Effect of Resistance Training on Hemoglobin among Volleyball Players

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ABSTRACT

To achieve this purpose thirty (N = 30) female volleyball players were randomly selected from Sri Ramakrishna Engineering College, Vattamalaipalayam, Coimbatore, Tamilnadu, India. 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 experimental group underwent twelve weeks for 3 days per week training. The selected criterion variable hemoglobin to assess Cyanmethaemoglobin method was used. Pre-test data were collected before the training program and post-test data were collected after the training program. 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 positively improves the secretion of hemoglobin due to the resistance training.

Keywords: Resistance training, volleyball players and hemoglobin.

1. INTRODUCTION

Health related physical fitness of a patient is dependent on both lifestyle related factors such as daily physical activity levels, nutritional habits and genetic factors, and is an important indicator of health status (Takken, 2003). The primary objective of sports training is to stress various bodily systems to bring about positive adaptation in order to enhance sporting performance. To achieve this objective, coaches and athletes systematically apply a number of training principles including overload, specificity and progression, organized through what is commonly termed periodisation. The application of these principles involves the manipulation of various programme design variables including choice of exercise, order of training activities/exercises, training intensity (load and repetition), rest periods between sets and activities/exercises and training frequency and volume in order to provide periods of stimulus and recovery, with the successful balance of these factors resulting in positive adaptation (Starks, 2013). Resistance training is any exercise that causes the muscles to contract against an external resistance with the expectation of increases in strength, tone, mass, and/or endurance. 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 lifestyle. (Pollock and Vincent, 1996). Protein kinase B/Akt can both activate protein synthesis and decrease protein breakdown, thus leading to hypertrophy and AMP-activated protein kinase can increase mitochondrial protein, glucose transport, and a number of other factors that result in an endurance phenotype. Not only are PKB and AMPK central to the generation of the resistance and endurance phenotypes, they also block each other's downstream signaling. The consequence of these interactions is a direct molecular blockade hindering the
development of the concurrent training phenotype. A better understanding of the activation of these molecular pathways after exercise and how they interact will allow development of better training programs to maximize both strength and endurance (Baar, 2006). The training program for the elders help to improve their health and decrease the risks brought about by the age. They can be more independent, without needing to rely on other people for doing simple things. Being able to do so will also decrease the risk of injuries in the elders. Regular training can result in a lowered heart rate and lowered blood pressure, especially after exercise. Thus, the risk of heart diseases is reduced. This kind of training however must be properly done. It requires commitment and consistency. It will have to be done in a regular basis. This is the real challenge when it comes to exercise and improving one’s health. It’s not hard to exercise for 30 minutes, but it’s difficult to consistently do this 5 days a week for 3 or 4 months (Parker, 2006).

Blood is a tissue. The essential act of blood is to maintaining of hemostasis of internal tissues of body. A lot of actions are done in the body which changes the internal environment of chemical component, for example some changes will occur by contraction of muscles. A cell that contains hemoglobin and can carry oxygen to the body. Also called a red blood cell (RBC). The reddish color is due to the hemoglobin. Erythrocytes are biconcave in shape, which increases the cell's surface area and facilitates the diffusion of oxygen and carbon dioxide. This shape is maintained by a cytoskeleton composed of several proteins. Erythrocytes are very flexible and change shape when flowing through capillaries. Immature erythrocytes, called reticulocytes, normally account for 1-2 percent of red cells in the blood. Hemoglobin is a protein of 200 to 300 million nearly spherical molecules in each red blood cell, having a molecular weight of 64,458 based on the chemical structures of its alpha and beta chains (Ranjeet, 2000).

1.1 Delimitations

1. Thirty volleyball players were selected as subjects who were studied at Sri Ramakrishna Engineering College, Vattamalaipalayam, Coimbatore.

2. The study was limited to the age group of 18 to 22 years.

3. The subjects were assigned at random into two groups in which group I had control and group II acted as experimental group I.

4. The training period for the experimental group was 12 weeks (three days per week).

5. The study was delimited to the following variable hemoglobin.

1.2 Limitations

1. Though the subjects were motivated verbally, no attempt was made to differentiate their motivation level during testing and training.
2. No effort was made to find out the difference in environmental conditions during pre and post-test; however dry weather prevailed during the tests.

3. The uncontrollable changes in climatic conditions such as atmospheric temperature, humidity and other factors during the period of testing were considered as limitations.

1.3 Hypothesis
There would be a significant improvement on hemoglobin due to resistance training.

2. METHODOLOGY
To achieve this purpose thirty (N = 30) male volleyball players were randomly selected from Sri Ramakrishna Engineering College, Vattamalaipalayam, Coimbatore, Tamilnadu, India. 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 experimental group underwent twelve weeks for 3 days per week training. The selected criterion variable hemoglobin to assess Cyanmethaemoglobin standard method was used. Pre-test data were collected before the training program and post-test data were collected after the training program.

2.1 Training Programme
The intensity variations in 12 weeks training for experimental groups are given in Table - I.

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<th>Table I</th>
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<td><strong>Weeks</strong></td>
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<td><strong>% of intensity</strong></td>
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</table>

2.2 Statistical Technique
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.

<table>
<thead>
<tr>
<th>Table II</th>
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<tr>
<td><strong>COMPUTATION OF ANALYSIS OF COVARIANCE ON HEMOGLOBIN</strong></td>
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<tr>
<td><strong>TEST</strong></td>
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<td>PRE TEST</td>
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<td>POST TEST</td>
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<td>AD POST TEST</td>
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3. RESULTS

Findings: The statistical analysis comparing the initial and final means of hemoglobin due to resistance training has been presented in Table II.

Table II shows the analyzed data of hemoglobin. The hemoglobin pre means were 12.58 for the resistance training group and 12.54 for the control group. The resultant ‘F’ ratio of 1.02 was not significant at .05 levels indicating that the two groups were no significant variation. The post test means were 15.24 for the resistance training group and 12.62 for the control group. The resultant ‘F’ ratio of 5.74 at .05 level indicating that was a significant difference. The difference between the adjusted post-test means of 15.14 for the resistance training group and 12.66 for the control group yield on ‘F’ ratio 15.68 which was significant at .05 level. The results of the study indicate that there is a significant difference among resistance training and control groups on the hemoglobin.

4. CONCLUSION

Systematically performed physical exercise result in greater changes in the organism. The changes take place on the level of cellular structures, tissues, organs and body build, including levels of cellular auto regulation, hormonal regulation and neural regulation. Most of the training induced changes express adaptation to the conditions of enhanced muscular activity. The top level performance depends on effective training as well as on genetic peculiarities. Therefore, the tasks of training and of sport selection have to be discriminated, but it must be emphasized that there are no genetically induced factor that directly determine the level of sports results in any event. The results of analysis of covariance on hemoglobin showed that there was a significant difference existed between control group and resistance training group. Thus, twelve weeks of experimental treatment influence in hemoglobin of the volleyball players compared to control group. The above findings are in consonance with the study conducted by Krishna Sharma, Thirumaleshwara, Udayakumara and Savitha (2014), Santoshi Saulkar (2015), Carranque and others (2012) and Preeti Sharma and others (2010).

REFERENCES


