

# International Journal of Clinical Obstetrics and Gynaecology



ISSN (P): 2522-6614  
ISSN (E): 2522-6622  
Indexing: Embase  
Impact Factor (RJIF): 6.71  
© Gynaecology Journal  
[www.gynaecologyjournal.com](http://www.gynaecologyjournal.com)  
2026; 10(2): 1314-1317  
Received: 17-01-2026  
Accepted: 22-02-2026

**Dr. Smita Shail**  
Postgraduate Student, Department  
of Physiology, Shri B.M. Patil  
Medical College, Hospital and  
Research Centre, Vijayapura,  
Karnataka, India

**Dr. Jyoti Khodnapur**  
Professor, Department of  
Physiology, Shri B.M. Patil  
Medical College, Hospital and  
Research Centre, Vijayapura,  
Karnataka, India

**Corresponding Author:**  
**Dr. Smita Shail**  
Postgraduate Student, Department  
of Physiology, Shri B.M. Patil  
Medical College, Hospital and  
Research Centre, Vijayapura,  
Karnataka, India

## Comparison of Physical, Physiological and Psychological Parameters in Menopausal Women Practicing Yoga and Non-Practitioners: A Cross-Sectional Study

**Smita Shail and Jyoti Khodnapur**

DOI: <https://www.doi.org/10.33545/gynae.2026.v10.i2q.2191>

### Abstract

**Introduction:** As women enter menopause, they experience numerous changes physiologically and psychologically which may affect their quality of life. These changes often result in women seeking alternative methods to improve their quality of life, such as practicing yoga. Thus, we sought to compare both physical and physiological/psychological parameters between yogic practitioners and non-practitioners in menopausal women.

**Aim:** To compare physical, physiological and psychological parameters in menopausal women practicing yoga and non-practitioners.

**Materials and Methods:** We performed a cross-sectional observational study that included 120 menopausal women (60 men and women each for exercise and controls). We measured physical parameters of subjects using the WHO STEPS protocol for functionality. We assessed physiological parameters with PeriScope (Cardiovascular analysis device) and stress level was evaluated using the Perceived Stress Scale (PSS). Data was analysed using the independent t-test.

**Results:** No significant differences in physical parameters existed between the two groups (yoga practitioners/control). Yoga practitioners also demonstrated significantly less heart rate ( $p = 0.04$ ), systolic blood pressure ( $p = 0.017$ ), diastolic blood pressure ( $p = 0.012$ ), mean arterial pressure ( $p = 0.008$ ) and lower PSS scores ( $p = 0.001$ ) when compared to controls.

**Conclusion:** Yoga is associated with improved physiological and psychological health among menopausal women.

**Keywords:** Menopause, Yoga, Stress, Blood Pressure, PSS

### Introduction

During menopause, there is a decrease in the ability of your ovaries to function and a decline in estrogen. This provides additional systemic effects on the body. Due to larger life expectancy, women spend a significant amount of their life in post-menopause and therefore are important from a medical perspective <sup>[1]</sup>.

Hormone changes during menopause represent an increase in risk for cardiovascular disease, an imbalance in sympathetic and parasympathetic nervous systems, stress, as well as anxiety <sup>[2]</sup>. Although hormone-replacement therapy may still serve as an effective option, its long-term use is often limited by serious potential side effects, including the risk of thromboembolic events and malignancies <sup>[3]</sup>.

In recent years, non-pharmacological approaches, such as yoga, have been highlighted as having the added benefit of providing women with a holistic approach to physical self-care. In addition to the physical aspects, yoga integrates breathing techniques and meditation to improve the functioning of the autonomic nervous system and to promote psychological well-being <sup>[4, 5, 6]</sup>. The published evidence suggests that, through regular yoga participation, pre-menopausal women are less likely to develop cardiovascular risk factors and have lower levels of stress than those who do not practice yoga <sup>[7-9]</sup>. Additionally, yoga has been shown to improve autonomic balance, neuroendocrine function, and overall quality of life in various populations <sup>[10-13]</sup>. However, comparative data comparing the physiological and psychological outcomes of yoga practitioners to non-yoga practitioners is limited. Therefore, this study set out to compare the physical, physiological, and psychological measures in menopausal women who do and do not practice yoga.

## Materials and Methods

This is a cross-sectional observational study which was conducted at Shri B. M. Patil Medical College, Hospital and Research Centre, Vijayapura, over a period of one year from April 2024 to March 2025. The study population comprised women aged 40-60 years who had attained natural menopause. A total of 120 participants were enrolled and divided into two groups: 60 women with regular yoga practice and 60 women without yoga practice. The sample size was determined using an appropriate statistical formula.

$$N = 2 \left[ \frac{(Z_{\alpha} + z_{\beta}) * S}{d} \right]^2$$

Participants were recruited through convenience sampling based on their availability and eligibility for the study.

Women were eligible for inclusion in the study if they had attained natural menopause, had been practicing yoga regularly for a minimum of three years, and provided informed willingness to participate. Participants were excluded if they had a history of comorbid medical conditions such as hypertension, diabetes mellitus, thyroid disorders, or other major systemic illnesses. Women with diagnosed psychiatric disorders or those who had undergone surgically induced menopause were also excluded from the study. These exclusion criteria were

implemented to minimize potential confounding factors and ensure the reliability and validity of the study outcomes.

A comprehensive range of anthropometric, cardiovascular, and psychological parameters was assessed in the study participants. Anthropometric measurements included height, weight, body mass index (BMI), body surface area (BSA), waist circumference, hip circumference, and waist-to-hip ratio (WHR). Cardiovascular parameters such as heart rate, systolic blood pressure, diastolic blood pressure, pulse pressure, and mean arterial pressure were measured using the PeriScope cardiovascular analysis system. Psychological stress levels were evaluated using the standardized Perceived Stress Scale (PSS), which provided an assessment of perceived stress among menopausal women included in the study. The inclusion of these multidimensional variables enabled a comprehensive evaluation of the participants' overall physiological and psychological health status.

The study got approval from the Institutional Ethics Committee, and all participants gave their written consent before taking part, making sure the research was done in an ethical way.

### Statistical Analysis

Statistics were prepared using SPSS version 23 (IBM Corp., Armonk, NY, USA 2015). All data will be reported as mean  $\pm$  SD. Comparisons between Groups A and B will be made using an independent t-test. Statistical significance will be  $p < 0.05$ .

## Results

**Table 1:** Comparison of Physical Parameters

Parameters	Control Group (n=60)	Study Group (n=60)	p-value
Age	48.75 $\pm$ 5.84	49.46 $\pm$ 6.22	0.517
Weight	60.25 $\pm$ 11.14	59.9 $\pm$ 12.09	0.869
Height	1.53 $\pm$ 0.04	1.51 $\pm$ 0.04	0.06
BMI	25.59 $\pm$ 4.40	25.98 $\pm$ 4.9	0.65
BSA	1.58 $\pm$ 0.14	1.55 $\pm$ 0.15	0.306
Waist Circumference	72.55 $\pm$ 14.49	72.2 $\pm$ 15.54	0.899
Hip Circumference	81.13 $\pm$ 14.44	80.78 $\pm$ 15.73	0.899
WHR	0.89 $\pm$ 0.03	0.89 $\pm$ 0.03	0.886

Mean age of participants in control and yoga groups was 48.75  $\pm$  5.84 years and 49.46  $\pm$  6.22 years respectively. There was no significant difference found ( $p = 0.517$ ) between two groups which indicates that age of participants was not confounder in the present study. Similarly body weight ( $p = 0.673$ ), height ( $p = 0.055$ ) and BMI ( $p = 0.106$ ) of both groups did not show significant difference. These findings further strengthen the point that nutritional status of the subjects in both control and yoga groups was similar. Body composition indicators such as body surface area (BSA), waist circumference, hip

circumference and waist-hip ratio (WHR) in both groups were also comparable. There was no significant difference between them ( $p > 0.05$ ). (Table 1) Long-term yoga practice does not significantly affect body composition parameters in individuals practicing yoga for over 7 years. Individuals in both the runners and walkers groups were similar in physical terms as shown in Table 1; this homogeneity supports the appropriateness of comparing within groups in terms of physiological and psychological measures.

**Table 2:** Comparison of Physiological Parameters

Parameters	Control Group (n=60)	Study Group (n=60)	p-value
Heart Rate (beats/min)	78.56 $\pm$ 11.61	75.36 $\pm$ 10.07	0.04*
Systolic Blood Pressure (mmHg)	138.2 $\pm$ 18.23	129.0 $\pm$ 19.21	0.017*
Diastolic Blood Pressure (mmHg)	81.08 $\pm$ 9.30	76.63 $\pm$ 9.68	0.012*
Pulse Pressure (mmHg)	57.11 $\pm$ 13.78	53.28 $\pm$ 13.77	0.13
Mean Arterial Pressure (mmHg)	100.12 $\pm$ 11.23	94.39 $\pm$ 11.97	0.008*

Yoga practice was found to produce a statistically significant reduction in heart rate, indicating improved autonomic activity and increased parasympathetic dominance in yogis (75.36  $\pm$  10.07 vs. 78.56  $\pm$  11.61 beats/min;  $p = 0.04$ ) as compared with control subjects.

Systolic and diastolic blood pressure also was significantly

lower in the yoga group (systolic: 129.0  $\pm$  19.21 mmHg vs. 138.2  $\pm$  18.23 mmHg,  $p = 0.017$ ; diastolic: 76.63  $\pm$  9.68 mmHg vs. 81.08  $\pm$  9.30 mmHg,  $p = 0.012$ ). As mentioned earlier, both systolic and diastolic blood pressure decreased (Table 2), reflecting a reduction in afterload. Global perfusion, as indicated by mean arterial pressure (MAP), also decreased in the yoga

group ( $94.39 \pm 11.97$  vs.  $100.12 \pm 11.23$  mmHg;  $p = 0.008$ ).

Although pulse pressure was lower in the yoga group, the difference was not found to be statistically significant ( $p = 0.13$ ), indicating that the effect of yoga on this parameter could be minimal or unpredictable. Table 2 shows improvements in important cardiovascular indices in yoga practitioners indicating better autonomic balance and lower risk for cardiovascular diseases.

**Table 3:** Comparison of Psychological Parameters (Perceived Stress Scale)

Parameter	Control	Study	p-value
PSS Score	$34.01 \pm 5.7$	$16.25 \pm 6.86$	0.001*

The mean PSS score for the yoga group was markedly lower than for the control group ( $16.25 \pm 6.86$  vs.  $34.01 \pm 5.7$ ). The difference was highly statistically significant ( $p = 0.001$ ).

By tracking stress, women in this study found a nearly 50% decrease in their stress scores over time, which implies a profound impact on the emotional regulation and mental health of menopausal women through yoga. The collective benefits of breathing, meditation, and physical postures found in yoga practice likely contribute to these findings. Table 3 showed that there was a significant improvement in the scores for all psychological variables in the yoga group with greatest improvement seen in the scores for perceived stress.

### Discussion

In this study, we have shown that long-term yoga practice has significant positive effects on cardiovascular and psychological parameters among peri/postmenopausal women, while there were no differences in physical outcomes between the groups.

The lower heart rates and blood pressures of the yoga practitioners indicate that they have improved autonomic regulation. Also, we know that yoga can increase the parasympathetic response and decrease the sympathetic hyperactivity which contributes to overall cardiovascular stability<sup>[10, 11]</sup>. Similar findings have been reported in previous studies where yoga interventions resulted in significant reductions in systolic and diastolic blood pressure<sup>[10]</sup>.

Additionally, the substantial decrease in perceived stress scores in the yoga practitioners highlights the psychological effects of yoga. Research demonstrates that mind-body interventions, like yoga, can regulate the hypothalamic-pituitary-adrenal axis, therefore decreasing cortisol levels and improving emotional resilience<sup>[8, 9, 12]</sup>.

The systematic reviews and meta-analyses show that practicing yoga is very beneficial for improving menopausal symptoms, quality of life, and psychological well-being<sup>[4, 7]</sup>. Furthermore, yoga-based lifestyle interventions have also been linked to the reduction of such feelings of anxiety and depression<sup>[13-15]</sup>.

The absence of statistically significant differences across the different physical measurements may be attributed to participants having similar anthropometric measurements at baseline and also that this current study is cross-sectional, which limits the ability of the authors to evaluate potential long-term changes in structural factors.

Overall, the results of this research study support the use of yoga as an effective complementary and nonpharmacological means of improving overall cardiovascular and psychological health among menopausal women.

### Strengths and Limitations

There are numerous important strengths to this study, including

that this study was designed in a comparative manner such that there was an actual comparison of both groups, and that the study had multiple dimensions allowing for a complete measurement of the study variables. There are also several limitations of this study including that the study design was cross-sectional and therefore there is no ability to make inferences of causation or of a temporal relationship between the study groups; furthermore, the relatively small sample size may limit the generalizability of this study, and, finally, it cannot be ruled out that the possibility of selection bias exists. Future studies using larger samples and including longitudinal follow-up are needed to confirm these results and establish the long-term impact of this type of exercise on these variables.

### Conclusion

Yoga practices have been shown to improve physiological and psychological well-being, making them an ideal non-drug method for treating menopause symptoms. This research establishes the long-term effect of yoga on the physiological and psychological wellness of menopausal women, demonstrating that yoga is safe, inexpensive, and does not involve medication; therefore, it may be a viable alternative therapy in low-resource environments.

### Acknowledgement

Nil.

### Funding

None.

### Conflict of Interest

None declared.

### References

1. Nelson HD, Vesco KK, Haney E, Fu R, Nedrow A, Miller J, Nicolaidis C, Walker M, Humphrey L. Nonhormonal therapies for menopausal hot flashes: systematic review and meta-analysis. *JAMA*. 2006 May 3;295(17):2057-2071.
2. Thurston RC, Joffe H. Vasomotor symptoms and menopause: findings from the Study of Women's Health Across the Nation. *Obstet Gynecol Clin North Am*. 2011;38(3):489-501.
3. Rossouw JE, Anderson GL, Prentice RL, LaCroix AZ, Kooperberg C, Stefanick ML, Jackson RD, Beresford SA, Howard BV, Johnson KC, Kotchen JM. Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results from the Women's Health Initiative randomized controlled trial. *JAMA*. 2002 Jul 17;288(3):321-333.
4. Cramer H, Lauche R, Langhorst J, Dobos G. Effectiveness of yoga for menopausal symptoms: a systematic review and meta-analysis of randomized controlled trials. *Evid Based Complement Alternat Med*. 2012;2012(1):863905.
5. Innes KE, Selfe TK, Vishnu A. Mind-body therapies for menopausal symptoms: a systematic review. *Maturitas*. 2010 Jun 1;66(2):135-149.
6. Chattha R, Raghuram N, Venkatram P, Hongasandra NR. Treating the climacteric symptoms in Indian women with an integrated approach to yoga therapy: a randomized control study. *Menopause*. 2008 Sep 1;15(5):862-870.
7. Cramer H, Peng W, Lauche R. Yoga for menopausal symptoms: a systematic review and meta-analysis. *Maturitas*. 2018 Mar 1;109:13-25.
8. Streeter CC, Gerbarg PL, Saper RB, Ciraulo DA, Brown

- RP. Effects of yoga on the autonomic nervous system, gamma-aminobutyric acid, and allostasis in epilepsy, depression, and post-traumatic stress disorder. *Med Hypotheses*. 2012 May 1;78(5):571-579.
9. Pascoe MC, Thompson DR, Ski CF. Yoga, mindfulness-based stress reduction and stress-related physiological measures: a meta-analysis. *Psychoneuroendocrinology*. 2017 Dec 1;86:152-168.
  10. Hagins M, States R, Selfe T, Innes K. Effectiveness of yoga for hypertension: systematic review and meta-analysis. *Evid Based Complement Alternat Med*. 2013;2013(1):649836.
  11. Telles S, Sharma SK, Balkrishna A. Blood pressure and heart rate variability during yoga-based alternate nostril breathing practice and breath awareness. *Med Sci Monit Basic Res*. 2014 Nov 19;20:184-193.
  12. Woodyard C. Exploring the therapeutic effects of yoga and its ability to increase quality of life. *Int J Yoga*. 2011 Jul 1;4(2):49-54.
  13. Patel NK, Newstead AH, Ferrer RL. The effects of yoga on physical functioning and health-related quality of life in older adults: a systematic review and meta-analysis. *J Altern Complement Med*. 2012 Oct;18(10):902-917.
  14. Gupta N, Khera S, Vempati RP, Sharma R, Bijlani RL. Effect of yoga-based lifestyle intervention on state and trait anxiety. *Indian J Physiol Pharmacol*. 2006 Jan 21;50(1):41-47.
  15. Sharma VK, Das S, Mondal S, Goswami U, Gandhi A. Effect of Sahaj Yoga on depressive disorders. *Indian J Physiol Pharmacol*. 2005 Oct 1;49(4):462-468.

**How to Cite This Article**

Shail S, Khodnapur J. Comparison of Physical, Physiological and Psychological Parameters in Menopausal Women Practicing Yoga and Non-Practitioners: A Cross-Sectional Study. *International Journal of Clinical Obstetrics and Gynaecology*. 2026;10(2):1314-1317.

**Creative Commons (CC) License**

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.