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# **Research Article**

# ANTHROPOMETRIC CHARACTERISTICS OF YOUNG INDIAN CRICKET PLAYERS AND THEIR RELATIONSHIP WITH PLAYING EXPERIENCE

### Prachi Sathe., Purnima Karotiya., Abhinav Sathe and Vijay Kumar D

Department of Physiotherapy, Rajeev Gandhi College, Bhopal, Madhya Pradesh, India

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#### ARTICLE INFO

## ABSTRACT

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*Key Words:* Cricket, Anthropometric profile, children, adolescent, playing experience Aim: Present study was conducted to make an anthropometric profile of adolescent cricketers and to find correlation of anthropometric variables with playing experience. Method: For this we selected 40 children and adolescent male subjects of mean age 11.15 years. Their height and weight were measured with stadiometer pole and digital weighing machine respectively and BMI was calculated; body fat was measured by Skin fold thickness measurement. Socio-demographic information that is, name, age and sex, role or position, playing experience were collected though questionnaire. Based on skin fold thickness measurements proportion of body fat was calculated. Result: The mean BMI was calculated as  $16.78 \pm 2.78$ . Body fat was calculated with the help of skin fold thickness at four sites, biceps, triceps, scapular and supra iliac. The mean skin fold thickness was  $5.6 \pm 2.76$ ,  $8.40\pm2.76$ ,  $6.1\pm2.30$  and  $7.82\pm3.24$  respectively. Body fat and lean body weight were  $11.60 \pm 4.58$  and  $31.85\pm 8.03$  respectively. Highly significant (Correlation is significant at 0.01 level) correlation of experience with age, BMI and lean body weight in children and adolescents was found. Result shows significant (Correlation is significant at 0.05 level ) correlation of playing experience with body fat. Conclusion: Our study concludes that playing cricket improves physical characteristics in children and adolescent population with experience.

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## **INTRODUCTION**

Anthropometry deals with the measurement and dimensions of persons and certain other characteristic features of the body such as mass, centre of gravity and volume of human body. As the age progresses changes in physiological and morphological parameters of body are evident. (Skrzypczak M *et al* 2007). Actual stature, weight, and body measurements including skinfolds girths are collected for purposes of assessing growth, body fat distribution, and for provision of reference data. BMI and Waist hip ratio are also two important predictors for teenagers to become overweight and obese. (De, K. (2017) Anthropometric measurements such as skinfolds allow cross-sectional analysis of the relationship between obesity and risk of disease. (Cdc, C. 2005)

During adolescence, individuals undergo significant growth and maturation, and unique changes take place in the body and their physical characteristics. (de Almeida, T. A., & Soares, E. A. 2003) The increasing adiposity among children and adolescents is becoming a global health concern both in developed and developing countries. (Klimek-Piotrowska *et al* 2015)Increase physical activity help to prevent excessive caloric intakes, decrease time with TV/videos games, modulates growth rate and actas a means to prevent obesity. (Berkey CS *et al* 2000). Participation in a team sport helps to prevent health risks such as obesity and cardiac abnormalities. In previous studies it is shown that participation in team sport program for children can be a feasible, acceptable, and efficacious intervention for weight control. (Weintraub DL *et al* 2008)

Cricket, as both a traditional English summer sport as well as a competition played year-round in warm, humid regions such as India, Australia, and the West Indies.(K. Lee Lerner 2005) .Every elite athlete in the history has gone a long way before reaching the top (Elferink-Gemser *et al* 2011) . To reach the elite level one requires participating in it at very young age and so is in the cricket. Cricket was a product of the English countryside, an ancient game that was played in a formalized fashion at least as early as the 1500s. It is a sport that alternates aerobic and anaerobic activity, thus requiring muscular strength and power capability. (K. Lee Lerner 2005). Jahan 2015 concluded that playing cricket and other team sports significantly prevent childhood obesity in the age group of13-16 years old children. The aim of current study was to make an

<sup>\*</sup>Corresponding author: Prachi Sathe

Department of Physiotherapy, Rajeev Gandhi College, Bhopal, Madhya Pradesh, India

anthropometric profile of adolescent cricket players and find the correlation of playing experience with anthropometric characteristics.

#### Procedure

This study was done during the period from March 2018 to July 2018. A convenient sample of 40 male children and adolescents of age group 8- 15 years were chosen by using non-probability purposive sampling method. Their parents were informed for allowing their participation in the research. They signed informed consent. Objectives of the study were explained to participants and parents. They were assured that information obtained would be anonymous and confidential.

Data were collected using a designed questionnaire for the study which included socio-demographic information (name, age and sex, role or position, playing experience).

Height was measured to the nearest centimetre using a stadiometer pole while the subject is in standing position without footwear and heals together. The weight was measured to the nearest 0.5 Kg, with light clothes and without footwear, by using a portable digital weighing scale. The body mass index (BMI) was calculated using Quetelet's index (Jeukendrup et al 2010). Body fat was measured by Skin fold thickness measurement at four sites i.e. Biceps, Triceps, Scapular and Suprailiac areas using ABS plastic skin fold calliper. Measurement was done while the participant in standing position with shoulder adducted and neutrally rotated and elbow in full extension. Dominant side of the body was measured for skin fold thickness. Referencepoints were markedand skin folds were pinched with the thumb and indicator fingers. The proportion of body fat was calculated according to Jackson and pollock method proposed in 1978.

Subjects were classified in various categories based on body fat in Essential fat, athletes, fitness, average and obese category. (Jeukendrup *et al* 2010) The Ethical Committee of Rajeev Gandhi College, Bhopal approved the study. Each participant voluntarily provided written informed consent before participating. Statistical analysis was done using SPSS Version 21 (IBM Corp., Chicago, Illinois, USA). The results were presented in tables and graphs.

### RESULTS

Descriptive anthropometric characteristics of children and adolescent cricket players describes that their mean age was  $11.150\pm1.70$  years, Mean height  $146.08\pm11.99$  cm, Mean weight was  $36.39\pm10.36$ . The mean BMI was calculated as  $16.78\pm2.78$ . Body fat was calculated with the help of skin fold thickness at four sites, biceps, triceps, scapular and supra iliac. The mean skin fold thickness was  $5.6\pm2.76$ ,  $8.40\pm2.76$ ,  $6.1\pm2.30$  and  $7.82\pm3.24$  respectively. Body fat and lean body weight were  $11.60\pm4.58$  and  $31.85\pm8.03$  respectively.

 Table 1 Anthropometric Characteristics of children and adolescent cricketers.

Characteristics	Mean	Standard deviation
Age	11.150	1.7029
Height (Cms)	146.075	11.9966
Weight (Kgs)	36.3985	10.36406
BMI	16.7843	2.78349

The above table shows the Anthropometric Characteristics of children and adolescent cricketers.

Table 2	Skin	folds	and	body	fat	meas	urement	s of	childre	en	and
			ade	olesce	ent (	cricke	eters.				

Characteristics	Mean	Standard deviation
Biceps skin fold thickness (mm)	5.600	2.7624
Triceps skin fold thickness (mm)	8.400	2.7624
Scapular skin fold thickness (mm)	6.100	2.3072
Suprailiac skin fold thickness (mm)	7.825	3.2494
Body fat	11.6090	4.58621
Lbs /Kgs of Body Fat	4.5358	2.69425
Lean Body Weight	31.8528	8.03423

The above table shows the mean skin fold thicknesses at biceps, triceps, scapular and suprailiac areas which are  $5.6 \pm 2.76$ ,  $8.4\pm2.76$ ,  $6.1\pm2.3$  and  $7.82\pm3.4$  mm respectively. Based on these four skin fold thicknesses body fat and lean body weight were calculated which were  $11.6\pm4.5$ ,  $4.53\pm2.7$  and  $31.85\pm8.03$  respectively in children and adolescent cricketers.

#### Table 3 Category as per body fat

They were classified in various categories based on body fat as: Essential fat, athletes, fitness, average and obese category.

Category	Frequency distribution	Percentage distribution		
Acceptable	4	10.0		
Athletes	22	55.0		
Essential Fat	4	10.0		
Fitness	10	25.0		
Total	40	100.0		

Results shows that maximum players (55%) are of athletic built, 25% belong to fitness, 10% to acceptable and 10% to essential fat category.

Table 4 Category as per Role/ Position

Role	Frequency distribution	Percentage distribution		
Batsman	22	55		
Bowler	18	45		
Total	40	100		

The above table shows that 55% players were batsmen and 45% of them were bowlers

**Table 5** Comparison of means of anthropometric characteristics of batsmen and Bowlers

Role/ Position	Descriptive	Age (years)	Height (cm)	Weight (kg)	BMI Kg/ m <sup>2</sup>	Body fat
Batsmen	Mean	11.05	144.61	35.50	16.68	11.02
	S.D	1.73	11.92	10.82	2.89	4.87
	Ν	22	22	22	22	22
Bowlers	Mean	11.28	147.86	37.49	16.90	12.32
	S.D	1.71	12.17	9.96	2.72	4.23
	Ν	18	18	18	18	18
Total	Mean	11.15	146.07	36.39	16.78	11.60
	S.D	1.70	11.99	10.36	2.78	4.58
	Ν	40	40	40	40	40

The above table shows the description of mean and standard deviations of batsmen and bowlers. It shows that age and BMI of both the groups were almost similar. Bowlers weres lightly taller than batsmen. Bowlers have higher body mass as compared to batsmen. Body fat was slightly higher in bowlers.

 Table 6 Correlation of anthropometric variables with playing experience

		Experience	Age	BMI	Body fat	Lean body weight
Correlation of experience with	Pearson correlation	1	0.87**	0.45**	0.33*	0.71**
	Significance two tailed N	40	0.001 40	0.004 40	0.03 40	0.001 40

\*\*. Correlation is significant at 0.01 level (2-tailed) \*. Correlation is significant at 0.05 level (2-tailed)

The above table describes the correlation of anthropometric variables with playing experience. It shows highly significant correlation of experience with age, BMI and lean body weight in children and adolescents. It also shows significant correlation of playing experience with body fat.

### DISCUSSION

The aim of the current study was to form an anthropometric profile of children and adolescent cricket players and to find the correlation of playing experience with anthropometric characters.

For the study 40 children and adolescent cricket players were chosen. Their age, weight, height and playing experience was documented with the help predetermined format of questionnaire. Their fat mass and lean body mass was calculated with the help of ABS plastic skin fold calliper by measuring the skin fold thickness at four sites i.e. Biceps, Triceps, Scapular and Suprailiac areas using Jackson and Pollock method.

The results of the study show that maximum of percentage children and adolescent players are of athletic built, few belonged to fitness, some of them to acceptable and the rest to essential fat category. They were segregated in two groups of batsmen and bowlers (Jeukendrup *et al* 2010).

Results also show highly significant correlation of experience with age, BMI and lean body weight in children and adolescents. It also shows significant correlation of playing experience with body fat. The reason for these results can be the growing age of the subjects. With age tissues of the body grow so the lean and fat mass also grows which results in greater BMI.

### CONCLUSION

Our study concludes that involvement in regular physical activity such as cricket help to improve physical characteristics in children and adolescent population with experience.

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