



**National Institutes of Health
Osteoporosis and Related
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National Resource Center**

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What People With Anorexia Nervosa Need to Know About Osteoporosis

What Is Anorexia Nervosa?

Anorexia nervosa is an eating disorder characterized by an irrational fear of weight gain. People with anorexia nervosa believe that they are overweight even when they are extremely thin. According to the National Institute of Mental Health, an estimated 0.5 to 3.7 percent of females have anorexia nervosa. Although the majority of people with anorexia are female, an estimated 5 to 15 percent of people with anorexia are male.

Individuals with anorexia become obsessed with food and severely restrict their dietary intake. The disease is associated with several health problems and, in rare cases, even death. The disorder may begin as early as the onset of puberty. The first menstrual period is typically delayed in girls who have anorexia when they reach puberty. For girls who have already reached puberty when they develop anorexia, menstrual periods are often infrequent or absent.

What Is Osteoporosis?

Osteoporosis is a condition in which the bones become less dense and more likely to fracture. Fractures from osteoporosis can result in significant pain and disability. Osteoporosis is a major health threat for an estimated 44 million Americans, 68 percent of whom are women.

Risk factors for developing osteoporosis include:

- thinness or small frame
- family history of the disease

- being postmenopausal and particularly having had early menopause
- abnormal absence of menstrual periods (amenorrhea)
- prolonged use of certain medications, such as those used to treat lupus, asthma, thyroid deficiencies, and seizures
- low calcium intake
- lack of physical activity
- smoking
- excessive alcohol intake.

Osteoporosis often can be prevented. It is known as a silent disease because, if undetected, bone loss can progress for many years without symptoms until a fracture occurs. Osteoporosis has been called a childhood disease with old age consequences because building healthy bones in youth helps prevent osteoporosis and fractures later in life. However, it is never too late to adopt new habits for healthy bones.

The Link Between Anorexia Nervosa and Osteoporosis

Anorexia nervosa has significant physical consequences. Affected individuals can experience nutritional and hormonal problems that negatively impact bone density. Low body weight in females causes the body to stop producing estrogen, resulting in a condition known as amenorrhea, or absent menstrual periods. Low estrogen levels contribute to significant losses in bone density.

In addition, individuals with anorexia often produce excessive amounts of the adrenal hormone cortisol, which is known to trigger bone loss. Other problems, such as a decrease in the production of growth hormone and other growth factors, low body weight (apart from the estrogen loss it causes), calcium deficiency, and malnutrition, contribute to bone loss in girls and women with anorexia. Weight loss, restricted dietary intake, and testosterone deficiency may be responsible for the low bone density found in males with the disorder.

Studies suggest that low bone mass (osteopenia) is common in people with anorexia and that it occurs early in the course of the disease. Girls with anorexia are less likely to reach their peak bone density and therefore may be at increased risk for osteoporosis and fracture throughout life.

Osteoporosis Management Strategies

Up to one-third of peak bone density is achieved during puberty. Anorexia is typically identified during mid to late adolescence, a critical period for bone development. The longer the duration of the disorder, the greater the bone loss and the less likely it is that bone mineral density will ever return to normal.

The primary goal of medical therapy for individuals with anorexia is weight gain and, in females, the return of normal menstrual periods. However, attention to other aspects of bone health is also important.

Nutrition: A well-balanced diet rich in calcium and vitamin D is important for healthy bones. Good sources of calcium include low-fat dairy products; dark green, leafy vegetables; and calcium-fortified foods and beverages. Supplements can help ensure that people get adequate amounts of calcium each day, especially in people with a proven milk allergy. The Institute of Medicine recommends a daily calcium intake of 1,000 mg (milligrams) for men and women, increasing to 1,200 mg for those age 50 and older.

Vitamin D plays an important role in calcium absorption and bone health. It is synthesized in the skin through exposure to sunlight. Food sources of vitamin D include egg yolks, saltwater fish, and liver. Many people obtain enough vitamin D by getting about 15 minutes of sunlight each day; others may need vitamin D supplements to achieve the recommended intake of 400 to 600 International Units (IU) each day.

Exercise: Like muscle, bone is living tissue that responds to exercise by becoming stronger. The best activity for your bones is weight-bearing exercise that forces you to work against gravity. Some examples include walking, climbing stairs, lifting weights, and dancing.

Although walking and other types of regular exercise can help prevent bone loss and provide many other health benefits, these potential benefits need to be weighed against the risk of fractures, delayed weight gain, and exercise-induced amenorrhea in people with anorexia and those recovering from the disorder.

Healthy lifestyle: Smoking is bad for bones as well as the heart and lungs. In addition, smokers may absorb less calcium from their diets. Alcohol also can have a negative effect on bone health. Those who drink heavily are more prone to bone loss and fracture, because of both poor nutrition and increased risk of falling.

Bone density test: A bone mineral density (BMD) test measures bone density in various parts of the body. This safe and painless test can detect osteoporosis before a fracture occurs and can predict one's chances of fracturing in the future. The BMD test can help determine whether medication should be considered.

Medication: There is no cure for osteoporosis. However, medications are available to prevent and treat the disease in postmenopausal women, men, and both women and men taking glucocorticoid medication. Some studies suggest that there may be a role for estrogen preparations among girls and young women with

anorexia. However, experts agree that estrogen should not be a substitute for nutritional support.

Resources

For more information on osteoporosis, visit the National Institutes of Health Osteoporosis and Related Bone Diseases ~ National Resource Center Web site at www.niams.nih.gov/bone or call 800-624-2663.

For more information on anorexia, visit the National Institute of Mental Health Web site at www.nimh.nih.gov or call 800-421-4211.

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For Your Information

This publication contains information about medications used to treat the health condition discussed here. When this fact sheet was printed, we included the most up-to-date (accurate) information available. Occasionally, new information on medication is released.

For updates and for any questions about any medications you are taking, please contact the Food and Drug Administration at 888-INFO-FDA (888-463-6332, a toll-free call) or visit its Web site at www.fda.gov.

For updates and questions about statistics, please contact the Centers for Disease Control and Prevention's National Center for Health Statistics toll free at 800-232-4636 or visit its Web site at www.cdc.gov/nchs.

Recognizing the National Bone and Joint Decade: 2002-2011