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## Compare selected strength parameters between offensive and defensive volleyball players

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### Abstract

The purpose of the study was to compare selected strength parameter of offensive and defensive volleyball players. The selection of subjects, orientation of the subjects, research design, collection of data and statistical technique used are detailed totally forty college volleyball players – twenty offensive players and twenty defensive players who participated in inter-collegiate level tournaments were selected for this study. The selected subjects were tested to find out their ability in strength using standard tests. Comparisons were made between the scores and the differences were considered as difference in their abilities. Statistical significance were determined through 't' test. In all cases 0.05 level was fixed.

**Keywords:** Strength parameter, Offensive and Defensive Volleyball Players.

### Introduction

Scientific research in the field of physical education and sports is required for a systematic development of physical education and sports. Throughout the world many different games have been played with a ball. In some games players use a part of the body to propel the ball while in other games players play with some equipments such as racquet, bat and stick. Competition in all fields of life especially in the field of physical education and sports have increased so must that one can not excel in sports other without taking any advantage of his own physique. A person is said to be fit from activity only if his structure firms it. Endurance, strength, power, flexibility, agility and speed are important general physical fitness components needed for team games like volleyball, football, hockey, basketball and various other games. The study of physical fitness has an important and valuable place in modern society due to its close relationship to every individual. It is the most important objective of physical education and an essential requirement of human performance. The individuals who are physically fit with proportional and developed body are considered healthy. He has adequate vascular strength for his need and this enables him to perform the activities with a high degree of motor proficiency. The physically fit individuals usually functions with maximum efficiency. The human body is a machine of wonder where complexity is capable of strong and forceful movement. This machine is made up of more than two hundred bones to which are attached more than six hundred muscles <sup>[1]</sup>.

### Game of Volleyball

Volleyball has developed into a highly competitive sport which requires a high level of physical, physiological and psychological fitness. The game at a high level of competition, requires quicker sudden movements and fast reaction. Volleyball matches have no time limit and matches can last for several hours, if the teams are evenly matched.

Successful play in volleyball is not the outcome of power alone but it is the product of the combined display of power and tactical abilities. Modern game of volleyball is characterized by accuracy, concentration and cleverness <sup>[2]</sup>.

Volleyball has changed beyond recognition in the past three decades from an unorganized sport into a highly competitive, requiring a high level of physical fitness, mental alertness and mastery over techniques.

“Volleyball has a great need for volitional qualities, with equal technical and tactical mastery the team whose players show the greatest desire for victory will win <sup>[3]</sup>.”

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### Reasons for selection of the study

As of any game, the volleyball players were broadly classified into two, namely, offensive and defensive. Depending upon their positions, the requirements of strength parameter of these players are bound to differ. The researcher was interested to scientifically find out whether there exists any differences on strength of the offensive and defensive volleyball players.

### Statement of the problem

The purpose of the study is to compare selected strength parameter between offensive and defensive volleyball players.

### Methodology

The purpose of the study was to compare selected strength parameter of offensive and defensive volleyball players. The selection of subjects, orientation of the subjects, research design, collection of data and statistical technique used are detailed.

### Selection of the subject

To achieve this purpose of investigation 20 offensive volleyball players, who served as setters and spikers, and 20 defensive volleyball players who served as blockers and diggers were selected. The subjects were selected from different colleges in Andhra Pradesh, who were participated at inter-collegiate level competitions. The subjects were in the age group of 18 to 22 years.

### Selection of variables

The researcher reviewed the variables scientific literature pertaining to the study from books, journals, periodicals, magazines and research papers, taking into consideration the importance of the variables. For this study the researcher selected the following variables:

1. Leg Explosive strength

### Orientation of subjects

Prior to the test, procedures were explained in detail to the subjects to ensure proper understanding and co-operation so as to obtain reliable data from the subjects. Demonstrations were given in front of the subjects prior to the actual collection of data.

### Research design

Totally forty college volleyball players – twenty offensive players and twenty defensive players who participated in inter-collegiate level tournaments were selected for this study. The selected subjects were tested to find out their ability in strength using standard tests. Comparisons were made between the scores and the differences were considered as difference in their abilities. Statistical significance were determined through 't' test. In all cases 0.05 level was fixed.

### Reliability of data

The reliability of data was ensured by establishing the instrument reliability, tester's competency and subject reliability.

### Instrument Reliability

Standardized equipments, stop watch, tape were used to measure the leg strength of the subjects. The instruments were compared with standard ones and found reliable.

### Tester's Competency

Reliability was established by the test-retest processes. Ten students were tested on selected variables. The repeated

measurement of individuals on the same test is done to determine reliability. It is a univariate not a bivariate situation, it makes sense then to use a univariate statistics like the intraclass correlation coefficient.

The intraclass correlation coefficient obtained for test-retest data are presented in Table I.

**Table 1:** Intra Class Correlation Coefficient of Test – Retest Scores

S. No	Variables	Coefficient of Correlation
1	Leg Explosive Strength	0.82*

\* Significant at 0.05 level

### Subjects reliability

The intraclass correlation value of the above test and retest also indicated subject reliability as the same subjects were used under similar conditions by the same tester. The coefficient of reliability were significant at 0.05 level, for the above test under investigation.

### Collection of data

A study was conducted to compare the leg strength among offensive and defensive volleyball players. For this purpose the research scholar followed the following procedure.

### Test administration

#### Leg explosive strength – vertical jump

**Purpose:-**To measure the leg power.

**Equipments:-**A measuring tape and a smooth wall surface at least 12 feet from the floor are required.

**Description:** The performer stood with one side towards a wall heels together kept on the floor, he reached upward as high as possible and made a mark on the wall. The performer then jumped as high as possible and made another mark at the peak height of their jumped and arched.

**Score:** The score was the vertical distance between the reach and jump and reached marks recorded in centimeters.

**Statistical procedure:** To find out the mean from ungrouped data, the formula explained by Clarke and Clarke was used [4].

$$M = \frac{\Sigma X}{N}$$

Where N = Total Number of scores  
 $\Sigma X$  = Summation of raw scores

The standard deviation was calculated directly from raw scores by the formula given by Clarke and Clarke.

$$SD = \sqrt{\frac{\Sigma X^2}{N} - M^2}$$

Where SD = Standard deviation  
 $\Sigma X^2$  = Sum of squared deviation from the mean  
 N = Total number of subjects.

To compute the standard error of the mean the following formula suggested by Clarke and Clarke was used:

$$\sigma_{DM} = \sqrt{\frac{M_1^2 + M_2^2}{N}}$$

where  $\sigma_{DM}$  = Standard Error of the Difference between the means.

$M_1^2$  = Square of standard error of the mean1  
 $M_2^2$  = Square of standard error of the mean2

The standard error of the mean was calculated by the formulae stated by Clarke and Clarke.

$$SE = SD / \sqrt{N}$$

Where SE = Standard Error of the mean  
 SD = Standard Deviation  
 $\sqrt{N}$  = Root of total number of scores

The 't' ratio of mean was found by the formula given by Clarke and Clarke.

$$t = DM / \sigma DM$$

where DM = Difference between means  
 $\sigma DM$  = Standard Error of the difference between means.

**Results and discussions**

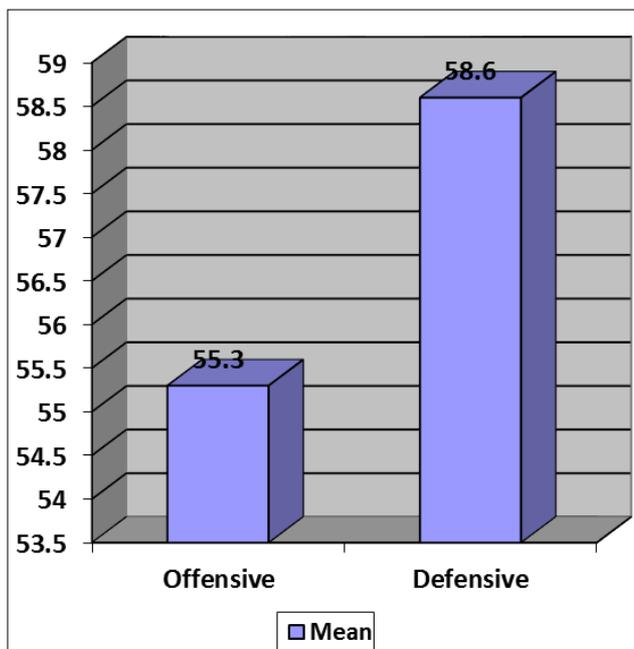
**Table 2:** Showing Mean, Mean Difference, Standard Deviation and Obtained 't' value between Offensive and Defensive Volleyball players on Explosive strength

Group	Mean	MD	SD	SDM	't'
Offensive	55.30		7.79		
Defensive	58.60	3.30	9.98	3.27	1.01

Required table value for df 1,19 = 1.73  
 Not Significant

The results presented in Table I proved that the average explosive strength of the offensive volleyball players was 55.30 and the defensive players was 58.60 with mean difference of 3.30. The obtained 't' value of 1.01 proved to be insignificant at the obtained value was less than the required table value of 1.73 to be significant at 0.05 level. Hence, it was proved that there was no significant difference between offensive and defensive volleyball players in explosive strength.

The obtained mean values were presented through bar diagram for better understanding of the results in Figure 1.



**Fig 1:** Bar Diagram Showing Mean values on Explosive strength of the Offensive and Defensive Volleyball Players

**Discussions on findings**

As of any game, the volleyball players were broadly classified into two, namely, offensive and defensive. Depending upon

their positions, the requirements of strength parameters of these players are bound to differ. In this study, the researcher was interested to scientifically find out whether there exists any difference on strength of the offensive and defensive volleyball players.

The obtained results presented in Table I proved that there was no significant difference in volleyball offensive and defensive players and there was no significant difference in explosive strength between volleyball offensive and defensive players.

The study proved that in volleyball while a attacker jumped with speed the defender also need to jump up and block the ball as such there was no significant difference between these players.

**Conclusions**

Within the limitations and delimitations of the study, the following conclusions were drawn:

1. Both offensive and defensive players possess adequate explosive power as assessed in this study.
2. It was concluded that there was no significant difference in offensive and defensive players in volleyball.
3. It was concluded that there was no significant difference in explosive power between offensive and defensive player in volleyball.

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