



EFFECTIVENESS OF POWER YOGA ON ANXIETY AND QUALITY OF LIFE IN YOUNG FEMALES WITH POLYCYSTIC OVARIAN SYNDROME (PCOS) – AN EXPERIMENTAL STUDY

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Abstract:

Background: PCOS is a complex condition characterized by elevated androgen levels, menstrual irregularities and small cysts in one or both ovaries which impact quality of life and mood and potentially precipitate depression and anxiety in the suffering women. The prevalence of mild, moderate and severe anxiety in women with PCOS is 62.9%, 29.6% and 7.4% respectively. Lifestyle interventions are first line effective treatment and even small changes improve symptoms and psychological well being. Power yoga is a form of Ashtanga-Vinyasa yoga as exercise developed in 1990 by Beryl Birch and Bryan Kest which includes 19 Suryanamaskar poses combined with different modules and asanas which benefit in increasing strength, stamina, focus, flexibility and reducing stress and thus improving quality of life.

Aim: To study the effectiveness of power yoga on anxiety and quality of life in young females with PCOS.

Methodology: 30 females suffering from PCOS aged 18-30 years diagnosed as per Rotterdam criteria were included in this study.

The study duration was six months with four weeks intervention duration.

Outcome measures: Hamilton Anxiety Rating Scale and WHO-QOL scale.

Results: Unpaired t test was used to analyze pre and post differences and p value and mean was calculated. The reduction in anxiety levels and improvement in QOL after intervention was extremely significant as p value was <0.0001 respectively. The pre and post treatment mean for anxiety levels was 23.03 and 11.60 respectively. The pre and post treatment mean for QOL was 52.2 and 63.47 respectively.

Conclusion: The study concluded that power yoga shows significant reduction in anxiety and significant improvement in QOL in females with PCOS.

Introduction: Polycystic ovarian syndrome is a complex condition characterized by elevated androgen levels, menstrual irregularities, and/or small cysts in one or both ovaries⁽¹⁾ Polycystic ovarian syndrome (PCOS) is the most prevalent female endocrine disorder with estimates ranging from 2.2% to as high as 26%⁽¹⁾ All changes are likely to impact quality of life and mood and potentially precipitate depression and anxiety⁽¹⁾ These changes have a significant effect on adult women, resulting in diminished quality of life, altered feminine identity, and dysfunction in the family and work environment⁽¹⁾ A study held by Aditi. P. Chaudhari and colleagues on anxiety, depression and quality of life in women with PCOS in 2018 proved the prevalence of mild, moderate and severe anxiety being 62.90%, 29.60% and 7.40% respectively in women with PCOS⁽²⁾ Also, Ram Nidhi and colleagues took a randomized control trial on the effect of holistic yoga program on anxiety symptoms in adolescent girls with PCOS in 2012 and proved that lifestyle interventions are the first-line effective treatment for PCOS and even small changes in lifestyle are known to improve symptoms and psychological well being⁽¹⁾ Power yoga is any of several forms of Ashtanga-Vinyasa yoga as exercise developed in America in 1990 by Beryl Birch and Bryan Kest. Power yoga is about working hard sensitively. It's about feeling good, not just looking good. The tone and shapeliness we attain from this work is a by product, the focus here is balance and healing. It has many of the same benefits as the foundational and vigorous traditional practice, including building internal heat and increasing strength, stamina, focus and flexibility, as well as cultivating meditative breathing and reducing stress because as we move and lengthen, twist, and fold our body in all directions, we ignite all our major energetic centers and the energy pathways for our vitality to flow. Detox is fueled with increased breathing, sweating and stimulating the organs that remove waste from the body and as we shed excess toxins from our body, we can tap into more of the energy and power that is already within us⁽³⁾

Need of study: Studies have proven the prevalence of anxiety disorders and a significantly lower score on three domains of quality of life namely physical health, psychological health, and social and personal relationships in PCOS patients⁽²⁾ Many theories state that indulging in power yoga practices reduce state anxiety significantly which eventually helps to improve quality of life⁽³⁾ However, there is scarcity of researches which prove this in relation to PCOS patients; therefore arises a need to find out the effectiveness of power yoga on quality of life and anxiety reduction in PCOS females.

Aim: To study the effectiveness of power yoga exercises on anxiety and quality of life in young females with PCOS.

Objectives: To find out effectiveness of power yoga exercises on anxiety by using Hamilton Anxiety Questionnaire in young females with PCOS over the period of 4 weeks.

To find out effectiveness of power yoga exercises on Quality of Life by using WHO- Quality of Life Questionnaire in young females with PCOS over the period of 4 weeks.

Hypothesis:

Null Hypothesis (H₀):-

Power yoga exercises will not be showing significant difference in reducing anxiety and improving quality of life over the period of 4 weeks with respect to Hamilton Anxiety Questionnaire and WHO-QOL Questionnaire

Alternate Hypothesis (H₁):-

Power yoga exercises will be showing significant difference in reducing anxiety and improving quality of life over the period of 4 weeks with respect to Hamilton Anxiety Questionnaire and WHO-QOL Questionnaire

Methodology:

Study design :-Experimental study

Sample size :- 30

Sampling method :- convenient sampling

Study population :- Females suffering from PCOS.

Study setting :- Colleges, hostels and hospital OPDs in and around city.

Study duration :- 6 months

Duration of intervention :- 4 weeks (45 minutes per session/ 5 days per week/ 4 weeks)

Inclusion Criteria:

Patients diagnosed with PCOS as per Rotterdam criteria: Oligoovulation and/or anovulation ,Hyperandrogenism ,Polycystic ovaries

Age: Adult female patients in their reproductive age group (18 – 30 years)

Minimum score on Hamilton anxiety questionnaire should be 17/56

BMI upto 29.9kg/m²

Flexibility on sit and reach test: Average and above

Full ROM of bilateral upper limb and lower limb

MMT grade 3 and above for bilateral upper limb, lower limb and trunk

Exclusion Criteria:

Use of oral contraceptives/hormone treatment/insulin sensitizing agents within previous 6 weeks.

Non-classic adrenal hyperplasia.

Recent fractures related to bilateral upper limb and lower limb and spine.

Recent injuries and surgeries related to bilateral upper limb and lower limb and spine.

Limb length discrepancy.

Sacroiliac joint dysfunction.

History of psychiatric illness.

History of metabolic and / or endocrinal conditions.

History of musculoskeletal, neurological and cardiovascular disorders.

Outcome measures:

Hamilton anxiety rating scale (ICC: 0.74-0.96)

World Health Organization (WHO) Quality of Life (QOL) Scale (ICC: 0.56-0.95)

Procedure:

The study will begin with a presentation of synopsis to an ethical committee of P.E.S Modern College of Physiotherapy and approval of committee. Total 30 participants will be selected on the basis of inclusion and exclusion criteria. Participants will be explained about the study and consent will be taken and the participants will receive power yoga training sessions for 4 weeks.

Pre and post assessment will be done by using :-

Hamilton Anxiety Rating Scale (ICC: 0.74 – 0.96)

World Health Organization (WHO) QOL Scale (ICC: 0.56-0.95)

Power yoga exercise plan includes:

Warm up – 10 minutes

Training session – 20 minutes

Cool down – 5 minutes

Pranayama – 10 minutes

Warm up

Marching

Back kicking exercise

Frontkicking exercise

Hands in the air

Chest expansions

Arm circle/Shoulder rotations

Torso and hip rotations

Power yoga sun salutation

It is a set of 19 poses and includes six main modules:

Static module

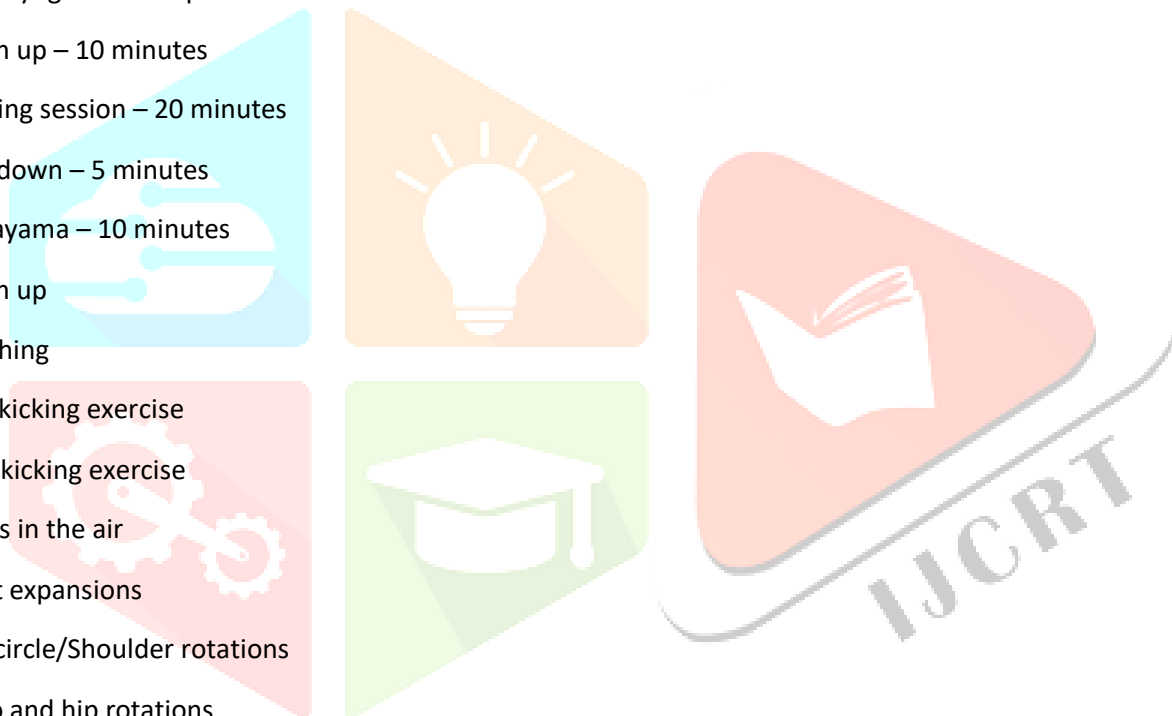
Resistance module

Dynamic 2 module

Dynamic 1 module

Plyometric module

Combo module



In static module, each of the 19 pose is held for five seconds and repeated five times in a sequence. In resistance module, after each pose a variation is added with five repetitions proceeding to next pose with variation added again and this is continued for each pose making it one cycle. Such three cycles are completed. In Dynamic 2 module, two or three poses are combined and repeated back to back five times proceeding to next two or three poses combination repeated five times and repeating the cycle three times.

In dynamic 1 module, the total 19 poses are performed back to back in a sequence three times which constitutes one cycle and doing such five cycles taking pause of one minute after each cycle. In plyometric module, base of support is changed after each pose. In combo module, any two of the above given modules are combined and performed.

Power poses- Standing, balancing, and twisting poses comprise sweaty center of our power practice and these poses are started after completing any one module. These power poses help us find and fortify our foundation, where every pose starts. It doesn't matter how far we go in any of the poses; instead, one should focus on igniting the power principles within one's experience and continue practicing. It is necessary to keep the breath and concentration intact, increase the challenge and begin to sweat while performing the dynamic movements. The flow of the movements should be fast but gentle. The poses included are:

Tree pose

Lord of dance pose

Warrior 1, 2, 3 and 4

Extended triangle pose

Revolve triangle pose

Half moon pose

Revolve half moon pose

Low lunge pose

Boat pose

Camel pose

Cow face pose

Knee hug pose

Pigeon pose

Bridge pose

Shoulder stand

Plough pose

Bow pose

Vishnus couch pose

Side staff pose

Locust pose

Cool down

Shoulder stretches

Triceps stretch



Hamstring stretch

Quadriceps stretch

Overhead stretch

Chest stretch

Pranayama and meditation

Sectional breathing – 4 minutes.

It has three sections of breathing:-

Clavicular breathing

Inter-costal breathing

Abdominal breathing

Forceful exhalation (Kapalabhati) – 2 minutes

Bhramari pranayama – 2 minutes

Anulom – Vilom (alternate nostril breathing) – 2 minutes

OM meditation – 10 minutes

Comparison of pre and post treatment values of Hamilton anxiety questionnaire scores shows a significant difference

	Pre treatment	Post treatment
Mean	23.03	11.60
Standard deviation	4.92	4.17
T value	26.8829	
P value	<0.0001	
Significance	Extremely significant	

Comparison of pre and post treatment values of WHO quality of life questionnaire scores shows a significant difference

	Pre treatment	Post treatment
Mean	52.2	63.47
Standard deviation	9.94	8.49
T value	15.5305	
P value	<0.0001	
Significance	Extremely significant	

Result: The reduction in anxiety levels in females suffering from PCOS after 4 weeks of power yoga intervention was extremely significant as the P value was <0.0001. The pre treatment mean was 23.03 with SD 4.92 while post treatment mean was 11.60 with SD 4.17. T value was 26.8829. The improvement in quality of life in females suffering from PCOS after 4 weeks of power yoga intervention was extremely significant as the P value is less than 0.0001. The pre treatment mean was 209.13 with SD 39.76 while post treatment mean was 254.27 with SD 33.67. T value was 15.9256.

Discussion: Total 30 patients were included in this study based on inclusion and exclusion criteria. This study was intended to see the effectiveness of power yoga on anxiety and quality of life in females suffering from PCOS. In this study anxiety levels were scored using Hamilton anxiety questionnaire and quality of life was scored using WHO quality of life questionnaire. KarachiUrooj Zafar^{1*}, Zahida Memon¹, Kausar Moin¹ et.al in their study “Prevalance of PCOS with Associated Symptoms and Complications at Tertiary Care Hospital” proposed that the overall

prevalence of anxiety in polycystic ovarian syndrome was 32.54% and anxiety was more common in age ranges between 21-25 and 26-30 years. Multiple factors are responsible for psychological disturbance, firstly androgen and insulin by their own may cause anxiety disorders if increase beyond normal levels. Secondly infertility in married female is definitely associated with psychological strains and social pressure which led them towards withdrawal and loneliness. Finally obesity, hirsutism and acne often demarcated them as unfeminine and unpleasing personalities that affect their societal image that ultimately led to anxiety, depression and seclusion¹⁵. RAM NIDHI, VENKATARAM PADMALATHA, RAGHURAM NAGAR et.al in their study "Effect of holistic yoga program on anxiety symptoms in adolescent girls with PCOS" proved that there was a significant reduction in anxiety after 12 weeks of intervention¹. It is due to efficacy of yoga in reducing stress arousal by modulating sympathetic nerve activity and thus reducing anxiety levels. Also, the mental silence facilitates greater awareness by altering the individual's cognitive appraisal and perceived self-efficacy with regard to stressors and thus reduces anxiety symptoms^{10,11}. Elizabeth Anderson et.al in their study "Effects of exercise and physical activity on anxiety" have shown that regular aerobic exercise is associated with lower sympathetic nervous system and hypothalamic-pituitary-adrenal (HPA) axis reactivity. Voluntary exercise alters the releases of corticotrophin-releasing factor (CRF) from the hypothalamus and ACTH from the anterior pituitary. These findings suggest that exercise induced changes in the HPA axis modulates stress reactivity and anxiety in humans¹⁶. ADITI CHAUDHARI, KAUSTUBH MAZUMDAR, POOJA MEHTA, in their study "Anxiety, Depression and Quality of Life in women with PCOS" observed that the physical and psychological domains of the QOL had the lowest score and psychiatric morbidity was significantly associated with a poorer QOL². Several international studies have reported that women with PCOS who suffer from anxiety and depression have a lower QOL^{7,8}. Bahrami, Homa and Mohseni, Maryam and Amini, Leila and Karimian, Zahra (2019) in their study "The effect of six weeks yoga exercises on quality of life in infertile women with polycystic ovary syndrome (PCOS)" concluded that Yoga as a meditation exercise for 6 weeks can improve the score of quality of life in women with PCOS undergoing infertility treatment by changing the physiological responses to stressors by improving autonomic stability with better parasympathetic tone and reducing sympathetic arousal with improved performance¹⁹. B L Alderman, R L Olson, C J Brush & T J Shors in their study "MAP training: combining meditation and aerobic exercise reduces depression and rumination" presented data indicating that a combination of meditation and moderate-intensity aerobic exercise significantly reduces symptoms of depression in individuals with MDD. The effects were robust, as evident by the nearly 40% reduction in depressive symptoms after only 8 weeks of training as the intervention reduces rumination, which is associated with enhanced neural representations of conflict monitoring and cognitive control through improved anterior cingulate cortex function¹⁴. Thus here my study shows similar results that combined effects of aerobic exercises with meditation and pranayama same as in power yoga reduces anxiety and improves quality of life significantly in just 4 weeks of intervention.

Conclusion: In this study power yoga showed significant reduction in anxiety and significant improvement in quality of life in females with PCOS. Hence, we are accepting alternative hypothesis which states that Power yoga exercises show significant differences in reducing anxiety and improving quality of life over the period of 4 weeks with respect to Hamilton Anxiety Questionnaire and WHO-QOL Questionnaire.

Limitations:

The sample size was small.

No long term follow up data was collected after 4 weeks.

Future scope of study:

Study can be done on large sample size.

Further studies are recommended with longer durations.

The study can also be done to see the effects of power yoga on flexibility, strength and endurance.

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