

Exercising with Osteoporosis



Osteoporosis results from a loss of bone mass (amount and density) and low bone strength. It leads to bone frailty and a high risk of fracture.



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Those often occur in the hip, spine, and wrist. About 34 million Americans have low bone mass, which is called osteopenia. Ten million more have a very low bone mass, which is called osteoporosis. Osteoporosis occurs more often in women. Women tend to lose bone earlier and faster. In fact, after menopause there is a 20 percent loss in the first five to seven years.

People with less muscle and lower strength are more likely to have less bone mass, too. Poor balance increases the risk of falls. Falls are a major cause of bone fractures in those with low bone mass. Fractures of the hip and its junction with the thigh bone are the most serious. About 24 percent of people over 50 years old with hip fractures will die within one year. Others may be less able to walk. Some require nursing home care.

Placing external pressure on the bone helps to increase the bone mass. The force causes the bone to adapt. Evidence suggests both aerobic and strength training exercise programs help prevent and treat osteoporosis. Aerobic exercise that is weight-bearing is best because it puts pressure on the bones. Some examples are walking, jogging, step aerobics, and jumping. Lifting a heavy weight also puts pressure on the bone.

Bone mass changes based on life stages. Bone mass peaks around 17 to 30 years. It is maintained until around age 50 (menopause for women). After age 50, there is rapid loss. The tactics used for bone health will differ at each stage. From teen years to age 30, aerobic exercise and strength training improve bone mass. Mature adults (aged 30 to 50 years) need more weight-bearing

aerobic and strength exercise. This will allow them to maintain and improve bone mass. After menopause, women can delay and minimize bone loss through exercise, but it may not be enough. In this case, they may also need hormone replacement therapy and a proper intake of calcium (1500 mg per day).

Getting Started

- Talk with your health care provider before you start an exercise program. Ask about any changes to your medications or any concerns in becoming more active.
- Take all medicines prescribed by your doctor.
- Start by exercising on your own. Begin walking or another form of activity that you can add to your daily routine.
- Invite others to join you. Exercising together is more fun and increases the chance you will continue. Dogs make great walking partners!
- Look for programs available in your community. Consider contacting an appropriately credentialed exercise professional* to help you. All you really need, though, is a good pair of shoes to get started walking.
- Use a pedometer or other activity tracker to monitor your progress. Slowly work toward a goal, like maybe 10,000 steps per day.

Aerobic Exercise Programs

The American College of Sports Medicine and the Centers for Disease Control and Prevention recommend at least 150 minutes per week of moderate-intensity aerobic activity, 75 minutes of vigorous aerobic activity, or an equivalent combination of both for adults. They also suggest muscle strengthening twice a week. Follow the FITT principle to design and implement a safe and effective program you will enjoy. F = frequency, I = intensity, T = time, and T = type.

- Frequency – Be active on most days of the week but at least three to four days. Work up to five days a week.
- Intensity – Exercise at a moderate level. Use the “talk test” to help you monitor. For example, even though you may notice a slight rise in your heart rate and breathing, you should be able to carry on a conversation while walking at a moderate pace. As you walk faster, you will begin to breathe faster and have difficulty talking. At that point, you’ve achieved moderate intensity or “somewhat hard.” Vigorous exercise causes a large

rise in heart rate and breathing. At this intensity it would become difficult to talk. Most people would rate this as “hard to very hard.”

- Time – Exercise 30 to 60 minutes per day. You can do it all at once or break it up into a few sessions of at least 10 minutes each.
- Type – Do rhythmic, weight-bearing exercises using the large muscle groups. Also, choose activities with a low risk of falling. Walking is good for bone density of the hip. Wear a weighted vest to increase intensity and put more stress on your bones. Choose activities you enjoy and will do regularly in your new, more active lifestyle. Add variety depending on the day or the season to keep your program more enjoyable.

Aerobic Exercise Cautions

- If you have been inactive for a long time, start with shorter sessions (10 to 15 minutes). Add five minutes to each session, increasing every two to four weeks. Over time, build up to being active at least 30 minutes a day on most days of the week.
- Swimming, water exercise, and biking are good aerobic activities. However, they are not weight-bearing. As such, they do little to improve bone mass.
- Water exercise is good if you have osteoporosis or have had vertebral fractures. Be sure to avoid exercises that cause you to twist, use dynamic abdominal muscles (like sit-ups) or make excessive trunk flexion (like touching toes or rowing).
- You should also avoid high-impact or contact activities if you have osteoporosis. They may overload your bones or put you at risk of falling. Begin each exercise in a stable position. Monitor your response before taking the next action.

Resistance Exercise Programs

Evidence suggests moderate- to vigorous-intensity resistance training is necessary to improve or maintain bone mass. Resistance training also improves your ability to function and promotes good health. Follow the FITT principle when creating a resistance exercise program, too.

- Frequency – Do resistance training at least two days per week. Plan a day of rest between sessions.
- Intensity – Moderate to vigorous (8 to 12 repetitions). The amount of stress put on the bones is most important. If weights are too light, they will not affect bone mass. If weights are too heavy, they might overload the bones. This could lead to a fracture. Be especially careful if you have very low bone mass.
- Time – Two sets of repetitions for all major muscle groups.
- Type – Try to increase the strength of your lower body first. This will lower your risk of falling. Do not neglect your upper body, though. At first, try using weight machines. These will help if you have balance problems. As your strength and balance improve, add free weights. Don't belong to a gym or health club? No problem. You can do the same exercises at home using free weights and resistance bands.

Resistance Exercise Cautions

- Avoid holding your breath when lifting. This can cause large changes in blood pressure. That change may increase the risk of passing out or developing abnormal heart rhythms. This is especially true if you also have high blood pressure.
- If you have joint problems or other health problems, do only one set for all major muscle groups. Start with 10 to 15 repetitions. Build up to 15 to 20 repetitions before you add another set.
- Remember, you are not training to be a weight lifter. You are trying to improve your strength and muscle endurance. This will improve or maintain your bone mass and make your daily activities less stressful.

Other Types of Exercise

- Poor balance and reduced muscle mass and strength are all independent risk factors for fractures and falling. Fifty percent of older adults have problems with balance.
- Exercises to improve balance are easy to do and can help a lot. Stand on one foot. Stand or walk on a balance board. Walk backwards. These all are simple exercises you should do most days.
- Reduce anxiety and the risk of falling with these simple precautions. Avoid unstable surfaces. Keep your exercise area free of hazards. Use balance support (for example, a chair, wall, or nearby person).

Remember, until age 30, your goal is to prevent bone loss and to build bone mass. This is the first line of defense against osteoporosis. During mid-life, try to slow bone loss and form new bone mass. In the later years, try to preserve bone mass and reduce the risk of falls with weight-bearing aerobic and strength exercises. This will help you remain independent and improve your quality of life.

Design your exercise program for the most benefit and the fewest risks to your health or physical condition. Contact an appropriately credentialed exercise professional* to work with you and your doctor. They can help you establish realistic goals. And together, you can design a safe, effective, and enjoyable program to meet your needs and goals.

For more information, visit www.exerciseismedicine.org or e-mail eim@acsm.org.

Pescatello, L., Arena, R., Riebe, D., & Thompson, P. (2013). General Principles of Exercise Prescription. In ACSM's Guidelines for Exercise Testing and Prescription (9th ed., pp. 166-177). Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins.

*A listing of exercise professionals can be found at www.usreps.org and EIM Credentialed professionals can be found through the ACSM ProFinder (<http://bit.ly/1Mq6ldN>).

Referral Instructions