

Effects of 12-week yoga programme on physiological parameters- (Lipid profile- LDL, HDL and cholesterol)



Physical Education

KEYWORDS :

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Introduction

In last decade and a half, world over cases of heart diseases have grown up exponentially in numbers, and the numbers of casualties worldwide are enough to prove that its a hazard. Cholesterol is the main reason for most of the heart related problems and that can be further simplified into LDL and HDL.

LDL (low density lipoprotein) often termed as bad cholesterol, the kind that can clog your arteries, high levels of LDL leads to blockage in arteries and cause serious problems like heart attack and stroke. Physical inactivity and sedentary lifestyle results in rise in level of LDL, whereas (HDL) is sometimes called "good cholesterol" (despite the fact that it is exactly the same as the cholesterol in LDL particles). Those with higher levels of HDL tend to have fewer problems with cardiovascular diseases while those with low HDL cholesterol levels (especially less than 40 mg/dl or about 1 mol/L) have increased rates for heart disease. Higher HDL levels are correlated with better cardiovascular health. Further increasing one's HDL has been found to improve cardiovascular health.

So basically our motive with this study was to bring down the LDL percentage.

Cholesterol percentage is high in people who are physically inactive or some may be obese and for these people any kind of physical activity appears difficult. This often prevents them taking up any activity. The ancient Indian science of yoga is a way of life which includes changes in mental attitude, diet, and the practice of specific techniques such as yoga postures(asanas), breathing technique (pranayama) and meditation, among various yoga techniques pranayama and many asanas can be performed while seated, and are less challenging for the people who are physically inactive, even people with physical disability can also practice various asanas and pranayama. In recent times yoga is being accepted broadly worldwide to achieve desired fitness levels and a disease free lifestyle. Modified versions of the physical exercises in yoga have become popular as a kind of low-impact physical exercise, and are used for therapeutic purposes. Both the meditative and the exercise components of yoga show promise for non-specific health benefits. A survey released in December 2008 by the US National Center for Complementary and Alternative Medicine found that yoga was the sixth most commonly used alternative therapy in the United States during 2007, with 6.1 percent of the population participating. Yoga has proven its efficacy in improving the LDL levels and total cholesterol. This study was undertaken to see the effects of 12 week yoga-pranayama practices on physiological parameters like LDL, HDL and total cholesterol conducting a lipid profile test before and after. Anthropometric measurements like weight and BMI were also considered.

Methods

The study was conducted from April 2013 to June 2013 in Revolution gym& spa (women healthcare & lifestyle center).After taking consent 50 individuals were selected in the age group of 35-50 years with the signs of cardiovascular problems after performing lipid profile tests. They were divided into test group (who underwent yoga practice) and control group (who did not undergo any yoga practice). The test groups were taught yoga and pranayama for 3 continuous months, 1 hour every day in the morning between 7.00 am and 8.00 am by yoga expert. The control group involved 25 patients and were on treatment did not undergo any yoga practice. Both the test and control groups

were asked for their blood samples for lipid profile test,LDL,HDL and total cholesterol before and after the study period. Anthropometric measurements like weight and BMI were also estimated before starting and at the end of the study period. The data obtained was analyzed using appropriate statistical methods.

Name and duration of various pranayamas & yogaasanas included in yogic practice

Pranayama

1. Bhastrika- pranayama, 3-5 mins per day
2. Kapal- bhati, 5-7mins per day
3. Anulom-viloma, 5-10 mins per day
4. Bhramari, 5 times a day
5. Udgit-Om Uchcharan, 5 times a day

Yoga-asanas

1. Surya namakar, 3-7 turns of each, the pose being maintained for ten seconds adding each turn, every fortnight
2. Tadasana, ¼ minute to one minute for adding ¼ minute per week.
3. Trikona-asana, ¼ minute to one minute for each side, adding ¼ minute per week
4. Pashimottanasana, ¼ minute to one minute adding ¼ minute per week
5. Bhujangasana, 3-7 turns of each, the pose being maintained for ten seconds adding one turn each, every fortnight
6. Vajrasana, ¼ min to 1 min adding ¼ min per week
7. Shalabasana, ¼ min to 1 min adding ¼ min per week
8. Shavasana, 2- 5 minutes, adding 1 minute per week

Result

Table 1: Physiological parameters in Test group and Control group.

	Test Group		Control Group	
	Before	After	Before	After
LDL	108±36	95±32.2	110.2±36.6	111.2±35
HDL	38.2±4.8	39.1±5	38.4±4.8	38±4.33
TC	178.9±42.2	162.18±32	187.4±44	184.6±42.6

P<0.001, TC= Total cholesterol

Table 2: Anthropometric measurements in test and control group

	Test group		Control Group	
	Before	After	Before	After
Weight	66.20±4.2	61.6±4.6	65.8±3.9	65.6±4.3
BMI	27.86±1.2	24.9±1.5	25.9±1.7	26.1±2.1

***P<0.001.**

Table 1 shows that there is significant decrease in LDL levels of the test group whereas LDL levels in control group were slightly decreased after three months this supports the fact that LDL levels can decrease significantly in people who observes physical inactivity. No significant changes were observed in HDL levels of control group but test group observed a slight increase in HDL level. But controlling and monitoring the diet throughout the study period may achieve significant improvement in HDL

levels.

Discussion and Conclusion

In the present study there were significant changes in LDL and TC values for the group that underwent yoga training for 12 weeks. The results have shown significant decrease in the presence of LDL and Total Cholesterol and significant increase in HDL. The results of post test were compared using t-test.

The possible mechanism of actions of yogasanas and pranayama that explain the outcomes of the present study are.

- a. Previous studies have indicated that losing weight can also lower your lipids, so the weight loss noted in individuals who practiced yoga during the study period may also have resulted in lowering down their cholesterol levels.
- b. Muscular relaxation, developed and improved blood supply might enhance insulin receptor expression on muscles causing increased glucose uptake by muscles and thus reducing blood sugar.
- c. There was significant decrease in weight and BMI of individuals from test group resulting in better heart condition and overall health.
- d. Studies have shown that stress can affect the entire physical system. "the muscle tense, the heart beats faster, breathing pattern change, and if cause of stress isn't discontinued, the body secretes more hormones that increase blood sugar levels, ultimately raising cholesterol and putting one at risk of heart diseases. Regular practice of pranayama and relaxing yoga postures possibly brought down the stress levels hence resulting in significant changes in cholesterol level.
- e. Direct Rejuvenation- rejuvenation of cells of pancreas due to abdominal stretching during yoga exercise, which may increase utilization and metabolism of glucose in peripheral tissues, liver and adipose tissue through enzymatic process.

Addition to all above effects, practicing yoga asanas and pranayama, many individuals reported a feeling of well being, more relaxed satisfied and a sense of relief from anxiety and depression. They were more alert and active which could be due to release of adrenocortical. Yoga -asanas with its change in posture and controlled breathing in pranayama influences mental status of an individual allaying apprehension, stress and brings about feelings of well being and hormonal balance.

Limitations

1. The numbers of individuals involved were less.
2. There may have been diet irregularity, as diet was suggested to individuals but wasn't monitored.
3. The parameters were taken only twice – once, at the time of start and other at the end of study period.

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