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Research Paper

Effect of Aerobic Training on Selected Biochemical Variables of College Men Athletes

Physical Education

KEYWORDS : Aerobic training, Hemoglobin, pyruvic acid, Sahli's hemoglobinometer and colorimetric method, and Friedemann and Haugen method.

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ABSTRACT

The purpose of the study was to find out the effects of aerobic training on selected biochemical variables among twenty men middle distance athletes from Alagappa University College of Physical Education, karaikudi were selected randomly as subjects. The age of the students ranged from 18 to 24 years. The selected subjects were divided into two groups. Group A underwent aerobic training and group B acted as control group. The experimental group was subjected to the training for three days in a week for a period of 8 weeks. The dependent variables namely Hemoglobin and pyruvic acid were estimated by Sahli's hemoglobinometer and colorimetric method, and Friedemann and Haugen method. The Data were collected from each subject before and after the training period and statistically analyzed by using dependent't' test and analysis of covariance (ANCOVA). It was found that there was a significant improvement in Hemoglobin and pyruvic acid due to the effects of aerobic training.

INTROUDUCTION

Athletes requiring a higher level of aerobic fitness (endurance) will get training for four to six days a week. Examples of large muscle group activities include; walking, jogging running non-sprint cycling, swimming and cross country skiing.

The critical feature of aerobic activity is continuous activity. And, specificity of training (SAID) dictates that the training should closely resemble the activity, or event: Runners should run, and swimmers swim. Thus, to improve cardiovascular endurance, the athletes should be trained aerobically.

Athletes involved in activities with a low aerobic component, such as football, power events in track, sprint events in running, swimming, and cycling may see a decrease in power and strength with excessive aerobic training. These athletes should limit their aerobic training to the early preparation of offseason training and then engage in a minimal amount of aerobic training to maintain good general fitness.

There are various types of aerobic exercise. In general, aerobic exercise is one performed at a low to moderate level of intensity over a long period of time. For example, running a long distance at a moderate pace is an aerobic exercise, but sprinting is not. Playing singles tennis, with near-continuous motion, is generally considered aerobic activity, while golf or doubles tennis, with their brief bursts of activity punctuated by more frequent breaks, may not be predominately aerobic.

HYPOTHESIS

1. There would be a significant improvement on Hemoglobin and pyruvic acid due to aerobic training among college men athletes.
2. There would be a significance difference between aerobic training group and control group on Hemoglobin and pyruvic acid among college men athletes.

METHODOLOGY

The purpose of the study was to find out the effects of aerobic training on biochemical variables among college men athletes. To achieve this purpose of the study, twenty men students studying in the college of Physical Education, Alagappa University, Karaikudi, Tamilnadu were selected as subjects and they were divided into two equal groups of ten subjects each, such as aerobic training group and control group. The Group I underwent aerobic training programme for three days per week for eight weeks and Group II acted as control which did not participate in any special training programme apart from the physical education activities as per the curriculum. The dependent variables namely Hemoglobin and pyruvic acid were estimated by Sahli's hemoglobinometer and colorimetric method, and Friedemann and Haugen method. The Data were collected from each subject before and after the training period and statistically analyzed by using dependent't' test and analysis of covariance (ANCOVA). It was found that there was a significant improvement on aerobic training on Hemoglobin and pyruvic acid.

ANALYSIS OF THE DATA

The effects of independent variables on selected Hemoglobin and pyruvic acid were determined through the collected data by using appropriate statistical techniques and the results are presented below. The analysis of dependent't' test on the data obtained for Hemoglobin and pyruvic acid of the pre-test and post-test means of aerobic training and control groups have been analysed and presented in table I

TABLE –I
THE SUMMARY OF MEAN AND DEPENDENT't' TEST FOR THE PRE AND POST TESTS ON HEMOGLOBIN AND PYRUVIC ACID OF AEROBIC TRAINING AND CONTROL GROUPS

Variables	Mean and 't' test Value	Aerobic training group	Control group
Hemoglobin	Pre test mean	12.53	12.52
	Post test mean	13.33	12.55
	't'test	6.08*	1.41
Pyruvic acid	Pre test mean	0.83	0.84
	Post test mean	1.52	0.83
	't'test	12.97*	0.48

* Significant at 0.05 level.(The table value required for .05 level of significance with df 9 is 2.26).

The table **I** show that the obtained dependent t-ratio values between the pre and post test means of Hemoglobin, pyruvic acid in aerobic training group is 6.08 and 12.97 respectively. The obtained dependent t-ratio values between the pre and post test means of Hemoglobin, pyruvic acid in control group is 1.41 and 0.48 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained't' ratio value of aerobic training group is greater than the table value, it is understood that aerobic training had significantly improved the Hemoglobin and pyruvic acid. However, the control group has not improved significantly. The obtained't' value is less than the table value, as they were not subjected to any specific training.

The analysis of covariance on Hemoglobin, pyruvic acid of aerobic training and control groups have been analysed and was presented in Table II

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TABLE – II
ANALYSIS OF COVARIANCE ON HEMOGLOBIN AND PYRUVIC ACID OF AEROBIC TRAINING AND CONTROL GROUPS

Variables	Adjusted post test means		Source of variance	Sum of squares	DF	Mean squares	Obtained 'F' Ratio
	Aerobic group	Control group					
Hemo-globin	13.33	12.56	Between	2.97	1	2.97	32*
			Within	1.58	17	0.09	
Pyruvic acid	1.52	0.84	Between	2.31	1	2.31	161.39*
			Within	0.24	17	0.01	

*Significant at .05 level of confidence (The table values required for significance at .05 level of confidence with df 1 and 17 is 4.45)

The table II shows that the adjusted post test means of Hemoglobin, pyruvic acid on aerobic training and control groups are 13.33, 1.52 and 12.56, 0.84 respectively. The obtained 'F' ratio value of Hemoglobin and pyruvic acid is 32 and 161.39 which are higher than the table value of 4.45 with df 1 and 17 required for significance at 0.05 level. Since the value of F- ratio is higher than the table value, it indicates that there is significant difference among the adjusted post test means of aerobic training and control group on Hemoglobin and pyruvic acid.

The results of the study showed that there was a significance difference between the adjusted post test mean of aerobic training group and control group on Hemoglobin and pyruvic acid.

Adjusted post test means of Aerobic Training and Control groups on Hemoglobin and Pyruvic acid have been presented in figure I.

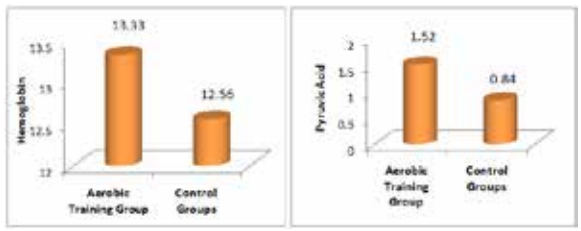

FIGURE 1: ADJUSTED POST TEST MEANS OF AEROBIC TRAINING AND CONTROL GROUPS ON HEMOGLOBIN AND PYRUVIC ACID

CONCLUSION

1. There was a significant improvement on Hemoglobin and pyruvic acid due to the effect of the aerobic training among college men athletes.
2. There was a significance difference between aerobic training group and control group on Hemoglobin and pyruvic acid among college men athletes.

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