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RELATIONSHIP OF SELECTED PREDICTIVE ANTHROPOMETRIC VARIABLES WITH THE SELECTED FOOTBALL SKILLS



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Abstract :

This study was an attempt to find out Relationship of Selected Predictive Anthropometric Variables with the Selected Football Skills. For this purpose the researcher randomly selected 60 subjects from different professional club in Pune. Their age range varied from 19 to 25years. Only male were randomly sorted out as the subjects. For Anthropometric Variables Height, leg length, body weight, Thigh circumferences and Calf circumferences were measured and to asses Selected Football Skills kicking (lofted kick) was measured. Regression equation was applied as statistical tool and results obtained in kicking (lofted kick) revealed that there equation estimates for the sample survey 93.0% of the variation in Dependent Variables (kicking ability of professional footballer) is explained by the area of calf circumference, body weight, height, thigh circumference, leg length.

Key Words:-Anthropometric, professional club, lofted kick.

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INTRODUCTION

Football is the most popular sport in the world which is considered as skill team based sports and it performed by men and women, children and adults with different levels of expertise. Football performance depends upon a numerous of factors such as decision making, technique, and creative play as well as technical/biomechanical, tactical, mental and physiological areas (Winterbottom, (1952) Simon Thadani, (2014)).

In every football matches when it is played at international level, it is desired a football player to have built adequately in size, speed and power. Nevertheless, all these are secondary when it comes to compare with the fundamental skills the player must possess. These skills are majorly perfected through constant practice and dedication, and if well mastered, can turn an ordinary player into extraordinary player with outstanding dribbler, defender, midfielder or even a goalkeeper (Chris Callaway, 2014). Football is a sport unlike almost all others, where the feet are needed most for technical skills more than the hands. A numeral of fundamental skills are needed to play football, with advanced players able to build on the fundamental skills for more complex and precise dribbling, passing and shooting.

Kicking is one of the very common skills in football which is used throughout the 90 minutes of the game, without the skill of kicking the game of football would not be possible and it has no mean. Player has to kick the ball as long as possible so that ball enters in the opponent area and able to score the goal this is the way of playing the football. This is the only concept behind the game of soccer (the complete soccer guide, (2014).

Anthropometrics variables consist of height, weight; leg length, arm length and body girth etc which has influence on the performance to some extent. Warren B. Young (2006) showed the relationship of anthropometric and fitness measures with the playing ability of Austrian footballer. A similar result was seen in the study of J. Keogh. (1999) Sanjit Sardar, (2001). Hence, body features provide sports coaches and trainer the criteria for selecting a good player and must be considered as predictive variables for futuristic performance (Reilly T, 2002).

For the successful and forceful kicking of the ball to travel and cover a long distance on the field various anthropometric variable play a vital role on the kicking. Therefore, the study was frame to find out the relationship of selected anthropometric variables with the kicking in distance and also to predict which anthropometric variables is highly is correlated with the performance in kicking.

METHODOLOGY

Sixty male professional footballers playing in super division league of Pune City with the mean age of 24.73 ± 1.70 year were selected as subjects. All the selected subjects were from respectively professional club .i.e. Pune Fc, Deccan Rover, DSK Shivajian, and having well experience of playing football and ample mastery over the football skill. The selected anthropometrics variables were thigh girth, height, weight, leg length and calf girth. And the selected football skill was kicking for distance. The data were collected in the mid of session when all the subjects were physically fits and available for the data collection of the research study. The anthropometric measurements as well as kicking for distance test data were collected on the Bharati Vidyapeeth University's College of physical education football ground. The measurement unit for the all the anthropometrics variables was in millimeter and centimeter whereas, the kicking for distance was measured in meter. The data were gathered under the control condition to obtain the data as per the objectives of the study. The statistical tool for this study was regression equation to construct equation to predict the highly correlated anthropometric with the kicking for distance performance.

RESULT

To determine the Regression equation of kicking with the selected Anthropometric variables, the data collected was analyzed using Linear Regression (Method = Enter) SPSS version=16 and data pertaining to that have been presented in Table- 1 to Table- 3.

Table - 1
Regression Equation of Anthropometric Variables of Kicking Ability of Professional Footballer Players.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.304 ^a	.093	.008	2.23122

a. Predictors: (Constant), calf circumference, body weight, height, thigh circumference, leg length

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Table - 1 shows that R2 was 0.093 when all selected predictors were included in step 1. This means that 93% of the variance in kicking performance is associated with changes in the Anthropometric variables.

Table -2
ANOVA Table of Anthropometric Variables of Kicking Ability in Professional Footballer Players

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.405	5	5.481	1.101	0.371 ^a
	Residual	268.831	54	4.978		
	Total	296.236	59			

a. **Predictors:** (Constant), calf circumference, body weight, height, thigh circumference, leg length

b. **Dependent Variable:** kicking.

In Table 2 ANOVA tests the null hypothesis that there is no linear relationship between the predictor and the Dependent Variable. For the Model 1 when all selected predictors (calf circumference, body weight, height, thigh circumference, leg length) were entered, the significance level associated with observed value of $F = (1.101)$ which is insignificant at 0.05 levels. Thus the null hypothesis can be accepted and it may be concluded that there is an insignificant linear relationship between the set of independent variable and dependent variable.

Table -3
Coefficient Regression Equation OF Anthropometric Variables to Dribbling Ability of Professional Football Players

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	27.654	14.692		1.882	0.065
	height	0.045	0.051	0.123	0.897	0.374
	leg length	0.105	0.074	0.254	1.426	0.160
	body weight	-0.008	0.065	-0.021	-0.125	0.901
	thigh circumference	-0.082	0.136	-0.083	-0.604	0.548
	calf circumference	0.198	0.212	0.127	0.932	0.356

a. Dependent Variable: kicking.

Table-3 displays the value of the coefficient in the regression equation and measures the probability that a linear relationship exists between each predictor variables and the Dependent variable. In this table 'B' is the slope of the line. 'SE B' is the standard error of 'B'. 'Beta' is the standardized regression coefficient. 'Sig' is the significance level for the test of the null hypothesis that the value of a coefficient is zero in the population.

In model I, the significance values for Anthropometric variables and kicking is higher than 0.05. Therefore, the null hypothesis that there will be no linear relationship between this predictor and kicking ability can be accepted.

The Resulting Regression Equation Is

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$$\text{Kicking ability} = 27.654 + 0.045 (\text{height}) + 0.105 (\text{leg length}) + (-0.005) (\text{body weight}) + (-0.082) (\text{thigh circumference}) + 0.198 (\text{calf circumference})$$

The equation estimates that for the sample survey 93.0% of the variation in Dependent Variables (kicking ability of professional footballer) is explained by the area of calf circumference, body weight, height, thigh circumference, leg length.

OBSERVATION AND FINDINGS

There are noticeable individual differences in terms of height, weight, body structure among the people. Anthropometric measures the size and proportions of the human body which reveals correlation between body structure physical characteristics and sport capabilities. The anthropometric structure having its own biomechanical advantages while performing the skill in sports. Therefore, while selecting players in various games coaches, trainer's give more emphasis on the physique of players. Football is the game of power, speed, agility & strength. The players having better height, body weight, good muscular physique prove to be good footballers and able to perform well on the football field. (Naghbi Morteza, Madialagan S. (2012) Mohamed Ali Hammami and associates (2012) Clark, S. Brooks, K. (2011))

This study was carried out in the college of physical education with aim to find out the relationship of selected anthropometric variables with basic skill of football i.e. kicking. For this purpose 60 professional footballers were selected and measured on Height, leg length, body weight, thigh circumference and calf circumference.

The data analyzed revealed that in case of kicking R² was 0.93 when all selected predictors were included. This means that 93% of the variance in kicking performance is associated with changes in the Anthropometric variables.

Which means the sample survey from all the selected footballers predicts that 93.0% of the variation in Dependent Variables (kicking ability of professional footballer) is explained by the area of calf circumference, body weight, height, thigh circumference, leg length.

For kicking higher and longer a footballer from the biomechanical point of view requires a longer force arm which can only be found when a footballer having longer leg length which is proved in the study. For better stability while kicking a footballer needs body weight which helps him to gain a good balance and kick longer. Even good circumference of thigh and calf indicate the sufficient amount of muscle fiber which indicates the good amount of power generated while kicking the ball.

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