Effect of Different Intensity Resistance Training on Lipid Profile

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Abstract

The purpose of the present investigation was to find out the effect of different intensity resistance training on lipid profile. To achieve this purpose, thirty men students were selected randomly as subjects. They were assigned randomly into two experimental groups. Group I underwent low intensity resistance training and group II underwent medium intensity resistance training group of fifteen each. All the subjects of two groups were tested on selected dependent variable such as HDL-C and LDL- C before and after the treatment. The data pertaining to the variables in this study were examined by using dependent 't' and analysis of covariance (ANCOVA). Two experimental groups' namely low and medium intensity resistance training groups have achieved significant changes on HDL-C and LDL- C. In view of improvement in lipid profile was concerned, the medium intensity resistance training was best training when compared to low intensity resistance training.

Key words: Resistance training, strength training, lipid profile,

Introduction

Resistance training also known as weight training or strength training has gained great popularity in recent years, largely due to its appeal and positive impact on many diverse populations, such as athletic recreational and clinical communities. Thus resistance training programmes are used to achieve many different goals such as performance improvement, injury rehabilitation, muscle tone improvement and strength improvement (American college of sports medicine, 2001). It emphasized that resistance training increases the concentration of various hormones and growth promoting agents with the body that many contribute to this improved muscular strength and size (pearson et al., 2000)

Regular exercise helps prevent heart disease. It does this by slowing the build-up of plaque in the arteries of the heart. Active people tend to have larger, cleaner arteries. Aerobic exercise increases the level of the "good" HDL cholesterol in the bloodstream, which helps carry the cholesterol out of the arteries, while decreasing the "bad" LDL cholesterol, which is associated with an increased risk of heart disease. Aerobic type of exercise helps to prevent obstructive blood clots from forming in these arteries. An additional cardiovascular benefit of aerobic exercise is that it helps to normalize blood pressure, especially in people whose blood pressure is somewhat elevated. Aerobic exercise makes the heart stronger and a more efficient pump. Resting heart rate usually decreases after exercise training because the heart can pump more blood per beat. (Brehm, Oct, 2010)

Methodology

The investigator selected 30 male students randomly from Department of Physical Education, Annamalai University, Chidambaram. Selected subjects were divided into two experimental groups. The age of the subjects were ranged from 19 to 25 years. HDL-C, LDL- C and TG were measured by lab test.

Training Programme

During the training period, the experimental groups underwent their respective training programmes for three days per week on alternate days for twelve weeks in addition to their regular programme of the course of study as per their curriculum. Group I underwent low intensity resistance (LIRG) training (55% to 65% of 1 RM) and group II underwent medium intensity (MIRG) training (65% to 80% of 1 RM) programme (i.e. Knee extension, leg curl, bench press, military press, half squat, leg press and dead lift). Before the commencement of the experimentation and at the middle of the training period (after fifth week), the investigator recorded the 1RM tests for training subjects. The duration of training session was one day with 50 minutes approximately, for the excluding warming up and cool down.

Analysis of the Data

The pre test and post test random group design was employed as experimental design for the study. Prior to and after the training Programmed the subjects were tested and Collected data on HDL-C, LDL- C and TG. The Collected data were analyzed statistically by using dependent 't' and analysis of covariance (ANCOVA). The level of significance was fixed at 0.05 level of confidence.

Table-I

The Summary of Means and Dependent 't' Test for the Pre and Post Test on Selected Variables of Lirg and Mirg

Variables	Tests	LIRG	MIRG
HDL- C	Pre test	49.27	51.36
	Post test	51.33	54.8
	't' test	8.32*	10.02*
LDL-C	Pre test	96.27	96
	Post test	92.53	89.27
	't' test	5.33*	10.98*
TG	Pre test	108.13	105.67
	Post test	104.8	101.93
	't' test	3.28*	6.61*

* Significant at 0.05 level *P<0.05

(The table value required for 0.05 level of significant with df 14 is 2.145)

The obtained dependent t-ratio values were higher than the table value 2.14 with df 14 required for significance at 0.05 level. It indicates that there were significant difference between the pre test and post test means of low intensity resistance training and medium intensity resistance training group on HDL-C, LDL-C, and TG.

Table- II
Analysis of Covariance on Selected Variables of Lirg and Mirg

Variables	Adjusted post test means		Source of variance	Sum of square	df	Mean square	F-Ratio
	LIRG	MIRG					
HDL-C	52.27	53.86	Between	17.617	1	17.617	14.39*
			Within	33.058	27	1.224	
LDL-C	92.43	89.37	Between	70.435	1	70.435	11.59*
			Within	164.139	27	6.079	
TG	105.09	103.24	Between	24.376	1	24.376	8.59*
			Within	76.631	27	2.838	

*Significant at 0.05 level of confidence *P<0.05 (The table value required for significance at 0.05 level with df 1and 27 is 4.21)

The adjusted post test means of low intensity resistance training and medium intensity training groups on HDL – C are 52.27 and 53.86 respectively. The obtained F ratio of 14.39 for adjusted post test means is greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on HDL –C

The adjusted post test means of low intensity resistance training and medium intensity training groups on LDL – C are 92.43 and 89.37 respectively. The obtained F ratio of 11.59 for adjusted post test means is greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on LDL –C

The adjusted post test means of low intensity resistance training and medium intensity training groups on TG are 105.09 and 103.24 respectively. The obtained F ratio of 8.59 for adjusted post test means is greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on TG

Results

The results of the study showed that there were significant improvements in HDL-C, LDL- C and TG between the pre and post test of the experimental periods. The result of the study implied that medium intensity resistance training group (MIRG) has got more improvement of HDL-C, LDL- C and TG when compared to LIRG.

Discussions

The results of the study may be depends upon the following points. The relationship between triglyceride-rich lipoproteins and HDL, noting the inverse relationship between HDL and CVD risk, which is more pronounced in women than in men, and the inverse relationship between triglyceride and HDL cholesterol levels. The inverse relationship between HDL-C and LDL-C.

Conclusions

From the analysis of the data, the following conclusions were drawn. Due to the influence of low and medium intensity resistance training increases the HDL-C.

After twelve weeks of low and medium intensity resistance training reduce the level of TG and LDL- C in blood.

Future research may also benefit from long term resistance practice studies. The current research looks only lipid changes in acute time frames.

The results of the study may be recommended to the therapists, physical educators and doctors to adopt these findings to improve the healthy lipid profile.

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