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TO STUDY THE EFFICACY OF CLASSICAL HATA YOGA TRAINING ON ANTHROPOMETRIC PARAMETERS AMONG HEALTHY ADULTS.

Endocrinology

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ABSTRACT

Background: Obesity is a complex disorder involving an excessive amount of body fat. Over weight and obesity have reached the epidemic proportion globally, thus posing a growing threat to the health of the young population. Studies have shown that yoga practices reduce anthropometric parameters and improve metabolic status.
Objective: The aims of the study was to study the effect of classical hata yoga training program on anthropometric variables in healthy adults.
Materials and Methods: In this interventional study with a pre-post design on 34 healthy adult participants, were taught classical hata yoga training module. Assessment were carried out on the 1st and 45th day of the program, using a BMI, waist, hip circumferences and mid-arm circumference were assessed.
Results: Significant reduction in BMI, waist, hip and mid arm circumferences respectively ($p<0.00$).
Conclusion: This study provides evidence that classical hata yoga training is a preventive program for metabolic syndrome and obesity.

KEYWORDS

BMI- Body Mass Index, Mid-arm Circumference, Waist Circumference, Hip Circumference, Classical Hata Yoga.

INTRODUCTION

Obesity is a chronic nutritional disorder which is increasing in prevalence worldwide. Over weight and obesity have reached the epidemic proportion globally, Obesity has now become a grievous health burden in developing countries particularly in India, which is currently experiencing the consequences of the drastic change in lifestyle of both urban and rural dwellers was found to be a contributory factor for the rising rates of obesity and associated metabolic diseases such as diabetes[1]. Obesity is considered to be the link between insulin resistance and metabolic abnormalities inclusive of diabetes, hypertension and dyslipidaemia, coronary artery disease. The prevalence of obesity and metabolic syndrome are increasing in India and other South Asian countries [2]. A recent study reported that the prevalence of adult overweight and obesity increased by 27.5 per cent with and number of overweight and obese individuals increasing from 857 million to 21 billion from 1980 to 2013 [3]. Ample of findings suggests that Indians tend to have increased waist circumference irrespective of BMI [4]. The World Health Organization has revised the BMI cut-off for Asain Indians and suggested a BMI of 25 kg/m2 to define obesity against the 30 kg/m2 recommended for European (The Asia Pacific. 2000). Indians also tend to have excess body fat and abdominal adiposity. For any given waist circumference, they have increased body fat accumulation and for any given body fat, they have increased insulin resistance[4]. In the recent study, abdominal obesity assessed by waist-to-hip ratio showed a strong association with myocardial infarction [5] and Excessive fat alone can contribute to several metabolic and cardiovascular diseases [6]. various studies conducted in Indian population have shown an association of obesity, dyslipidaemia, vascular inflammation, and metabolic syndrome [7]. It is among most common disorders in medical practice and also found to be very frustrating and difficult to manage. The conventional treatment for obesity includes decreasing caloric intake and increasing physical activity, that is, 'diet and exercise.' Medications have also been utilized. However, the long-term success rate of most weight loss programs is very low [8]. Metabolic disorder risk reduction could be achieved through weight-loss of about 10-20 per cent of the initial body weight, which may be achieved through lifestyle interventions [9]. Yoga is being a lifestyle intervention that emphasizes on lifestyle modification and increased physical activity, and has been found to be efficacious in weight-loss and improvement of metabolic disorders [10], many studies shown significant Effect of yoga on obesity by reducing the risk of binge eating, and had a statistically significant role in controlling weight, hypertension, and mood [11]. In another short term residential study showed a decrease in BMI, waist and hip circumferences, fat-free mass, total cholesterol, high density lipoprotein (HDL) cholesterol, fasting serum leptin levels and an increase in postural stability and hand grip strength [12]. There is an urgent need for an effective understanding and prevention of overweight, obesity and metabolic syndrome through natural strategies that are affordable and effective. Classical hata yoga practices offers valuable insights and practical applications in this regard.

MATERIAL AND METHODS

Thirty four participants who had enrolled in a forty five days classical hata yoga training program. Their ages ranged between 18 and 50 years (group average ±S.D., 31.4±9.3 years; 28 females and 6 males). We have fully explained the potential risks and benefits in the study before written informed consent was provided by participants, the study was approved by the ethics committee of the institution, Lakulish yoga university, located in Ahmadabad, Gujarat, India. The selection criteria included: absence of a disease which could have contributed to obesity (e.g., hypothyroidism, polycystic ovarian syndrome), and those with associated medical problems such as cardiac problems, uncontrolled hypertension, diabetes, osteoarthritis and on psychiatric medications were excluded. In this study we adopted a convenient sampling method to recruit the subjects who were undergoing forty five days Classical Hata yoga training program at Lakulish yoga university, Ahmadabad, Both genders, Age group 18 to 50 years, a single group pre-post design was used. The 45 days study was successfully completed by 34 participants.

DESIGN AND SETTING

The trial was a single group, pre-post trial. Participants were assessed on day 1 and day 45 of the forty five days classical hata yoga training program, when the assessment was completed, respondents were appreciated for their time and cooperation. The training program was held in a non residential Lakulish yoga university, located in Ahmadabad, Gujarat, India.

INTERVENTION

The forty five days classical hata yoga training program: a yoga teacher training program consisted of two sessions each day. The first session was between 08:30 hours and 11:30 hours for practice and the second session was between 12:00 hours and 13:30 hours for theory. In a day participants practiced shithilikarana vyayamas (loosening practices) followed by yogasanas and relaxation techniques with pranayama practices. The concepts used to develop a specific module of teaching for training program were taken from the classical hata yoga scripture of Lakulish yoga tradition [13], one of the oldest schools of hata yoga in India. Yoga is defined as mastery over the modifications of mind (*Chitta Vritti Nirodhah*-definition of *yoga* by *Patanjali*). It helps to remove the unnecessary surges of neuromuscular activation resulting

from heightened stress responses that may contribute to aging.

ASSESSMENTS

BODY MASS INDEX

The body mass index (BMI) was calculated as the body weight (in kg), in light clothing and without shoes, divided by height (in m) squared. The body weight was measured using an electronic weighing machine (ESSAE-DIGI, Bangalore), which is accurate to 0 mm between 200 gms to 150 Kgs. The height (in centimetres) was measured using a scale graduated in millimeters.

WAIST CIRCUMFERENCE

Participants were lightly clothed and asked to stand upright with feet 25 to 30 cm apart and weight evenly distributed. A scale graduated in millimeters was fitted around the abdominal girth without compressing soft tissue. The waist circumference was measured to the nearest 0.1 cm in a horizontal plane midway between the inferior costal margin and the iliac crest. Waist circumference is considered a reliable measure in clinical practice [14].

HIP CIRCUMFERENCE

Hip circumference was measured around the pelvis at the point of maximal protrusion of the buttocks. The ratio of the waist circumference to the hip circumference was derived and is a ratio between the fat stored centrally inside the abdomen (waist circumference) and fat stored peripherally (hip circumference).

MID-ARM CIRCUMFERENCE

The mid-arm circumference was measured as the circumference of the non-dominant arm mid-way between the bony prominence of the shoulder (the acromion) and the elbow (the olecranon). This circumference includes muscle mass and a circumferential skin fold.

DATA ANALYSIS

The data taken on the last day and on the first day of the classical hata yoga training program were compared with t-test and wilcoxon signed rank test for paired data using SPSS version 16.0.

RESULTS:

Following 45 days of Classical hata yoga training program, there was a significant decrease in BMI, waist circumference, hip circumference, mid arm circumference ($p<0.001$, comparing the values at the end of the training with the values at the beginning; t-test for paired data/Wilcoxon signed-rank test). There was a reduction in waist/hip ratio, though it was not statistically significant. The groups mean values ±S.D. are given in Table 1.

Table 1. Variables recorded at the beginning (Initial) and end (Final) of the classical Hata yoga training program are provided. Values (group mean ±S.D.) for the anthropometric variables.

Variables	Classical Hata Yoga Training (n=34)		P-value
	Pre	Post	
BMI (kg/m^2)	24.43 ±4.81	23.8 ±4.63	0.005**
Hip circumference (cm)	39.38 ±3.43	38.38±3.27	0.003**
Waist circumference (cm)	34.35 ±4.26	32.64 ±4.19	0.000***
Mid - arm circumference (cm)	11.19 ±1.34	10.46 ±1.13	0.000***
Waist/ Hip Ratio	0.87 ±0.06	0.85 ±0.06	0.061

*significant at $P<0.05$, ** significant at $P<0.01$, ***significant at $P<0.00$ (paired sample test and Wilcoxon Signed Ranks Test) BMI: body mass index.

There was also a significant decrease in the waist circumference and in the hip circumference. However, there was no significant change in waist/hip circumference ratio, suggesting that there was no change in the ratio between fat stored centrally inside the abdomen (waist circumference) and fat stored peripherally (hip circumference).

DISCUSSION

The present study was designed to determine the impact of classical hata yoga training program on body composition in healthy adults. Forty five days classical hata yoga training program improved body BMI, waist circumference, hip circumference, mid arm circumference compared with baseline values. A growing number of research studies have shown that yoga can improve strength and flexibility, and may help control physiological variables such as blood pressure, lipids, respiration, heart rate and metabolic rate to improve overall exercise capacity[15]. Yoga as a lifestyle intervention which combines a healthy lifestyle with mental peace [10], a study shows that yoga-based lifestyle intervention is efficacious in weight-loss, and it also prevents weight-gain, especially amongst those who are overweight [16] thus supporting the findings of anthropometric reduction in our study, which is the clear indication of preventive effect of yoga in obesity. Modification in lifestyle and calming practices are shown to improve clinical profile of patients with various pathologies [17], similar benefit was observed in another study where yoga improved adiponectin level, serum lipids, and metabolic syndrome risk factors in obese postmenopausal women [18] the physiological effects of yoga training that have been previously reported include the inhibition of body weight gain, reductions in cholesterol levels, and blood pressure, and improvement in immune function as well as beneficial psychological effects [19]. Importantly, even short-term yoga based comprehensive lifestyle intervention led to notable reduction in body mass index, blood pressure, and blood glucose with a clinically meaningful improvement in lipid profile [10]. The present trial can be considered preliminary, requiring a further randomized controlled trial and a follow-up to determine the long term impact of Classical Hata Yoga training on body composition in healthy adults. These results suggest that Classical Hata Yoga training play a vital role in preventing obesity and metabolic syndrome.

CONCLUSION

Some limitations of the current study are the relatively small sample size, may not have been sufficient to obtain statistically significant results. A future study with a larger number of participants is necessary. Furthermore, obesity is a complex condition and thus treatment modalities should be of holistic in nature. The finding of the study demonstrate that classical hata yoga training is a suitable approach for preventing obesity, as indicated by improvements in BMI, waist, hip circumferences and mid-arm circumference, compared with baseline values. Future investigations are demanded to establish and expand the results of the present study and to compare the preventive effects of classical hata yoga training with those of conventional approaches.

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CONFLICT OF INTEREST

None

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