



The American Orthopaedic  
Society for Sports Medicine

## SPORTS TIP

# Exercising for Bone Health

EXPERT CONSULTANTS: Sharon L. Hame, MD, Julie Casper, MD

### Why is exercise important for bone health?

Exercise is the stimulus that makes bones stronger. Your muscles grow and strengthen in response to exercise; bone behaves similarly. Stressing bone through activity and exercise encourages it to increase its calcium content and grow more dense. Bone health follows the adage, “Use it or lose it.” Inactivity leads to decreased bone mass. Exercise can help you maintain bone mass and reduce age-related bone loss.

Exercise decreases the risk of osteoporosis. It also improves muscle strength, balance and coordination, which help to prevent falls and bone fractures.

### Who should exercise?

It is important for people of all ages to exercise. During childhood and adolescence, the bone is rapidly building density and strength. Exercise helps to maximize one’s peak bone mass and may therefore prevent poor bone health in later years.

Exercise has its greatest effects in adults who have been inactive. Since bone naturally becomes weaker with age, it is vital that men and women of all ages exercise.

### What exercises are best for good bone health?

Any exercise is good because all exercise causes muscles to contract against bones, which stimulates bones to strengthen. A combination of weightbearing and resistance exercises is the ideal regimen.

Weightbearing exercises are those that place weight on the bones, such as walking and jogging. These exercises are the best for bone, because both muscles and gravity stress the bones. Other examples of weightbearing exercises include aerobics, hiking, stairs, dancing and even household chores and yard work. The higher the impact, the greater the benefit to bone. You may want to try holding light weights or water bottles while walking in order to increase the weight on your bones.

Resistance exercises also strengthen bones. Examples include free weights, weight machines or elastic tubing. You should focus on the major muscle groups in the legs, arms and trunk.

Any form of exercise is better than no exercise. Swimming and bicycling are not weightbearing exercises, but they still exercise your muscles. Even yoga and Pilates, when done at a vigorous level, can improve bone health. The best activity for you is one that you will enjoy doing and will do regularly.

### How much exercise is needed for good bone health?

Most doctors recommend weightbearing exercise for at least 30 minutes a day, 3 or 4 times a week. It’s all right to split your exercise up throughout the day; it doesn’t need to be done all at once to benefit the bones.

Resistance exercises should be done 2 or 3 times a week. Your muscles and bones need at least one day to rest between workouts in order to restore themselves.

### Is too much exercise harmful?

Yes. Extreme exercise regimens, sometimes seen in young competitive athletes, may lead to decreased bone density and stress fractures. Too much exercise wears down bones and does not allow time for the bones to rest and rebuild. Discuss your exercise schedule with your doctor to make sure you are not over-exercising.

### What else is necessary to maintain good bone health?

A proper diet is important to maintain bone strength. Specifically, bones need a supply of calcium in order to grow stronger. Children, adolescents, and young adults should have 1,200 to 1,500 milligrams of calcium daily. Adults need 1,000 to 1,500 milligrams each day. Sources of calcium include dairy products, green, leafy vegetables, tofu, shellfish, and almonds. Some foods like orange juice, bread, and cereal are fortified with calcium. Many people do not meet the recommended daily dose of calcium from their diet alone. In that case, calcium supplements can help one to achieve the recommended amount of calcium.

### References

Grandjean AC, Reimers KJ, Ruud J. Nutrition. In Ireland ML, Nattiv A. *The Female Athlete*. Philadelphia: Saunders. 2002:84–88.

Katz WA, Sherman C. Exercise for osteoporosis. *Phys Sport Med*. 1998. 26:2.

National Osteoporosis Foundation. At URL: <http://www.nof.org/prevention/exercise.htm>. Accessed October 15, 2003.

Sequin R, Nelson ME. The benefits of strength training for older adults. *Am J Prev Med*. 2003. 25(3 Suppl 2):141–149.



## Exercising for Bone Health

### Tips for Beginning an Exercise Program

#### Before you start

- Consult your doctor and orthopaedist to ensure that there are no medical or musculoskeletal problems that may place restrictions on your exercise program.
- Select an activity that you like and that works with your lifestyle. Try to vary your exercise routine in order to keep it interesting.

#### For cardiovascular or aerobic activities (such as walking, jogging, or swimming)

- Begin at a low level and gradually build your intensity and duration.
- Warm up for 5 minutes before any activity, start slowly for the first 5 minutes of the activity, and finish with a 5 minute cool-down (walking and stretching).
- Gradually increase your workout duration from 5 minutes to 30 minutes.
- Slowly increase your intensity so that your heart rate increases to 60 to 80 percent of your maximum heart rate (maximum heart rate equals 220 minus your age).

#### For resistance exercises (free weights, weight machines)

- Begin each exercise with very low weights and minimal repetitions.
- Slowly increase weight, no more than 10 percent per week.
- Gradually increase the number of repetitions to several sets of 10 to 12 repetitions, with a rest period of 30 to 60 seconds between sets.

#### Warning signs

- It is normal to feel mild soreness or stiffness after exercising. If you have pain or feel tired throughout the day after exercising, you did too much. You should decrease the intensity and/or the duration of your exercise.
- If you experience severe pain, swollen joints or limping, contact your doctor.