

EFFECTS OF TREADMILL WORKOUT IN LOW DENSITY LIPOPROTEIN AND VERY LOW-DENSITY LIPOPROTEIN IN SEDENTARY STUDENTS

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Abstract:

Objectives

The primary aim of the study was to examining the effects of Low Intensity Treadmill Workouts on Low Density lipoprotein (LDL) and very low density lipoprotein (VLDL).

Sample Size

Only one group was targeted as an experimental group, there was no control group. The 15 male participated in the study and their age ranged between 19-28 years. The all students are sedentary and not participation any sporting or physical activities.

Ethical consideration

Exclusion criteria were the presence of any chronic disease such as CVD, Hypertension Hypotension, asthma, Diabetes, etc. that would put the subjects at risk when performing the experimental tests.

Training program

Experimental group participated in Low Intensity Treadmill Workouts Training program which was conducted for four-week, four days in a week and 15 minutes in a day. After the pre-test was over, the entire selected subjects were exposed to four-week Treadmill Workouts.

Results

Low Density lipoprotein and very low density lipoprotein decreased after four-week Treadmill Workouts intervention programme.

Keywords: LDL, VLDL, sedentary

ORIGIN OF THE PROBLEM

A Sedentary lifestyle is a type of lifestyle in which one is not Participated in physical or sporting activity or life with exercise (Sassos 2020) A person living a sedentary lifestyle is often sitting or lying down while engaged in an activity like playing video games, reading or using a mobile phone or computer for much of the day, socializing and watching TV,. A sedentary lifestyle contributes to poor cardiovascular health, diseases as well as many preventable causes of death (Owen et.al 2020). Treadmills are mostly used for cardio training and aerobic in Nature. However, this fitness machine can be used for more boosting your cardiovascular health. Workout on treadmills can control cholesterol in the blood, preventing blockage in arteries, increase high-density lipoprotein (HDL) and reduce low-density lipoprotein

(LDL) in the blood (Superko,1991. Durstine, and Haskell 1994)). A low-density lipoprotein (LDL) cholesterol level may be associated with a higher risk for heart disease and stroke (Bridgley, Pearson, Ross & Braithwaite, 2008, Krummel, Etherton Peterson 1993). Stress led to higher levels of low-density lipoproteins (LDL), the “bad” cholesterol, and decreasing levels of good cholesterol (Assadi,2017).Treadmills is a most popular workout machines on the gym. treadmill workouts can benefit your health, both mentally and physically. The treadmill is a hugely popular **aerobic exercise machine**. Aside from being a versatile cardio machine, a treadmill can also help to manage stress level (<https://www.healthline.com/health/treadmill-weight-loss#other-benefits>).Treadmills provide outstanding cardiovascular exercises, which can significantly enhance cardiovascular health. Treadmill workout maintain constant heart rates (<https://healthytalbot.org/topics/7-ways-treadmill-workouts-can-benefit-your-health/>). There are several studies available in our society that aerobic exercise combined with weight loss significantly reduces, low-density lipoprotein cholesterol, very low-density lipoprotein cholesterol, and triglycerides but no study available on effects of treadmill workout on LDL and VLDL in sedentary students. There is a scarcity of research reports on the effects of treadmill workout on low-density lipoprotein (LDL) of The effort made by the investigator, can prove very useful for reduce low-density lipoprotein (LDL) and maintain cardiovascular health.

METHODS

In this study, the researcher Follow the ethical guidelines, principles, and standards for studies conduct with human beings. The study was including safeguards for protecting humans, which involve three major ethical principles: beneficence, respect for human dignity, and human justice. Only one group was targeted as an experimental group, there was no control group. The 15 male sedentary students from SRTM University, participated in the study and their age ranged between 19-28 years. Experimental design for this study involves a cross sectional, comparative pre and post-test single experimental design. The blood sample collected from veins to measure Low Density lipoprotein and very low density lipoprotein (a types of lipid) by the technician of Sahyog Pathology lab Vishnupuri Nanded. This study involves an experiment of sedentary students on quasi experimental research design.

Demographic information:

The data was collected through respondents in the form of different descriptive tests. The demographic information about, age, height weight, daily smoking etc. was obtained before seeking responses.

Training Intervention program:

For this study, the members of Swami Ramanand Treeth Marathwada University’s students were selected as the subjects. The age of subjects ranged between 19 to 20 years and they were studying in Academic year 2015-2018. All students are sedentary in nature and not participation in any sporting or physical activities regularly. Experimental group participated in treadmill workout training program which was conducted for 4 weeks and 4 days in a week and 15 minutes in a day at 6.5 km speed. The standard treadmills of Aerofit were used to training program. Before exercise pre-test done by departmental fitness centre.

The LDL and VLDL were measured collecting the blood sample by Sahyog pathological laboratory. After the pre-test was over, all the selected subjects were exposed to 4 week treadmill workout program, post-test done by departmental fitness centre. The levels of Low Density lipoprotein (LDL) and very low density lipoprotein (VLDL) are tested after fasting 8 to 12 hours. Low Density lipoprotein (LDL) and very low density lipoprotein (VLDL) levels remain temporarily higher for a period after eating. The blood pressure and heart rate were measure though the digital blood pressure monitor of Amron.

Data processing:

Data processing plays a very significant role in the interpretation of numerical data obtained from individuals by giving numerical expressions to the relationships and the variations with respect to different aspects.

The data was checked for accuracy and completeness and was coded and put up into the SPSS Descriptive statistics for all studied variables, percentage, mean, standard deviation and t-ratio, were considered statistically technique throughout the study and the level of significant was set-up at 0.05 level.

RESULTS AND DISCUSSION

The results concerning of this research are presented in the form of tables and also illustrated with the help of suitable figures wherever necessary. For the sake of convenience and methodical presentation of the results, following order has been adopted.

Table1 : shows the Range of Low Density lipoprotein (LDL) Cholesterol level.

LDL Cholesterol	
Status of LDL Cholesterol	Range of LDL Cholesterol
Optimal	Less than 100 mg/dL
Near optimal	100 to 129 mg/dL
Borderline high	130 to 159 mg/dL
High	160 to 189 mg/dL
Very high	190 mg/dL and higher

Table 1, shows the range of LDL Cholesterol level. The National Cholesterol Education Program has set guidelines for LDL Cholesterol level in milligrams per decilitre (mg/dL).

Less than 100 mg/dL LDL Cholesterol level consider as optimal level, 100 to 129 mg/dL LDL Cholesterol level consider as Near optimal level, 130 to 159 mg/dL LDL Cholesterol level consider as Borderline high level, 160 to 189 mg/dL LDL Cholesterol level consider as high level and 190 mg/dL and higher LDL Cholesterol level treated as high level.

Table :2Pre and post-test of Low Density lipoprotein (LDL) in Sedentary students

Components	Test	No.	Mean	Std. Deviation	T-ratio
Low Density lipoprotein (LDL)	Pre-test	15	143.56	15.68	P,<.05*
	Post-test	15	119.86	12.39	

Table -2 indicates, the Pre-test mean score of Low Density lipoprotein (LDL) was 143.56mg/dL and the post test was 119.86mg/dL obtained respectively of students. Whereas, the of Pre-test SDs of Low Density lipoprotein (LDL) was 15.68mg/dL and post-test was 12.39mg/dL recorded respectively of sedentary students.

The result of the study indicates the significant effects of treadmill workout was found in Low Density lipoprotein (LDL) among students. The findings of the study reveal Low Density lipoprotein (LDL) were decreases after four week of treadmill workout training program.

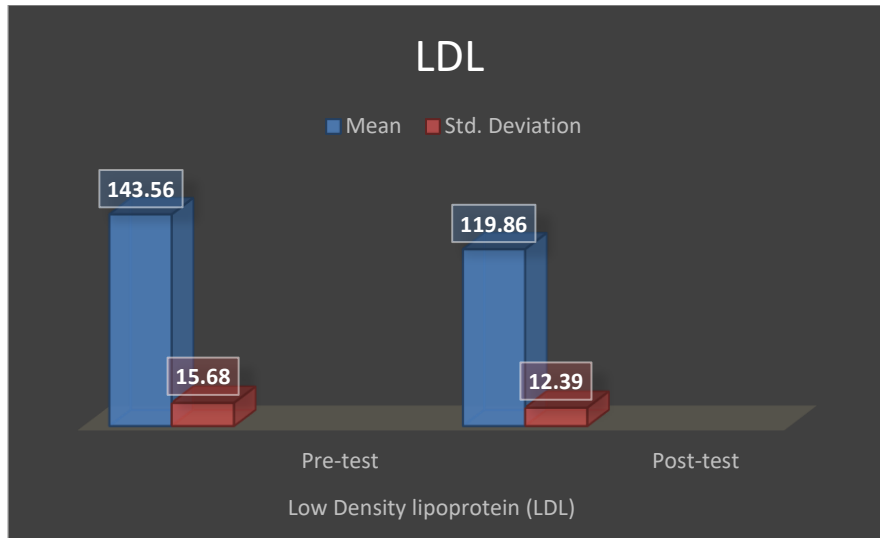


Figure : 1 Pre and post-test of Low Density lipoprotein (LDL) in Sedentary students

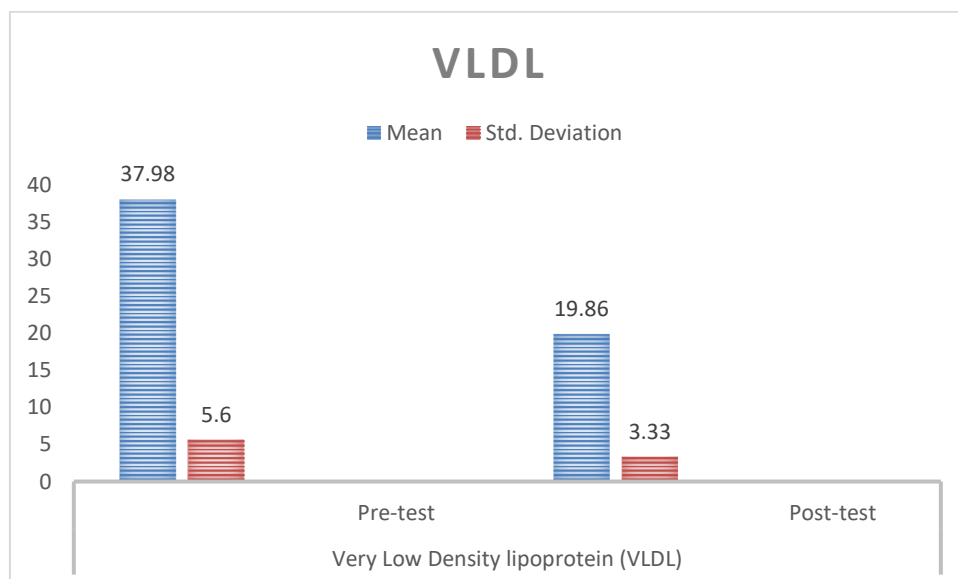
Table :3 Pre and post-test of very Low Density lipoprotein (VLDL) in Sedentary students

Components	Test	No.	Mean	Std. Deviation	T-ratio
Very LowDensity lipoprotein (VLDL)	Pre-test	15	37.98	5.60	P,<.05*
	Post-test	15	19.86	3.33	

Table -3indicates, the Pre-test mean score of Very Low Density lipoprotein (VLDL) was 37.98 mg/dLand the post test was 19.86 mg/dLobtained respectively of sedentary students. Whereas, the of Pre-test SDs of Very Low Density lipoprotein (VLDL) was5.60mg/dLand post-test was 3.33 mg/dL recorded respectively of students.

The findings of the study reveals that the Very Low Density lipoprotein (VLDL) were decreases after four weeks of treadmillworkout training program.

Figure : 2 Pre and post-test of very Low Density lipoprotein (VLDL) in Sedentary students



DISCUSSION

The findings of the study reveal that aerobic exercises training intervention reduce Low Density lipoprotein (LDL) and very low density lipoprotein (VLDL). Regular participation in physical activity as well as an exercise 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 maintain blood pressure, lower the risk of cardiovascular heart disease and lowers Low Density lipoprotein (LDL) and very low density lipoprotein (VLDL) (Durstine, and Haskell, 1994). Most important effect of exercise on human body is on metabolic system specially Low Density lipoprotein (LDL) and very low density lipoprotein (VLDL). High level of lipoprotein is one of the risk factors for coronary heart disease (Durstine, 1994).

Exercise favourably changes serum lipid lipoprotein-cholesterol concentration. The hormone cortisol is released in response to stress. Studies suggest that the high levels of cortisol from long-term stress can increase Low Density lipoprotein (LDL), very low density lipoprotein (VLDL) and blood pressure. These are common risk factors for heart disease. This stress can also cause changes that promote the buildup of plaque deposits in the arteries (Health encyclopaedia, Durstine, 1994, Krummel 1993, Superko 1991).

Even minor stress can trigger heart problems like poor blood flow to the heart muscle. This is a condition in which the heart doesn't get enough blood or oxygen. And, long-term stress can increase the blood pressure, Low Density lipoprotein (LDL) and very low density lipoprotein (VLDL). This makes the blood stickier and increases the risk of stroke (Health encyclopaedia). Treadmill workout offers many benefits. It may help to, weight loss, improve endurance, control blood sugar, increase HDL (good) cholesterol levels, improve memory and cognition, protect against Alzheimer's, promote healthier skin, strengthen muscles, decrease fatigue, decrease joint stiffness, relieve stress and anxiety, promote better sleep, increase energy levels, boost your immune system and improve sexual arousal. Finally, this research provides a platform for further research in the field of health related issue.

IMITATIONS OF THE RESEARCH

A limitation of this study is that it reflects the findings of one institution; the data was collected in one institution, hence, the results may not be generalized to other institutions. Results of this study are limited by a relatively small preliminary experimental group rather than a study of actual behaviour, which would be very difficult to achieve.

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E - Resources

<https://adaa.org/understanding-anxiety/related-illnesses/other-related-conditions/stress/physical-activity-reduces-st>

<https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=1&ContentID=2151>

Web site: <http://www.mayoclinic.com/health/cholesterol-test/my00500>