

Effect of surya-namaskar on flexibility and abdominal muscles strength of college students

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Abstract : The purpose of the present study was to examine the effect of Surya-namaskar on flexibility and abdominal muscle strength of college students. For the study research scholar selected forty college male students randomly at the age of 20 to 21 years and divided into two groups i.e. experimental group (N=20) and control group (N=20). Experimental group performed Surya-namaskar for six days per week for a duration of three months and control group was not participated in Surya-namaskar. Pre and post assessments of flexibility and abdominal muscle strength were conducted using standardised test. Flexibility was measured with the help of sit and reach test and abdominal muscle strength was measure with bent knee sit ups test. The result of the present investigation shows that the experimental group have significant improvement in flexibility and abdominal muscle strength with compare to control group due to participation in Surya-namaskar.

Key words: Surya-namaskar, flexibility, abdominal muscle strength, sit and reach test, bent knee sit ups test.

1. INTRODUCTION:

Surya-namaskar, or Sun Salutation, is a series of 12 yoga poses traditionally performed in a sequence. It has gained popularity as a form of physical exercise that promotes flexibility, muscle strength, cardiovascular fitness, and mental relaxation. Yoga is now a widely accepted form of physical activity, and several studies have suggested its positive impact on various health parameters.

Flexibility and abdominal muscle strength are key components of physical fitness. They contribute to better posture, improved athletic performance, and prevention of injuries. Flexibility refers to the ability of a joint or series of joints to move through an unrestricted, pain-free range of motion. It is an important aspect of physical fitness and contributes to overall health. Flexibility can enhance athletic performance, reduce the risk of injuries, and improve posture and alignment. Abdominal muscle strength refers to the strength and endurance of the muscles located in the abdominal area, including the rectus abdominis, obliques, and transverse abdominis. Strong abdominal muscles are essential for overall core stability, which supports the spine and pelvis, enhances posture, and aids in various physical activities.

1.1 Statement of the problems:

The study was undertaken to know the effect of Surya-namaskar on flexibility and abdominal muscle strength of college students.

1.2 Purpose of the study:

The purpose of the study was to evaluate the effect of Surya-namaskar on flexibility and abdominal muscle strength of college students.

1.3 Objectives of the study:

- To study the effect of Surya-namaskar on flexibility of college students.
- To study the effect of Surya-namaskar on abdominal muscle strength of college students.



1.4 Hypothesis:

It was hypothesised that Surya-namaskar significantly improve flexibility abdominal muscle strength of college students.

1.5 Delimitations:

1. The study was delimited to forty college students only.
2. The subject for the present study was randomly selected.
3. The subjects were divided into two groups : experimental group (N=20) and control group (N=20).

1.6 Limitations:

1. Dietary habits of the experimental group and control group subjects were not under control of the researcher.
2. Daily activities of the participant were not control.

2. Methodology:

For the present study forty subjects were selected with the help of simple random sampling method. The age group of subjects was 20 to 21 years. The randomly selected subjects were divided into two groups. i.e. experimental group (N=20) and control group (N=20). The independent variable in the present investigation was Surya-namaskar and dependent variables were flexibility and abdominal muscles strength. The pre-post assessment of flexibility and abdominal muscles strength were conducted using standardised test. Flexibility was measured with the seat and rich taste and abdominal muscle strength was measured with the help of bent knee sit ups of both the groups. The experiments group underwent a Surya-namaskar training for three months, practicing twelve repetitions of the complete sequence, six days per week. The control group continued with their usual physical activities.

Results:

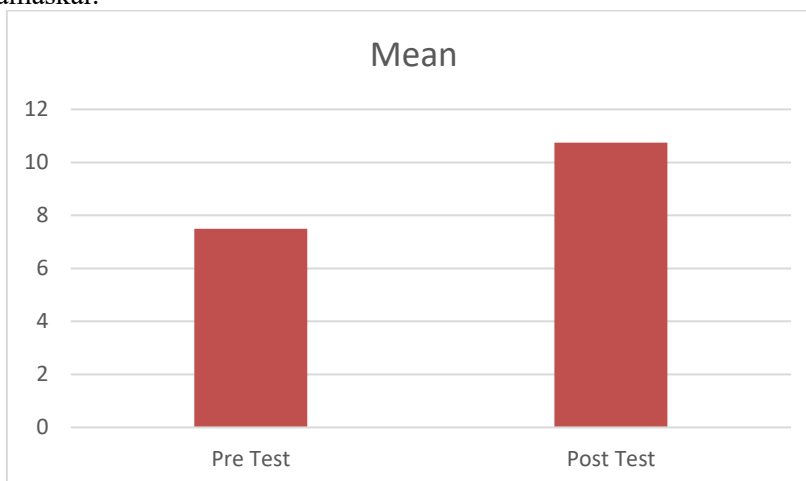
Analysis of data and interpretation of result was done by using descriptive statistics and comparative analysis was done by using student ‘t’ test. The level of significant was kept at 0.05 level. It was hypothesized that there were significant changes found in flexibility and abdominal muscle strength of college male students if they do regular Surya-namaskar.

Table No. 1 Showing the Pre-Test and Post-Test Score of Flexibility of the Experimental Group

	N	Mean	SD	MD	SE	‘t’ test	Table value of ‘t’ test
Pre-test	20	7.5	1.54	3.25	0.39	8.3	2.09
Post-test	20	10.75	1.55				

Significant at level 0.05

The above table shows that the initial mean value of flexibility of experimental group was 7.5 and final main value was 10.75. The resultant meant difference of pre-and Post test was 3.25 and standard error was 0.39. The calculated ‘t’ test value was 8.3, this value was significant at 0.05 level because the calculated ‘t’ test value is greater than table value of ‘t’ test i.e. 2.09. It was found that the flexibility of experimental group was statistically significant because of participation in Surya-namaskar.



Graph Showing the Pre-Test and Post-Test Mean Score of Flexibility of the Experimental Group

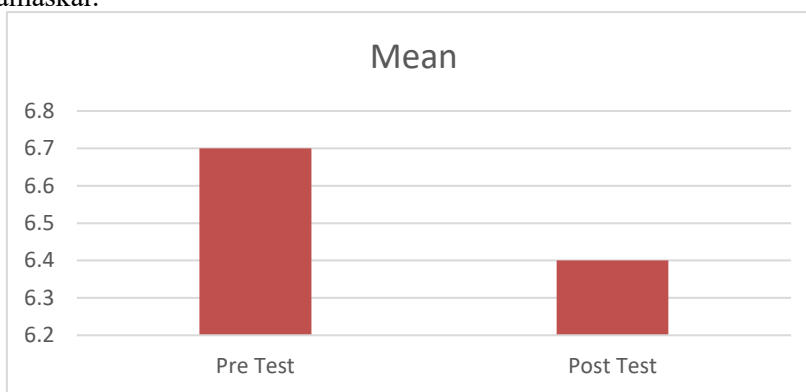


Table No. 2 Showing the Pre-Test and Post-Test Score of Flexibility of the Control Group

	N	Mean	SD	MD	SE	't' test	Table value of 't' test
Pre-test	20	6.7	1.6	0.3	0.34	0.88	2.09
Post-test	20	6.4	0.8				

Significant at level 0.05

The above table shows that the initial mean value of flexibility of control group was 6.7 and final main value was 6.4. The resultant meant difference of pre-and Post test was 0.3 and standard error was 0.34. The calculated 't' test value was 0.88, this value was not significant at 0.05 level because the calculated 't' test value is smaller than table value of 't' test i.e. 2.09. It was found that the flexibility of control group was not statistically significant because of non-participation in Surya-namaskar.



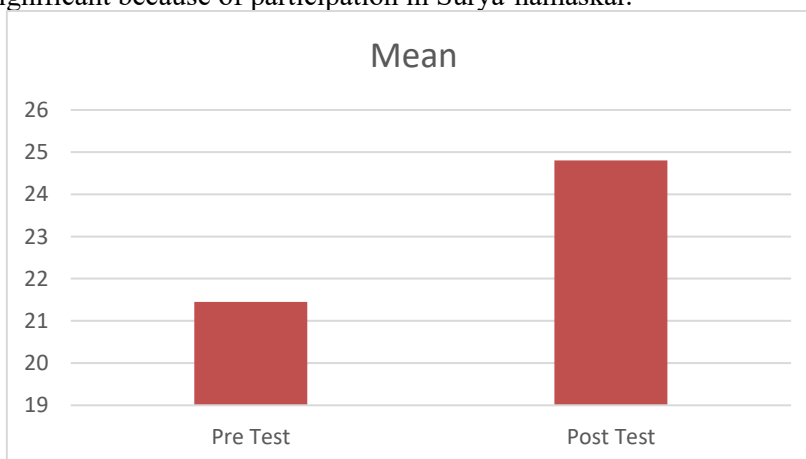
Graph Showing the Pre-Test and Post-Test Mean Score of Flexibility of the Control Group

Table No. 3 Showing the Pre-Test and Post-Test Score of Abdominal Muscle Strength of the Experimental Group.

	N	Mean	SD	MD	SE	't' test	Table value of 't' test
Pre-test	20	21.45	1.23	3.35	0.33	10.15	2.09
Post-test	20	24.8	0.95				

Significant at level 0.05

The above table shows that the initial mean value of abdominal muscle strength of experimental group was 21.45 and final main value was 24.8. The resultant meant difference of pre-and Post test was 3.35 and standard error was 0.33. The calculated 't' test value was 10.15, this value was significant at 0.05 level because the calculated 't' test value is greater than table value of 't' test i.e. 2.09. It was found that the abdominal muscle strength of experimental group was statistically significant because of participation in Surya-namaskar.



Showing the Pre-Test and Post-Test Mean Score of Abdominal Muscle Strength of the Experimental Group

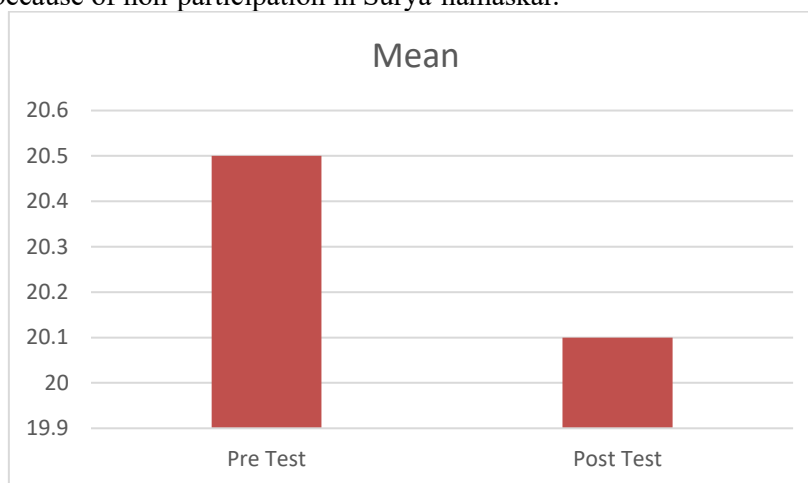


Table No. 4 Showing the Pre-Test and Post-Test Score of Abdominal Muscle Strength of the Control Group.

	N	Mean	SD	MD	SE	't' test	Table value of 't' test
Pre-test	20	20.5	1.05	0.4	0.3	1.33	2.09
Post-test	20	20.1	0.85				

Significant at level 0.05

The above table shows that the initial mean value of abdominal muscle strength of control group was 20.5 and final mean value was 20.1. The resultant mean difference of pre-and Post test was 0.4 and standard error was 0.3. The calculated 't' test value was 1.33, this value was not significant at 0.05 level because the calculated 't' test value is smaller than table value of 't' test i.e. 2.09. It was found that the abdominal muscle strength of control group was not statistically significant because of non-participation in Surya-namaskar.



Showing the Pre-Test and Post-Test Score of Abdominal Muscle Strength of the Control Group

3. DISCUSSION:

The results of this study suggest that regular practice of Surya-namaskar significantly improves both flexibility and abdominal muscle strength of college students. The sequence of postures in Surya-namaskar involves forward bends, backward bends, and stretching movements, which may account for the improved flexibility. The dynamic nature of the practice also engages the core muscles, leading to increased abdominal strength. Previous studies have supported the notion that yoga can enhance physical fitness. The findings of this study are consistent with research indicating that yoga practices like Surya-namaskar can improve abdominal muscular endurance and flexibility. Limitations of the study include the relatively short duration of the intervention and the small sample size. Future studies could explore the long-term effects of Surya-namaskar on other physical and mental health parameters.

4. CONCLUSION:

This study provides evidence that a six-week Surya-namaskar program can significantly improve flexibility and abdominal muscle strength in college students. Incorporating Surya-namaskar into daily fitness routines could offer a simple and effective way to enhance physical fitness and overall health.

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