

Effects of Suryanamaskara on Hip and Trunk Flexibility among College Students

Surajit Den¹ and Dr. Jaideep Ghosh²

Research Scholar, PGTD of Physical Education, RTM Nagpur University¹

Principal, Indira Gandhi College of Physical Education, RTM Nagpur University²

Abstract: *The aim of the study was designed to determine the immediate effects of Suryanamaskar on hip and trunk flexibility among college male students. The purpose was based on sample of 40 (forty) subjects. The subject randomly selected from the college of Howrah District. The age of subjects for the study was ranged 18 to 20 years. The selected variables for the purpose were Suryanamaskar (Independent variable) and Flexibility (Dependent variable). The subjects their Hip and Trunk flexibility was measured using the Sit and Reach test and Trunk rotation test. Pre and post measurements the subjects were formed to do 10tardySuryanamaskar with 05 seconds holds at each step and then immediate effect of Suryanamaskar. Before and after execution t-values shows significant difference for sit and reach test and trunk rotation test at p value <0.05 in trunk and hip flexibility of Suryanamaskar. The finding of this study that Suryanamaskar shows immediate effect on improving flexibility of the hip trunk muscles.*

Keywords: Suryanamaskar, Flexibility, Sit and Reach test, Trunk rotation test

I. INTRODUCTION

Suryanamaskar, also known as Sun Salutation, is a series of twelve yoga postures that can be performed in a continuous flow. It is a popular practice in various forms of yoga, including Hatha, Ashtanga, and Vinyasa. Suryanamaskar is often used as a warm up or as a standalone practice to increase flexibility, strength, and balance. Flexibility is an important aspect of physical fitness and is defined as the ability to move joints through their full range of motion.² It is essential for maintaining good posture, preventing injuries, and performing daily activities with ease. A sedentary lifestyle, stress, and lack of physical activity can lead to decreased flexibility, which can cause muscular imbalances and affect overall movement and performance. Suryanamaskar can improve flexibility by stretching and strengthening the muscles of the entire body. The continuous flow of postures in Suryanamaskar targets various muscle groups, including the hamstrings, hip flexors, shoulders, and chest. It also involves rotation and extension of the spine, which can increase flexibility and mobility in the back. Regular practice of Suryanamaskar can also help to release tension and tightness in the muscles, leading to improved flexibility.

The Sit and Reach test are a common measure of flexibility, specifically in the lower back and hamstrings. It involves sitting on the floor with legs extended and reaching forward to touch the toes. Suryanamaskar can improve performance on this test by targeting the hamstrings and lower back muscles through movements such as Uttanasana (Forward Fold) and Bhujangasana (Cobra Pose).³

Trunk rotation test is another measure of flexibility that assesses the range of motion in the spine and upper back. It involves sitting on the floor with legs extended and rotating the torso to reach for the toes on either side.⁴ Suryanamaskar can improve performance on this test by targeting the spine and upper back muscles through movements such as Parivrtta Trikonasana (Revolved Triangle Pose) and Ardha Matsyendrasana (Half Lord of the Fishes Pose).

Suryanamaskara is a Sanskrit word which combines two words namely Surya meaning Sun and Namaskara meaning Salutation. In ancient times, Hindus greet each other with Namaskar which means "I bow to u". In Suryanamaskara we bow to the God Surya (Sun god) and express our gratitude to him.⁵ Sun which is the source of life and light that sustains life on earth from the body by for the light, energy, vitality, and health that we enjoy. Samkhya philosophy states that the entire universe is made of and governed by three fundamental qualities (Guna) that are present everywhere. They are: Sattva (harmony, clarity, intelligence), Rajas (activity, passion, motion) and Tamas (inertia, laziness, darkness).⁶ In

Suryanamaskara, the bending postures are associated with Sattva guna and the stretching postures are associated with Rajas guna. Alignment and relaxation in postures is associated with Tamas guna. Sattva guna leads to happiness and relaxation which form the basis for further movement of yoga. Rajas guna is associated with constructive and creative behavior that leads to the physical improvement. On the other hand, Tamas guna is associated with calmness, relaxation, and cooling. The movement of yoga is based on a combination of these three qualities of Gunas. Suryanamaskara effectively balances these three Gunas. Suryanamaskara is the only form of yogic practice that is associated with a set of precise movements, which when practiced regularly, has been found to be beneficial for the body and the mind in many ways (cited in Sisodia, 2017).⁷ Suryanamaskara complete workout for the mind, body and soul.

Purpose of the Study

The following research purpose was for this study does Suryanamaskara effective for improving flexibility of college students

Objective of the study

This study's objective is immediate effects of Suryanamaskara on Hip and Trunk Flexibility among college students.

Delimitations

1. The study was delimited to only one physiological variable such as flexibility.
2. The study was conducted on only 40 male college students.

Methodology of the study

Experimental designs method was used in the present study. The study was conducted by using the group pre-test and post-test design. Experimental study was conducted that consisted male students of age 18 to 20. Subjects who were willing to participate were included in the study. Boys who have any recent injuries, any musculoskeletal, cardiovascular and neurological conditions were excluded from the study. 60 participants were initially enrolled for the study out of those 40 students was recruited according to the criteria.

Apparatus used

1. Sit and reach box or alternatively a ruler be used
2. Wall, Chalk, Pencil, Ruler, Measuring Tape

Test Procedure and Scoring

Sit and Reach test

Procedure: This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down with the palms facing downwards, and the hands on top of each other or side by side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subject reaches out and holds that position for a one-two seconds while the distance is recorded. Make sure there are no jerky movements. Wells, K.F. & Dillon, E.K. (1952)⁸.

Trials: Three

Scoring: The score will be recorded to the nearest centimetre or half inch as the distance reached by the hand. Some test versions use the level of the feet as the zero mark, while others have the zero mark 9 inches before the feet. There is also the modified sit and reach test which adjusts the zero-mark depending on the arm and leg length of the subject. There are some norms for the sit and reach test.

Trunk Flexibility

Procedure: Mark a vertical line on the wall. Stand with your back to the wall directly in front of the line, with your feet shoulder width apart. You should be about arm's length away from the wall, though you may need to adjust the distance

from the wall once you start the test. Extend your arms out directly in front of you so they are parallel to the floor. Twist your trunk to your right and the touch the wall behind you with your fingertips, keeping your arms extended and parallel to the floor. You are allowed to turn your shoulders, hips and knees as long as your feet don't move. Mark the position where your fingertips touched the wall, and measure the distance from the line. A point before the line is a negative score and a point after the line is a positive score. Repeat for the left side with your feet in the same position.⁹

Scoring: Take the average of the 2 scores (left and right sides)

All the subjects were measured for hip and trunk both flexibility using the sit and reach test and trunk rotation test to measure the individual values were also taken. The subjects were demonstrated the techniques prior to measurement. After recording the pre measurements the subjects were made to do 10 tardy Surya Namaskar with 05 sec holds at each asana.

Surya Namaskar Protocol:

It consists of a total of 12 Steps and asanas:

- Hasta uttanasan–Raised arms pose
- Padhahastasan–Forward bend with sanding
- Ekapadaprasaranasana – Horse pose
- Dwipadaprasaranasana -Parallel pose
- Sasankasana–Moon pose
- Sashtanga Namaskar – Ground touch with eight limbs
- Bhujangasan – Cobra pose
- Parvatasan– Mountain pose
- Sasankasana–Moon pose
- Ekapadaprasaranasana – Horse pose
- Padhastasan– Forward bend with standing
- Hasta Uttanasan– Raised arms pose

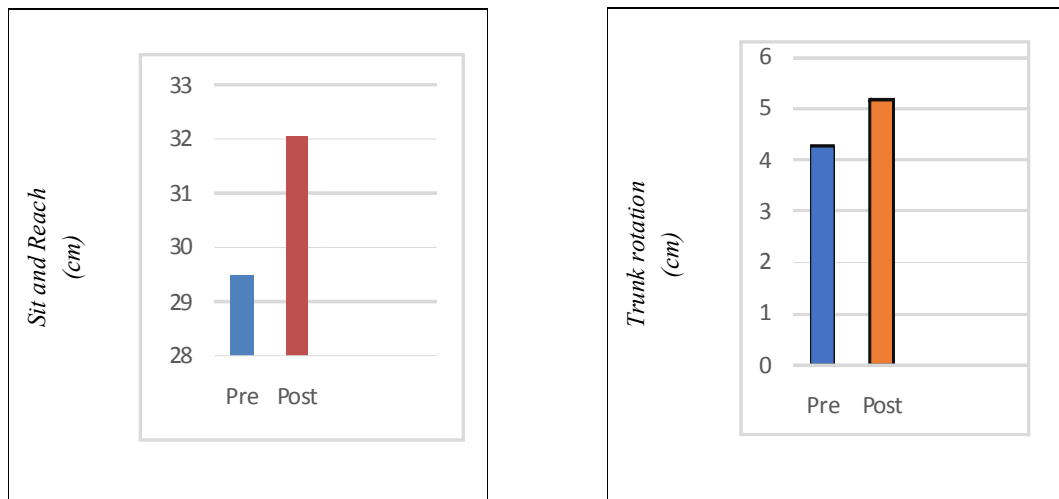
II. RESULTS AND STATISTICAL ANALYSIS

All analysis was carried out in SPSS windows Version 20.0. An alpha-level of 0.05 was used to determine statistical significance. Paired t-test was applied in pre–post of Sit and Reach test and Trunk rotation test to see the immediate effect of Surya Namaskar.

Table 1: Comparison of all outcome measures following Suryanamaskara

<i>Outcome measures</i>	<i>Pre mean (SD)</i>	<i>Post men (SD)</i>	<i>t-value</i>	<i>P-value</i>
<i>Sit and reach test</i>	<i>29.51 (5.15)</i>	<i>31.09 (4.58)</i>	<i>12.30</i>	<i>0.00</i>
<i>Trunk rotation test</i>	<i>4.34 (1.18)</i>	<i>5.22 (1.07)</i>	<i>13.67</i>	<i>0.00</i>

As shown in the above table there is significant difference in the values of sit and reach test and Trunk rotation test readings at level of significance p=0.00.



Graph 1: Mean of sit and reach Graph 2: Mean of trunk rotation

III. DISCUSSION

In the present study subjects were asked to perform Surya Namaskar for 10 times with 05 sec holds at each asana. Then their flexibility was measured before and after doing Surya Namaskar by sit and reach test and Trunk rotation test. The results of the present study as shown in table are mean values for sit and reach test before and after doing Surya Namaskar are 29.49 ± 5.15 cm and 32.04 ± 4.58 cm respectively; mean for trunk rotation test is 4.25 ± 1.18 cm and 5.18 ± 1.07 cm respectively. Thus, it is found that Suryanamaskara shows immediate effect on improving flexibility of the muscles.

The present study was limited only to male college students aged from 18 to 20 years. Future studies can be performed on both the gender and on healthy and elderly populations. In addition, effect of Surya Namaskar needs to be further investigated as a tool to enhance physical fitness and quality of life dimensions in various diseased conditions. Longitudinal study can also be performed.

IV. CONCLUSION

In conclusion, Suryanamaskara is a powerful shows immediate effect that can improve flexibility in the body through its rhythmic and flowing movements. Regular practice of Suryanamaskara can lead to increased flexibility, improved posture, reduced tension, and better overall movement and performance. It is a versatile and accessible practice that can benefit people of all ages and fitness levels.

REFERENCES

- [1]. Chutia S, Changmai S, Thapa SK, Gogoi BC. Effect of surya Namaskara on flexibility of middle elementary school students. International Journal of Physical Education, Sports and Health 2016; 3(4):142-143. Retrieved from www.kheljournal.com
- [2]. Singh AS, Singh V. Effect of Surya Namaskara on Static Balance of School Girls. International Journal of Physical Education, Health and Social Science (IJPEHSS), 2014;3(2) Retrieved from www.ijpehss.org
- [3]. Sisodia AS. Effect of Surya Namaskara on flexibility of school girls. International Journal of Physical Education, Sports and Health. 2017; 4(2):154-156. Retrieved from www.kheljournal.com
- [4]. Saraswati S. Surya Namaskar-A technique of solar vitalization. : Munger Yoga Publications Trust. ; 1983.
- [5]. Jonsson D. Flexibility, Stability and related concepts. In B. Furaker, K. Hakansson, & J.C. Karlsson (Eds), Flexibility and stability in working life, New York, N.Y. 10010, 2007, 30-33
- [6]. Sisodia DAS. Effect of Surya Namaskar on flexibility of school girls. International Journal of Physical Education, Sports and Health. 2017; 4(2).

- [7]. Anagha Mangaonkar AP. Effect of SuryaNamaskar VS Dynamic Stretching on Hamstring Flexibility Among Physiotherapy Students: A Pilot Study. International Journal of Physiotherapy. 2018 December;5(6).
- [8]. Amit Vaibhav SSaOPS. Surya Namaskar(Sun Salutation): A Path to Good Health. International Journal of Pharmacological Research. 2016; 6(7).
- [9]. Ashwini Deshmukh et al. A comparative study between Pilates and Surya Namaskaron flexibility in women having sedentary lifestyle using sit and reach test and shoulder and wrist test. International JournalofYoga, Physiotherapy and Physical Education. 2018; 3(2).