



## A Comparative Study of Selected Physiological Dimension between State Level and National Level male Baseball Players

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### Abstract

The present study was carried out to study the physiological dimensions (Vital Capacity, Pulse Rate and Peak Flow) of state level and national level male baseball players. To achieve the objectives of the study thirty (N1-30) state level baseball boys and thirty (N2-30) national level baseball boys were selected randomly as subjects of the study. The age of the subjects ranged between 17-28 years. To determine the significant difference between the mean scores of state level and national level baseball players on selected physiological dimension 't' test was employed with the help of IBM statistical Software version 20. The level of significance was set at 0.05. Results of the study revealed that there were significant differences obtained on physiological dimension (Vital capacity, Pulse Rate and Peak Flow) between State level baseball players and National level baseball players.

**Keywords:** Physiological dimensions, vital capacity, pulse rate, peak flow, baseball.

### Introduction

In the modern field of research the researchers studied morphological, physiological, physical and technical variables of international level players in an attempt to understand the requirements to achieve top level in sports competition. Various effects of practicing sports activities on the composition of the human body and its vital organs attracted much attention of authors based on the basic rule on which the physiological and physical efficiency are built. Studying functional and physiological aspects recently represents an important side of the scientists' studies to identify the changes that happen under the effects of practicing various sports and physical activities. Studying the physical compositions and physiological capabilities variables of the baseball players served to give information concerning the physical and physiological capabilities of the players, which contributes to the guidance and the rationalization of selecting baseball players and beginners as well as the good basis for targeted practicing. To achieve this goal, the research aims at identifying the effect of the training program on the Vital Capacity, Pulse Rate and Peak Flow in the baseball players. Accomplish success in international competition, baseball players must achieve an excellent level of physical fitness and physiological condition during training, Vital Capacity, Pulse Rate and Peak Flow are considered relevant to baseball performance from different competitive levels. The typical differences commonly observed between males and females in the general population are also seen in baseball players when analyzing Vital Capacity, Pulse Rate and Peak Flow. The game of baseball entails throwing, fielding, pitching, catching, base running and hitting. Strength of the shoulder girdle is also necessary for hitting and throwing the

ball. As for strength training, studies have shown those baseball-specific programs can significantly increase batting speed and striking power as well as throwing velocity. Power training (through polymeric or ballistics for example) can increase a baseball player's speed and agility. The baseball is mostly played by the males in the western countries, China, Japan, Korea etc. In India, both male and female players play baseball at school level, college level, university level and national level. An overabundance of research work is available on the physical characteristics of baseball players belonging to different nations<sup>1-5</sup>. However, a negligible literature is available on the physiological dimensions of male baseball players, especially in case of India. Thus, the aim of the present study was to investigate the difference of physiological dimensions (Vital Capacity, Pulse Rate and Peak Flow) between the state level and national level baseball players.

### Methods and Materials

Subjects have been randomly selected for the study. The age ranged from 17-28 years for the subjects, total number of subjects was 60 baseball players from Punjab region. The investigators selected (N1-30) state level and (N2-30) national level baseball male players. In the consultation with experts and considering tester's competency and even feasibility criteria in mind, especially of equipments reliability and time factor, the following physiological dimensions were selected for study namely Vital Capacity, Pulse Rate and Peak Flow.

**Statistical Analysis:** In order to examine the hypothesis of the present study Mean, SD and independent sample t-test were employed to compare the mean scores of state level and

national level baseball players of significance was set at 0.05. the IBM SPSS statistics was used to analyzed the collected data.

**Results and Discussion**

**Results:** The comparison between state level and national level college boys on selected physiological dimensions (Vital Capacity, Pulse Rate and Peak Flow) were statistically analyzed

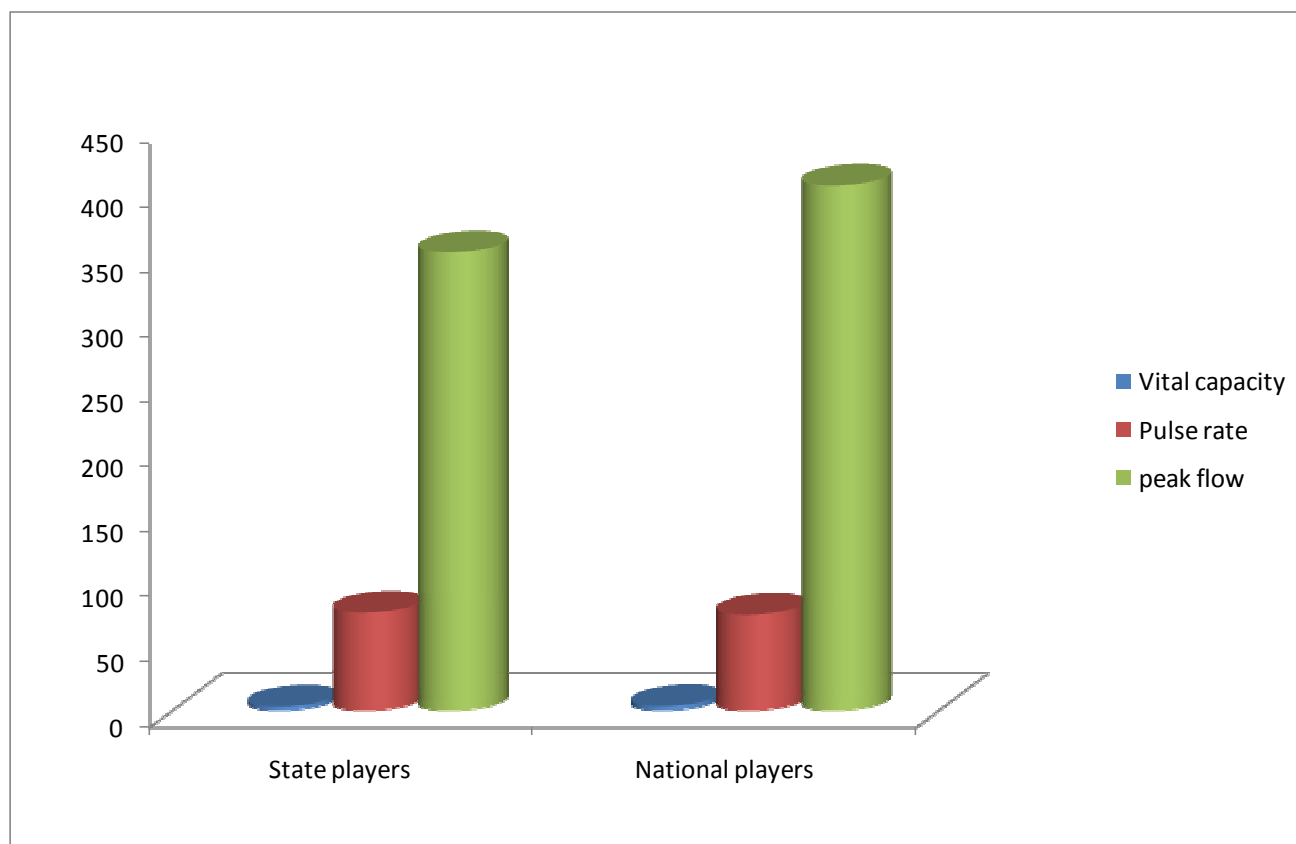
using ‘t’ test. The data pertaining to the same in presented table-1

Table 1: depicts that the mean score of vital capacity of state level and national level baseball players was 3.35 and 3.70, in case of pulse rate the mean scores were 75.80 and 74.26 for state level and national level players, respectively. The mean value of peak flow was 353.63 and 405.13 for state level and national level baseball players

**Table-1**  
**Mean values (±SD) of state level and national level male baseball players.**

Variables	Group	Mean	SD	‘t’ ratio
Vital Capacity	State Level	3.35	0.28	4.458*
	National Level	3.70	0.32	
Pulse Rate	State Level	75.80	2.69	1.903
	National Level	74.26	3.49	
Peak Flow	State Level	353.63	84.90	2.444*
	National Level	405.13	78.14	

Significant at 0.05 levels



**Figure-1**  
 Shows the mean values of Vital Capacity, Pulse Rate and Peak Flow of male baseball players

**Discussion:** The result of 't' value showed significant differences in relation to Vital Capacity, Pulse Rate and Peak Flow between state level baseball players and national level baseball players, where national level baseball players were found superior in the physiological dimensions. Than state level baseball players

### Conclusion

The result concluded that there was a significant were found between state level and national level male baseball players on the account of vital capacity and peak flow, finding of this study suggest that the national level players were significantly players for the long term matches without less fatigue than state level players .than may also had better than state level baseball players

**Practical Applications:** Similar studies can be conducted among females and also in different sports and games to find the physiological dimensions of sports persons. Further this study can be conducted in different sports and games to find the importance of these parameters in the performance of an athlete.

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