



Isolated And Combined Effects Of Yogic Practices And High Intensity Interval Training On Cardio Vascular Risk Factors Among Adult Men

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Abstract:

Aim: To examine the effects of yogic practices, High Intensity Interval Training and Combination of High Intensity Interval Training and Yogic Practices on Risk Factors of Coronary Heart Disease in obese adult.

Methods: Eighty obese men (mean[SD] age 24.4 {1.3} years) were randomly divided into four groups: Yogic Practices group (YPG: n=20): High Intensity Interval training group (HIITG: n=20): Combination of High Intensity Interval Training and Yogic Practices group (CHITYPG: n=20): Control group (CG: n=20): All the subjects were evaluated before and after the training period using five tests: i) Body mass index; ii) Systolic blood pressure; iii) Diastolic blood pressure; iv) LDL Cholesterol; and v) HDL Cholesterol: The yogic practice group underwent yogic practices consisted of asanas, pranayama and meditation. The High Intensity Interval Training Group underwent High intensity interval training consisted of exercise. The Combination of Yogic Practices and High Intensity Interval Training underwent High Intensity Interval Training followed by yogic practices. The control group has continued to carry out the daily activities during the experiments. The experimental groups trained 3 days a week for 16 weeks

Results: Training produced significant improvements in body mass index, systolic blood pressure, diastolic blood pressure, LDL Cholesterol and HDL Cholesterol in all the intervention groups from pre to post tests. The improvements were significantly higher for the CHITYPG than for the YP, HIIT and Control groups; 18.6%, 10%, 5% and 2% for the body mass index ($p < 0.05$); 20%, 15%, 10% and 2% for Systolic blood pressure ($p < 0.05$); 8%, 6%, 4% and 2% for Diastolic Blood pressure ($p < 0.05$); 30%, 20%, 10% and 5% for HDL Cholesterol ($p < 0.05$); 20%, 15%, 10% and 5% for LDL Cholesterol ($p < 0.05$) respectively.

Conclusion: Combination of yogic practices and high intensity interval training produced greater improvements in the coronary heart risk factors of Body Mass Index, Systolic Blood Pressure, Diastolic Blood Pressure, LDL Cholesterol and HDL Cholesterol than each of the training programs performed separately.

Key words: Yogic Practices High Intensity Interval Training Body Mass Index Blood Pressure LDL Cholesterol and HDL Cholesterol.

1.Introduction

The burden of cardiovascular disease world – wide is one of great concern to patients and health care agencies alike. Circulatory disease, including myocardial infarction (MI) and stroke kill more people than any other disease. Globally nowadays every individual is conscious about his health and wants to look handsome, like their role models heroes. Today youth spend a lot of time in the gymnasium to improve their muscles, to reduce fat and to maintain quality of life. In fact we know yoga practices helps for improving cardio-vascular system and in reducing fat. Risk factors are traits and life-style habits that increase a person's chances of having coronary artery and vascular disease. Some risk factors cannot be changed or controlled, while other risk factors are controllable. The most important risk factors are high blood pressure, high blood cholesterol and cigarette smoking. Other factors that may increase your risk for cardiovascular disease are diabetes, being overweight (obesity), being inactive and having an unhealthy reaction to stress. Obesity is strongly associated with coronary artery disease (CAD) and may be an independent risk factor for Heart attack. Medical authorities have identified obesity as a causal factor in the development of diabetes, hypertension, and cardiovascular disease (CVD), and more broadly, of metabolic syndrome/insulin resistance syndrome. In addition, in recent years, authorities have identified obesity as a significant risk factor for the development of certain cancers. All of these conditions play a role in premature morbidity, often leading to unemployment, lost earnings, lowered quality of life, and mortality. As a chronic condition that interferes with daily function and overall wellbeing.

2.Yogic Practice

Yoga knowledge is essential and very much important for individuals before starting any program. With a sensible approach one can be benefited without any side effects. If one goes astray the wrong footsteps of yoga practices may leads to side effect on the human body. One should always remember to train under the guidance of a professional coach which gives him very fast results in a safe way. Yoga was first introduced in second century A.D by the father of yoga, Patanjali. Yoga is a method by which one can remove ignorance and attain union with the supreme self (B.K.S.Iyengar, 1983). BMI is closely related to both percentage body fat and total body fat (Haslam and James 2005). Accumulation of fat deposits in the body tissues results in obesity. Obesity is a condition that arises, when ones a body weight exceeds the normal range of BMI i.e. 19.5 to 25.

Flexibility is the ability of an individual to move the body and its parts through as wide a range of motion as possible without undue strain to the articulations and muscle attachments. Yoga has a complete message for humanity. It has a message for the human body, it has a message for the human mind, and it has also a message for the human soul. Intelligent and capable youth must come forth to carry this message to every individual not only in India, but also in every other part of the world. The purpose of the study was to find out whether there is any significant improvement on the efficiency of the Physiological and Biochemical variables through selected asanas and interval training.

3.High Intensity Interval Training

High-intensity interval training (HIIT) is a cardio respiratory training technique that alternates brief speed and recovery intervals to increase the overall intensity of your workout. The global trends towards high intensity interval training is hotting up with big results and fast. The High intensity interval training delivers accelerated fat burnings and hormonal benefits that enhance health and wellbeing. High Intensity Interval training not only helps performance, but it also allows the body to burn calories up to 24 – 48 hours after the workout. This training burns fat rapidly and improves of athletic capability. This sessions combines high-impact body weight exercise with and explosive workouts. Get the double warmmy of maximizing your calorie burn within the workout and burning fat for hours afterwards. High-intensity interval training is done at a sub-maximal level; around 80-95% of maximal aerobic capacity. The High intensity interval training that's improves significantly increase for aerobic and anaerobic fitness. Decreased fasting insulin and increased insulin sensitivity. It reduces abdominal and subcutaneous fat that stored just under the skin.

4.Hypothesis Of The Study

It was the goal of the present study to examine the effects of yogic practices and high intensity interval training on cardio vascular risk factors of male adult. We hypothesized that following training, (a) The yogic practice group would demonstrate significant improvement in cardio vascular risk factors (b) The High Intensity Interval training group would demonstrate significant improvement in cardio vascular risk factors. (c) The Combination of high intensity interval training and yogic practice group would demonstrate significant improvement in cardio vascular risk factors. (d) The Combination of High Intensity Interval Training group would demonstrate significant

improvement better than the Yogic practices, High Intensity Interval Training and Control groups.(e) The High Intensity interval group would demonstrate significant improvement better than Yogic practices and Control groups. (f) The Yogic Practices group would demonstrate significant improvement better than Control group.

5.Methods

5.1.Selection Of Subjects

A total of eighty obese male adults (age: 24.5 ± 1.3 ; height: 183.9 ± 5.9 cms; weight; 90.7 ± 10.5 kg) volunteered to participate in this study. The subjects were carefully informed about the design of the study with special information on possible risks and discomfort that might result, and subsequently signed an informed consent document prior to the start of the study. Subjects were not on any medications that would affect physical performance.

5.2.Experimental Design

A pretest and posttest randomized group design was employed with this study. The selected subjects were randomly divided into four groups: Yogic Practices group (YPG; n=20); High Intensity Interval training group (HIITG; n=20); Combination of High Intensity Interval Training and Yogic Practices group (CHITYPG; n=20) and Control group (CG; n=20). The yogic practice group underwent for yogic practices. The High Intensity Interval Training Group underwent for High intensity interval training. The Combination group underwent for High Intensity Interval Training followed by Yogic Practices. The control group has continued to carry out the daily activities. The subjects were tested before and after the training period of sixteen weeks using the identical two day measurement protocols. The present study was carried out from 1st Oct 2012 to 31st Jan 2013 for a period of 16 weeks, 3 days per week.

5.3.Training Protocol

The three experimental groups did three sessions of training for the duration of 16 weeks. The Yogic Practice group began with Surya Namaskar followed by Asana and pranayama and finally ended with meditation. The whole practice was carried out for the duration of 60 minutes. The High Intensity Interval Training Group performed 12 calisthenics exercise with High Intensity (above 80%) and each exercise was performed

for the duration of one minute followed by 20 seconds of rest between each exercise. During in between of 20 second of rest the subjects performed slow jogging. All the exercises were repeated for two times. The combined group performed High Intensity Interval Training of calisthenics exercises for the duration 30 minutes including with warming up then the subjects performed yogic practices for the duration of 30 minutes without any rest. The total duration of the training program was 60 minutes.

5.4. Testing Procedure

After being cleared to participate in the study, all the subject were assessed for weight, Height, BMI, Blood pressure and Lipid Profile. Height and weight of the subjects was measured and recorded the BMI was calculated by applying the following formula Body Mass Index = weight (Kg) / Height (mts)². Blood Pressure was measured by sphygmomanometer. Lipid profile was measured in clinical laboratory by applying enzymatic colorimetric method, as recommended by “Burstein et. al. (1970) and lopes et.al. (1977).” LDL – Cholesterol was calculated from Total-Cholesterol, Triglycerides and HDL Cholesterol levels by using the following formula recommended by “Friedewald, Levy and Fredrickson (1972)”. LDL-Cholesterol = Total Cholesterol – (Triglycerides/5) – HDL Cholesterol.

Following 16 weeks of training, all the four groups completed all the five testing assessment identical to that described in the pre testing protocol.

6. Statistical Analysis

Paired t-test was used to determine the significance of differences between pretest and posttest for the groups. The subjects were selected random, but the groups were not equated in relation to the factors to be examined. Hence Analysis of Co-variance was applied to determine the significance of difference between the means of four groups. The Scheff’s post hoc test was used to analysis the differences between the means of the various groups.

To test the obtained results on variables, level of significance 0.05 was chosen and considered as sufficient for the study.

Variables	Tests	Yogic practice	High intensity interval training	Combined high intensity interval training with yogic practice	Control group
Body mass index (index)	Pre	27.02 ± 3.93	26.18 ± 4.92	26.03 ± 2.1	26.55 ± 2.84
	Post	26.24 ± 3.55®©	25.15 ± 4.23®©Ω	24.61 ± 1.75®©£¥	26.37 ± 2.72
Systolic blood pressure (mm/hg)	Pre	83.35 ± 3.37	85.45 ± 3.27	89.95 ± 5.66	82.85 ± 2.48
	Post	80.7 ± 1.65®©	81.15 ± 2.34®©Ω	84.65 ± 5.11®©£¥	83.85 ± 2.97
Diastolic blood pressure (mm/hg)	Pre	125.1 ± 4.55	129 ± 6.6	131.45 ± 4.62	123.2 ± 3.1
	Post	122.35 ± 2.6®©	124.2 ± 4.2®©Ω	116.45 ± 4.4®©£¥	123.6 ± 4.15
LDL Cholesterol mg/dl	Pre	100.1 ± 12.48	140.9 ± 8.6	141.1 ± 11.9	110.7 ± 24.8
	Post	98.25 ± 10.7®©	127.9 ± 8.9®©Ω	105.6 ± 11.2®©£¥	110.5 ± 24.3
HDL Cholesterol mg/dl	Pre	41.5 ± 9.22	37.05 ± 7.02	39.8 ± 4.14	43.7 ± 8.8
	Post	45.9 ± 7.8®©	42.3 ± 5.06®©Ω	46.25 ± 7.82®©£¥	45.8 ± 7.8

Table 1 : Data were presented as a Mean (\pm SD) from baseline to posttest for risk factors of cardio vascular among yogic practice, high intensity interval training, combined high intensity interval training followed by yogic practice and control groups

® Significant difference between pretest and posttest ($P < 0.05$)

© Significant difference between experimental groups compared with the Control group ($P < 0.05$)

Ω Significant difference between the Yogic Practice and High intensity interval training groups ($P < 0.05$)

£ Significant difference between the yogic practice and combined training group ($P < 0.05$)

¥ Significant difference between the high intensity interval training and combined training groups ($P < 0.05$)

7.Result

Paired t- test showed that the experimental groups showed significant increase in the body mass index (YPG = 4.25, P = .000; HIITG = 6.98, P= .000; CHITYPG = 11.41, P= .000), systolic blood pressure (YPG = 9.84, P = .000; HIITG = 4.66, P= .000; CHITYPG = 6.5, P= .000), diastolic blood pressure (YPG = 15.86, P = .000; HIITG = 4.44, P= .000; CHITYPG = 4.23, P= .000), LDL – Cholesterol (YPG = 6.17, P = .000; HIITG = 6.71, P= .000; CHITYPG = 16.1, P= .000) and HDL – Cholesterol (YPG = 7.06, P = .000; HIITG = 5.61, P= .000; CHITYPG = 5.99, P= .000). The results of all the experimental groups were better than the control group. The combined high intensity interval training followed by yogic practice group was significantly better than the yogic practice and high intensity interval training groups. The high intensity interval training group was significantly better than yogic practice group.

8.Discussion

The purpose of this study was to determine if yogic practice, high intensity interval training alone or in combination of high intensity interval training followed by yogic practice can reduce cardio vascular risk factors among body mass index, systolic blood pressure, diastolic blood pressure, LDL – cholesterol and HDL – cholesterol. The results indicate that short term high intensity interval training is capable of decreasing cardio vascular risk factors but the combination of yogic practice is even more beneficial. This finding demonstrates that the decrease in cardio vascular disease risk factors is due to the repetitive nature of high intensity interval training; the muscles adapt and begin building new capillaries (blood vessels). This allows the body to deliver oxygen to the working muscles easier and quicker. With the result the heart begins to get stronger and healthier which allows to be more active for a longer time this helps to reduce the Cholesterol and further reduces the blood pressure also. According to the American College of Sports Medicine, more calories are burned in short high intensity exercises. The research studies also shows that the high intensity interval training helps to burn calories up to 24 hours after the workout which results to improve in decrease of the body weight.

9.Conclusion

It was concluded that the combination of high intensity interval training followed by yogic practices is the best method to reduce the risk factors of body mass index, systolic blood pressure, diastolic blood pressure, LDL – cholesterol and HDL - cholesterol.

10.Reference

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