

COMPARATIVE ANALYSIS OF BLOOD PROFILES OF SPORTSMEN PARTICIPATING IN DIFFERENT GAMES

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ABSTRACT

This paper deals with the analysis and comparison of leukocytes in sportsmen of different games. These white blood cells' variables include Neutrophils, Lymphocytes, Monocytes, Eosinophils, Basophils and white blood cells. A total of 33 University level sportsmen, from different categories i.e. Yoga – 8, Handball – 10 & Volleyball - 15, were analyzed and blood from antecubital vein was collected just before the training session of the athletes. Using hematological analyzer (Horiba Yumizen H500), the blood was analyzed.

Keywords: Yoga, Handball, Volleyball, White Blood Cells.

INTRODUCTION

Sportsmen need somewhat more vitality and immune power as compared to a sedentary individual. This immunity helps the sportsmen to not only recover much faster from the rigorous activity but also helps to tackle many diseases without much symptoms. In this context, white blood cells are the cells of the immune system that plays a significant role for the sportsmen. The homeostasis in the body of every human being maintains a balance of every vital function. Intense physical activity often leads to suboptimal haematological status in human beings. White blood cells (WBCs), also called leukocytes or leucocytes, are the cells of the immune system that are involved in protecting the body against both infectious disease and foreign invaders. (Pub Med, n.d. 1,3). Its constituents include Neutrophils which is a type of immune cell that is

one of the first cell types to travel to the site of an infection. Neutrophils help fight infection by ingesting microorganisms and releasing enzymes that kill the microorganisms. A neutrophil is a type of white blood cell, a type of granulocyte, and a type of phagocyte. (PubMed, n.d.). Next is lymphocyte is a type of white blood cell that is part of the immune system. There are two main types of lymphocytes: B cells and T cells. The B cells produce antibodies that are used to attack invading bacteria, viruses, and toxins. The T cells destroy the body's own cells that have themselves been taken over by viruses or become cancerous. (PubMed, n.d.5,6). Monocytes are a type of white blood cell that fights off bacteria, viruses and fungi. Monocytes are the biggest type of white blood cell in the immune system. (Study.com, n.d.). Eosinophils are formed in the bone marrow and then released into the blood. As soon as a parasite enters the body, a chemical signal is sent out that the Eosinophils recognize and tells them exactly where the intruders are located. (Study.com, n.d.). Basophils are granulocytic white blood cells that are active in the inflammatory response. They are mostly found in the skin and mucosa tissues, which are the tissues lining the openings in the body. (Study.com, n.d.). The purpose of this study was to examine the diversity of white blood cell counts and its constituents among 3 elitegroup of athletes.

METHODS AND PROCEDURES

The samples of blood were collected from 33 athletes who represented three different sports discipline: 8 from Yoga, 10 from Handball and 15 from Volleyball and all of them participated in All India University Tournament in their respective games. The age range of these players was from 18 to 25. The blood sample was taken from antecubital vein of the athletes before training session by a professional technician. The Haematological analyzer tool used to analyze all blood profiles is Horiba's Yumizen H500. After analysis, the following data about was found.

Sr. No.	Variables	Yoga	Handball	Volleyball
	N	8	10	15
1	Neutrophils	5.79±4.19	3.7±0.86	5.58±1.94
2	Lymphocytes	1.80±0.58	2.61±0.48	2.91±0.58
3	Monocytes	0.02±0.02	0.52±0.24	0.03±0.01
4	Eosinophils	0.08±0.06	0.35±0.24	0.43±0.29
5	Basophils	0.1±0.04	0.09±0.03	0.13±0.03
6	WBCs	7.83±4.18	7.3±0.95	9.09±1.99

RESULTS & INTERPRETATIONS

For comparison of mean concentration of different variables in the blood of sportsmen Analysis of Variance (ANOVA) & T-test was used. Following results were found

ANOVA Results		
Variables	F Value	F Test
Neutrophils	2.23	Non- significant
Lymphocytes	10.8**	Significant
Monocytes	51.42**	Significant
Eosinophils	5.31**	Significant
Basophils	4.46	Non-significant
WBCs	1.71	Non-significant

** - significant at 0.01 level

The mean concentration of three variables had significant difference so that they were further analyzed using T-test.

T-test Results			
Variables	Yoga vs Handball	Yoga vs Volleyball	Handball vs Volleyball
Lymphocytes	3.2**	4.4**	1.43
Monocytes	6.25**	1.13	6.13**
Eosinophils	3.32**	4.36**	0.72

** - significant at 0.01 level

Variable	Difference between	Result
Lymphocytes	Yoga vs Handball	Significantly higher in Handball
	Yoga vs Volleyball	Significantly higher in Volleyball
	Handball vs Volleyball	No significant difference

Variable	Difference between	Result
Monocytes	Yoga vs Handball	Significantly higher in Handball
	Yoga vs Volleyball	No significant difference
	Handball vs Volleyball	Significantly higher in Handball

Variable	Difference between	Result
Eosinophils	Yoga vs Handball	Significantly higher in Handball
	Yoga vs Volleyball	Significantly higher in Volleyball
	Handball vs Volleyball	No significant difference

CONCLUSIONS

White blood cells or leukocytes plays a vital role in immunity [1,2]. White blood cells are more activated in individuals indulging in physical activity [3]. In this study, there was a significant difference in Lymphocytes, Monocytes and Eosinophils. Yoga players doesn't have to face opponents and strategies as their event is show specific. In results, Yoga players have the least activation of leukocytes and we can conclude that they have less leukocytes in bloodstream [4]. Whereas Handball & Volleyball players have to go through intense physical activity which increases leukocytes count in bloodstream [4,5].

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