



## EFFECT OF VARIED MODES OF YOGIC PRACTICES ON SELECTED PHYSICAL FITNESS COMPONENTS AMONG OBESE SCHOOL GIRLS

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### Abstract

The purpose of the study was to investigate the effect of varied modes of yogic practices on selected physical fitness components among obese school girls. To achieve the purpose of the present study, 570 girls in the age group of 14 to 17, studying in schools were selected as subjects, by using purposive sampling method. Initially based on the height and weight, the body mass index was calculated. Based on the BMI of selected subjects (N= 570) the subjects on or above 25 were further screened and totally 79 students were found as obese girls. From the selected subjects (N = 79, BMI<25) 60 subjects were randomly assigned into three groups equally. Each group was consisting of 20 subjects. The experimental group I underwent the training of asanas group (AG), the experimental group II underwent the training of suryanamaskar group (SNG). The group III acted as control group (CG). The two experimental groups were treated with their respective training for about 3 days a week for 12 weeks of training period. The three groups were statistically analysed by using analysis of covariance (ANCOVA). In case of significance of mean difference was observed on the criterion measure, as a post – hoc test, the Scheffe’s test was applied to find out which pair of group is high among the others. The asana group has showed better performance on flexibility and body weight than the other two groups. The suryanamaskar group also showed better performance on abdominal muscular strength & endurance and cardio-respiratory endurance than the control group.

**Key words:** Asana, Suryanamaskar, Obese.



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### Introduction

India has a rich tradition of yogic practices. Now a days yoga, the ancient practice of postures, breathing and meditation is gaining a lot of attention from healthcare professionals. With increasing scientific research in yoga, its therapeutic aspects are also being explored. Suryanamaskar – The salutation to the God Sun, is also a part of Indian traditional yogic practices. Each cycle of suryanamaskar is a sequence of certain ‘asanas’, performed along with ‘pranayama’. The sequence of asanas is such that each asana is complimentary to the next. During suryanamaskar, muscles of the entire body experience stretch and pressure alternately and therefore it is said to give more benefits with less expenditure of time. It is claimed that suryanamaskar practice gives benefits of both- asana and pranayama and improves general health and fitness. Hence, the present study was undertaken to study effects of suryanamaskar practice on cardio-respiratory fitness parameters in young, healthy subjects. (Patel, 2004).

It is a well-known fact that suryanamaskar is an all-round exercise for all, young and old, men and women. The truth is as real and as clear as the Sun in the sky. It requires no canvassing to prove its worth. The actual practice is the only evidence to confirm the assets you get through suryanamaskar. The Sun God is one who always activates others and is full of activities too. He is the symbol of cosmic energy. The chariot of the Sun God is of seven horses. The horses represent the seven days of the week. They also stand for the seven colours of the rainbow. The seven power points in our body have different colours of their own. His work is colourful. It is endless and unlimited combination & permutation of colours. Nobody can pinpoint the exact

time when the activities of the Sun God started. The span of time of His activities cannot be counted either. The end of his activities is beyond our imagination. His activities are varied. The food supplied to all the plants is the same but the rose is not the same as other flowers. All the leaves of different trees are not the same. The varieties of the trees and the leaves are uncountable. In this world there is no man alike in looks or in deeds. HE is omnipresent in all and every act. When the sun rises in the sky all the creatures & worms, birds & animals start their work. Pray the Sun God to give inspiration and energy to do good deeds (**Pattabbi, 2005 & Swami Gitananda, 2006**).

Yoga is a way of life. It has its own significant impact positively in developing the human beings physically, mentally and spiritually. Though varies modes of yogic practices the society can overcome the physical fitness components and physiological variables that are required for day to day life especially the school going girls. Having this thirst, the present study was carried out with the purpose to find out the effect of varied modes of yogic practices on selected physical fitness components among obese school girls.

### Methodology

To achieve the purpose of the present study, 570 girls in the age group of 14 to 17, studying in schools were selected as subjects, by using purposive sampling method. Initially the height and weight of girls were measured and the body mass index was calculated. Based on the BMI of selected subjects (N= 570) the subjects on or above 25 were further screened and totally 79 students were found as obese girls. Thus the obese girls were selected as subjects finally for the present study.

**TABLE – I**

Sl.No	Physical Variables	Test	Units
1	Abdominal Muscular Strength and Endurance	Modified Sit-Ups	In numbers
2	Flexibility	Sit and reach	In centimeters
3	Cardio Respiratory Endurance	12mintues Run and Walk Test	In meters
4	Body Weight	Weighing Machine	In kilograms

In the present study, pre-post randomized experiment design was adopted as it was considered as appropriate for the purpose of finding the effect of varied modes of yogic practices on selected physical fitness components among obese school girls. For this, from the selected subjects (N = 79, BMI<25) 60 subjects were randomly assigned into three groups 20 subjects each. Of the three groups, two groups were used for experimental purpose and one for control group. The experimental group I underwent the training of asanas group (AG), the experimental group II underwent the training of suryanamaskar group (SNG). The group III used as control group (CG) and keep off from any form of physical training all the two experimental groups were treated with their respective training for about 3 days a week for 12 weeks of training period. Thus the experiment design for the present study was done. The three groups were statistically analysed by using analysis of covariance (ANCOVA). In case of significance of mean difference was observed on the criterion measure, as a post – hoc test, the Scheffe’s test was applied to find out which pair of group is high among the others.

## Results and Discussion

The detailed procedure of analysis of data and interpretation were given below,

**Table-II**  
**Summary of Descriptive Statistics on Selected Physical Fitness Components**  
**Among Obese School Girls**

Sl. No	Variables	AG		SNG		CG	
		Pre test (Mean and S.D)	Post test (Mean and S.D)	Pre test (Mean and S.D)	Post test (Mean and S.D)	Pre test (Mean and S.D)	Post test (Mean and S.D)
1	Abdominal Muscular Strength and Endurance	14.35 ± 2.71	20.40 ± 1.87	14.45 ± 2.68	22.20 ± 2.91	13.25 ± 2.61	13.15 ± 2.97
2	Flexibility	15.75 ± 1.94	21.40 ± 1.27	15.70 ± 1.59	20.60 ± 1.12	16.50 ± 1.73	16.05 ± 1.05
3	Cardio-Respiratory Endurance	974.75 ± 120.50	1375.20 ± 89.92	963.70 ± 119.05	1416.80 ± 79.17	1026.65 ± 87.26	1054.10 ± 150.13
4	Body Weight	75.10 ± 1.20	70.60 ± 1.53	75.15 ± 1.26	70.20 ± 1.47	74.80 ± 1.10	74.90 ± 1.68

AG = Asana Group SNG = Suryanamaskar Group CG = Control Group

The table II shows that the pre and post test means and standard deviation of three groups on selected physical fitness components among obese school girls.

**Table - III**  
**Analysis of Variance of Pre Test Scores on Selected Physical Fitness Components**  
**Among Obese School Girls**

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Abdominal Muscular Strength and Endurance	BG	17.73	2	8.86	1.24
		WG	407.25	57	7.14	
2	Flexibility	BG	8.03	2	4.01	1.29
		WG	176.95	57	3.10	
3	Cardio-Respiratory Endurance	BG	45189.43	2	22594.71	1.86
		WG	689892.50	57	12103.37	
4	Body Weight	BG	1.43	2	0.71	0.50
		WG	81.55	57	1.43	

\*  $P < 0.05$  Table F, df (2,42) (0.05) = 3.21

In table III, the results of analysis of variance of pre test scores on abdominal and muscular strength and endurance (1.24), flexibility (1.29), cardio-respiratory endurance (1.86) and body weight (0.50) were lesser than the table value of 3.21 indicating that it was not significant for the degrees of freedom (2,42) at 0.05 level of confidence indicating that the random sampling was successful.

**Table-IV**  
**Analysis of Variance of Post Test Scores on Selected physical fitness**  
**Components among Obese School Girls**

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Abdominal Muscular Strength and Endurance	BG	918.03	2	459.01	65.97*
		WG	396.55	57	6.95	
2	Flexibility	BG	333.10	2	166.55	61.42*
		WG	154.55	57	2.71	
3	Cardio-Respiratory Endurance	BG	1575913.73	2	787956.86	64.07*
		WG	701006.20	57	12298.35	
4	Body Weight	BG	271.60	2	135.80	55.36*
		WG	139.80	57	2.45	

\*  $P < 0.05$  Table F, df (2,42) (0.05) = 3.21

In table IV, the results of analysis of variance of post test scores on abdominal and muscular strength and endurance (65.97), flexibility (61.42), cardio-respiratory endurance (64.07) and body weight (55.36) were greater than the table value of 3.21 indicating that it was significant for the degrees of freedom (2,42) at 0.05 level of confidence.

**Table-V**  
**Analysis of Covariance of Adjusted Post Test Scores on Selected Physical Fitness**  
**Components among Obese School Girls**

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Abdominal Muscular Strength and Endurance	BG	918.42	2	459.21	66.50*
		WG	386.69	56	6.90	
2	Flexibility	BG	304.05	2	152.03	56.70*
		WG	150.15	56	2.68	
3	Cardio-Respiratory Endurance	BG	1438774.88	2	719387.44	57.84*
		WG	696391.71	56	12435.56	
4	Body Weight	BG	279.80	2	139.90	59.80*
		WG	130.99	56	2.33	

\* P < 0.05 Table F, df (2,41) (0.05) = 3.22

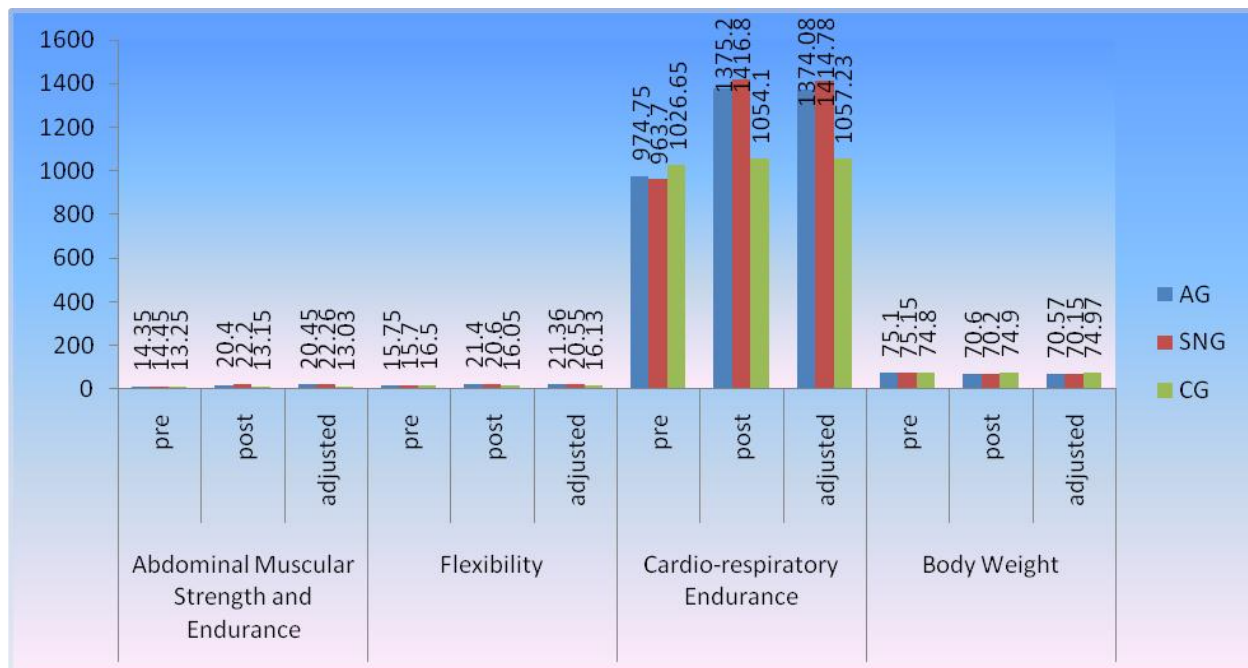
In table V, the results of analysis of covariance of adjusted post test scores on abdominal and muscular strength and endurance (66.50), flexibility (56.70), cardio-respiratory endurance (57.84) and body weight (59.80) were greater than the table value of 3.22 indicating that it was significant for the degrees of freedom (2,41) at 0.05 level of confidence.

**Table-VI**  
**Scheffe's Post-Hoc Test for the Selected Physical Fitness Components**  
**among Obese School Girls**

Sl.No	Variables	Adjusted Means			Mean Difference	CI Value
		AG	SNG	CG		
1	Abdominal Muscular Strength and Endurance	20.45	22.26	-----	1.81	2.08
		20.45	-----	13.03	7.42*	
		-----	22.26	13.03	9.23*	
2	Flexibility	21.36	20.55	-----	0.81	1.30
		21.36	-----	16.13	5.23*	
		-----	20.55	16.13	4.42*	
3	Cardio-respiratory Endurance	1374.08	1414.78	-----	40.70	88.67
		1374.08	-----	1057.23	316.85*	
		-----	1414.78	1057.23	357.55*	
4	Body Weight	70.57	70.15	-----	0.42	1.21
		70.57	-----	74.97	4.40*	
		-----	70.15	74.97	4.82*	

From the table VI it can be seen that the mean differences between asanas and control groups, suryanamaskar and control group of abdominal and muscular strength and endurance

(7.42, 9.23), flexibility (5.23, 4.42), cardio-respiratory endurance (316.85, 357.55) and body weight (4.40, 4.82) respectively, greater than the confidential interval value (2.08, 1.30, 88.67,1.21) respectively, which was significant at 0.05 level of confidence. The mean differences between asana and suryanamaskar groups of abdominal and muscular strength and endurance (1.81), flexibility (0.81), cardio-respiratory endurance (40.70) and body weight (0.42) respectively, lesser than the confidential interval value (2.08, 1.30, 88.67,1.21) which was insignificant at 0.05 level of confidence.



**Figure-I Shows the Mean Values of Control Group on Selected Physical Fitness components among Obese School Girls**

## Conclusions

In the light of the study undertaken with certain limitations imposed by the experimental conditions, the following conclusions were drawn.

- The result of the study reveals that there was a significant improvement in the experimental groups on selected variables when compared to the control group after the completion of twelve weeks of different packages of yogic exercises.

- The asana group has showed better performance on flexibility and body weight than the other two groups.
- The suryanamaskar group also showed better performance on abdominal muscular strength & endurance and cardio-respiratory endurance than the control group.

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