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Relationship of height, leg length, upper leg girth and lower leg girth with the speed of cricket players

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Abstract

Purpose of the study was to find out relationship of height, leg length, upper leg girth and lower leg girth with the speed of the Cricket players. Total 30 Inter University level Cricket players were selected from Guru Ghasidas Vishwavidyalaya, Bilaspur Chhattisgarh. Age of the subject was between 20 to 25 years. For the purpose of the study height, leg length, upper leg girth and lower leg girth was selected as independent variables and speed of the Cricket players was selected as dependent variables. Descriptive statistics mean, and standard deviation was used to know the nature of the data. To find out relationship of height, leg length, upper leg girth and lower leg girth with the speed of Cricket player's coefficient of correlation was used. On the basis of the results of the study it may conclude that significant relationship was found between speed with height ($r = -.838$, $p < .05$) and leg length of the Cricket players ($r = -.707$, $p < .05$). Findings of the study also indicate that Insignificant relationship was found between speed and upper leg girth ($r = -.447$, $p > .05$), lower leg girth of the Cricket players ($r = -.367$, $p > .05$).

Keywords: *Speed, Height, Leg length, Upper leg girth and Lower leg girth.*

1. Introduction

Cricket is the most popular game played between two teams, each consisting of eleven players, use a bat and ball. The pitch, a rectangular area in the centre of the oval-shaped cricket ground, is 22 yards (20.12 meters) by 10 feet (3.04 meters) high. Two sets of three sticks, called wickets, are buried in the ground at either end of the field. The top of each wicket has horizontal pieces called bails. Each turn is called a "inning", and the objective is to score the maximum runs and both teams alternate between batting and bowling (pitching) according to the predetermined length of the match.

It is termed the "Gentlemen's Game" because players play with a sense of worldwide brotherhood and give it their all in an effort to win. Cricket is believed to have been organized for the first time hundreds of years ago. In the 17th century, cricket was introduced to North America by the English colonies. Most probably a century before it reached the north of England (Bowen, 1970). In the 18th century, it initiated in other parts of the world. Seafarers from the British East India dates back Company introduced it to the 1900s, and colonists introduced it to the West Indies (Bowen, 1970).

A cricket player's success in the game can be impacted by anthropometric aspects in which player's performance can be impacted by their height, weight, and body size, according to some research. Batsmen may have an advantage when it comes to batting because they are typically shorter and have less body mass than other cricket players. Taller batsmen may hit the cricket ball harder because of their larger levers, according to research a cricket player's performance can be adversely affected by excess body weight, which can decrease batsmen's ground reaction forces during shots. Increased shoulder-to-wrist and total arm length may be linked to faster ball release in fast bowlers. Other research, however, indicates that a bowler's performance is not influenced by a single anthropometric trait.

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Anthropometry is the measurement of the body parts devoted to measuring and evaluating the size, shape, strength, and functional ability of the human body. The systematic measurement of the physical appearances of the human body, mostly dimensional descriptors of body size and shape, is known as anthropometry. In order to improve performance of players coaches and players focuses on anthropometric variables. The distribution of body dimensions changes as a result of changes in population lifestyles, dietary habits, and ethnic makeup (e.g., the increase in obesity), necessitating frequent updates to anthropometric data collections.

1.1 Objective of the study:

- To find out relationship of height with speed of Cricket players
- To find out relationship of leg length with speed of Cricket players
- To find out relationship of upper leg girth with speed of Cricket players
- To find out relationship of lower leg girth with speed of Cricket players

1.2 Hypothesis of the study:

- There may be no significant relationship of height with speed of the Cricket players.
- There may be no significant relationship of leg length with speed of the Cricket players.
- There may be no significant relationship of upper leg girth with speed of the Cricket players.
- There may be no significant relationship of lower leg girth with speed of the Cricket players.

2. Method and Procedure

2.1 Selection of subject: Total 30 Inter University level Cricket players were selected from Guru Ghasidas Vishwavidyalaya, Bilaspur Chhattisgarh. Age of the subject was between 20 to 25 years.

2.2 Selection of variables: For the purpose of the study following variables were selected:

TABLE-1

Selected variables and their criterion measures

Variables		Criterion measures	Unit of measures
Dependent Variables	Speed	100m Sprint	m/s
Independent Variables	Height	Stadiometer	Centimetre
	Leg Length	Measuring tape	Centimetre
	Upper Leg girth	Measuring tape	Centimetre
	Lower Leg girth	Measuring tape	Centimetre

2.3 Statistical Technique

Descriptive statistics mean, and standard deviation was used to know the nature of the data. To investigate relationship of height, leg length, upper leg girth and lower leg girth with the speed of Cricket player's coefficient of correlation was used. All statistical calculation was done with the help of SPSS software.

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3. Results and Findings

Table-2

Descriptive statistics of height, leg length, upper leg girth, lower leg girth and speed of Cricket players

Variables	N	Mean	SD
Height	30	171.46	7.92
Leg Length	30	99.9	5.94
Upper Leg Girth	30	56.41	5.01
Lower Leg Girth	30	37.20	3.44
Speed	30	13.277	1.49

Table-2 shows the descriptive statistics i.e. Mean, and SD, of height, leg length, upper leg girth, lower leg girth and speed.

Table-3

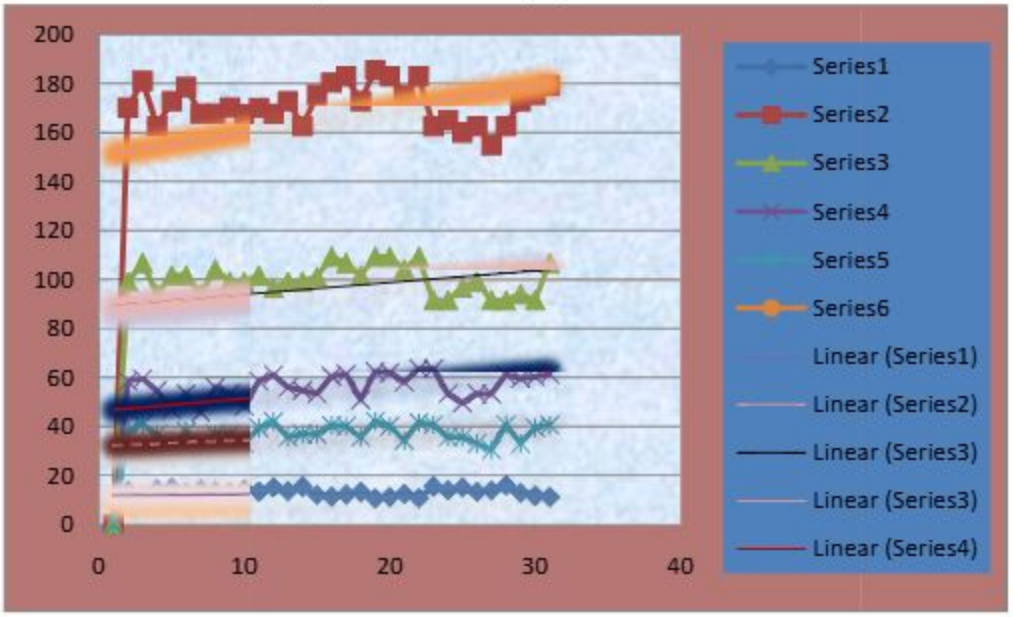
Correlation Coefficient (r) of height, leg length, upper leg girth and lower leg girth with the speed of Cricket players

Sr. N.	Variables	Correlation Coefficient	Sig.
1	Height	-.838*	.000
2	Leg Length	-.707*	.000
3	Upper Leg Girth	-.447	.013
4	Lower Leg Girth	-.367	.046

The above table shows speed of the Cricket players is significantly related with height and leg length. Above result also indicate insignificant relationship between speed of the cricket players with upper and lower leg girth.

Fig. 1

Graphical representation of relationship of height, leg length, upper leg girth and lower leg girth with the speed of the Cricket players



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4. Discussion of the Findings

Purpose of the study was to find out relationship of height, leg length, upper leg girth and lower leg girth with the speed of the Cricket players. Result of the study shows that Significant relationship was found between speed with height ($r = -.838$, $p < .05$) and leg length of the Cricket players ($r = -.707$, $p < .05$).Taller players often have longer legs; they may take longer strides, which could increase speed because fewer steps are required to reach a given distance. Because height impacts the centre of gravity, it can have a beneficial impact on running stability. Taller people can sometimes have more trouble balancing during rapid changes in pace. Running mechanics depend significantly on leg length, especially the proportions of the femur (thigh bone) and tibia (shin bone). Longer stride length is a crucial component of speed, may be achieved with longer legs, which also provide a higher range of motion. By lowering the energy expenditure each stride and maybe increasing running speed, stride efficiency can be improved by maintaining the proper leg length in relation to the rest of the body.

Findings of the study also indicate that Insignificant relationship was found between speed and upper leg girth ($r = -.447$, $p > .05$), lower leg girth of the Cricket players ($r = -.367$, $p > .05$). Larger upper and lower leg girth especially muscle mass play important role in speed of the player but present result shows insignificant relationship between upper and lower leg girth and speed. Probable reason may be greater fat mass rather than muscle mass in upper and lower leg especially in the quadriceps and hamstrings muscles because these muscles are essential for powerful knee extension and flexion.

Each of these factors, either separately or together influence cricket players perform. Peak speed performance requires striking a balance between stride length, which is determined by height and leg length, and step frequency, which is influenced by upper and lower leg girth muscle strength.

On the basis of result and findings of the study following conclusions may be drawn:

- Significant relationship was found between speed and height of the Cricket players ($r = -.838$, $p < .05$).
- Significant relationship was found between speed and leg length of the Cricket players ($r = -.707$, $p < .05$).
- Insignificant relationship was found between speed and upper leg girth of the Cricket players ($r = -.447$, $p > .05$).
- Insignificant relationship was found between speed and lower leg girth of the Cricket players ($r = -.367$, $p > .05$).

Initially it was hypothesized that there will be no significant relationship of height and leg length with the speed of the cricket players, is not accepted. it was hypothesized that there will be no significant relationship of upper leg girth and lower leg girth with the speed of the cricket players, is accepted at 0.05 level.

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