# DIFFERENT POSITION-WISE ANALYSIS OF ANTHROPOMETRIC AND PHYSICAL FITNESS VARIABLES AMONG INTER COLLEGIATE MEN VOLLEYBALL PLAYERS

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## ABSTRACT

The purpose of the study was to different position wise analyze of anthropometric and physical fitness variables among inter collegiate men volleyball players. To achieve the purpose of the study 35 attackers, 35 blockers, 25 setters and 12 libero players those who represented for the intercollegiate level Tournament from Manonmaniam Sundaranar University, Tirunelveli and Madurai Kamaraj University, Madurai affiliated colleges in around Tirunelveli, Thoothukudi and Madurai district, Tamilnadu. The selected subjects were divided into four groups Group I consists of 35 attackers, Group II consists of 35 Blockers, Group III consists of 25 setters, and Group IV consists of 12 libero players. Only male volleyball players were selected for this study as participants and their age ranged from18 to 25 years. All the subjects were tested on selected criterion variables. The data pertaining to the variables were examined by using analysis of variance (ANOVA) for each variables to determine the differences if any, among the means. Whenever 'F' ratio was found to be significant, the Scheffe's post-hoc test is used to determine the cell mean differences. The level of significance was fixed at 0.05 level of confidence for all the cases.

Keywords: *Anthropometric arm length, Agility and volleyball*

## Introduction

Sports as an activity offers an opportunity for self-expression, and fulfillment, personal achievement, skill acquisition and demonstration of ability social interaction, enjoyment, good health and well-being. It promotes involvement, integration and responsibility in society and contributes to the development of society, especially when sports activities have become accepted as an integral part of the culture of every society in every nation. (**Matveyer, 1981**)

Anthropometric measurement of body structure is the oldest type of body measurement known dating back to the beginning of recorded history. It was also an early type of testing in physical education. On the theory that exercise should be prescribed to affect muscle size, emphasis was placed upon muscle symmetry and proportion. In the year 1861 Hit Chock and sergeant produced profile charts to reveal how individuals compared with their standards. Sargents chart continued 44 anthropometric measurements as well as number of strength tests. Fifty such tests were recommended by the American association for the advancement of physical education. (**Zeigler and Earle F, 1982**)

## Volleyball

Volleyball is an excellent all-round team-sport, and it has been widely accepted as a highly competitive and recreational game throughout the world. Since its inception in 1895, it has not only developed from a slow moving game into a fast one, but also has become a game of high interest and joy to the players and spectators alike. It is interesting to note that the speed of a powerfully spiked ball in the game of Volleyball is about 45 meters per second, which is much faster than the movement of the ball in most other games. Further, the game offers a wider opportunity for the development of strength, speed, endurance, agility, neuro-muscular skills and coordination of all parts of the body by the actions involved in the game, such as running, jumping, bending, stretching and other movements which call for balance and poise. The game situations demand coordinated teamwork thereby instilling in every player a sense of personal and group responsibility by his individual performance and his ability to combine with the rest of the team. Volleyball, when promoted under sound leadership, brings out and sharpens the qualities of honesty, fair play and sportsmanship in those who participate in it.

Volleyball has an added advantage in being suitable for both sexes, regardless of age and physical ability, as it is highly adaptable. It is a game easy to learn, and since there is no body-contact between opponents, there is little danger of serious injuries. The game requires only a small play area and the equipment needed is within the reach of all income groups. Because of its usefulness to both sexes, there are great opportunities for healthy and sound social contacts among men and women of all races. As a sport, Volleyball has immense recreational and carry-over values and thus meets all the requirements of an ideal form of physical activity. **(Sue Gozansky, 1987)**

## Physical Fitness

The term "Physical" refers to movement, whereas the prefix "bio" is added to illustrate the biological importance of these three abilities. Physical Fitness is one's richest possession. It cannot be purchased. It has to be earned through a daily routine of physical exercises. It is self-evident that the fit citizens are a nation's best assets and weak ones its liabilities. It is therefore the responsibility of every country to promote physical fitness of its citizens because physical fitness is basic requirement for most of the takes to be undertaken by an individual in his daily life. If a person's body is under developed or grows soft or inactive and if he fails to develop physical prowess, he is undermining his capacity for thought and for work, which are of vital importance to one's own life and society in a welfare state.

## Methodology

The purpose of the study was to analyze the anthropometric and physical fitness variables among different position wise volleyball players. To achieve the purpose of the study 35 Attackers, 35 Blockers, 25 Setters and 12 Libero players those who represented for the intercollegiate level tournament from Manonmaniam Sundaranar University, Tirunelveli and Madurai Kamaraj University, Madurai affiliated colleges in around Tirunelveli, Thoothukudi and Madurai district, Tamilnadu. The selected subjects were divided into four groups Group I consists of 35 Attackers, Group II consists of 35 Blockers, Group III consists of 25 Setters, and Group IV consists of 12 Libero players. Only male volleyball players were selected as participants subjects were tested on the selected variables.

**Statistical technique**

        The selected subjects were divided into four groups Group I consists of 35 Attackers, Group II consists of 35 Blockers, Group III consists of 25 Setters, and Group IV consists of 12 Libero players. Only male volleyball players were selected as participants subjects were tested on the selected variables. The data pertaining to the variables were examined by using analysis of variance (ANOVA) for each variables to determine the differences if any, among the means. Whenever 'F' ratio was found to be significant, the Scheffe's test was used as post-hoc test to determine the cell mean differences. The level of significance was fixed at .05 level of confidence for all the cases.

**Analysis of the data**

**Agility**

The analysis of variance on the data obtained on Agility of four different groups have been analyzed and presented in Table 1

**Analysis of Variance on Agility among Attackers, Blockers, Setters and Liberos**

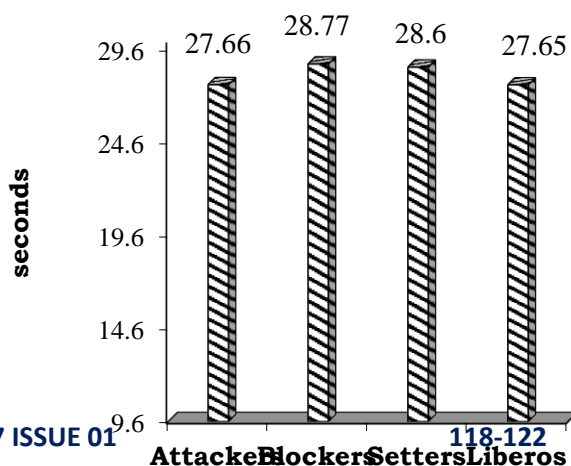| Mean | | | | Sources of Variance | Sum of Square | df | Mean Squares | F-ratio |
|---|---|---|---|---|---|---|---|---|
| Attackers | Blockers | Setters | Liberos | | | | | |
| 27.66 | 28.77 | 28.60 | 27.65 | Between Group | 28.79 | 3 | 9.59 | 1.810 |
| | | | | Within Group | 545.91 | 103 | 5.30 | |

**(Agility scores are in seconds)**

(The table value required for significance at .05 level with degrees of freedom (df) 3 and 103 is 2.68)

        Table -1 show that the mean values of four different groups like Attackers, Blockers, Setters and Liberos are 27.66, 28.77, 28.60 and 27.65 respectively. The obtained F-ratio value is 1.810 which is lesser than the table value 2.68 with df 3 and 103 required for significance at .05 level. Since the value of F-ratio is lesser than the table value, it indicates that there is no significant difference exists among the means of four different groups on Agility.

The Means Values of Attackers, Blockers, Setters and Liberos on Agility are graphically represented in Figure 1.

**Figure 1: Mean Values of Attackers, Blockers, Setters and Liberos on Agility.**

## Arm Length

The analysis of variance on the data obtained on Arm length of four different groups have been analyzed and presented in Table -2

**Analysis of Variance on Arm Length among Attackers, Blockers Setters and Liberos.**

| Mean | | | | Sources of Variance | Sum of Square | df | Mean Squares | F-ratio |
|---|---|---|---|---|---|---|---|---|
| Attackers | Blockers | Setters | Liberos | | | | | |
| 81.26 | 82.94 | 78.28 | 76.92 | Between | 504.59 | 3 | 168.17 | 8.16* |
| | | | | Within | 2122.53 | 103 | 20.61 | |

**(Arm length scores are in Centimeters)**

(The table value required for significance at .05 level with degrees of freedom (df) 3 and 103 is 2.68)

Table -2 shows that the mean values of four different groups like Attackers, Blockers, Setters and Liberos are 81.26, 82.94, 78.28 and 76.92 respectively. The obtained F-ratio value is 8.16 which is greater than the table value 2.68 with df 3 and 103 required for significance at .05 level. Since the value of F-ratio is greater than the table value, it indicates that there is significant difference exists among the means of four different groups on Arm length.

**TO FIND OUT WHICH OF THE FOUR PAIRED MEANS HAD A SIGNIFICANT DIFFERENCE, THE SCHEFFE'S POST-HOC TEST WAS APPLIED AND THE RESULTS ARE PRESENTED IN**

**Table -3**

**Scheffe's Test for the Differences between the Paired Means on Arm Length among Different Groups.**

| Mean values | | | | Mean Differences | Confidential Interval |
|---|---|---|---|---|---|
| Attackers | Blockers | Setters | Liberos | | |
| 81.26 | | | 76.92 | 4.34* | 4.28 |
| 81.26 | 82.94 | | | 1.68 | 3.15 |
| | 82.94 | 78.28 | | 4.66* | 3.41 |
| | | 78.28 | 76.92 | 1.36 | 4.46 |

*Significant at .05 level.

The table-3 shows that the mean difference in arm length between attackers and blockers and setters and liberos are 1.68 and 1.36 which are lesser than the confidence interval value of 3.15, 4.46 at.05 level of confidence. Mean difference in arm length be between attackers and liberos and blockers and setters are 4.34, 4.66 which are greater than the confidence interval value of 4.28, 3.41 at .05 level of confidence. The result of the study indicates that there is significant difference between attackers and liberos, blockers and setters on arm length. However, the mean value of blockers was found to be higher than attackers, setters and liberos

on arm length. The means values of attackers, blockers, setters and liberos on arm length are graphically represented in figure 2.

**Figure -2 Mean Values of Attackers, Blockers, Setters and Liberos on Arm Length.**
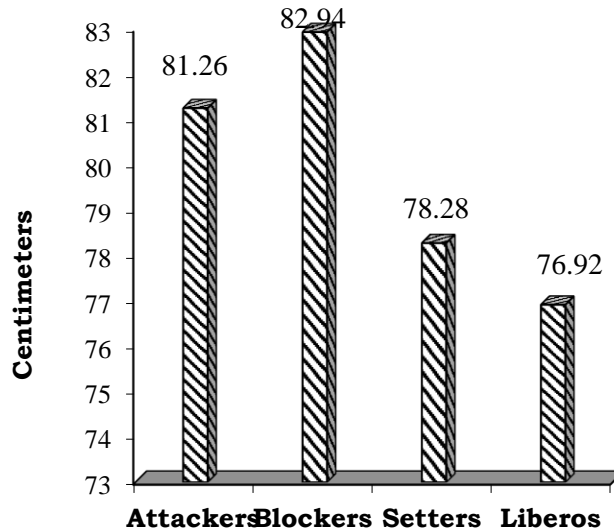


**Discussion on Finding**

The result of the study indicates that there is significant difference among four different volleyball playing positions namely Attackers, Blockers Setters and Liberos. However, Blockers are found to be better than Attackers, Setters and Liberos on Arm Length.

**Conclusions**

From the results of the study, following conclusions were drawn:

1. There is no significant difference among Attackers, Blockers, Setters and Liberos of inter-collegiate volleyball players on Agility.
2. There was significant difference among Attackers, Blockers, Setters and Liberos of inter-collegiate volleyball players on Arm Length.

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