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EFFECT OF AEROBIC EXERCISE ON FITNESS AND QUALITY OF LIFE IN POSTMENOPAUSAL WOMAN

Physiotherapy

Nikita	Mpt Orthopaedics, College Of Physiotherapy, Pgims Rohtak, India
Dimple Choudhry	Assistant Professor, College Of Physiotherapy, Pgims Rohtak, India
Minakshi B Chauhan	Senior Professor, Department Of Obs & Gynae, Pgims Rohtak, India
Malika Jhandai	Assistant Professor, Om Sterling Global University, Hisar, India

ABSTRACT

Menopause is a natural biological process marking the end of a woman's reproductive years, typically occurring in middle age. This transition is characterized by the cessation of menstrual cycles and a decline in estrogen levels, leading to various physical and emotional changes. Postmenopausal women often experience decreased fitness, weight gain, and a higher risk of chronic conditions such as osteoporosis and cardiovascular disease. Regular aerobic exercise has been proposed as a beneficial intervention to counteract these negative effects. **Study selection:** This narrative review is conducted on databases from Pub med, Google scholar and ResearchGate. This review included 8 studies on the effect of aerobic exercise on fitness and quality of life in postmenopausal women. **Conclusion:** It is concluded that aerobic exercise training effective in improving fitness and quality of life in postmenopausal women. However, some studies show some limitations. so further studies of higher methodological quality are needed to determine the optimal type of exercise, optimal dosage and timing.

KEYWORDS

Aerobic exercise, fitness, quality of life, postmenopausal women,

INTRODUCTION

A woman who has not menstruated for at least 12 months is considered to enter menopause, and the postmenopausal period begins at this point. Women go through different stages of menopause, from "late reproductive" to "early and late menopausal transition" to "post-menopause. The age at which menopause begins can be influenced by a variety of factors, including genetics, socioeconomic level, smoking status, alcohol consumption, usage of oral contraceptives, number of pregnancies, BMI, and PA (Physical activity).[1] The age at which Indian women naturally enter menopause is found to be 46.2 ± 4.9 years. The natural menopause age is determined by region and is as follows: Central 47.8 ± 4.4 years, north 45.5 ± 4.9, south 46.1 ± 5.6, east 47.3 ± 3.9, and west 46.2 ± 4.9 years. There is a positive correlation between age at menarche and age at menopause.[2] Up to 30% of women, according to evidence, think they become "less active" while going through menopause.[3] Musculoskeletal fitness can be operationally defined by the measurement of joint flexibility, muscular strength, muscular power, and muscular endurance. As people age, they often see a reduction in their muscular strength, cardiorespiratory fitness, mobility, and flexibility.[4] Postmenopausal and elderly women experience a more marked degradation of physical function and decreased estrogen secretion causes postmenopausal women to lose muscle mass, strength, and neuromuscular function.[3] Fatigue, one of the most prevalent and bothersome symptoms of menopause, is a widely reported concern in primary care, negatively impacting individuals' quality of life.[5] Age has also been demonstrated to correlate with quality of life negatively. In particular, it has been demonstrated that postmenopausal women's scores on physical functioning, physical role restriction, general health, and social functioning all considerably decline with age. Several side effects, including increased fatigue, headaches, and mood swings, can result from post-menopause and have a detrimental impact on quality of life (QoL).[6]

Exercise may offer distinct advantages for postmenopausal women due to the propensity for weight gain, particularly in the abdominal area, following menopause. Increased body fat, especially abdominal fat, and adult weight gain are associated with a higher risk of postmenopausal breast cancer.[7]

Physical activity (PA) has been demonstrated to improve physiological indices, psychological well-being, and physical functioning as well as quality of life (QOL) in menopausal women. Aerobic exercise significantly reduces adiposity measures, particularly total body fat and abdominal fat, in postmenopausal women, with higher volumes of exercise showing greater effectiveness. Additionally, aerobic training effectively improves anxiety, depression, and sleep quality in perimenopausal women. It also reduces typical menopausal symptoms such as night sweats, mood swings, and irritability in recently postmenopausal women with a sedentary lifestyle.[8]

METHODS

Author, Journal, Year	Design & characteristics of participants' sample size	Materials & Method	Outcome Measures	Results
Wen et al. 2017[9]	An Intervention Study 48 postmenopausal women with age ranged from 50- 65 years	Exercise group (n=24) Step aerobics exercise thrice a week for 10 weeks Control group (n=24) maintain their normal dietary intake and lifestyle.	functional fitness (chair stand, arm curl, 8-foot up-and-go, sit-and-reach, and 2-minute step test), evaluations of body composition (weight, BMI, and body fat percentage), analysis of lipid profiles (total cholesterol, triglycerides, HDL cholesterol), and measurement of bone metabolism markers (serum levels of osteocalcin and C-terminal telopeptide of type I collagen [CTX]).	No significant changes were observed in body weight, BMI, or lipid profiles for either group.
Karacan et al.2010[10]	An experimental study 65 menopausal women with age ranged from 46-55	Exercise groups (n= 65) aerobic exercise for 6 months, 3 days per	Body weight, Body mass index(BMI), Resting heart rate, Blood pressure	24-week aerobic exercise program significantly improved physical fitness and reduced

	years	week, and 55 minutes of aerobic and calisthenic exercise. The exercise program included 10 minutes warm-up exercises, 40 minutes of aerobic exercise, 15	(systolic and diastolic), Flexibility sit-and-reach test),Aerobic power (Cooper test), Hand grip strength (measured with a dynamometer), Sit-ups and push-ups	menopausal symptoms in participants. Reductions in body weight, body mass index (BMI), resting heart rate, and blood pressure, along with increases in aerobic power, flexibility, and strength. Menopausal symptoms,
Gulati et al. 2020[11]	An experimental study 30 postmenopausal women with age ranged from 45-55 years with BMI ranged 18.5 to 30	Exercise group (n= 15) aerobic training for thrice a week for 4 weeks. Exercise program include Warm-up: 10 minutes Main program: 30 minutes (stationary cycling, running, aerobic dancing, stair climbing) Cool down: 5 minutes (stretching exercises) Control group (n=15) engaged in free body exercises for 4 weeks	Flexibility- sit and reach test. Cardiovascular Fitness- Measured by VO_2 max using the Modified Queens College Step Test. Core Strength-forearm plank position test.	4-week aerobic exercise training significantly improved cardiovascular and musculoskeletal fitness in postmenopausal women. Exercise group showed significant increases in VO2 max (p=0.001), flexibility (p=0.008), and core strength (p=0.003). In comparison, Control group which performed free body exercises, also improved but to a lesser extent, particularly in core strength (p=0.009).
Yu et al.2019[12]	A retrospective Cohort study 80 postmenopausal women with age group ranged from 45-85 years	Exercise group (n=40) aerobic dance for 3 times a week for 24 weeks. Aerobic dance programe includes 10 minutes of mild warming up activities consisting of calisthenics and stretching, 35 minutes of aerobic dance exercise consisted of A step, V step, tap point, grapevine, march, leg curl, walking . 10 to 15 minutes cool-down activities.	Height, weight, BMI, BMD, Physical fitness(grip Strength, closed-eye foot balance, step test sitting trunk flexion, sit-ups, Sargent jump,reaction time and sidestep, HRQoL	24 weeks of aerobic exercise produces beneficial effect on BMI, weight, physical fitness and HRQol scale in postmenopausal women.
Luoto et al. 2012[13]	An randomized control trial 151 postmenopausal women with age ranged from 40-63 years	Intervention group(74) aerobic training (four times a week for 6 months Control group(77) attended lectures on physical activity and health but did not engage in aerobic training.	Primary Outcome: Frequency and severity of hot flushes. Quality of Life Assessment: Women's Health Questionnaire (WHQ) and Short Form-36 (SF-36) quality of life score.	Aerobic training effectively reduces hot flushes and enhances mental health and physical fitness in symptomatic menopausal women. Intervention group experienced a significant reduction in night-time hot flushes (P = 0.012) and a decrease in depressed mood (P = 0.01) compared to the control group. Improvements were also noted in WHQ scores for depressed mood (P = 0.03) and menstrual symptoms (P = 0.01). Additionally, the intervention group demonstrated a significant increase in estimated maximal oxygen consumption (P = 0.008) and lean mass (0.57 kg vs. 0.15 kg; P = 0.046).

DISCUSSION

Aerobic exercises improve quality of life and fitness in postmenopausal women. The main objective of this review is to find out the effect of aerobic exercise on quality of life and fitness in postmenopausal women. Wen et al. proved that a 10-week group-based step aerobics program effectively improves functional fitness, reduces bone resorption markers (CTX), increases energy expenditure, and decreases body fat in postmenopausal women with low bone mass, though it does not affect bone mineral density or osteocalcin levels. Karacan et al. proved that a 24-week aerobic callisthenic exercise program significantly improves physical fitness parameters such as body weight, blood pressure, and strength, and reduces menopausal symptoms including hot flushes, night sweats, anxiety, and depression. Gulati et al. found that aerobic exercise training significantly improved cardiovascular and musculoskeletal fitness, including VO2 Max, flexibility, and core strength, in postmenopausal women compared to free body exercises. Yu et al. found that a 24-week aerobic dance intervention significantly improved femoral neck BMD, grip strength, side step performance, and physical function in postmenopausal women with osteopenia. Luoto et al. demonstrated that unsupervised aerobic training significantly reduced night-time hot flushes and improved mood, physical functioning, and cardiorespiratory fitness among sedentary women aged 43–63 years.

CONCLUSION

Aerobic exercise is very beneficial for postmenopausal women, helping to lower heart disease risk, improve fitness, and boost overall quality of life. Structured exercise programs can also reduce menopausal symptoms, improve sleep, and enhance physical abilities. However, some studies have limitations, such as short study durations, not tracking diet, and insufficient focus on bone health markers.

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