



# Effect of Suryanamaskar V/S Resistance Training in Stress Management in Polycystic Ovarian Syndrome- A Comparative Study.

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## Abstract:

### Background:

PCOS is one of the most common Endocrinopathy affecting 4-8% of women of reproductive age. Stress is implicated both in the cause & worsening of PCOS. Stress disturbs normal hypothalamo-pituitary-ovarian axis, leads to insulin resistance which produce stage of hyperandrogenism due to which somatic symptoms of PCOS like Hirsutism , anovulation , abnormal menstruation, subfertility & psychic symptoms like anxiety ,depression ,Insomnia & loss of concentration develops.

### Aim:

To compare the effect of suryanamaskar v/s Resistance Training in stress level of PCOS.

### Methodology:

Girls [n=40] between age 18-25 years diagnosed with PCOS on the basis of Rotterdam's Criteria with score ranging between 13 to 26 on Perceived Stress Scale.

### Outcome measures:

Rotterdam's Criteria, Perceived Stress Scale.

### Results:

Paired t-test is carried out to test the significance in Group 1 and Group 2 which shows P-Value for Group 1 and Group 2 is < 0.05. Unpaired t-test is carried out for comparison between Group 1 and Group 2 which shows. P-Value is < 0.05. Mean difference for Group 1 is greater than Group 2.

### Conclusion:

This study was done to check the Effect of Suryanamaskar and Resistance Training in stress management in PCOS. From the study, we can conclude that there is significant effect of Suryanamaskar and resistance training on stress in PCOS. The study shows that suryanamaskar is more effective than resistance training on stress in PCOS.

### Keywords:

Polycystic Ovarian Syndrome, Rotterdam's Criteria, Perceived stress scale, Suryanamaskar, Resistance training.

## INTRODUCTION

PCOS is one of the most common Endocrinopathy affecting 4-8% of women of reproductive age. Despite its Heterogenous nature, the hallmarks of the disease are Hyperandrogenism & chronic anovulation.(1)

PCOS is a disorder of the endocrine system. In PCOS, the ovaries produce higher levels of androgen than usual which interfere with development and release of eggs.(1)

There are multiple factors which contribute to the pathogenesis of the disease, stress being one of them (2).

Stress is implicated both in the cause & worsening of PCOS. Stress disturbs normal hypothalamo-pituitary-ovarian axis, leads to insulin resistance which produce stage of hyperandrogenism due to which somatic symptoms of PCOS like Hirsutism, anovulation, abnormal menstruation, subfertility & psychic symptoms like anxiety, depression, Insomnia & loss of concentration develops.(1,2)

Cortisol which is a stress hormone has been implicated as sensitive biomarker for stress related changes in body. These are reflective of the activation of hypothalamic - pituitary -adrenal axis respectively. Higher prevalence of stress in PCOS patients has a critical role in altered body composition. (2)

Stress is less focused but one of the factors strongly associated with PCOS. (3)

Compared with women not reporting PCOS, women reporting PCOS have increased stress. (4)

Suryanamaskar includes 12 asanas which involves the breathing awareness, physical postures & mantras.(5)

Suryanamaskar promotes calmness of mind & subsides stress level. It plays positive & significant role to decrease stress level. Positive effect, self compassion, inhibition of posterior hypothalamus & salivary cortisol were all shown to have relation between Suryanamaskar & stress. (5)

High intensity resistance exercises are useful in stress management. It also reduces cortisol level which is a stress hormone. (6)

## NEED OF STUDY

Stress is a factor strongly associated with PCOS. Stress is implicated both in the cause & worsening of PCOS. There have been studies done to check the role of stress in the pathogenesis of PCOS. There is no study done to check the effectiveness of suryanamaskar v/s resistance training in stress level of PCOS

## AIM

To compare the effect of suryanamaskar v/s Resistance Training in stress level of PCOS.

## OBJECTIVES

- To study the effect of suryanamaskar on stress level of PCOS.
- To study the effect of Resistance training on stress level of PCOS.
- To Compare effect of suryanamaskar and resistance training on stress level of PCOS.

## HYPOTHESIS

Null Hypothesis :

- There will be no significant effect of suryanamaskar in stress management in PCOS.
- There will be no significant effect of resistance training in stress management in PCOS.

Alternative Hypothesis :

- There will be significant effect of suryanamaskar in stress management in PCOS.
- There will be significant effect of resistance training in stress management in PCOS.

## METHODOLOGY

Sample size : 40

Study setting : Gyneac hospitals in pune

Study Design : Comparative Study

Sample method : Purposive Sampling

Study population : subjects with stress level between 13 to 26 in PCOS (on PSS)

Study duration : 6 months

## MATERIALS

- Pen
- Paper
- Yoga Mat
- Theraband
- Outcome Measures
- Consent Forms

## INCLUSION CRITERIA

- Age: 18-25 years (8).
- Subjects diagnosed with PCOS on ultrasonography.
- Subjects with PSS score ranging from 13 to 26 in PCOS.
- Subjects should fit in ROTTERDAMS CRITERIA for PCOS.

## EXCLUSION CRITERIA

- Subjects with musculoskeletal deformities.
- Subjects who are under psychological medication.
- Subjects who have undergone recent surgery

## PROCEDURE

1. Study began with the presentation of synopsis to an ethical committee.
2. The study began after ethical clearance is granted by the committee.
3. The subjects were selected on the basis of the inclusion and exclusion criteria.
4. The subjects were explained about the study before starting the procedure.
5. Consent were taken from the subject who wished to participate in the study.
6. The subjects were assessed on the basis of Perceived Stress Scale.

7. Subjects with moderate stress (13 to 16) were included.
8. They were divided in 2 groups by odd and even numbers.

Odd was given –Suryanamaskar

Even was given- Resistance Training.

☐ Suryanamaskar (group 1):

- 4 wks protocol was given.
- Included 12 postures of suryanamaskar.
- Held each posture for 30 secs
- Each round took 6 mins. to complete.(3)
- Five rounds were done with Breathing control. Five rounds took approx. 30-40 mins.(3)
- Started with warm up exercise-Walking, Climbing stairs, simple stretches, Spot jogging.
- Started the suryanamaskar postures with breathing awareness (30 sec hold for each posture was done)
- Ended with cool down exercise-Pranayama, Meditation
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☐ Resistance Training (group 2):

- 4 wks protocol.
  - Multi joint resistance exercises with theraband.
  - Exercises performed- leg curl, bicep curl, tricep extension, hip flexion, hip extension, leg extension.,Lat. Shoulder raises ,shoulder press , chest press.(6)
  - 8 repetitions of each exercise were performed.(6)
  - Performed 2 sets of each exercise daily.
9. At the end of 4wks protocol stress was reassessed with the Perceived Stress Scale.

### STATISTICAL ANALYSIS

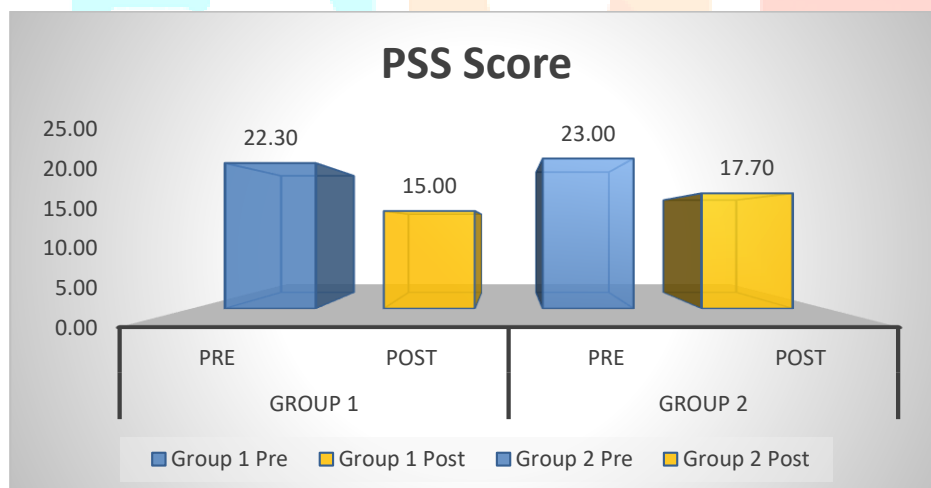
Statistical analysis was done by Paired and Unpaired t test .  $P < 0.05$  was considered to be Statistically Significant.

Microsoft Excel and Word was used for designing the table.

## RESULT

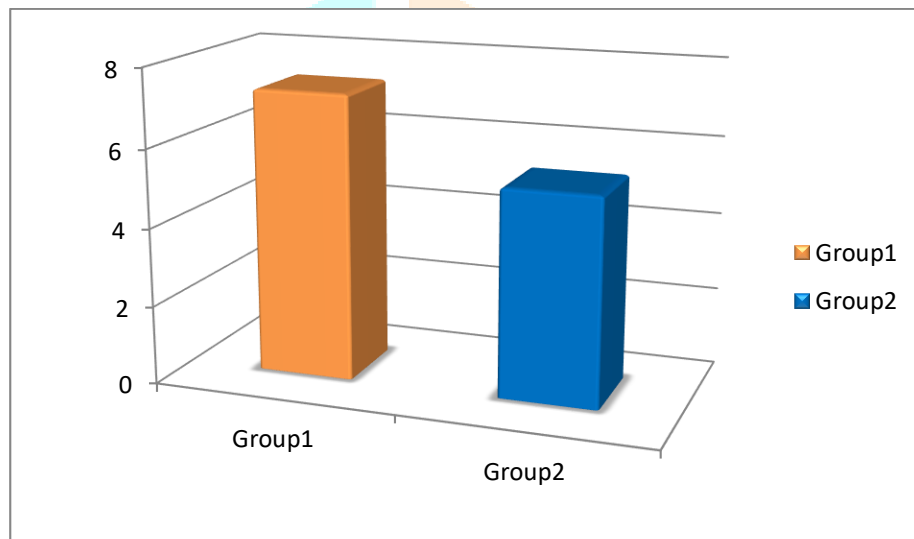
A. PERCEIVED STRESS SCALE [PSS]

PSS		MEAN	N	SD	SE	t value	P value	% effect	Result
Group 1	PRE	22.30	20	2.70	0.60	11.386	0.0000000006	32.74	SIG
	POST	15.00	20	2.49	0.56				
Group 2	PRE	23.00	20	2.71	0.61	7.654	0.0000003211	23.04	SIG
	POST	17.70	20	4.04	0.90				



## B. COMPARISON BETWEEN GROUP 1 AND GROUP 2

Variable	Group	N	MEAN	SD	SE	t value	P value	Result
PSS	Group1	20	7.30	2.87	0.64	2.119	0.041	Sig.
	Group2	20	5.30	3.10	0.69			



## DISCUSSION

The objective of the study was to find out the effect of Suryanamaskar and Resistance Training in stress management in PCOS.

PCOS is the disorder of the endocrine system. Stress is one of the factor which contributes to the pathogenesis of the disease.(2)

Stress is implicated both in the cause and worsens of pcos. The psychic symptoms like stress, anxiety, depression, insomnia and loss of concentration develops due to PCOS.(1,2)

The study was conducted in 40 subjects diagnosed with PCOS AND ROTTERDAM'S criteria of age 18- 25 , and the subject were selected on the basis of PSS .

A study, DEPRESSION, ANXIETY AND PERCEIVED STRESS IN WOMEN WITH AND WITHOUT PCOS conducted by ANNA DAMONE, ANJU JOHAM, ARUL EARNEST which Compared with women not reporting PCOS, women reporting PCOS have increased depression, anxiety and perceived stress. This study proved that Stress play a role in the association between PCOS, depression and anxiety which completely supports the project. They Further added studies should consider assessment and management of stress in PCOS.

The study conducted by MME&RCs M.A. Rangoonwala College of PT to see the effect of Suryanamaskar on Stress level shows that there is significant difference in stress level after suryanamaskar which supports the study. The reason behind this is suryanamaskar improves relaxation through reducing sympathetic activity and improves the sense of general well being by improving parasympathetic activity, alternate deep breathing during asana seemed to cause mild

sympathetic stimulation thereby may increase the capacity of the sympathetic nervous system to respond to acute stressors without rapidly exhausting its reserves. There was calmness and relaxation. (9)

SURYANAMASKAR is seen to affect the HPA axis. Cortisol is a stress hormone and an end product of HPA axis, has been reported to be flattened with suryanamaskar practice and thus reduces stress. (9)

Suryanamaskar with their rhythmic, mechanical stimulation of connective tissues and muscular fibers lining cause an improvement in their muscle tone and contractile power which in turn improves their functional capacity. The adequate muscle length leads to decreased muscle work leading to less fatigue during ADL which leads to progressive relaxation. The suryanamaskar may be regarded as the meditation in the movement of the body as it enhances the mental concentration improving relaxation and decrease in stress and anxiety. (9)

The study, RESISTANCE TRAINING IS MEDICINE EFFECT OF STRENGTH TRAINING ON HEALTH conducted by WESTCOTT, PHD, DEPARTMENT OF EXERCISE SCIENCE, stated that at least four studies have examined the effects of resistance training on stress levels in clinically depressed individuals, and at least 18 studies have examined the effects of resistance training on stress symptoms in healthy adults or adults with medical problems. (11)

Although these trials produced mixed results, the review authors concluded that there was sufficient evidence to support resistance training as an effective intervention for reducing depression symptoms in adults with depression. (10)

MENTAL HEALTH BENEFIT OF STRENGTH TRAINING IN ADULTS, STUDY CONDUCTED BY PATRICK J. O'CONNOR PHD. This review summarizes evidence from randomized controlled trials to examine whether strength training influences anxiety, chronic pain, cognition, depression, fatigue symptoms, self-esteem, and sleep. The weight of the available evidence supported the conclusion that strength training is associated with reductions in stress symptoms. (11)

The sympathetic and parasympathetic nervous systems are both parts of the autonomic nervous system, and even though they are in charge of the same body functions, they make opposite things. The sympathetic nervous system prepares the body for intense physical activity and is often referred to as the fight-or-flight response. The parasympathetic nervous system has almost the exact opposite effect and relaxes the body and inhibits or slows many high energy functions. The effects of the parasympathetic nervous system can be summarized by the phrase 'rest and digest'. So stimulating parasympathetic system provides state of relaxation.

## CONCLUSION

- Hence, from the study we can conclude that there is significant effect of suryanamaskar on stress in PCOS. There is significant effect of resistance training on stress in PCOS.
- SO, our null hypothesis is rejected, and alternative hypothesis is accepted.
- The study shows that suryanamaskar is more effective than resistance training on stress in PCOS.

## LIMITATIONS

- Small sample size.
- Each treatment session could not be monitored

## FUTURE SCOPE

- This study can be done on larger population.
- This study can be done on Adolescence (11-18) girls for early management of stress.
- The study can be carried out for more weeks.
- Group therapy can be done for same protocol.
- Some other type of aerobic training can be used in this study.

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