



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## COMPARISON OF GENERAL IMMUNOLOGICAL STATUS OF CRICKETERS AND FOOTBALL PLAYERS- A CLINICAL TRIAL.

1Dr. Saikot Chatterjee, 2Harekrishna Das

1Associate Professor, 2Research Scholar

1University of Kalyani,

2University of Kalyani

**Introduction:** Sport is a huge area of research and development. Sports scientists are frequently engaged in research and innovation for development of the status of sport as well as the sports persons. Within all constraints the scholars are vying for good research. Among all multidisciplinary areas connected with sport science human physiology is considered to be one of the most vital. Sports scientists quite often try to draw relationship between sports performances and the related physiological counterparts. Research on Cardio respiratory functioning, Muscular system and their relationship with sport or exercise are common. Very few researches have endeavored on sport or exercise and their impact on immunological variables. Some scholars or scientists endeavored for such innovative research but the findings suggest for further study. Keeping in consideration the gap of knowledge and suggestions for further research the scholar premeditated to conduct a research directed towards athletic performance and their relationship with immune status.

The total leukocyte and the white blood cells act as shield against diseases. The leukocytes fight against the pathogens and protect the human being from infections.

Athletes who trained a lot had 2-times as often a cold 2 months prior to a marathon as compared to a group who ran only little.

A high white blood cell count may indicate several things, such as the immune system is working to destroy an infection, a sign of physical or emotional stress, or particular types of cancer. Pregnancy also leads to high white blood cell count, as levels tend to rise from the first trimester, into the third. White blood cell levels will also rise in the hours following labor, due to the severe stress the body undergoes. Meanwhile, a low white blood cell count can signal that an injury or condition is destroying cells faster than the body is making them. It could also mean that the body is producing too few of them. While symptoms will depend on the cause of the high white blood cell count, fluctuations in white blood cell count may not cause any symptoms.

### **Findings of other scholars:**

There are many factors that may affect the immune response to acute exercise, including training status, repeated exercise bouts, and extreme environments (for a more detailed discussion of these topics, see the textbook edited by Gleeson et al.<sup>36</sup>)

Athletes who participated to a marathon reported a 6-times higher susceptibility to colds as compared to those who planned to participate but were not able to (business matters, injuries etc.) (Nieman et al.1990). Moderate exercise prior to exposure to an infectious agent protected against infection. Severe exercise, however, led to increased susceptibility (Davis et al. 1997, Gross et al.1998).

**Methodology:** Giving the research a definite shape and reach the best conclusion the scholar followed a systematic methodology. So far the nature of study is concerned; it is typically a status study. For the research the scholar randomly selected 30 male cricketers and 30 football players. All the players had a background of playing in All India Inter University Level. National level players were specifically selected because they had attained a state of maturity with respect to playing ability as well as physiological capacities. The players were communicated through University Sports Board/ division i.e. the coaches and other teachers connected with sports affairs in the Universities. Moreover a consent form was prepared all about the nature of the study and dimensions of data collection. In fact it was to ascertain the willingness of the subjects for acting as volunteers in the study. The subjects were asked to go through the procedures of research in detail especially collection of blood samples for analysis and were asked to put their signatures as a mark of voluntary participation.

At the very outset the scholar collected personal data like age, height body mass of the players. Apart from other health related fitness variables and anthropometric measures the scholar exclusively focused towards collection of blood samples for assessment of their immune status. Blood samples were analyzed and total leucocytes Thousands/c.mm, Lymphocytes, Monocytes, Eosinophil and Neutrophils were estimated with the help of standard laboratory procedures Ige was also estimated as a predictor of immune status. As statistical procedure mean and SD. were calculated and compared with reference levels.

**Result and discussion:**

In this part of the study the author presented data in tabular form and made his interpretation based on reference level and other physiological factors.

Table 2. Age height and weight of the Players

| Variables                   | Groups   | No. of Subjects | Mean   | Std. Deviation<br>(±) | Std.error |
|-----------------------------|----------|-----------------|--------|-----------------------|-----------|
| Age<br>(years)              | Football | 30              | 21.07  | 2.23                  | 0.41      |
|                             | Cricket  | 30              | 20.10  | 2.16                  | 0.39      |
| Standing<br>Height<br>(cm.) | Football | 30              | 171.35 | 6.79                  | 1.24      |
|                             | Cricket  | 30              | 166.97 | 6.76                  | 1.23      |
| Weight<br>(kg)              | Football | 30              | 62.52  | 7.74                  | 1.41      |
|                             | Cricket  | 30              | 65.61  | 10.60                 | 1.93      |

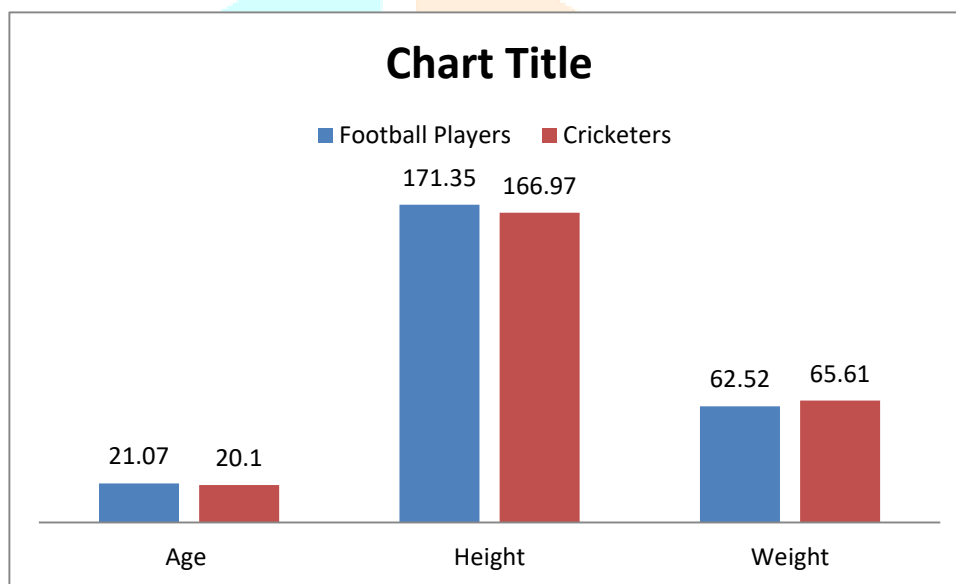


Fig. 1. Column chart showing the age height and weight of the athletes.

Table 1 shows the descriptive statistics of age height and weight of the players and association of their scores have been presented in the column charted shown in fig 1. From the scores of the table and the column chart it is somehow clear that the subjects are homogeneous in nature and there does not exist wide variations with respect to age height and weight.

Table 2. Hematology of cricketers

| Blood components                   | N  | Minimum | Maximum | Mean    | Std. Deviation | Reference value |
|------------------------------------|----|---------|---------|---------|----------------|-----------------|
| Total leucocytes<br>Thousands/c.mm | 30 | 5.50    | 12.10   | 8.0200  | 1.57292        | 4-11            |
| Lymphocytes                        | 30 | 14.00   | 44.00   | 30.2000 | 7.26541        | 20-45           |
| Monocytes                          | 30 | 1.00    | 3.00    | 1.7000  | .59596         | 2-8             |
| Eosinophil                         | 30 | 2.00    | 7.00    | 4.2333  | 1.07265        | 1-4             |
| Neutrophils                        | 30 | 50.00   | 82.00   | 63.9000 | 7.44335        | 40-75           |

From the results of hematology presented in table 2 it is clear that the level of the white blood cells of cricketers is within the normal range except monocyte little lower and eosinophil little higher.

Table 3. Hematology of footballers

| Blood components                | N  | Minimum | Maximum | Mean    | Std. Deviation | Reference value |
|---------------------------------|----|---------|---------|---------|----------------|-----------------|
| Total leucocytes Thousands/c.mm | 30 | 5.60    | 14.00   | 8.4667  | 1.82744        | 4-11            |
| Lymphocytes                     | 30 | 23.00   | 40.00   | 33.2000 | 4.85230        | 20-45           |
| Monocytes                       | 30 | 1.00    | 2.00    | 1.4000  | .49827         | 2-8             |
| Eosinophil                      | 30 | 2.00    | 13.00   | 4.6333  | 2.28161        | 1-4             |
| Neutrophils                     | 30 | 45.00   | 74.00   | 61.0333 | 5.54905        | 40-75           |

From the results of hematology presented in table 3 it is clear that the level of the white blood cells of football players is to some great extent similar with that of the Volleyball players. In case of footballers also the level of monocyte is little lower and that of eosinophil little higher with respect to reference value.

From the available literature it is clear that white blood cells multiply when exposed to high intensity exercise. This increase usually depends on intensity, duration, nature of sport. It is also clear that the increase reduces to normal after a definite duration. Some of the researchers are also of the view that systematic continuous sports training probably leads to immune adaptations i.e. immunological cells or proteins like the leucocytes, their subtypes and the immunoglobulin mostly remain within their normal range.

The findings of the study somehow reveals that the mean values of the different leucocytes are within normal reference value; which proves that the sports persons irrespective of their nature duration and intensity of games they attain a steady state with respect to general immunological status or rather systematic continuous sports training helps individual protect against diseases and susceptibilities.

**Conclusion:** From the findings of the study the scholar arrived at the conclusion that leukocyte count or the number of white blood cells present is very important with respect to immunological state of a person. Number of white blood cells fluctuates widely during acute sport performance or exercise and shows normal values in case of moderate exercise and may be lower for athletes participating in very stress full chronic exercise. Based on the data and their interpretations the author deduced that the levels of the different white blood cells of both volleyball players and footballers are within the normal reference value and for which the athletes bear a steady and normal immunological status. They are apparently healthy and have standard level of protection against infections and diseases.

**References:**

1. Gleeson M, Bishop NC, Walsh NP. *Exercise Immunology*. Oxford, UK, New York, USA: Routledge; 2013
2. Campbell JP, Turner JE. Debunking the myth of exercise-induced immune suppression: redefining the impact of exercise on immunological health across the lifespan. *Front Immunol*. (2018) 9:648. 10.3389/fimmu.2018.00648
3. Kakanis MW, Peake J, Brenu EW, Simmonds M, Gray B, Hooper SL, et al.. The open window of susceptibility to infection after acute exercise in healthy young male elite athletes. *Exercise Immunol Rev*. (2010) 16:119–37. 10.1016/j.jsams.2010.10.642
4. McKune AJ, Smith LL, Semple SJ, Wadee AA. Influence of ultra-endurance exercise on immunoglobulin isotypes and subclasses. *Br J Sports Med*. 2005;39(9):665-70.

