

Exercise and Bone Health

What are the benefits for postmenopausal women?

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Some types of exercise have beneficial effects on women's bone health at all ages. Early in life, these exercises are known to promote higher peak bone mass. During midlife, exercise provides many bone-related health benefits, although these effects on have not been clearly established. Later in life, exercise probably has a modest effect on slowing the menopause-associated decline in bone mass, provided there is adequate calcium and vitamin D. However, at all ages, even in those over age 90, exercise can increase muscle mass and strength, which may help prevent falls and, possibly, fractures.

EXERCISE AND BONE HEALTH

Some exercises have been associated with reduced bone loss, although

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few studies have directly evaluated their effect on bone mineral density (BMD).¹ A meta-analysis of clinical trials published from 1966 to 1996 showed that exercise training programs prevented or reversed almost 1% of bone loss per year in the lumbar spine and femoral neck for both premenopausal and postmenopausal women.²

The type of exercise is important. Most experts agree that there are two types of exercises that provide the most bone benefits: weight-bearing exercises and strength-training (or resistance) exercises.³

Weight-bearing exercises are those in which bones and muscles work against gravity. These include any exercise in which the feet and legs bear one's body weight, such as jogging/running, walking/hiking, climbing stairs, dancing, and racquet sports.

Strength-training (or resistance) exercises are those activities that improve muscle mass through muscle resistance, such as free weights or weight machines.

Bicycle riding and swimming, although effective aerobic exercises, are

not weight-bearing exercises.⁴ They should only be used as an adjunct to weight-bearing or strength-type exercises in a program focused on bone health. Of course, they provide many other health benefits, including cardiovascular improvements and increasing joint mobility and general flexibility. Swimming and other water exercises can be especially good for women with severe arthritis or who cannot otherwise participate in an exercise program.

It is well-established that BMD loss begins to increase after menopause, especially during the first 5 postmenopausal years.⁵ Some evidence shows that strength-training exercises may curb bone loss in postmenopausal women who are estrogen deplete.⁶ Strength-training also appears to provide additional benefits for women who use estrogen/hormone-replacement therapy (ERT/HRT), allowing them to increase bone mass rather than just maintain it with ERT/HRT alone.⁷ However, an exercise program by itself cannot prevent menopause-associated bone loss.

ABOUT NAMS

Founded in 1989, The North American Menopause Society (NAMS) is the leading nonprofit organization dedicated to promoting women's health during midlife and beyond through an understanding of menopause.

NAMS contact information is as follows:

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EXERCISE AND FALLS

Exercise appears to play an important role in reducing the risk of falls in elderly women, probably by improving strength, balance, and mobility. This decreases their propensity to fall and improves their ability to absorb impact. Exercise programs for the elderly reduce their risk of falling by 10%, and programs that include training for balance reduce this risk by nearly 20%.⁸ However, there are no clinical data showing that exercise has a direct effect on lowering fracture rates. It is possible that those who participate in regular exercise might have fewer falls; however, it is unclear if exercise affects the risk for fracture from falls that do occur.¹

CLINICAL IMPLICATIONS

Because exercise has such wide-ranging health benefits, clinicians should encourage all perimenopausal and postmenopausal women to exercise regularly. For bone benefits, women should be advised to add strength-training and weight-bearing exercises to their exercise program. Exercises that are not strength-training or weight-bearing have minimal effect on BMD, but do have other health benefits.

An exercise program for women with established osteoporosis should not include heavy weight-bearing exercises or activity so vigorous that it may trigger a fracture. Lower impact weight-bearing exercises such as walking, climbing stairs, and water aerobics can usually be done safely for many years. With proper instruction, many postmenopausal women can participate in weight-training. Initially, the weights should be light, with emphasis on proper technique and posture. The goal is to work up to a high-resistance, low-repetition program.

At the initiation of an exercise program for postmenopausal women, especially for those who have been inactive, their range of motion, musculoskeletal, mental, visual, and cardiovascular status should be assessed. For a woman with advanced osteoporosis, referral to a physical therapist or exercise physiologist may be indicated.

The recommended minimum for healthy midlife women is 30 minutes of moderate intensity physical activity performed on most, preferably all, days of the week. Strength-training can be performed as little as twice a week and need not involve special equipment other than simple weights or elastic bands. Some exercise, however, is better than none—even minimal changes in routine that encourage physical activity can be an important beginning.

Since long-term continuance with exercise programs is low (and bone gains are maintained only as long as the exercise program is continued), it is important to provide counseling on selecting and maintaining an exercise program. Some women may need guidance regarding which type(s) and level of exercise for bone health are appropriate, as well as encouragement to work exercise into their routine in a way they can imagine doing for the rest of their lives. This requires commitment and sometimes giving up something, such as sleeping late on weekends. In the elderly, the importance of exercise in preserving independence and, thus, enhancing quality of life cannot be overemphasized.

CONCLUSION

Although evidence indicates that strength-training and weight-bearing exercises are effective for pre-

venting bone loss in postmenopausal women, exercise alone should not be viewed as prevention or treatment for osteoporosis. Rather, exercise should be included as a part of a comprehensive management program for all postmenopausal women.

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