

**Helpful information
about bone health &
osteoporosis**
Patient Resource



Centura Health Physician Group
Mercy Orthopedic Associates



Every year In the United States, 2.5 million fractures occur due to osteoporosis. Out of these, 330,000 are hip fractures, and half of these hip fractures are second fractures. Hip fractures are associated with 25-30% mortality rate within a year. Osteoporosis is a treatable disease and most of these fractures can be prevented.

The Bone Health Clinic at Mercy Orthopedic Associates was developed to help you prevent fractures. Whether or not you have already had any fractures, our goal is to prevent any further fractures and help you live a longer, independent, high quality life at home.

What is Osteoporosis?

Osteoporosis is a disease characterized by low bone mass, deterioration of bone tissue, and decreased bone quality. These changes lead to bone fragility and an increased risk of fractures at multiple body sites. Men as well as women are affected by osteoporosis, a disease that can be prevented and treated. In the United States, more than 40 million people either already have osteoporosis or are at high risk for fractures due to low bone mass and/or poor bone quality.

Fragility Fractures

Fragility fractures are osteoporosis related fractures. They occur from minimal velocity trauma, such as a fall from standing height. Osteoporosis can be diagnosed in anyone who has a history of a fragility fracture.

Risk Factors for Osteoporosis

Anyone who has sustained a fragility fracture has more than double the risk of another fracture compared to people who have not had a fragility fracture. There are also other risk factors for developing osteoporosis. Some factors you cannot change and some you can.

Risk factors you cannot change:

- Age – we lose bone density and have changes that affect bone quality as we age
- Sex - females are more likely to develop osteoporosis than men
- Ethnicity – Caucasian and Asian women are at highest risk, however

osteoporosis can happen in people of any race

- Body Frame Size – small, thin boned people are at highest risk
- Family history – it is thought that osteoporosis and high fracture risk is hereditary, especially if a person’s parent sustained a hip fracture.

Risk factors you can change:

- Calcium and Vitamin D intake – a lifetime of low calcium and vitamin D intake makes you more prone to bone loss
- Medication use – Long-term use of certain medications, such as glucocorticoids, proton pump inhibitors, and some anticonvulsants can lead to loss of bone density and fractures.
- Activity – An inactive lifestyle or extended bed rest weakens bones.
- Tobacco use – Tobacco and smoking are bad for bones as well as the heart and lungs.
- Alcohol intake – Excessive consumption of alcohol increases the risk of bone loss.
- Caffeine – Greater than 2 servings daily can increase the risk of bone loss. Caffeine can decrease absorption of calcium in the stomach and increase calcium excretion in the kidneys.
- Sex hormones – Abnormal absence of menstrual periods (amenorrhea), low estrogen level (menopause), in women, and low testosterone levels in men can bring on osteoporosis.
- Anorexia nervosa – Characterized by an irrational fear of weight gain, this eating disorder increases the risk for osteoporosis.

Diagnosis

Your healthcare provider has a number of tools to help detect and diagnose osteoporosis. Osteoporosis can be diagnosed two ways. First, if there is a history of a fragility fracture, osteoporosis can be diagnosed automatically regardless of bone mineral density (BMD) testing results. Secondly, it can be diagnosed based results of BMD testing, also called densitometry or DEXA scan. DEXA scans are often done to screen people for osteoporosis, even if they have never had a fracture.

Workup for osteoporosis typically includes a comprehensive medical assessment, defining your risks, medical and family history, and any health or bone problems you may be having. Blood work will help to identify possible causes of osteoporosis. A DEXA scan will also likely be done to measure your bone density.

Bone density Testing

The results of you bone mineral density (BMD) test are reported as a “T-score” or “Z-score.”

- The T-score compares your bone density to that of a healthy 30-year old. T-scores are used in men 50 and older and postmenopausal women.
- The Z-score compares your bone density to other people of your age, sex, and race. Z-scores are used in men younger than 50 and in premenopausal women.

T-scores Results

A T-score is within the normal range if it is -1.0 or greater

A T-score between -1 and -2.4 indicates less dense than normal bone (osteopenia)

A T-score equal or less than -2.5 indicates osteoporosis

Diet, Calcium, and Vitamin D

Calcium

The foods we eat contain a variety of vitamins, minerals, and other important nutrients that help keep our bodies healthy. Two nutrients in particular, calcium and vitamin D, are needed for strong bones.

Calcium is needed for multiple organs in our bodies, including our heart, brain, and muscles. If we do not get the calcium that our bodies need to maintain these body functions, our bodies “steal” calcium from our bones, and this can lead to osteoporosis if this occurs for a long period of time. Many published studies show that low calcium intake throughout life is associated with low bone mass and high fracture rates. National nutrition surveys have shown that most people are not getting the calcium they need to grow and maintain healthy bones. The purpose making sure that calcium intake is adequate is to ensure that your body does not have to take calcium out of your bones.

Women 51 and older, and men 71 and older need 1200 mg of calcium per day from all sources. Adult women 50 and younger and men 70 and younger need 1000 mg of calcium per day from all sources. Dietary sources of calcium include dairy products, leafy green vegetables, fish with bones, and fortified foods.

If you have trouble getting enough calcium in your diet, you may need to take a calcium supplement. The amount of calcium you will need from a supplement depends on how much calcium you obtain from food sources. There are several different calcium compounds from which to choose, such as calcium carbonate and calcium citrate, among others. Calcium citrate is generally recommended. It is best to get as much of the required calcium from your diet rather than from supplements. Calcium is absorbed in amounts of 500-600 mg at a time, so divide doses if you rely solely on calcium supplementation. Keep in mind that the recommended calcium intake amount includes what you get in your diet and in supplements.

Vitamin D

The body needs vitamin D to absorb calcium. Without enough vitamin D, you can't absorb enough calcium from your diet. In this situation, the body must take calcium from its stores in the skeleton, which weakens existing bone and prevents the formation of strong, new bone.

Although we have many days of sunlight in Colorado, there is not enough “direct sunlight” to provide us with the vitamin D that we need to maintain healthy levels. Also, nobody should be relying on the sun for vitamin D, as you should be wearing sunscreen and protecting yourself from prolonged sun exposure to prevent skin cancer. Food sources of vitamin D are very limited. Therefore, most people do require supplementation to maintain healthy vitamin D levels.

The elevation and latitude of Durango, Colorado causes very low vitamin D levels for many local residents, requiring a higher recommended daily intake of 1000-2000 IU.

Protein

Protein is needed for fracture healing. In addition, studies have shown that elderly people with a hip fracture who do not have enough protein in their diets are more likely to experience loss of independence, institutionalization, and even death after their fracture. People who get adequate amounts of protein are also less likely to lose muscle mass as they age. The recommended daily intake for protein is 56 grams for men and 46 grams for women.

Caffeine

People with high amounts of caffeine in their diets are more prone to bone loss and fractures. Caffeine can decrease calcium absorption and increase loss of calcium at the kidneys which can result in bone loss over long periods of time, especially in people who have low calcium intake. It is recommended to have no more than 2 servings of caffeine per day.

Alcohol

People who consume excessive alcohol are also more likely to have osteoporosis and fractures. No more than 2 servings of alcohol is recommended.

Exercise

Vital at every age for healthy bones, exercise is important for treating and preventing osteoporosis. Exercise also increases muscle strength, coordination, and balance, which not only leads to better overall health, but can help prevent falls and related fractures. Like muscle, bone is living tissue that responds to exercise by becoming stronger. Young women and men who exercise regularly generally achieve greater peak bone mass (maximum bone density and strength) than those who do not.

A comprehensive exercise program for bone health should focus on weight bearing activity, strengthening, flexibility and balance. Sometimes people may benefit from working with a physical therapist. There are also programs offered throughout the community that focus on these different components. Some people who have had specific types of fractures or are at a very high risk of fractures should not do certain

exercises. You should talk to your healthcare provider prior to starting any new exercise program.

Home Safety/Fall Prevention

Falls can increase the likelihood of fracturing a bone in the hip, wrist, spine, or other part of the skeleton. In addition to the environmental, falls can also be caused by impaired vision or balance, chronic diseases that affect mental or physical functioning, and certain medications, such as sedatives and antidepressants. It is important that individuals with osteoporosis be aware of any physical changes that affect their balance or gait, and that they discuss these changes with their doctor.

Whether you are at risk and trying to prevent a fall or trying to prevent a second fall, here are some tips to help eliminate the environmental factors that lead to falls:

1. Install grab bars in your bathroom.
2. Keep things off the floor that you might trip over, including throw rugs.
3. Use night lights and keep a flashlight and phone by your bed.
4. Go to: <https://orthoinfo.aaos.org/en/staying-healthy/home-safety-checklist/> for a complete list of things you can do to prevent falls.

Medications for Osteoporosis

Treatment of osteoporosis with medications can increase in bone density and reduce the risk of new fractures. Some medications can actually build new bone and improve bone quality. There are many different medications, and the specific one that is right for you will be determined by your labs, other tests, and a discussion with your provider. Many people are worried about the risk of side effects with medications. However, for most people, the risk of a life changing fracture is significantly higher than the risk of a serious side effect from a medication.