



# Comparative analysis of selected physical fitness variables between army and police volleyball players

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## Abstract

The purpose of the study was to find out whether there was a significant difference in physical fitness levels between Army and Police volleyball players. In order to achieve this purpose, 12 Volleyball players each from Army and Police teams were selected respectively who represented their teams undergoing training in Bangalore. By computation of t-ratio the Army and Police volleyball players were tested for the statistical significance of 2.04 table value. The level of confidence set for the significance was 0.05 level and it has been derived from the results that there was a significant difference in speed, agility and cardio respiratory endurance variables, were the army volleyball players being found superior in speed, meanwhile police volleyball players were superior in agility and cardio respiratory endurance and it was found that there was no significant difference in muscular endurance, flexibility and leg explosive power between the Army and Police volleyball players.

**Keywords:** Volleyball, Army, Police, Speed, Agility, Cardio Respiratory Endurance, Muscular Endurance, Flexibility, Leg Explosive Power.

## Introduction

In the present scenario a great stress has been laid on physical fitness in every country. It is considered as an essential need of all individuals for living effectively and efficiently. So every individual is interested in developing and maintaining their physical fitness.

Physical fitness defined by the president's council of physical fitness and sports is the "ability to carry out daily tasks without vigor and alertness, without undue fatigue and with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies"<sup>1</sup>.

Fitness for any sport consists of a number of inter-related qualities or factors such as speed, flexibility, strength, agility, endurance etc., most of the coaches and physical education teachers are well aware of these components of fitness and work hard to develop these components to attain a good level of fitness in their players<sup>2</sup>. But there are number of sports coaches who ignore to develop or increase these components in their athletes. Games such as volleyball, football, hockey etc., require specific kind of fitness, with different movements and different strategies<sup>3</sup>.

In India the game of Volleyball has been taken up by many public sectors, sports units, organizations, clubs etc, like the Army, Police, Railways, Airlines, Banks and many other state

units. Among all these the Army and Police play a prominent role, by contributing large number of players to the national team. On many occasions it could be seen these two teams fighting for top honors at national level competitions. When roughly observed it can be seen that the game of volleyball is well suited for these two sectors, because the strenuous training which they undergo may directly or indirectly contribute to their improvement of physical fitness. As their main task is to defend the nation from enemies and safe guard the people of the country, they need to be more fit than others. Thus both Army and Police forces utilize physical fitness for performance purpose during the time of peace<sup>4</sup>.

**Statement of the Problem:** The purpose of the study was to find out whether there was a significant difference in physical fitness level between Army and Police Volleyball players.

**Hypothesis:** It was hypothesized that there would be no significant difference in speed performance, leg explosive power, flexibility, cardio-respiratory endurance, muscular endurance and in agility between Army and Police Volleyball players.

## Methodology

The purpose of this study was to find out whether there was a significant difference in physical fitness level between the volleyball players of Army and Police teams.

**Selection of Subjects:** In order to achieve this purpose, 12 Volleyball players each from Army and Police teams were selected respectively who represented their teams undergoing training in Bangalore.

**Selection of variables:** The following selected physical fitness variables (2) were tested for the purpose of this study.

Variables	Tests	Criterion Measures
Speed	30 meters run with flying start	Seconds
Agility	2x10 meters shuttle run	Seconds
Flexibility	Modified sit and reach test	Centimeters
Cardio-respiratory endurance	600 mts run	Seconds
Muscular Endurance	Bent-knee sit ups	Numbers per Minute
Leg Explosive Power	Standing broad jump	Centimeters

**Statistical Procedure:** To analyze the data 't' ratio was computed to determine the significant difference, between paired means.

## Results and discussion

As the purpose of the study was to compare the physical fitness variables of Army and Police Volleyball players, the obtained data was statistically analyzed to assess the significance at 0.05 level of confidence. The required 't' value was obtained from the table for the level of significance. 't'-ratio of 2.04 was needed for significance at 0.05 level of confidence.

The calculated data such as numbers, the means of the two teams, standard deviation, and 't' ratio of selected physical fitness variables i.e speed, agility, Cardio Respiratory Endurance, Muscular Endurance, Flexibility and Leg Explosive Power Volleyball players are as follows

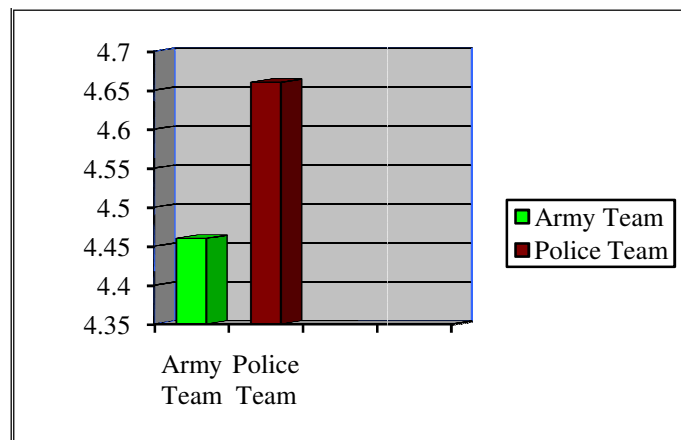
**Speed:** The data pertaining to speed performance between Army and Police Volleyball players were statistically analyzed and the result is presented in Table-1.

**Table-1:** Table showing numbers, mean, standard deviation and 't' value of speed between Army and Police Volleyball players.

Variable: Speed	Nos.	Mean	S.D.	't' value	Level of Significance
Army Team	12	4.46	0.10	2.537	Significant at 0.05 level
Police Team	12	4.66	0.24		

Table-1 reveals that there is a significant difference in speed performance between Army and Police Volleyball players as the obtained 't' value 2.537 is more than the Table value 2.04.

Average speed performance (in Seconds) of Army and Police Volleyball players is graphically represented in Figure-1



**Figure-1:** Average speed performance (in Seconds) of Army and Police Volleyball players is graphically.

**Agility:** The data pertaining to agility performance between Army and Police Volleyball players were statistically analyzed and the result is presented in Table-2.

**Table-2:** Table showing numbers, mean, standard deviation and 't' value of agility between Army and Police Volleyball players.

Variable: Agility	Nos.	Mean	S.D.	't' value	Level of Significance
Army Team	12	4.77	0.21	2.803	Significant at 0.05 level
Police Team	12	4.58	0.10		

Table-2 reveals that there is a significant difference in agility performance between Army and Police Volleyball players as the obtained 't' value 2.803 is more than the Table value 2.04.

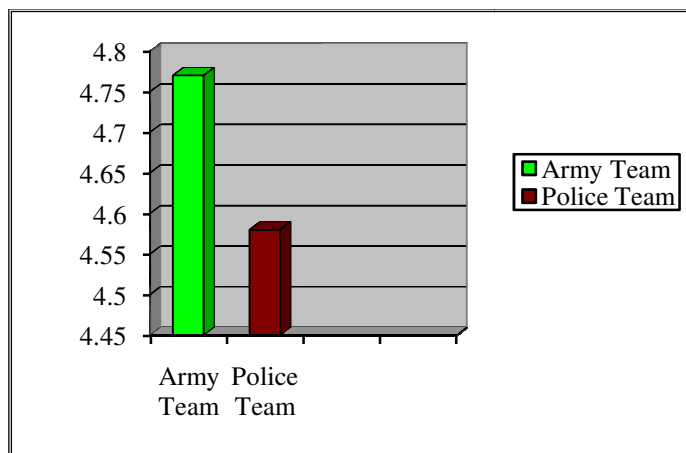
Average agility performance (in Seconds) of Army and Police Volleyball players is graphically represented in Figure-2.

**Cardio Respiratory Endurance (CRE):** The data pertaining to Cardio Respiratory Endurance performance between Army and Police Volleyball players were statistically analyzed and the result is presented in Table-3.

**Table-3:** Table showing numbers, mean, standard deviation and 't' value of Cardio Respiratory Endurance between Army and Police Volleyball players.

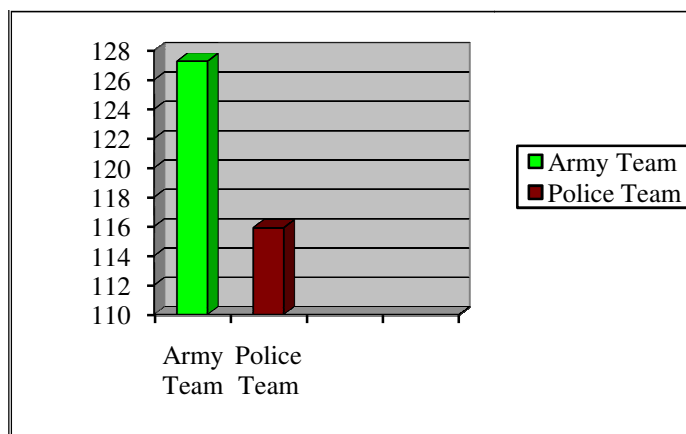
Variable: CRE	Nos.	Mean	S.D.	't' value	Level of Significance
Army Team	12	127.26	4.16	4.482	Significant at 0.05 level
Police Team	12	115.92	7.71		

Table-3 reveals that there is a significant difference in Cardio Respiratory Endurance performance between Army and Police Volleyball players as the obtained 't' value 4.482 is more than the Table value 2.04.



**Figure-2:** Average agility performance (in Seconds) of Army and Police Volleyball players is graphically.

Average Cardio Respiratory Endurance performance of Army and Police Volleyball players is graphically represented in Figure-3.



**Figure-3:** Average Cardio Respiratory Endurance performance of Army and Police Volleyball players is graphically.

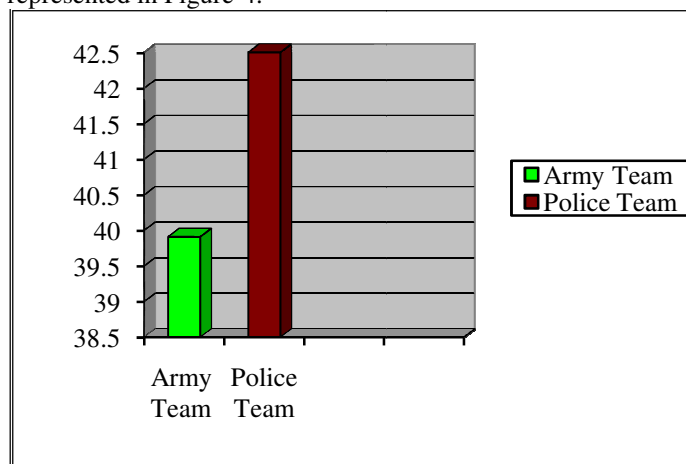
**Muscular Endurance (ME):** The data pertaining to Muscular Endurance performance between Army and Police Volleyball players were statistically analyzed and the result is presented in Table-4.

**Table-4:** Table showing numbers, mean, standard deviation and 't' value of Muscular Endurance between Army and Police Volleyball players.

Variable: ME	Nos.	Mean	S.D.	't' value	Level of Significance
Army Team	12	39.91	6.54	0.907	Not Significant
Police Team	12	42.50	7.39		

Table-4 reveals that there is no significant difference in Muscular Endurance performance between Army and Police Volleyball players as the obtained 't' value 0.907 is less than the Table value 2.04.

Average Muscular Endurance performance (in numbers/minute) of Army and Police Volleyball players is graphically represented in Figure-4.



**Figure-4:** Average Muscular Endurance performance (in numbers/minute) of Army and Police Volleyball players is graphically.

**Flexibility:** The data pertaining to flexibility performance between Army and Police Volleyball players were statistically analyzed and the result is presented in Table-5.

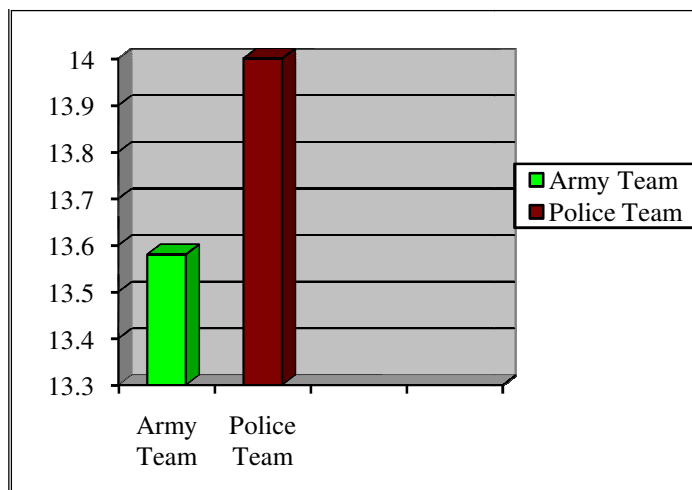
**Table-5:** Table showing numbers, mean, standard deviation and 't' value of Flexibility between Army and Police Volleyball players.

Variable: Flexibility	Nos.	Mean	S.D.	't' value	Level of Significance
Army Team	12	13.58	4.81	0.222	Not Significant
Police Team	12	14.00	4.36		

Table-5 reveals that there is no significant difference in Flexibility performance between Army and Police Volleyball players as the obtained 't' value 0.222 is less than the Table value 2.04.

Average flexibility performance (in centimeters) of Army and Police Volleyball players is graphically represented in Figure-5.

**Leg Explosive Power (LEP):** The data pertaining to Leg Explosive Power performance between Army and Police Volleyball players were statistically analyzed and the result is presented in Table-6.



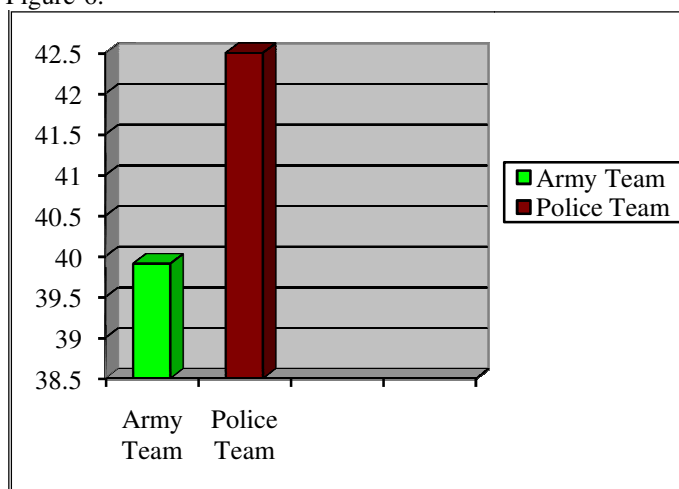
**Figure-5:** Average flexibility performance (in centimeters) of Army and Police Volleyball players is graphically.

**Table-6:** Table showing numbers, mean, standard deviation and 't' value of Leg Explosive Power between Army and Police Volleyball players.

Variable: LEP	Nos.	Mean	S.D.	't' value	Level of Significance
Army Team	12	231.58	10.99	0.017	Not Significant
Police Team	12	231.50	12.85		

Table-6 reveals that there is no significant difference in Leg Explosive Power performance between Army and Police Volleyball players as the obtained 't' value 0.017 is less than the Table value 2.04.

Average leg explosive power performance (in centimeters) of Army and Police Volleyball players is graphically represented in Figure-6.



**Figure-6:** Average leg explosive power performance (in centimeters) of Army and Police Volleyball players.

**Discussion on findings:** i. The Army Volleyball players are superior to Police Volleyball players in speed performance, which might be due to more speed workouts been included in the training schedule of the Army Volleyball team. ii. The Police Volleyball players are superior to Army Volleyball players in agility, which might be due to more agility exercises being practiced by the Police Volleyball team. iii. The Police Volleyball players are better than Army Volleyball players in cardio respiratory endurance, which might be due to the importance given by the Police Volleyball coaches towards improvement of cardio respiratory endurance in their players. iv. No significant difference was found in muscular endurance between Police and Army Volleyball players, which might be due to equal importance given by both the teams towards improvement of muscular endurance, where muscular endurance being the important component for the game of Volleyball. v. No significant difference was found in flexibility between Police and Army Volleyball players, which might be due to equal importance given by both the teams towards improvement of flexibility. vi. No significant difference was found in leg explosive power between Police and Army Volleyball players, which might be due to equal importance given by both the teams towards improvement of leg explosive power, as this component plays a major role in jumping ability of the Volleyball players.

## Conclusion

By computation of t-ratio the Army and Police volleyball players were tested for the statistical significance of 2.04 table value. The level of confidence set for the significance was 0.05 level and it has been derived from the results that there was a significant difference in speed, agility and cardio respiratory endurance variables, where the army volleyball players being found superior in speed, meanwhile police volleyball players were superior in agility and cardio respiratory endurance and it was found that there was no significant difference in muscular endurance, flexibility and leg explosive power between the Army and Police volleyball players.

## References:

1. Clarke H.H. (1971). Basic understanding of physical fitness.. President's Council on Physical Fitness and Sport. Washington, DC, *Physical Fitness Research Digest*, 1(1), 1-10.
2. Mahipal (2016). A Comparative study of selected physical fitness variable among state level athletes and football players of district panipat. *Times International Journal of Research*, 11-15. ISSN 23494867
3. Srikanth R. (2002). Comparative Analysis of selected physical fitness variables among army and police hockey players. (Unpublished M.P.Ed thesis) Bangalore University 2002, 4-5.
4. Srikanth R. and reddy Dr. Muni (2005). Comparative Analysis of selected physical fitness variables among army

- and police Volleyball and Football players. (Unpublished Mphil thesis) Anamalai University, 6-8.
5. Rao Ramachandra N. and Rao Rathnakara R.V.L.N. (2015). Effect of selected physical fitness Components of

Volleyball players in spiking performance at various atmospheric conditions. *Research Journal of Physical Education Sciences*, 3(11), 4-7, ISSN 2320-9011.