



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2015; 1(10): 613-616
www.allresearchjournal.com
Received: 25-07-2015
Accepted: 26-08-2015

Kunvar Singh
Research Scholar, Department
of Physical Education, G.G.V.
Bilaspur (C.G.)

Dr. Ratnesh Singh
Associate Professor,
Department of Physical
Education, G.G.V. Bilaspur
(C.G.)

Relationship of selected anthropometric variables with the velocity of ball in pace bowling in cricket

Kunvar Singh, Ratnesh Singh

Abstract

Purpose: Purpose of the study was to find out the relationship between selected Anthropometric variables and velocity of the ball of pace bowlers in Cricket. Relationship was calculated by using Product Moment Method of Co-relation. Result of the study showed that the calculated value of “r” for the velocity of the ball and anthropometric variables: height, arm length was found to be significant at 0.05 level of confidence and no significance relationship of velocity of the ball with the body weight and arm girth.

Methods: For the present study total 15 pace bowlers from Guru Ghasidas Vishwavidyalaya Bilaspur, (C.G.), were selected as subjects. Anthropometric variables selected by the researcher were: height, weight, arm length and arm girth.

Statistical Technique: For determining the significant relationships of height, weight, arm length, arm girth with the velocity of the ball of pace bowlers in cricket, descriptive statistics and the Pearson's Product Moment Correlation was used for the analysis of data with the help of SPSS (16.0 version) software and the level of significance was set at 0.05.

Findings: Significant relationship found between velocity of the ball with height($r=.645^*$, $p < .05$), arm length($r=.719^*$, $p < .05$) and no significant relationship of velocity of ball with the weight($r = -.266$, $p > .05$), arm girth($r = .454$, $p > .05$).

Conclusions: The results indicate there is significance relationship between anthropometrics variables (height, arm length) with the velocity of the ball of the pace bowlers in Cricket and no significance relationship in body weight and arm girth with the velocity of ball.

Keywords: Cricket, Anthropometric variables, Velocity of the ball.

1. Introduction

Cricket was basically British past time evolved by the British and later educated by the many of the countries of the British Common Wealth and Empire. Cricket is the most well-liked and richest game. There is no precise evidence obtainable which shows when and by whom the cricket was started in England. It is fundamentally an English game. Old works shows that it is as old as thirteenth century.

Cricket is a most popular team game which is played in the pitch of twenty two yard. Each team consists of eleven players at the time of play. The players struggle with full effort to win the match. The players play the match with the feeling of brotherhood by this reasons this is known as “Gentlemen’s Game”. The game of cricket is thought to have been played in the prearranged form hundreds of years ago. Cricket was introduced to North America by the English colonies in the 17th century most likely before it had even reached the north of England (Bowen, 1970) [6]. In the 18th century, it started in other parts of the world. It was introduced to the West Indies by colonists and to India by British East India Company mariners in the first half of the century (Altham, 1962) [1]. It commenced in Australia approximately as soon as the colonization began in 1788. After wards, New Zealand and South Africa followed in the early 19th century (Altham, 1962) [1].

Anthropometric measurement plays a significant role in pace bowling in cricket. Anthropometric measurements are beneficial for a better performance in pace bowling in cricket like longer the arm length more the leverage which helps the bowler to bowl fast. Height is an important factor in pace bowling and this is obvious from the fact that the majority of the great pace bowlers have an advantage of height.

Correspondence
Kunvar Singh
Research Scholar, Department
of Physical Education, G.G.V.
Bilaspur (C.G.)

Bowling, batting and fielding are three fundamental skills in cricket. This study focuses on pace bowling skills, sometimes known as fast bowling. The main aim of pace bowling is to bowl the cricket ball at high speed and to induce it to bounce of the pitch in an erratic fashion or move sideways through the air, factor that make it difficult for the batsman to hit the ball cleanly (Bartlett, *et al.*, 1996)^[17]. Three general classifications are there in pace bowling i.e. fast, medium fast and the medium. Ball release speed in pace bowling is much dominance by various biomechanical, anthropometric and technique factors (Stokill and Bartlett, 1992a)^[17].

Pace bowlers require a large amount of energy and most pace bowlers are capable to bowl of 4-6 over's spell without rest according to situation and requirement of the team. Ball release speed in pace bowling is much dominance by various biomechanical, anthropometric, physical fitness and technique factors (Stokill and Bartlett, 1992a)^[17].

Pace bowling is the important area of bowling in cricket. Pace bowling in cricket is the projection of the ball with the maximum velocity in the opposite side of the wicket at the distance of twenty two yards. Anthropometric variables play an important role in bowling performance. Anthropometric parameter like height, sitting height, arm length, arm girth is advantageous for a high performance of fast bowler. Longer the arm length is more the leverage which helps the bowler to get maximum velocity. It's a proof of a successful bowler at the international level those who takes an advantages by their height.

Objective of the study

- To find out the relationship of height with the velocity of the ball of pace bowlers.
- To find out the relationship of weight with the velocity of the ball of pace bowlers.
- To find out the relationship of arm length with the velocity of the ball of pace bowlers.
- To find out the relationship of arm girth with the velocity of the ball of pace bowlers.

Hypothesis of the study

- It was hypothesized that there would be no significant relationship of height with the velocity of the ball of pace bowlers.
- It was hypothesized that there would be no significant relationship of weight with the velocity of the ball of pace bowlers.
- It was hypothesized that there would be no significant relationship of arm length with the velocity of the ball of pace bowlers.
- It was hypothesized that there would be no significant relationship of arm girth with the velocity of the ball of pace bowlers.

Methodology

Selection of subjects

For the present study total 15 male pace bowlers from Guru Ghasidas Vishwavidyalaya Bilaspur, on the basis of purposive sampling were selected as subjects. Age ranging from 18 to 28 years.

Selection of Variables

Keeping the feasibility criterion in mind, the researcher selected the following variables for the present study:

❖ Independent variables:-

- Height
- Weight
- Arm length
- Arm girth

❖ Dependent variables:

Velocity of the ball

Criterion Measures

- Height, arm length, arm girth was measured by measuring tape in centimeters.
- Weight was measured by digital weighing machine.
- Velocity of the ball of pace bowlers was measured by the stopwatch recorded in meter/second then convert in km/hours.

Statistical Technique

For determining the significant relationships of height, weight, arm length, arm girth with the velocity of the ball of pace bowlers, descriptive statistics and the Pearson's Product Moment Correlation was used for the analysis of data with the help of SPSS (16.0 version) software and the level of significance was set at 0.05 level of confidence.

Result and Findings of the Study

Descriptive statistics was applied on all data. After determining normal distribution of the test variables, Pearson's Product Moment correlation was used to identify relationship between test variables.

Table 1: Descriptive statistics of anthropometrics variables (height, weight, arm length, arm girth) and velocity of the ball of pace bowlers

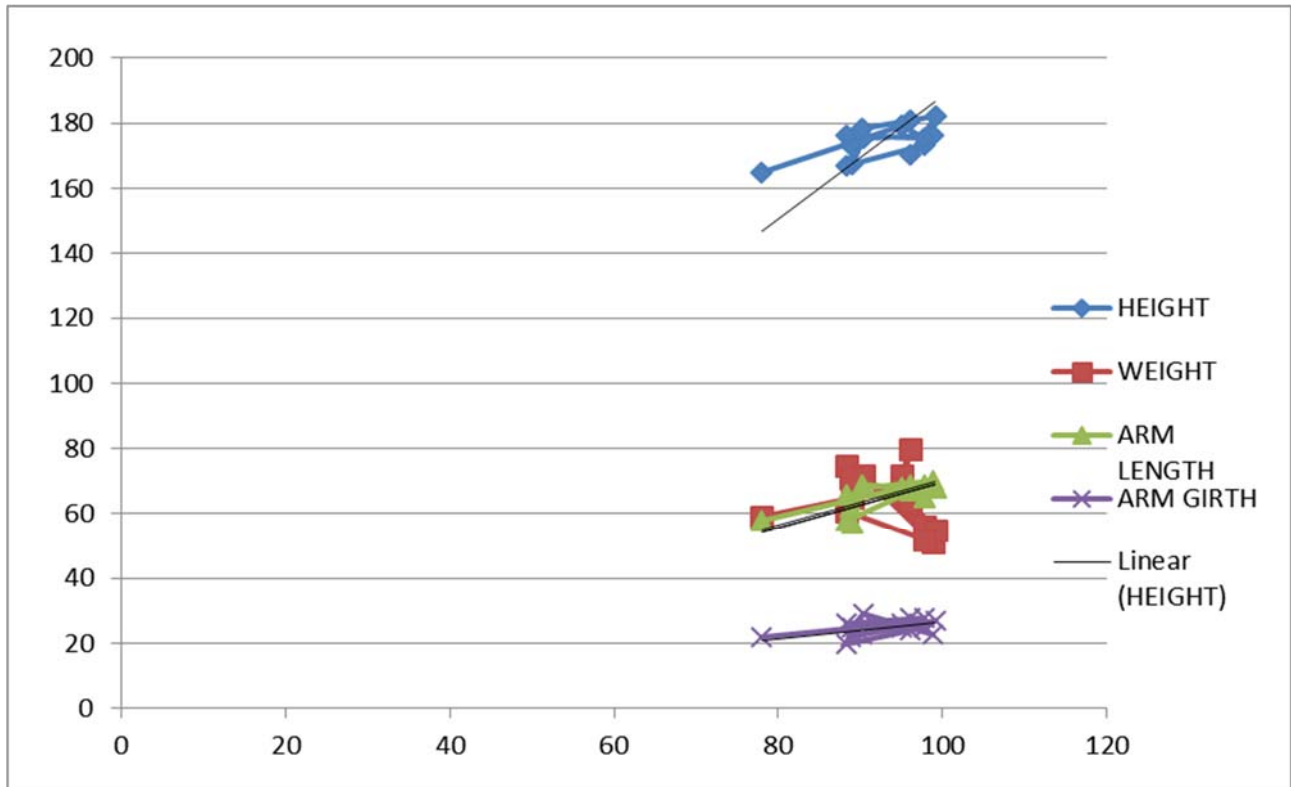
Variables	N	M	SD
Height	15	174.57	5.25
Weight	15	64.86	8.92
Arm Length	15	65.46	4.48
Arm Girth	15	24.86	2.55
Velocity Of The Ball	15	92.56	5.73

Table-1 indicates the descriptive statistics i.e. Mean, and SD, of selected anthropometric variables (height, weight, arm length, arm girth,) and velocity of the ball of pace bowlers.

Table 2: Correlation Coefficient (r) of velocity of the ball and anthropometrics variables (height, weight, arm length, arm girth)

Independent variables	Correlation coefficient (r)	p- value
Height	.645*	.009
Weight	-.266	.337
Arm length	.719*	.003
Arm girth	.454	.089

Table - 2 clearly indicates that there is significance relationship between velocity of the ball and Independent Variables i.e. height, arm length as the p-values were less than 0.05. There is no significance relationship of body weight and arm girth with the velocity of the ball of pace bowlers.



Graphical representation of relationship of velocity of the ball of pace bowlers with height, weight, arm length and arm girth.

Discussion of Findings

The correlation values of height (.645), arm length (.719) were found significant in relation to the velocity of the ball of pace bowlers in cricket. The correlation values of weight (-.266) and arm girth (.454) were found no significant in relation to the velocity of the ball of pace bowlers. On the basis of findings of this study this may be due to the fact that the ultimate performance of velocity of the ball of fast bowlers depends on the height and arm length. Velocity of the ball not influence by the body weight and arm girth of the pace bowlers.

Velocity of the ball by fast bowlers while bowling may be due to the fact that height is directly proportional to the releasing height and more the height of releasing point will be the more velocity of the ball. Longer arm length may also have played important role in fast bowling, as the longer lever increase the angular velocity of rotating arm, if angular velocity of rotating arm increase velocity of ball also increases.

Arm girth and body weight have negatively influenced the performance in velocity of the ball. Probable reason may be because of the more percent of fat content in the arm as well as total body.

Conclusions

Within the limitation of the present study and on the basis of findings the following conclusions have been drawn –

- Significant relationship observed between velocity of the ball and height ($r = .645$, $p < 0.05$).
- No significant relationship was observed between velocity of the ball and body weight ($r = -.266$, $p > 0.05$).
- Significant relationship was found between velocity of the ball and arm length ($r = .719$, $p < 0.05$).
- No significant relationship was found between velocity of the ball and arm girth ($r = .454$, $p > 0.05$).

Initially it was hypothesized that there would be no significant relationship between selected anthropometric variables (height, arm length) with Velocity of the ball of pace bowlers in cricket, is not accepted at 0.05 level. It was hypothesized that there would be no significant relationship between selected anthropometric variables (weight and arm girth) with velocity of the ball of pace bowlers in cricket, is accepted at 0.05 level.

References

Books

1. Altham HS. A History of Cricket, George Allen & Unwin, 1962, 1.
2. Barrow Mc, Gee. A Practical Approach to Measurement in Physical Education, J.G.P. Williams, Sports Medicine. London: Edward Arnold Ltd 1962; 1:112
3. Barrow M, Harold Rosemary McGee. A Practical Approach to Measurement in Physical Education. Philadelphia: Lea and Febiger, 1971, 123.
4. Barrow HM, McGee R. A Practical Approach to Measurement. Philadelphia: Lee and Fibinger, 1984.
5. Bartlett RM, Stockill NP, Elliott BC, Burnett AF. The biomechanics of fast bowling in men's cricket: A review. Journal of Sports Sciences 1996; 14:403-424.
6. Bowen R. Cricket: A History of its Growth and Development. Eyre & Spottiswoode, 1970.
7. Campos FAD. Anthropometric profile and motor performance of junior badminton players. Brazilian Journal Biomotricity. 2009; 3(2):146-151.
8. Clarke David H, Clarke H. Harrison. Application of Measurement to Health and Physical American Medical College Association & American Association of Health Physical Education and Recreation. Exercise and Fitness, Journal of Health, Physical Education and Recreation. 1964; 35:44.
9. Clarke Harison H, David Clarke H. Application of Measurement to Physical Education, Prentice Hall, Inc. Eaglewood Cliff, New Jersey, 6, 123.

10. Clarke Harison H, David Clarke H. Application of Measurement to Physical Education, Sixth Edition. Prentice Hall, Inc. Eaglewood Cliff, New Jersey, 123.
11. Education (Englewood cliffs, N.J. Prentice Hall Inc), 1976.
12. Edward Wayne Wenling the Relationship of Forearm Muscle Strength to Bat Swing Velocity, Completed Research in Health, Physical Education and Recreation 1963, (5)40.
13. Harison Clarke H, David Clarke H. Application of Measurement to Physical Education, Sixth Edition. Prentice Hall, Inc. Eaglewood Cliff, New Jersey. 123.
14. Williams JGP. Sports Medicine. London: Edward Arnold Ltd., 1962, 1.
15. Jack F. Fingleton cricket London: Alan and monbroy publication, 1972,
16. Johnson BL, Nelson JK. Practical Measurement for Evaluation in Physical Education. Delhi: Sujeet Publication, 1982.

Journals

1. Bartlett RM, Stockill NP, Elliott BC, Burnett AF. The biomechanics of fast bowling in men's cricket: A review. Journal of Sports Sciences. 1996; 14:403-424.
2. Campos FAD. Anthropometric profile and motor performance of junior badminton players. Brazilian Journal Biomotricity. 2009; 3(2):146-151.
3. Clarke David H, Clarke H. Harrison. Application of Measurement to Health and Physical American Medical College Association & American Association of Health Physical Education and Recreation. Exercise and Fitness, Journal of Health, Physical Education and Recreation. 1964; (35):44.
4. Clarke Harison H, David Clarke H. Application of Measurement to Physical Education, Prentice Hall, Inc. Eaglewood Cliff, New Jersey. 6, 123.
5. Education. (Englewood cliffs, N.J. Prentice Hall Inc). 1976.
6. Edward Wayne Wenling. The Relationship of Forearm Muscle Strength to Bat Swing Velocity, Completed Research in Health, Physical Education and Recreation. 1963; (5):40.
7. Reid W Randall. The Relationship of Lowers Limb Flexibility, Strength and Anthropometric Measure to Skating Speed in Versity Hockey Players, Completed Research in Health, Physical Education and Recreation. 1978; 20:144.
8. Sabol Beatrice. A Study of Relationship among Anthropometrics, Strength and Performance in Health, Physical Education and Recreation. 1963, 96.