

# Effect of Circuit Training, Breathing and Aerobic Exercise on Fatigue and Irritability in Perimenopausal Females

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**Abstract:** ***Introduction:** Perimenopause, the transitional phase leading up to menopause, is characterized by significant hormonal changes, which can result in various symptoms, including fatigue, irritability, hot flashes, and mood disturbances. These symptoms often exacerbate due to the social isolation and limited awareness faced by many housewives. Exercise, particularly circuit training combined with aerobic activities, has been shown to mitigate these symptoms by improving physical and psychological well-being. **Methods:** This study was conducted on 20 perimenopausal women aged 40 - 50 years from Ujjain city. Participants were selected based on a Menopause Rating Scale (MRS) score greater than 15 and other inclusion criteria. The intervention consisted of a 4 - month exercise program, with circuit training performed four times a week for the first two months, followed by aerobic exercises for the next two months. Fatigue and irritability levels were measured using validated scales before and after the intervention. Paired - samples t - tests were used to analyze the data. **Results:** The mean fatigue score significantly decreased from 26.60 (SD = 5.05) to 20.50 (SD = 4.73) post - intervention ( $t = 10.088, p < 0.001$ ). Similarly, the mean irritability score showed a significant reduction from 20.20 (SD = 3.61) to 14.55 (SD = 3.00) after the 4 - month intervention ( $t = 10.115, p < 0.001$ ). **Conclusion:** The study demonstrated that a structured exercise regimen comprising circuit training and aerobic exercises significantly reduced fatigue and irritability among perimenopausal women. These findings suggest that incorporating regular physical activity into the daily routine of perimenopausal women can alleviate common symptoms, improving their overall quality of life.*

**Keywords:** Perimenopause, fatigue, irritability, exercise, quality of life

## 1. Introduction

Perimenopause, a term that signifies the transitional period leading up to menopause, represents a significant phase in a woman's life, typically occurring in her 40s and early 50s. This period, which can last from 4 to 10 years, is marked by a series of hormonal changes as the ovaries gradually produce less estrogen. For many women, particularly housewives who often face social isolation, this transition can be challenging due to a lack of awareness and support.<sup>1</sup>

Housewives, who may be confined to their homes with limited social interaction and fewer opportunities to engage in external activities, often suffer more acutely from perimenopausal symptoms. These women might experience irregular periods, sleep disturbances such as insomnia, mood changes including irritability and depression, hot flashes, and

fatigue. The decline in estrogen levels leads to these symptoms as the body adjusts to the hormonal changes.<sup>2</sup> Without proper awareness and understanding, many housewives might not recognize these symptoms as part of perimenopause, leading to increased anxiety and distress. Physiologically, perimenopause begins when the ovaries start to deplete their supply of follicles, the structures that release eggs during a woman's reproductive years. As the follicles diminish, fewer eggs are released, and eventually, the ovaries stop functioning. This decline in ovarian function leads to a drop in estrogen levels, which in turn causes the various symptoms associated with perimenopause. The reduction in estrogen affects not only the reproductive system but also the cardiovascular system, bone density, and mental health, contributing to the wide range of symptoms experienced by women during this transition.<sup>3</sup>

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Exercise, particularly circuit training, has been shown to be beneficial for women undergoing perimenopause. Circuit training is a high - intensity workout that combines cardiovascular exercises with strength training, targeting different muscle groups in a sequential manner.<sup>3</sup> This form of exercise helps improve overall fitness and strength, which can alleviate some perimenopausal symptoms. For instance, circuit training has been found to increase dopamine levels in the brain, which helps reduce stress and depression. Additionally, the release of serotonin during exercise can enhance mood and promote better sleep. By maintaining a regular exercise routine, women can help balance their estrogen levels, thereby reducing the severity of hot flashes and other symptoms.<sup>4</sup>

Aerobic exercises also offer significant benefits for perimenopausal women. Activities like walking, running, swimming, and cycling increase heart rate and improve cardiovascular health. These exercises help reduce vasomotor symptoms such as hot flashes and night sweats. Moreover, aerobic exercise has positive effects on blood pressure, flexibility, aerobic power, strength, and body composition. By incorporating regular aerobic workouts, women can improve their overall health and manage perimenopausal symptoms more effectively.<sup>4, 5</sup>

Breathing exercises can further help women manage the symptoms of perimenopause. Techniques such as paced breathing, alternate nostril breathing, and breath visualization can aid in relaxation and stress reduction. Deep breathing helps increase oxygen intake and remove carbon dioxide from the body, promoting a calming effect on the nervous system. These exercises trigger the relaxation response, which reduces the production of stress - related neurochemicals, thereby alleviating symptoms like anxiety, hot flashes, and sleep disturbances.<sup>6, 7</sup>

## 2. Methodology

**Source of data:** Housewives of colonies of Ujjain city Adarsh Nagar Nagjhiri.

**Sample criteria:** A total of 20 participants were followed for a period of 4 months receiving aerobic exercise and circuit training program.

**Study time:** A period of total 4 days in a weeks.

**Duration:** - 4 months

**Outcome measure:**

Fatigue scale  
Irritability scale

**Inclusion criteria:**

- 1) Menopausal rating scale (MRS) (>15)
  - 2) Age - 40 to 50 years female
  - 3) Irritability
  - 4) Fatigue
  - 5) Hot flashes
- (Out of all these features 2 - 3 symptoms are mandatory)

**Exclusion criteria**

- 1) Women treated with HRT and non - hormonal medicine within past two weeks before the study.
- 2) Hysterectomy
- 3) Oophorectomy
- 4) Having regular menstruation
- 5) Hypertension
- 6) Diabetes mellitus
- 7) Heart disease
- 8) Cancer therapy
- 9) History of drug addiction or alcohol abuse<sup>(1, 7)</sup>

## 3. Procedure

In this study firstly the questionnaire of Menopause Rating Scale (MRS), irritability and fatigue scale was distributed to females. Initially we had 30 participants on the basis of our inclusion and exclusion criteria. According to MRS scale value (>15), 20 participants have were taken in our study as they all are fit the inclusion criteria. Although the questionnaire was in English, women were interviewed in their own language Hindi by trained professionals. Informed consent prior to enrollment into the study was obtained. Exercise protocol and the purpose of this treatment was explained to the patient. Before starting our exercise protocol, we took all readings of fatigue and irritability and then took them again after 4 months of finishing circuit and aerobic exercises. The FAS is a 10 items scale evaluating of chronic fatigue. Each item of the FAS is answered using a five point Likert - type scale ranging from 1 ("never") to 5 ("always"). Total scores can range from 10 indicating the lowest level of fatigue to 50, denoting the highest. For irritability scale patients marked the box beside each item that best described how they were feelings in the past week. The response options were scored, 0 = (not at all), 1 = (some of the time), 3 = (most of the time). Maximum score of irritability scale is 42 that is 1 - 14 = (mild irritability), 15 - 28 = (moderate irritability), 29 - 42 = (severe irritability). Consent form was taken from the patient. The total duration of treatment is 1 hour and 4 sitting per week. Total duration of study was 4 months. First, we took resting blood pressure of all perimenopausal women before exercise protocol. Circuit training was designed following a frequency of 4 times a week for 2 months to complete the circuit training program. A sequence of exercises to perform for one minute each station, 45 seconds to perform the next station and 2 minutes between the 1<sup>st</sup> and 2<sup>nd</sup> round and 2 minutes between the 2<sup>nd</sup> and 3<sup>rd</sup> round were done. Before doing the circuit training program stretching and warm up for 5 minute was done. The workout was for the duration of 1 hour and lastly 5 minutes cooling down exercises was done. For the next two months aerobic exercises that develop the cardio respiratory endurance, and muscular endurance of perimenopause women were executed. The sequence of the exercises in the program followed the warm up, work out, and cool - down format. The intensity, duration and frequency of the exercises was from easy to difficult, short to long. The sequence of the exercises was logical such as muscular strength conversion to muscular endurance. This means that the program was scientifically designed to achieve the desired improvements.

## 4. Results

**Table 1:** Comparison of mean fatigue score between pre and post intervention score

		N	Mean score	SD	t	p
Fatigue	Pre intervention	20	26.60	5.05	10.088	0.000
	Post intervention	20	20.50	4.73		

The mean fatigue score before the intervention was 26.60 with a standard deviation (SD) of 5.05. After the intervention, the mean score decreased to 20.50 with a standard deviation of 4.73. The paired - samples t - test indicated a statistically significant reduction in fatigue scores, with a t - value of 10.088 and a p - value of 0.000, suggesting that the intervention was effective in significantly reducing fatigue among the participants.

**Table 2:** Comparison of mean irritability score between pre and post intervention score

		N	Mean score	SD	t	p
Irritability	Pre intervention	20	20.20	3.61	10.115	0.000
	Post intervention (after 4 months)	20	14.55	3.00		

In present study, cases mean irritability (14.55±3.00) score were significantly decrease post intervention (after 4 months) (P<0.05) as compare to pre intervention (20.20±3.61).

## 5. Discussion

The present study's findings indicate that high - load circuit training, combined with aerobic exercise, effectively reduces fatigue and irritability in perimenopausal women. This conclusion aligns with several other studies that have investigated the impact of exercise on menopausal symptoms.

For instance, a study by **Elavsky and McAuley (2007)** found that physical activity significantly improved mood and reduced fatigue in midlife women undergoing the menopausal transition. The combination of aerobic and resistance training in their study enhanced overall psychological well - being, similar to our findings that show a significant reduction in fatigue and irritability post - intervention.<sup>8</sup>

Furthermore, a systematic review by **Daley et al. (2014)** supported the role of exercise in alleviating vasomotor symptoms, such as hot flashes, and improving psychological health during menopause. Although their focus was more on vasomotor symptoms, the psychological benefits they observed, including reductions in anxiety and depression, resonate with our study's outcomes, highlighting the broad benefits of exercise beyond physical health.<sup>9</sup>

However, some studies present different results. For example, a randomized controlled trial by **Sternfeld et al. (2014)** found no significant difference in menopausal symptoms between women who engaged in a structured exercise program and those who did not. This discrepancy could be attributed to differences in exercise intensity and type, participant characteristics, or the measurement tools used for assessing menopausal symptoms.<sup>10</sup>

## 6. Conclusion

In this study, a structured 4 - month exercise regimen combining circuit training and aerobic exercises significantly reduced fatigue and irritability in perimenopausal women. These results highlight the importance of physical activity as a non - pharmacological intervention to alleviate perimenopausal symptoms. The substantial improvements in fatigue and irritability scores emphasize the role of exercise in enhancing both physical and psychological well - being during this transitional phase. Given the social and emotional challenges faced by many housewives during perimenopause, implementing exercise programs can offer a viable solution to improve their quality of life. This study adds to the growing body of evidence supporting exercise as an effective means to manage perimenopausal symptoms, encouraging healthcare providers to recommend regular physical activity as part of holistic care for women during this critical period.

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**Conflict of Interest:** None

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