

Comparative Study on Selected Anthropometric Parameters of Under 15-Year Cricketers of West Bengal and Bangladesh

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Abstract

The purpose of the study was to observe the difference, if any, in selected anthropometric parameters of the cricketers of West Bengal and Bangladesh in under 15-year age category. In each group fifteen male players were the subjects. Anthropometric parameters for this study were - height, weight, body mass index (BMI), body surface area (BSA), skinfolds (calf and triceps), body fat percentage (%BF), fat mass and lean body mass (LBM). Mean, standard deviation (SD) and independent t-test were the statistics used for interpretation of data and the level of significant difference between the groups was set at $p < 0.05$ level. Comparing the data of two groups, it was observed that, there was no difference between the two groups in any of the four directly measured anthropometric parameters - height, weight, calf and triceps skinfolds or in the five derived anthropometric parameters - BMI, BSA, %BF, fat mass and LBM. Hence, the study was concluded that under 15-year male cricketers of Bangladesh and West Bengal do not differ in the selected anthropometric parameters.

Keywords: Anthropometric parameter, Under 15-year cricketer, West Bengal, Bangladesh.

Introduction

Cricket, the gentlemen's game, is the unofficial national game of India. West Bengal is one of the states of the country where cricket is a very popular game. In West Bengal most of the national and international cricket matches are played at Eden Gardens, Kolkata. Bengal has won many national cricket championships in senior and in different age categories. Besides, cricket culture is not at all a new phenomenon in Bangladesh. After winning the 1997 ICC trophy in Malaysia, Bangladesh qualified for the 1999 Cricket World Cup for the first time and cricket has been a popular game in Bangladesh too (www.banglacricket.com).

In the process of growth and development inherited abilities and environment play great roles. It is agreed that heredity provides raw materials and environment provides condition for the development of hereditary raw materials. Heredity sets the limit of growth and development and the environment dictates how much of the available limit would be accomplished (Berk, 2004).

Within the general pattern of growth, there are differences, noticed in the population of two countries. This, perhaps, is due to the influence of the socio-cultural environment. The socio-economic status of West Bengal and Bangladesh are pretty different. There might have differences in many areas between the people of Bangladesh and West Bengal.

With this background concept the study was hypothesised as there would be difference between the under 15-year cricketers of West Bengal and Bangladesh with respect of their selected anthropometric measurements.

Methodology

Fifteen under 15-year male cricketers those who represented Bangladesh team and fifteen under 15-year male cricketers who represented West Bengal team were the subjects of this study.

Table-I
Description of Subjects

Groups	No. of subjects	Age (in years)
Bangladesh Team	15	13 to 15
West Bengal Team	15	13 to 15

Anthropometric parameters for this study were - height, weight, body mass index (BMI), body surface area (BSA), skin-folds (calf and triceps), body fat percentage (% BF), fat mass and lean body mass (LBM). Measurements were taken on the subject during the month of February 2011, before the friendly match played at Kalyani University Cricket Ground.

The anthropometric tape was used to measure height to the nearest 0.1 cm. For each height reading, the heel, buttocks and shoulder blades were in contact with the vertical surface. Weight was recorded to the nearest 0.5 kg. All subjects wore light clothing and removed their shoes before the measurement of weight. BMI was measured from weight and height ratio (kg/m²). Body surface area (BSA) was measured through the formula, $BSA = [\text{Height}(\text{cm}) \times \text{Weight}(\text{kg}) / 3600]^{1/2}$ (Mosteller, 1987). The medial surface of the calf was taken for measurement of calf skin-fold. Triceps skin-fold was taken on the posterior surface at the level of biceps skin-fold with the subject in the same position. Body fat percentage, fat mass and LBM were measured by two-site skin-folds, that is, triceps and biceps skin-fold (Slaughter et al., 1982).

Mean, standard deviation (SD) and independent t-test were the statistics used in this study for interpretation of data. SPSS software version 11.5 was used for analysis of data and the level of significant difference between means was set at $p < 0.05$.

Results

Table-II represents the results on anthropometric parameters. The height was 165.93 ± 6.93 cm and 165.60 ± 8.03 cm in mean and SD values for both teams.

There was no difference in height between two groups. The mean and SD values of weight was 51.60 ± 0.05 kg and 50.07 ± 5.8 kg. No difference of weight between two groups was found. The values of BMI of both teams were 18.75 ± 1.18 kg/m² and 18.23 ± 1.48 kg/m² and no difference was prevailed between the both team. BSA of Bangladesh players were 1.407 ± 0.08 m² and 1.38 ± 0.10 m² for West Bengal players. The mean and SD values of calf skin-folds were 11.09 ± 3.48 mm and 11.07 ± 3.06 mm. No difference was observed in skinfolds of the two groups.

Table-II

Results on the Anthropometric Parameters of under 15-year Cricketers of West Bengal and Bangladesh

Parameters	Group	Mean \pm SD	t-value
Height (cm)	Bangladesh	165.93 \pm 6.93	0.122 ^{NS}
	West Bengal	165.60 \pm 8.03	
Weight (kg)	Bangladesh	51.60 \pm 4.05	0.84 ^{NS}
	West Bengal	50.07 \pm 5.81	
BMI (kg/m ²)	Bangladesh	18.75 \pm 1.18	1.062 ^{NS}
	West Bengal	18.23 \pm 1.48	
BSA (m ²)	Bangladesh	1.407 \pm 0.08	0.821 ^{NS}
	West Bengal	1.38 \pm 0.10	
Calf skf (mm)	Bangladesh	11.867 \pm 3.48	0.669 ^{NS}
	West Bengal	11.067 \pm 3.06	
Triceps skf (mm)	Bangladesh	6.93 \pm 2.05	1.018 ^{NS}
	West Bengal	7.87 \pm 2.90	
% Bf	Bangladesh	14.82 \pm 3.88	0.069 ^{NS}
	West Bengal	14.92 \pm 3.90	
Fat Mass (kg)	Bangladesh	7.70 \pm 2.37	0.190 ^{NS}
	West Bengal	7.53 \pm 2.54	
LBM (kg)	Bangladesh	43.89 \pm 3.24	0.930 ^{NS}
	West Bengal	42.53 \pm 4.65	

NS= Not Significant

The mean and SD values of triceps skin-folds were 6.93 ± 2.05 mm and 7.87 ± 2.90 mm. This is more in West Bengal cricketers than Bangladesh Cricketers. There was no difference in % BF between the two groups were the mean and SD values were 14.82 ± 3.88 and 14.92 ± 3.90 . The mean and SD values in fat mass were 7.70 ± 2.37 kg and 7.53 ± 2.54 kg, which revealed that fat mass, was more in Bangladesh Cricketers. The LBM is more in Bangladesh Cricketers

than the mean and SD values were 43.896 ± 3.24 kg and 42.53 ± 4.65 kg. Within the similar weight the players of Bangladesh team had slightly higher values in %BF and LBM; however, that difference was not significant. Hence, all the t-values were less than the tabulated t-value to be significant at 0.05 level of significance, therefore, the hypothesis was rejected and the alternate hypothesis was accepted, which corroborated that there was no difference between the under 15-year cricketers of West Bengal and Bangladesh in those variables.

Discussion

The anthropometric profile of under 15-year cricketers West Bengal and Bangladesh was been compared in this study. In the anthropometric profile, the most commonly considered three parameters, namely- height, weight and BMI of two groups did not differ. BMI of the growing-ups increases from ten year onwards through adolescence (Fredricks et al., 2000) and the BMI of the two groups were within the healthy category (18.5 - 24.9 kg/m²) of WHO (1998). Body surface area was measured by indirect method (Mosteller, 1987) with the height and weight of each subject. As there was no difference in height and weight of two groups, the BSA of the two groups was almost same.

In case of skin-folds of both groups were identical. In terms of the body composition components, such as, % BF, LBM and fat mass, the two groups did also very similar to each other.

Though at the time of adolescence a huge variation exists in any type of individual of this age, but in spite of that probability, the two groups' anthropometric profiles had no difference. The study findings revealed the identical anthropometrical properties of the under 15-year male cricketers of Bangladesh and their West Bengal counterparts.

It was seen that the mean values of Bangladesh cricketers were higher West Bengal Cricketers in height, BMI, BSA, calf skin-fold, fat mass and LBM but the corresponding t-values clearly indicate that these differences were not acceptable to be statistically significant.

Conclusion

From the findings of the study on the selected anthropometric parameters the following conclusions are drawn.

Under 15-year male cricketers of West Bengal and Bangladesh did not differ in their anthropometric profiles. Anthropometrically, the cricketers of both groups were identical to each other.

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