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Examining the Effect of Callisthenic Exercise on High Density Lipoprotine Cholesterol in Sedentary Individuals

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ABSTRACT

The purpose of the study was to develop calisthenics exercise program and study its effect on the lipid profile of sedentary individuals. For this study single group pre and posttest method was used for the study in which 40 sedentary male from Khalsa Health Club, Pune, participated and their age ranged between 18-42 years.

Samples weight and Height were measured by researcher and assistant for body mass index. Lipid Profile Test - High density lipoprotein cholesterol (HDL-C) were measured in Samarth pathological laboratory. Followed with 12 week exercise training program and every week 4 days session. Finally, when the training period of 12 week was over the post test was taken and the data collected and analyzed. After the designed intervention program was applied the post test data was collected and paired sample t-test was used to determine the effect of intervention program on lipid profile level. It was found that HDL of sedentary subject increased after the calisthenics exercises training program and it were statically as well as numerically significant. This research has determined the effect of calisthenics exercise on lipid profile on male sedentary subjects between ages 18- 42 years old.

Keywords: Callisthenic exercise, Sedentary, Lipid Profile & High Density Lipoprotein Cholesterol

INTRODUCTION

Most countries face high and increasing rates of cardiovascular disease. Dyslipidemia (deranged lipid profile) is one of the major risk factor for the atherosclerosis. Atherosclerosis will lead to cardiovascular diseases like coronary artery disease, Hypertension, cardiovascular accident (stroke), peripheral arteries diseases. These diseases are the major causes of mortality and morbidity in the society which leads to major economic burden to the nation. The number of known cardiac risk factors increases everyday because of our life style (tobacco use, physical inactivity, an unhealthy diet and harmful use of alcohol) that is full of physical, psychological and mental stress and the just way for protection and treatment is pharmalogical prescription and another way is through life style modification that includes physical exercise, healthy dietary habits which have been proved by studies (Prentice AM et al 1995). This study shows that there is significant average reduction in cardiac risk with physical exercises.

Regular participation in physical activity as well as a single exercise session can positively alter cholesterol metabolism. Exercise is involved in increasing the production and action of several enzymes that function to enhance the reverse cholesterol transport system. Exercise has been shown to improve blood pressure, lower the risk of cardiovascular heart disease improve lipid profile (that is raise HDL, lower LDL and Total Cholesterol) (Durstine, J.L. and W.L.haskell S1994).

Most important effect of exercise on human body is on metabolic system specially lipids. Lipid and lipoprotein are risk factors for coronary heart disease. Exercise favorably changes serum lipid lipoprotein-cholesterol concentration. There is decrease in total cholesterol triglyceride and ratio of total cholesterol to HDL-cholesterol. Body weight losses decrease cholesterol and triglyceride level (Krummel D, et al 1993).

The study of the effect of calisthenics exercise on lipid profile has become a major topic of interest to physical educationist in the recent year.

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Vol-22-Issue-36-December-2019

OBJECTIVES OF THE STUDY

- The objective was to measure the high density lipoprotein cholesterol of sedentary individuals.
- The objective was to develop calisthenics exercise program suited for sedentary individuals.
- The objective was to study the effect of calisthenics exercise program on the high density lipoprotein cholesterol of sedentary individuals.

METHODOLOGY

Only one group was targeted experimental group, there was no control group. The 40 male sedentary from Khalsa Health Club, Pune, participated in the study and their age ranged between 18-42 years. Training was given to the experimental group only.

Experimental design for this study involves a cross sectional, comparative pre and post test of students in an experimental research. Since only experimental group was taken by the investigator and there was no control group so this study was conducted in a quasi-square experimental design.

VARIABLES OF THE STUDY

Variables are condition that researcher manipulates, controls or observes. This study is consisting of three variables: Independent variable, Dependent variable and extraneous variable.

Independent Variables

In this study independent variable is 12 week of calisthenics exercise training program. This variable was used to bring about change in the dependent variables. These variables were the base of the training module developed.

Dependent Variables

For this study dependent variables are:

- High density lipoprotein cholesterol (HDL-C).

Extraneous Variable

In this study extraneous variable are:

- Diet routine.
- Socio-economic factor / status.

TESTING PROCEDURES

Test were schedule in the following manner

TOOLS OF THE STUDY

Lipid profile measurement tool ErbaChem 5 Plus V2, Body scale tools which was used in this research, Electronic weight machine for weight measure and Meter tape for height. Samples Height and Weight were measured without shoes and with the least dressing.

LIPID PROFILE TEST

A complete cholesterol test, also called a lipid panel or lipid profile. Lipid profile is a blood test that can measure the amount of cholesterol and triglycerides in your blood. A cholesterol test can help determine the risk of the buildup of plaques in arteries that can lead to narrowed or blocked arteries throughout the body (atherosclerosis). High cholesterol levels usually don't cause any signs or symptoms, so a cholesterol test is an important tool. High cholesterol levels often are a significant risk factor for heart disease (Mayo Clinic staff 2013)

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Vol-22-Issue-36-December-2019

The lipid profile includes Total Cholesterol, HDL (often called good cholesterol), LDL (often called bad cholesterol), and triglycerides. The report will include additional calculated values such as HDL/Total Cholesterol ratio or a risk score based on lipid profile results, age, sex, and other risk factors.

PROCEDURE OF THE STUDY

For this study the members of khalsa Health club, pune were selected as the subjects. The age of subjects ranged between 18 to 42 years. One group will be the target, experimental group. Experimental group participated in calisthenics exercise training program which was conducted for 12 weeks and every week 4 days session. Before calisthenics exercise training period, pre-test had done by laboratory. Samples weight and Height were measured by researcher and assistant for body mass index. Lipid Profile Test - High density lipoprotein cholesterol (HDL-C) these factors were measured in Samarth pathological laboratory.

After the pre-test was over, all the selected subject were exposed to 12 week Exercise training program and every week 4 days session. The program consisted of the following callisthenic exercises; jogging, skipping, front-side-back running, Suryanamaskar, floor pushups, pullups, situps, back extension, squat, Squat Thrust, Jump & squat, jump & lunges, lunges, step lunges, calf raises, dips, tricep dips on steps, walking with push up position,Clap &push ups, crunches, back bridge, back extension, bhujangasan, pelvic tilts, pelvic thrust, hip extension, Maximus kickback, side leg raise, knee up on steps, Front, side, & back Running, shuttle run, shuttle run with side step, step up and down, V-up, abdominal drag and flag, .

At the start of the programme the participants went through entire body workout, so that they get used to the exercise routine. From the 3rd to 7th week Monday was dedicated to upper body exercises and chest, biceps, triceps and back muscle were concentrated; Wednesday and Sunday was dedicated to cardio, abs and back exercise; Friday was dedicated to lower body exercises and quadriceps, hamstring, gluteus and calf muscle were concentrated

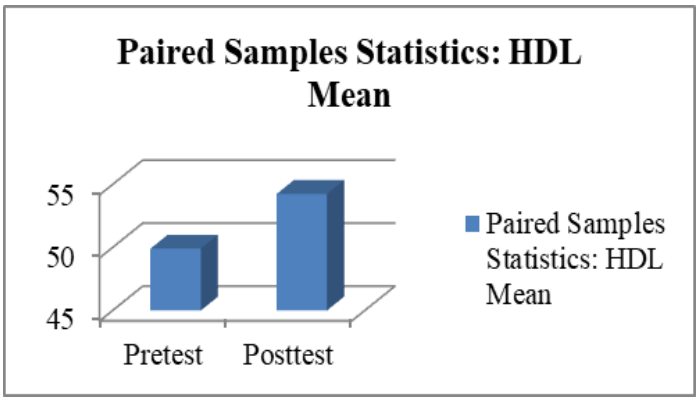
From the 8th to 12th week Monday and Friday was dedicated to cardio, abs and back exercises. Wednesday and Sunday was dedicated to Entire body plyometric exercises and chest, biceps, triceps, back muscle, quadriceps, hamstring, gluteus and calf muscle were concentrated. When the treatment or training period of 12 week was over, post test was conducted.

STATISTICAL TREATMENT

After step wise data collection i.e. pre test, treatment and post test they were processed through a series of statistical analysis; After the designed intervention program was applied the post test data was collected and paired sample t-test was used to determine the effect of intervention program on lipid profile level.

The mean, standard deviation and standard error of mean was calculated. Co relational statistics were used to examine the degree of the relation between exercise and lipid profile. Pearson Correlation method was used for this propose. Post intervention program the post test data was collected and processed for finding the effect of calisthenics exercise training program on lipid profile. The t-test for paired observation was used to determine whether group improved significantly in lipid profile level after training.

1. Analysis of Effect on HDL Level



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Vol-22-Issue-36-December-2019

1.1 Paired Samples Statistics: HDL

Test	Mean	N	Std. Deviation	Std. Error Mean
Pretest	49.906	35	3.1261	.5284
Posttest	54.240	35	2.2027	.3723

The above table shows the HDL level of 35 subjects at pretest was 49.906 mg/dl with standard deviation of 3.1261. Similarly at post test, there was increase in level of HDL i.e. 54.240 mg/dl (± 2.2027).

1.2 Paired Samples Correlations: HDL

N	Correlation	Sig.
35	0.927	0.001

The above tableshows the correlation between pre test and posttest score. It was 0.927 which was statistically significant at 0.001 significance level.

1.3 Pair Sample t-test: HDL

Pair	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
Pre Test and Post test	-4.3343	1.3619	.2302	18.829	34	0.001

The above table shows the Mean Difference between pretest and post-test score of HDL level was -4.3343 mg/dl. This mean difference was tested by pair sample t-test. At 34 degrees of freedom t-value was 18.829 which was statistically significant at 0.05 significance level (p=0.001). This indicates that there was significant effect on HDL level.

RESULT OF STUDY

The purpose of the present study was to examine the effect of calisthenics exercise on lipid profile in sedentary individuals.

It was found in (t = 18.829, p<.05) High density lipoprotein cholesterol (HDL) Level of experimental group. That means the High density lipoprotein cholesterol (HDL) of sedentary subject increased after the calisthenics exercises training program and it was statically as well as numerically significant.

IMPLIES OF THE STUDY

1. The study would help the physical education teachers to know the effect of exercise on lipid profile.
2. The results of present study would help to give appropriate treatment to the lipid profile patient.
3. The finding of the study would help lipid profile patient to improve good health.
4. This study may motivate other investigators to takes up similar studies.
5. The study would be helpful to medicine and physical education science.
6. This study would prove the importance of calisthenics exercise in decrease of cardiac diseases.
7. This study would prove that we can use calisthenics exercise instead of pharmalogical prescription.

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