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Study of effects of yogic exercises on lipid profile

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Abstract
The purpose of the present research was to determine the effects of Yogic exercises on lipid profile of adolescents. To achieve this fifteen physically active and interested students (N = 15) were selected as subjects and their age group ranged between 16 to 18 years. The experimental groups underwent their respective experimental treatment for eight weeks, 4 days a week and a session on each day. In lipid profile mainly triglycerides, Total Cholesterol, LDL and HDL were analyse. The t-test was applied for analysed the data. The result of the study revealed that there are positive effects on lipid profile of Yogic training have significantly effect on triglycerides, Total Cholesterol, LDL and HDL (p 0.05) as compared pre exercises effects and post exercises effects.

Keywords: Yogic exercises, lipid profile, triglycerides, total cholesterol, LDL and HDL.

Introduction
Today's society needs a person who is physically and mentally fit to contribute to the well-being of society. Therefore, the need for improving Physical fitness and to achieve healthy life participation in sporting activities is very much important in modern era. Physical fitness is a positive and dynamic quality extending on a continuum form death to the abundant life. It is related to ability to meet the demands of the environment, specifically to preserve, to with stand stress, to resist fatigue and to possess the energy for and abundant life. Physical fitness is minimal in the seriously ill and maximal in the highly conditioned person. The energy demands of daily tasks vary from individual to individual. Some position between these poles is satisfactory for most of people. Since an individual is non divisible in to discrete parts, Physical fitness affects all phases of human existence. It is vital for the whole person in order to permit total effectiveness'. Involvement of Physical fitness through exercise is also importance for the maintenance of sound neuromuscular, cardiovascular, and other organic system.

Physical fit Person has more efficient circulatory and respiratory system than an unfit person. The conditioned individual has a greater stroke volume, which enables more blood to be pumped each stroke, thus enabling fewer strokes per-minute to do the work. The trained person is also able to achieve full oxygen carbon dioxide exchange, resulting in more available oxygen taken from the air, a slower rate of breathing and a lower rate of lactic acid formation than is formed in the untrained individual. High level of lipid Profile is very commonly associated with Coronary Heart disease. Evidence indicates that coronary heart disease being is early childhood and progress slowly into adulthood. As in the CHD, Cholesterol along with other lipids gets deposited on the arterial walls. This deposition of harmful lipids can be minimized or reduced by undergoing required intensity of exercise.

Aerobic word originally applied by bacteriologists to bacteria Aerobic the word applied to the bacteria requiring free oxygen in order to live. Later, as exercise started to become more and popular, these words were adopted to designate certain types of exercise. Most everyone is familiar with "Aerobic exercise" Not everyone is familiar with non-aerobic or anaerobic exercise.

Lipid Profile
The lipid profile is a blood test done to assess the status of fat metabolism in the body and is important in heart disease. This includes measuring lipids (fats) and its derivatives known as

lipoproteins. Lipoproteins are compounds containing fat and proteins and include free cholesterol, cholesterol esters, triglycerides, phospholipids and apoproteins [1].

Lipids

The Lipids are a heterogeneous group of compounds related either actually or potentially to fatty acids. They have a common property of being relatively insoluble in water and soluble in non-polar solvents such as ether, chloroform, benzene and acetone. A lipid includes fats, oils, waxes and related compounds. Lipids are classified as simple, complex and derived lipids [2].

Cholesterol

Cholesterol is a type of fat called a lipid, which the body uses to help build cells and produce certain hormones and bile salts. Cholesterol forms complexes with proteins in the blood to produce lipoproteins. Lipoprotein comes in two forms: (1) High Density Lipoprotein (HDL); the good cholesterol with more protein than fat, and (2) Low Density Lipoprotein (LDL); the bad cholesterol with more fat than protein [3].

Normal range of cholesterol in the blood should be less than 200 milligrams per decilitre or mg/dl. High cholesterol of 240 mg/dl or greater in the blood increases the risk of heart disease, stroke, coronary artery disease etc. Abnormally low levels of cholesterol may indicate hyperthyroidism, or an overactive thyroid gland, liver disease, inadequate absorption of nutrients from the intestines and malnutrition.

We all have quite a lot of cholesterol in our blood, and it is there for the excellent reason that it is an essential chemical for the efficient running of the human body. Only a small amount of this cholesterol comes directly from the food we eat: most of it is made by our own body. Nevertheless, it is not a good thing to have too much.

Cholesterol is not a life-threatening toxin, but a medium-sized molecule that is really a building block for important parts of the body. In particular it is an essential component of cell membranes. Cholesterol also stabilizes a cell against temperature changes. It is a major part of the membranes of the nervous system, the brain, the spinal cord and the peripheral nerves. In particular it is incorporated into the myelin sheath that insulates the nerves from the surrounding tissue. Cholesterol is also the forerunner of important hormones such as the female sex hormone, oestradiol, and the male sex hormone, testosterone, and of vitamin D, which we need in order to utilize calcium and form bone. Nearly all body tissues are capable of making cholesterol, but the liver and intestines make the most. We require cholesterol to produce the bile we need to digest the fats in our food, and the name itself comes from the Greek words for 'bile solids [4].

Essential though cholesterol is, there can be too much of it, and too much causes a build-up of deposits in the arteries, constricts them, and may even block them, with dire consequences.' The causes which are now seen as contributing to higher-than-normal cholesterol levels are: hereditary factors, which are the most important; then high blood pressure; followed by stress, smoking, obesity and dietary cholesterol [5].

Materials and method

The purpose of the study was to analyse the effects of Yogic exercises on lipid profile. To achieve this, thirty (N = 15) interested students of Rohtak District, Haryana, were randomly selected as subjects and their age ranged between 16 to 18 years. Lipid Profile was selected as variable for this study. The Lipid Profile was measured by lipid profile test in the laboratory. Yogic training was Ashans and Prayanams which was more than 40 minutes per day. The intensity ranged from 50% to 70%. These exercises were performed for 5 day per week and one session on each day. Data were collected one day before starting the exercises and after completion the exercises.

Data Analysis

Mean and standard deviation of lipid profile were calculated of experimental group before and after the exercises for using t-test. All analysis was carried out using graph pad t-test calculator and test at .05 level of significance.

Results

Statistical Treatment of the Data

Statistical methods play very significant role in the interpretation of the numerical data obtained from the subjects by numerical expressions to the relationship and the variations with respect to different aspects. Keeping in view the aims of the study following statistical tools was used for the interpretation of Data.

Table 1: Comparison of Mean score of Total Cholesterol (Lipid Profile).

Type of exercise	Mean (N-15 each)	SD	SED	t-test
Pre Test	218.41 mg/dl	21.13 mg/dl	5.42	4.69
Post Test	193.00 mg/dl	20.82 mg/dl		

* Significant Value .05.

Table 2: Comparison of Mean score of Triglycerides (Lipid Profile).

Type of exercise	Mean (N-15 each)	SD	SED	t-test
Pre Test	305.00 mg/dl	26.32 mg/dl	6.65	2.25
Post Test	294.00 mg/dl	25.15 mg/dl		

* Significant Value .05.

Table 3: Comparison of Mean score of HDL (Lipid Profile).

Type of exercise	Mean (N-15 each)	SD	SED	t-test
Pre Test	44.02 mg/dl	5.15 mg/dl	1.44	5.28
Post Test	53.11 mg/dl	6.02 mg/dl		

* Significant Value .05.

Table 4: Comparison of Mean score of LDL (Lipid Profile).

	Mean (N-15 each)	SD	SED	t-test
Pre Test	118.84 mg/dl	12.13 mg/dl	2.87	7.07
Post Test	98.69 mg/dl	10.01 mg/dl		

* Significant Value .05.

[1] Gary A. Thibodeau (1990), "Anthony's Textbook of Anatomy and Physiology" Mosby College Publishing. St. Louis, pp 32

[2] I. bid.

[3] William C. Ober (2004) "Exercise Physiology" Prentice Hall International INC. London, UK

[4] Hebbelinck. J.O. (1990) Utilization of fatty acids during exercise. In: Bio-Chemistry of exercise VII, Vol. 21, Human Kinetics PP 319-322.

[5] I. bid.

Table 5: Comparison of Mean score of VLDL (Lipid Profile).

	Mean (N-15 each)	SD	SED	t-test
Pre Test	28.26 mg/dl	3.12 mg/dl	.69	6.32
Post Test	23.91 mg/dl	2.04 mg/dl		

* Significant Value .05.

The t-test of the pre and post mean scores of lipid profile of experimental group have been analysed and presented in Table I to V. Table No. I indicate that the pre and post test mean and standard deviation of experimental groups on total cholesterol. The obtained 't' value on total cholesterol was 5.15, which was higher than P value at 0.05 level of confidence; hence there was significant difference in pre and post mean of experimental group of total cholesterol.

Table No. II indicate that the pre and post test mean and standard deviation of experimental groups on triglycerides. The obtained't' value on triglycerides was 2.25, which was higher than P value at 0.05 level of confidence; hence there was significant difference in pre and post mean of experimental group of triglyceride.

Table No. III indicate that the pre and post test mean and standard deviation of experimental groups on HDL. The obtained 't' value on HDL was 5.28, which was higher than P value at 0.05 level of confidence; hence there was significant difference in pre and post mean of experimental group of HDL.

Table No. IV indicates that the pre and post test mean and standard deviation of experimental groups on LDL. The obtained 't' value on LDL was 7.07, which was higher than P value at 0.05 level of confidence; hence there was significant difference in pre and post mean of experimental group of LDL.

Table No. V indicates that the pre and post test mean and standard deviation of experimental groups on VLDL. The obtained 't' value on VLDL was 6.32, which was higher than P value at 0.05 level of confidence; hence there was significant difference in pre and post mean of experimental group of VLDL.

Discussion

Many studies suggested that Yogic exercises may be valuable for determining the physical variables such as agility and speed. Teixeira *et al*., (2001) pointed out that resistance training three times per week is an effective as five times per week. Agility and speed are considered as the main determinants of sports performance. This improvement in agility is beneficial for athletes who require quick movements while performing their sport and support results from other studies. In a study of tennis players, the authors used test to determine speed and agility (Parsons and Jones, 1998). They found that the players became quicker and more agile; enabling them to get to more balls and be more effective tennis players. Neural adaptations usually occur when athletes respond or react as a result of improved coordination between the central nervous system (CNS) signal and proprioceptive feedback (Craig, 2004). Many research studies suggested that resistance training may be valuable for determining the variable such as agility. Hence, it is recommended that systematic designed resistance training such as progressive and alternate low and high intensity helps to improve agility; which is absolutely needed for better performance in almost all games.

Conclusion

Yogic exercises helps to develop or maintain physical fitness and overall health. It is evident from a number of the adaptations that occur with Yogic exercises that there are several health-related benefits. Yogic exercises has been shown to increase factors associated with health. From the results, the different modes of Yogic exercises can be significantly change the lipid profile between 15 and 18 years of boys. Any practical application requires careful implementation and individual experimentation. The result of the study indicated that there was significant improvement on lipid profile due to eight weeks of different Yogic exercises. From the results, we recommend that Yogic exercises are the good for health purpose as well as recreational purpose.

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