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Effect of Slow Versus Fast Suryanamaskar on Pulmonary Function in Young Sedentary Individual - A Comparative Study

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ABSTRACT

AIM: This study aimed to compare the effects of slow and fast Suryanamaskar on pulmonary function in young sedentary individuals.

INTRODUCTION: A sedentary lifestyle is often associated with reduced pulmonary efficiency. Regular physical activity strengthens respiratory muscles and improves lung function. Suryanamaskar is a traditional yogic sequence that combines physical postures with controlled breathing patterns, thereby enhancing pulmonary function through natural respiratory movements. Suryanamaskar, when performed at both slow and fast rates, has shown its effects on various parameters; however, the specific effects of slow versus fast Suryanamaskar on pulmonary function in young sedentary individuals remain unclear. Therefore, this study was undertaken to compare their effects.

METHODOLOGY: Thirty-four sedentary individuals aged 18-30 were randomly assigned to two groups: Group A performed fast-Suryanamaskar (15 rounds in 30 minutes), and Group B performed slow-Suryanamaskar (7 rounds in 30 minutes). The intervention lasted 6 weeks with three sessions per week. Pulmonary function was measured using PFT parameters-Forced Vital Capacity (FVC), Forced Expiratory Volume in one second (FEV1), and FEV1/FVC ratio pre- and post-intervention.

RESULT: There was a significant effect in both groups on the pulmonary function test. However, there are no statistically significant differences between the groups according to intergroup comparisons.

CONCLUSION: The study concluded that there was absolutely no statistically significant difference between the two groups, the study concluded that the two types (Slow and Fast-Suryanamaskar) are equally beneficial at improving pulmonary function.

Keywords: Suryanamaskar, Pulmonary Function Test, FVC, FEV1, Sedentary Lifestyle, Yoga

INTRODUCTION

In Sanskrit, Surya refers to the Sun, and Namaskar means Salutation. For all living beings, the day begins with the sunrise. Suryanamaskar is a comprehensive physical exercise believed to have been created and promoted by the king of Aundh, Late Shrimant Balasaheb Panth Pratinidhi, in the 1920s. It is the most popular sequence of asanas derived from Indian traditional physical training. Nowadays,

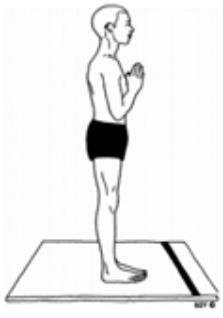
Suryanamaskar is both a physical as well as a spiritual practice.

Every step in Suryanamaskar is executed with a synchronised breathing pattern and posture. Step 1 begins with regular breathing. In the backward stretching step, the chest is expanded with inhalation. And in the forward bending step, the chest is contracted with exhalation. With alternating inhale and exhale patterns, the postures are designed to support the lungs in breathing spontaneously at their own rate. As a result, dynamic posture aids the practitioner in increasing lung capacity through consistent Suryanamaskar practice.[1]

Suryanamaskar is an essential part of ancient Indian yoga practices. Suryanamaskar (SN) is a series of yoga poses that are dynamically performed in time with the breath.

There are Total 12 postures in Suryanamaskar.

1. Pranamasana (prayer pose)
2. Hasta Uttanasana (raised arms pose)
3. Padahastasana (Hand to foot pose) 4.
4. Ashwa Sanchalanasana (Equestrian Pose)
5. Parvatasana (Mountain Pose)
6. Ashtanga Namaskar (Salute with eight parts)
7. Bhujangasana (Cobra Pose)
8. Parvatasana (Mountain Pose)
9. Ashwa Sanchalanasana (Equestrian Pose)
10. Padahastasana (Hand to foot pose)
11. Hasta Uttanasana (raised arms pose)
12. Pranamasana (prayer pose)

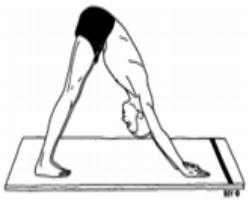


1. Pranamasana

2. Hasta Uttanasana

3. Padahastasana

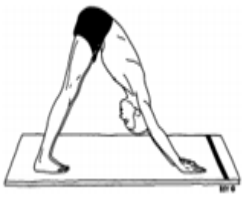
4. Ashwa Sanchalanasana



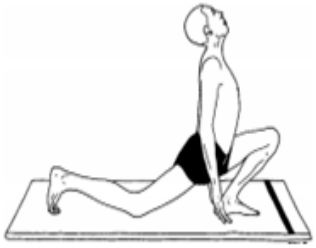
5.Parvatasana

6. Ashtanga Namaskar

7. Bhujangasana



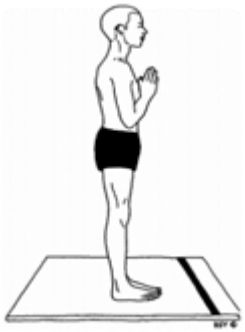
8. Parvatasana



9.Ashwa Sanchalanasana

10. Padahastasana

11. Hasta Uttanasana



12. Pranamasana

The effect of Suryanamaskar has positive physiological benefits. Suryanamaskar has many benefits for toning, stretching, massaging, and relaxing all of the body's internal organs, muscles, and joints. It balances metabolism and strengthens the back. Additionally, it regulates every part of the body, including the digestive, respiratory, and circulatory systems.3 Suryanamaskar warms the body and functions as a cardiotonic when performed rapidly; when performed slowly, it tones and strengthens the muscles and improves internal organ function. Additionally, the Slow Suryanamaskar exercise strengthens the inspiratory and expiratory muscles. The many Slow Suryanamaskar poses include chest wall expansion and isometric contraction, which may strengthen the intercostal muscles.[2]

The term "sedentary lifestyles" describes a lack of physical activity. This could have been associated with less efficient lung function. Engaging in specific physical activities may improve pulmonary function and strengthen the respiratory muscles. Involvement in physical activity is crucial for improving lung function. Frequent exercise is well acknowledged as a crucial lifestyle choice for the advancement and preservation of personal health and well-being.[4]

To measure and follow changes in pulmonary function, volumes and airflow measurement, spirometry is most frequently used. It is a measurement of volume versus time and is the most widely used indicator of lung function. One useful method for evaluating lung function is the Pulmonary Function Test (PFT). The following are the PFT parameters. The highest amount of air that may be expelled following a maximal inspiration is known as forced vital capacity, or FVC. The volume of air expelled in the first second of maximum expiration following maximal inspiration is known as forced expiratory volume in one second (FEV1). The volume of forced expiration in the first second divided by the forced vital capacity of the lungs is known as FEV1/FVC.[5]

Suryanamaskar has been shown to improve lung capacity in sedentary individuals, but the effect of slow and fast Suryanamaskar on pulmonary function in young sedentary individuals remains unclear. So, this study was undertaken to find out the effect of slow versus fast Suryanamaskar on pulmonary function in young sedentary individuals.

MATERIALS & METHODS

Material

1) Pulmonary Function Test software.
2) Computer
3) Cotton, Pen, Pencil, eraser, paper
4) Spirit (hygiene solvent for cleaning mouth piece)
5) Yoga Mat/Mat
6) Watch

Methodology

STUDY DESIGN– Comparative Study
SAMPLE SIZE: 34
STUDY POPULATION: 18-30 Years of age group
STUDY DURATION: 6 MONTHS
SAMPLING METHOD: simple random sampling
MINIMUM SAMPLE SIZE(N): 34
METHOD OF ALLOCATION: Sealed envelope method

CRITERIA OF SELECTION:
INCLUSION CRITERIA.

a) Individual with an age group between 18 to 30 years.
b) Individual with sedentary life style, physically inactive or not doing exercise at least 3 days in a week for 12 weeks.
c) Individuals with BMI between 18-25.
d) Individuals with Waist circumference less than 40 inches in male and 35 inches in female.
e) Individual who are willing to participate in the study.

EXCLUSION CRITERIA

a) Individual with known case of any cardiovascular/respiratory/metabolic/musculoskeletal disease /or disorder.
b) Individual with recent trauma.
c) Individuals with addiction.
d) Individuals with history of allergy to environmental pollutants.

OUTCOME MEASURE

Pulmonary Function Test

Pulmonary function test (PFT) is a useful method for evaluating lung function

Parameters for PFT used in this study are as follows.

a) Forced Vital Capacity (FVC). The maximum volume of air which can be exhaled after a maximal inspiration.
b) Forced volume in one sec (FEV1) The Volume Expired in first second of maximal Expiration after a maximal inspiration.
c) FEV1/FVC It is the ratio of the forced expiratory volume in the first one second to the forced vital capacity of the lungs.

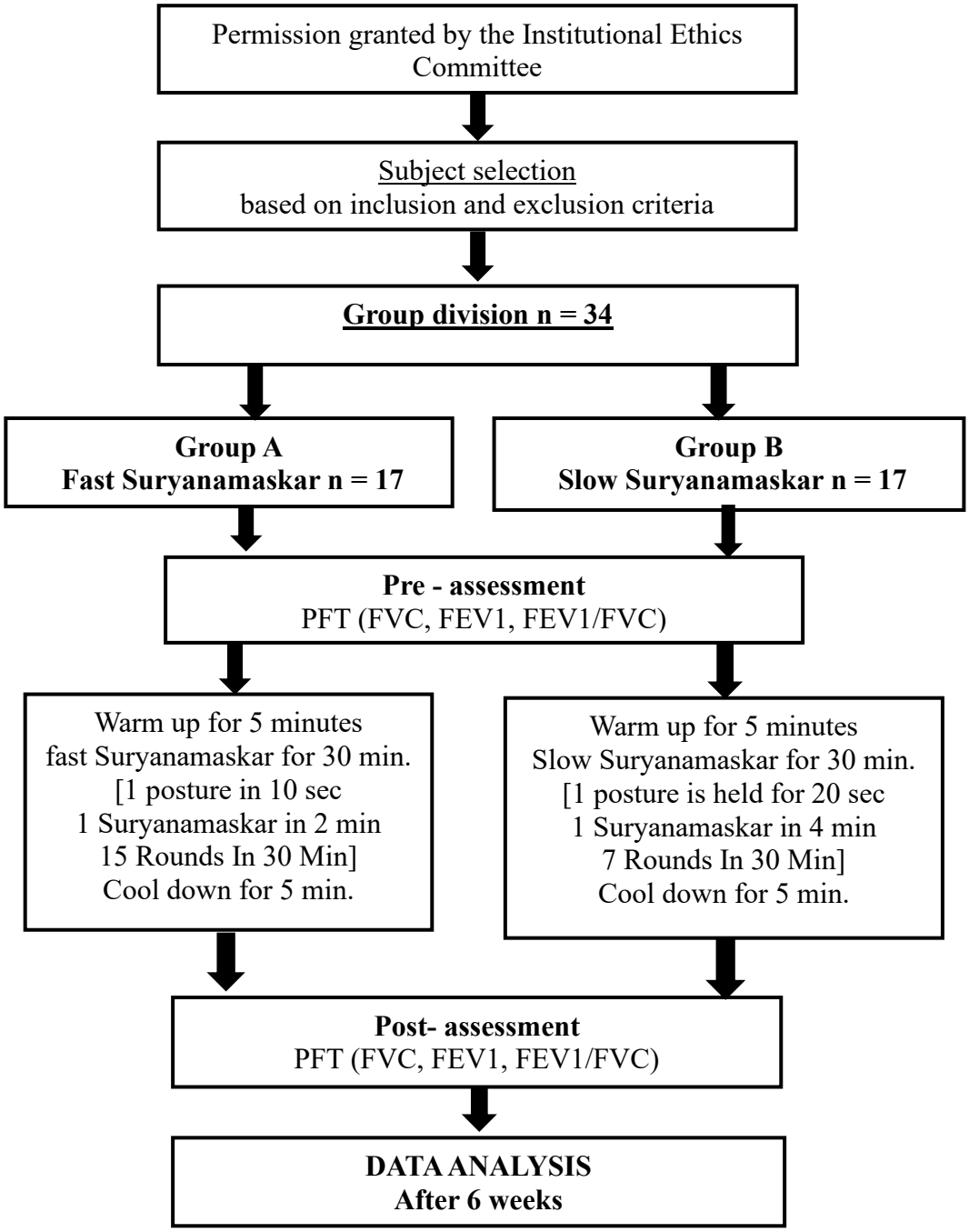
Procedure

To conduct the following study, ethical permission was obtained from the Institutional Ethics Committee. Criteria for inclusion and exclusion were used to screen the subjects. Before the study began, the subjects were informed of the process and obtained written consent. 34 participants were split into two groups. (Group A-17 & Group B-17). The whole procedure was explained, and a pre-assessment was taken using PFT. Subjects have to put the mouthpiece in their mouth, inhale through the nose with a deep breath, and then exhale fully with as much force as possible. The subject had to repeat this procedure three times with a gap of 5 minutes in between, and the best of three was taken as a final measurement. In group A(n=17), the subjects were trained to perform all the postures of Suryanamaskar for one week. After that, the subjects were trained to perform rapid Suryanamaskar for one week. The subjects are asked to perform rapid Suryanamaskar under supervision in such a manner that all 12 postures are completed in 2 minutes, and each posture was hold for 10 seconds. Fifteen rounds were performed in 30 minutes. Rapid Suryanamaskar were performed for 3 alternatives day per week for about 6 weeks. The total duration of one session was of 40 minutes, including a warm-up and cool-down of 5 minutes each. Warm-up and cool down include stretching of all major muscle groups.

In group B (n=17), the subjects were trained to perform all the postures of Suryanamaskar for one week. After that, the subjects were trained to perform slow Suryanamaskar for one week. The subjects were asked to perform slow Suryanamaskar under supervision in such a manner that all 12 postures were completed in 4 minutes and each posture was held for 20 seconds. Seven rounds were performed in 30 minutes. The total duration of one session was 30 minutes. Slow Suryanamaskar was performed for 3 alternatives day per week for about 6 weeks. The total duration of one session was 40 minutes, including a warm-up and cool-down of 5 minutes each. Warm-up and cool down include stretching of all major muscle groups.

FAST	SLOW
1 Suryanamaskar in 2 min	1 Suryanamaskar in 4 min
15 Rounds In 30 Min	7 Rounds In 30 Min.
1 posture in 10 sec	1 posture is held for 20 sec

Post-intervention measurements were taken after 6 weeks in both Group A and Group B using PFT parameters FVC, FEV1, and FEV1/FVC. The same procedure was repeated in all subjects.



RESULT

Demographic Variables

Sr. No.	Variable	Groups	Group A		Group B	
			Frequency	Percentage	Frequency	Percentage
1	Age	18-23	15	88.24	14	82.35
		24-30	2	11.76	3	17.65
2	Gender	Male	6	35.29	6	35.29
		Female	11	64.71	11	64.71
3	BMI	below 18.5	2	11.76	0	0.00
		18.5-24.9	14	82.35	17	100.00
		25-29.9	1	5.88	0	0.00
		30 & above	0	0.00	0	0.00

Group A – FAST SURYANAMASKAR - Paired t test				
FVC				
Variable	**Mean**	**S.D.**	**T**	**p**
Pre Test	2.41	0.77	4.28	0.00
Post Test	2.73	0.68		

The comparison of pre and post-test means of FVC was analysed using a paired t-test. The pre-test FVC average was 2.41 standard deviation (SD=0.77), while the post-test average was 2.73 (SD=0.68). The paired t-test yielded a statistic of 4.28 with a p-value of 0.00. Since the p value is less than 0.05, it indicates a significant difference between the pre- and post-test FVC averages.

Group A - FAST SURYANAMASKAR - Paired t test				
FEV1				
Variable	**Mean**	**S.D.**	**t**	**p**
Pre Test	2.32	0.67	4.81	0.00
Post Test	2.66	0.68		

The paired t-test was used to compare the means of pre- and post-test FEV1. The pre-test FEV1 mean was 2.32 with standard deviation (SD=0.67), while the post-test mean was 2.66 (SD=0.68). The t-test resulted in a statistic of 4.81 with a p-value of 0.00. Since the p-value is less than 0.05, it indicates a significant difference between the pre- and post-test FEV1 score.

Group A - FAST SURYANAMASKAR - Paired t test				
FEV1/FVC				
Variable	**Mean**	**S.D.**	**t**	**p**
Pre Test	97.71	5.71	1.62	0.12
Post Test	98.81	2.92		

The comparison of pre and post-test means of FEV1/FVC was done by a paired t test. The pre-test FEV1/FVC average was 97.71 with standard deviation of 5.71. The post-test FEV1/FVC average was 98.81 with standard deviation of 2.92. The test statistic value of the paired t-test was 1.62, with a p-value of 0.12. The p value more than 0.05, which means there is no significant difference in pre and post-test FEV1/FVC average score.

Group B - SLOW SURYANAMASKAR - Paired t test				
FVC				
Variable	**Mean**	**S.D.**	**t**	**p**
Pre Test	2.42	0.61	3.43	0.00
Post Test	2.72	0.61		

The comparison of pre and post-test means of FVC was analysed using a paired t-test. The pre-test FVC average was 2.42 standard deviation (SD=0.61), while the post-test average was 2.72 (SD=0.61). The paired t-test yielded a statistic of 3.43 with a p-value of 0.00. Since the p value is less than 0.05, it indicates a significant difference between the pre- and post-test FVC average scores.

Group B - SLOW SURYANAMASKAR - Paired t test				
FEV1				
Variable	**Mean**	**S.D.**	**t**	**p**
Pre Test	2.35	0.63	3.33	0.00
Post Test	2.68	0.61		

The paired t-test was used to compare the means of pre- and post-test FEV1. The pre-test FEV1 mean was 2.35 with standard deviation (SD=0.63), while the post-test mean was 2.68 (SD=0.68). The t-test resulted in a statistic of 3.33 with a p-value of 0.00. Since the p-value is less than 0.05, it indicates a significant difference between the pre- and post-test FEV1 score.

Group B - SLOW SURYANAMASKAR - Paired t test				
FEV1/ FVC				
Variable	Mean	S.D.	t	p
Pre Test	98.80	2.36	1.50	0.15
Post Test	99.86	0.99		

The comparison of pre and post-test means of FEV1/FVC was done by paired t test. The pre-test FEV1/FVC average was 98.80 with standard deviation of 2.36. The post-test FEV1/FVC average was 99.86 with standard deviation of 0.99. The test statistics value of the paired t-test was 1.50 with p value 0.15 The p value more than 0.05, that means there is no significant difference in pre and post-test FEV1/FVC average score.

Group 1 vs Group 2 - POST-test - Unpaired t test				
FVC				
Variable	Mean	S.D.	t	p
Group 1	2.73	0.68	0.03	0.98
Group 2	2.72	0.61		

The comparison post-test t-test means of FVC was done by unpaired t test. The group A FVC average was 2.73 with standard deviation of 0.68. The group B FVC average was 2.72 with standard deviation of 0.61. The test statistics value of the unpaired t-test was 0.03 with p value 0.98. The p value more than 0.05, that means there is no significant difference in FVC average score.

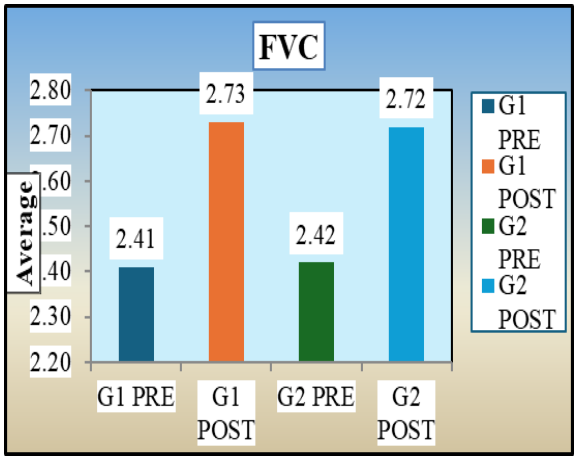
Group 1 vs Group 2 - POST-test - Unpaired t test				
FEV1				
Variable	Mean	S.D.	t	p
Group 1	2.66	0.68	0.11	0.91
Group 2	2.68	0.61		

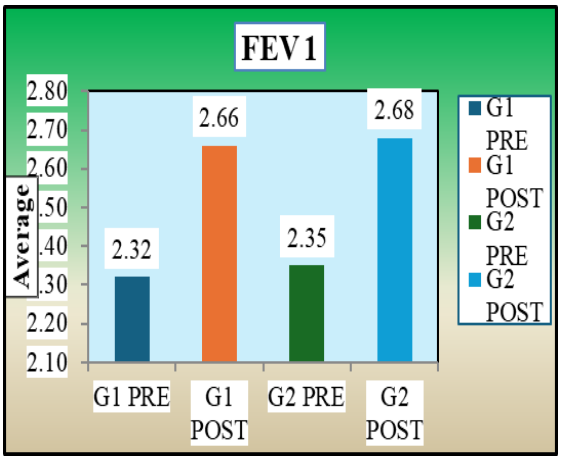
The comparison of post-test means of FEV1 was done by unpaired t test. The group 1 FEV1 average was 2.66 with standard deviation of 0.68. The group 2 FEV1 average was 2.68 with standard deviation of 0.61. The test statistics value of the unpaired t-test was 0.11 with p value 0.91. The p value more than 0.05, that means there is no significant difference in FEV1 average score.

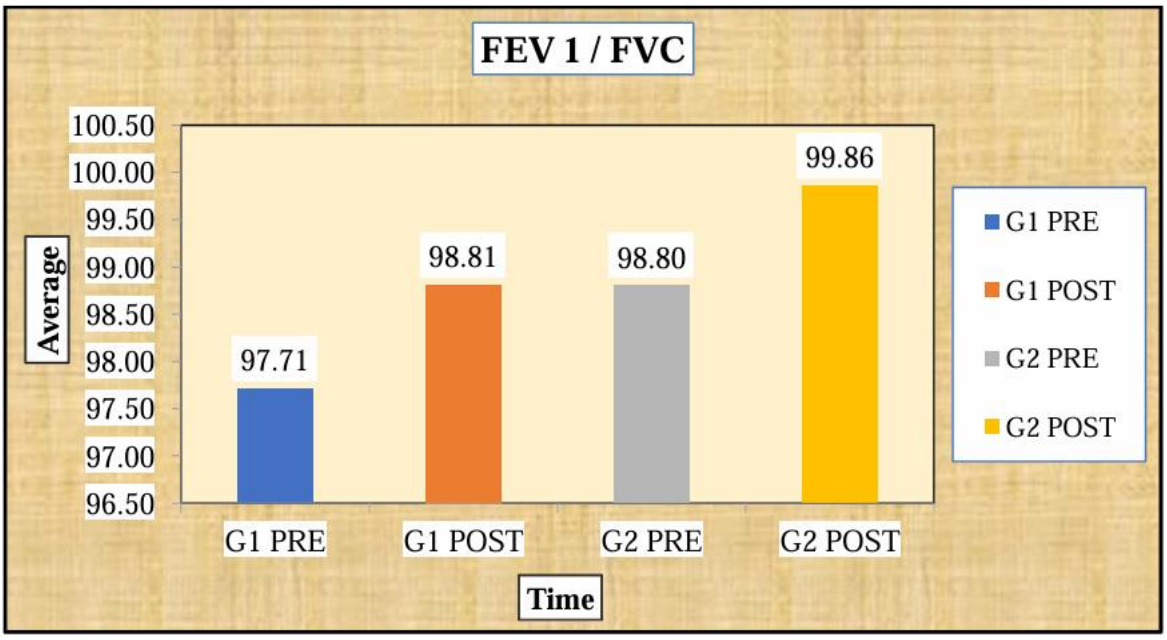
Group 1 vs Group 2 - POST-test - Unpaired t test				
FEV1/ FVC				
FEV 1 / FVC	Mean	S.D.	t	p
Group 1	98.81	2.92	1.00	0.33
Group 2	99.56	0.99		

The comparison post-test t-test means of FEV1/FVC was done by unpaired t test. The group A FEV1/FVC average was 98.81 with standard deviation of 2.92. The group B FEV1/FVC average was 99.56 with standard deviation of 0.99. The test statistics value of the unpaired t-test was 1.00 with p value 0.33. The p value more than 0.05, that means there is no significant difference in FEV1/FVC average score.

Group (Means)	FVC	FEV 1	FEV 1 / FVC
G1 PRE	2.41	2.32	97.71
G1 POST	2.73	2.66	98.81
G2 PRE	2.42	2.35	98.80
G2 POST	2.72	2.68	99.86







The result of this research showed that there was a significant effect in both the group on pulmonary function test. But Intergroup comparisons show no statistically significant difference between the group.

DISCUSSION

The present research was conducted on 34 subjects. These subjects were divided into 2 groups (Group A-17 & Group B-17). Group A underwent fast Suryanamaskar, whereas group B underwent slow Suryanamaskar for 6 weeks. Pre and post assessment was taken using PFT parameters FVC, FEV1, and FEV1/FVC. The data was analysed statistically, and results were generated.

The FVC mean for group A before Fast Suryanamaskar was 2.41±0.77, and after 6 weeks of fast Suryanamaskar was 2.73± 0.68. A paired t-test was applied for comparing pre and post intervention results. The p value obtained was 0.00 (which is less than 0.05), indicating that the FVC pre and post the test varies significantly.

The FVC mean for group B before Slow Suryanamaskar was 2.42± 0.61, and after 6 weeks of fast Suryanamaskar was 2.72± 0.61. A paired t-test was applied for comparing pre and post intervention results. The p value obtained was 0.00 (which is less than 0.05), suggesting that the pre- and post-test FVC differ significantly. For comparison of post-test means of FVC in group A (2.73±0.68) and group B (2.72±0.61) unpaired t-test was applied. The p value obtained was 0.98, which is more than 0.05, indicating there is no significant difference in FVC between the groups.

FEV1 for group A before Fast Suryanamaskar was 2.32±0.67, and after 6 weeks of Fast Suryanamaskar was 2.66±0.68. For comparison of pre and post intervention results, a paired t-test was applied. The p value obtained was 0.00 (which is less than 0.05), suggesting that the pre- and post-test FEV1 differ significantly. FEV1 for group B before slow Suryanamaskar was 2.35±0.63 and after 6 weeks of fast Suryanamaskar was 2.68± 0.61. For comparison of pre and post intervention results, a paired t-test was applied. The p-value obtained was 0.00 (which is less than 0.05), suggesting that the pre- and post-test FEV1 differ significantly. For comparison of post-test means of FEV1 in group A (2.66±0.68) and group B (2.68±0.61) unpaired t-test was applied. The p-value obtained was 0.91 (which is more than 0.05), indicating that there is no significant difference in FEV1 between groups.

FEV1/FVC for group A before Fast Suryanamaskar was 97.71±5.71, and after 6 weeks of Fast Suryanamaskar was 98.81±2.92. After applying a paired t-test for comparing pre-post intervention results, the p value found was 0.12 (which is more than 0.05), indicating that there was no significant difference in pre and post-test FEV1/FVC ratio. FEV1/FVC for Group B before slow Suryanamaskar was 98.80±2.36, and after 6 weeks of fast Suryanamaskar was 99.86±0.99. After applying a paired t-test for comparing pre-post intervention results, the p value found was 0.15 (which is more than 0.05), indicating that there was no significant difference in pre and post-test FEV1/FVC ratio. For comparison of post-test means of FEV1/FVC in group A, 98.81±2.92 and group B, 99.56±0.99, an unpaired t-test was applied. The p-value found was 0.33, which is more than 0.05, indicating that there is no significant difference in FEV1/FVC ratio.

In our study, there was a significant improvement in FVC and FEV1 post intervention in both groups, but statistically, there was no significant difference in pre and post FEV1/FVC ratio in both groups. Also, comparison between the groups showed no statistically significant difference for FEV1 and FVC. This indicates that there was an increase in pulmonary function with respect to FEV1 and FVC in both groups. Both the techniques, i.e. slow as well as fast Suryanamaskar, were equally effective in improving FEV1 and FVC. Also, there was no significant difference in pre- and post-comparisons of FEV1 in both groups when compared statistically. This indicates that there was no significant effect of slow as well 32 as fast Suryanamaskar on FEV1/FVC ratio when performed for 6 weeks. i.e. effect of both the techniques remains the same.

The results obtained in this study can be compared to the study done by Ananda Balayogi Bhavanani, Kaviraja Udupa and Madanmohan. They conducted research on physiological functions in 42 healthy students. The 42 subjects were divided in two groups. The subjects were trained to perform Suryanamaskar rapidly in group A and slow manner in group B, respectively. After 2 weeks of training, both group A and B practised the same under the direct supervision of the instructor for a total duration of 6 months. Slow Suryanamaskar training produced a significant ($P < 0.01$) increase in forced vital capacity (FVC)and forced expiratory vital volume in 1st second FEV1. It was discovered that Fast Suryanamaskar training resulted in a significant ($P < 0.001$) increase in isometric

hand grip (IHG) and hand grip endurance HGE, maximum inspiratory pressure (MIP) and maximum inspiratory pressure (PEFR), It was found that fast suryanamaskar training also produced a significant ($P < 0.001$) increase in isometric hand grip (IHG) hand grip endurance HGE, maximum inspiratory pressure (MIP) and maximum inspiratory pressure (PEFR). All parameter changes were statistically comparable between the Fast Suryanamaskar and Slow Suryanamaskar groups, according to intergroup comparisons, except HGE and MIP, which showed a statistically significant ($P < 0.05$) increase in the FAST Suryanamaskar group relative to the SLOW Suryanamaskar group.[2]

The results found in this study were in contrast to the study done by Dr Deepti Wadhwa, Dr Amrit Kaur, Naman Shah, and Amruta Dhande. Their research showed that Slow Suryanamaskar as well as Fast Suryanamaskar had a substantial impact on PEFR and the Physical Fitness Index ($p < 0.0001$). According to the intergroup comparison, the Slow Suryanamaskar group's PEFR values increased considerably higher than those of the Fast Suryanamaskar group.

The reason for the results obtained in our study can be that each pose in Suryanamaskar is subjecting the respiratory muscles (e.g. intercostals) to stretch. This stretching increases their contractility, and this causes the intercostal muscles to become less tense, increasing the strength and endurance of the respiratory muscles. This mechanism was also supported by the study done by Rafaela Barros, Dr Sa, et al., who showed that stretching exercises for the respiratory muscles improve the kinetics, kinematics, and respiratory patterns of the chest wall.[9] Previous researches have proven that the dynamic movements in each step of Suryanamaskar make the respiratory muscles contract and expand alternatively with rhythmic breathing, this enhancing diaphragmatic activation and the engagement of key respiratory muscles. This practice can significantly improve lung function. This ultimately increases gaseous exchange at the alveolar level, increasing FVC and FEV1. L. Prasanna Venkatesh a, Vandhana S.b also commented in their review article that there is enhancement of chest expansion, isometric contraction, and muscle strength during various Suryanamaskar poses.[1] In our study, there was no significant difference between the effects of slow and fast suryanamaskar indicating that there was no significant impact of changing the speed of Suryanamaskar. So Suryanamaskar performed at slow and fast rates has the same effect on pulmonary function in young sedentary individuals.

CONCLUSION

The study concluded that both Slow and Fast Suryanamaskar are equally effective in increasing pulmonary function as there was no statistically significant difference found when both the groups are compared.

Limitations

Environmental factors affecting participant's performance was not considered such as humid environment.

Out of total samples (34), majority of the participants were female (22).

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

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Conflict of Interest: No conflicts of interest declared.

REFERENCES

1. Venkatesh P, Vandhana S. Insight on Surya Namaskar from its origin to application towards health. Journal of Ayurveda and Integrative Medicine. 2021; 13: 100530.
2. Bhavanani AB, Udupa K, Madanmohan. A comparative study of slow and fast Suryanamaskar on physiological functions. International Journal of Yoga. 2011; 4(2): 71–76.
3. Saraswati SS. Asana Pranayama Mudra Bandha. 4th ed. Munger, Bihar, India: Yoga Publications Trust; 2008. p.162–174.

4. Prakash S, Meshram S, Ramtekkar U. Athletes, yogis and individuals with sedentary lifestyles: Do their lung functions differ? Indian Journal of Physiology and Pharmacology. 2007; 51(1): 76–80.
5. Ranu H, Wilde M, Madden B. Pulmonary function tests. European Respiratory Review. 2011; 20(120): 84–90.
6. Mondal S. Exercise science in the ancient India. Indian Journal of Yoga, Exercise and Sport Science and Physical Education. 2016; (71): 1–5.
7. Fisher LR, Cawley MID, Holgate ST. Relation between chest expansion, pulmonary function, and exercise tolerance in patients with ankylosing spondylitis. Annals of the Rheumatic Diseases. 1990; 49: 921–925.
8. Karpagam S, Gaur GS, Trakroo M, Kumar S. Comparative study of the effect of slow and fast Suryanamaskar on workload of heart in normal human subjects. International Journal of Basic and Applied Physiology. 2013; 2(2): 166–169.
9. Wadhwa D, Kaur A, Shah N, Dhande A. Effect of slow and fast Surya Namaskar on peak expiratory flow rate, blood pressure, and physical fitness index among pharmacy students. International Journal of Physiotherapy and Research. 2022; 10(3): 4250–4255.
10. Joshi MV, Afle G. Effect of slow Suryanamaskar on pulmonary functions in 10–15-year-old school-going children at the end of 4 weeks: An experimental study. International Journal of Applied Research. 2020; 6(8): 359–361.

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