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Effect of speed training on selected bio chemical variables among university male students

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Abstract
The aim of speed training is to condition the athlete to move at high velocity, employing maximal power when needed. In order to do this, the neuromuscular system must be conditioned to very fast movements and training need to be very specific, with a very high anaerobic component (Martin & Coe, 1991). Sprint training is an effective training method designed to elicit enhancements in motor fitness and physiological parameters. It has vastly different training effects depending upon the intensity and duration of the work and rest period. More research is required concerning the variation in different methods of sprint training and their effect. For the purpose of this study, fifteen untrained male students of Annamalai University in the age group of eighteen to twenty years were recruited, with their consent. The selected subjects were healthy and normal, and they were physically fit enough to undergo the sprint training programme. The selected dependent variables namely Total Cholesterol, High Density Lipoprotein Cholesterol (HDL-C), Low Density Lipoprotein Cholesterol (LDL-C) and Triglycerides were assessed using standard tests and procedures, prior to and immediately after the training protocol. Estimation of lipoprotein variables was done with the help of a Biochemist and laboratory technicians. The speed training programme conducted for a period of eight weeks in the study indicated a positive change in total cholesterol and low-density lipoprotein cholesterol level in case of male students.

Keywords: Speed Training, bio chemical Variables and lipid profiles

1. Introduction
Lipid profile is the pattern of lipids in the blood. A lipid profile usually includes the total cholesterol, high density lipoprotein (HDL) cholesterol, triglycerides, and the calculated low density lipoprotein (LDL) cholesterol. “Lipid” is a medical term used to describe fats in the bloodstream, more commonly referred to as cholesterol and triglycerides. The body needs cholesterol for digesting dietary fats, making hormones, building cell walls, and other important processes..

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2. Methodology
Subjects and Variables
For the purpose of this study, fifteen untrained male students of Annamalai University in the age group of eighteen to twenty years were recruited, with their consent. The selected subjects were healthy and normal, and they were physically fit enough to undergo the sprint training programme. The selected dependent variables namely Total Cholesterol, High Density Lipoprotein Cholesterol (HDL-C), Low Density Lipoprotein Cholesterol (LDL-C) and Triglycerides were assessed using standard tests and procedures, prior to and immediately after the training protocol. Estimation of lipoprotein variables was done with the help of a Biochemist and laboratory technicians. The subjects were asked to report early morning before the commencement of training program for the collection of blood sample (pre-test) and the Post-test blood samples was drawn 48 hours after the last training programme. The test was conducted by drawing 10 ml of blood from the vein near the antecubital fosse and the level of lipoprotein in the blood sample is determined. The tests were conducted after 12 hour fasting.

Training Protocol
The selected subjects were undergone the sprint training for eight weeks, with three sessions a week on alternative days. After 10 to 15 minutes of warm-up, the subjects performed 6 to 10 repetitions of 40 to 80 metres sprinting exercises a session at 80 to 100% of their 100 metres personal best performance, with a recovery interval of one to three minutes between repetitions and five minutes between sets.

Statistical Procedures
The selected variables for which data were collected from two groups prior to and after experimentation on selected lipid profiles were statistically examined for significant difference, if any, by applying the analysis of covariance (ANCOVA) with the help of SPSS package. The level of significance was accepted at $P < 0.05$.

3. Results and Discussions
The subjects averaged 21.7 ± 0.5 years of age, 169.3 ± 2.5 cm in height, and 62.4 ± 2.8 kg in weight. The data collected on selected lipid profiles before and after the eight weeks of sprint training is statistically analyzed and it is presented in table 1.

Table 1: Analysis of Covariance on Selected Lipid Profiles of Sprint Training and Control Groups

Variables	Groups	Adjusted Mean	SOV	Sum of Squares	df	Mean Square	'F' ratio
Total Cholesterol	Sprint training	206.677	B	335.695	1	335.695	7.456*
	Control	213.389	W	1215.652	27	45.024	
High Density Lipoprotein Cholesterol	Sprint training	44.175	B	53.891	1	53.891	0.902
	Control	41.492	W	1612.514	27	59.723	
Low Density Lipoprotein Cholesterol	Sprint training	134.124	B	616.431	1	616.431	4.965*
	Control	143.209	W	3352.136	27	124.153	
Triglycerides	Sprint training	143.373	B	3.461	1	3.461	0.006
	Control	142.693	W	15830.769	27	586.325	

Required table value for significance at 0.05 level of confidence for df of 1 and 27 is 4.21
* Significant at 0.05 level.

The obtained 'f ' value of 7.456 and 4.965 for adjusted posttest mean on Total Cholesterol and low density lipoprotein cholesterol is greater than the required table value of 4.21 for significance at 0.05 level of confidence with degree of freedom 1 and 27. The result of the study showed that there is significant difference between sprint training and control groups on Total Cholesterol and low density lipoprotein cholesterol. It is concluded from the result of the study that there was significant decrease in Total Cholesterol and low density lipoprotein cholesterol due to the effect of sprint training.

The obtained 'f 'value of 0.902 and 0.006 for adjusted posttest mean on High Density Lipoprotein Cholesterol and Triglycerides is less than the required table value of 4.21 for significance at 0.05 level of confidence with degree of freedom 1 and 27.The result of the study showed that there is no significant difference between sprint training and control group on High Density Lipoprotein Cholesterol and Triglycerides. It is concluded from the result that there was a slight increase in High Density Lipoprotein Cholesterol and slight decrease in Triglycerides due to the effect of sprint training.

4. Conclusions

On the basis of the findings of the study, the following conclusions may be drawn.

The speed training programme conducted for a period of eight weeks in the study indicated a positive change in total cholesterol and low-density lipoprotein cholesterol level in case of male students. The training programme has shown positive but insignificant changes in, HDL-C and Triglycerides. The findings of the study indicate that Total Cholesterol, High Density Lipoprotein Cholesterol (HDL-C), Low Density Lipoprotein Cholesterol (LDL-C) and Triglycerides increased by 9.98%, 7.11%, 3.90% and 8.83% respectively due to eight weeks of sprint training. These results suggest that the sprint training is an effective means for bringing out significant changes in lipid profiles.

5. References

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