



COMPARATIVE STUDY ON SELECTED ANTHROPOMETRIC MEASUREMENTS BETWEEN UNDER-19 YEARS STATE LEVEL MALE VOLLEYBALL PLAYERS AND HANDBALL PLAYERS

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ABSTRACT: To evaluate these physical abilities, the anthropometric measurements, parameters of body composition such as the percent body fat (% Fat) fat free mass (FFM) and somatotype components are often use. The purpose of the study was to compare the selected anthropometric measurements of under -19 year's state level male Volleyball and Handball players. Total sixty (60) district level male Volleyball (30) and Handball (30) players were randomly selected from Nadia, Hooghly, South & North 24 Parganas, Kolkata and Howrah. All the subjects were assessed for height, weight, BMI, skin fold thickness, circumference, width, and length .Analyzing the data it was found that- 1. The volleyball players were significantly taller than handball players. 2. The biceps and triceps skin folds of volleyball players were significantly higher than handball players. 3. The volleyball players had greater thigh circumference than handball players.

Keywords: Volleyball, Handball, anthropometric measurements, skin folds, circumference, width;

1. INTRODUCTION

Successful participation in these sports requires from each player a high level of technical and tactical skills and suitable anthropometric characteristics. All ball games require comprehensive abilities including physical, technical, mental and tactical abilities. Among them, physical abilities of players are more important as these have marked effects on the skill of players and the tactic of the teams because ball games require repeated maximum exertion such as dashing and jumping. Such physical abilities are important for volleyball, handball and basketball players to achieve higher levels of performance [1-5]. To evaluate these physical abilities, the anthropometric measurements, parameters of body composition such as the percent body fat (% Fat) fat free mass (FFM) and somatotype components are often use. Studies on the physical characteristics of the human body to date indicate that the morphological characteristics of athletes successful in a specific sport differ in somatic characteristics from the general population. Basketball and volleyball require handling the ball above the head; therefore, having a greater height is an advantage in these sports. Higher body mass however, is a hurdle for handball and volleyball players in achieving good jumping height.



Various researchers suggested that different body size shape and proportions are beneficial in different physical activities [6-12].

1.1. Purpose of the study

The purpose, of the study were as follows –

- i. To study the selected anthropometric measurements of under-19 years state level male Volleyball and Handball players.
- ii. To find out the significant difference, if any, between under-19 years state level male Volleyball and Handball players in respect to skin fold thickness, circumference, width, and length.

2. METHODOLOGY

For the present study sixty (60) male subjects were randomly selected from Nadia, Hooghly, North & South 24 Parganas, Kolkata and Howrah Districts; among them, thirty (30) subjects for U-19 years state level male volleyball players and thirty (30) for Handball players.

To conduct the present study the following measurement were taken –

A. Personal parameters- Age, Height, Weight and BMI, B. skin fold thickness, C. circumference, D. width, and E. length. To collect relevant data for this study, following instruments were used – Weighing Machine, Measuring tape, Stadiometer, skin- fold caliper and sliding-caliper.

3. RESULTS & DISCUSSION

Table –1. Personal parameters of volleyball and handball players.

Variable	Volleyball players		Handball players		‘t’ value
	Mean	SD	Mean	SD	
Age	17.87	± .61	17.70	± .65	1.04
Height (cm)	173.08	± 8.08	166.03	± 6.15	3.80*
Weight (kg)	61.22	± 6.60	59.28	± 7.69	1.04
BMI (kg/m ²)	20.49	± 2.41	21.46	± 2.08	-1.68

* Significant at 0.01 level $t_{0.05, 58} = 2.00$

Table -1 shows the descriptive statistics of personal parameters of volleyball and handball players. The table represented that the height of volleyball players were 173.08 ± 8.08 cm (mean \pm SD) and



for handball players sit was 166.03 ± 6.15 cm. Mean body height of volleyball players was significantly higher than those of handball players ($P < 0.05$). No statistically significant difference was observed between the volleyball and the handball players in relation to body weight and BMI.

Table-2. Statistics on skin fold of groups (Volleyball and Handball)

Parameter	Volleyball		Handball		't' value
	Mean	SD	Mean	SD	
Biceps (mm)	3.68	± 2.10	2.67	± 1.30	2.26*
Triceps (mm)	7.97	± 4.59	5.98	± 2.62	2.06*
Sub scapula (mm_	9.43	± 4.15	8.22	± 3.67	1.20
Suprailliac (mm)	7.05	± 5.22	5.05	± 3.16	1.80
Thigh (mm)	11.65	± 6.25	9.33	± 5.20	1.56
Calf (mm)	7.68	± 3.65	6.77	± 4.00	.93
Abdomen (mm)	14.90	± 9.83	11.20	± 7.45	1.64

* Significant at 0.05 level $t_{0.05} 58 = 2.00$

In table 2 descriptive statistics for skin fold measurement values were depicted. Both biceps ($P > 0.05$) and triceps skin folds ($P > 0.05$) measurements were significantly higher for volleyball players than handball players. There were no significant differences observed between two groups for sub scapula, suprailliac, thigh, abdomen and calf skin fold measurement.

Table-3. Statistics on circumference / Girth of two groups (volleyball and handball)

Variable	Volleyball		Handball		't' value
	Mean	SD	Mean	SD	
Waist (cm)	71.38	± 6.12	69.12	± 5.40	1.52
Abdomen (cm)	73.79	± 6.56	71.30	± 7.15	1.41
Gluteus (cm)	87.28	± 6.75	84.37	± 4.57	1.92
Wrist (cm)	15.79	$\pm .89$	16.15	± 1.42	- 1.33
Thigh (cm)	50.20	± 5.14	47.50	± 4.26	2.22*
Calf (cm)	33.34	± 2.93	32.55	± 2.59	1.11
Biceps (cm)	24.37	± 2.48	24.33	± 1.92	.076

* Significant at 0.05 level $t_{0.05} 58 = 2.00$

Table -3 representing the statistics of circumference /girth of two groups (Volleyball and Handball). There was no significant difference between volleyball and handball players in Biceps, waist, abdomen, glutens, wrist and calf circumference between the two groups, but thigh circumference ($p > 0.05$) was significantly higher for volleyball players than handball players.



Table-4.Statistics on length of two groups (Volleyball and Handball)

Variable	Volleyball		Handball		't' value
	Mean	SD	Mean	SD	
Upper Ex. (cm)	74.81	± 4.79	76.25	± 4.21	1.29
Lower Ex (cm)	91.09	± 5.19	88.46	± 4.98	1.993
Thigh (cm)	43.62	± 2.99	42.36	± 4.59	1.26
Hand (cm)	55.22	± 4.51	56.60	± 3.61	-1.30
Plan (cm)	19.15	± .75	19.15	± 1.57	.00
Fore arm (cm)	27.02	± 1.63	27.27	± 1.48	-.63

Table -4 shows the descriptive statistics for length of body segment of volleyball and handball players. There was no significant difference between volleyball and handball players in relation to upper extremity, lower extremity, thigh, hand, palm and fore arm length.

Table-5.Statistics on width of two groups (Volleyball and Handball)

Variable	Volleyball		Handball		't' value
	Mean	SD	Mean	SD	
Hummers (cm)	6.62	± .50	6.52	± .43	.79
Femur (cm)	9.47	± .74	9.48	± .48	-.10

Table -5 shows statistics of width of the body segment of volleyball and handball players. No significant difference was observed in hummers and femur width between the volleyball and handball players.

DISCUSSION

Present study showed that volleyball players were significantly taller than handball players. Both biceps and triceps skin folds measurements were observed to be significantly higher for volleyball players than handball players. Volleyball players had greater thigh circumference than handball players and there were no significant difference between volleyball and handball players in relation to length and width of the body.

4. CONCLUSION

- i. The volleyball players were significantly taller than handball players.
- ii. The biceps and triceps skin folds of volleyball players were significantly higher than handball players.
- iii. The volleyball players had greater thigh circumference than handball players.



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