Original Research Article

Comparative study of Hatha yoga and High Intensity Intermittent Training exercise in stress induced obese individuals

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Abstract

Background with Method: Study was conducted at Index Medical College Hospital & Research Centre, Indore from December 2018 to March 2021 with aim to Comparative study of Hatha yoga and High Intensity Intermittent Training exercise in stress induced obese individuals, participants were 82 sedentary obese (BMI > 30 kg/m2) of both genders between the ages of 25–55 years . All participants provided written informed consent before participating in the study. The total number of participants were screened based on the Holmes and rahe stress scale scores.**Results:** Mean±standard deviation. HIEG= high intensity exercise group; BMI =body mass index; kg= kilogram TC. Total cholesterol; HDL.High density lipoprotein; TAG.Triglycerides; LDL. Low density lipoprotein; WC. Waist circumference; WHR.Waist hip ratio; FI.Fasting insulin; BF. Body fat; ANOVA. analysis of variance.**Conclusion:** In summary, our study suggest that 8-weeks of HIIE combined with strength exercise is an effective protective cardio-metabolic strategy capable of modifying HDL-c, LDL, WHR, and body fat. Yoga group parameters showed significant difference in stress related parameters compared with HIIT exercise.

Keywords: Hatha yoga, stress & obese.

Introduction

Hatha yoga has indeed been demonstrated in a rising number of studies to enhance flexibility and strength, and also to help control physiological parameters like blood pressure, lipids,[13] respiratory, heart rate, and metabolic activity, all of which can help improve overall exercise capacity. [14,15]Yoga is also a simple and low-cost tool that requires little in the way of equipment or trained instructors, with some studies demonstrating excellent long-term adherence and benefits.

[16–18] Although surveys (13) and clinical studies (14) have provided preliminary evidence of the efficacy of yoga in weight loss and improved body composition, the effects of yoga on abdominal obesity have yet to be researched. Our study investigated the effect of yoga on waist circumference and additional anthropometric measures in women with abdominal obesity.

Obesity is a major public health issue in modern societies. Obesity is linked to a combination of physical inactivity and a poor diet. [1] It linked to a variety of chronic health problems, including cardiovascular disease, hypertension, type 2 diabetes, stroke, sleep apnea, and some types of cancer, as well as mood swings and sadness in obese people, according to extensive research.

Chronic stress[4,] has been linked to abdominal obesity, which has been linked to overstimulation of the hypothalamic pituitary-adrenal (HPA) axis[2,3] and altered diurnal cortisol secretion. Disturbances of the neuroendocrine axis, and abdominal obesity with metabolic abnormalities, are significantly linked to aberrant regulation of the HPA axis and observed stress-dependent cortisol levels. [5]

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The apparent link between physical and mental health is of special interest, since it involves a complicated series of interrelationships involving life style, anthropometric, psychological, and physical activity variables[6-8]Obesity is more prevalent in both children and adults around the globe, and obesity has indeed been linked to a greater risk of cardiovascular disease [1, 2]. Longitudinal research has revealed that teenage adiposity and fat distribution persists into adulthood, with 50–80 percent of obese adults having been obese as adolescents [3, 4]. Elevated triglycerides (TG), HDL-C, LDL-C and alterations in lipoprotein subclasses are all related with CVDs [5, 6]

Despite the well-ested benefits of routine physical activity to improve cardiometabolism, it remains difficult for health professionals to comply with current guidelines for physical activity of at least 30 minutes per day with moderate intensity 5 days a week or 20 minutes per day of vigorous exercise 3 days a week[9]. As the time gap is the most frequently cited obstacle to compliance with the practise, more recent studies have been aimed at identifying a more time-efficient way of training. Low-volume HIIT (30 seconds of sprints separated by retrieval intervals) is a training mode that takes little time. In many studies, however, similar changes are being found in the reduction of cardiometabalic risk factors as in traditional MIC programmes, despite only requiring 10-20 % of the time commitments [10-12] HIIT can be an ideal training mode for adolescents and young adults, who are often struggling, given these findings.

Methodology

Study was conducted at Index Medical College Hospital & Research Centre, Indore from December 2018 to March 2021, participants were 82 sedentary obese (BMI > 30 kg/m^2) of both genders between the ages of 25–55 years . All participants provided written informed consent before participating in the study. The total number of

participants were screened based on the Holmes and rahe stress scale scores.The present study was a parallel, randomized control trial that evaluate Hatha yoga (experimental group) to high intensity interval training (HIIT) (control group), using a pre (t0)/post (t1) intervention design. Prior to beginning the intervention, participants were randomized in a 1:1 ratio into an 6-week, 4 sessions per week, Hatha Yoga program or an 8-week, 3 sessions per week, gym-run HIIT program and the outcomes were measured post intervention.

The yoga intervention was specially conceived for this study by a certified teacher of hatha yoga with venerable experience, in cooperation with a large national professional association of yoga teachers . The intervention was specifically adapted to the needs, capabilities, and limitations of women with abdominal obesity, with a particular focus on a reduction in waist circumference. The yoga sessions were delivered by a certified teacher of hatha yoga. The initial, full day, workshop (6 hours) and each yoga session comprised a series of selected yoga poses (asanas), breathing exercises (pranayama), deep relaxation (savasana), and dietary/nutritional recommendations on the basis of traditional yoga teachings, as well as instructions and practical exercises from the areas of meditation, positive thinking, and relaxation. Each yoga lesson consisted of 50–60 minutes of yoga poses and 30–40 minutes of other exercises.

HIIT was performed on treadmill. Participants performed a 20-minute protocol, consisting of four minutes of cycling at 15% of maximum anaerobic power (Max-AP) (defined as the peak power achieved during the Wingate Test) followed by 30 seconds at 85% of Max-AP. This cycle was repeated four times within each protocol, ending with two minutes at 15% of Max-AP. This was performed 3d/wk for 6 wks, with at least 24 hrs between each session.

Results

Table 1:Base values of Anthropometric markers in Exercise group and yoga group

Parameter	HIEG(n=41)	Yoga group (n=41)
BMI (Kg.m^2)	34.4±2.6	33.4±1.1
Age (Years)	24.5 ± 3.7	24.5 ± 3.7
Height (m)	1.78 ± 6.5	1.78 ± 6.5
Body mass (kg)	74.7 ± 7.6	66.8 ± 5.1

Mean±standard deviation. HIEG= high intensity exercise group; BMI =body mass index; kg= kilogram

Table 2: Mean and standard deviation of different parameters before and after 6 weeks of HIEG and yoga group

Variables		HIEG (n=41)	Yoga group(n=41)	Anova
TC	Pre Post	171.6±35.6 170.5±23.5	176.5±2.6 125.6±2.1	0.64
HDL(mmol/L)	Pre Post	0.8± 0.3 10.5±0.5	1.7±0.4 0.8±0.3	0.78
TAG(mmol/L)	Pre Post	1.6±0.1 1.4±0.1	1.6±0.4 1.3±0.2	0.62
LDL	Pre Post	105.6±0.4 100.3±0.2	106.6±0.8 101.3±0.6	0.58
WC (cm)	Pre Post	96.5±7.6 93.1±5.4	99.4±0.4 97.4±0.5	0.61
WHR	Pre Post	90.5±4.6 83.1±6.4	94.4±0.4 90.4±0.5	0.75
FI	Pre Post	11.4±1.4 11.9±1.5	11.5±1.3 12.8±1.6	0.59
BF%	Pre Post	21.4±1.5 20.5±1.2	22.5±1.3 22.4±1.6	0.89
Melnoldehyde	Pre Post	102.6±1.4 99.3±0.5	133.2±0.5 119.3±.0.4	0.54

TC.Total cholesterol; HDL.High density lipoprotein; TAG.Triglycerides; LDL. Low density lipoprotein; WC. Waist circumference; WHR.Waist hip ratio; FI.Fasting insulin; BF. Body fat; ANOVA. analysis of variance.

Discussion

The purpose of the present study was to analyze the effect of 6 weeks of HIIT and hatha yoga without caloric Restriction on body composition and lipid profile in sedentary stress induced obese individual.According to our results, the proposed HIIT intervention favored clinically significant improvements of body composition, physical fitness, and blood lipid profile in overweight/obese youth.

Although the benefits of moderate intensity continuous physical activity on body composition are well documented (Irving et al., 2008; Green et al., 2004), results remain unclear for HIIT, especially among obese youth (Lambrick et al., 2016). Yet HIIT is today widely used as a time-efficient strategy for the management of body weight in overweight and obese patients (Wewege et al., 2017), further evidence are still needed to clarify its real impact on body composition (Alahmadi et al., 2014; Kong et al., 2016). Racil et al. (2013) have used a training program similar to our study.

A recent systematic review and meta-analysis conducted by Keating et al. (2017) concluded that neither short-term HIIT or sprint interval training favor any clinically meaningful reductions in BF in obese patients. According to our results a 6-8-week HIIT intervention favored a clinically and statistically significant improvement of several obesity indicators such as body weight, BMI, WC, and BF in our sample of overweight and obese youth when compare with yoga group . Interestingly our results also indicate that the observed beneficial effect of our HIIT program on obesity indicators might depend on the patient's initial degree of obesity. Indeed, we found significantly positive correlations between the initial body weight, BMI, and WC. In yoga group most of the parameters were not so significant by the observation all these parameters it was clear that yoga may require longer duration for effective results when it is compared to HIIT exercise parameters .

Conclusion

In summary, our study suggest that 8-weeks of HIIE combined with strength exercise is an effective protective cardio-metabolic strategy capable of modifying HDL-c, LDL, WHR, and body fat. Yoga group

parameters showed significant difference in stress related parameters compared with HIIT exercise.

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