

## COMPARATIVE STUDY OF SELECTED PHYSICAL FITNESS AND PHYSIOLOGICAL COMPONENTS BETWEEN VOLLEYBALL AND NON- VOLLEYBALL PLAYERS

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### Abstract

*The purpose of the study was to compare the physical and physiological fitness among Inter-collegiate level volleyball and Non-volleyball players. For this study 15 Volleyball and 15 Non – volleyball players were selected. The age of the players ranged between 18-25 years. The variables undertake for the study are flexibility, endurance, agility, strength, pulse rate, vital capacity and VO<sub>2</sub> Max. Data was analyzed by using t-test independent, level of significance set at 0.05. Analyzed data showed that there is significant difference between volleyball and non-volleyball players in physical variables i.e. flexibility and strength & There is no significant difference between volleyball and non-volleyball players in physical fitness i.e. endurance and agility. Also Analyzed data showed that there was significant difference between volleyball and non-volleyball players in physiological variables i.e. pulse rate, vital capacity, and VO<sub>2</sub> Max.*

**Keywords:** Flexibility, endurance, agility, strength, vital capacity, pulse rate and VO<sub>2</sub> Max.

### Introduction

Sports have become inseparable phenomena of our social life. It has made its own place at the apex of human civilization because of its tribal competition event and ever improving nature. Physical fitness allow individual to do their works vigorously and continuously without any exhaust and have energy leftover to meet any emergency need and enjoy leisure time. Various research studies conducted by experts in physical education and sports have emphasized the

importance of investigating the specific structures, correlated with various sports activities, for the selection and development of talent in sports and for better performance at different levels of sports competitions. There are numerous factors which are responsible for the performance of sportsman. These are physical, mental, technical and tactical. Among them physical abilities are most important.

Physical fitness is a general concept defined in many ways by differing physical educationist as One's ability to perform daily task with efficiency, without undue fatigue and reserve ample energy to enjoy vigorous leisure time activities and unforced emergency. Hare two major categories are considered : Health related fitness associated with disease prevention and functional health, and skill related fitness is the ability to perform during games and sports. Physical fitness is generally achieved through correct nutrition, exercise, hygiene and rest.

Volleyball is one of the most popularly played games in the world. It is the game of power agility as well as speed. Physical fitness is of paramount importance in this game. Hence, the health related aspects play a crucial role in the performance of the players. Volleyball is a dynamic and intermittent team sport consisting of fast and short displacement movements, in which the speed, jumping and changes of direction are integral part of the demands of the game. These demands require well- developed physical conditioning as they are necessary to succeed during volleyball competitions, although the requirements may vary depending on the level of competition of the athletes.

### **Methodology**

Data were collected on two groups of 15 Volleyball and 15 Non- volleyball players. Among them 15 students those who have player at inter-collegiate tournament considered as volleyball players and those who have not played volleyball was considered as non-volleyball player, their ranged from 18 to 25.

**Equipment used for collection of Data:** Following equipment will be used for collection of data:

1. **Agility:** It was measured with 40 yard Shuttle run.
2. **Flexibility:** It was measured with Goniometer or Flexiometer.
3. **Endurance:** It was measured by Harvard Step Test.
4. **Strength:** It was measured by Dynamometer.
5. **Pulse Rate:** Digital Stop watch was used to measure the pulse rate.

6. **Vital Capacity:** It was measured by Peak Flow Meter.
7. **VO<sub>2</sub> Max:** To measure maximum oxygen consumption required for getting energy to the body

### Statistical analysis

The purpose of this study was to find out the diurnal variations on selected physical fitness and physiological variables. The data pertaining to each of the selected physical fitness and physiological variables were examined by the special statistical techniques viz. mean, standard deviation and 't' test. 't' test was applied to check the significant difference between the group. The level of significance was set at 0.05 levels of physical and physiological variables of volleyball and non-volleyball players. The analysis of data collected on selected physical fitness components namely agility, strength, flexibility, Endurance and physiological variables namely pulse rate, vital capacity and VO<sub>2</sub> max during different times of day have been describe.

**Results:** Table 1: Mean and standard deviation of physical components of volleyball and non-volleyball players.

Components	Volleyball players (N=15)		Non-volleyball players (N=15)		t- ratio
	Mean	S.D.	Mean	S.D.	
Agility	18.7	15.0	14.1	6.00	1.103
Flexibility	15.8	5.21	12.5	4.23	1.908*
Endurance	2.23	0.26	2.11	0.17	1.5
Strength	47.4	9.87	40.4	8.36	2.096*

\*significant at 0.05 level

It is evident from table 1 that the mean of volleyball players in physical variable i.e., agility, flexibility, endurance and strength are 18.7 for agility, 15.89 for flexibility, 2.23 for endurance,

47.4 for strength. And in case of non-volleyball players for the physical variables are 14.1 for agility, 12.5 for flexibility, 2.11 for endurance, and 40.4 for strength.

Table 2: Mean and standard deviation of physiological components of volleyball and non-volleyball players.

Components	Volleyball players (N=15)		Non-volleyball players (N=15)		t- ratio
	Mean	S.D.	Mean	S.D.	
Pulse rate	79.9	8.78	72.2	5.20	2.92*
Vital capacity	3.87	0.28	3.12	0.19	8.62*
VO <sub>2</sub> Max	30.97	3.11	27.88	2.99	2.33*

\*significant at 0.05 levels

It is evident from table 2 that the mean of volleyball players in physiological variables are 79.9 for pulse rate, 3.87 for vital capacity and 30.97 for VO<sub>2</sub> Max. And in case of non-volleyball players 72.2 for pulse rate, 3.12 for vital capacity and 27.88 for VO<sub>2</sub> Max.

### Conclusion:

Within the limitations of the study and procedure following conclusion were arrived at: There was significant difference between volleyball and non-volleyball players in physical variables i.e. flexibility and strength. There is no significant difference between volleyball and non-volleyball players in physical fitness i.e. endurance and agility. There was significant difference between volleyball and non-volleyball players in physiological variables i.e. pulse rate, vital capacity, and VO<sub>2</sub> Max. Volleyball player have a muscular physique. Their shoulder strength was determined to be excellent in their upper body. And non-volleyball players, on the other hand, found observed to want a weakened upper body.

**Reference:**

- Sheppard, J.M., & Stangannelli, L.C. (2009). An analysis of playing positions in elite men's volleyball: considerations for competition demands and physiologic characteristics. *The Journal of Strength & Conditioning Research*, 23(6), 1858-1866.  
<https://doi.org/10.1519/JSC.0b013e181b45c6a>
- Thangavel G., Kulothungam p., (2022) Analysis of selected physical and physiological variables highly correlated with playing ability of inter-collegiate level volleyball players. *Journal of Xi'an Shiyou University, Natural Science Edition*. ISSN:1673-064X.  
<http://xisdxjxsu.asia>
- Ghosh M.C., (2017) A comparative study on physical and physiological parameters difference between district men volleyball and Kho-Kho players. *International Journal of Multidisciplinary Research and Development*. ISSN; 2349-4182 ,  
[www.allsubjectjournal.com](http://www.allsubjectjournal.com)
- Govind B.T., Milind V.B. (2013). A Profile of fitness parameters and performance of volleyball players. *Journal of Krishna Institute of Medical Sciences University*, Vol.2, No.2, July – Dec.2013. ISSN 2231-4261

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