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## Relationship study between selected anthropometric measurements and playing ability of volleyball players

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### Abstract

The main purpose of the study was to determine the significant relationship in between selected anthropometric measurement and playing ability of volleyball players. 20 male Volleyball players who represented the state of Tripura in the National Tournaments of Volleyball were randomly selected as subjects for the purpose of the study. The age of the subjects was ranging from 18 to 24 years.

The study was restricted to volleyball players who represented the State of Tripura in the National Tournaments as well as anthropometric measurements were restricted to body weight, standing height, arm length, leg length, chest girth, thigh girth and calf girth.

Body Weight was measured by weighing machine at least clothes and score was recorded in Kilogram. Standing height was measured the maximum distance from the floor to the highest point on the head by use of anthropometer and score was recorded in centimeter. Arm length was measures the distance between acromial all across to dactyl- ion (from shoulder to the tip of middle finger) by use of anthropometer and score was recorded in centimeter. Leg length was measured the maximum distance from the floor to the highest point of trochanterion by use of anthropometer and score was recorded in centimeter. Chest girth was measured the circumference of chest at the level of mesosternale in standing position with arm relaxed by sides by use of anthropometric tape and score was recorded in centimeter. Thigh girth measurement was taken at the level midway between the trochanterion and tibiale laterale sites by use of anthropometric tape and score was recorded in centimeter. Calf (maximum) girth was measured from the lateral aspect of the leg by use of anthropometric tape and score was recorded in centimeter. The playing ability of the volleyball players was measured by use of five point rating scale (highest point is 5 and lowest point is 1) was discovered by Biggs in 2003 and The score on the playing ability being the middle score of the three experts, ratings were considered accurate enough for the purpose of the study.

To determine the significant relationship between selected anthropometric measurements and playing ability of volleyball players the Pearson's product co-efficient of correlation statistical technique was employed. Level of significance was set at 0.05.

The findings of the study showed that there were no significant relationship in between selected anthropometric measurement and playing ability of volleyball players.

**Keywords:** Body weight, standing height, arm length, leg length, chest girth, calf girth

### Introduction

Anthropometry is that division of anthropology that is concerned with the dimension of human body. This definition can be controlled to the kind of dimensions normally used in connecting physically performance with physique (Warren R. Johnson 1974) [12].

Anthropometric measurements were vital concerns of the first phase of the scientific era of dimension, which commenced in 1860's. Existing interest in anthropometric measurement emphases on three areas - growth measures, body type and composition. The use of such measures comprises classification, prediction of growth patterns and prediction of achievement in motor activities as well as assessment of obesity (D. Alien Philip and James E. Hornak 1979) [11].

Measurement of body size contains such descriptive data as height, weight and surface area, while measurement of body proportion pronounces the relationship between height and weight and amongst length, width and Circumference of numerous body parts. It is seen that top athletes in some sports incline to have those proportions that bio-mechanically support the exact performance essential (Earle F. Zeigler 1982).

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The body structure of an individual has a significant part on his sports performance. Hence, coach and physical education teachers while opt for their players for involvement, give due attention to the skill possessed by the player and at the same time they should afford due weightage to numerous anthropometric measurements also.

Today, it has been realized that the champions in different sports differ in their anthropometric and body composition particular requirements of their respective events. Studies have shown that the top level performance is not guaranteed, if the anthropometric-body dimensions of power-driven aspect of the game concerned. Consequently, it is detected that separately from other factors the performance of a sportsman in any sport and game is influenced by innumerable definite physiognomies, body composition, apart from many other traits and physiological functions which help him to attain better performance. Hence the research scholar was interested to undertake the study stated as "Relationship Study between Selected Anthropometric Measurements and Playing Ability of Volleyball Players".

### Significance of the study

1. The outcome of this study might bring about some knowledge of the relationship between anthropometric measurements and playing ability of volleyball players.
2. This study would be of a great use to the physical education teachers and coaches to select appropriate potentialities in players for different disciplines.
3. The findings of this study might give certain additional guidelines based on anthropometric data in selecting the players for a particular event or game.

### Hypothesis

It was hypothesized that there would be significant relationship between selected anthropometric measurements and playing ability of volleyball players.

### Materials and Methods

20 male Volleyball players who represented the state of Tripura in the National Tournaments of Volleyball were randomly selected as subjects for the purpose of the study. The age of the subjects was ranging from 18 to 24 years. The study was restricted to volleyball players who represented the State of Tripura in the National Tournaments as well as anthropometric measurements were restricted to body weight, standing height, arm length, leg length, chest girth, thigh girth and calf girth.

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of the leg by use of anthropometric tape and score was recorded in centimeter. The playing ability of the volleyball players was measured by use of five point rating scale (highest point is 5 and lowest point is 1) was discovered by Biggs in 2003 and The score on the playing ability being the middle score of the three experts, ratings were considered accurate enough for the purpose of the study.

The data pertaining to the study were collected by applying the above mentioned selected tests and tools.

### Results and Discussion

To determine the significant relationship between selected anthropometric measurements and playing ability of volleyball players the Pearson's product co-efficient of correlation statistical technique was employed. Level of significance was set at 0.05 for testing the hypothesis. The results pertaining to these have been presented in the following table.

**Table 1:** Relationship of Selected Anthropometric Measurements and Playing Ability of Volleyball Players

Variables Correlated	Co-efficient of Correlation
Body weight and Playing ability	0.284 <sup>@</sup>
Standing Height and Playing ability	0.162 <sup>@</sup>
Leg Length and Playing ability	0.213 <sup>@</sup>
Arm Length and Playing ability	0.272 <sup>@</sup>
Chest Girth and Playing ability	0.209 <sup>@</sup>
Thigh Girth and Playing ability	0.229 <sup>@</sup>
Calf Girth and Playing ability	0.301 <sup>@</sup>

@ Not significant at 0.05 level

Findings of table-1 reveal that playing ability of volleyball players show no significant correlation with body weight, standing height, arm length, leg length, thigh girth and calf girth of players because calculated r-value of 0.284, 0.162, 0.213, 0.272, 0.209, 0.229 and 0.301 respectively are less than the tabulated r -value of 0.444 at 0.05 level for 18 degrees of freedom.

### Discussion

Table-1 revealed that Anthropometric measurements and performance of volleyball players do not show significant relationship. Primarily Aims of Training before competition is to gain maximum performance during the competitions, prevent injuries and maintain potential. It seems that all the players do not regularly participate in training programme. Playing efficiency mainly depends upon the psychological parameters and psychological variables as well as in training session due to avoid the injury players did not gave the test efficiently hence this types of results have been shown in the study.

### Conclusions

1. There were no significant correlation in between body weight and playing ability of volleyball players.
2. There were no significant correlation in between standing height and playing ability of volleyball players.
3. There were no significant correlation in between arm length and playing ability of volleyball players.
4. There were no significant correlation in between leg length and playing ability of volleyball players.
5. There were no significant correlation in between thigh girth and playing ability of volleyball players.
6. There were no significant correlation in between calf girth and playing ability of volleyball players.

## References

1. Amusa Latheef O. The Relationship between Soccer Playing Ability and Selected Measures of Structure and Physical and Physiological Performance in Colleges, Completed Research in Health. Physical Education and Recreation. 1979; 21.
2. Ansish Tony, Krishnaswami PC. The Relationship among swimming performance and selected physiological parameters in competitive Male Age Group (10-14 years) Swimmers, Sports Research. 2012; 1(1).
3. Bakke Lavern W. Relationship of Selected and Physical Performance Measures to Performance in Running Hop-Step-Jump, Research Quarterly. 1984; 35.
4. Bale P, Bradbury D, Colley E. Anthropometric and Training Variables related to 10 Kms Running Performance. British Journal of Sports Medicine. 1986; 20.
5. Bandyopadhyay A. Anthropometry and Body Composition in Soccer and Volleyball Players in West Bengal, India. Journal of Physiology. 2007; 26(4).
6. Biggs ER. Modern Training & Testing Methods in panre, Dubugue Iowa: W. C. Brown Co., 2003.
7. Boldt M, Gregory D, Jaffe D, Dodge TM, Jones MT. Relationship Between Body Composition and Performance Measures in NCAA Division HI Women's Volleyball Players. Journal of Strength & Conditioning Research. 2011; 25(3).
8. Brocherieae Franck, Girardb Olivier, Forchinoc Fabricio, Santose Gil van A. Dos, Relationships Between Anthropometric Measures and Athletic Performance, with Special Reference to Repeated-Sprint Ability, in the Qatar National Soccer Team. Journal of Sports Sciences. 2014; 32(13).
9. Campbell Donah W. The Relationship of Selected Measures of Physical Performance and Structure to Quality in Collegiate Football, Completed Research in Health, Physical Education and Recreation. 1980; 22.
10. Ciliga D, Petrinovic-Zekan L, Trost T. The Relationship between Anthropometric Indicators and Motor Abilities hi Wheelchair Basketball Players, Croatian Sports Medicine Journal. 2006; 21(1).
11. Alien Philip D, James E Hornak. Measurement and Evaluation in Physical Education. New York: John Willey and Sons, 1979.
12. Warren R Johnson *et al.* Science and Medicine of Exercise of Snorts. New York: Harper and Row Publishers, 1974.