



# YOGA'S IMPACT ON MUSCULAR ENDURANCE AND FLEXIBILITY: A STUDY ON WORKING WOMEN IN THE TEXTILE INDUSTRY

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**Abstract:** Yoga is the most rapidly growing health movement of today, despite having existed thousands of years already. People attitude towards health, spirituality, way of life and our place in society have changed quite dramatically, as people are looking for answers for their everyday problems. The application of yogic practices will relief number of chronic physical, psychological and psychosomatic diseases. The purpose of the study was to investigate the effects of yogic practices such as asanas and Surya Namaskara on flexibility and muscular endurance among working women in textile industry. To facilitate the study, 120 working women were selected from a textile unit in Satara, Maharashtra, India. The Analysis of Covariance is used to validate the results obtained. The results of the present study proved that there was significant improvement on flexibility and muscular endurance due to twelve-week yoga asana training and twelve week Suraya Namaskara training compared to the control group. It was suggested that a similar study may be conducted with larger samples, which would support the findings of this study.

**KEYWORDS:** Asana, Flexibility, Muscular Endurance, Surya Namaskara, Yoga

## I. INTRODUCTION

The textile industry is one of the fast-growing and most important industries for the economic growth of India as well as worldwide. It is a labor-intensive industry provides jobs to millions of people both skilled and unskilled also covers both urban and rural areas. Especially it accounts for more than 80% of women workers. Though it provides women empowerment, also poses many physical and psychological hurdles to them due to the nature of working conditions of the textile industries.

Many researches attempted to expose the health issues associated with those industries and very few attempted to find out alternative solutions which enhance the health of the workers also their working capacity. In this paper, an attempt is made to find out the impact of yogic practices especially asanas and Surya Namaskara on physical fitness variables among women workers in textile industry.

## HYPOTHESIS

1. It was hypothesized that there would be significant improvement on Flexibility among working women in textile industry due to twelve weeks yogic practices group than control group.
2. It was hypothesized that there would be significant improvement on Muscular Endurance among working women in textile industry due to twelve weeks yogic practices group than control group.
3. It was hypothesized that there would be significant improvement between experimental groups on flexibility and muscular endurance.

## 3.1 Population and Sample

To achieve the present investigation, one twenty textile industry women workers were randomly selected from a textile unit in Satara, Maharashtra, India and the subjects' age ranged between 25 years and 35 years. Subjects were divided into three equal groups with 40 subjects each, such as experimental group I, experimental group II and control group.

Experimental group I underwent 12 weeks yoga training with simple yoga asanas and experimental group II underwent Surya Namaskara practices for 12 weeks. Meanwhile control group allowed to do their normal activities. The data were collected from each subject before and after the training period and statistically analyzed by using Analysis of Covariance (ANCOVA) which

is used to find out the significant improvement on selected criterion variables. All the cases 0.05 level of confidence was fixed as a level of confidence to test the hypotheses.

## Results And Discussion:

TABLE – I

### COMPUTATION OF ANALYSIS OF COVARIANCE ON FLEXIBILITY (SCORES IN CENTIMETRES)

Test	Experimental Group I	Experimental Group II	Control Group	Source of variance	Sum of squares	Degrees of Freedom	Mean Squares	F-ratio
Pre-test mean	9.700	10.61	10.93	Between	32.897	2	16.448	2.21
				Within	105.660	117	0.903	
Post-test mean	15.76	13.85	12.04	Between	276.701	2	138.351	52.886*
				Within	306.073	117	2.616	
Adjusted mean	15.62	13.97	12.15	Between	187.351	2	93.675	56.01*

Table F-ratio at 0.05 level of significance for 2 and 117 (df) =3.07, 2 and 116 (df) =3.07

\*Significant

Table -I shows that the pre test and post test mean scores of flexibility. The post test scores analysis proved that there was significant difference between the groups, as the obtained F value was greater than the required F value of 3.07. This proved that there was a significant difference among the means due to the experimental training on flexibility. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's confidence interval test. The results were presented in Table –II.

TABLE – II

### SCHEFFE'S CONFIDENCE INTERVAL TEST SCORES ON FLEXIBILITY (SCORES IN CENTIMETRES)

Group I	Group II	Control Group	Mean Difference	Required C.I
15.62	13.897	--	1.65	1.72
15.62	--	12.15	3.47*	
--	13.897	12.15	1.82*	

\* Significant

The multiple mean comparisons shown in Table - II proved that there existed significant differences between the adjusted means of experimental group I and control group, experimental group II and control group. There was no significant difference between experimental group I and experimental group II. The pre and post-test means on flexibility were presented through bar diagram for a better understanding of the results of this study in Figure -I.

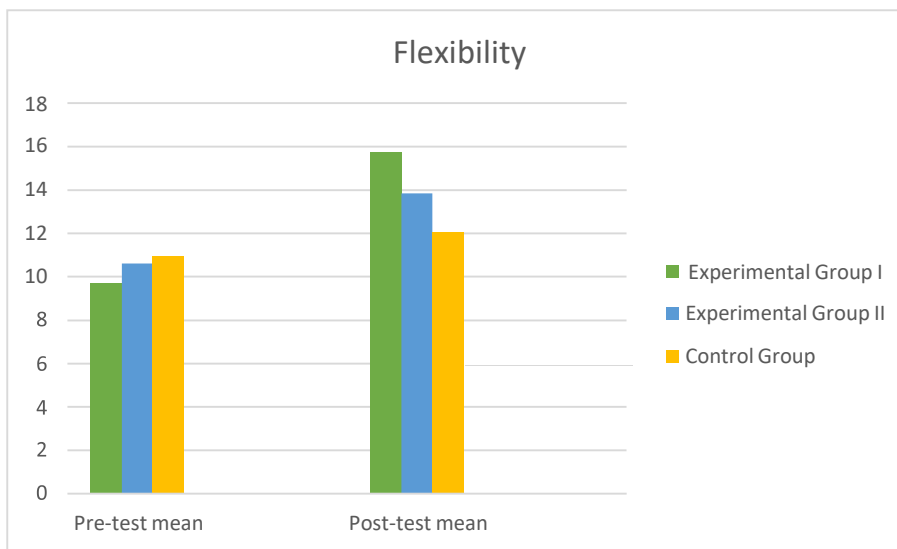


Fig I Flexibility Mean Comparison

TABLE – III

**COMPUTATION OF ANALYSIS OF COVARIANCE ON MUSCULAR ENDURANCE (SCORES IN COUNTS)**

Test	Experimental Group I	Experimental Group II	Control Group	Source of variance	Sum of squares	Degrees of Freedom	Mean Squares	F-ratio
Pre-test mean	28.95	28.71	30.18	Between	49.191	2	24.595	2.40
				Within	53.888	117	0.461	
Post-test mean	38.65	35.02	29.36	Between	1829.482	2	914.741	59.90*
				Within	111.496	117	0.953	
Adjusted mean	38.74	35.17	29.12	Between	1563.59	2	781.796	61.90*
				Within	107.335	116	0.927	

Table F-ratio at 0.05 level of significance for 2 and 117 (df) =3.07, 2 and 116 (df) =3.07

\*Significant

Table -III shows that the pre-test and post-test mean scores of muscular endurance. The post test scores analysis proved that there was significant difference between the groups, as the obtained F value was greater than the required F value. This proved that there was a significant difference among the means due to the experimental trainings on flexibility. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s confidence interval test. Therresults were presented in Table –IV.

TABLE – IV

**SCHEFFE’S CONFIDENCE INTERVAL TEST SCORES ON MUSCULAR ENDURANCE (SCORES IN COUNTS)**

Group I	Group II	Control Group	Mean Difference	Required C.I
38.74	35.17	--	3.57	4.72
38.74	--	29.12	9.92*	
--	35.17	29.12	6.05*	

\* Significant

The multiple mean comparisons shown in Table - IV proved that there existed significant differences between the adjusted means of experimental groups and control group. The pre and post test means on muscular endurance were presented through bar diagram for better understanding of the results of this study in Figure -II

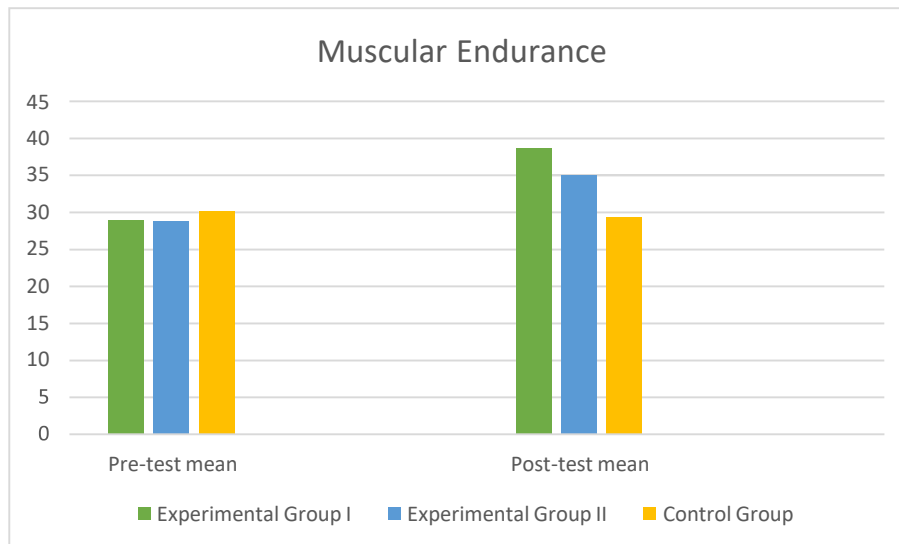


Fig II: Muscular Endurance Mean Comparison

## CONCLUSION

The results of the present study proved that there was significant improvement on flexibility and muscular endurance due to twelve-week yoga asana training and twelve week Suraya Namaskara training compared to the control group. It was suggested that a similar study may be conducted with larger samples, which would support the findings of this study.

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