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EFFECTS OF DIFFERENT TRAINING METHODS ON HAEMOGLOBIN

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Abstract

In recent time, it has become necessary for physical educator, coaches, trainees and fitness instructors to recognize the vital part that science plays in successful conduct of physical education, athletic and activity programme. The blood serves as the principal transport medium of body, carrying oxygen, nutrients and chemical massagers to the tissue and waste products synthesized metabalities away. The main purpose of the present study is find out the effects of different training protocols on Hemoglobin. For the study 18 male student of B.P.Ed. or M.P.Ed. course of physical education department A.M.U. Aligarh were selected out of three hoemotoloical variable hemoglobin was selected as dependent variable for the study. The criterion measure was hemoglobin content recorded in gram/100 ml of blood random group design was used to divide all the subject in three equal groups. The experimental groups were given weight training and ploymetric training for a period of eight weeks excluding the period utilized for pre-test and post-tests. The control group didn't participate in any activity during the experimental period.

***Keywords**: Training Methods, Haemoglobin*

Introduction

Over the past thirty years, the number of exercise physiology laboratories have increased manifolds. As a result much new knowledge dealing with how best to train athletic teams and to develop fitness for health has appeared in the scientific literature.

Sport performance is indeed an aspect of complex human performances, which has several dimensions. Hence, several disciplines of sports science are required to work in a coordinated manner to explore the nature and the process of sports performance. In the last few decades several disciplines of sports sciences namely, Sports Medicine, Sports Physiology, Sports Biomechanics, Sports Psychology, Sports Nutrition etc. have emerged. These sports sciences work as an integrated whole helping athletes in achieving peak performance.

The blood consists of two parts- a fluid part and a'solid part of the corpuscles. The function of the blood as a whole, are of course, the sum total of those of its components — corpuscles, salts, proteins and other substances.

By virtue of its haemoglobin contents, the blood takes in oxygen and distributes it to all the tissues and collect from them the excesses of their carbon-dioxide produced during the metabolic processes. The major function of red blood cells is to transport haemoglobin,

which in turn carries oxygen from the lungs to the tissues. Volume of blood and haemoglobin content in the blood increased by training. The number of red blood corpuscles is definitely affected by exercise. Even after a short out of exercise, such as 220 yard run, the number of red blood corpuscles increases. The increase depends on the load and duration of exercise.

It is established that a training of adequate intensity and volume of stimulus leads to noticeable changes in the physiological and bio-chemical system of the body. These changes are affected by a number of factors including age, sex, environment and fitness level. Though, the effect of training is supported by circulating system, respiratory system, nervous system, endocrine system and many other relative systems, yet the actual work is done at tissue level especially in the active muscles.

Significance of the Study

The present study, therefore, will be significant in the following ways.

The study will reveal the comparative effects of weight training and plyometrics workout on selected haematological variable, i.e. Haemoglobin. The study, in addition to discovering new facts in the area of exercise physiology and bio-chemistry, will help physical educators and coaches in overcoming various haematological problems with the help of activity.

Holmgren (1963) found out in his study that intermittent long term training resulted in an increase in physical working capacity in a steady state, total haemoglobin and blood volume.

Counsilman observed significant positive changes in haemoglobin content of the blood due to different exercises.

Herger determined that four times weekly training is not better than two times per week.

Ahlborg (1967) in his investigation found that haemoglobin concentration increases at the onset of work.

In view of the above studies available, it may be concluded as the haematological variables are likely to be affected by training but a clear-cut information is still not available. This inspired the invesigator to undertake this study. h was hypothesized that the haemoglobin will respond significantly to weight training and ploymetrics.

Method

18 male students of B.P.Ed. and M.P.Ed. course of Physical Education A.M.U., Aligarh were selected for the present study. Out of threee haemotological variables haemoglobin was selected as dependent variable for the study. The criterion measure was haemoglobin content recorded in grain /100m1 of blood. Random group design was used to divide all the subjects in three equal groups. The experimental treatment group and the control group were assigned at random by drawing lots. The experimental groups were given weight training and ploymetric training for a period of eight weeks excluding the period utilized for pre-test and post-tests. The control group didn't participate in any activity during the experimental period. The training session was conducted thrice a week on alternate days.

Cynamethaemoglobin method was adopted to determine the amount of haemoglobin in the blood For this fasting blood samples were procured by the. pathology lab under the supervision of Health Centre A.M.U., Aligarh.

To have a comparison between the effects of two different training methods, and with the control group, the analysis of co-variance and t-test were computed.

Results

The scores of male subjects as depicted in table 1 revealed that in analysis of co-variance for haemoglobin test, the obtained F-ratio in case of pre-test, post test and adjusted posttest means was 0.02, 0.057, and 0.065 respectively. All the three values were found to be insignificant, as the obtained values fall much below the required value 3.29 at 0.05 level of confidence. This proves that random assignment of the subjects to three groups was quite successful.

Table 1: Analysis of covariance of the scores of Two Experimental Groups and the Control Group in Cynamethaemoglobin test.

Means	Groups			Source of variance	ss	df	mss	f-ratio
	A	B	C					
Pre-Test Means	75.90	75.0	76.5	A W	11680.29 5923.28	2/15	3894 1.164	0.02
Post-Test Means	84.1	84.1	79.8	A W	13544.28 5.11	2/15	4515 0.26	0.057
Adjusted Mean	99.04	99.12	97.71	A W	4064 0.264	2/15	0.264	0.065

F .05 = 3.29 Degree of Dreedom 2/15

A=Among the Group Means W=Within the Group Means

The result pertaining to t-test for haemoglobin is presented in Table 2. It can be inferred from the table that t-ratio obtained for the two experimental groups and one control group A.B. and C was 27.61, 30.63 and 11.11. As the required ratio for the significance was 2.13 at 0.05 level of confidence, thus it is quite evident that all the values have significant difference.

Table 2: Significance of difference between pre-test and post test means of two experimental groups and one control group in cynamethaemoglobin test.

Group	Pre-Test Mean	Post-Test Mean	Dm	oDm	t- ratio
A	75.90	84.10	8.2	0.297	27.61
B	75.00	84.10	9.1	0.297	30.63
C	76.50	79.50	3.3	0.297	11.11
t .05 = 2.13				df=2/15	

Discussion

All forms of athletic training are associated with the changes in biochemistry. The exact effect of these factors depends upon the type of training and nature of activities involved. The study tried to establish relationship of biochemical variable to the performance.

The main function of haemoglobin is to carry oxygen from the lungs to different tissues of the body and carbondioxide is carried back to the lungs. Therefore, main function of the haemoglobin is to supply oxygen to the working muscles, the oxygen carrying capacity of the blood depends upon the amount of haemoglobin present in it.

The relationship of haemoglobin to performance is quite obvious as when an individual performs exercise, due to a higher mobilization of plasma from the blood to tissue fluid, a relative increase is also noticed in case of haemoglobin. During exercise, because of additional requirement comes into circulation (from store of liver and spleen) and thus contributes further, to an apparent increase in haemoglobin.

The analysis of data reveals that haemoglobin increases as a result of weight training and ploymetric training as compared to control group and the groups show a very significant difference amongst them in their improvement. But, the improvement is not to reach the level of confidence as the t-ratio of experimental groups are much higher than the control group.

But certainly both types of training to some extent stimulated the haemopietic system of the body and thereby increasing the haemoglobin concentration of the blood after 8 weeks of training. This corroborates the finding of Counsilman.

Conclusion

On the basis of analysis of data and within the limitation of the present study, it is concluded that though both weight training and ploymetric training seemed to be contributing towards increase in haemoglobin , the improvement is not much but all the groups were significantly different in their progress.

References

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