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## Ruduction of body fat practicing yogic posture: An experimental study

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### Abstract

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. It is long popular practice in India which union of the individual consciousness or soul with the Universal Consciousness or Spirit. Yoga is a popular activity for athletes, children, and seniors. Practicing Yoga has been proven to lower blood pressure, heart rate, respiratory rate and increases strength. It also calms our minds and help to reduce stress.

**Purpose:** Present study was designed to find out the effect of performing Yogic posture (Asanas) on body fat among adolescent school girls.

**Methodology:** A total of 30 students from a secondary school were selected randomly as the subject for the present study. The age of the subjects was in between 14-16 years and they were studying in VIII to IX standard. Percent body fat (PBF) was considered as criterion of this study. PBF was assessed by standard anthropometric equation for which the skin folds of the subject were measured by Harpenden – Holton skin fold caliper. Training protocol includes selected Yogic-posture or asanas. Subjects practiced the Yogic-asanas on alternate days for three days per week. Training Schedule was planned for six weeks duration. Single experimental group design was adopted for the present study. Mean and standard deviation were used as descriptive statistics and t-test was used to analyze the mean deference between the pre treatment value and post treatment value of PBF. Only 0.05 level of significance was considered for this study.

**Results:** Results revealed that post treatment value of PBF (23.60) was lower than the pre treatment value (25.15). But the difference between group means ( $t=0.99$ ) was not statistically significant ( $p>0.05$ ).

**Conclusion:** From the above findings it was concluded that the six week Yogic practice had not significant effect on PBF reduction among adolescent school girls.

**Keywords:** Yogic-posture, Body fat percentage, Fat reduction, Adolescent school girls

### Introduction

Human needs exercise not only for growth and development but it also helpful to stay healthy and fit. Participating in the daily physical activities in a more efficient manner helps to maintain standard body composition. Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. It is long popular practice in India that has become increasingly more common in western society. Yoga is a popular activity for athletes, children, and seniors which can be modified to suit all levels for maintain fitness. The efficiency of yoga on health and physical and cardio-respiratory fitness have been well proved<sup>[1]</sup>. Yoga calms our minds and helps to reduce stress (Huang, Chien, and Chung; 2013)<sup>[2]</sup>. Yoga has been proven to lower blood pressure, heart rate, respiratory rate (James; 2002)<sup>[3]</sup>. and increases strength and flexibility (Halder *et al.*; 2015)<sup>[4]</sup>. Hatha yoga has become increasingly popular in western countries as a method for coping with stress and as a means of exercise and fitness training (Schell *et al.*; 1994)<sup>[5]</sup>. Hatha yoga is an ancient practice that was developed to promote physical health as well as an awareness of one's true nature. It consists of a series of postures, called asanas, and various breathing exercise, called pranayam, which encourage balance between the physical, mental, emotional, and spiritual aspects of human being. In short, hatha yoga promotes health. Like other forms of yoga, hatha yoga is purported to quiet the mind and focus the concentration; however, of all the yoga traditions, the importance of physical fitness is emphasized most in hatha yoga (Worthington; 1982)<sup>[6]</sup>.

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Yoga has been practice for thousands of years. It is on ancient theories, observation and principles of the mind-body connection. Substantial research has been conducted to look at the health benefits of yoga-yoga postures (asana), yoga breathing (pranayama) and meditation. These yoga practice might be interacting with varies somatic and neuro endocrine mechanism bringing about therapeutic effects (Malhatra and Sing; 2002) [7]. Yoga is traditionally believed to have beneficial effects on physical and emotional health (Gilbert C; 1999) [8]. The overall performance is known to be improved by practicing yoga techniques (Upadhyay *et al.*, 2008) [9]. Yoga practices can also be used as psycho-physiological stimuli to increase the secretion of melatonin which, in turn, might be responsible for perceived well-being (Harinath et.al; 2004) [10]. Yoga may be effective as or better than exercise at improving a variety of health related outcome measures (Ross and Thomas, 2010) [11]. Present study was designed to find out the effect of six week Yoga-asana practice on body fat among adolescent school going girls.

## Materials and methods

### Subject

A total of 30 students from a secondary school were selected randomly as the subject for the present study. The age of the subjects was in between 14-16 years and they were studying in VIII to IX standard. The average weight of the subjects was 42.45 Kg ( $\pm 9.47$ ).

### Criterion measure

Percent body fat (PBF) was considered as criterion of this study.

### Instrument and tools used

PBF was assessed by standard anthropometric equation for which the skin folds of the subject were measured (AAPEHRD, 1984) [12]. For this purpose Harpenden skin fold caliper was used.

### Training protocol

Training protocol includes selective Yogic-asanas. The yogic-asanas included were Padmasana, Bazrasana, Vdhrasana, Poschimattasana, Usthasana, Shashangasana, Bhujangasana, Salvasona and Shabhasana. Duration of the practice was 30 minutes for each day. Each exercise was performed two times and subjects practiced the Yogic-asanas on alternate day for three days per week. Training Schedule was planned for six weeks duration.

### Design of the study and statistical procedure used

Single experimental group design was adopted for the present study. Mean and standard deviation were used as descriptive statistics and t-test was used to analyze the mean deference between the pre treatment value and post treatment value of PBF. Only 0.05 level of significance was considered for this study. All statistical calculations were done using standard statistical software (Excel, 2010).

### Results and findings

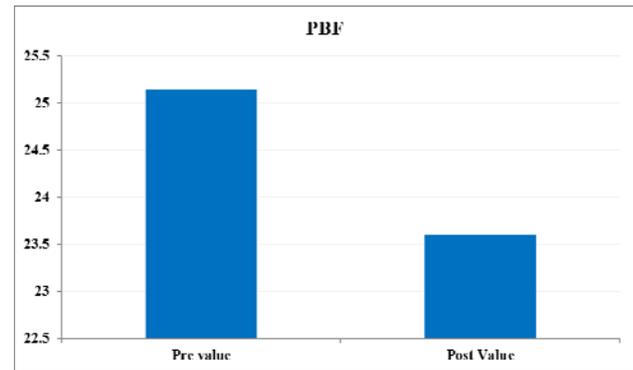
The mean values and standard deviation of pre treatment value and post treatment value of PBF have presented in Table-1. Difference between means was analyzed by t-test and result also presented in same table. From Table-1 it was clear that post mean value of PBF of the subjects was lesser than the pre mean value which indicted that participation in yogic-asanas helps to decrease body fat percentage but

calculated t-value for this parameter was not significant statistically which clearly proved that this difference was not due to the treatment effect. The findings also have presented graphically in Figure-1 for better understanding.

**Table 1:** Descriptive and inferential statistics of selected Parameter

Parameter	Pre Test value		Post Test value		t-value
	Mean	SD	Mean	SD	
<b>PBF</b>	25.15	5.14	23.60	6.76	0.99*

\* Not significant at 0.05 level.



**Fig 1:** Graphical representation of pre test value and post test value of PBF

### Discussion on findings

Practicing Yoga on regular basis has positive effect on health and wellness. Several studies have reported positive effect of Yoga practices on physiological health (Raub, 2002; Cramer *et al.* 2014; Mondal, Kaibarta and Sil. 2016) [13, 14, 15], psychological health (Huang, Chein and Chung, 2013; Kauts, 2013) [16, 17], cognitive health (Chaya *et al.* 2009), [18] anthropometric health (Halder *et al.* 2015) [19]. Balaji *et al.* (2012) reviewed and reported that yoga practice has considerable health benefits, including improved cognition, respiration, reduced cardiovascular risk, body mass index, blood pressure, and diabetes and influenced immunity and ameliorated joint disorders [20]. Harinath *et al.* (2004) [10], found that Yogic practices for three months resulted in an improvement in cardiorespiratory performance and psychologic profile. The plasma melatonin also showed an increase after three months of yogic practices in their study though the systolic blood pressure, diastolic blood pressure, mean arterial pressure, and orthostatic tolerance did not show any significant correlation with plasma melatonin. However, they reported that the maximum night time melatonin levels in yoga group showed a significant correlation ( $r = 0.71$ ,  $p < 0.05$ ) with well-being score. Their observations suggested that yogic practices can be used as psychophysiologic stimuli to increase endogenous secretion of melatonin, which, in turn, might be responsible for improved sense of well-being. [10] Ray *et al.* (2001) [21] studied the effect of training in Hatha yogic exercises on aerobic capacity and perceived exertion (PE) after maximal exercise and reported that absolute value of  $VO_2$  max increased significantly ( $P < 0.05$ ) and the PE score after maximal exercise decreased significantly ( $P < 0.001$ ) in the yoga group after 6 months [21]. Bikram yoga, another style of *hatha* yoga involving a standardized series of *asanas* performed to an instructional dialogue in a heated environment (40.6°C, 40% humidity). According to published literature (Hewett *et al.*, 2015) [22], Bikram yoga has been shown to improve lower body strength, lower and upper body range of motion, and balance in healthy adults. Non-RCTs

report that Bikram yoga may, in some populations, improve glucose tolerance, bone mineral density, blood lipid profile, arterial stiffness, mindfulness, and perceived stress [22].

Yoga practice can improve flexibility and balance, relieve stress, and reduce aches and pains. Some studies reported that it does have a positive influence on the mental aspects associated with successful weight loss and weight maintenance. Shinde *et al.* (2013) [23], conducted a study and concluded that regular practice of yoga is really improves the pulmonary functions and is helpful in weight reduction [23]. Present study found no significant effect of six weeks yoga-asanas practice on reduction of percent body fat among adolescent school girls. Review of literature suggested that yoga generally doesn't burn as many calories as cardiovascular exercise (Van Pelt, 2016) [24]. The static posture like yoga asanas practice as per the schedule used in this study did not burn much more body fat in case of adolescent stage. Venkatarreddy *et al.* (2003) in their study reported no significant change in lean body mass but they found a significant reduction ( $p < 0.05$ ) in BMI for women subjects in which the reduction was greater for group II (BMI greater than 35) as compared to group I (BMI 25-35) [25]. Zorofi, Hojjati and Elmiyeh (2013) [26] have seen in their study that yoga exercises along with fasting can help overweight people to experience ideal weight loss; also for the athletes who stop exercising in Ramadan, yoga can be used as an alternative to maintain their weight. The result of present study might be due to the lesser duration of training schedule. The selection of the asanas also might be the factor of that kind of result. The yogic postures considered in this training schedule might not be use full to burn body fat. The diet or food habit of the subject which is considered as an important factor of fat accumulation or maintaining body fat could not be controlled in this study. That also might be one of the factors of this kind of result of this study.

### Conclusion

Six week Yoga-Asanas (posture) practice has no significant effect on reduction of percent body fat among adolescent school girls.

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