

A Correlation Study between Playing Ability and Selected Anthropometrical Variables among College level Volleyball Players

Upendra Singh^{1*}, Dr. Divesh Chaudhary²

1 Research Scholar, Department of Physical Education, IIMT University, Meerut (U.P.),

India

upendra.tom@gmail.com

2 Professor, Department of Physical Education, IIMT University, Meerut (U.P.), India

Abstract: The objective of the study was to correlation between playing ability and anthropometrical variables among college level volleyball players. Method:- The subjects of the study were 120 intercollegiate volleyball players were selected from different University (Choudhary Charan Singh University, Meerut and Maa Shakumbhari University, Saharanpur) in the state of Uttar Pradesh. The age level of subjects ranged from 18 to 25 years. Before the administration of tests the scholar personally met the team managers of concerned teams and took permission to collect data from their respective teams. After taking permission the scholar visited all the team member and elaborated each test items for anthropometrical variables (thigh girth, calf girth, arm girth relaxed, arm girth flexed & weight). All the subjects were tested after their matches. Three fully qualified experts assessed the players' playing ability during the matches they played. Statistical Techniques:- To find out significant different correlation between playing ability and anthropometrical variables among college level volleyball players, Product moment correlation was computed. Level of significance was set at 0.05 to check for significance. Results and Discussion:- The results revealed that there were significant ($p > .05$) differences in correlation between playing ability and thigh girth, calf girth, arm girth relaxed, arm girth flexed & weight among college level volleyball players.

Keywords: Thigh Girth, Calf Girth, Arm Girth Relaxed, Arm Girth Flexed, Weight, Playing Ability and Players

INTRODUCTION

Volleyball is a popular sport that has a rich and fascinating history, spanning over a century of development and evolution. The sport's roots can be traced back to various games played with a ball and a net, which eventually culminated in the creation of modern volleyball. Let's dive into the lengthy history of volleyball, highlighting its key milestones, influential figures, and how it has grown into the global sport we know today. ^[1]

In India game of Volleyball was introduced more than 70 years back by some Physical Education teachers who went abroad, where training of Volleyball and different games was given. Volleyball was first taken seriously in India by YMCA, College of Physical Education, Madras (T.N.). They trained their students in volleyball and took it to every corner of the country. Volleyball Federation of India was formed in 1951, through which volleyball was promoted and developed throughout the country. Indian Olympic Association (IOA) used to control it before the formation of Volleyball Federation of India (VFI). ^[2]

Anthropometry is used to measure non-invasive quantitative body mass. Anthropometry is used to know and evaluate the actual nutritional status in humans. In pediatrics, this science is also required to evaluate the general health status of children, nutritional adequacy and growth and development of children. Measuring growth and normal growth in children are some of the important parameters, with the help of which the doctor assesses the health and well-being of the child and is also needed to reduce the risk of disease in adults. Anthropometry is used to know the body composition of any adult, so that the current condition of any adult can be detected and treated.^[3]

The correlation between playing ability and anthropometric variables (physical measurements such as height, weight, wingspan, etc.) can vary depending on the sport or activity in question. Anthropometric variables can play a role in determining an individual's potential for success in certain sports, but they are not the sole determinants of playing ability.^[4]

In some sports, such as basketball and volleyball, height can be a significant factor in determining a player's ability to perform certain skills like blocking shots or spiking the ball. Taller individuals may have an advantage in these sports due to their increased reach and ability to cover more ground. However, there are always exceptions, and skill, technique, and athleticism also play vital roles in determining success.

On the other hand, in sports like soccer or basketball, players with shorter stature and lower body weight may have an advantage in terms of agility and speed, allowing them to maneuver more quickly on the field or court.^[5]

METHODOLOGY

The subjects of the study were 120 intercollegiate volleyball players were selected from different University (Choudhary Charan Singh University, Meerut and Maa Shakumbhari University, Saharanpur) in the state of Uttar Pradesh. The age level of subjects ranged from 18 to 25 years. Before the administration of tests the scholar personally met the team managers of concerned teams and took permission to collect data from their respective teams. After taking permission the scholar visited all the team member and elaborated each test items for anthropometrical variables (Thigh Girth, Calf Girth, Arm Girth Relaxed, Arm Girth Flexed, Weight). All the subjects were tested after their matches. Three fully qualified experts assessed the players' playing ability during the matches they played. To find out significant different correlation between playing ability and anthropometrical variables among college level

volleyball players, Product moment correlation was computed. Level of significance was set at 0.05 to check for significance.

RESULT OF THE STUDY

Thigh Girth

To find out thigh girth of intercollegiate volleyball players, descriptive statistics was used and the descriptive analysis is presented in table no.-1.

Table 1: Descriptive statistics in relation to thigh girth of intercollegiate volleyball players

Mean	56.70
Standard Deviation	2.064
Range	12
Minimum	50
Maximum	62

It is evident from the table no.-1, which shows the mean value of thigh girth for intercollegiate volleyball players were 56.70. This table shows the standard deviation value of thigh girth for intercollegiate volleyball players were 2.064. This table shows the range value of thigh girth for intercollegiate volleyball players were 12. Table also reheets that the minimum value of thigh girth for intercollegiate volleyball players were 50. This table shows the maximum value of thigh girth for intercollegiate volleyball players were 62.

To find out relation between thigh girth and intercollegiate volleyball players performance, product moment method of correlation was used and the analysis in presented in table no.-2.

Table 2: Correlation coefficient of relationship between thigh girth and intercollegiate volleyball players performance

Variable	Coefficient of correlation
Thigh Girth	-.027*

Significant value = .05

It is evident from table no.-2 that, significant relationship was found between thigh girth and intercollegiate volleyball players performance, since the calculated coefficient of correlation (-.027) was found lower than the correlation significant value .05.

Calf Girth

To find out calf girth of intercollegiate volleyball players, descriptive statistics was used and the descriptive analysis is presented in table no.-3.

Table 3: Descriptive statistics in relation to calf girth of intercollegiate volleyball players

Mean	31.24
Standard Deviation	2.13
Range	8
Minimum	27
Maximum	35

It is evident from the table no.-3, which shows the mean value of calf girth for intercollegiate volleyball players were 31.24. This table shows the standard deviation value of calf girth for intercollegiate volleyball players were 2.13. This table shows the range value of calf girth for intercollegiate volleyball players were 8. Table also repeats that the minimum value of calf girth for intercollegiate volleyball players were 27. This table shows the maximum value of calf girth for intercollegiate volleyball players were 35.

To find out relation between calf girth and intercollegiate volleyball players performance, product moment method of correlation was used and the analysis is presented in table no.-4.

Table 4: Correlation coefficient of relationship between calf girth and intercollegiate volleyball players performance

Variable	Coefficient of correlation
Calf Girth	.136*

Significant value = .05

It is evident from table no.-4 that, insignificant relationship was found between calf girth and intercollegiate volleyball players performance, since the calculated coefficient of correlation (.136) was found higher than the correlation significant value .05.

Arm Girth Relaxed

To find out arm girth relaxed of intercollegiate volleyball players, descriptive statistics was used and the descriptive analysis is presented in table no.-5.

Table 5: Descriptive statistics in relation to arm girth relaxed of intercollegiate volleyball players

Mean	28.24
Standard Deviation	1.78
Range	7
Minimum	25
Maximum	32

It is evident from the table no.-5, which shows the mean value of arm girth relaxed for intercollegiate volleyball players were 28.24. This table shows the standard deviation value of arm girth relaxed for intercollegiate volleyball players were 1.78. This table shows the range value of arm girth relaxed for intercollegiate volleyball players were 7. Table also repeats that the minimum value of arm girth relaxed for intercollegiate volleyball players were 25. This

table shows the maximum value of arm girth relaxed for intercollegiate volleyball players were 32.

To find out relation between arm girth relaxed and intercollegiate volleyball players performance, product moment method of correlation was used and the analysis is presented in table no.-6.

Table 6: Correlation coefficient of relationship between arm girth relaxed and intercollegiate volleyball players performance

Variable	Coefficient of correlation
Arm Girth Relaxed	.00*

Significant value = .05

It is evident from table no.-6 that, significant relationship was found between arm girth relaxed and intercollegiate volleyball players performance, since the calculated coefficient of correlation (.00) was found lower than the correlation significant value .05.

Arm Girth Flexed

To find out arm girth flexed of intercollegiate volleyball players, descriptive statistics was used and the descriptive analysis is presented in table no.-7.

Table 7: Descriptive statistics in relation to arm girth flexed of intercollegiate volleyball players

Mean	31.01
Standard Deviation	1.32
Range	6
Minimum	29
Maximum	35

It is evident from the table no.-7, which shows the mean value of arm girth flexed for intercollegiate volleyball players were 31.01. This table shows the standard deviation value of

arm girth flexed for intercollegiate volleyball players were 1.32. This table shows the range value of arm girth flexed for intercollegiate volleyball players were 6. Table also repeats that the minimum value of arm girth flexed for intercollegiate volleyball players were 29. This table shows the maximum value of arm girth flexed for intercollegiate volleyball players were 35.

To find out relation between arm girth flexed and intercollegiate volleyball players performance, product moment method of correlation was used and the analysis is presented in table no.-8.

Table 8: Correlation coefficient of relationship between arm girth flexed and intercollegiate volleyball players performance

Variable	Coefficient of correlation
Arm Girth Flexed	-.013*

Significant value = .05

It is evident from table no.-8 that, significant relationship was found between arm girth flexed and intercollegiate volleyball players performance, since the calculated coefficient of correlation (.013) was found lower than the correlation significant value .05.

Weight

To find out weight of intercollegiate volleyball players, descriptive statistics was used and the descriptive analysis is presented in table no.-9.

Table 9: Descriptive statistics in relation to weight of intercollegiate volleyball players

Mean	78.17
Standard Deviation	8.84
Range	42
Minimum	55
Maximum	97

It is evident from the table no.-9, which shows the mean value of weight for intercollegiate volleyball players were 78.17. This table shows the standard deviation value of weight for intercollegiate volleyball players were 8.84. This table shows the range value of weight for intercollegiate volleyball players were 42. Table also reheat that the minimum value of weight for intercollegiate volleyball players were 55. This table shows the maximum value of weight for intercollegiate volleyball players were 97.

To find out relation between weight and intercollegiate volleyball players performance, product moment method of correlation was used and the analysis in presented in table no.-10.

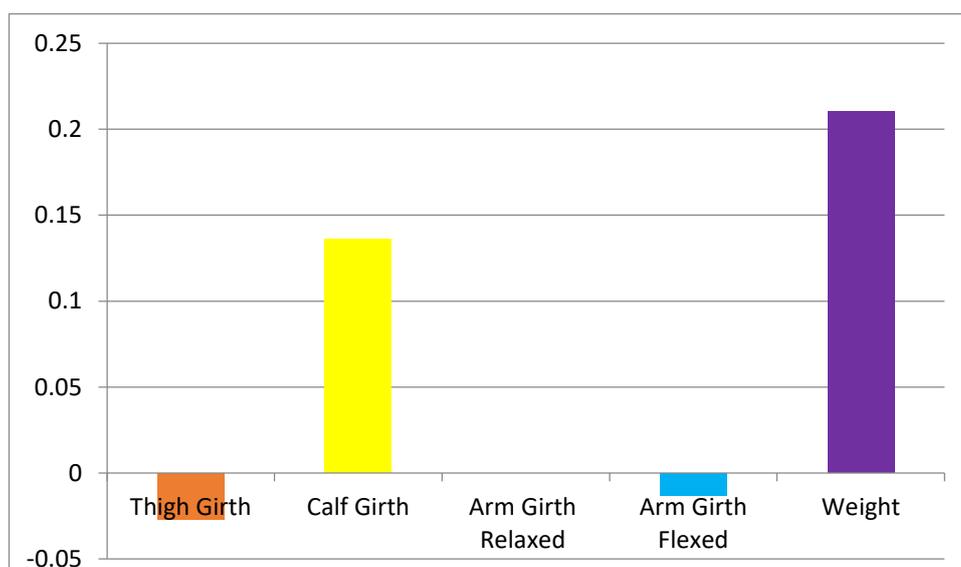
Table 10: Correlation coefficient of relationship between weight and intercollegiate volleyball players performance

Variable	Coefficient of correlation
Weight	.210*

Significant value = .05

It is evident from table no.-10 that, insignificant relationship was found between weight and intercollegiate volleyball players performance, since the calculated coefficient of correlation (.210) was found higher than the correlation significant value .05.

The relationship of anthropometric variables with intercollegiate volleyball players performance has been illustrated in the Figure No.-1.



DISCUSSION OF FINDINGS

This study was conducted by the researcher to know the correlation between playing ability and selected anthropometric variables (thigh girth, calf girth, arm girth relaxed, arm girth flexed and weight) among college level volleyball players. This study can be an eye opener for all those who consider such characteristics as an important factor in sports performance. Anthropometric variables are important for any player to perform well in sports. This concept is essential for almost all sports. Volleyball players also need anthropometric variables to perform well in the game. Which has a direct impact on their sports performance?

The anthropometric variables have a positive relationship with sports performance for volleyball performance, proving that anthropometric variables help the player to perform better in volleyball. The result of the study is supported by **Kathiresan K., Kumar A. Suman & Yokesh R. T. P. (2019)^[6]**, aimed to predict handball performance among Tamil Nadu national players based on key anthropometric and physical ability variables, **Pandey A. K. & et al (2016)^[7]**, investigated the relationship between selected anthropometric variables and volleyball performance among 25 male university-level players, **D. Yuvaraj (2016)^[8]**, conduct a study on effect of aerobic training on selected bio- chemical and anthropometrical variables of college men, **Kaur Loveleen and Dr. Singh Amandeep (2016)^[9]** on topic relationship of motor fitness parameters with performance among 100m female sprinters, **Letona I B. & et al. (2015)^[10]** aimed to identifying talented young soccer players: Conditional, anthropometrical and physiological characteristics as predictors of performance, **Tabrizi H. B. & et al. (2013)^[11]** conduct study comparing the Static and Dynamic Balances and Their Relationship with the Anthropometrical Characteristics in the Athletes of Selected Sports” and **Devaraju K. & Kalidasan R. (2012)^[12]** aimed to “Prediction of Kabaddi Playing Ability from Selected Anthropometrical and Physical Variables among College Level Players.

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