



Research articles

Yoga for holistic treatment of polycystic ovarian syndromeSavita P Patil^{1*}, Bijendra Singh¹, Jyoti Bisht¹, Shipra Gupta², Rupa Khanna³¹Department of Yogic Science, SGRR University, Dehradun, Uttarakhand, India²Graphic Era Hill University Dehradun, Uttarakhand, India³Graphic Era Deemed to be University Dehradun, Uttarakhand, India**ABSTRACT**

Poly Cystic Ovarian Disease (PCOD) is very common in women and people who I am close to having this disease. One in three women of reproductive age has this disease in the entire globe. COD, besides having many immediate health risks, also causes anxiety, depression and other mental health problems. As a woman, I can empathize with what other women have to live with because of this disease. I have been practicing Yoga for many years now and can feel the benefits of it. While practicing Yoga, I marvel that our great civilization has given us this treasure that can be so useful to many people living both in our country and abroad. PCOD can happen due to hormonal changes, lifestyle habits, and since I have felt the benefits of practicing Yoga on myself, I was curious to understand if it can treat PCOD. To my amazement, it does. I am therefore submitting my research paper on how Yoga can holistically treat PCOD.

Keywords: PCOD, Yoga, Obesity, Insulin, Holistic treatment.

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INTRODUCTION

Before we get to treating PCOD we should understand what it means, what causes it & the effect it has on our body. Poly Cystic Ovarian Disease is a disorder of hormones that is very commonly seen in women of reproductive age. Poly Cystic means multiple cysts. Women who have PCOD have less frequent or prolonged menstrual periods or would have excessive male hormones. All women have two ovaries that alternately release an egg every month.

PCOD occurs when the ovaries fail to release eggs regularly due to the formation of many small collections of fluids called follicles on them. These fluids/cysts happen when the ovaries release a lot of immature/partly mature eggs which become cysts after some time.

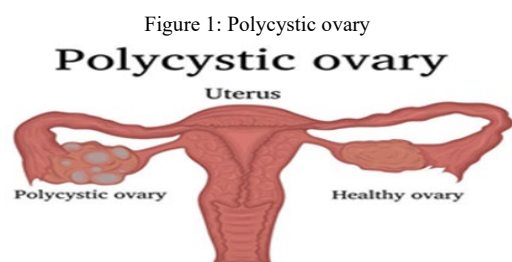


Figure 1: Polycystic ovary

The left ovary has multiple cysts and is enlarged due to it as compared to a healthy cyst free ovary on the right.

Image Reference
Navbharat Times

There are many types of symptoms that occur in a woman's body. These symptoms may be different from woman to woman. Some women develop symptoms during their first menstrual cycle, whereas others develop it later due to weight gain^[1,2].

The common symptoms of PCOD are

- Having little/less frequent or no menstrual periods.
- More than 35 days gap between periods.
- Abnormally heavy periods cause excessive bleeding.
- Excessive androgen. These are male hormones that are elevated.
- These cause unwanted hair growth on the face above lips. (The term used is called Hirsutism). Balding or male pattern baldness.
- Acne on the face.
- Mood swings, anxiety, depression and headache.
- Infertility.
- Dark patches of skin in folds.
- Weight gain around the abdomen.
- Skin tags (small pieces of excessive skin in neck or armpit)

Complications of PCOD

- Infertility as the cysts hamper the functioning of the ovaries.
- Women can't get pregnant because the ovaries cannot release

eggs.

- PCOD is linked with type 2 diabetes. It produces excess insulin, which leads to insulin resistance. Therefore, women with PCOD have higher chances of getting Type 2 diabetes.
- Higher male hormones cause facial hair and hair on the chest & armpits, which may affect a woman's self-esteem. In this world of active social media presence and comparisons, low self-esteem may further cause anxiety & depression, which further spirals into other health problems.
- Hepatitis/fatty liver: severe inflammation caused by the accumulation of fat cells around the liver, making the liver look bulky. Although PCOD is linked with Hepatitis, it is not clear how it causes it. *
- Due to hormonal changes, the body's metabolism is affected, which causes high blood sugar, high blood pressure, abnormal cholesterol or high levels of fat/triglycerides in the blood that may cause greater chances of contracting cardiovascular disease.
- Excess insulin causes weight gain and forms fat around the belly, called visceral fat.
- High blood pressure due to stress can cause cardiovascular problems^[3,4].

MATERIAL AND METHOD

The subjects were comprised of 107 MA (Masters in Arts) students who were classified into two groups of control & experimental. They were randomly assigned. Pranayama was practised by the experimental group of students for a full semester. A scale (Sarason's) that measures test anxiety was measured on both groups in the final session before the examination.

Study 1

Other than the fact that the hormonal disorder causes PCOD, not much is known. Studies have linked high-stress levels, consuming fatty foods, pollution and lifestyle diseases to hormonal changes.

A study was undertaken by hiring 2217 women who were diagnosed with PCOD. Two hundred seventy-nine medically fit women of reproductive age with no disease were also hired.

Various variables were part of the study, which included

Women who smoked, who used plastic tableware, had excessive calorific intake. It was found that women who did all the above had more chances of getting PCOD.



Causes of PCOD

Study 2

In another study that was undertaken in Karachi Pakistan, 70 out of 127 women were having irregular periods because of the following reasons

Consuming high-fat foods.

Having a high calorific diet.

Smoking.

Exposure to pollution.

Anxiety, stress due to the nature of their work.

The study was undertaken by collecting data by random sampling of women between 15 – 40.

A questionnaire was given to them to answer, which included questions about lifestyle, the foods they consumed, which restaurants they went to, whether they faced stress/anxiety in their lives, their habits. Their answers were analysed to conclude the study^[5].

Diagnosis

Based on your symptoms, your healthcare provider may ask you about your medical history. You will most likely have to be examined physically, which may most likely include a pelvic exam. This exam is used to check the health of your reproductive organs from both insides and outside your body.

Often there may be common symptoms of PCOD which other diseases may cause. Therefore, to be sure, you should get the following tests done^[6,7].

Ultrasound

An abnormally sized ovary compared to the reference standard will mean that there is a cyst present. By using a computer and sound waves that are passed to the body and return back to the machine, thereby creating images of the ovaries and areas surrounding it, the size of the ovaries will let the healthcare professional know if there are cysts present. Besides this, the test will also show the thickness of the uterus lining known as the endometrium. You may have to fill your bladder by drinking water so that gas does not obstruct/distort the image^[8].

Blood tests

Your healthcare professional may ask you to get a blood test as the blood carries various enzymes, hormones, fat & glucose.

Blood tests are done to check the symptoms of PCOD as the triglyceride; cholesterol levels may be elevated. High levels of androgen can also mean that you may have PCOD. Reference numbers of hormones, enzymes are compared to diagnose through blood tests^[9,10].

Treating PCOD

As we know that stress and lifestyle, besides genetics, causes PCOD in women. We can practice Yoga to prevent this to happen. There are innumerable studies that have linked yoga with

treating stress, improving the endocrine system, cardiovascular system, balancing the nervous system and immune modal, metabolic profile and overall health of the practitioners. A paper was written which links PCOD with obesity and stress. The hypothalamic-pituitary-ovarian axis is disturbed by obesity & stress, leading to hyperandrogenism and other complications like insulin resistance ^[11,12]. Practising the following for around 30 mins everyday will help prevent PCOD

Badhakonasana

Badha means Bound or Restrained, *Kona* means Angle, Asana means Pose or Posture. The asana is called Badhakonasana as it is practised in such a way that both feet are tucked near the groin area, hands are tightly clasped as though a person is bound or tied in an angle. This asana is called the butterfly position as it resembles the way the butterfly flaps its wings when the person is moving its legs. The pose is also called the cobbler pose, as it looks as if a cobbler is sitting during work. Spread your legs straight and keep your spine erect when you sit ^[13]. Your soles should touch each other as you bend your knees. Now bring your knees towards the pelvis. Your hand should now tightly grab your feet. For support, you can keep your hands under your feet. Try as much as possible to bring your heels close to the groin area. Breathe in deeply and breathe out deeply while pressing your thighs and knees towards the floor. Try to keep them pressed downward gently ^[14]. Try to resemble the flapping of the wings like a butterfly by flapping both the legs up and down. You may start slowly and increase your speed gradually. Breathe deeply throughout the exercise. Flap as high and fast as you can comfortably, then slow down and eventually stop. Take a deep breath in, bend forward; keep the chin up and spine erect while you exhale. Push the knees and thighs close to the floor by pressing your elbows on your thighs or knees. You will feel the stretch in the inner region of the thigh. Relax the muscles while taking deep long breaths. While bringing the torso up, breath in and out deeply. As you exhale, gently release the posture. Straighten the legs out in front of you and relax ^[15].

Suptabadhakonasana

Lower your back towards the floor while exhaling; lean on your hands. Once you have leaned on your forearms, spread your back pelvis with the help of your hand and release your lower torso and upper side of your hip through your tailbone. Bring your back towards the floor. Use a cushion or something soft to support your neck and head.

Grip the uppermost region of the thigh with your hands and externally rotate your thighs. Your outer thighs should press away from the torso ^[16].

Your hands should slide along the outer thigh towards the knees from the hips. Widen your outer knees away from your hips.

Your hands should slide down along your inner thighs, towards the groin from your pelvis. Imagine as if your inner groin is sinking towards your pelvis. Widen the back pelvis and narrow the front pelvis by pushing the hip points together. Your arms should be angled at 45 degrees from your body while lying on the floor; make sure that your palms are facing up.

Push the knees towards the floor as if imagining that it will increase the stretch of the inner groin. If your groin is too stiff, pushing the knees down will have the opposite effect, which is that the groin will harden as well as your abdomen and lower back region. What you should do instead is that imagine that your knees are reaching towards the ceiling and continue settling your groin deep into your pelvis. Your knees will drop as your groin drops towards the floor ^[17]. Beginners should try to hold the pose for a minute or as much as possible, gradually increasing their period of the hold. To finish the pose, use your hands to press your thighs together, roll towards the left side, and lift yourself away from the floor, head coming up after the torso.

Bharadvajasana

This asana is named after Rishi Bharadwaj, who was the father of Dronacharya. Sit on the floor comfortably, keeps your legs straight and in front of you. Shift to your right hip, bend your knees on the floor, put your foot outside your left hip, rest your left ankle in the right arch. Inhale while lifting through the upper sternum to increase the height of the front torso. Keep the lower back long by lengthening your tailbone. Keep your belly soft. Keep your left hand under your right knee and bring your right hand towards the floor beside your right hip. Press your shoulder blades firmly against your back while you twist your chest to the right. Continue to turn your torso from left to right or the other way around as much as you can. Lift your sternum with every inhalation; you can use your fingers by pressing them on the floor. Twist a little more with every exhalation. Hold the pose for 30 secs to a minute. Return to the starting position and repeat every time ^[18].

Chakki chalanasana

This asana copies the movement of grinding wheat on a stone slab using a grinder. Sit comfortably, with your legs apart from each other. Interlock your fingers and keep your hand in front of your body. They should be stretched away at shoulder height. Breathe in deeply and move your upper body with your hands in such a way that it forms an imaginary circle. Inhale while moving forward right and exhale while moving back towards the left. Remember to move from your lower back. Naturally, a slight movement of the legs can occur. Keep breathing deeply. You should feel a stretch in your arms, groin, legs and abdomen. Rotate 5 to 10 times in one direction and another 5 to 10 times in the other direction.

A few rounds of Suryanamaskar: It literary means saluting

the sun. To start, stand straight with your hands folded like you are praying. Distribute your weight evenly on both your feet. Breathe slowly. Inhale and put your hand to the sides and then overhead to towards the heavens like you are greeting the Sun. Now exhale and bend your torso with the top of your head facing the ground. Touch your elbows to the calves and wrap your fingers firmly on your ankles. Inhale and forward bend your spine, and your hand can touch the ground. You should now be able to look directly on the ground.

Now exhale and repeat step 3.

On the next exhalation, assume a plank position by moving back your legs and pressing your palms against the ground, your feet should be within your hips, and your hands should be within your shoulders. Breathe in. Exhale and lower your knees and torso towards the ground without bending. Inhale and further bring down the knees towards the ground and bend your torso upwards with your hands touching and facing the ground. Pull your shoulders back. Now exhale lower your upper body and raise your hips towards the sky. Now inhale and lunge using your left foot towards your hands^[19].

Now exhale while standing up straight with your hands by your sides. The below study was reviewed by Ms Aarti Mahajan and was published in the International Journal of Clinical and Experimental Physiology. In her review, she observes that many of the studies have used an integrated course of Yoga, including Sahaj, Hatha, Sudharshan Kriya with Asanas, Pranayama, and other techniques of meditation that include Dhyana, Omkar & Amrita Meditation.

These practices helped regulate hormones like melatonin, thyroid, cortisol, testosterone, adrenaline and various neurotransmitters like serotonin, dopamine, and endorphins. Besides these, it also regulated insulin secretion that leads to preventing and controlling diabetes. Practising Yoga also helps in controlling blood pressure and oxidative stress, thereby reducing the chance of getting cardiovascular disease^[20].

Surya namaskar

We already probably know that Surya Namaskar is very beneficial, as it boosts metabolism, reduces stress & anxiety, helps check obesity. Below are the studies that show the benefits:

A study was conducted on college students to see if there are any effects of Surya namaskar on relaxing these students. Four hundred nineteen students were assessed on symptoms of stress.

They were between 17 to 22 years in age. Out of 419, 124 were classified as highly stressed. Out of these 124 students, two groups were made, experimental and control. Each of these two groups had 40 students each that finished the experiment. These 40 students were assessed on how to relax & stressed out they were before & after conducting the suryanamaskar program.

The experimental group that performed Suryanamaskar

showed lower stress levels, lower negative emotions; they were physically and mentally more relaxed, it was found that their strength had also increased, and they were less sleepy compared to the control group. In a separate study, a group of 30 people were chosen from Srinagar and Garhwal, and they had an average weight of 75 to 82.5 kgs and a height of 155 to 167 cms. They were all healthy people without any disease. They were classified into two groups of 30 people each. One is experimental and the other being the control group, respectively. The experiment group were made to perform Suryanamaskar for 60 minutes every day for 30 days. They were weighed before & after the test to compare their weights after the test was over. There were no other dietary or other lifestyle changes undertaken^[21].

The experimental group that performed Suryanamaskar weighed less than the control group that did not. Thus, showing the effectiveness. Another study was conducted to assess the effect of Suryanamaskar on cardiorespiratory and metabolic responses. To study the effects of Suryanamaskar, 60 healthy Indian women & men of the range of 18 to 22 years of age had participated. They had trained for Suryanamaskar for more than two years. To measure their heart rate & metabolic response, and oxygen consumption, a heart rate monitor, a portable oxycon metabolic monitor were attached to the participants while they performed four rounds of Suryanamaskar. The study lasted for a single session which lasted 30 minutes.

Following are the results

The participants showed that the exercise had made their heart more efficient as according to their age, their maximal heart rate (HRmax) was at 80% during round 2, 84% in round 3 and 90% during round4. We can observe from this that their cardiorespiratory efficiency had increased as a result of this exercise. Other than this, the oxygen consumption averaged at 26 ml/Kg/Min during each round, resulting in an expenditure of 230Kcal of energy during this 30-minute training session for a 60 Kg person. Acute effects of Surya Namaskar on the cardiovascular & metabolic system. Besides this, Suryanamaskar helps prevent obesity. While training for this exercise, micro-tears in the muscle occur, and while sleeping or at rest, the body heals, repairing those micro tears, thereby strengthening these muscles. While repairing these muscles, energy is consumed even while at rest. Therefore, it utilizes any excess calories consumed^[22,23]

Pranayama

This study was conducted among medical students who were studying for their MBBS degree. As we know, there is a lot to learn in this profession; besides all the learning, as part of their degree, they have to attend patients in a hospital. While having very little time for recreation & leisure, they have to manage with all the time they have to cater to the demands required to obtain their degree,

which include long hours in the hospital. These students are subject to a lot of stress. Adding to this, their own expectations and their family's expectations and comparison with peers adds to the stress.

As we know that mental and physical stress leads to many diseases like cardiovascular disease, mental breakdown, depression, becoming anti-social; among few effects, it is, therefore, necessary to reduce stress. One way is through Pranayama. Following is the study of how Pranayama helps in controlling stress.

The sample size consisted of a total of 59 students, of which 27 boys and 32 females. The students were informed about the study and were given an orientation, and they gave their consent. A stress-related questionnaire was given to them, and autonomic function tests were conducted. These tests were conducted prior to and post performing Pranayama. The students were to practice Pranayama for two months, five days a week for 1 hour everyday^[24]. The test results were obtained by using a SPSS software. The results had shown that after practising various Pranayama for two months, the students' total stress results had evidently decreased.

VLF (Very Low Frequency) and LF (Low Frequency) in n.u (N.u. is the measurement of the frequency in the number of waves) had significantly reduced post the practice of pranayama, indicating a reduction in sympathetic heart drive. HF (High Frequency) in n.u had significantly increased post practising of pranayama for two months. This showed an increase in the parasympathetic output to the heart. After practising Pranayama for two months also achieved a better parasympathetic control as the ratio of LF/HF (Low frequency/high frequency) had significantly reduced, showing a better sympathovagal balance and resting balance.

The following study was undertaken in Iran, which also tells us the universal acceptance of Yoga to improve lifestyle. This study was also conducted on stressful students who were anxious while undertaking stress during their education.

The study was conducted to investigate the effect of performing Pranayama on students having test and performance anxiety^[25].

RESULT

After the practice of Pranayama was complete, the experimental group experiencing high test anxiety was at 33%, which was nearly half of the control group's percentage of 66.7%.

The Sarason's T - test for anxiety and performance score indicated that the experimental group of students showed a lower mean test anxiety score of M=16.00 as against the control group students who had a test score of 19.31.

The experimental group students also performed better in their exams as against the control group students.

This showed a negative correlation between their performances in

their final tests vs test anxiety. ($r=-204$, $P<.05$).

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REFERENCE

1. Azziz R, Woods K S, Reyna R, 2004. The prevalence and features of the polycystic ovary syndrome in an unselected population. *J Clin Endocrinol Metab.* 89, 2745–9.
2. Lobo R A, Carmina E, 2000. The importance of diagnosing the polycystic ovary syndrome. *Ann Intern Med.* 132, 989–93.
3. The Rotterdam ESHRE/ASRM-sponsored PCOS Consensus Workshop Group, 2004. Consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome (PCOS). *Hum Reprod.* 19, 41–7.
4. Balen A, Homburg R, Franks S, 2009. Defining polycystic ovary syndrome. *BMJ.* 338, 2968–77.
5. Bradley C, 1996. Measuring quality of life in diabetes. *Diabetes Annual.* 10, 207–24.
6. Muldoon MF, Barger SD, Flory JD, Manuck S.B. 1998. What is quality of life measurements measuring. *BMJ.* 316, 542–5.
7. Holmes S, 2005. Assessing the quality of life—reality or impossible dream: A discussion paper. *Int J Nurs Stud.* 42, 493–501.
8. Speight J, Shaw JAM, 2007. Does one size really fit all? Only by considering individual preferences and priorities will the true impact of insulin pump therapy on quality of life be determined. *Diabetes Med.* 24, 693–5.
9. Bradley C, 2001. Importance of differentiating health status from quality of life. *Lancet.* 357, 7–8.
10. Jones GL, Hall JM, Balen AH, Ledger WL, 2008. Health-related quality of life measurement in women with polycystic ovary syndrome: A systematic review. *Hum Reprod update.* 14, 15–25.
11. Speight J, McCann M, 2006. Assessing the individualized impact of polycystic ovary syndrome (PCOS) on women's quality of life using the SEIQoL. *Proceedings of the British Psychological Society.* 15, 1–24.
12. Trent ME, Rich M, Bryn Austin S, Gordon CM, 2002. Quality of life in adolescent girls with polycystic ovary syndrome. *Arch Pediatr Adolesc Med.* 156, 556–60.
13. Elsenbruch S, Hahn S, Kowalsky D, 2003. Quality of life, psychosocial well-being, and sexual satisfaction in women with polycystic ovary syndrome. *J Clin Endocrinol Metab.* 88, 5801–7.
14. Trent ME, Rich M, Austin SB, Gordon CM, 2003. Fertility concerns and sexual behavior in adolescent girls with polycystic ovary syndrome: Implications for quality of life. *J Pediatr Adolesc Gynecol.* 16, 33–7.
15. Guyatt G, Weaver B, Cronin L, 2004. Health-related quality of life in women with polycystic ovary syndrome, a self-administered questionnaire, was validated. *J Clin Epidemiol.* 57, 1279–87.
16. Isoppo C, Fiori E, Valeriano R, 2004. Clinical-psychological and psychophysiological assessment in women with obesity and

- Poly cystic Ovary Syndrome. Psychol Health. 19, 86-94.
17. Jones GL, Benes K, Clark TL, 2004. The Polycystic Ovary Syndrome Health-Related Quality of Life Questionnaire (PCOSQ): a validation. Hum Reprod.19, 371-7.
 18. Schmid J, Kirchengast S, Vytiska-Binstorfer E, Huber J, 2005. Infertility caused by PCOS—health-related quality of life among Austrian and Moslem immigrant women in Austria. Hum Repro'd. 19, 2251-7.
 19. Clayton WJ, Lipton M, El ford J, 2005. A randomized controlled trial of laser treatment among hirsute women with polycystic ovary syndrome. Br J Dermatol.152, 986-92.
 20. Hahn S, Benson S, 2006. Elsen bruch S, Metformin treatment of polycystic ovary syndrome improves health-related quality-of-life, emotional distress & sexuality. Hum Reprod. 21, 1925-34.
 21. McCook JG, Reame NE, Thatcher SS, 2005. Health-related quality of life issues in women with polycystic ovary syndrome. J Obstet Gynecol Neonatal Nurs.34, 12-20.

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