

## A comparative study of anthropometric characteristics of national volleyball players of selected state

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### Abstract

The purpose of the study was to compare the selected Anthropometric characteristics of National Volleyball Players of selected state. It was hypothesized that there may be no significant difference in selected Anthropometric characteristics of National Volleyball Players of selected state. The present study was conducted on forty male volleyball players from Gujarat and Rajasthan states who participated in National Volleyball Championship. The age of the subjects ranged from 20 to 25 years. The study was taken to pinpoint the Anthropometric characteristics. Therefore, based on literary evidence and scholar's own understanding the variables are selected for the purpose of this study Standing Height, Leg Length, Arm Length, Trunk Length, Hand Length, Thigh Length, Thigh girth. To find the characteristics of selected anthropometrical of national level volleyball players of Gujarat and rajasthan states. Moreover, in order to compare the selected anthropometrical characteristics among national volleyball players of Gujarat and Rajasthan T-Test has been applied. The above statistical technique was performed by using SPSS version 11.5. the means of Gujarat and Rajasthan in Height as the observed T-ratio was 11.567, which was higher value than the required value (2.021), the means of Gujarat and Rajasthan in Leg Length as the observed T-ratio was 7.669, which was higher value than the required value (2.021), the means of Gujarat and Rajasthan in Arm Length as the observed T-ratio was 7.770, which was higher value than the required value (2.021), the means of Gujarat and Rajasthan in Trunk Length as the observed T-ratio was 5.0873, which was higher value than the required value (2.021), the means of Gujarat and Rajasthan in Hand Length as the observed T-ratio was 2.911, which was higher value than the required value (2.021), the means of Gujarat and Rajasthan in Thigh Length as the observed T-ratio was 1.861, which was lower value than the required value (2.021), the means of Gujarat and Rajasthan in Thigh Girth as the observed T-ratio was 5.148, which was higher value than the required value (2.021).

**Keywords:** Anthropometric characteristics, national volleyball players

### Introduction

Anthropometric measurement consists of objective measurements of structure and functions of the body. The measurement of the structure includes items such as weight, total height and width, the depth and the circumferences of the chest etc. The measurements of functions includes such items as pulse rate arterial and venous, blood pressure, muscles strength, basal metabolic rate, estimate from cardio-vascular posture and breathing capacity. (G.S. Sundarajun, 1972) <sup>[9]</sup>

Body composition is concerned in past with the obesity of the individual. In measuring these aspects of body compositions, the total body weight is measured. Lean body weight includes muscle bones and vital organs. The underlying assumption is that total body weight equals lean body weight. The higher the percentage of fat body weight the higher the degree of obesity. (Easle F. Zeigler, 1982) <sup>[10]</sup>

Anthropometric measurements matter of concerns of the first phase of the scientific area of measurement which began in 1960's. Current interest in anthropometric measurements focuses on three areas – growth patterns and prediction of success in motor activities, as well as, assessments of obesity. Body composition was concerned in past with the obesity of the individual. In measuring the aspects, the total body weight and fat weight, fat weight and lean body weight which includes muscles, bones and vital organs. The higher percentage of fat body weights than the higher the percentage of obesity. The physical fitness anthropometric measurement variables and

body compositions are very important factors for achieving the high level of performance in standard competitions. (Frank M Verdani). <sup>[11]</sup>

### 2. Methodology

**2.1 Objective of the study:** The purpose of the study was to compare the selected Anthropometric characteristics of National Volleyball Players of selected state.

**2.2 Hypothesis:** It was hypothesized that there may be no significant difference in selected Anthropometric characteristics of National Volleyball Players of selected state.

**2.3 Subjects:** The present study was conducted on forty male volleyball players from Gujarat and Rajasthan states who participated in National Volleyball Championship. The age of the subjects ranged from 20 to 25 years.

**2.4 Variables:** The study was taken to pinpoint the Anthropometric characteristics. Therefore, based on literary evidence and scholar's own understanding the following variables were selected for the purpose of this study:

1. Standing Height
2. Leg Length
3. Arm Length
4. Trunk Length
5. Hand Length

- 6. Thigh Length
- 7. Thigh girth

**2.5 Statistical Techniques:** To find the characteristics of selected anthropometrical of national level volleyball players of Gujarat and Rajasthan states. Moreover, in order to compare the selected anthropometrical characteristics among national volleyball players of Gujarat and Rajasthan T-Test has been applied. The above statistical technique was performed by using SPSS version 11.5.

**3. Result:** To compare on each Anthropometrical characteristics among two states i.e. Gujarat and Rajasthan T-Test analysis was employed and Level of significance was set at 0.05.

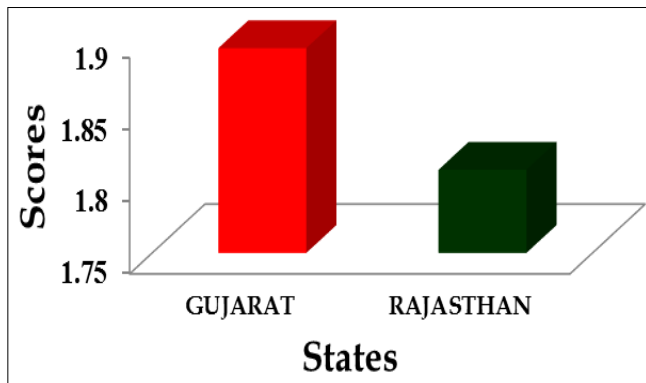
The entire analysis in this chapter has been carried out by using statistical software (SPSS 17 version) to address the following research issues are as follows:

**Table 1:** Comparison of Mean Score of Height in Volleyball Players of Gujarat and Rajasthan

Group	Number	Mean	Standard Deviation	DF	t-value
Gujarat	20	1.8925	2.15517	38	11.567
Rajasthan	20	1.8078	2.46809		

\* Significant at 0.05 level. Tab t 0.05 (38) =2.021

Table-1 clearly indicates that significant difference was found between the means of Gujarat and Rajasthan in Height as the observed T-ratio was 11.567, which was higher value than the required value (2.021) to be significant at the level of significance 0.05.



**Fig 1:** Comparison of Mean Score of Height in Volleyball Players of Gujarat and Rajasthan

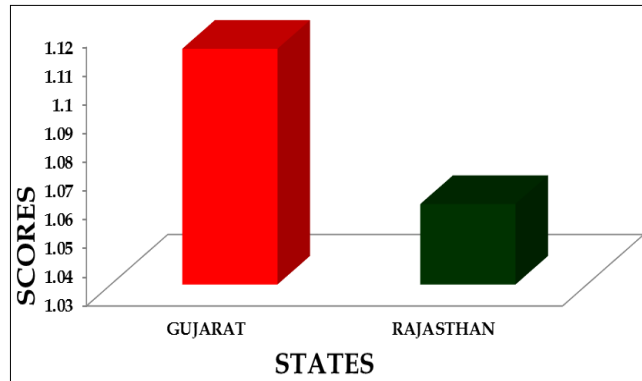
**Table 2:** Comparison of Mean Score of Leg Length in Volleyball Players of Gujarat and Rajasthan

Group	Number	Mean	Standard Deviation	DF	t-value
Gujarat	20	1.1120	2.52566	38	7.669
Rajasthan	20	1.0580	1.88065		

\* Significant at 0.05 level. Tab t 0.05 (38) =2.021

Table-2 clearly indicates that significant difference was found between the means of Gujarat and Rajasthan in Leg Length as

the observed T-ratio was 7.669, which was higher value than the required value (2.021) to be significant at the level of significance 0.05.



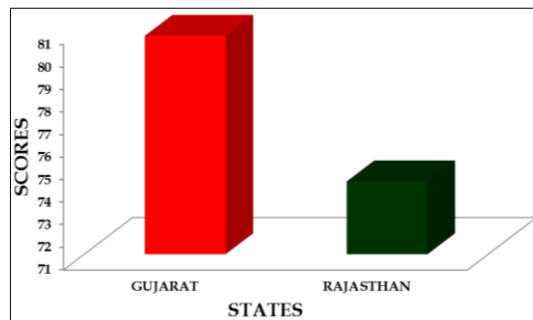
**Fig 2:** Comparison of Mean Score of Leg Length in Volleyball Players of Gujarat and Rajasthan

**Table 3:** Comparison of Mean Score of Arm Length in Volleyball Players of Gujarat and Rajasthan

Group	Number	Mean	Standard Deviation	DF	t-value
Gujarat	20	80.6750	1.84444	38	7.770
Rajasthan	20	74.2250	3.22194		

\* Significant at 0.05 level. Tab t 0.05 (38) =2.021

Table-3 clearly indicates that significant difference was found between the means of Gujarat and Rajasthan in Arm Length as the observed T-ratio was 7.770, which was higher value than the required value (2.021) to be significant at the level of significance 0.05.



**Fig 3:** Comparison of Mean Score of Arm Length in Volleyball Players of Gujarat and Rajasthan

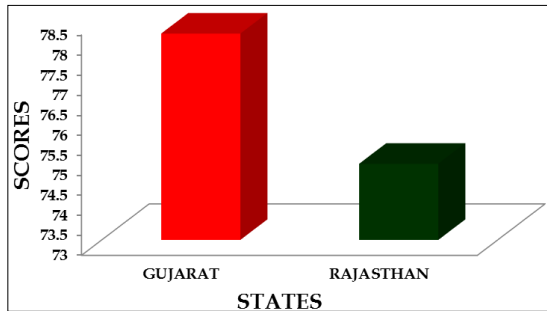
**Table 4:** Comparison of Mean Score of Trunk Length in Volleyball Players of Gujarat and Rajasthan

Group	Number	Mean	Standard Deviation	DF	t-value
Gujarat	20	78.1500	2.02679	38	5.873
Rajasthan	20	74.9000	1.41979		

\* Significant at 0.05 level. Tab t 0.05 (38) =2.021

Table-4 clearly indicates that significant difference was found between the means of Gujarat and Rajasthan in Trunk Length as

as the observed T-ratio was 5.0873, which was higher value than the required value (2.021) to be significant at the level of significance 0.05.



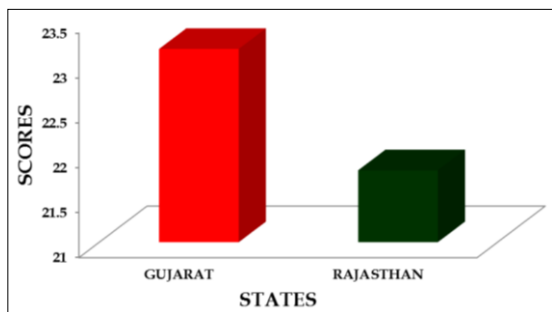
**Fig 4:** Comparison of Mean Score of Trunk Length in Volleyball Players of Gujarat and Rajasthan

**Table 5:** Comparison of Mean Score of Hand Length in Volleyball Players of Gujarat and Rajasthan

Group	Number	Mean	Standard Deviation	DF	t-value
Gujarat	20	23.1500	1.30888	38	2.911
Rajasthan	20	21.8000	1.60918		

\* Significant at 0.05 level. Tab t 0.05 (38) =2.021

Table-5 clearly indicates that significant difference was found between the means of Gujarat and Rajasthan in Hand Length as the observed T-ratio was 2.911, which was higher value than the required value (2.021) to be significant at the level of significance 0.05.



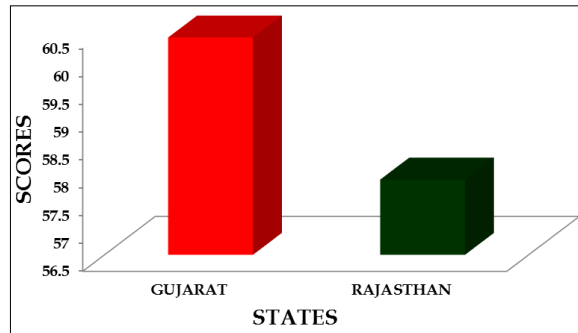
**Fig 5:** Comparison of Mean Score of Hand Length in Volleyball Players of Gujarat and Rajasthan

**Table 6:** Comparison of Mean Score of Thigh Length in Volleyball Players of Gujarat and Rajasthan

Group	Number	Mean	Standard Deviation	DF	t-value
Gujarat	20	60.4000	5.68840	38	1.861
Rajasthan	20	57.8500	2.27746		

\* Significant at 0.05 level. Tab t 0.05 (38) =2.021

Table-6 clearly indicates that insignificant difference was found between the means of Gujarat and Rajasthan in Thigh Length as the observed T-ratio was 1.861, which was lower value than the required value (2.021) to be significant at the level of significance 0.05.



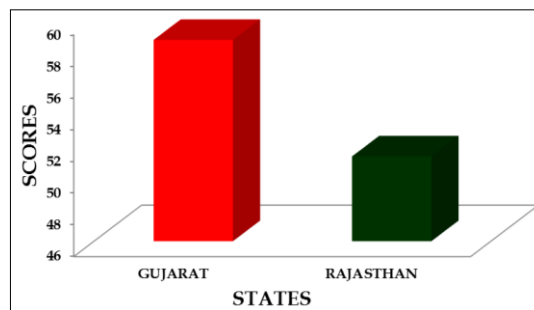
**Fig 6:** Comparison of Mean Score of Thigh Length in Volleyball Players of Gujarat and Rajasthan

**Table 7:** Comparison of Mean Score of Thigh Girth in Volleyball Players of Gujarat and Rajasthan

Group	Number	Mean	Standard Deviation	DF	t-value
Gujarat	20	58.7000	6.03586	38	5.148
Rajasthan	20	51.3500	2.08440		

\* Significant at 0.05 level. Tab t 0.05 (38) =2.021

Table-7 clearly indicates that significant difference was found between the means of Gujarat and Rajasthan in Thigh Girth as the observed T-ratio was 5.148, which was higher value than the required value (2.021) to be significant at the level of significance 0.05.



**Fig 7:** Comparison of Mean Score of Thigh Girth in Volleyball Players of Gujarat and Rajasthan

**4. Discussions:** - The statistical findings so observed when anthropometric variables of Volleyball players were compared between states of Rajasthan and Gujarat revealed that Height, Leg length, Arm length, Trunk length, Hand length and Thigh girth which is significant at 0.05 level. It indicates that the mean scores of anthropometric characteristics at various variables differ significantly. This could be attributed to the fact that both the states volley ball players does not possess similar characteristics. Appearance of such result is quite obvious because the geographical climate and region is different. Moreover, the daily routine habit and training programme may be different in each state. Further, the comparative results indicate that anthropometrics at thigh length in Rajasthan state volleyball player is insignificant from Gujarat volleyball players. This could be attributed to the fact that both the states volley ball players possess similar characteristics.

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