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## The Use of Yoga in the Treatment of PCOS

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### STRESZCZENIE

Zespół policystycznych jajników (PCOS) jest złożonym i powszechnym zaburzeniem endokrynologicznym, które dotyka kobiety w wieku rozrodczym. Objawy obejmują liczne torbiele jajników, hiperandrogenizm (wysoki poziom męskich hormonów) i nieregularne cykle menstruacyjne. PCOS wiąże się z różnymi problemami zdrowotnymi, w tym

insulinoopornością, otyłością, hirsutyzmem (nadmiernym owłosieniem) i problemami z płodnością. Interwencje w stylu życia i utrata wagi, jeśli to wskazane, pozostają leczeniem pierwszego rzutu dla kobiet z PCOS. Regularna aktywność fizyczna jest zalecana kobietom z PCOS w celu utrzymania zdrowej masy ciała i sprawności układu sercowo-naczyniowego. Joga to system ćwiczeń, zwanych asanami, który pochodzi ze starożytnych Indii. Asana oznacza „wygodną pozycję”, więc każda pozycja jogi jest uważana za optymalną dla ludzkiego samopoczucia i równowagi. Istnieją również bardziej skomplikowane asany, szczególnie dla początkujących, które mogą sprawiać wrażenie, że zaburzają równowagę. Oprócz asan, techniki oddechowe znane jako pranajama są również bardzo ważne w jodze. Praktykowanie jogi jest doskonałym narzędziem do poprawy funkcjonowania całego naszego organizmu, zarówno na poziomie psychiki, jak i fizyczności, dlatego jest szczególnie cenne dla pacjentek z PCOS.

**Cel badania:** Celem niniejszego przeglądu jest wykazanie korzystnego wpływu jogi na organizm kobiet chorujących na PCOS.

**Materiały i metody:** Przegląd przeprowadzono poprzez przeszukanie publikacji naukowych w PubMed i Google Scholar. Analiza obejmowała wyszukiwanie przy użyciu słów: pcos, joga pcos, joga aktywność fizyczna, a następnie krótko podsumowałyśmy uzyskane wyniki.

**Wnioski:** Przegląd literatury oraz przedstawione wyniki badań klinicznych pokazują, że holistyczne podejście do leczenia PCOS, w tym ćwiczenia fizyczne w postaci ćwiczeń jogi mają korzystny wpływ na jakość życia pacjentek.

**Słowa kluczowe:** joga, pcos joga, cukrzyca pcos, zespół metaboliczny pcos, aktywność fizyczna pcos

## **ABSTRACT**

Polycystic ovary syndrome (PCOS) is a complex and common endocrine disorder, and affects women of reproductive age. Symptoms include multiple ovarian cysts, hyperandrogenism (high levels of male hormones), and irregular menstrual cycles. PCOS is associated with a variety of health problems, including insulin resistance, obesity, hirsutism (excessive hair growth), and fertility problems. Lifestyle interventions and weight loss, if appropriate, remain the first-line treatment for women with PCOS. Regular physical activity is recommended for women with PCOS to maintain a healthy weight and cardiovascular

fitness. Yoga is a system of exercises, called asanas, that originates from ancient India. Asana means “comfortable posture,” so any yoga posture is considered optimal for human well-being and balance. There are also more complicated asanas, especially for beginners, that can feel like they are taking away from one’s balance. In addition to asanas, breathing techniques known as pranayama are also very important in yoga. Practicing yoga is an excellent tool in improving the functioning of our entire body, both on the level of psyche and physis, which is why it is especially valuable for patients with PCOS.

**Aim of study:** The purpose of this review is to demonstrate the beneficial effects of yoga on the body of women with PCOS.

**Materials and methods:** This review was conducted by searching for scientific publications in PubMed and Google Scholar. The analysis included searching using the words: pcos, yoga pcos, yoga physical activity and then briefly summarizing their findings.

**Conclusions:** The literature review and the presented results of clinical studies show that a holistic approach to PCOS treatment, including physical exercise in the form of yoga exercises, has a positive effect on the quality of life of patients.

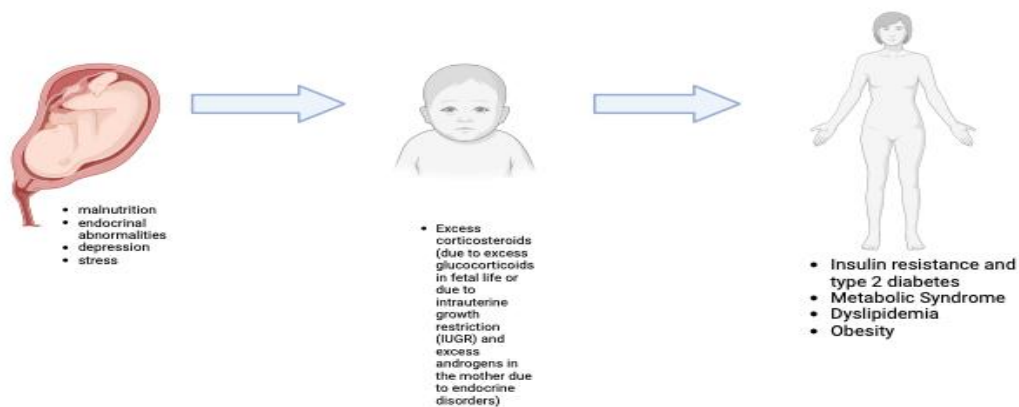
**Keywords:** yoga, pcos yoga, pcos diabetes, pcos metabolic syndrome, physical activity pcos

## 1. Introduction:

PCOS affects 10-13% of women of reproductive age. It is becoming one of the most common endocrine and metabolic disorders. [1] It significantly worsens the quality of life of patients and increases the risk of diseases. [2] PCOS is associated with an increased risk of glucose intolerance and diabetes (both type 2 and gestational), atherosclerotic dyslipidemia, systemic inflammation, non-alcoholic fatty liver disease, hypertension and coagulation disorders.[3] It also has adverse effect on women's mental well-being, causing increased anxiety and depression. [4] [5]

### 1.1. Etiology of PCOS

The development of the syndrome seems to be caused by a combination of genetic predisposition and prenatal and postnatal environmental factors, but the exact etiology is unknown.[6]

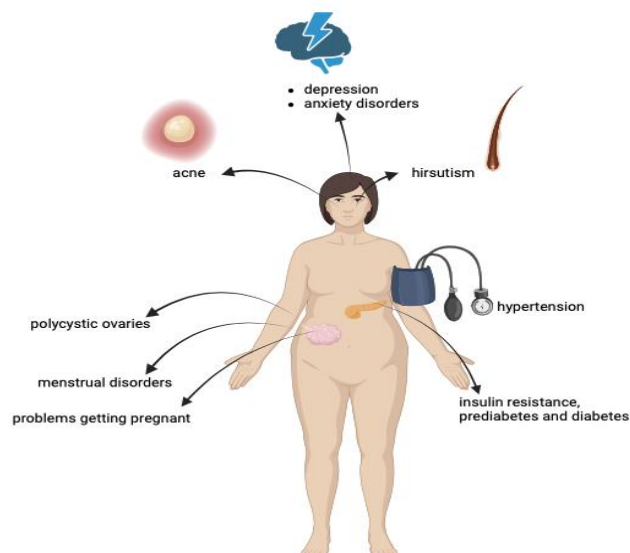


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**Fig 1. Pathogenesis of PCOS.**

Source: prepared on the basis of information contained in: Sangaraju,2022. [6]

## 1.2. Symptoms of PCOS



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**Fig. 2. Symptoms of PCOS. Source: prepared on the basis of information contained in: Sangaraju, 2022. [7-8]**

### 1.3. Diagnosis of PCOS

The criteria of the 2018 International Evidence-Based Guidelines should be taken into account when diagnosing PCOS. They are based on the criteria based on the 2003 Rotterdam consensus. Diagnosis of the disease requires the presence of two of the following:

- 1) clinical/biochemical hyperandrogenism;
- 2) ovulatory dysfunction;
- 3) polycystic ovaries on ultrasound (presence of more than 10 cysts in each ovary or ovarian volume greater than 10 cm<sup>3</sup> on ultrasound in the absence of other endocrine etiologies such as thyroid disease, non-classical congenital adrenal hyperplasia and hyperprolactinemia). [9]

From 2023, anti-mullerian hormone (AMH) can be used as an alternative to ultrasound. In the presence of irregular menstrual cycles and hyperandrogenism, the diagnosis is simplified, and ultrasound or AMH are not required for diagnosis. [1]

There are 4 phenotypes of PCOS:

1. Classic, characterized by hyperandrogenism, ovulation disorders and polycystic ovaries detected by ultrasound (HOP);
2. With hyperandrogenism and ovulation disorders but normal ovarian ultrasound (HO);
3. With hyperandrogenism and polycystic ovaries observed by ultrasound but without ovulation disorders (HP);
4. With ovulation disorders and polycystic ovaries but without evidence of hyperandrogenism (OP) [8]

The type of PCOS is related to metabolism and cardiovascular function.

### 1.4. Treatment of PCOS

Due to the complex etiology of PCOS, there is no universal treatment method that aims to improve hormonal imbalances, control body weight, and improve quality of life.

There is a lot of evidence that exercise can help women with PCOS gain numerous benefits. The 2018 PCOS guidelines recommend  $\geq 150$  minutes of moderate exercise per week or  $\geq 75$

minutes of vigorous exercise per week to prevent weight gain and  $\geq 250$  minutes of moderate exercise per week or  $\geq 150$  minutes of vigorous exercise per week to prevent weight loss and weight regain. It is also recommended to minimize sedentary time and include strength training two days per week. [9]

### Yoga in the treatment of PCOS

The term yoga comes from the Sanskrit word yuj, meaning “to join” and symbolizes the unification of bodies with consciousness in mind and spirit. [10] Yoga is a physical and bodily device that combines physical elements (asanas), relaxation techniques (pranayama), relaxation, and meditation to bring about the unification of mind and body. [11]

It has already been researched for several years as a means of providing relief from back pain, stress, insomnia, anxiety symptoms, as well as suffering from diseases, hypertension, neurodegenerative and urological diseases. [12-16] Yoga is a series of exercises that do not require any prior preparation.

In 2023, a study was conducted that provides information on yoga treatment for PCOS patients. It concerned 26 participants in each group (intervention and control). The yoga activities were carried out by a professional teacher for 90 minutes in a group session, three times a week, for 12 weeks. The remaining 4 days a week, exercises were performed independently at home. They were recorded in the registry by the institute staff. The study showed that participants in the intervention group had statistically significant reductions from baseline in weight and BMR. Measurements of BMI, visceral fat percentage, and waist and hip circumference in women in the intervention group showed a downward trend. There was a reduction from baseline in post-glucose insulin and AMH levels in the intervention group. Cholesterol, HDL, LDL, and SGPT improved significantly from baseline in the intervention group. [17]

Conclusions: Based on the analysis, we conclude that yoga may have a beneficial effect on certain health outcomes such as menstrual regularity and hyperandrogenism. Improvements in the values of the indices were also noted. On this basis, yoga can be suggested as a relatively safe and effective form of treatment for PCOS.

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Methodology: Agnieszka Przesór, Natalia Medźwiedzka

Software: Agnieszka Przesór, Natalia Medźwiedzka

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Project administration: Agnieszka Przesór, Natalia Medźwiedzka

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