



P-ISSN: 2394-1685  
E-ISSN: 2394-1693  
Impact Factor (ISRA): 5.38  
IJPESH 2016; 3(4): 171-173  
© 2016 IJPESH  
www.kheljournal.com  
Received: 01-05-2016  
Accepted: 02-06-2016

**Amandeep Kaur**  
Assistant Professor, Physical  
Education Khalsa College,  
Amritsar, Punjab, India.

**Dr. Daljeet Singh**  
Associate Professor, Physical  
Education Khalsa College,  
Amritsar, Punjab, India.

## Comparative study of physiological characteristics of high and low performance of male cricket players

**Amandeep Kaur and Dr. Daljeet Singh**

### Abstract

The purpose of the study is to compare the physiological characteristics of High and Low Performance of Male cricket Players. In this study total 60 cricketers (30 high performance and 30 low performance) were selected from various colleges affiliated to Guru Nanak Dev University, Amritsar. The age group selected for this study was  $20.14 \pm 1.10$  years. All the participants were informed about aim and methodology of the study and they volunteered to participate in this study. All the participants were assessed for physiological characteristics. Four (04) sub variables were considered i.e. Blood Pressure (Systolic & Diastolic), Vital Capacity, Heart Rate and Resting Breathing Frequency. To find the significant difference t-test was used at the significant level of 0.05. The study revealed that there is significant difference occurred between High and Low Performance of Male cricket Players with regard to Blood Pressure (Systolic & Diastolic), Heart Rate and Resting Breathing Frequency whereas there is no significant difference occurred between High and Low Performance of Male cricket Players in relation to vital capacity.

**Keywords:** High & low performance, blood pressure (systolic & diastolic), vital capacity, heart rate and resting breathing frequency

### 1. Introduction

The Cricket is very famous sports these days in India. In every sport there is a need of specific training. Training has a very pronounced effect on heart rate, even at rest, for example, in highly trained athletes of either sex, resting heart rates may be as low as or lower than 40 beats per minute. In contrast, resting heart rates for untrained but healthy individuals may be as high as 90 beats per minute. A slow resting heart rate is characteristic of the trained individual. It should be pointed out that a relatively slow heart rate, coupled with a relatively large stroke volume, indicates an efficient circulatory system. In combination with other physiological measurements, the vital capacity and resting breathing frequency are important indicator of human performance. Vital capacity is the maximum amount of air a person can expel from the lungs after a maximum inspiration. It is equal to the inspiratory reserve volume plus the tidal volume plus the expiratory reserve volume. A person's vital capacity can be measured by a spirometer which can be a wet or regular spirometer. The normal adult has a vital capacity between 3 and 5 litres whereas participation in sports activity subsequently raises the vital capacity.

Vital capacity and total lung capacity are related to body size and vary approximately as the cube of a linear dimension such as body height, upto the age of 25. The individual dimensions are, however, not exclusively decrease for the size of the lung volumes. The lung volumes are about 10 percent smaller in women than in men of the same age and size. Training during adolescence will eventually increase the vital capacity and total lung capacity. After the age of about 30, the residual volume and functional residual capacity increase and the vital capacity usually decreases (Astrand and Rodahl 1986) [2].

Thus we see that the size, shape and form of the players are known to play a significant role in the performance of sports persons. Numerous factors are responsible for the performance of badminton players. Fundamental skills of cricket like batting, bowling, throwing, catching requires a specific type of physique having specific proportions with certain conditional abilities, depending on physiological variables such as Vital capacity, Heart rate. Blood pressure and resting breathing frequency.

**Correspondence**  
**Amandeep Kaur**  
Assistant Professor, Physical  
Education Khalsa College,  
Amritsar, Punjab, India.

## 2. Methodology

The purpose of the study was to compare the physiological characteristics of High and Low performance cricket players. A group of 60 subjects (30 High performance cricket players and 30 Low performance cricket players) aged 21-28 years participated in the study. The purposive sampling technique was used to attain the objectives of the study. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. In high performance National and All India inter university level cricket players were consider and for Low performance state and zonal level players were taken from different Colleges affiliated to Guru Nanak Dev University, Amritsar, Punjab. For physiological variables blood pressure, vital capacity, heart rate and Resting Breathing Frequency were considered as sub variables.

### 2.1 Criterion Measure

- Blood pressure was recorded in mm /Hg with using Sphygmomanometer & Stethoscope.
- Vital capacity was recorded in Cubic centimeter with using Spiro – meter.
- Heart rate was recorded in Beats/minute with using Stop watch.
- Resting Breathing Frequency was recorded in up and down of belly (stomach) while lying on the ground in One minute with using Stop watch.

### 2.2 Analysis and Interpretation of Data

To find out the significant difference between High and Low performance of male cricket players t – test was used at the significant level of 0.05.

**Table 1:** Significance of mean difference between High and Low performance of male cricket players on Systolic Blood Pressure.

Group	No. of Samples	Mean	Standard deviation	t-value
High performance cricket players	30	107.833	10.641	-3.064
Low performance cricket players	30	116.366	10.924	

Significant at 0.05  $t_{(58)}=1.671$

The table:1 indicates that mean and standard deviation values with regard to high performance cricketers on Systolic Blood Pressure variable were 107.833 and 10.641 whereas in case with low performance cricketers were 116.366 and 10.924

respectively. There is significant difference occur as the calculated t value (-3.064) is less than the tabulated value (1.671) at significant level 0.05.

**Table 2:** Significance of mean difference between High and Low performance of male cricket players on Diastolic Blood Pressure.

Group	No. of Samples	Mean	Standard deviation	t-value
High performance cricket players	30	71.933	10.868	-2.406
Low performance cricket players	30	78.1	8.879	

Significant at 0.05  $t_{(58)}=1.671$

The table:2 indicates that mean and standard deviation values with regard to high performance cricketers on Diastolic Blood Pressure variable were 71.933 and 10.868 whereas in case with low performance cricketers were 78.1 and 8.879

respectively. There is significant difference occur as the calculated t value (-2.406) is less than the tabulated value (1.671) at significant level 0.05.

**Table 3:** Significance of mean difference between High and Low performance of male cricket players on Vital Capacity.

Group	No. of Samples	Mean	Standard deviation	t-value
High performance cricket players	30	6073.333	546.893	3.123*
Low performance cricket players	30	5613.333	592.908	

Significant at 0.05  $t_{(58)}=1.671$

The table:3 indicates that mean and standard deviation values with regard to high performance cricketers on Vital Capacity variable were 6073.333 and 546.893 whereas in case with low performance cricketers were 5613.333 and 592.908

respectively. There is insignificant difference occur as the calculated t value (3.123\*) is more than the tabulated value (1.671) at significant level 0.05.

**Table 4:** Significance of mean difference between High and Low performance of male cricket players on Heart Rate.

Group	No. of Samples	Mean	Standard deviation	t-value
High performance cricket players	30	67.133	10.830	-2.04
Low performance cricket players	30	72.5	9.283	

Significant at 0.05  $t_{(58)}=1.671$

The table:4 indicates that mean and standard deviation values with regard to high performance cricketers on Heart Rate variable were 67.133 and 10.830 whereas in case with low performance cricketers were 72.5 and 9.283 respectively.

There is significant difference occur as the calculated t value (-2.04) is less than the tabulated value (1.671) at significant level 0.05.

**Table 5:** Significance of mean difference between High and Low performance of male cricket players on Resting Breathing Frequency.

Group	No. of Samples	Mean	Standard deviation	t-value
High performance cricket players	30	18.766	3.223	-3.064
Low performance cricket players	30	22.066	4.933	

Significant at 0.05  $t_{(58)}=1.671$

The table: 5 indicates that mean and standard deviation values with regard to high performance cricketers on Resting Breathing Frequency variable were 18.766 and 3.223 whereas in case with low performance cricketers were 22.066 and 4.933 respectively. There is significant difference occur as the calculated t value (-3.064) is less than the tabulated value (1.671) at significant level 0.05.

### 3. Conclusion and Discussion of Results

The aim of the study was to compare as well as to find the significant difference between the High performance and Low performance level cricket male players with regard to physiological Characteristics. The results revealed that there is significant difference occurred between High and Low performance cricketers with regard to Blood Pressure (Systolic and Diastolic), Heart Rate and Resting Breathing Frequency whereas there is no difference occurred between High and Low performance cricketers with regard to Vital capacity.

### 4. References

1. Saini JN. Comparison of selected Physiological variables between football and hockey players” research paper published in international journal of physical education health & sports sciences. 2013; 2(02):62-69. ISSN 2279-0306
2. Astrand P0, Rodahl K. Text book of Work Physiology-Physiological Basis of Exercise, Ed. I 1 l, Mc Graw Hill Book Co., Singapore, 1986; 209-67:646-79.
3. Singh Jitendra. Comparative Study of Anthropometrical and Physiological Characteristics of High And Low Performance Male Badminton Players of India unpublished Ph. D. thesis, Department of Physical Education, Aligarh Muslim University, Aligarh, 2013.
4. Singh R, Sharma P. A comparative study of archers and shooters on selected psychological and physiological variables Paper published in the proceeding book of national seminar on fitness & wellness held at L.N.I.P.E Gwalior on 2014, 25-27.
5. Komala J, Isaac L. Impact of hath yogic practices on selected phusiological, psychological and bio-chemical variable among type II diabetic women patients” research paper published in international journal of health, fitness & sports sciences 2013; 2(01):125-130. ISSN 2320-5202.
6. Rani A. Effect of circuit training on selected physiological variables of basketball players Paper published in the proceeding book of National conference on wellness through Physical activity: Future Prospective held on at Punjabi university Patiala, 2014.