



# A Literature Review on Effects of Low-Impact Evening Exercises on Perimenopausal Hot Flashes

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## Abstract

**Background:** Perimenopause is the stage before menopause when women have irregular periods and eventually stop having periods altogether. During this time, women often experience symptoms like hot flashes and changes in mood and bleeding patterns, which can affect their daily lives. Studies have found that exercise, specifically low-impact aerobic activities like walking, can improve the health and well-being of women going through perimenopause. It can help reduce hot flashes, improve sleep, and enhance overall quality of life, benefiting both physical and mental health.

**Aim:** This study aimed to find the effects of low-impact evening exercises on perimenopausal hot flashes.

**Search Method:** PubMed, Google Scholar, Science Direct, and ResearchGate from these databases, articles were searched using the keywords.

**Selection Criteria:** The articles were collected based on the inclusion criteria focusing on the hot flashes experienced by perimenopausal/menopausal women.

**Results:** The results show that many women are turning to alternative therapies to manage their symptoms of perimenopausal hot flashes although there are many treatment choices available, including hormonal and non-hormonal drugs, due to worries about the adverse effects of medications. Hot flashes have been linked to exercise as a non-pharmacological therapy option, but it's unclear what kind of exercise is best for perimenopausal women or when to start. The reviewed studies collectively suggest that exercise such as the low-impact ones, can have beneficial effects on alleviating menopausal and perimenopausal symptoms, including hot flashes. Low-impact exercises may also be effective in addressing these symptoms, as suggested by the overall findings of the reviewed literature. Thus low-impact evening exercises such as walking are beneficial and are especially important because many women report that hot flashes are worse in the evening.

**Conclusion:** Research from multiple studies indicates that engaging in low-impact exercises in the evening can effectively decrease hot flashes and improve the overall well-being of women experiencing perimenopause. These findings highlight the significance of including physical activity, particularly low-impact exercises, as a non-pharmacological solution for managing symptoms during this transitional phase. This intervention not only improves physical health but also addresses emotional and mental aspects, ultimately enhancing the overall quality of life for women in perimenopause. Thus, it is a valuable and easily accessible option for those seeking to manage their symptoms during this stage.

**Keywords:** Menopause; Perimenopausal women; Hot flashes; Vasomotor symptoms; Low-impact exercise; Evening exercises; Physical activity

## Introduction

During the climacteric period, women go through three stages: Menopause, perimenopause, and post-menopause. Perimenopause, also known as the menopause transition period, is when women experience changes in their menstrual cycle until it eventually stops, along with hormonal changes. At this stage, women may have an increase in Luteinizing Hormone (LH) and Follicle-Stimulating Hormone (FSH), which can lead to a decrease in estrogen and inhibin hormone secretion due to follicle depletion [4]. Perimenopause is a transitional stage before menopause,

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Received Date: 24 Apr 2024

Accepted Date: 27 May 2024

Published Date: 01 Jun 2024

### Citation:

Hepzibah SS, Thomas A, Flora F. A Literature Review on Effects of Low-Impact Evening Exercises on Perimenopausal Hot Flashes. *Ann Physiother Clin.* 2024; 4(1): 1015.

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lasting anywhere from a few months to a decade. It is characterized by irregular menstrual cycles and hormonal changes, particularly in estrogen levels. Symptoms can vary greatly from woman to woman, with some experiencing hot flashes and heavy periods while others have no bothersome symptoms. The transition technically ends 12 months after the last menstrual period. Research shows that the highest risk for depression occurs during the reproductive years, when hormone levels fluctuate during menstrual cycles. Symptoms such as irritability, nervousness, and dysphoria also increase during menopause, likely due to changes in estradiol levels. Additionally, up to 75% of women in the perimenopausal stage experience vasomotor symptoms [6].

Many women experience hot flashes and night sweats during menopause, which can negatively affect their quality of life. Hormone therapy, although effective, has been limited due to concerns about its association with breast cancer and cardiovascular events. There are not many effective alternatives to hormone therapy, so many women turn to vitamin supplements, natural remedies, or relaxation techniques for relief. Overall, there is a lack of effective treatment options for menopausal symptoms [11].

Numerous researches have looked at how well exercise works to cure menopausal symptoms, but the findings haven't been very clear. There is compelling evidence that physical activity has several positive effects on both physical and mental health, even though its efficacy as a treatment for hot flashes/night sweats is debatable [7]. Physical Activity (PA) involves human movement and has physiological benefits such as increased energy expenditure and improved physical fitness. However, many middle-aged women do not engage in enough physical activity to meet the guidelines. The World Health Organization recommends that adults should participate in at least 150 min of moderate intensity activity per week or 75 min of vigorous intensity activity per week, along with muscle-strengthening activities. Previous research has shown that women often become less active and more sedentary during menopause [12]. Research shows that women are willing to exercise regularly, especially if it helps them avoid the health risks of hormonal therapy. However, it is still difficult to get women to increase their exercise levels. Some common obstacles to starting or increasing exercise include lack of time, safety concerns, bad weather, and not having a workout partner. Menopausal women prefer walking as their preferred form of exercise [9].

## Methodology

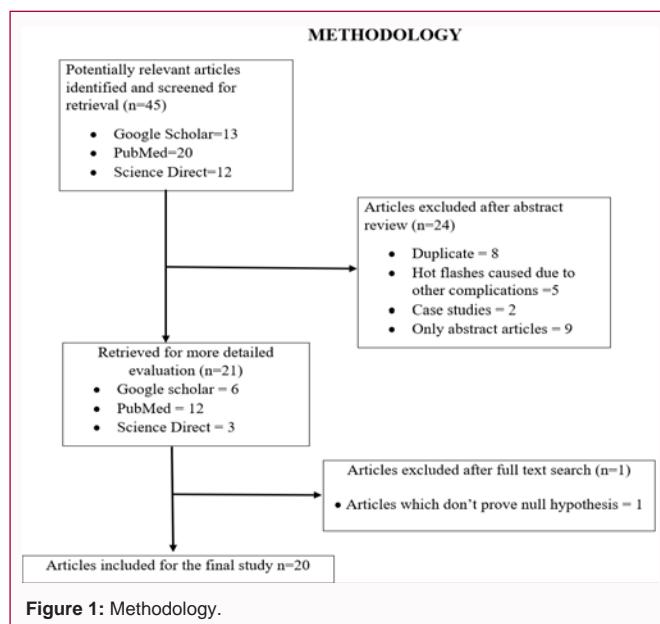
### Search method and eligibility criteria

PubMed, Google Scholar, and ScienceDirect were utilized to conduct a comprehensive literature search from the year 2016. Articles that were not published in English were eliminated.

Here, the articles were searched with the keyword's menopause, perimenopausal women, hot flashes, vasomotor symptoms, low-impact exercise, evening exercises, and physical activity. Twenty articles were selected and reviewed based on the keywords, inclusion, and exclusion criteria.

### Inclusion criteria

- Articles explaining the effects of exercises on perimenopausal/ menopausal hot flashes
- Articles published in the last seven years.
- Articles available in full text.



- Articles published in the English language.

### Exclusion criteria

- Articles explaining surgical interventions.
- Articles discussing other than the effects of exercises on perimenopausal/menopausal hot flashes were excluded (Figure 1 and Table 1).

## Discussion

Women go through hormonal and menstrual changes during the perimenopause, also known as the menopause transition period, which usually happens between the ages of 45 and 55 years. During this time, the hormones LH and FSH are secreted more often, which causes follicles to shrink and estrogen and inhibin production to decline. The change in estrogen hormone levels, according to researchers, is the primary reason for hot flashes during this period. There is a link between physical activity and the occurrence of vasomotor symptoms, according to studies [4].

According to Ruchi Mishra et al. [6] premenopausal women often begin to experience perimenopause at the age of 40 years, and it can endure for several years. Women may encounter symptoms including hot flashes, irregular periods, and mood fluctuations during this time. According to a study, fitness training can lessen the severity of these symptoms and enhance psychological health in general. Thirty female participants in the study underwent a training regimen that comprised aerobic, pelvic muscle, and relaxation activities. The findings demonstrated that cardiovascular fitness can be increased through exercise and that this can help with menopausal symptoms and quality of life.

According to Ahiwale et al. [13] a study was conducted to examine whether a therapeutic exercise program could benefit sedentary women with premenopausal symptoms. The study involved 65 women between the ages of 35 and 55 years, and the findings revealed a significant improvement in both symptoms and quality of life. Premenopausal symptoms were less severe thanks to the exercise program, which also enhanced general well-being. According to the body of research under review, walking, and other low-impact

Table 1: Summary of article.

S. No	Author	Year	Study Design	Sample Size	Summary
1.	Mengnan Zhao [1]	2023	A meta-analysis of randomized controlled trials	1,493	A meta-analysis of 12 randomized controlled trials involving 1,493 subjects was conducted to determine the effects of exercise on sleep in perimenopausal women. The analysis revealed that exercise can effectively enhance sleep in perimenopausal women, with fitness Qigong being the most effective intervention when performed for 10-12 weeks, at a frequency of more than 3 times a week, and with duration of 30-60 minutes each time.
2.	Sigrid Nilsson [2]	2022	Sub-study of a randomized controlled clinical trial	65	A sub-study of a randomized control trial aimed to understand how resistance training can reduce symptoms of Vasomotor Symptoms (VMS) and if it affects Luteinizing Hormone (LH) and Follicle-Stimulating Hormone (FSH). The study involved 65 postmenopausal women who were randomly assigned to either participate in resistance training or be part of a control group. The compliant intervention group experienced a significant decrease in LH levels compared to the control group. FSH levels also decreased, but not significantly. The number of hot flushes decreased more in the intervention group, but there was no correlation between changes in LH or FSH levels and hot flushes. The authors suggest that natural painkillers produced during resistance training can reduce hot flashes by stimulating specific neurons and inhibiting hormone production. The study supports this proposed mechanism.
3.	María del Carmen Carcelén-Fraile [3]	2022	Randomized clinical trial	125	A randomized control study examined how a Qigong exercise program affects the severity of menopausal symptoms and the quality of life of postmenopausal women. The study involved 125 women who were randomly assigned to either a control group or an experimental group. The severity of their menopause-related symptoms and quality of life were assessed before and after the intervention period. The results showed that the women in the Qigong group experienced significant improvements in the severity of their symptoms and their overall quality of life. This suggests that a twelve-week Qigong exercise program can be beneficial for postmenopausal women in Spain.
4.	Iwi Liesdyanata [4]	2021	Cross-sectional design and a quantitative approach	173	A cross-sectional study aimed to examine the connection between physical activity and vasomotor symptoms in perimenopausal women. The participants were 173 women aged 45-54 who were still menstruating. The study found that most participants were in the 45-50 age group and experienced severe vasomotor symptoms. Additionally, most participants had sufficient physical activity levels, a medium level of education, and an informal occupation. The study also found a significant relationship between physical activity, Body Mass Index (BMI), and vasomotor symptoms. In conclusion, there is a significant relationship between physical activity, BMI, and vasomotor symptoms in perimenopausal women.
5.	Filiz Polat [5]	2021	Randomized control Trial	156	A randomized control study aimed to determine the impact of exercise training on menopausal symptoms using the health promotion model. The study involved 156 women, with one group receiving daily exercise training for 12 weeks and another group acting as a control without any exercise training. The results showed a statistically significant difference in the mean scores of the two groups, indicating that exercise training based on the health promotion model reduced menopausal symptoms.
6.	Ruchi Mishra [6]	2020	Experimental study	30	An experimental study focused on the emotional and physical challenges that women experience during perimenopause, and how it can lead to depression and irritability. The study aimed to assess the effectiveness of aerobic and pelvic floor exercises in reducing these symptoms in perimenopausal housewives. Thirty women between the ages of 40-50 with perimenopausal symptoms were selected for the study. Pre and post-readings of a menopause rating scale were taken after two months of exercise sessions. The results showed a significant decrease in postnatal depression and insomnia after two weeks of exercise. This study suggests that physical activity can improve the quality of life for perimenopausal women and help them manage their symptoms.
7.	Adèle Thomas [7]	2020	Randomized controlled trial	261	A randomized control study examined the effectiveness of physical activity as a treatment for menopausal symptoms in women who were previously inactive. In this study, 261 participants were randomly assigned to different physical activity interventions or a control group. Interviews were conducted with a subset of participants after they completed the trial. The results showed that physical activity was viewed positively by all participants and had improved their symptoms, sleep, physical health, and psychological well-being. Those who received social support along with physical activity reported improved coping abilities. Participants expressed a preference for doctors discussing physical activity as a treatment option before medication. The study suggests that healthcare professionals should discuss physical activity as a first treatment option for menopausal women and provide support and encouragement.

8.	Zeinab Javadivala [8]	2020	Randomized control trial	190	<p>A randomized control study aimed to determine if a behavioral strategy could effectively initiate and maintain physical activity in order to reduce or eliminate menopausal symptoms.</p> <p>In this study, a group of menopausal and perimenopausal women were randomly divided into two groups. The intervention group consisted of smaller subgroups of women who knew each other and they participated in a 12-week physical activity program along with group education and discussion sessions. The severity of menopausal symptoms was determined using a self-report instrument called the Menopause Rating Scale. The intervention group experienced a significant decrease in the frequency and severity of menopausal symptoms, including hot flashes, sleep problems, and joint discomfort. The percentage of participants with severe symptoms decreased significantly in the intervention group. In contrast, the non-intervention group experienced worsening symptoms. In conclusion, introducing an educational program that promotes the benefits of physical activity, along with utilizing existing neighborhood networks for communication and cooperation, can lead to increased physical activity levels and reduced menopausal symptoms. These networks provide a cost-effective way to enhance the quality of life for women going through perimenopause and menopause.</p>
9.	Beate C. Sydora [9]	2020	Qualitative descriptive design	20	<p>A qualitative descriptive study was conducted in focus groups with women who had moderate to severe menopause symptoms. They asked the women about their experiences with menopause and exercise, and how they would like a walking exercise program to be designed. The data from the focus groups was transcribed and analyzed using qualitative content analysis to identify the key characteristics of an engaging walking exercise program.</p> <p>A study involving 20 participants in 5 focus groups found that women were interested in using walking as a way to stay healthy and potentially alleviate menopause symptoms. Four important characteristics of a walking program were identified, including being sensitive to the health needs of menopausal women, accommodating different physical abilities, providing social support, and being flexible with locations and scheduling. The study suggested that a specialized social network platform for menopausal women could be used to start and maintain an effective walking program.</p>
10.	Ketki Ponde [10]	2019	Randomized control trial	60	<p>A randomized control study aimed to compare the effects of yoga therapy and aerobic exercise on symptoms, stress, and quality of life in perimenopausal women. Sixty women between the ages of 40-55 were divided into two groups: one group practiced yoga five times a week for six weeks, while the other group walked five times a week for six weeks. The participants' symptoms, stress levels, and quality of life were assessed before and after the intervention. The results showed that both groups experienced significant improvements, but the yoga group showed greater improvement in symptoms, stress, and quality of life compared to the aerobic exercise group. Overall, this study suggests that yoga is more effective than aerobic exercise in improving these aspects in perimenopausal women.</p>
11.	Emilia Berin [11]	2019	Randomized control trial	65	<p>A randomized study aimed to investigate the impact of 15 weeks of resistance training on the occurrence of moderate to severe hot flashes in postmenopausal women. 65 participants were randomly assigned to either a resistance training intervention or no change in physical activity. The resistance training was conducted three times a week, consisting of 8 exercises with 8-12 repetitions in 2 sets. The primary outcome measured was the change in the average number of moderate or severe hot flashes per day from the start of the study to week 15. Secondary outcomes included changes in hot flush score and time spent on physical activity. The results showed that the intervention group experienced a greater decrease in hot flush frequency compared to the control group. The mean percentage change was -43.6% in the intervention group and -2.0% in the control group. This suggests that a 15-week resistance training program can effectively reduce hot flashes in postmenopausal women and may be a safe treatment option for alleviating vasomotor symptoms.</p>
12.	Magdalena Dąbrowska-Galas [12]	2019	Cross-sectional study	305	<p>A cross-sectional study aimed to investigate the relationship between different domains of physical activity and menopausal symptoms in women. A total of 305 women aged 40-65 were included and divided into three groups based on their menopausal status. The participants' physical activity levels were assessed using the International Physical Activity Questionnaire, and the severity of their menopausal symptoms was measured using the Menopause Rating Scale. The results showed that the menopausal stage was significantly associated with the severity of menopausal symptoms, particularly urogenital and somato-vegetative symptoms. Physical activity during leisure time was significantly associated with menopausal symptoms, with women who had high and moderate physical activity levels experiencing less severe symptoms compared to inactive women. Additionally, women with low physical activity levels at work had more severe somato-vegetative symptoms.</p>

13.	Ahiwale AV [13]	2019	Randomized control trial	65	A randomized control study aimed to determine the impact of therapeutic exercises on pre-menopausal symptoms in women with sedentary lifestyles. A total of 65 subjects between the ages of 35-55 were included in the study and randomly assigned to treatment groups. The severity of pre-menopausal symptoms and quality of life were assessed before and after the treatment using the menopausal rating scale and SF-36 questionnaire. The results showed a significant improvement in both the menopausal rating scale and SF-36 scores after the therapeutic exercise protocol. Therefore, it can be concluded that therapeutic exercise has a positive effect on pre-menopausal symptoms in sedentary women.
14.	Ekta Malik [14]	2018	Quasi-experimental study	103	A quasi-experimental study was conducted on 103 menopausal women in Ambala district, Haryana. The women in the experimental group received a lifestyle modification program that focused on six domains: health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. The intervention consisted of two sessions, each lasting 2 hours, held on consecutive days. Data was collected from the women through face-to-face interviews using a sociodemographic form, the Menopausal Rating Scale, and the Health Promoting Lifestyle Profile II. The experimental group showed a significant improvement in menopausal symptoms and health-promoting behaviors after the intervention, while the comparison group did not show significant changes. Before the intervention, there were no significant differences between the groups in terms of menopausal symptoms and health-promoting behaviors. In the experimental group, the posttest menopausal symptoms were significantly decreased and health-promoting behaviors were significantly increased. The study found that a lifestyle modification program was successful in reducing menopausal symptoms and promoting healthier behaviors in women.
15.	P.Bakiyalakshmi [15]	2018	Quasi experimental study	30	A quasi-experimental study assessed the level of menopausal symptoms among menopausal women, determined the effectiveness of walking and deep breathing exercises in reducing these symptoms, and examined the association between symptom level and demographic and clinical variables. The study used a quantitative experimental approach with a sample of 30 women. The women practiced the intervention of daily walking and deep breathing exercises for one month. The results showed a significant reduction in symptoms after the intervention. The study concluded that walking and deep breathing exercises effectively reduced menopausal symptoms.
16.	S. Xi [16]	2017	Randomized control study	60	This study aimed to determine the impact of health education that included diet and exercise supervision on menopausal symptoms and diet/exercise habits. The study enrolled 60 patients with perimenopausal syndrome and divided them into an intervention group and a control group. The intervention group received health education, diet supervision, and exercise supervision twice a week for 12 weeks, while the control group continued with their normal routines. After the intervention, the intervention group had significantly lower scores for various menopausal symptoms compared to the control group. Additionally, their intake of certain foods was significantly lower and a higher percentage of them had a regular exercise habit compared to the control group. Overall, the study concluded that a 12-week intervention of health education combining diet and exercise supervision can improve menopausal symptoms and help patients establish healthy habits.
17.	Im EO [17]	2017	Randomized control study	29	A randomized control study was conducted to determine if a Web-based program could effectively reduce menopausal symptoms in Asian American midlife women by increasing their physical activity. The study involved 29 participants who were randomly assigned to either the intervention group or the control group. Multiple instruments were used to measure menopausal symptoms and physical activity. The results showed that while both groups experienced improvements in physical activity, the intervention group had greater improvement. The severity of menopausal symptoms decreased for the control group over time, but not significantly for the intervention group. However, when physical activity was taken into account, the differences in symptom severity between the two groups were not statistically significant. Overall, the study found that a 3-month Web-based intervention was feasible and showed preliminary efficacy in increasing physical activity among Asian American midlife women for managing menopausal symptoms.
18.	Yuko Kai [18]	2016	Randomized control trial	40	A randomized control study aimed to investigate if a 3-week stretching program could alleviate menopausal and depressive symptoms in middle-aged Japanese women. This study included 40 middle-aged Japanese women who were divided into two groups: a group that did daily stretching exercises before bed for three weeks, and a control group that did not receive any intervention. The researchers measured the participants' menopausal and depressive symptoms using specific scales. During the 3-week intervention program, 75.8% of participants followed the program as instructed. The group that engaged in stretching exercises experienced notable enhancements in menopausal symptoms and depression, in contrast to the control group. No adverse effects were reported by any of the participants. The study suggests that middle-aged Japanese women can alleviate menopausal and depressive symptoms by doing a 10-minute stretching routine before bedtime.



19.	Kirsi Mansikkamäki [19]	2016	A cohort study after a randomized controlled trial	176	A cohort study after a randomized controlled trial aimed to investigate the long-term effects of a 6-month exercise training program on hot flashes. The study followed up with participants 4 years after the exercise intervention ended. Ninety-five out of 159 women who were originally randomized for the study participated in anthropometric measurements and a 2 km walk test. They also completed a questionnaire and kept a one-week diary on physical activity, menopause symptoms, and sleep quality. The frequency and severity of hot flashes were combined to create a Hot Flush Score (HF Score). Statistical analysis showed that women in the exercise group had a higher likelihood of improving their HFS score compared to women in the control group, even after adjusting for hormone therapy. This effect was more significant for women who had fewer hot flashes at the beginning of the study. Overall, the study suggests that exercise can have positive effects on HF Score even 4 years after the initial exercise intervention.
20.	Tom G. Bailey [20]	2016	Randomized control trial	21	A randomized control study aimed to see if exercise training could help reduce hot flashes in postmenopausal women by improving thermoregulatory control and vascular function. Twenty-one women experiencing hot flush symptoms participated in the study. They underwent various tests to measure their blood flow, fitness levels, sweat rate, and sensitivity to temperature. The women then either participated in supervised exercise training or a control group for 16 weeks, and the tests were repeated afterward. The results showed that exercise led to improved fitness, decreased hot flush frequency, lower core temperature, increased blood flow in the brain and skin, and improved sweating sensitivity. The findings suggest that exercise that improves cardiovascular fitness can reduce the frequency of hot flashes by better regulating body temperature and blood flow.

workouts can help reduce hot flashes and other perimenopausal symptoms. Notably, since many women report that hot flashes are frequently more intense in the night, low-impact evening exercises have a distinct advantage. They also help in reducing the severity of hot flashes and enhancing sleep, general quality of life, and emotional well-being, according to the studies reviewed in this study.

**Limitations**

Limited generalizability of the findings to a broader perimenopausal population.

The studies do not always account for confounding factors, such as diet, medication use, and other lifestyle choices, which could influence the outcomes.

**Conclusion**

Research from multiple studies indicates that engaging in low-impact exercises in the evening can effectively decrease hot flashes and improve the overall well-being of women experiencing perimenopause. These findings highlight the significance of including physical activity, particularly low-impact exercises, as a non-pharmacological solution for managing symptoms during this transitional phase. This intervention not only improves physical health but also addresses emotional and mental aspects, ultimately enhancing the overall quality of life for women in perimenopause. Thus, it is a valuable and easily accessible option for those seeking to manage their symptoms during this stage.

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