

REVIEW ARTICLE

Non-Pharmacological Approaches to Menstrual Disorders: The Role of Pilates and Yoga -A review of literature

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ABSTRACT

The substantial potential of Yoga and Pilates as successful non-pharmacological treatments for menstrual disorders is highlighted by a thorough systematic review of nine English-language research publications published between 2015 and February 2025. In order to focus exclusively on peer-reviewed studies that addressed menstrual health, Yoga, and Pilates, the review purposefully excluded unpublished research, studies unrelated to menstruation, and general exercise interventions. The findings show that Pilates offers major advantages like enhanced emotional regulation, greater flexibility, and an improved quality of life, while also significantly reducing menstrual discomfort and premenstrual syndrome (PMS) symptoms. Conversely, yoga is equally effective because it has been shown to improve sleep patterns, balance hormone function, lessen pain, and ease mood swings, stress, and anxiety. Several studies that demonstrated statistically significant improvements ($p < 0.05$ to $p < 0.0001$) further supported the reliability of these findings. Yoga and Pilates not only address the symptoms of menstrual disorders but also their underlying causes, such as chronic stress, which has been connected to hormonal imbalance and irregular menstruation. Based on these nine reviews, it can be concluded that these methods are all-inclusive tools for menstrual health because they promote mental clarity, improve hormonal balance, lower pelvic tension, and increase blood circulation. Because of their combined physical, emotional, and psychological benefits, yoga and pilates are vital integrative strategies that greatly reduce menstrual discomfort and support overall female wellness.

Keywords: Menstrual Disorders, Dysmenorrhea, premenstrual syndrome, Yoga and Pilates.

Received 21.11.2025

Revised 01.02.2026

Accepted 21.02.2026

How to cite this article:

Punita S, Sheetal M and Manish K. Non-Pharmacological Approaches to Menstrual Disorders: The Role of Pilates and Yoga -A review of literature. Adv. Biores. Vol 17 [4] April 2026. 306-312

INTRODUCTION

Menstrual disorders, such as dysmenorrhea, amenorrhea, oligomenorrhea, menorrhagia, and premenstrual syndrome (PMS), affect the physical and mental health of women and menstruating individuals. The painful cramps that are a hallmark of dysmenorrhea are often brought on by endometriosis or prostaglandins. Amenorrhea is the lack of menstruation, whereas oligomenorrhea is the irregular cycles that are often caused by hormonal imbalances. Menorrhagia (heavy bleeding) can lead to anaemia, and PMS is characterized by recurrent emotional and physical symptoms that disappear after menstruation [1]. Ovarian cysts, elevated testosterone levels, and irregular periods are the hallmarks of polycystic ovarian syndrome (PCOS), a common hormonal disorder [2]. The exact cause is unknown, but genetic and metabolic factors are important. Menstrual disorders can cause mood swings, fatigue, and a decreased quality of life in addition to the physical symptoms [3]. It has been demonstrated that Pilates, a low-impact workout regimen that prioritizes breathing, core strength, and controlled movement, can help reduce stress, menstrual pain, and hormone imbalances. It enhances body awareness, emotional balance, and posture, partly through boosting endorphin release [4,5]. Yoga improves emotional resilience, regulates hormones, and increases flexibility [6]. Yoga is a comprehensive mind-body practice that incorporates asanas (postures), pranayama (breathwork), and meditation [7]. It helps control the symptoms of PMS, dysmenorrhea, and PCOS by enhancing overall wellbeing and regulating stress

reactions [8]. The usefulness of yoga and Pilates as non-pharmacological therapies for menstrual disorders is compared in this review.

MATERIAL AND METHODS

Research showing a link between menstrual issues, yoga, and Pilates was accepted, along with studies that were accessible online in full text in English. Studies that were excluded included Pilates and yoga, conference papers, unpublished dissertations, and participants experiencing pain or other conditions unrelated to menstrual issues. Moreover, studies examining the impact of exercise training or other methods on menstrual health were not considered. The keywords searched in PubMed and Google Scholar included: premenstrual symptoms, dysmenorrhea, menorrhagia, amenorrhea, premenstrual dysphoric disorder (PMDD), Pilates, and yoga in different combinations to identify and explain the connection between menstrual pain, premenstrual symptoms, reduced sleep, and quality of life. The timeframe for the data search extended from 2015 to February 2025.

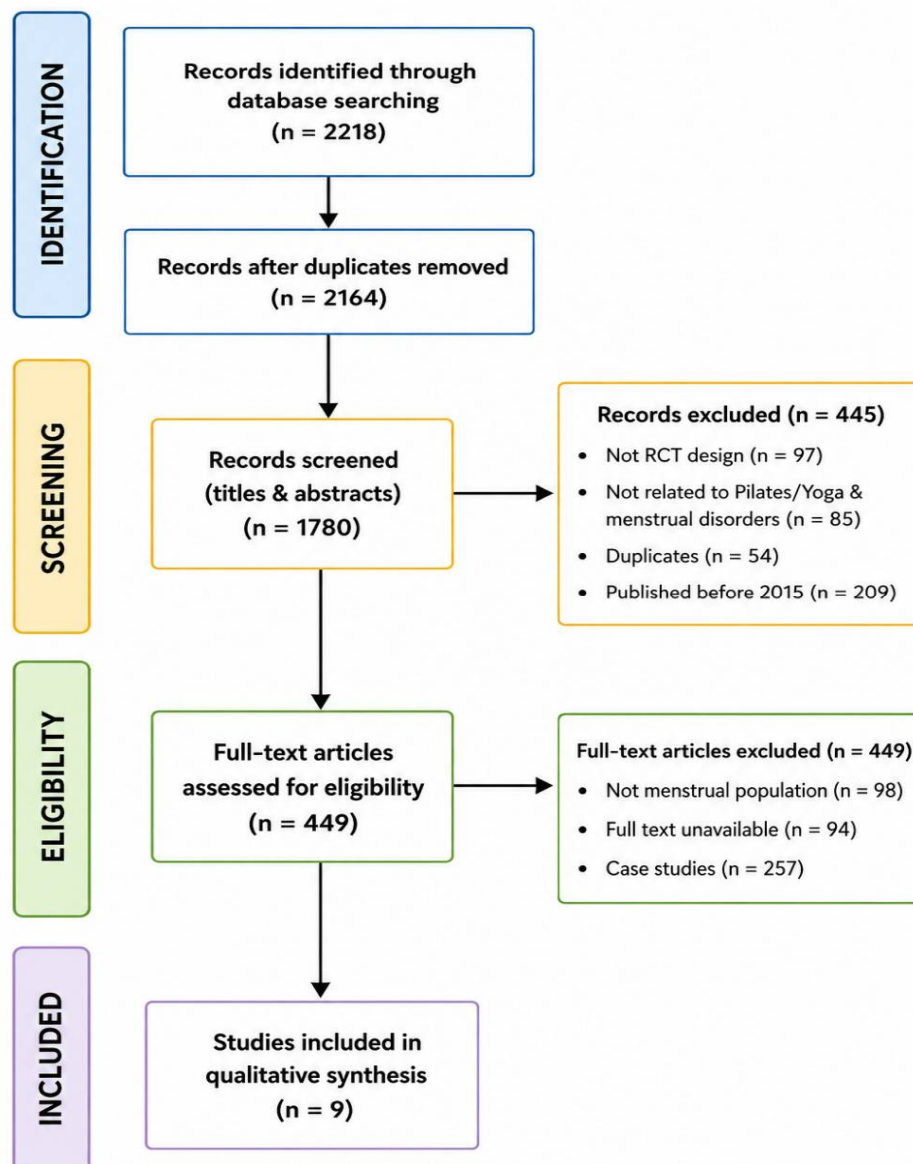


Fig. 1. PRISMA flow diagram illustrating the study selection process for inclusion in the systematic review of Pilates interventions for menstrual disorders.

Table 1: Summary of Pilates-Based Interventions for Premenstrual Syndrome (PMS) and Primary Dysmenorrhea

Ref.	Design	Participants	Main Outcomes	Intervention Time of Pilates	Intervention Group of Pilates	Results	Conclusion
[9]	quasi experimental design	50 Participants	Visual analogue scale Cox Menstrual Symptom Scale Premenstrual Symptoms Screening Tool	Pilates was performed twice a week for 12 weeks.	12-week pilates protocol was given in two groups, i.e. experimental and control.	In addition to reducing body fat, improving sleep quality, and lowering stress, the Pilates group demonstrated notable improvements in strength, flexibility, pain (VAS), and menstrual symptoms (CMSS, PSST). Interestingly, 46.7% did not use painkillers. Pilates' efficacy was demonstrated by the fact that the control group did not experience these advantages.	The Pilates exercises employed in this study were found to significantly lessen PMS symptoms. Pilates exercises are therefore essential for lowering PMS symptoms.
[10]	A quasi-experimental pre-test post-test design	100 female students	Premenstrual Symptoms Screening Tool Distress Tolerance Scale Emotion Regulation Questionnaire	8 weeks - Pretest, post-test, and follow-up were the three phases	Three one-hour sessions per week, for a total of 24 sessions, were attended by the PMS participants.	The study found that people with PMS who did Pilates had significantly improved distress tolerance (40.93 → 47) and emotion regulation (suppression: 12 → 16.8; reappraisal: 22.4 → 26.06) ($p < 0.05$). The emotional well-being of people with PMS may benefit from Pilates.	This study found that Pilates improves the cognitive reappraisal and distress tolerance of women with PMS. Future research should include clinical populations, combine Pilates with other therapies, and extend sessions and follow-ups to assess long-term effects.
[11]	experimental study	60 female participants	Visual Analogue Scale MDQ-Menstrual Distress Questionnaire	3 days per week for 12 weeks	The group performed ten repetitions of exercises such as hip mobility, leg floats, chest lifts, stretches, pelvic curls, and planks during 30-minute sessions that combined Pilates, conventional physiotherapy, and hot packs.	Graph Pad InStat Trial Version 13.3 was used to analyze the data, with paired t-tests for within-group comparisons and unpaired t-tests for between-group comparisons.	The current study suggests that Pilates may help women with primary dysmenorrhea relieve pain and enhance their quality of life when used in conjunction with traditional physiotherapy treatment.

[12]	Experimental study	25 females	Wong-Baker scale	3 months	One-leg rockers, side and supine leg lifts, and opposite arm-leg reverse crunches were among the exercises.	Exercises like stretching and core strengthening on a bosu ball were found to significantly improve the pain status of teenage girls with primary dysmenorrhea, as measured by the Wong Baker scale ($p < 0.0001$) after data analysis.	The results of the study showed that bosu pilates significantly decreased primary dysmenorrhea in teenage girls.
[13]	Comparative study	38 females	Visual Analogue Scale Menstrual Distress Questionnaire	5 months	The group performed ten repetitions of exercises such as hip mobility, leg floats, chest lifts, stretches, pelvic curls, and planks during 30-minute sessions that combined Pilates, conventional physiotherapy, and hot packs.	Parametric tests showed a significant improvement in both groups' pain levels and quality of life ($p \leq 0.005$). The between-group analysis revealed no appreciable changes in quality of life, but Group A (Pilates) saw a significant reduction in pain.	Pilates and self-stretching are helpful interventions for improving quality of life and lowering pain in patients with primary dysmenorrhea. Pilates was found to be more effective at reducing pain than self-stretching.
[14]	randomized controlled trial	50 females	WaLIDD Score (working ability, location, intensity, days of pain, dysmenorrhea) Numerical Rating Scale	12 weeks	The Hatha Yoga training was conducted over a period of 12 weeks.	NRS scores decreased considerably more in the Yoga group than in the control group, improving by 1.92 and 3.09 versus 0.06 and 0.02, respectively ($p < 0.05$).	According to the study, yoga and aerobic exercise work better together than aerobic exercise alone to treat dysmenorrhea in women with PCOS, particularly college students looking for non-pharmacological solutions.
[15]	structured experimental design	50 female college students	McGill pain questionnaire WaLIDD score (working ability, location, intensity, days of pain, dysmenorrhea)	12 weeks	One group receives aerobic exercise and yoga, while the other group receives only aerobic exercise. The treatment is given for 60 minutes, five days a week.	According to the p-value of 0.0001, the findings were statistically significant. This indicates a strong correlation between the reduction in dysmenorrhea symptoms and the combined treatment.	The study supports the notion that yoga poses and aerobic exercise may be a more effective combination than aerobic exercise alone for treating dysmenorrhea in women with PCOS.

[16]	Single-blind, randomized controlled trial.	40	Menstrual Distress Questionnaire Visual Analogue Scale	12 weeks	The participants engaged in one 60-minute yoga session per week for 12 weeks. Exercise, relaxation methods, and meditation were all part of the program.	Menstrual pain intensity (group difference, -0.94; 95% CI, -1.47 to -0.42; $p = 0.001$) and menstrual distress (group difference, -1.13; 95% CI, -1.43 to -0.82; $p < 0.0001$) were significantly lower in the experimental group than in the control group.	These findings imply that yoga interventions could lessen the discomfort and cramping associated with menstruation for female undergraduate students with primary dysmenorrhea.
[17]	randomized controlled clinical trial	62 subjects	Beck Depression Inventory-II questionnaires Demographic	2 months	There were three sessions, each lasting sixty minutes.	Compared to the pre-intervention and control groups, yoga significantly reduced the diastolic BP and depression levels.	Because yoga significantly affects blood pressure and symptoms of depression, it can be used as an alternative or complementary treatment for people with PMS.

RESULT

The number of articles that were retrieved, reviewed, and excluded is shown in Figure 1. In the end, 17 studies that focused on menstrual disorders, Yoga, and Pilates were included because they matched the study's objectives. Excluded were studies that had nothing to do with these themes. Key findings are summarized in Table 1, which also highlights the advantages of Yoga and Pilates in treating pain, sleep, premenstrual symptoms, and emotional regulation.

Pilates has been demonstrated to improve ovulation and quality of life by lowering body mass index, controlling menstrual cycles, and alleviating dysmenorrhea in PCOS. In addition to decreased PMS symptoms and medication use, Çitil et al. [9] reported significant improvements in VAS, CMSS, PSST, and flexibility/strength ($p < 0.01$). An 8-week Pilates program significantly decreased menstrual pain, according to Niroomand et al. (2024) [10] reported better emotional regulation ($p < 0.0001$). Song et al., Paithanker et al. Gotpagar et al. , and Soni et al. all reported similar results ($p < 0.0001$) [11,12,13]. Yoga improves mindfulness and stress management, which reduces PMS-related mood swings. Haryono et al. [19] reported greater reductions in NRS scores among yoga practitioners ($p = 0.013$), and several studies [15,16,17] support the idea that yoga is effective in reducing menstrual symptoms ($p < 0.001$).

DISCUSSION

The purpose of this study was to assess how well Yoga and Pilates can be used to treat menstrual disorders. Menstrual disorders, such as heavy bleeding, pain, or absent periods, are among the most common reasons for gynecological consultations worldwide. This type of disorder includes cycles that are more than three months apart, less than 21 days apart, or more than 10 days apart. Furthermore, a higher risk of cardiovascular disease has been linked to irregular menstruation, highlighting the significance of early detection and treatment. Advances in menstrual tracking and standardized classification schemes, like FIGO's, have enabled better diagnosis and treatment [18]. Menstrual pain may be lessened by non-pharmacological therapies like acupuncture, massage, TENS, heat therapy, and exercise, including Yoga and Pilates [19]. Pilates places a strong emphasis on posture, breathing, core strength, and controlled movement. According to research conducted in 2016, it has benefits for improving flexibility, lowering anxiety and depression, and strengthening abdominal muscles [20]. Whereas, Bhatt et al. (2024) [21] using the MSQ and SF-36, randomized about 30 women with primary dysmenorrhea to either chair aerobics or Pilates. They found no significant difference in symptom relief or quality of life ($p > 0.05$), indicating that chair aerobics was superior to Pilates. By combining physical postures, breath control, and relaxation, yoga has been demonstrated to help reduce stress and anxiety as well as PMS symptoms like breast tenderness, bloating, and cramps [22]. Additionally, by encouraging parasympathetic activity through methods like Yoga Nidra, it supports hormonal balance and relaxation [23]. Further research on

yoga's effects on menstrual disorders is required to increase our understanding and enhance its therapeutic applications. In the long run, stronger treatments will improve menstrual health and overall wellbeing as a result of more research in this field. One of the primary limitations of this review is the lack of a meta-analysis, which restricts the ability to draw statistically sound conclusions across studies. The inclusion criteria were limited to full-text, publicly available research published between 2015 and 2025, which might have resulted in selection bias and left out relevant research published before or after these dates. Furthermore, the exclusion of unpublished work, conference papers, and dissertations may have resulted in the loss of significant insights from grey literature.

CONCLUSION

According to recent studies, Yoga and Pilates are both useful for treating menstrual issues and easing pain. They improve circulation, ease cramps, encourage hormonal balance, and lessen stress, which is a major contributor to irregular menstruation. When combined, they provide a comprehensive approach to menstrual health and offer substantial alleviation of discomfort associated with the cycle.

COMPETING INTEREST

The author has declared that there is no competing interest.

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