

## Research Article

### Women, Menopause, Exercise Therapy Strategies

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Menopause represents a natural physiological transition from the reproductive stage to permanent infertility and is accompanied by a wide range of physical, psychological, and social changes that substantially influence women's quality of life (1). Clinically, menopause is defined as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity and a marked decline in estrogen production (2). This hormonal alteration is associated with vasomotor symptoms such as hot flashes and night sweats, sleep disturbances, impaired concentration, and mood disorders. Over the long term, menopause is linked to an increased risk of cardiovascular disease, stroke, and osteoporosis (3).

The decline in estrogen levels during menopause, combined with increased visceral fat accumulation and weight gain, significantly elevates cardiovascular risk (4). Aging, reduced physical activity, and psychosocial stressors further contribute to unfavorable changes in body composition during this period. Notably, women experience an annual loss of approximately 1–2% of skeletal muscle mass after the age of 40, which adversely affects metabolic health, physical function, and long-term independence (5). Osteoporosis is the most prevalent metabolic bone disorder in postmenopausal women, affecting more than half of women over the age of 50 (6). This condition is characterized by a reduction in bone mineral density and deterioration of bone microarchitecture, leading to an increased risk of fractures. Epidemiological evidence indicates that women are nearly eight times more likely than men to develop osteoporosis, emphasizing the need for preventive strategies (7).

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Among non-pharmacological interventions, regular physical activity plays a pivotal role in mitigating menopausal complications. Consistent exercise improves cardiovascular and bone health, enhances metabolic rate, reduces abdominal adiposity, improves sleep quality, and promotes psychological well-being (8). Long-term adherence to structured exercise programs may also reduce the incidence of cardiovascular disease in postmenopausal women (9).

Various exercise modalities have demonstrated benefits in alleviating menopausal symptoms. Mind-body exercises such as yoga have been shown to reduce blood pressure and improve flexibility and sleep quality. Aerobic exercises enhance cardiac and pulmonary function, while resistance training is particularly effective in preserving muscle mass, improving metabolic health, and reducing the risk of osteoporosis, cardiovascular disease, and type 2 diabetes. Resistance-based exercises have also been associated with improved mental health outcomes in postmenopausal women (10-14).

In conclusion, given the well-established benefits of exercise and the minimal adverse effects associated with most physical activity modalities, transitioning from a sedentary lifestyle to regular physical activity is essential for alleviating menopausal symptoms and promoting long-term health. It is recommended that postmenopausal women adopt individualized and supervised exercise programs to reduce menopause-related complications and enhance overall quality of life.

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