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## Relationship between body weight and spiking ability in Volleyball

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### Abstract

The present study assessed that 'Body weight' (anthropometric measurement) and spiking ability's relation in Volleyball and what the relationship between body weight and spiking ability. Ten University level Volleyball players were taken and measurements their body weight and subjects were evaluated through Bosco Ergo Jump test for measuring the jumping ability for spiking. The result indicates that body weight were positively co-related with all Volleyball spiking abilities test.

**Keywords:** Volleyball, anthropometry and spiking

### Introduction

#### Anthropometry and spiking

Anthropometry simply means "measurement of people". The word is derived from the Greek 'anthros' meaning man, and 'metron' meaning measure. More formally it is the study of the size, shape and strength of the human body, including, mass, volumes, mobility, proportions, centers of gravity, and inertial properties of the whole body and body segments. Anthropometrics is the practice of anthropometry and involves the collection, analysis and application of anthropometric data.

It is the measurement of the size and proportions of the human body, It is a term which refers quantitative measurements of the human body. Numerous measurements of the body can be taken, ranging from bone density scans to height measurements. For spiking good anthropometry characters is require. For example body weight, standing height, arm length, leg length, etc.

### Method

Ten university level volleyball players were selected conveniently, and the players were from Visva-Bharati University. The age range of the subject was 20-28 years. Their mean height was 175.5cm and mean body weight was 63.7kg. The body mass index of these subject was 20.68 kg/m<sup>2</sup>.

### Criteria measure

In this study the researcher collected data on anthropometric variables and spiking ability of the volleyball players. The anthropometric variables were measure by body weight, standing height and hand raise standing height. The spiking ability was measured by Bosco ergo jump test (Bosco, luhtanen, komi, 1983) <sup>[1]</sup>.

**Anthropometric variables:** It is the measurement of size and proposition of the human body. It is term which refers qualitative measurements of the human body. Limited time available for this project restricted the researcher to confined only one anthropometric variables; body weight.

### Weight

**Purpose:** To measure the weight of the subject.

**Equipment:** Calibrated weighing machine.

**Procedure:** The weight of the subjects was taken with an anthropometric weighing machine.

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The subject wearing a short pant only stood at the center of the machine and the weight was recorded from the indicator needle of the dial.

**Volley ball spiking ability**

Volleyball spiking ability was measured through Bosco ergo jump test (Ciccarone *et al.*). Ergo jump system is a series of jump test for the assessment of muscular mechanics and power developed by Carmelo Bosco (Bosco *et al.* 1983) [1]. The Bosco protocol includes the following jumps, though what is called the Bosco Test may in fact be all, a combination and just one of these tests. All the tests involve a variation of the vertical jump test, though technique differences result in measuring different muscle characteristics. In the Bosco Test there are i) Squat Jump (SJ) - ii) Squat Jump with extra weight (SJ+) - iii) Counter Movement Jump (CMJ) - iv) Abalakov Jump (ABK) - v) Drop Jump (DJ) vi) Repetitive Jump (RJ). Many of these test can be measured using a standard timing mat or other vertical jump test equipment, though there have been systems developed specifically to measure and calculate results of the Bosco Jump Protocol.

**Design**

Test were conducted in the afternoon time of different days with the availability of the volleyball players. The anthropometric data were collected three times and the man was recorded. Where as volleyball spiking ability conducted by Bosco test was also take and three times for each test. But the best performance was taken for the calculation. Then the two data’s namely anthropometric and spiking ability were statistically calculated to for established co-relation, or not.

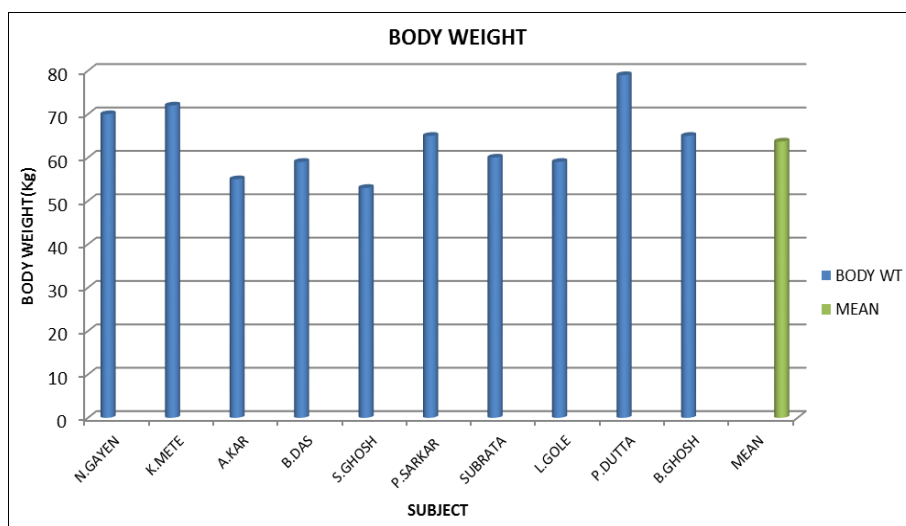
**Statically procedure**

In this study the researcher used mean, S.D for descriptive statistics and calculated co-relation by the help of excel software in the computer.

**Analysis and interpretation of data**

**Body weight**

The mean body weight of 10 volley ball subject was 63.7kg and presented in this graph



**Fig 1:** The mean body weight of 10 volley ball subject was 63.7kg and presented in this graph

**Discussion**

The volleyball in a situational sports classified among activities laying on alternative an aerobic and aerobic process, with an important participation of the muscular mass. The anthropometric characters are very much responsible in this overhead sports activities. The standing height reaching height and body weight players a very important rate in volleyball particularly for jumping ability. In volleyball the basic nature of the game is to spike the overhead ball into the

opponent court and the opponent may resist or block the ball over the net. So, the jumping abilities is very vital in volleyball to win the game. Within the limitation of the present study the researcher tried to collect data about some related anthropometry variables and jumping abilities through Bosco test which essentially influenced the volley ball spiking ability. In the following table the co-relation body weight and volleyball spiking ability were presented for ready references. Body weight and volleyball spiking ability

**Table 1:** Body weight was positively co-related with all volleyball spiking abilities test.

| An anthropometric parameters | Volleyball spiking ability |           |         |           |           |          |           |
|------------------------------|----------------------------|-----------|---------|-----------|-----------|----------|-----------|
|                              | S.J                        | S.J+      | C.M.J   | A.B.K     | D.J(40cm) | DJ(80cm) | R.J       |
| Body Weight                  | 0.772479*                  |           |         |           |           |          |           |
| Body Weight                  |                            | 0.743483* |         |           |           |          |           |
| Body Weight                  |                            |           | 0.7521* |           |           |          |           |
| Body Weight                  |                            |           |         | 0.790769* |           |          |           |
| Body Weight                  |                            |           |         |           | 0.800694* |          |           |
| Body Weight                  |                            |           |         |           |           | 0.70312* |           |
| Body Weight                  |                            |           |         |           |           |          | 0.746945* |

\*=significant

**Conclusion**

After reviewing the scientific data on anthropometric and spiking ability. The researcher formulated his project topic. After collecting the data and compare it with other leading researchers result. The following conclusion were drawn: The body weight was found positively co-related with all the jumping measures. Here muscle mass may be a factor.

**References**

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