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Investigation of the Changes in Selected Biochemical and Haemotological Parameter Resulting from Aerobic Exercise and Treadmill Training

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Abstract

The purpose of the study was to find out the investigation of Aerobic exercise and treadmill training on selected biochemical variable of HDL-Cholesterol (HDL-C), and haemotological variables such as Platelets Count (PC) arid Blood Clotting Time (BCT) of school boys. Thirty boys subjects were selected from government her sec school chidambaram randomly selected and divided into equated groups of Aerobic Training Group (ATG) (n=10), Treadmill Training Group (TTG) (n=10) and Control Groups (CG) (n=10). Blood samples were taken from the each subject before and after the nine weeks of training period and blood test were tested in the biochemistry lab at Chidambaram. The collected data was statistically analysed by using analysis of covariance (ANCOVA). It was found that there was significant improvement on HDL-'Cholesterol and Blood Clotting Time of ATG and TTG when compared to the CG However, there was no significant difference on Platelets count among the groups. But between the experimental groups there was no significant different on biochemical and haemotological variables.

Keywords: Aerobic exercise, Treadmill training, HDL, PC, BCT.

Introduction

Sports training are a basic preparation of the sportsmen for better performance through physical exercise. It is based on scientific principles of aiming at education and performance, enhancement. Sports activities consists of motor movement and action and their success depends to a great extend on how correctly they are performed. Techniques of training and improvement of tactical efficiencies plays a vital role in training process. Today sports training are mostly based upon the competitive motive each nation is trying to achieve top level performance and to win laurels on international competitions. Today records are proved to be lower performance of tomorrow. This is because greater stress has been laid on the quality rather than quantity training. Sports training are done for improving sports performance. The sports performance as any other type of human performance is not the product of one single system (or) aspect of human personality. On the contrary it is the product of the total personality of the sports person. The personality of person has several dimensions. For example. physical, physiological, social and psychic. In order to improve sports performance the social and psychic capacities of the sports person also have to be improved in addition to the physical and physiological ones. In other words the total personality of sportsman has to be improved in order to improve his performance. Sports training therefore, directly and indirectly aims at improving the personality of the sport man.

Training is a programme of exercise designed to improve the skills and increase the energy capacity of an athlete for a particular event. In sports, the word 'training' is generally understood to be a synonymous of doing physical exercises. In a narrow sense training is doing physical exercises for the improvement of performance or general fitness. Aerobic exercise refers to exercise that involves or improves oxygen consumption by the body. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. Many types of exercise are aerobic, and by definition are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise involving large muscle groups, and a cooling down period at the end. A low impact treadmill workout such as walking or jogging is beneficial to weight loss. Walking on a treadmill is a straightforward activity and requires no practice; therefore, it is an efficient way to add fitness to your routine. These workouts help burn calories and are an effective tool for maintaining lost lbs. as well. Moreover, engaging in low impact treadmill sessions on a regular basis can help lower blood pressure and bad cholesterol and help raise

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your good cholesterol. Training improves the functioning of the circulatory, respiratory and muscular systems. While practice largely aimed at improving control of muscular activity by the nervous system. Different - training methods have been commonly used to improve physical fitness and its related standards of performance of the players. There are several types of training used for developing endurance type of activities. They are as interval training, fartlek training, weight training, circuit training, treadmill training, [bicycle ergometer training etcetera. Among the above endurance training, weight training, treadmill framing is used in the Gym to develop fitness according to their level and it is very simplest way of developing in the Gym. Hence, an attempt made to find out the investigation of the changes in selected biochemical and haemotological parameters resulting from aerobic exercise and treadmill training.

Methodology

Investigation of the changes in selected biochemical and hematological parameters resulting from aerobic exercise and treadmill training. To achieve the puipose of the study, thirty boy's subjects were selected from government her sec school chidambaram randomly selected and divided into three equal groups, Group-I as Aerobic Training Group (ATG), Group-II as Treadmill Training Group (TTG) and Control Group (CG). Group-I underwent aerobic training, Group-II underwent treadmill training for four days per week for nine weeks and Group-Ill acted as control group who did not participate in any special training. The age of the subjects ranged from 14 to 18 years. The duration of training period was one hour from 6.30 am to 7.30 am including warming up and warming down. The aerobic exercises were done only in the floor (floor aerobic exercises). Each set undergone for 20 minutes, between set 2 minutes of intervals with slow beat walk was executed. The first three weeks mild tempo was used, next three weeks medium tempo was used and last three weeks fast tempo was used as intensities for these aerobic exercises. The treadmill training group was undergone training for one hour including warming up and warming down. The electronics treadmill was manually set as for first three weeks at ground leveled surface, next three weeks downhill set up and last three weeks uphill set up. The entire training programme was held at annamalai university Gym and Gymnasium. Blood samples were taken from the each subject before and after the aerobic and treadmill training and blood samples were tested in the biochemistry lab at chidambaram. The collected data was statistically analysed by using analysis of covariance (ANCOVA).

Tests Selection

S.No	Criterion Variables	Tests	Units of Measurement
1	HDL-Cholesterol	One Step Method	mg/dl
2	Platelets Count	Blood Test	Lakhs Cells/Cu.mm
3	Blood Clotting Time	Blood Test	Minutes

Results

Table I. Analysis of Covariance on Criterion Variables of ATQ TTG and CG groups

Criterion Variables	**Adjusted post-test mean**			**Source of Variance**	**df**	**Sum of Squares**	**Mean Squares**	**F-ratio**
	Aerobic Training Group (ATG)	**Treadmill Training Group (TTG)**	**Control Group**					
HDL-Cholesterol (ms/dl)	63.22	62.02	56.40	Between	2	284.46	284.46	22.59*
				Within	26	213.99	12.59	
Platelets Count (Lakhs Cells/Cu.mm)	1.89	1.85	1.11	Between	2	0.14	0.14	2.33
				Within	26	1.15	0.06	
Blood Clotting Time (Minutes)	2.02	2.12	2.81	Between	2	1.33	1.33	6.65*
				Within	26	3.52	0.20	

*significant at .05 level of confidence
(Table value required for significant at .05 level with df 2 and 26 is 3.35)

The Table- I indicated that the obtained F-ratio of HDL-Cholesterol that is 22.59 and Blood clotting time that is 6.65 for adjusted post-test mean was greater than the-table value of 3.35 for df 2 and 26 required for significant at .05 level of confidence. The results of the study shows that significant differences existed between the adjusted post-test means of the aerobic training group, treadmill training group and control groups in improving on HDL-Cholesterol (HDL-C) and blood clotting time (BCT). But there was no significant difference among the groups on platelets count (PC). The adjusted post mean value of the three groups has been graphically presented in figures.

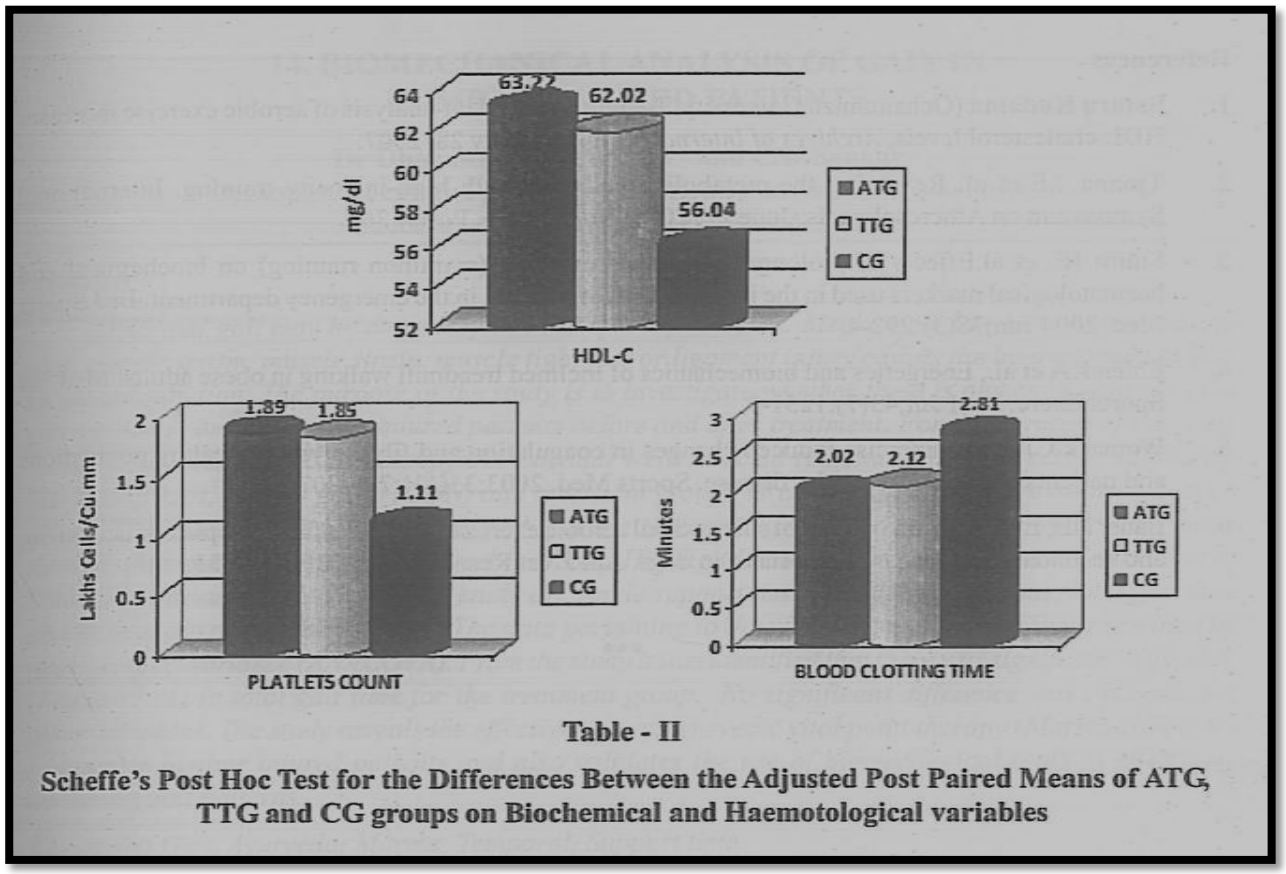

Table II. Scheffes Post Hoc Test

Variables	ATG	TTG	CG	MD	CI
HDL Cholesterol	63.22 63.22 -----	62.02 ----- 62.02	----- 56.40 56.40	1.20 6.82* 5.62*	1.85
Blood Clotting Time	2.02 2.02 -----	2.12 ----- 2.12	----- 2.81 2.81	0.01 0.79* 0.69*	0.51

*Significant difference at 0.05 level of confidence

Table -II indicates that the aerobic training group and treadmill training group were significantly improved in the HDL-choIesterol and blood clotting time when compared with the control group. Between ATG and TTG groups were not found any significant differences.

Discussion on Findings

Aerobic exercise refers to exercise that involves or improves oxygen consumption by the body. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. The present study revealed that the aerobic training group and treadmill training group were significantly improved in the HDL-cholesterol and blood clotting time when

compared with the control group. The observations have been confirmed in other studies also (Satoru Kodama, 2007) and (Tjonna AE et al, 2006). The result of the study also shows that no significant differences existed between the two training groups. (Womack CJ et al, 2003).

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. The experimental groups' namely aerobic training group and treadmill training groups have achieved significant improvement on HDL-cholesterol and blood clotting time when compared to the control group.
2. The two experimental groups such as aerobic training group and treadmill training groups have not significant improvement on platelets when compared to the control group.
3. But between the aerobic training and treadmill training groups there was no significant difference on selected criterion variables.

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