*International Journal of Pharmaceutical and Medical Research*
*Volume – 2 Issue – 6 December 2014*
*Website: www.woarjournals.org/IJPMR* *ISSN: 2348-0262*

# Effect of Resistance Training On Leukocytes among Netball Players

**Mr Joji Varghese[1] and Dr P V Shelvam[2]**

[1]Assistant Director of Physical Education, Mar Baselios
College of Engg. & Tech.,
Trivandrum, Kerala, India 695015

[2]Professor, Dept. of Physical Education & Sports Sciences,
Annamalai University,
Annamalainagar, Tamilnadu, India 608002

Abstract: ***The purpose of the study was to find out the effect of resistance training on leukocytes among netball players. To achieve this purpose of the study, thirty netball players who were attended the National Games camp held at Mar Baselios College of Engineering and Technology, Trivandrum. The selected subjects were aged between 18 to 22 years. They were divided into two equal groups of fifteen each, Group I underwent resistance training and Group II acted as control that did not participate in any special training apart from their regular curricular activities. The subjects were tested on selected criterion variable such as leukocytes prior to and immediately after the training period. The selected criterion variable such as leukocytes was determined through Neubeaurs Haemocytometer. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on leukocytes.***

**Keywords:** training, resistance, players, leukocytes.

## 1. Introduction

Regular exercise and physical activity are extremely important and beneficial for long-term health and well-being. Specificity is the principle of training that states that sports training should be relevant and appropriate to the sport for which the individual is training in order to produce a training effect. The specificity principle simply states that training must go from highly general training to highly specific training. General fitness training works towards broad goals of overall health and well-being, rather than narrow goals of sport competition, larger muscles or concerns over appearance. A regular moderate workout regimen and healthy diet can improve general appearance markers of good health such as muscle tone, healthy skin, hair and nails, while preventing age or lifestyle-related reductions in health and the series of heart and organ failures that accompany inactivity and poor diet. Diet itself helps to increase calorie burning by boosting metabolism, a process further enhanced while gaining more lean muscle. An aerobic exercise program can burn fat and increase the metabolic rate. Resistance training should be an integral part of an adult fitness program and of a sufficient intensity to enhance strength, muscular endurance and maintain fat-free mass (FFM). Resistance training should be progressive in nature, individualized and provide a stimulus to all the major muscle groups. "adding strength training to a program of regular physical activity will help to decrease the risk of 'chronic diseases' while improving quality of life and functionality, allowing people of all ages to improve and maintain their health and independent life style. Resistance training is for everyone. It is an important tool for achieving a complete healthy life. Resistance training is not just for people who are athletes, want to build or tone muscle, or are using resistance training to achieve a better looking body. Resistance training has two different, sometimes confused meanings – a more broad meaning that refers to any training that uses a resistance to the force of muscular contraction (better termed strength training), and elastic or hydraulic resistance which refers to a specific type of strength training that uses elastic or hydraulic resistance, which refers to a specific type of strength training that uses elastic or hydraulic tension to provide this resistance. Regular endurance exercise has profound benefits on overall health, including the prevention of obesity, cardiovascular disease, and diabetes. The objective of this study was to determine whether AMP-activated protein kinase (AMPK) mediates commonly observed adaptive responses to exercise training in skeletal muscle. White blood cells (WBCs), also called leukocytes or leucocytes, are the cells of the immune system that are involved in defending the body against both infectious disease and foreign invaders. All leukocytes are produced and derived from a multipotent cell in the bone marrow known as a hematopoietic stem cell. Leukocytes are found throughout the body, including the blood and lymphatic system.

### 1.1 Statement of the problem

The purpose of the study was to determine the effect of resistance training on leukocytes among netball players.

### 1.2 Delimitations

1. The study was delimited to netball players attended the National Games camp.
2. The study was delimited to 30 netball players, their age was 18 to 22 years.
3. The study was restricted to the dependent variable is leukocytes and independent variable is resistance training.

## 1.4 Significance of the Study

1. The findings of the study may be helpful for players to apply resistance training which will help in better health and fitness.
2. The findings of the study would be helpful for the exercise physiologist to know the role of leukocytes influence their physical fitness.
3. The results of the study may be helpful to fitness trainers, coaches, physical educationist and exercise physiologists to design proper training protocol for other populations

## 2. Methodology

In the present study all the students who were attended the netball camp in connection with National Games held in Mar Baselios College of Engineering and Technology, Trivandrum were considered as population for the study. Thirty netball players in the age of 18-22 years were chosen as sample for the study. The selected participants were divided into two groups. Group I underwent resistance training and group II act as control group. The experimental groups underwent eight weeks of training in their particular workout. For this study dependent variable is leukocytes.

## 2.1 Test Administration – Estimation of Leukocytes

A1 in 20 dilution of blood was made of adding 20 ml of blood in to 0.38 ml of diluting fluid in a 75 × 10 mm glass tube. After tightly corking the tube, the suspension was mixed by rotating the tube at least one minute. The improved neubeaurs counting chamber with its cover glass already in position was filled by means of a past our pipette. The red cells were analysed by the diluting the fluid but the leukocytes remained in fact, their nuclei staining deep violet blank. The cells were counted width 16 mm objective and × 10 eye pieces. The counting was done from all the smaller squares of the four corner white blood corpuscles counting areas. Thus the total area counted was 4 sq mm.

## 2.2 Analysis of Data

The data obtained were analyzed by analysis of covariance (ANCOVA). Analysis of covariance was computed for any number of experimental groups, the obtained 'F' ratio compared with critical F value for significance.

## 3. Results

**Findings:** The statistical analysis comparing the initial and final means of blood parameter, leukocytes due to resistance training have been presented in Table I.

**TABLE I**
**COMPUTATION OF ANALYSIS OF COVARIANCE ON LEUKOCYTES**

| Test | Experimental Group | Control Group | F ratio |
|---|---|---|---|
| Pre | 5.36 | 5.33 | 1.23 |
| Post | 6.01 | 5.35 | 9.20* |
| Ad. Post | 5.99 | 5.39 | 18.72* |

Table I shows the analysed data of leukocytes. The leukocytes pre means were 5.36 for the resistance training group and 5.33 for the control group. The resultant 'F' ratio of 1.23 was not significant at .05 levels indicating that the three groups were no significant variation. The post test means were 6.01 for the resistance training group and 5.35 for the control group. The resultant 'F' ratio of 9.20 at .05 level indicating that was a significant difference. The difference between the adjusted post-test means of 5.99 for the resistance training group and 5.39 for the control group yield on 'F' ratio 18.72 which was significant at.05 level. The results of the study indicate that there is a significant difference among resistance training and control group on the leukocytes.

## 4. Discussions

The results of the study proved that there were significant differences between control group and resistance training group. The eight weeks of experimental treatment significantly influence on leukocytes content in netball players. The above results are supported by (Arazi and others (2011) and Nahid Bijeh and others (2013)).

## 5. Recommendations

1. It was recommended that adequate steps may be taken to include aerobic, resistance and concurrent training in the physical education curriculum as these exercises significantly improves the hemoglobin of the subjects.
2. Similar study may be conducted on a larger population.
3. Similar study may be undertaken and its influence on psychological and biochemical parameters may be assessed.

## References


[1] Ansel, Howard C and Prince Shelly. J, (2004) Pharmaceutical Calculations: The Pharmacist's Handbook, LippincottWilliams & Wilkins, Philadelphia, USA.

[2] Bompa TO (1983), Theory and Methodology of Training, Dubuque, IA: Kendall/Hunt..

[3] Frontera, WR, et. al., (1990) "Strength Training and Determinants of VO2 max in Older Women", Journal of Applied Physiology, 68(1).

[4] Pollock ML and Vincent KR, (1996) "Resistance Training for Health: The President's Council on Physical Fitness and Sports Research Digest, December", Series 2:8.

[5] Arazi H, et. al., (2011) "Variations of Hemotological Parameters following Repeated Bouts of CXoncurrent Endurance – Resistance Exercises", *Journal of Jahrom University of Medical Sciences*, 9(2).

[6] Nahid Bijeh, et. al., (2013) "The Effect of Eight Weeks Swimming Training on Hepatic Enzymes and Hematological Values in Young Female", *International Journal of Basic Science & Applied Research*, 2(1).

[7] Clarke, H. Harrison and Clarke, David H., Advanced Statistics, New Jersey: Prentice Hall Inc., 1972..


## Author Profile


**Mr. Joji Varghese**
**Assistant Director of Physical Education,**
**BPE (L.N.C.P.E,Trivandrum)**
**M.P.E(L.N.C.P.E,Trivandrum),**


14 yrs of experience in the field of Physical Education Area of specialization in Bio mechanics & Hockey Handling the teams such as Basketball, Shuttle Badminton, Table Tennis, Netball , Lawn Tennis


**Dr. P. V. Shelvam**
Annamalai Universitys, 05-06-1962
B.Sc (PHY)., M.A (Socio).,M.P.Ed., M.Phil., Ph.D., Dip NIS. PGDY,
B.Sc (PHY)., Vivekananda College, Madurai Kamaraj University, 1983
M.A (Socio)., Annamalai University, 2001
M.P.Ed., Annamalai University, 1988
M.Phil., Annamalai University, 1990
Ph.D., Annamalai University, 1997
Dip NIS. (Basketball), NSNIS, Patiala, 1989
PGDY, Annamalai University, 2003


22 years experience in the field of physical education as a nature of teaching, coaching, officiating and research. Now I am working as a Professor in the Department of Physical Education and Sports Sciences, Previous working in the Tamilnadu Physical Education and Sports University as a Professor and Head in the Department of Advanced Training and Coaching. I publish two books 1. Anatomy and Physiology for Physical Education Students and 2. Kinesiology, both published by