International Journal of Movement Education and Sports Sciences (IJMESS)
Annual Refereed & Peer Reviewed Journal Vol. V No. 1 January-December 2017
Online ISSN 2321-7200 Print ISSN 2348-5604
A UGC Approved & Notified Journal

A Comparative Study of Selected Skinfold Variables of Fast Bowlers of Various Age Groups

Dr.Prashant Bambal*
*Seth Kesarimal Porwal College of Arts & Science & Commerce, Kamptee, Nagpur, (Maharashtra)

(Received 15 December 2017-Accepted & Published 22 December 2017)

Abstract

The professionalism in game of cricket is at its pinnacle, while all the factors contributing to a performance are being studied through scientific approach. Performance and anthropometrics or morphometrics play a decisive role in performance building and search and selection of talents. Fast bowlers attract the anthropologists and their technique to measurement of various body parts as they can bowl effectively with good speed. This study was an attempt to study skinfold measurement of fast bowlers and the objective was to compare skinfold measurement among Under19, Under 25 and Ranji Trophy players in terms of their total measurement called fat %. A sample of 150, fast bowlers representing Madhya Pradesh, Uttar Pradesh, Rajasthan, Vidarbha and Railways in Under 19, Under 25 and Ranji trophy were selected as subjects for the study. Skinfold measurement of biceps, triceps, subscapularis, suprailiac, abdominal, thigh and calf were taken and compared using descriptive statistics and ANOVA. The Under 25 group was found best with a mean value of 67.56 and Ranji players showed maximum fat %of 77.34. The significant difference was found between Under 25 and Ranji Trophy players with a p- value of 0.002 and significant F ratio of 5.022 at 0.05 level. The reason behind could be the fitness program of the groups and age factor.

Keywords : Anthropometrics, skinfold, Fat %, morphometrics.

INTRODUCTION

A lot is being told in today's cricketing world about the fast bowling capabilities of Indian bowlers performing in India and abroad. This is universal consensus that India is performing to its maximum and contributed by its bowlers unexpectedly brilliant. Fast bowlers not only need excellent bowling techniques which make them accurate, but an extraordinary set of physical fitness. Along with technique and physical fitness, there is one more aspect which could be very influential in fast bowling and it is anthropometric measurements (anthropometric variables) of fast bowlers which varies in individual capacity and determines the effectiveness of bowlers adding or inhibiting the capacities of the bowlers.

In anthropometrics, we learn about obtaining systematic data of various body parts. A branch of anthropology known as physical anthropometry deals with measurements of human body and its parts, earlier known as "morphometrics". It is used to describe variations in shape and sizes of humans and ratios of limbs, torso and various parts used to differentiate them for physical strength and other physical capacities with in distinct populations. In ancient times Greeks and Romans used this science to categorize the children into talents for fighters, dancers and others.

Skinfold measurement may play a vital role in fast bowing in cricket as most of the fast bowlers suppose to have effective lean body mass and minimum amount of fat to execute fastest possible. The more percentage of fat a sports person has the more benefit he gains in terms of economy of efforts. Fat content in the muscles affects inversely the bowling speed. The advantage of height is an important factor in fast bowling only if the bowler has optimum amount of fat percent. Various body segments have varied amount of fat percent. A fast bowler of unquestionable delivery

Copyright 2013 Dabas Educational Welfare Society (DEWS)

has to run over a dozen of yards so that he can deliver the ball to other end with a sheer pace and to reproduce the delivery many times in a spell sufficient enough to deceive and get the batsman out. More than the required body fat increase the mass of the athlete and put load instead to accomplish this, a fast bowler has to put more energy and efforts to overcome the barrier of inertia to gain speed, coordination and balance.

The present study is an attempt to compare and study the selected anthropometric variables, that is skinfold measurement among male fast bowlers of Under 19, Under 25 and Ranji trophy teams of selected Cricket Associations. The anthropometric variables selected for the study were the skinfold measurement of biceps, triceps, subscapularis, suprailiac, abdominal, thigh and calf. It was hypothesized that, "there will not be any significant difference among the anthropometric measurements of Under 19, Under 25 and Ranji trophy players". The significance of the study can be stated as the, results of the study will be helpful to locate the anthropometric characteristics having influence on bowling speed of bowlers of different age groups in cricket. The study may be helpful in developing selection module or talent identification for fast bowlers of different age group. The result of study may educate the cricket players in general about the contribution of anthropometric characteristics involving to bowl fast and develop training program for bowlers of different age groups.

METHODOLOGY

Fast bowlers and probables of the state teams and cricket associations of Vidarbha, Madhya Pradesh, Uttar Pradesh, Rajasthan and Railways in Under19, Under 25 and Ranji Trophy category were selected as subjects for the present study. A total of 150 fast bowlers (10 bowlers from each category and 30 from each team) were selected as subjects for the study.

The description of variables and criterion measures of the anthropometric variables under the category of skinfold measurement, selected for the study have been shown in the table-1.

Skinfold measurement

The skinfold thickness was measured by grasping a fold of skin and the Underlying subcutaneous tissue between the thumb and the forefinger, 1-2 cm above the site to be measured. The equipment used for measuring all skin fold widths was a standard skin fold caliper. The most reliable Harpenden, Lange and lafayette skinfold calipers.

Table -1: Procedure for Skinfold Measurement

Body part	Method of measurement	Units
Biceps	Measured grim the front of the subject, on the anterior surface of the arm midway between the top of the shoulder and the elbow. The arm was hanged loosely at the side. Vertical fold.	mm
Triceps	Measured from the behind the subject, on the posterior surface of the arm midway between the top of the shoulder and the elbow. The arm hanged loosely at the side. Vertical fold.	mm
Sub scapular	Measured below the inferior angle of the scapula with the fold in an oblique plane descending laterally (outward) and downwards at an angle of approximately 45	mm
Supra iliac	Measured 5 cm above the iliac crest with the fold oblique,	mm

Copyright 2013 Dabas Educational Welfare Society (DEWS)

	descending medially (inwards) at an angle of 45^{o} to the horizontal.	
Abdominal	Measured in the vertical plane 5 cm to the right of the umbilicus (belly button).	mm
Thigh	Measured as a vertical fold taken midway between the hip and the knee joints on the anterior surface of the thigh.	mm
Calf	Measured on the medial surface of the calf at the level of the greatest circumference. Player's weight placed on the opposite leg.	mm

Total fat % was determined by Sum of skin folds - the sum of the essential skinfolds added together.

Statistical Techniques used to analyze the data is the following.

1. Descriptive statistics, showing mean and standard deviation.
2. ANOVA, to find the difference among the means.
3. L.S.D. method was employed to find out the exact location of difference in means.
4. The level of significance was taken at 0.05.

FINDINGS

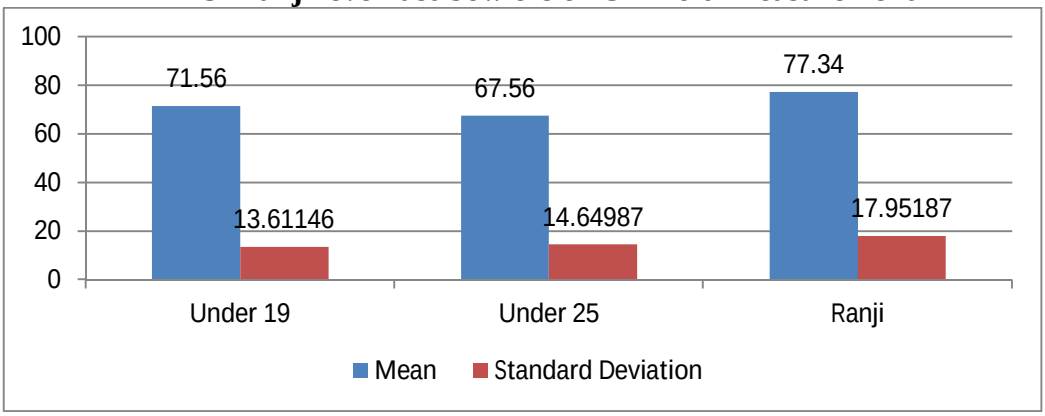
The statistical analysis of collected data revealed that not all the groups were same in fat percent. The mean scores and standard deviations have been shown in table-2.

Table-2: Mean Scores and Standard Deviations of U-19, U-25, & Ranji level fast bowlers on Skinfold Measurement

Age Groups	Mean	Standard Deviation
Under 19	71.5600	13.61146
Under 25	67.5600	14.64987
Ranji	77.3400	17.95187

Table- 2 reveals that the mean score of Under 25 is the lowest while Ranji has the highest mean value on Skinfold Measurement. Standard deviation on Skinfold Measurement Under 19 bowlers has the lowest value while Ranji trophy players have the highest standard deviation in scores. The graphical representation of table-2 is presented in Figure 1.

Figure – 1: The graphical Mean Scores and Standard Deviations of U-19, U-25, & Ranji level fast bowlers on Skinfold Measurement



The one way analysis of variance on Skinfold Measurement among the male cricket fast bowlers of various cricket associations is presented in table-3.

Copyright 2013 Dabas Educational Welfare Society (DEWS)

Table-3: **One Way Analysis of Variance (ANOVA) of Scores on Skinfold Measurement** among **Various level (U-19, U-25 & Ranji) Fast/Medium Pace Bowlers**

Source Of Variation	Sum Of Square	df	Mean Sum Of Square	F- Ratio Calculated	F-Ratio Tabulated	Sig. (p value)
Between Groups	2417.613	2	1208.807	5.022	3.06	.008
Within Groups	35385.860	147	240.720			

The table-3 clearly shows that the calculated F-ratio (5.022) is more than the tabulated value of F (3.06) at 0.05 levels. Therefore it is evident that significant difference exits among the mean values of Skinfold Measurement **(fat %)** of cricket fast/medium pace bowlers of various categories. The null hypothesis stated could not be accepted.

To find the exact location of difference where F-Ratio is significant, pair- wise mean comparison (Post-Hoc) was done by using least significant difference test. Data pertaining to this has been presented in table-4.

Table-4: Post Hoc (LSD) on Skinfold Measurement among U-19, U-25, & Ranji level Fast Bowlers

Dependent Variable	(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. p value
Skinfold Measurement	UNDER 19	UNDER 25	4.00000	3.10303	.199
		RANJI TEAM	-5.78000	3.10303	.065
	UNDER 25	RANJI TEAM	-9.78000	3.10303	**.002***

***Significant at 0.5 level**

Table-4 reveals that the significant difference exist between the skinfold measurement of Under 25 category and Ranji trophy level players as fat % in Ranji trophy level players have significantly higher fat percent than the Under 25 fast bowlers.

DISCUSSION OF FINDINGS

The skinfold anthropometric variable among the various groups has been significant between Under 25 and Ranji level fast bowlers at 0.05 level of significance. The probable and logical reason for this difference might be that Under 19 players naturally on lower side of fat % and Under 25 players were training hardest to fitness while Ranji trophy players were in age group of maximum and least in metabolic rate and hence the significant difference existed.

CONCLUSION AND RECOMMENDATION

Fat % of the body can be assessed by various skinfold measurement of the different parts of the body. The fat % can be determining factor of bowling performance of fast bowlers. When it comes to national and international level it can be a variable to performance and selection of individuals for the teams. In the present study fat % of Under 19, Under 25 and Ranji trophy level players were assessed and compared. The Under 25 category fast bowlers were examined to be least on fat % and were significantly better than Ranji level players. The reason could be the higher age factor

Copyright 2013 Dabas Educational Welfare Society (DEWS)

of Ranji players and hence lower on BMI. The difference between Under19 and Under 25 was negligible.

It is recommended on the basis of the study that as age increases the fitness schedule should be vigorous to avoid accumulation of fat. It is also recommended that a more detailed study with other variables or with bigger sample size can be studied.

REFERENCES

1. Sundarajun, G.S., (1972) **"Human Growth and Development"** (Madras: Roshan Publications.
2. Tanner, J.M. (1964)"**The Physique of the Olympic Athletes"** (London : Allon and Union ltd.
3. Thiess & Schnabel, (1987) "**Science of Sports Training"**.
4. Verdani, Frank M **"Measurement Concepts in Physical Education**" (St. Louis: The C.V.Mosby Co.,).
5. Joseph, V.K. (1983) **"Relationship of Power, agility, flexibility and measurement of selected body segments to Volleyball playing ability"** (unpublished Master's Thesis Jiwaji University).
6. Kansal, Devinder K. (1996) **"Test and Measurement"** (Publications: D.V.S. Publications New Delhi).
7. Bagchi, Devashish (2011) **"Relationship of Selected Anthropometric and Fitness Variable with the Velocity of Ball in Fast Bowling in Cricket".**
8. Bandyopadyay, Subhas Chandra (1982)"Relationship of Selected Anthropometric Measurements Physical Fitness and Motor Ability to Soccer Skill Performance" **(Unpublished Master's Thesis, Jiwaji University, Gwalior).**
9. Bharathi, Charls Suthanthira (July, 1996) "A comparative analysis of selected physical Anthropometrical variables & psychological variables among Tamilnadu, Andrapradesh & Kerala State University Kabaddi players", **(Unpublished Master of Philosophy Thesis, Alagappa University,** Karaikudi.

Copyright 2013 Dabas Educational Welfare Society (DEWS)