

## **A Study on Correlation between Accuracy and Anthropometric Variables of Tennis Players**

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### **ABSTRACT**

This study was undertaken at Rohtak on state level tennis players. Fifteen players randomly selected and their anthropometric variables such as height and arm length were measured with the help of standardized devices. The accuracy was found by seeing the percentage of getting success in the first serve during the competition. The collected data were statistically analyzed by using Pearson Product Moment Correlation. The following findings were drawn after the statistical treatment. There was very low negative correlation between the height and accuracy in the first serve. There was also very low negative correlation between the Arm Length and accuracy in the first serve and there was very low positive correlation between the Arm Length and height of state level Tennis players.

### **INTRODUCTION**

Success in tennis requires a mix of player talent, good coaching, appropriate equipment, and an understanding of those aspects of sport science pertinent to the game. Success in tennis is greatly affected by the technique a player uses and biomechanics plays an integral role in stroke production. Successful professional tennis players are generally above average in height because they have better reach. The extra height and arm length gives them an advantage when: 1. opponents want to hit the ball around the player (I.e. make a passing shot). 2. The height provides a better angle to whack a serve into to tennis court to start playing a point.

Anthropometry, is a term coined by the naturalist Georges Cuvier, means the measurement of man, and is used by physical anthropologist for the comparison of man to other primates. Another use of anemometry is to determine relationship between body structure and motor performance (Clarke & Clarke, 1980). Anthropometry consists of making external measurements of the human body. These measurements may be either objective by using special instrument such as calipers or subjective by using a list of characteristics or a description of

categories to guide judgments. The results can be used to appraise body build includes the size and proportions of the individual whereas nutritional status refers to the relationship in development between skeletal, relationship, adipose and muscular tissues. The posture refers the symmetry of the body and its parts (**Meyer R. Carlton, 1974**).

Body size and composition is often rated very low in importance for tennis players, however it's role is not insignificant. Tall players with a good arm length can reach more areas of the court with ease. We have listed the height of all Wimbledon champions over time, and have shown that their average height has increased. It is useful to measure Height and Arm Span in tennis players.

**Sanz David, Munoz & et al (2007)** had carried out some research and studied the anthropometric characteristics, body composition and somatotype of elite male and female junior tennis players, to compare the anthropometric data, body composition and somatotype of the first 12 elite junior tennis players on the ranking with the lower ranked players, and to establish an anthropometric profile chart for elite junior tennis players. When comparing the first 12 and the lower ranked elite junior tennis players of both genders, no significant differences were observed in any measured item for the boys. By contrast, significant differences were observed in height and humeral and femoral breadths between the first 12 and the lower ranked girls, whereby the first 12 were taller and had wider humeral and femoral breadths than the lower ranked players. These differences could influence the playing style of junior female players.

Accuracy is the ability of the individual to control voluntary movements toward an object (**Yobu A., 1988**). Tennis players have to control their movements while they take first serve. The accuracy may collapse enormous speed given to the ball. Hence, getting success in the first serve is somewhat difficult than that of second serve. Here an attempt was taken to find out the relationship between anthropometric variables and accuracy in the first serve of university Tennis player.

Most studies analyzing tennis strokes have focused on the biomechanical aspects of the player's movement and influence of racket characteristics (**Akutagawa S, 2005**) (**Knudson D, 1999**). In addition, several studies (**Bonato M, 2015**) have examined the influence of anthropometric characteristics in ball speed and accuracy, mainly during the serve. Results of these studies (**Cross R, 2009**) appear to indicate that height plays a determining role in both

variables during the serve. Theoretically, taller players can achieve higher ball impact height, allowing them to serve at a higher speed than smaller players with the same probability of a successful serve (Vaverka F, 2013). In this connection, significant positive relationships between height and ball speed during the serve have been observed in professional tennis players.

## **METHODOLOGY**

This study was undertaken at the State level Tennis players of Rohtak District. The players were selected on the basis of age between fifteen and twenty. Fifteen tennis players were found suitable and they were tested accuracy in the first serve, height and arm length were found by using standardized studio meter and a steel tape. These measurements were made by the same person to minimize the error in measurement.

The collected data were statistically analyzed by using product moment correlation (Khan and Khanum ,1994).

## **FINDINGS**

**Table showing correlation coefficient between anthropometric variables and accuracy**

<b>Sr. No.</b>	<b>Variables</b>	<b>Correlation Coefficient</b>
<b>1</b>	Accuracy in first serve Vs. Height	-0.008
<b>2</b>	Accuracy in first serve Vs. Arm Length	-0.039
<b>3</b>	Height Vs. Arm Length	+0.015

Table shows that there is a very low negative correlation among height and accuracy in first serve (-0.008). There is also very low negative correlation between arm length and accuracy in first serve (-0.039). Table further shows that there is a low positive correlation between height and arm length (+0.015) of state level tennis players.

## **Discussion**

The results obtained from the study showed that there is very less negative correlation between accuracy in first serve and height and accuracy in first serve and arm length of selected tennis players. Hence, as per results obtained from this study, the height and arm length of State level tennis player influence in getting success in first serve. This might to be because of their ability to control over the voluntary movements on a specific target (**Yobu, 1988**). So, the tennis player may be trained such a way that they should be given more importance to skill acquisition rather than anthropometric.

It is quite natural that there was a low positive correlation between height and arm length of state level tennis player

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