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## A comparative study of explosive strength among volleyball and basketball intercollegiate players

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### Abstract

Purpose of the study was to compare the explosive strength of CCS University intercollegiate basketball and volley ballplayers. For this purpose a total 40 subjects (N=20 from respective game) age between of 18-25years were selected as the subject for the study. The collected data on explosive strength were analysed through descriptive statistics, independent t-test at the level of confidence 0.05. No significance difference was found in explosive strength among male basketball and volleyball intercollegiate. On the basis of the results and findings it was concluded that both players have similar level of explosive strength at intercollegiate level.

**Keywords:** Explosive strength, basketball, volleyball, intercollegiate

### Introduction

Court games are small, fast-paced games requiring high running, manoeuvring ability, and agility to gain good court position and compete with opponents (Thomas 1972) <sup>[14]</sup>. Volleyball, on the other hand, is fast-paced and requires motor qualities like speed, explosive power, agility, quickness, and muscular endurance. Participation in systematic programs of training can lead to desirable changes in physical and physiological variables, such as strength, speed, endurance, and resting pulse rate, blood pressure, and hemoglobin (Dhake, 2017) <sup>[2]</sup>.

Muscular strength is crucial for an individual's functional capacity and is often emphasized in sports medicine (Shukla, *et al.*, 2020) <sup>[11]</sup>. It improves performance, prevents injuries, and aids rehabilitation. Muscular strength is defined as the ability to exert force on an external object or resistance Further, Garcia-Hermoso, *et al.* (2018) <sup>[3]</sup>; Pavasini, *et al.* (2019) <sup>[6]</sup>; and Turusheva, *et al.* (2017) <sup>[15]</sup>. Studies show older individuals have greater muscle strength than younger adults, which is linked to better health and independent living, contributing to a higher quality of life (Stone, 1993) <sup>[12]</sup>. Strength can be defined as maximal strength, which refers to the maximum muscular force a muscle or group of muscles can generate under specific conditions, and explosive strength, which is demonstrated over a short period, like a jump (Verkhoshansky and Siff, 2004; and Santos-Garca, *et al.* 2008) <sup>[16, 10]</sup>. High strength is crucial for success in sports, requiring rapid force production. Generating maximum power enhances athletic performance, and jumping, sprinting, and agility performance are associated with maximum power generation (Baker *et al.*, 2001; and McBride *et al.*, 2005) <sup>[1, 5]</sup>.

### Purpose

The purpose of the study was to compare the explosive strength of male basketball and volleyball intercollegiate players of CCS University, Meerut.

### Hypotheses

It was hypothesized that there will be no significant difference between male basketball and volleyball intercollegiate players of CCS University, Meerut on their explosive strength.

### Selection of subject

Total 40 male subjects (i.e., N=20 in each group) were selected from CCS University, Meerut. The age of subjects ranged between 18-25 years. Further, simple random sampling technique was applied in selection of subjects.

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## Selection of Variables

**Dependent Variable:** Explosive strength

**Independent Variable:** Basketball and volleyball intercollegiate players

## Criterion Measures

Vertical jump Test was used to assess the explosive strength of the subjects and score was recorded in centimetres.

## Administration of Test

### Vertical Jump (Sergeant Jump) Test

**Purpose:** To measure the explosive power ability

**Tool:** wall, powder, steel-tape

**Procedure:** The athlete stands side on to a wall and reaches up with the hand closest to the wall. Keeping the feet flat on the ground, the point of the fingertips is marked or recorded. The athlete then stands away from the wall, and leaps vertically as high as possible using both arms and legs to assist in projecting the body upwards. Attempt to touch the wall at the highest point of the jump. The difference in distance between the standing reach height and the jump height is the score. The best of three attempts is recorded.

**Scoring:** The jump height is usually recorded as a distance score vertical jump technique was recorded in centimetre as score.

## Collection of data

Data on explosive strength were taken with the permission of

the authorities. Further, the data on explosive strength variables were collected in a structured manner by considering the subject's engagement in the university.

## Statistical Technique

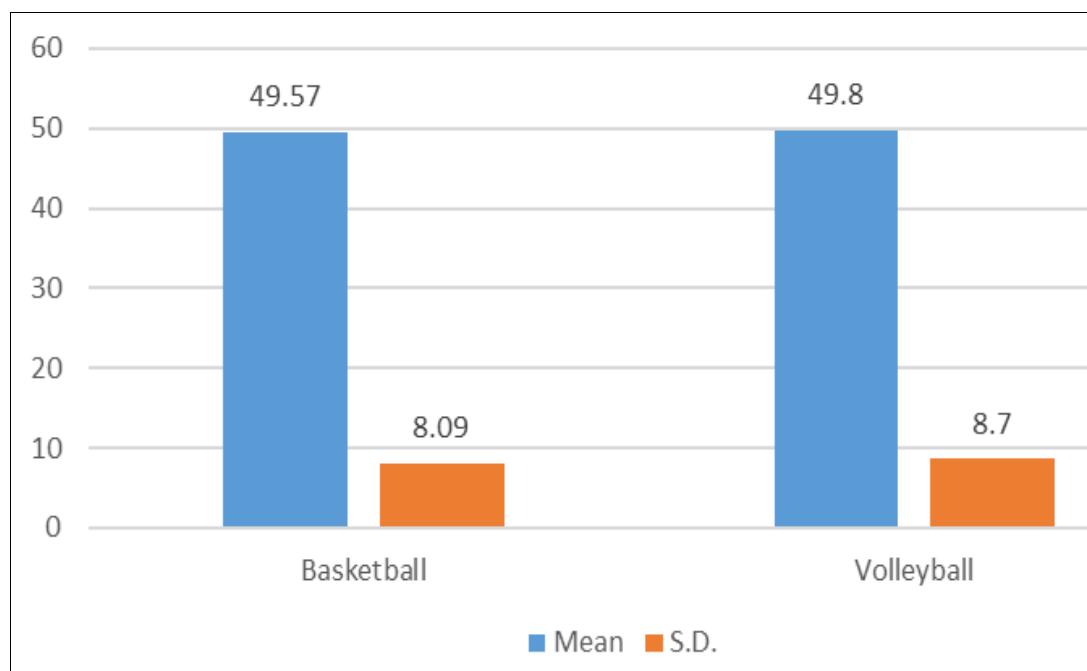
Descriptive statistics, t-test were applied for the analysis of the selected physical fitness variables between basketball and volleyball intercollegiate male players and the level of significance was set at 0.05 level respectively.

**Table 1:** Analysis of explosive strength between basketball and volleyball intercollegiate players of CCS University, Meerut

Variable	Group	Mean	SD	Degree of Freedom	T-Ratio	Sig. Value
Agility	Basketball	49.57	8.09	38	-0.09	0.77
	Volleyball	49.80	8.70			

N=40, Level of significance= 0.05

Table 1, exhibits the Mean  $\pm$  Std. Deviation of Explosive Strength (Vertical Jump) of male basketball players from CCS University, Meerut at intercollegiate level was (49.57 $\pm$ 8.09 cm) and Explosive Strength (Vertical Jump) of male volleyball players from CCS University, Meerut at intercollegiate level was (49.80 $\pm$ 8.70 cm). Further, table-1 also indicates the no significant difference among the basketball and volleyball players of CCS University, Meerut at intercollegiate level as the obtained P-Value (0.77) is higher than 0.05 (T=-0.09, P>0.05) at 0.05 level of significance. Further, the graphical representation of selected physical fitness variables i.e., agility of basketball and volleyball intercollegiate players are shown in Figure 1.



**Fig 1:** Graphical representation of mean of explosive strength between male basketball and volleyball intercollegiate players of CCS University, Meerut

## Discussion of findings

This study was conducted to compare the explosive strength between male basketball and volleyball players from CCS University at intercollegiate level. Further, from table no – 1 the findings of the descriptive analysis were reveals that volleyball intercollegiate players have greater mean value on explosive strength than basketball players. Moreover, table no – 1 were also reveals the analysis of independent t- test and no significance difference were found among male basketball

and volleyball intercollegiate players of CCS University, Meerut on selected physical fitness variables explosive strength at 0.05 level of confidence. This insignificant difference in explosive strength among basketball and volleyball players of present study was due to the similarity in nature and activities of these games. Further, similar level of participation of the subjects of both games i.e. basketball and volleyball at intercollegiate level could be another reason for this insignificant difference in explosive strength. However,

these findings were also supported by Mane and Jyoti (2018)<sup>[4]</sup>, who founded insignificant difference among basketball and volleyball female players on their explosive strength. Moreover, Dhake (2017)<sup>[2]</sup> also founded similarities in explosive strength among basketball and volleyball players. Additionally, Rani *et al* (2012)<sup>[8]</sup>; Rani *et al* (2013)<sup>[9]</sup>; Ramkumar (2014)<sup>[7]</sup>; and Thakur and Pandey (2016)<sup>[13]</sup> also concluded an insignificant difference in explosive strength between basketball and volleyball intercollegiate players.

### Conclusion

The result of the study shows the insignificant difference between male basketball and volleyball players of CCS University, Meerut at intercollegiate level. Further, it was concluded that both game players have similar vertical explosive strength at intercollegiate level.

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