0.003	0.019	0.000	0.000	0.000	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table-II shows the results of obtained r values and p values of selected motor ability components and anthropometric variables. The obtained r value (-0.679) between speed of delivery and speed was significant at 0.01 level. There was a significant negative correlation between speed of delivery and speed. The obtained r value (0.757) between speed of delivery and arm power was significant at 0.01 level. There was a significant positive correlation between speed of delivery and arm explosive power. The obtained r value (0.519) between speed of delivery and height was significant at 0.01 level. There was a significant positive correlation between speed of delivery and standing height. The obtained r value (-0.078) between speed of delivery and weight was not significant at 0.05 level. There was a no relationship between speed of delivery and body weight. The obtained r value (0.510) between speed of delivery and arm length was significant at 0.01 level. There was a significant positive correlation between speed of delivery and arm length. The obtained r value (0.469) between speed of delivery and leg length was significant at 0.01 level.

There was a significant positive correlation between speed of delivery and leg length.

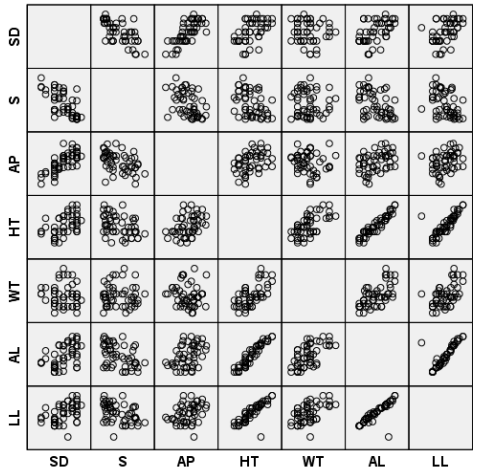
There was a significant negative relationship between speed and arm explosive power since the obtained r value (-0.439) was significant at 0.01 level. There was negative relationship between height and speed and positive relationship between height and arm explosive power as the obtained r values (-0.403 and 0.395) were significant at 0.01 level respectively.

There was no relationship between weight and speed, and weight and arm explosive power as the obtained r values (-0.016 and -0.120 respectively) were not significant at 0.05 level. there was a positive relationship between weight and height since the obtained r value (0.635) was significant at 0.01 level.

There was negative relationship between arm length and speed (-0.447), positive relationship between arm length and arm explosive power (0.399), arm length and height (0.950), arm length and weight (0.617) as the obtained r value was significant at 0.01 level.

There was a negative relationship between leg length and speed (-0.415), positive relationship between leg length and arm explosive power (0.331), leg length and height (0.820), leg length and weight (0.542), leg length and arm length (0.837) since the obtained r values were significant at 0.01 level.

Figure-1 showing the correlation matrix



Pyne et al. (2000) reported that height and upper body strength had a significant relationship on bowling speed. The higher ball release speed has been attributed to longer limbs among the bowlers **(Glazier, Paradisis, and Cooper, 2000).** A study of 9 collegiate fast-medium bowlers reported that ball-release speed was highly correlated with shoulder–wrist length and total arm length **(Stockill and Bartlett, 1994).** The finding of the present study is in line with results of present study. The speed of delivery and speed has a negative relationship since the scores of speed is taken in seconds and the speed of delivery was measured in km/h which are indirectly proportional scores. The pace bowlers usually taller in stature which contributes better ball release speed. Similarly, the standing height has directly proportional relationship with leg length and arm length. Speed and arm power has inversely proportional relationship with each other.

Conclusions

There was significant negative relationship between speed of delivery and speed. The speed of delivery had a

positive correlation with arm explosive power, height, arm length and leg length. There was no relationship between speed of delivery and body weight.

The speed and arm explosive power, and height and speed, arm length and speed, leg length and speed had a negative relationship. Height and arm explosive power, arm length and arm explosive power, leg length and arm explosive power, leg length and height, arm length and height, leg length and weight, leg length and arm length, arm length and weight, weight and height had positive relationship.

There was no relationship between weight and speed, and weight and arm explosive power.

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