

# An Investigation of Selected Anthropometric Measurements and Physical Fitness Components with Relationship of Volleyball Playing Ability

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## Abstract

The study aimed to An investigation of selected Anthropometric Measurements and Physical Fitness components with Relationship of Volleyball Playing Ability. The players with minimum inter collegiate level participation from kuvempu University in Volleyball players age ranging between 18-25 years were selected to act as subject for the study. AAHPER Fitness Test and Brady Volleyball Playing Ability Test were used for the collection of the data. i.e., in Anthropometric Measurements, Body Height was measured by stadiometer and the score was measured in cm., Arm Length were measured by gullick tape and scores was recorded in cm, Leg length was measured by gullick tape and scores was recorded in cm. For selected Physical Fitness Variables, Pull ups was used to measure arm and shoulder strength, One point for each correct pull up, Shuttle run was used to measured agility and the scores was recorded in second, Standing Broad Jump was used to measure explosive strength and the score was recorded in mt and cm , for Playing Ability, Brady Volleyball Test for playing ability was used. An investigation of selected Anthropometric Measurements and Physical Fitness components with Relationship of Volleyball Playing Ability, the Pearson's product moment correlation was used.

Keywords: Anthropometric Measurements, AAHPER Fitness Test, Brady Volleyball Playing Ability Test.

## Introduction

Physical Education and sports have now become an integral part of the educational process as it prepares an individual for real life (Charles, 1983). It has received worldwide recognition when in 1978 UNESCO charter clearly gave great importance and held that it should be treated as one of the Fundamental Human Right by the national governments (Sharma, 1981). Increased participation in sports has resulted in competition which has become an important element of modern life. Competition provides the means by which one can show one's worth by competing successfully. For top level performance, it is very important to spot, select and nurture a budding sportsman as it is recognized by all that athletes must possess some inherent qualities, which can be developed by means of systematized and scientific training (Frost, 1971).

Physical Education, sports and physical fitness are interrelated terms. One of the significant aim of every physical education and sports programme is to develop physical fitness meant merely muscular strength. This concept of fitness has also undergone a change, now a new concept of "Total fitness means that state which characteristic the degree which the person is able to function. In the field of Physical Education one of the objective of testing and measuring is to place a proper person in to a proper activity and thus to avoid misfit as far as possible consequently to decide what factors are needed for an activity in the purpose of the activity analysis, where as to decide factors are present in the individual in the purpose of personal analysis. Thus there is an attempt to find same type of relationship.

Anthropometry is the oldest type of body measurement used dating back to the beginning of recorded history. The concepts of the ideal proportion varied of time. In United States Anthropometry measurement was the first type of measurement to be used, generally in Physical Education. On the theory that exercise should be prescribed to affect muscle size emphasis was placed upon body symmetry and proportion. Anthropometry simple stated consists of making external measurements to human body. These measurements may be either objective or subjective. Commonly used is associating Physical Performance with body build Physical fitness is very desirable quality to possess. However physical fitness can be defined many ways and several components of physical fitness have been identified. The following question needs to be asked "fitness for what?". Does the student desire physical fitness that will contribute to general health or does he or she want physical fitness that will ensure outstanding performance in some particular sports. The qualities that make up both health related physical fitness and performance are largely the same. However some of the qualities may need to be developed to a greater extent in performance related physical fitness.

Volleyball which is an excellent around team sport has been widely accepted as a highly competitive as well as a recreational game throughout the world. It is now recognized as one of the most breath taking and dramatic sport of the Olympics both from the viewpoint of players and spectators. There are many sports which a person can choose from one such sport is Volleyball which is a very popular modern indoor and outdoor game with fast and quick action.

William G. Morgan, an instructor at the Young Men's Christian Association (YMCA) in Holyoke, Massachusetts invented Volleyball in 1895. The game was designed to include the aspects of Baseball, Basketball and Tennis. As a highly competitive sport, volleyball arrived on the international level relatively late in the late 1950's. The International Olympic Committee (IOC) designated Volleyball as an Olympic Sport in 1957, and included in the 1964 Olympic Games in Tokyo.

Federation of International De Volleyball (FIVB) is the largest sports organization in the world with 220 affiliated member countries. The international governing body for the sport, which located in Lausanne, Switzerland, the FIVB organized in 1947.

Volleyball is a game in the true sense of the word. The players have specific responsibilities have to man oeuvre a definite, planned and strategic offensive and defensive pattern. Volleyball is a complex game of simple skills. It is played by two teams consisting of 12 players each on a playing court, divided by a net. The object of the game is to send the ball over the net in order to ground it on the opponent's court and to prevent the same effort by the opponent. The Volleyball court is a rectangular field with the size of 18×9 meters. A net of 2.43 m in height in the middle for men. Two teams in the match, as opponents, will exercise various skills and tactics to attack and to defend. In each team there are six players standing in two rows with three players in each.

Volleyball players remain on their own respective sides of the court with a tall net serving as a barrier between the two teams. This basic setup makes Volleyball a unique game and influences the necessary traits required to be a good Volleyball player. Research in the field of sports and games had proved that the future performance of an individual or team could be predicted through the analysis of certain variables, which are found to be the basis for total performance. Among many factors the following variables such as anthropometrical, physical, physiological and skill performance that decide the playing ability of an individual. Unlike many competitive team sports, Volleyball doesn't feature any physical contact between opponents. The game of Volleyball offers opportunities for the development of Strength, endurance, speed, agility, and neuro-muscular skills and immediate action along with many precise educational outcomes. The game of Volleyball requires a conditioning programme, which develops flexibility, muscular strength, power and agility all of which must be integrated to achieve the optimum skill performance from each player. Motor abilities that correspond to all the movements of players before touching the ball and in contact with the ball.

### **Objective of the Study**

The main objective of the study An investigation of selected Anthropometric Measurements and Physical Fitness components with Relationship of Volleyball Playing Ability.

### **Hypothesis of the study**

It was hypothesized that there would be a significant relationship between the selected anthropometrical and physical fitness components with the volleyball playing ability scores.

## Methodology

The players who participated in inter collegiate Volleyball tournament in kuvempu University whose age between 18-25 years were selected. AAHPER Fitness Test and Brady Volleyball Playing Ability Test used for the collection of the data. i.e., in Anthropometric Measurements, Body Height was measured by stadiometer and the score was measured in cm. Arm Length were measured by gullick tape and scores was recorded in cm, Leg length was measured by gullick tape and scores was recorded in cm. For selected Physical Fitness Variables, Pull ups was used to measure arm and shoulder strength, One point for each correct pull up, Shuttle run was used to measured agility and the scores was recorded in second, Standing Broad Jump was used to measure explosive strength and the score was recorded in mt and cm, for Playing Ability Brady Volleyball Test ability was used. To find out the relationship between selected anthropometric measurements and selected physical fitness variables with volleyball playing ability of the players, the product moment method to find the co-efficient of co-relation was applied. .

Table 1: Pearson's Product Moment Correlation between Playing Ability to Different Anthropometric Measurements and Physical Fitness Components

Si no	Variables	'r' value
1	Body Height and volleyball Playing Ability	0.828*
2	Arm Length and volleyball Playing Ability	0.648*
3	Leg Length and volleyball Playing Ability	0.672*
4	Pull-Ups and volleyball Playing Ability	0.874*
5	Shuttle Run and volleyball Playing Ability	0.769*
6	Standing Broad Jump and volleyball Playing Ability	0.856*

\*Significant at 0.05 Tabulated  $r(28) = 0.361$

The results pertaining to the relationship between selected anthropometric measurements and selected physical fitness variables with volleyball playing ability of volleyball players shows that, co-efficient of co-relation between body height and playing ability is 0.82, co-efficient of co-relation between Arm length and playing ability is 0.648, leg length and playing ability is 0.672, Pull-ups and playing ability is 0.874, Shuttle run and playing ability is 0.769 and finally standing broad jump and playing ability is 0.856.

## Conclusions

From the finding of the study of may be concluded that:-

1) Body height, Arm length and leg length were the most significant independent measurements for playing ability in volleyball players.

2) Pull-ups, shuttle run and standing broad jump, were the most significant independent items for playing ability in volleyball players.

3) A combination of the significant independent variables, such as body height, Arm length, Leg length, Pull-ups, Shuttle run, and standing broad was found most valid and reliable for predicting performance in playing ability in volleyball players .

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