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Relationship of wicket keeper performance and selected anthropometric measurement of inter university cricket players

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Abstract

Objective: The objective of the study was to find out the correlation between Wicket keeper performance and selected Anthropometric measurement of Inter University Cricket players.

Methods: For the purpose of the study 120 male Cricket players who participated in Inter-University Cricket Championship, were selected as the subjects for the study. Age of the subjects was ranging from 18 to 25 years. Selected anthropometric characteristics namely Standing Height, Body Weight, Arm Length, Fore Arm Length, Upper Arm Length, Upper Arm Girth, Hand Length, Leg Length, Thigh Length, Lower Leg Length, Thigh Girth, Calf Girth were selected. To find out the correlation between Wicket keeper Performance and selected Anthropometric Characteristics in relation to specific categories in team, Product Moment Method of Correlation was used. and the level of significance was set at 0.05.

Results: The findings of the study revealed that $r_{05}(28) = 0.374$. There exists a significant relationship between Wicket -Keeping Performance and Thigh Length. There exists an insignificant relationship between Wicket - Keeping Performance and selected Anthropometric characteristics (Height, Weight, Arm Length, Fore Arm Length, Upper Arm Length, Upper Arm Girth, Hand Length, Leg Length, Lower Leg Length, Thigh Girth, Calf Girth).

Conclusions: It was concluded that there was significant relationship found in Wicket -Keeper Performance of Thigh Length of selected Anthropometric characteristics.

Keywords: Wicket keeper performance, anthropometric measurement

Introduction

Sport activity is a combined effect of cultural, social, personal and organic systems. Cricket is one of the team sports which demands high level technical and tactical abilities along with desired level of Fitness (Anspaugh, *et al.*, 1994) ^[1]. In Cricket generally players are divided into three categories, Bowler, Batsman and fielders. Batsmen are meant for scoring with the help of combining their techniques, tactics and efforts during play. Bowler are responsible to stop the batsman to make runs and fielders are resist to tackle and dismiss the strategy that opponent (batsman) tries to execute and help the bowlers to make the batsman out. Due to advancement of scientific methods of training, techniques and tactics every player requires certain specific physical physiological and psychological qualities to achieve higher standard in their respective game. Anthropometric measurement consists of objective measurements of structure and functions of the body. The measurement of the structure includes items such as weight, total height and width, the depth and the circumferences of the chest etc. The measurements of functions includes such items as pulse rate arterial and venous, blood pressure, muscles strength, basal metabolic rate, estimate from cardio-vascular posture and breathing capacity (Sundarajun, 1972) ^[6]. Measurement of the body size include such descriptive information as height, weight and surface area, while measures of body proportion describe the relationship between height and weight among length, width and circumferences of various body segments. It has been found that top athletes in some sports tend to have those proportions that biomechanical aid, the particular performance required (Timonthy, *et al.*, 1998) ^[7]. Cricket has become one of the most popular games in the world, and of all the major games. It must also be one of the oldest game.

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For the game from which the present one originated is generally accepted as having been played for over two thousand years. Its popularity has, no doubt, always owed much to the fascination man finds hitting a ball with bat. Today cricket is essentially team games, and has developed into a fast and highly skillful one. Cricket is no longer thought to be an easy game, a great deal of fitness and mastery over the skill is necessary to play their game effectively. The game has unique characteristics in the sense that each player has to play in every position.

Objective

The objective of the study was to find out the correlation between wicket keeper performance and selected anthropometric measurement of Inter University Cricket players.

Methodology

Subjects

For the purpose of the study 120 male Cricket players who participated in Inter-University Cricket Championship, were selected as the subjects for the study. Age of the subjects was ranging from 18 to 25 years. 30 subjects were selected i.e. wicket- keeper.

Variables

Selected Anthropometric Characteristics were as follows -:

1. Standing Height
2. Body Weight
3. Arm Length
4. Fore Arm Length
5. Upper Arm Length
6. Upper Arm Girth
7. Hand Length
8. Leg Length
9. Thigh Length
10. Lower Leg Length
11. Thigh Girth
12. Calf Girth

Criterion measures for anthropometric characteristics:

All the Anthropometric Characteristics was measured by anthropometric kit.

Selection of subjects

For the purpose of the study 120 male Cricket players who participated in Inter-University Cricket Championship organized by Ravenshah University, Cuttack, Orissa in the session 2010-11, were selected as the subjects for the study. Age of the subjects was ranging from 18 to 25 years. 30 subjects were selected of Wicket- Keeper.

Reliability of data

The reliability of data was ensured by establishing the instrumental reliability and tester's competency (Gay, 2000).

Instrumental reliability

The instruments, which were used in the study, were obtained from standard firms, which cater to the needs of various research laboratories in India and abroad and their calibration have been accepted as accurate enough for the

purpose of this study.

Design of study

The Correlational design was used for the study. A single group of units of analysis was obtained preferably randomly; each individual was measured on all selected variables at more or less the same time.

Administration of anthropometric characteristics tests

Standing Height

Subjects were made to stand erect without shoes against a marked scale on the wall. The heels, buttocks and back were touching the wall. The subjects were instructed to keep the heels together, head straight and hold a full breath in while measurement was taken. A stiff hard board was held horizontally on the head and touching the scale marked on the wall. The subjects were asked to step out and the reading indicated by the hard board was recorded. This was repeated twice to ensure accurate measurement and height was recorded to the nearest half a centimeter.

Body weight

The subjects were allowed to wear short vest and were made to stand at the centre of the weighing machine. The weight was recorded from the indicator of dial to a nearest half of kilogram.

Arm Length

Arm Length was measured with the flexible steel tape. The subjects were made to stand erect, arm completely hung, relaxed by the side of the body and arm length was taken from the acromion process, the point just above the shoulder joint to the tip of the middle finger. The arm length was recorded to the nearest half centimeter.

Hand Length

Subjects were instructed to place the hand on the table with palm facing upward and fingers close with wrist extension and elbow flexion in relaxed position. The hand length was taken with steel tape from the base of the thumb to the tip of the middle finger.

Leg Length

Subjects were instructed to stand erect and leg length was taken with the flexible steel tape from the greater trochanter to the floor. Leg length was recorded to the nearest half centimeter.

Thigh Length

Subjects were made to stand erect and thigh length was taken with the flexible steel tape vertically from the most protuberant part of patella bulge to the upper edge of the greater trochanter. Thigh length was recorded to the nearest half centimeter.

Thigh Girth

Subjects were made to stand erect and thigh was taken with the flexible steel tape placed round the thigh horizontally with its top edge just under the fold of buttocks. During measurement, subjects were asked to stand with their weight equally distributed on both the feet. Thigh Girth was recorded to the nearest half centimeter.

Calf Girth

Subjects were asked to place the foot on the stool with thigh parallel to the ground and calf girth was measured with flexible steel tape at the maximum circumference of the calf in a plane at right angle to its long axis. In this position, the calf muscle was remaining quite relaxed. Calf Girth was recorded to the nearest half centimeter (Sodhi, *et al.*, 1984).

Statistical technique for analysis of data

To find out the correlation between Cricket Performance and selected Anthropometric Characteristics in relation to specific categories in team, Product Moment Method of Correlation was used.

Findings

Table 1: Correlation between Dependent Variable (Wicket - Keeping Performance) and Independent Variables (Selected Anthropometric Characteristics)

Independent Variables	Correlation coefficient
Height	-0.05065
Weight	-0.36592
Arm Length	-0.26046
Fore Arm Length	-0.31207
Upper Arm length	-0.29398
Upper Arm Girth	-0.07757
Hand Length	-0.1817
Leg Length	-0.23493
Thigh Length	-0.40946*
Lower leg Length	0.310765
Thigh Girth	-0.32839
Calf Girth	-0.19068

* Significant at .05 level

$r_{.05(28)} = 0.374$

Table - 1 clearly indicates that there exists a significant relationship between Wicket -Keeping Performance and Thigh Length as the correlation coefficient values were found higher than the tabulated value at .05 level of significance.

Table - 1 also indicates that there exists an insignificant relationship between Wicket - Keeping Performance and selected Anthropometric characteristics (Height, Weight,

Arm Length, Fore Arm Length, Upper Arm Length, Upper Arm Girth, Hand Length, Leg Length, Lower Leg Length, Thigh Girth, Calf Girth) as the correlation coefficient values were found lower than the tabulated value at .05 level of significance.

Conclusions

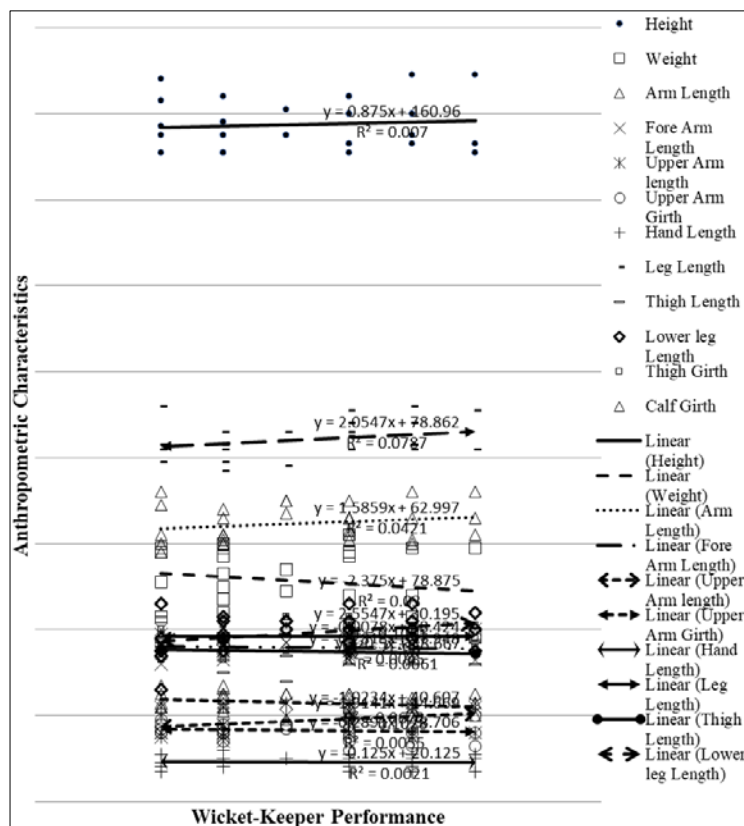


Fig 1: Correlation between Dependent Variable (Wicket-Keeping Performance) and Independent Variables (Selected Anthropometric Characteristics)

Table 2: Joint contribution of Independent Variables (Selected Anthropometric Characteristics) in predicting Dependent Variable (Wicket - Keeping Performance)

Criterion Variables	Independent variables	Coefficient of multiple correlation
Wicket - Keeping Performance	Height	0.755475*
	Weight	
	Arm Length	
	Fore Arm Length	
	Upper Arm length	
	Upper Arm Girth	
	Hand Length	
	Leg Length	
	Thigh Length	
	Lower leg Length	
	Thigh Girth	
	Calf Girth	

* Significant at .05 level.

r.05 (17) = 0.482

Table- 7 indicates that significant relationship was found between criterion variables (Wicket - Keeping Performance) and independent variables (Selected Anthropometric Characteristics) as coefficient of multiple correlation was found 0.60043 which is higher than the tabulated value.

Estimation of Wicket -Keeping Performance on the basis of selected anthropometric Characteristics

Multiple Regression

The regression equation is (Equation 3)

Wicket -Keeping Performance = 19.7 + 0.0229 Height - 0.0157 Weight - 0.121 Arm Length + 0.0681 Fore Arm Length + 0.0271 Upper Arm length - 0.099 Upper Arm Girth - 0.051 Hand Length + 0.240 Leg Length - 0.333 Thigh Length - 0.130 Lower leg Length - 0.0853 Thigh Girth - 0.117 Calf Girth.

Results: The findings of the study revealed that r.05 (28) = 0.374. There exists a significant relationship between Wicket -Keeping Performance and Thigh Length. There exists an insignificant relationship between Wicket - Keeping Performance and selected Anthropometric characteristics (Height, Weight, Arm Length, Fore Arm Length, Upper Arm Length, Upper Arm Girth, Hand Length, Leg Length, Lower Leg Length, Thigh Girth, Calf Girth).

Conclusions: It was concluded that there was significant relationship found in Wicket -Keeping Performance of Thigh Length of selected Anthropometric characteristics

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