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Non-pharmacological management of menstrual low back pain: A systematic review of yoga interventions

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Abstract

Menstrual low back pain (MLBP) is a common manifestation of primary dysmenorrhea that negatively affects women's daily activities, academic performance, and quality of life. While pharmacological treatments such as NSAIDs are widely used, they may cause side effects or be unsuitable for long-term management. This systematic review aims to evaluate the effectiveness of yoga as a non-pharmacological intervention for reducing menstrual low back pain and improving related outcomes. This review followed the PRISMA 2020 guidelines. Literature searches were conducted in PubMed, Scopus, Web of Science, Cochrane Library, and Google Scholar from January 2010 to September 2025. Eligible randomized controlled trials (RCTs) involving yoga interventions for women with primary dysmenorrhea or menstrual low back pain were included. The PICO framework guided study selection. The methodological quality of studies was assessed using the TESTEX Scale. Six RCTs with sample sizes ranging from 34 to 92 participants met inclusion criteria. Yoga interventions—ranging from simple poses to integrated programs combining asana, pranayama, and relaxation—significantly reduced pain intensity (VAS/NPRS). Additional benefits included improved quality of life, psychological well-being, and body awareness. Yoga effectively reduces menstrual low back pain and enhances multidimensional aspects of health. As a safe and accessible approach, yoga may serve as a complementary therapy in managing dysmenorrhea-related back pain.

Introduction

Menstrual low back pain (MLBP), often accompanying primary dysmenorrhea, is a prevalent gynecological issue among women of reproductive age. It is characterized by cramping pain radiating from the lower abdomen to the lumbosacral region, affecting productivity and quality of life (Ju et al., 2014; Bernardi et al., 2017). Pharmacological options such as nonsteroidal anti-inflammatory drugs (NSAIDs) and hormonal therapy are commonly used but may not be suitable for all women due to contraindications, side effects, or limited long-term applicability (Ortiz, 2010). Consequently, there is increasing interest in safe, accessible, and non-pharmacological approaches for menstrual pain management.

Physiologically, menstrual low back pain may arise from uterine ischemia and excessive prostaglandin secretion, leading to referred pain in the lumbosacral region and secondary muscle tension. These symptoms are often accompanied by increased sympathetic activity and reduced pelvic circulation, which exacerbate pain and discomfort. Conventional pharmacological management mainly targets uterine contractions but does not address musculoskeletal tension or psychosomatic factors. This highlights the need for holistic interventions that can simultaneously influence both physiological and psychological dimensions of pain.

Yoga, a mind–body discipline integrating postures (asanas), breathing control (pranayama), and relaxation, has been shown to reduce menstrual pain, anxiety, and physical tension by improving autonomic balance and circulation. Several randomized controlled trials (RCTs) have reported positive effects of yoga in women with primary dysmenorrhea (Rakhshaee, 2011; Yonglitthipagon et al., 2017; Kirca & Celik, 2021; Günebakan & Acar, 2023). However, most previous reviews examined dysmenorrhea in general and rarely distinguished menstrual low back pain as a specific

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clinical manifestation. Considering that MLBP may involve unique neuromuscular and biomechanical mechanisms, a focused synthesis is needed to clarify yoga's specific therapeutic role.

Therefore, the aim of this systematic review is to synthesize and critically evaluate evidence from randomized controlled trials on the effectiveness of yoga interventions in reducing menstrual low back pain among women of reproductive age.

Method

Protocol and Registration

This systematic review adhered to the PRISMA 2020 guidelines. The protocol was not registered on PROSPERO.

Eligibility Criteria

Studies were included if they met the following PICO criteria:

Table 1
PICO.

Component	Description
Population (P)	Women of reproductive age with primary dysmenorrhea or menstrual low back pain
Intervention (I)	Yoga practices (asana, pranayama, relaxation)
Comparison (C)	Control or standard care
Outcome (O)	Pain intensity, pain duration, quality of life, psychological well-being

Additional inclusion criteria: RCTs or quasi-experimental studies, English language, full-text availability. Exclusion: secondary dysmenorrhea, combined interventions, case reports, and reviews.

Search Strategy

Databases searched: PubMed, Scopus, Web of Science, Cochrane Library, and Google Scholar (Jan 2010–Sep 2025). Search terms: "yoga," "asana," "pranayama," "dysmenorrhea," "menstrual pain," "menstrual low back pain." Reference lists of relevant articles were screened manually.

Eligibility Assessment

Two independent reviewers screened titles, abstracts, and full texts. Discrepancies were resolved through discussion and consensus.

Quality Assessment

The methodological quality of included studies was assessed using the TESTEX Scale (Smart et al., 2015), designed for evaluating exercise-based interventions. Table 2 presents the quality scores.

Data Extraction

Extracted data included study design, sample characteristics, intervention type, duration, and outcomes.

Results

The initial search identified 543 articles. After removing duplicates and applying eligibility criteria, 6 RCTs were included. The updated PRISMA diagram (Figure 1) illustrates the selection process.

Table 3 shows the characteristics of the included studies, including author, country, sample size, type of yoga intervention, intervention duration, and main outcomes. All included studies evaluated yoga interventions in women with primary dysmenorrhea, and four specifically reported outcomes related to menstrual low back pain. Pain intensity was measured using the Visual Analog Scale (VAS) or Numeric Pain Rating Scale (NPRS) in all studies.

Table 2
Methodological quality assessment using TESTEX Scale.

Study	Total Score (/15)	Quality Interpretation
Rakhshaee (2011)	12	High
Yonglitthipagon et al. (2017)	13	High
Kirca & Celik (2021)	11	Moderate
Günebakan & Acar (2023)	13	High
El Nahas et al. (2024)	12	High
Rakhshaee (2011, repeat group)	10	Moderate

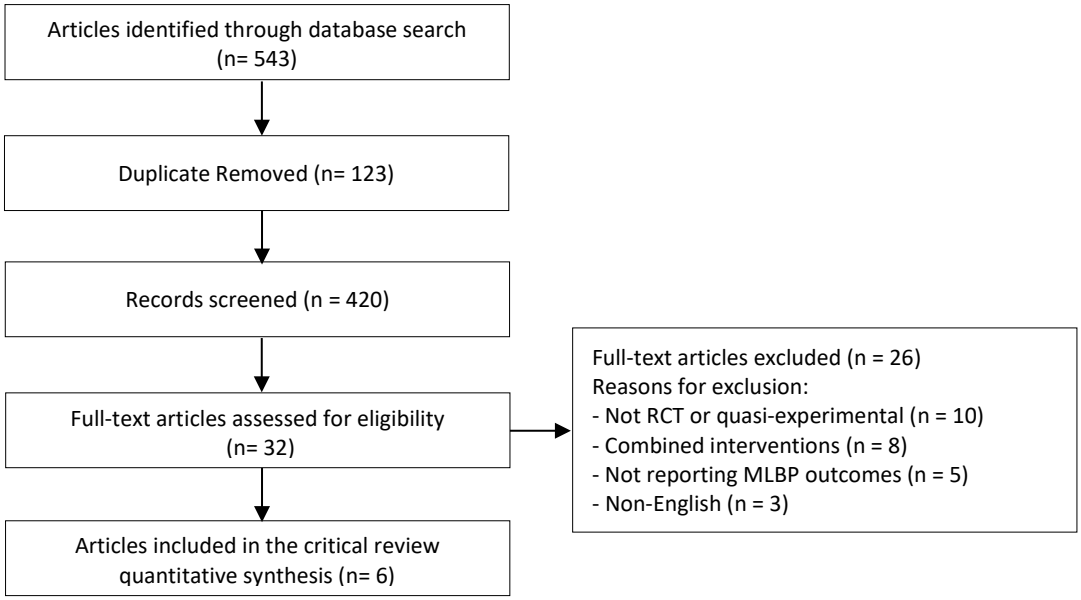

Figure 1. PRISMA Flowchart.

Table 3
Characteristics of included studies.

Author (Year)	Country	n	P (Population)	I (Intervention)	C (Comparison)	O (Outcome)	Duration	Main Findings
Rakhshaee (2011)	Iran	92	Female university students with primary dysmenorrhea (18–22 yrs)	3 yoga poses (Cobra, Cat, Fish)	No intervention (control)	VAS pain intensity, pain duration	2 months	Significant reduction in pain intensity and duration compared to control
Yonglitthipagon et al. (2017)	Thailand	34	Young women with primary dysmenorrhea (18–22 yrs)	Yoga program (asana + pranayama, 30 min/day, 2x/wk)	No exercise (control)	VAS pain intensity, QoL, physical fitness	12 weeks	Decreased menstrual pain, improved QoL and fitness
Kirca & Celik (2021)	Turkey	72	Female university students with dysmenorrhea (18–24 yrs)	Structured yoga-based exercise program (12 sessions)	Routine care/control	Dysmenorrhea pain score, QoL	8 weeks	Significant reduction in pain scores and improved QoL
Yonglitthipagon et al. (2017)	Thailand	58	Female students with dysmenorrhea	Integrated yoga practice (asanas, breathing, relaxation)	Control (no exercise)	VAS pain, psychological distress	12 weeks	Reduced menstrual low back pain and distress
Rakhshaee (2011)	Iran	48	Female students with dysmenorrhea	Daily yoga poses during luteal phase	Control	VAS pain intensity, duration	2 months	Lower pain scores and shorter pain duration
Günebakan & Acar (2023)	Turkiye	62	Women with primary dysmenorrhea (18–45 yrs)	Tele-yoga (Hatha yoga via Zoom, 45 min, 2x/wk)	No intervention (control)	Menstrual Symptom Scale, VAS, QoL, anxiety, body awareness	8 weeks	Reduced pain, improved body awareness, lower anxiety

All studies demonstrated a significant reduction in pain intensity among participants in the yoga intervention groups compared with control groups. In addition, several studies reported secondary benefits such as decreased anxiety, improved body awareness, and enhanced quality of life.

Discussion

This systematic review synthesized evidence from six randomized controlled trials examining the effects of yoga on menstrual low back pain and primary dysmenorrhea. The overall findings consistently indicate that yoga interventions are effective in reducing pain intensity and improving secondary outcomes such as quality of life, psychological well-being, and physical fitness.

These effects are consistent with findings that yoga enhances parasympathetic activity and reduce systemic inflammation, contributing to lower pain sensitivity and improved autonomic regulation (Telles et al., 2020; Villemure et al., 2015). Moreover, improved blood flow and pelvic mobility from specific asanas such as Bhujangasana and Marjariasana may alleviate ischemic discomfort related to menstrual pain (Chaudhary et al., 2022). Several mechanisms may explain the analgesic effects of yoga in women with menstrual low back pain. Yoga postures, particularly forward bends, spinal extensions, and pelvic tilts, help to relax paraspinal and pelvic floor muscles, improve pelvic blood circulation, and reduce ischemic pain caused by elevated prostaglandin levels during menstruation. Breathing techniques (pranayama) and relaxation practices modulate autonomic nervous system activity, enhancing parasympathetic dominance, lowering sympathetic overactivity, and thereby reducing muscle tension and pain perception. In addition, mind body awareness cultivated through yoga may improve coping strategies and reduce catastrophizing, both of which are associated with chronic pain perception. These physiological and psychological mechanisms support the integration of yoga as a comprehensive intervention for dysmenorrhea-related pain.

The results of this review are consistent with previous systematic reviews and meta-analyses that have reported the beneficial effects of yoga in managing dysmenorrhea symptoms (Kim & Kim, 2019; El Nahas et al., 2024). Similar meta-analyses have also reported moderate-to-large effect sizes for yoga interventions on menstrual pain reduction, supporting the robustness of these findings (Yeh et al., 2022). Importantly, however, most prior reviews have focused broadly on dysmenorrhea without distinguishing between abdominal pain and menstrual low back pain. By specifically emphasizing MLBP, this review addresses a gap in the literature, as low back pain during menstruation may involve additional musculoskeletal and neuromotor factors beyond uterine contractions alone. This distinction is clinically relevant because low back pain may persist longer and cause greater disability compared with isolated abdominal cramping.

An interesting observation across the included studies is the diversity in yoga protocols, ranging from simple asanas such as Cobra, Cat, and Fish poses (Rakhshaee, 2011) to more comprehensive programs combining asana, pranayama, and relaxation (Yonglitthipagon et al., 2017; Günebakan & Acar, 2023). Despite this heterogeneity, all interventions demonstrated significant reductions in pain intensity, suggesting that even brief and targeted yoga practices may confer meaningful benefits. Nevertheless, the magnitude of improvement was greater in studies with longer intervention periods (≥ 8 weeks) and higher frequency of practice (2–3 sessions per week). This implies a possible dose–response relationship between yoga practice and pain reduction.

Beyond pain, several trials also reported improvements in quality of life, psychological distress, and body awareness (Kirca & Celik, 2021; Günebakan & Acar, 2023). These findings suggest that yoga provides multidimensional benefits, aligning with the biopsychosocial model of pain. Unlike pharmacological treatments that primarily target pain symptoms, yoga may enhance physical functioning, emotional regulation, and social participation. This broader impact underscores yoga's role not only as a pain management tool but also as a holistic approach to women's health.

Despite promising results, certain limitations must be acknowledged. First, the majority of included studies were conducted in Asia and the Middle East, with relatively small sample sizes, limiting generalizability across diverse cultural and demographic populations. Second, blinding of participants was not feasible in most trials, which may introduce performance bias. Third, differences in yoga style, frequency, duration, and delivery (in-person vs. tele-yoga) limit the comparability of results. Fourth, only a few studies specifically measured low back pain separately from abdominal pain, which highlights the need for future trials to differentiate these outcomes clearly.

From a clinical perspective, the findings suggest that yoga may be recommended as a complementary and non-pharmacological approach for women

experiencing menstrual low back pain. Given its low cost, safety profile, and accessibility, yoga can be integrated into physiotherapy programs, community health education, and self-care strategies for adolescents and young women. For implementation, standardized yoga modules focusing on safe and practical poses, guided by trained professionals, should be developed and tested in larger populations.

Conclusion

Yoga is a safe and effective complementary therapy for reducing menstrual low back pain and improving overall well-being. The TESTEX quality assessment supports the methodological strength of existing trials. Integration of yoga into physiotherapy and women's health programs is recommended.

Authors' Contribution

The author solely contributed to the study design, data collection, statistical analysis, manuscript preparation, and approval of the final version of the manuscript.

Ethical Approval

Ethical approval was not required for this study, as it was based exclusively on previously published articles that had obtained prior institutional ethical clearance.

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Conflict of Interest

The authors hereby declare that there was no conflict of interest in conducting this research.

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