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Effect of asanas on flexibility of sedentary women

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Abstract
The objective of the study was to find out the "Effect of asanas on flexibility of sedentary women". For the purpose of the study sixty sedentary women were selected purposively from Bolpur, Birbhum, West Bengal, India as the subject. They were categorized into two age group of 30 to 40 years (n-30) and 40 to 50 years (n-30). Each age group were also divided into two- experimental group (n-15) and control group (n-15). Flexibility was selected as the variable for the study. Eight weeks training program of the selected asanas were given to both the experimental groups. Pre-test and post-test data of all the groups were taken by using sit and reach test. To calculate the data descriptive statistics, Analysis of Co-variance (ANCOVA) and LSD post-hoc and independent t-test were used. The level of significance was set at 0.05 level. The result revealed the significant effect on flexibility of both the experimental groups-EG-1 (F-13.469) and EG-2 (F-10.223*). There was no significant difference between the two experimental groups. On the basis of the result, it was concluded that the asanas have significant effect on flexibility of the sedentary women group.

Keywords: Yogic practice, asana, fitness, flexibility, sedentary women

Introduction
Indian history is closely related to the awareness of health and physical activity where male engage first then female slowly engage. Normally female candidates participated less in physical activity. However, in rural area female candidates are engaged in physical activity but not in urban area. Normally house wife did not participate in regular activity, or lack of time involved in regular physical activity, because our society is still not allowing them to do so and also there is various responsibilities in daily life such as preparation of children for going school, maintenance of daily works in the house etc. These life-style routine is maintained by the house wife in the daily life, and this is the main cause of decrease in physical fitness of house wife. This less active or not active life-style routine continues for a long gradually lead the house wife in sedentary life which decrease the optimum capacity of internal system of the house-wife. In a different way, this life-style slowly decreases the immunity power of the house wife that ultimately increases chances of various diseases.

Flexibility is one of the important fitness components which not only play a vital role for the sports person but also for sedentary people. It helps to increase physical performance by improving the elasticity of the muscles and ligaments. It helps to prevent sports related injuries. It helps in faster recovery.

Yoga involves a systematic method by which the awareness of the processes of stress relief can be expended and thus gain control over them. Yogic practices enhance quality of life by improving physical, physiological and psycho-social perspectives of human being these are the widely addressed benefits of yoga.

As the women has less opportunity to do regular physical activity in various places specially in open places, they need some special physical activity like yogic practices which is one of the very easy mode of keeping fitness for all including the sedentary women and can be performed in closed room also.

There are a few researches on flexibility for the sedentary women. With this background and less availability of research work on sedentary women of different age groups on selected parameters after yogic practices, this study was undertaken.

The objective of the study was to find out the effect of asanas on flexibility of sedentary women.

Methodology

Subjects: For the purpose of the study sixty sedentary women were selected purposively from Bolpur, Birbhum, and West Bengal, India as the subject. They were categorized into two age group of 30 to 40 years (n-30) and 40 to 50 years (n-30). Each age group were also divided into two- experimental group (n-15) and control group (n-15).

Variable: Flexibility was selected as the variable for the study.

Test and Criterion Measure: To measure the flexibility of different age group sedentary women, sit and reach test of flexibility was used. The score of the subject on sit and reach test of flexibility was recorded in centimetre.

Collection of Data: Pre-test data were collected from both the two experimental groups and two control groups of different age group of sedentary women. Yogic training schedule comprised of vrikshasana, paschimatanasana, yogamudra, sarvangasana, halasana, matsyasana, bhujangasana, salabhasana, dhanurasana, chakkarasana, bakrasanaa, utkatasana and shavasana was administered for six days a week for eight weeks to two experimental groups of 30-40 years age and 40 to 50 years age. The load was gradually increased from 1st-2nd week to 7th-8th week. Immediately after completion of the yogic treatment to the experimental group, the post-test data were collected from all the four groups.

Statistical Analysis: To find out the effect of asanas on flexibility of sedentary omen, descriptive statistics, Analysis of covariance (ANCOVA) and LSD post-hoc test were applied. The level of significance was set at0 .05 level.

Result and Discussion

Table 1: Descriptive Statistics on Hip and Back Flexibility of the Selected Groups

	Group-1				Group-2			
	EG-1		CG-1		EG-2		CG-2	
	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
Mean (cm)	8.533	11.733	8.2	9.2	8.133	11.533	8.066	9.333
Standard Deviation	4.257	3.918	4.394	4.491	5.667	6.0221	5.0351	5.0521
Std. Error	1.099	1.011	1.134	1.159	1.463	1.554	1.300	1.304
Skewness	-1.356	-0.912	-1.500	-1.832	-1.093	-1.350	-1.195	-0.923
Kurtosis	2.983	1.378	3.665	5.020	1.178	1.629	1.181	0.511
Maximum Score (cm)	14	17	14	15	16	20	15	15
Minimum Score (cm)	-3	2	-4	-4	-5	-2	-3	-2

Table 1 describes the mean, standard deviation, Standard error, Skewness, Kurtosis, Maximum score and Minimum score of subjects in dynamic balance of both the groups of sedentary women.

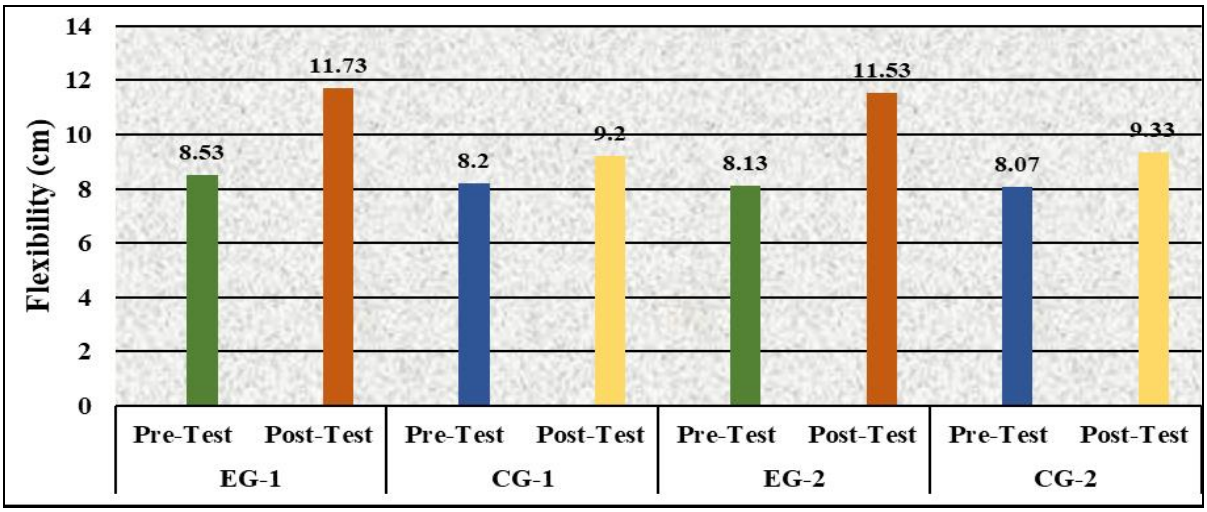

Fig 1: Graphical Representation of Pre-Test & Post-Test Mean for Distinct Groups on Flexibility of both the Sedentary Women Groups

Table 2: ANCOVA for G-1 Distinct Groups on Flexibility for Pre-Test and Post-Test Data

Source	df	Sum of Squares	Mean Square	F-value
Treatment Group	1	37.374	37.374	13.469*
Error	27	74.919	2.775	
Total	28	112.293		

Table value of F (1,27) = 4.22 Significant at the .05 level

Table-2 reveals significant improvement in flexibility (F=13.469) among G-1 groups. The obtained F value was found to greater than that of tabulated F value 4.22 at 0.05 level of significance with 1, 27 degree of freedom.

Table 3: Pair wise Comparisons of G-1 Groups of Adjusted Means on Flexibility Obtained in Pre-Test and Post-Test Data

Group	N	Pre-Test	Post-Test	Mean Adjusted	Mean Difference	CD
EG-1	15	8.53	11.73	11.58	2.23*	1.036
CG-1	15	8.20	9.20	9.35		

*. The mean difference is significant at the .05 level

Table-3 expresses the paired adjusted final mean differences in flexibility clearly indicates the significant difference between the experimental and control group (2.23*) which were greater than that of the critical value 1.036.

Table 4: ANCOVA for G-2 Distinct Groups on Flexibility for Pre-Test and Post-Test Data

Source	Df	Sum of Squares	Mean Square	F-value
Treatment Group	1	34.172	34.172	10.223*
Error	27	90.251	3.343	
Total	28	124.423		
Table value of F (1,27) = 4.22 Significant at the .05 level				

Table-4 reveals significant improvement in flexibility (F=10.223*) among the G-2 groups. The obtained F value was found lesser than that of the tabulated F value 4.22 at 0.05 levels of significance with 1, 27 degree of freedom.

Table 5: Pair wise Comparisons of G-2 Groups of Adjusted Means on Flexibility obtained in Pre-Test and Post-Test Data

Group	N	Pre-Test	Post-Test	Mean Adjusted	Mean Difference	CD
EG-1	15	8.13	11.53	11.50	2.13*	1.137
CG-1	15	8.07	9.33	9.37		
*. The mean difference is significant at the .05 level						

Table-5 reveals the paired adjusted final mean differences in flexibility clearly indicates the significant difference between the experimental and control group (2.13*) which were greater than that of the critical value 1.137.

Table 6: Mean Difference between Experimental Group-1 and Experimental Group-2 on Flexibility

Group	Mean	Mean Difference	Std Error of Diff	t-Value	Sig. Level
EG-1	3.2	0.2	0.77	0.26	0.796
EG2	3.4				

Table-6 expresses the result of independent t-test between the experimental group-1 and experimental group-2 where the t-value (t=0.26) was found not significant as the p-value was 0.796.

The result may be due the similar type of lifestyle spent by both the category of sedentary women and also the age group difference was not so high. The result was supported by the study of Rai., A. and Reddy., T.O. (2013) who worked on a study to compare effect of static and dynamic asana on flexibility of B.H.U. students. The result indicated that static experimental group, dynamic experimental group, flexibility were significantly increase but control group flexibility no significant changes was observed. They concluded that yoga training to higher increased significant score in both of the experimental groups, and also compared to control group.

Conclusion

On the basis of the result, it may be concluded that the Yogasana training improve the flexibility of the sedentary women.

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