Review Article

Journal of Iranian Medical Council, Volume 10, Issue no. 1
http://dx.doi.org/10.18502/jimc.v10i1.23255

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Aerobic Exercises and Pelvic Floor Training in Improving Pain and Quality of Life in Primary Dysmenorrhea: A Systematic Review

Yuvakshi Bhatnagar, Manu Goyal, Aditi Popli and Kanu Goyal*

Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, Maharishi Markandeshwar Deemed to be University, Mullana, Ambala, Haryana, India

*** Corresponding author**

Kanu Goyal, MPT, PhD
Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, Maharishi Markandeshwar Deemed to be University, Mullana, Ambala, Haryana, India
Email:
kanu.goyal@mmumullana.org

Received: 7 Aug 2025
Accepted: 22 Dec 2025

Citation to this article
Bhatnagar Y, Goyal M, Popli A, Goyal K. Aerobic Exercises and Pelvic Floor Training in Improving Pain and Quality of Life in Primary Dysmenorrhea: A Systematic Review. *J Iran Med Counc*. 2027;10(1):76-89.

Abstract

Background: Painful cramps before or during menstruation are referred to as Primary Dysmenorrhea (PD). This is to assess the impact of aerobic exercise and pelvic floor training on pain and Quality of Life (QoL) among women with PD, thus it is necessary to thoroughly evaluate the quality of the evidence that supports their efficacy.

Methods: PubMed, Cochrane Library, PEDro, and Google Scholar were searched for articles that were not restricted by language or publication date. The years that were searched from various data sources were from the year 2014 to 2022. The English-language searches included both randomised clinical studies and randomised control trials. “Pelvic floor training”, “aerobic exercises”, and “primary dysmenorrhea” were the search terms. Boolean operators used were “AND”, and “OR”. In this systematic review, the participants had to be between the ages of 17 and 45, have PD, have a PEDro score of five or above, and be female only. Two reviewers independently assessed the quality of each study using the PEDro scale. Pain intensity and QoL outcomes were extracted and compared across studies. While meta-analysis was not feasible, consistent patterns and statistically significant results (p=0.005) were observed.

Results: Exercises that improve heart rate and pelvic floor strength, along with aerobic sessions, were been established to significantly relieve symptoms in patients with PD (p=0.005). After various levels of follow-up in the investigations, the mentioned differences remained significant.

Conclusion: This systematic review suggests that aerobic activities and pelvic floor training might help treat patients with PD.

Keywords: Aerobic exercise, Dysmenorrhea, Pelvic floor training, Quality of life, Women

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Introduction

A woman's reproductive cycle is strongly influenced by her menstrual cycle. The menstrual cycle frequently starts with an obnoxious cramping sensation in the lower abdomen. The term dysmenorrhea is derived from the Greek words meno (month) and rheas (flow), which denote troublesome menstrual flow. Dysmenorrhea is the most common gynaecological condition experienced by fertile women. Typically, there are two types of dysmenorrhea: primary and secondary. This review focuses on Primary Dysmenorrhea (PD) (1-3).

PD is characterized by painful menstruation and cramping in the lower abdomen, frequently accompanied by other symptoms as headaches, sweating, nausea, vomiting, diarrhoea, and tremulousness. For women with normal pelvic anatomy, all these symptoms occur either prior to or during the menstrual cycle. PD causes recurring crampy pain during menstruation, without any detectable pelvic pathology. Secondary dysmenorrhea is period pain linked to endometriosis or other pelvic pathologies. PD typically develops in adolescence, following the onset of ovulatory cycles (4-7).

Menstruating women endure severe menstrual pain at a high rate, with 21% to 26% reporting it (Grandi *et al*, 2012). Women with PD have pain, sleep problems, and decreased QoL. According to Maybin and Critchley (2011), the body's increased prostaglandin levels are the cause of the pain associated with dysmenorrhea. According to Mentheny and Smith (1989), stress is thought to be the primary contributing factor in the association between physical exercise and dysmenorrhea (8).

The prevalence of PD is very high, particularly in teenagers. Over 50% of women who menstruate and up to 90% of teenage girls worldwide report having periods, with 10% to 20% of them characterizing their discomfort as severe and upsetting. The discomfort is strong enough to interfere with everyday activities, comparable in intensity to renal colic pain, and may be accompanied by cardiac irregularities (9-11). A favourable family history, early menarche (less than 12 years), low or high body mass index (less than 20 or more than 30), nulliparity, smoking, longer cycles or duration of bleeding, irregular or heavy menstrual flow, premenstrual symptoms, clinically suspected pelvic inflammatory disease, history of sexual assault, psychological symptoms like anxiety and depression, and young age (less than 30) are risk factors for dysmenorrhea (12-14).

Aerobic exercise programs have been utilized to manage dysmenorrhea symptoms in numerous studies. Recent studies suggest that moderate to high-intensity aerobic training can reduce physical and psychological symptoms by affecting inflammatory mediators linked with this illness. Beta-endorphins and other natural opiates are thought to be released more readily when exercising at high intensities (15-17).

Pelvic rocking exercises can also help maintain a healthy body and are essential in reducing dysmenorrhea. Adolescents should be taught exercise to reduce discomfort, weariness, weakness, and nausea, enhance abdominal muscle strength, and promote physical and mental recovery. Adolescents with dysmenorrhea often miss school, sports, and social activities. A study of teenage girls in Egypt found that the prevalence of dysmenorrhea varied between rural and urban areas, at 80.1 and 69.6%, respectively (18,19).

Menstrual discomfort is typically caused by ischemia. Prostaglandins are released during menstruation, which results in uterine contractions. In the uterus, prostaglandin primarily causes two effects: first, spiral artery vasospasm, which causes ischemic necroses that cause cramps and muscular spasms as well as the darkening of the endometrial superficial layer; second, it increases myometrial contractions (20).

Primary dysmenorrhoea affects over 50% of youth and 30-50% of menstrual women, causing discomfort. The prevalence of PD is the highest among women aged 16-25, but it is often underdiagnosed due to the belief that pain is a natural component of the menstrual cycle, leading to a lack of medical attention despite significant misery (21).

A recent study on cytokine gene expression profiles found that women with PD had a shift in the balance of pro-inflammatory cytokines and anti-inflammatory transforming growth factor-beta family member genes, with up-regulation of pro-inflammatory cytokines and down-regulation of anti-inflammatory responses throughout the menstrual cycle (22).

As to the World Health Organization, Quality of

Life (QoL) is defined as "a person's view of their place in life within the framework of their culture and value systems, as well as in connection to their objectives, standards, expectations, and concerns". Research suggests that dysmenorrhea can negatively impact an individual's mental health, QoL and social life, leading to a worse perception of QoL in women (23-25).

Dysmenorrhea typically causes lower abdominal/pelvic pain, as well as physical and psychological concerns. Common physical symptoms include systemic, gastrointestinal, and elimination-related issues. Symptoms may include headaches, lethargy, weariness, sleepiness, sore breasts, heavy lower belly, backache, aching knees and inner thighs, myalgia, arthralgia, and swelling in the legs. Gastrointestinal symptoms include fluctuating appetite, nausea, vomiting, and bloating, whereas elimination symptoms include constipation, diarrhea, frequently peeing, and sweating. Females with dysmenorrhea may have psychological symptoms as anxiety, melancholy, irritability, and nervousness. It was found that women with dysmenorrheic pain had three times as many symptoms of anxiety, despair, and excess somatic symptoms (26-31).

NSAIDs are affordable anti-inflammatory and analgesic medications that are mostly used to treat PD. They are regarded as the cornerstone of treatment for dysmenorrhea since they prevent cyclooxygenase from acting, which prevents prostaglandin synthesis. For women who prefer to use analgesics or in situations where contraceptives are prohibited, NSAIDs are advised as the first line of treatment (32-39).

PD was shown to occur at higher rates in those who were lacking in physical activity. Physical activity positively impacts blood circulation, prostaglandin levels, and stress, which reduces pain and the incidence of dysmenorrhea. Consequently, women who avoid participating in exercise do not benefit from endogenous opioids. This motif encourages women to continue physical activity (40-42).

Exercise, whether active or passive, has been shown to reduce pain in PD. Exercise is thought to decrease the frequency and severity of PD (43,44).

The severity of experiencing menstrual changes varied with age. Decreases in pain intensity, negative moods, decreased focus, and behavioural fluctuations have all been linked to aging (45).

Defining the beginning, length, severity, aggravating and attenuating factors, and link with menstruation through a pain and symptom history is beneficial. Investigate gastric, urinary, musculoskeletal, and psychological complaints to determine their impact on daily activity and work/school function. If sufficient, a sexual history should include dyspareunia and any prior pelvic infections or STDs. Prior treatments should be carefully documented, including the medicine administered, dosage, timing, and efficacy. To diagnose secondary dysmenorrhea, a physical examination and potentially an ultrasound evaluation are crucial. Although vaginal swabs and the Complete Blood Count (CBC) are advised if a picture of secondary dysmenorrhea is suspected, biochemical testing is never definitive (46).

Dysmenorrhea can cause some women suffer from mental health problems, which can lead to social isolation and a reduction in their participation in society (47). More than ten years ago, a comprehensive analysis of dysmenorrhea in the UK population revealed prevalence rates ranging from 41 to 97%, with significant severity in 11 to 14% of women. Physical activity and consistent exercise have been promoted as useful treatments and preventative measures for dysmenorrhea in the last 30 years (48-52).

Exercise raises endorphin levels, which in turn raises pain threshold in women of reproductive age via influencing blood steroid hormone levels. Exercise lowers sympathetic nervous system activity, which in turn lowers dysmenorrhea symptoms. To stimulate the release of natural opiates like beta-endorphins, it is thought that strenuous exercise is more beneficial. Women who exercise regularly may be obscured from mood decline prior to and during menstruation, according to some research (53-55).

Pelvic exercise reduces pelvic congestion and relieves pain by increasing vasodilatation, releasing endogenous endorphins, suppressing prostaglandins, and blocking blood flow from viscera. Further, physical activity improves hormonal balance, which shortens the duration of menstruation (56).

Stress reduction techniques and physical activities like aerobics and pelvic clock exercises can effectively treat painful menstruation by reducing stress and reducing stress-related symptoms, enhancing pain

threshold and overall well-being (57).

This study aims to assess the effectiveness of an exercise intervention for reducing the menstrual symptoms associated with PD in women (58).

The primary objectives include:

- Assessing the effectiveness of current literature in context to aerobic exercises in reducing the intensity and duration of PD.
- Assessing and synthesizing the existing evidence on the effectiveness of pelvic floor training in improving the QoL and pain in PD.
- Does the aerobic exercises and pelvic floor training have significant effects in improving QoL and pain in PD?

Materials and Methods

Project approval

The Approval for the project was given by Student Project Committee of MMIPR, MM(DU), Mullana-133203, with a reference No. SPC-2022-15.

Eligibility criteria

Participants in the study had to be between the ages of 17 and 45, have PD, have a PEDro score of five or above, and be female only. Male participants and unpublished articles were the exclusion criteria for the research selection.

Information sources

Articles published between 2014 to 2022 were searched for using the electronic databases Cochrane, PubMed, and Google Scholar to compile the most recent evidence about aerobic workouts and pelvic floor training for PD. All the papers were identified using the PICO research questions as well as the inclusion and exclusion criteria (Table 1). Assessment of risk of bias was done in table 2.

Study selection

The review was conducted in accordance with using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) standards as a guide. Additionally, this assessment was posted on PROSPERO (Registration ID: CRD42024580581) on August 21, 24.

Data extraction

Each of the selected articles provided the following details: (1) author names and publication information; (2) number of participants in each group according to independence and break; (3) duration and intensity of physical treatment given to patients in the experimental group; and (4) primary outcome measure. A single table presents the objectives, designs, population techniques, interventions, outcome measures, findings, and conclusions of the included studies.

Data synthesis

Each of the seven included Randomized Controlled Trials (RCTs) was carefully reviewed to extract relevant data on the participant characteristics, types of interventions, and outcomes related to pain intensity and QoL. These results were analysed to identify consistent patterns in effectiveness of intervention.

All the studies reported statistically significant improvements in either pain, QoL, or both, following intervention. Despite differences in the type and duration of exercise protocols used in the seven RCT'S, the results generally supported the positive impact of physical activity and pelvic floor exercises in managing pain associated with PD.

The emphasis was placed on outcome measures such as the Visual Analog Scale (VAS), Numeric Pain Rating Scale (NPRS), and validated QoL questionnaires like SF-36 and WHO-BREF for a comprehensive synthesis of the findings.

Table 1. Selection of the studies using the PICO process

Population	Intervention	Comparators	Outcomes
Only the females with primary dysmenorrhea are included in the study, and participants aged 17 to 45 years old are involved in the study	Physiotherapy intervention included aerobic exercises and pelvic floor training	Studies included a control group, a placebo intervention, and no intervention	Age, BMI, Visual analogue scale (VAS), Numeric pain rating scale (NPRS), DASS 21, WHO-BREF, SF-36, VMSS, Q-LES-Q-FS

Table 2. Assessment of risk of bias

Author/Year	1	2	3	4	5	6	7	8	9	10	11	Total score
El–Refaye *et al* (2014) (71)	1	1	0	1	1	0	1	1	1	1	1	9
Dehnavi Z *et al* (2015) (72)	1	1	0	1	1	0	0	1	1	1	1	8
Sutar A *et al* (2016) (73)	1	1	0	1	0	0	0	1	1	0	1	6
Kannan P *et al* (2019) (74)	1	1	1	1	0	0	1	1	1	1	1	9
Agarwal N *et al* (2021) (75)	1	0	0	0	0	1	1	1	1	1	0	6
Adaora NS *et al* (2021) (76)	1	1	0	1	0	1	1	1	1	1	1	9
Qamar A *et al* (2022) (77)	1	1	0	0	0	0	1	1	1	1	1	7

Criteria: 1. eligibility criteria were specified; 2. subjects were randomly allocated to groups; 3. allocation was concealed; 4. the groups were similar at baseline; 5. there was blinding of all subjects; 6. there was blinding of all therapists who administered the therapy; 7. there was blinding of all assessors who measured at least one key outcome; 8. measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups; 9. intention to treat analysis; 10. Comparison between the groups; 11. the study provides measures of variability.
Each positive point in studies is given a score of 1 on 0 to 10 score.

Results

Study selection

The initial search yielded 2203 papers. Out of these, 1463 duplicates were removed and the remaining articles were evaluated on the basis of the title and abstract. Records removed due to non RCT's were (n=541). Articles that qualified for full text screening were (n=199).

Reports excluded were treatments other than aerobic exercise and pelvic floor training (n=190). Reports that are evaluated for eligibility were (n=9). Reports extracted due to incomplete information (n=2). Publications covered in the review (n=7). All the seven studies that met the inclusion criteria were randomized clinical trials and randomized controlled trails which were further selected for the systematic review. In the supplementary search, no article met the inclusion criteria as a result of which no further studies were incorporated for the review. The PRISMA flow diagram is shown in figure 1.

Study characteristics

Despite the prevalence of menstrual disorders amongst young females, many do not seek professional help due to the idea that it will not be effective (59,60). Gynaecologists recommend a comprehensive strategy for managing symptoms. Non-pharmacological treatments include herbal medicines, dietary supplements, lifestyle adjustments, and physical activity. For years, the notion that exercise can prevent or alleviate symptoms has been widely accepted (56,61).

Physical activity and exercise have been linked to reduced menstruation symptoms, according to experimental researches (62-64). Fundamental muscle conditioning appears to have the potential to alleviate PD by increasing pelvic circulation and metabolism (65-67).

For many women, exercise has become an essential part of their daily life. Regular exercise and physical activity are useful ways to control stress and its symptoms. Pelvic rocking works well in managing dysmenorrhea and maintaining overall wellness. To strengthen abdominal muscles, reduce discomfort, fatigue, weakness, and nausea, and aid in both physical and mental recovery, it is necessary to teach women how to exercise (68,69).

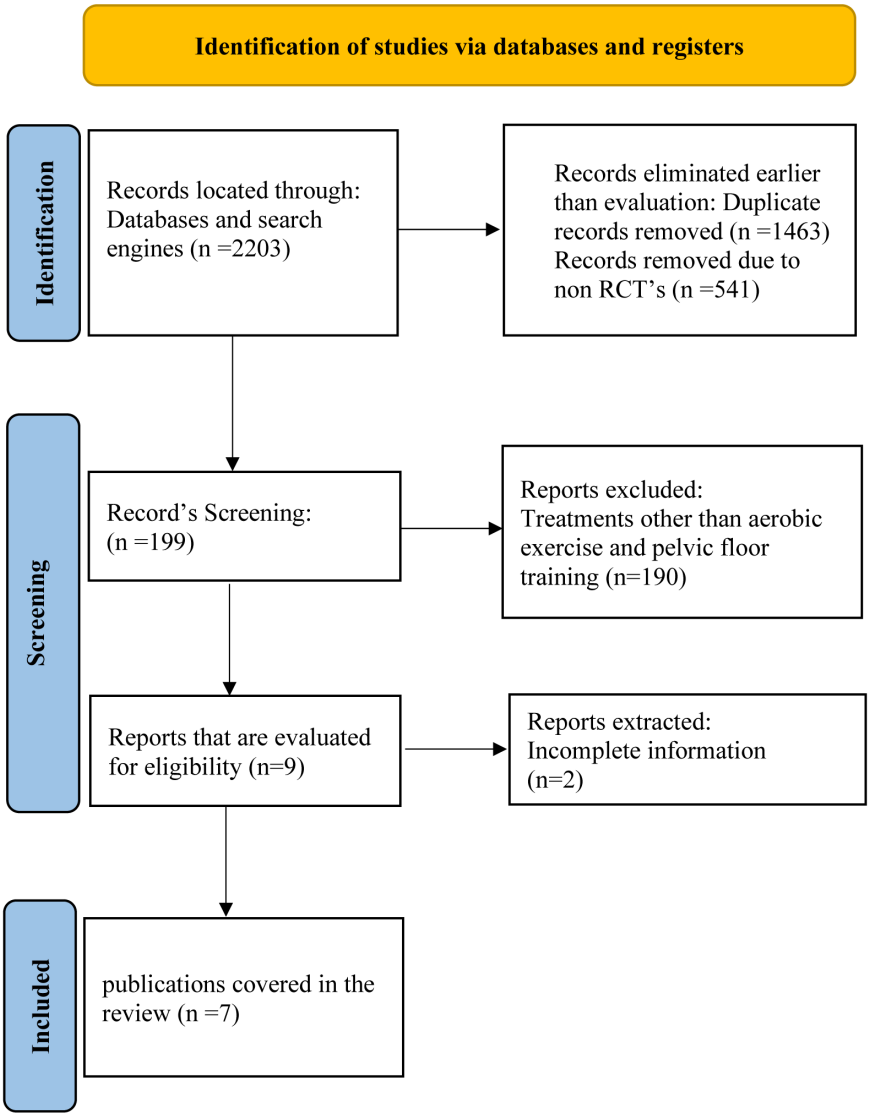


Figure 1. Flow diagram of the article selection for review.

Thus, aerobic activity may enhance well-being, ease stress, and alleviate PD by generating endorphins. Endorphin secretion from the brain can lead to feelings of happiness and comfort (44,70).

The study characteristics are included in table 3.

Risk of bias in the included studies

The procedure of generating the randomly assigned item sequences was almost always free of bias when the hidden allocations were used. A significant risk of bias existed since items were blinded to both participants and experts. The general availability of significant research's methodology and findings is the reason behind this. The risk of bias was evaluated using RobVis Tool along with the RoB 2.0 dataset. Every study was assessed independently by the first reviewer (Figures 2 and 3).

Synthesis of the results

Seven articles were included in the data extraction process out of the 2203 studies that were chosen. These investigations that were experimental by nature and carried out in Indore, Bangalore, New Zealand, India, Iran, Pakistan, and Egypt, indicate that these countries have been the primary ones focusing on this subject. In addition, the trials examined the effectiveness of pelvic -floor training and aerobic activity on pain as well as QoL in individuals with PD.

Principle findings

The study demonstrated that for individuals with PD, aerobic exercises and pelvic floor training dramatically reduced discomfort and improved QoL. It seems to be a successful approach to strengthen the pelvic floor muscles and improve general QoL in

Table 3. The characteristics of RCT studies included

Author/ year	Objective	Experimental group	Control group	Outcome measures	Result
El–Refaye *et al* (2014) (71)	To find out how aerobic exercise combined with pelvic rocking affects women with primary dysme-norrhea's quality of life	In addition to pelvic rocking exercises, engaged in aerobic exercise training program	Only pelvic rocking exercises were given to control group	The Dysmenorrheic Pain Intensity Scale (PPi) rates pain from 0 (no pain) to 4 (excruciating pain). The SF-36v2 is a 36-question survey that assesses quality of life, providing physical and mental health ratings across eight scales of functional health and well-being	Following a three-month training program, we saw a notable rise ($p<0.001$) in quality-of-life scores and a notable drop ($p<0.001$) in PPi scores. QOL was higher and the PPi scores decreased more in the aerobic plus pelvic rocking exercise group (A) than in the pelvic rocking exercise group (B), with percentages of improvement of 46.32 and 3.4%, respectively, and 83.33 and 13.4%, respectively, for both groups
Dehnavi Z *et al* (2015) (72)	This study aimed to find out how 8 weeks of aerobic training affected intensity of PD	Every workout phase comprised of three types of movements: aerobic (kinetic, such as arm extension and rotation, upper rotation), cold (resting and sitting motions to return to starting point), and warming (head movements, traction, shoulder rotation, and balance)	No intervention was given to the control group	The tool was a visual pain questionnaire that was filled out by both groups throughout the first three days of their menstrual cycles	Findings indicated that there was no consequential correlation between two groups and the degree of PD at the start of the trial. At the 4-week mark following the intervention, there were no significant changes observed in the control group ($p=0.423$). However, at the 8-week mark following the study, there were noteworthy changes seen in the intervention group in relation to the control group ($p=0.041$)
Sutar A *et al* (2016) (73)	This study aimed to assess the effect of aerobic exercise on PD	Workout regimens consisted of dynamic warm-up exercises for the trunk, upper, and lower limbs, as well as stretches like hamstring and lunges. Marching, step touches, grapevines, knee lifts, and jumping jacks were among the aerobic dance steps. The workout finished with a cool-down that included quadriceps and hamstring stretches	The control group did not engage in any physical activity or alteration to their lifestyle	The pain level at the start of the trial and during the next three cycles was measured using VAS. QOL was assessed using the Short Form- 36 (SF-36), (HR- QoL)	Exercise group experienced a considerable drop in pain (VAS scores), according to the data. The VAS scores showed a statistically significant ($p<0.05$) decline shortly following the exercise intervention commenced, and this decline persisted over the next three visits. There were notable differences in the exercise group's Physical Domain of Quality of Life
Kannan P *et al* (2019) (74)	To evaluate the effects of an aerobic exercise schedule based on treadmill, on PD discomfort and related symptoms.	For the next six months, the experimental group exercised at home without supervision after undergoing supervised aerobic training. Warm-up activities preceded treadmill training, which was followed by a cool-down exercises, such as pelvic stretches, mid-and lower back stretches, and abdominal strengthening gluteal muscles	The participants in the control group were called to confirm their group assignment and were asked to continue taking their regular painkillers. The study measures were completed by the women in the comparison group. They were not provided with any trial treatment	The validated Mc-Gill Pain Questionnaire (brief form), was used for pain assessment. This questionnaire has three subscales: the Present Pain Index is used to assess "present pain", the 0–100 *mm* Visual Analogue Scale is used to evaluate pain intensity, and the Pain Rating Index was used to assess pain quality. The validated 12-Item Short-form Health Survey (SF-12) was used to assess the QOL	Exercise significantly improved pain quality and intensity after 4-week training in collation to control group, with no significant difference in present pain. Pain interference also showed significant effects at 4 weeks. Exercise showed enduring advantages for current pain, quality of life, and everyday functioning for up to seven months

Contd. table 1.

Agarwal N *et al* (2021) (75)	To study how well pelvic floor muscle stretching and exercise can decrease discomfort and enhance quality of life in young women suffering from primary dysmenorrhea	Pelvic stretching, pelvic rocking, Kegel exercise, Flutter exercise, Mosher exercise, Subtle exercise was given as an intervention	There are no pelvic floor muscle exercise and stretching given to the control group	The World Health Organization Short Form (WHO-BREF) was used to measure QOL, and the NPRS (Numeric Pain Rating Scale) was the main outcome measure. The World Health Organization Short Form (WHO-BREF) was used to measure quality of life, and the NPRS (Numeric Pain Rating Scale) was the main outcome measure	Stretching and pelvic floor exercises were found to be beneficial in reducing discomfort and improving QOL for young women with primary dysmenorrhea in the current study
Adaora N.S *et al* (2021) (76)	To investigate the effects of aerobic exercises on QOL in individuals with PD	Various components of exercise program are the warm-up, the aerobic activity phase, and the cool-down	The control group did not follow out the training	The Q-O-L Enjoyment and Satisfaction Questionnaire - Short form (Q-LES-Q-SF) was used to measure QOL, the 3-*min* step test was used to measure exercise intensity, the VAS and verbal multidimensional scoring system (VMSS) were used to measure menstrual severity and pain intensity	The study found significant differences among Group A and Group B in VO2 max, VAS improvement, and Q-LES-Q-SF scores. Group A showed a higher improvement in VO2 max, VAS, and VMSS compared to Group B. These findings suggest that group A may be more effective in promoting physical activity
Qamar A *et al* (2022) (77)	To determine whether pelvic clock exercises and high intensity aerobics are beneficial for treating primary dysmenorrhea	Received a structured program which included warm-ups and high-intensity aerobics. Other exercises included a set of quadruped bent knee hip extension, London bridges, jumping lunges, mountain climbers and warm-ups	Pelvic clock exercises were done from 12 to 6 o'clock, as directed, progressively increasing in intensity over the course of many weeks to shift from 3-9 o' clock. then clockwise rotation, starting at 12 and going from 3 to 6 to 9 and ending at 12 o'clock	The VAS, DASS–21, and self-administered questionnaire for the symptoms of dysmenorrhea were being used to determine outcome measures	Participants who received treatment with high-intensity aerobic exercise demonstrated a statistically significant improvement in their ability to manage menstrual discomfort, with a p-value of less than 0.05, yet both strategies were successful in this regard

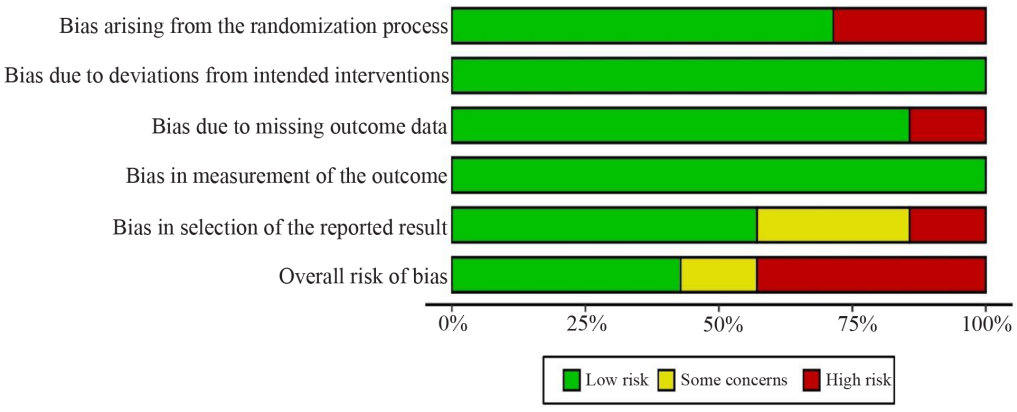


Figure 2. The risk of bias assessment.

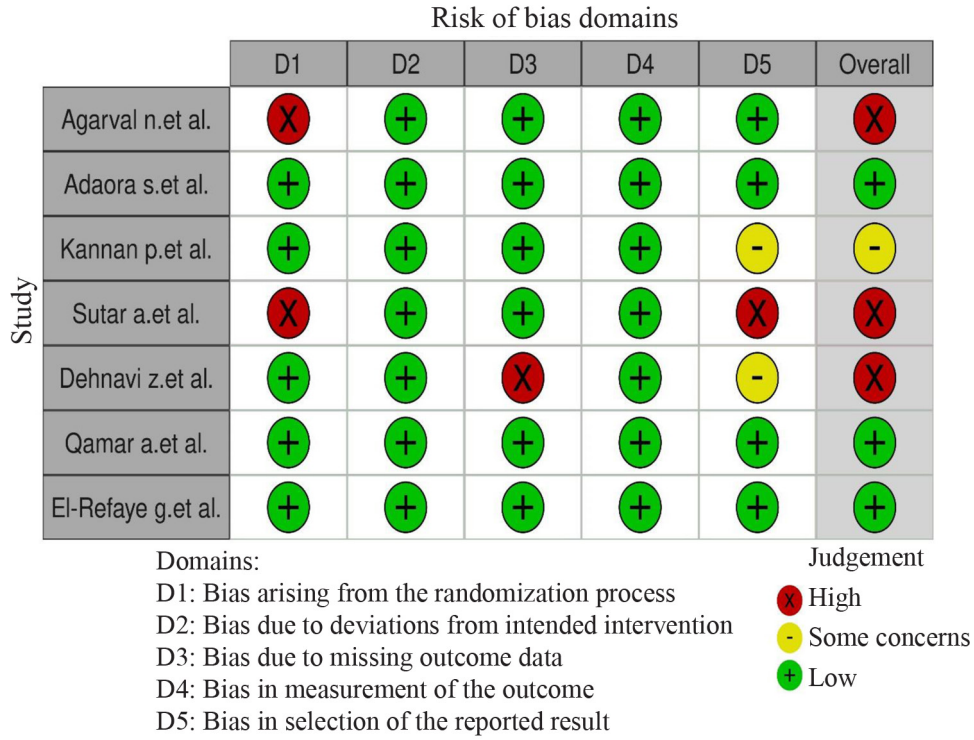


Figure 3. The risk of bias summary of the included articles for review.

addition to altering pain. The most significant finding indicates that aerobic physical activity and pelvic floor training are advantageous in mitigating pain associated with PD.

Long-term advantages like raising QoL can be achieved with its efficient nature. These findings still need to be validated by more comprehensive studies using larger sample sizes to assess the effect of recording in the days that follow. The results suggest that pelvic floor training and aerobic exercise may be implemented to assist patients with PD throughout their treatment programme.

Comparison with existing literature

The primary aim of this systematic review was to evaluate the effects of aerobic training and pelvic floor exercises and their influence on pain and QOL for young women with PD. As far as the authors currently know, this is the first study assessing how well aerobic exercises and pelvic floor training work to reduce pain, enhance QoL in young women with PD. This study includes seven experimental studies. All the seven were used in a systematic review. The treating examiner made the decision about the procedures selected after knowing which approaches would work best for a patient with the problem.

Refaye *et al* found out how aerobic exercise in addition to pelvic rocking affects QoL of women who have PD. A 12-week aerobic training program led to reduced pain intensity, fewer menstrual symptoms, and improved QoL in the participants. The intervention group showed marked progress in VO_2 max and satisfaction scores compared to the control group. It was found that aerobic exercises and pelvic rocking help women with PD feel less discomfort and have an advanced QOL.

Adaora *et al* discovered how aerobic exercise affects the QOL in young women with PD. The participants in the study underwent a 12-week regimen of aerobic exercise training; a control group did not take part in the trial. According to the findings of the mentioned study, aerobic exercise regimens consisting of 45-*min* sessions per week for 12 weeks were beneficial in enhancing the QoL and reducing discomfort in females who suffer from PD.

Kannan *et al* evaluated how well a treadmill-based aerobic training regimen alleviates PD discomfort associated symptoms. For four weeks, the experimental group participated in supervised aerobic training, and for the next six months, they

exercised at home without supervision. The control group got the same treatment as usual. According to this study, exercise significantly impacted pain, QoL, and function associated to PD.

Sutar *et al* aimed to examine the impact of aerobic exercise on PD. After the intervention, VAS ratings decreased significantly for each menstrual cycle. As soon as the exercise intervention began, the VAS scores began to decline. This decline was statistically significant ($p<0.05$) and continued over the next three sessions. According to this study, girls with PD were benefitted from aerobic exercise programme by experiencing less pain and better physical symptoms, which will positively impact their QoL.

Dehnavi *et al* investigated the effect of an eight-weeks aerobic exercise program on the severity of PD. Participants in the intervention group were engaged in aerobic activities three times per week for eight weeks, each session lasting thirty minutes, in accordance with the planned exercise schedule. According to the study's findings, aerobic exercises are beneficial to treat PD. Thus, PD can be managed by aerobic exercise.

Agarwal *et al* determined that pelvic floor muscle stretching and exercise can effectively reduce discomfort and enhance QOL in young women with PD. According to the statistics, both outcomes had statistically significant results. Women aged 20 to 40 who practiced Kegel and stretching routines over four weeks reported decreased pain intensity and better daily functioning. According to the study, young women with PD can improve their QoL and reduce pain by stretching and exercising their pelvic floor muscles.

Qamar *et al* suggested whether pelvic clock exercises and high-intensity aerobics are beneficial for managing PD. Both methods responded well to relieve the patients' menstrual pain, although patients receiving high-intensity aerobic exercise had more favourable outcomes than the other group ($p<0.05$). According to the study's findings, although pelvic clock exercises and high intensity aerobics both are beneficial for PD, high intensity aerobics appears to be more effective.

This review is clinically relevant since it represents those physiotherapeutic approaches such as aerobic exercises and pelvic floor training can help young women with PD. It was found in several studies that menstrual pain was reduced and QoL was improved. It supports the use of exercise programs, including aerobic and pelvic floor training, as an effective treatment that physiotherapists can offer to help manage menstrual pain and improve daily life functioning.

Strengths

This study stands out as one of the first to systematically explore both aerobic exercise and pelvic floor training together for managing PD. It pulls evidence from multiple randomized clinical and controlled trials, adding strength to its findings. The combination of two interventions is a unique angle that makes it especially useful. The review indicated that exercises like aerobic exercises and pelvic floor training helps women manage menstrual pain naturally and improve their QoL.

Limitations

This review summarized the research on physiotherapy interventions such as aerobic exercises and pelvic floor training. A few restrictions need to be addressed. Many records lack information, which may not always be a sign of poor trial execution, but without these details, it is challenging to determine the degree of bias in every trial.

Conclusion

Current systematic review of all the seven RCTs indicates that pelvic floor training and aerobic activities are a beneficial treatment for women with PD offering pain relief and an enhancement in QOL. All the reviewed articles demonstrated greater involvement of women in their jobs, society, and daily tasks, as well as decreased pain and an enhanced QoL. Additional high-quality research, particularly RCTs, remain necessary to validate these findings. Prospective research should incorporate a validated and large sized studies in their research methodology to ensure that the findings of those investigations may be incorporated into upcoming meta-analysis.

Conflict of Interest

Authors declare no conflict of interest.

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