

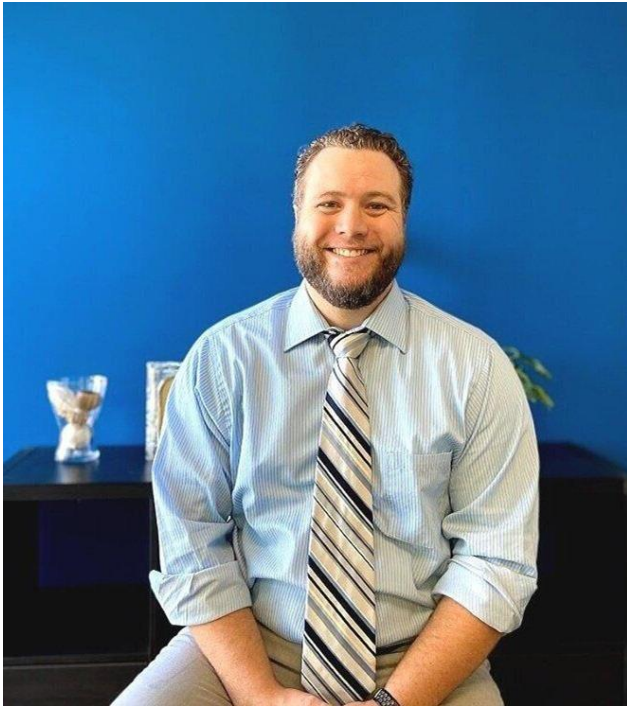


Osteoporosis: How to Prevent Bone Loss

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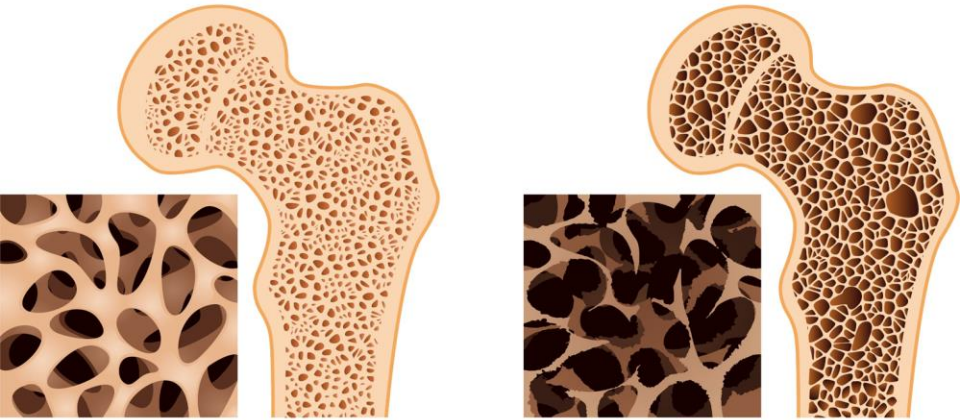
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Osteoporosis



Healthy bone

Osteoporosis



OSTEOPOROSIS

How to Prevent and Combat Bone Loss



GOALS AND OBJECTIVES



Define Osteoporosis

What is Osteoporosis

What causes Osteoporosis

What Dangers are involved

How can Osteoporosis Limit mobility and activity

Medications and Osteoporosis

What medications are used for treating and combating degenerative effects of Osteoporosis

When is it appropriate to consider using medications as a form of intervention

Healthy activities to prevent Osteoporosis

Preventative interventions

Combative interventions

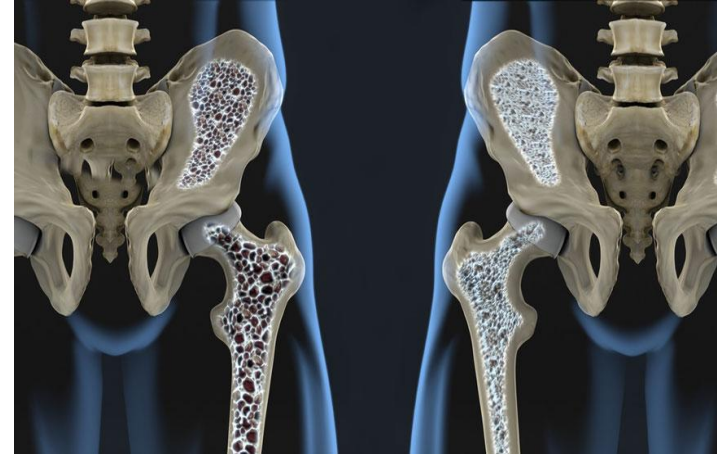
Healthy Lifestyle needs and Changes one can make to prevent and combat osteoporosis.

Osteoporosis: What is it?

Osteoporosis is a skeletal disorder in which bones weaken and risk of fracture is increased. Osteoporosis does not have any physical symptoms. Many people discover they have Osteoporosis following a bone fracture. While any fracture is a serious occurrence, hip fractures are of greatest public health concern because the consequences are often devastating.

Bone strength is determined by the amount of bone mass or bone mineral density (BMD) and its quality and microarchitecture. The latter two qualities are not easy to measure, but methods to accurately assess BMD, such as dual-energy x-ray absorptiometry (DXA), are available.

In 1994, an expert panel convened by the World Health Organization (WHO) developed diagnostic criteria for osteoporosis and reduced bone density in women. This diagnostic criteria was updated in 2022.



What Causes Osteoporosis?



Osteoporosis occurs when the body cannot replace bone (remodeling) as fast as it is broken down (resorption). It is common in older individuals, especially women.

Osteoporosis is defined as a history of fragility fracture and/or a T-score of -2.5 or lower on dual energy X-ray absorptiometry (DXA or DEXA).

Osteopenia (or low bone mass) is defined as a T-score between -1.0 and -2.5 on DXA.

****Bone is mostly replaced in the entire skeleton about every 10 years after the first year of life. This slows down as we age.**

What is a DXA Scan?



A DXA (dual energy x-ray absorptiometry) scan, is a bone density test that tells you if you have normal bone density, low bone density (Osteopenia), or Osteoporosis. It is the **ONLY** test that can diagnose Osteoporosis. The lower the bone density, the greater the your risk of fracture. A bone density test can help you and your Dr. form a plan.

Benefits:

- Learn if you have weak bones or Osteoporosis before a fracture occurs.
- Predict your chances of a bone fracture in the future.
- Monitor if your bone density is improving, staying the same, or getting worse.
- Find out how well a medication for Osteoporosis is working.
- If a fracture has occurred, confirm if Osteoporosis is present.

When to get a DXA Scan?

The National Osteoporosis Foundation (NOF) recommends a bone density test if?

- You are a woman age 65 or older
- You are a man age 70 or older
- You break a bone after age 50
- You are a woman of menopausal age with risk factors
- You are postmenopausal and under age 50 with risk factors
- You are a man age 50-69 with risk factors

A bone density test may also be necessary if you have any of the following:

- An X-ray of you spine showing a break or bone loss in your spine
- Back pain with a possible break in the spine
- Height loss of $\frac{1}{2}$ inch or more within 1 year
- Total Height loss of 1.5 inches from your original Height

What Dangers are involved with Osteoporosis?



Primary Dangers are Bone Fractures (Broken Bone)

- **Fragility fracture is one caused by a degree of trauma not expected to cause a fracture; for example, a fall from standing height or lower. Fragility fractures, such as vertebral compression fractures and distal forearm fractures, are common in the elderly but can occur at any age. Exclusions: toes, fingers, face, skull, and ribs.**
- **Major osteoporotic fracture is a fracture of the hip, spine (clinical), wrist, or humerus.**

Secondary Dangers include Mental Effects & Fear of falling- Leads to decreased activity, resulting in decreased strength, endurance, balance control and reaction control (Reflex timing).

How can Osteoporosis limit activity and mobility?



Knowledge of Osteoporosis can cause a Fear of Falling and Fear of Injury

- This can result in decreased activity= decreased strength, endurance, balance control, balance correction and reaction timing, poor posture and stature.
- May encourage use of AD (Cane, Walker, Wheelchair) to encourage safety and security
 - *Although these are enabling devices, they can be seen as devices that represent a negative disability.*
- Require need for reduced intensity of activity (Ex. Change from Running to Walking).
- Chronic pain- as a result from falls, fracture, or decreased activity
- Decrease or Loss of quality of life, dependence on caregivers, and inability to carry out daily tasks and activities with independence.
- It is a good idea to have your vision and hearing checked so that falls do not occur as a result of inability to see or hear what's going on around you.

Medication and Osteoporosis

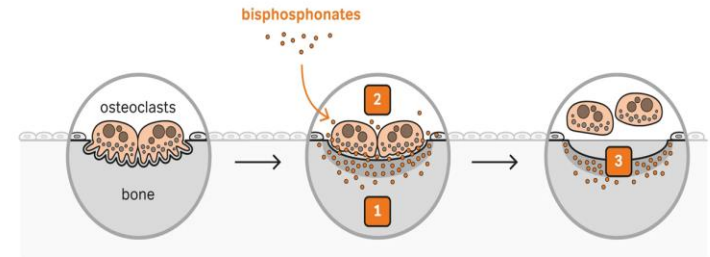
Most people with osteoporosis also need medications to slow bone mass loss or prevent fractures.

There are 2 classes of medications:
Antiresorptive, and Anabolic.

Antiresorptive drugs- work by slowing the resorption or breakdown part of the remodeling cycle.

- Bisphosphonates are the most common treatments for osteoporosis. These anti-resorptive drugs include Alendronate (Fosamax), Risendronate (Actinol), Ibandronate (Boniva), and zoledronic acid (Reclast).

- Side effects of bisphosphonates are rare but can include osteonecrosis of the jaw and atypical femoral fractures.



- 1** Bisphosphonates concentrate in newly mineralised bone and osteoclasts
- 2** Bisphosphonates are released during bone breakdown. They inhibit further osteoclast activity
- 3** This results in reduced bone breakdown

Medication and Osteoporosis

Anabolic Drugs- work by stimulating the formation part of the remodeling process. More bone is formed than is taken away. The result is stronger bone that is less likely to break.

FDA-approved anabolic medicines available at this time.

- **Teriparatide- a parathyroid hormone analog.**
- **Abaloparatide, a parathyroid hormone-related protein analog.**
- **Romosozumab-aqqg- a novel agent in the treatment for postmenopausal osteoporosis**
- **Sclerostin inhibitor**

Medication and Osteoporosis

Bone density Category	When to Consider Osteoporosis Medicine Treatment in Postmenopausal Women and Men Age 50 Years and Older	T- Scores	
		Range	Possible T-Scores
Normal Bone Density	Most people with T-scores of -1.0 or higher do not need to consider a medicine.	-1.0 and above	+1.0 +0.5 0 -0.5 -1.0
Low Bone Density (Osteopenia)	People with T-scores between -1.0 and -2.5 should consider a medicine when there are certain risk factors suggesting an increased chance of breaking a bone in the next 10 years.	-1.0 to -2.5	-1.1 -1.5 -2.0 -2.4
Osteoporosis	All people with osteoporosis should consider a medicine to reduce the risk of broken bones.	-2.5 or below	-2.5 -3.0 -3.5 -4.0
Severe Osteoporosis	All people with severe osteoporosis should consider a medicine to reduce the risk of additional broken bones	-2.5 or below plus a broken bone	-2.5 -3.0 -3.5 -4.0

Preventative Measures to avoid Osteoporosis



What can you do to protect your bones and prevent osteoporosis?

- Eat a well-balanced diet that includes enough calcium AND Vitamin D
- Eat plenty of fruits and vegetables
- Exercise on a regular basis
- Avoid excess alcohol intake and smoking

Calcium and Vitamin D

Calcium and vitamin D are the two most important nutrients to maintain good bone health.

So, how much calcium and vitamin D does the average person need on a daily basis?

Calcium and Vitamin D

Women & Men	
Under Age 50	400-800 International Units (IU) Daily.
Age 50 +	800-1000 IU Daily

**Table 1.
Recommended
Calcium intake.**

Women	
Age 50 & Younger	1,000 mg* Daily
Age 50 & Older	1,200 mg* Daily
Men	
Age 70 & Younger	1,000 mg* Daily
Age 71 & Older	1,200 mg* Daily

**Table 2.
Recommended
Vitamin D intake.**

Preventing Osteoporosis

It is estimated that about 2 million fractures are caused by osteoporosis each year. So, what can you do to protect your bones and prevent osteoporosis?

- Stay up to date on medical screenings and status'
 - Eat a well-balanced diet that includes enough calcium AND Vitamin D
 - Eat plenty of fruits and vegetables
 - Exercise on a regular basis
 - Avoid excess alcohol intake and smoking
- Cut down on Salt and Caffeine intake

Combating Osteoporosis

Diet: Take Calcium & Vitamin D. Consume enough protein, cut down on salt, Caffeine, and Alcohol. Stop smoking. Eat plenty of fruit and vegetables, stay hydrated.

Medications: Discuss with your physician which ones will best help you.

Exercise: establish a plan for regular weight bearing, balance, and progressive exercises. Discuss with a PT or fitness professional. Keep it simple to be able to maintain daily participation.

Exercise and Osteoporosis

Keep It Simple. Sit less and move around more! Walk to the mailbox. Walk the dog. Dance in the kitchen. Take the stairs. Take opportunities to load your bones throughout the day.

Build a Plan. Include both strength training and weight-bearing activities. A physical therapist (PT) or certified exercise professional with expertise in bone health can design a customized program for you.

Tips & Cautions:

Good posture is important while sitting, standing, walking and exercising. A PT or exercise professional can teach you how to reduce stress on your spine and joints through muscle balance, proper movement and body positioning.

Avoid activities that involve excessive twisting or bending, especially if you have low bone density in your spine. For example, use caution with activities like Yoga or Pilates or take a break during stressful positions.

To build strength in a certain bone, you must do exercises that involve and challenge that specific area. For example, lifting weights to make your arms stronger will not prevent a hip fracture.

Exercise and Osteoporosis

Weight-Bearing Activity	What: Repetitive-impact weight-bearing activity	How Often: 4-7 days/week	How Hard: Moderate- to high-intensity depending on ability and bone/joint health	How Much: Start w/5 impacts. Gradually build up to 30-60 total impacts over the day OR Start w/5-10 minutes of weight-bearing activity – build up to 20-45 minutes/day.
Strength Training	Hand weights, resistance bands, weight machines or your own body weight (for example, chair sit-to-stands or kitchen counter push-ups)	2-3 days/week *Rest day in between	Start w/12 repetitions at light-medium effort. Gradually build to hard effort for just 8 repetitions.	8-10 repetitions for each major muscle group. After 2 weeks, increase to 2 sets.

Exercise and Osteoporosis

<p>Balance</p>	<p>Standing Stability: When standing, gradually reduce your base of support: 1) Stand with both feet together and hands on your chest. 2) Stand with one foot forward and the other back. 3) Stand-heel-to-toe. 4) Stand on one leg. Hold a position for 15-30 seconds.</p>	<p>Active challenges Do movements that disturb your center of gravity: 1) Walk on a line. 2) Walk heel-to-toe. 3) Walk on your toes. 4) Turn in a circle or move in different patterns.</p>		
<p>Other Activities</p>	<p>Aerobic Activity Aerobic activities such as walking, cycling or using an elliptical trainer are important for heart health and stamina. Do these activities for 30-60 minutes (preferably weight-bearing) at least 3 days/week at a moderate-intensity.</p>	<p>Flexibility Stretch your muscles 5-7 days/week. Stretch to the point of feeling tightness. Hold for 10-30 seconds (30-60 seconds for older adults). For example, stretch your chest, thighs and calves to help your posture.</p>	<p>Change it Up If your bones can handle it, activities with changes of speed and direction can be good, such as aerobic dance routines, tennis, pickleball, dancing or soccer. Ask your health care provider if these would be safe for you.</p>	<p>Posture You can stand taller by doing exercises to strengthen your back and stretch your chest muscles. A PT or exercise professional can help you achieve muscle balance for better posture.</p>

Healthy Lifestyle

Lifestyle changes: As with many health conditions, increased activity can be a major benefit. Weight bearing exercises at least 4 days a week for 30 minutes is a good start. Other activities include Aerobic exercise for increased cardiovascular strength and endurance, Anaerobic exercises for increased pulmonary endurance,

Maintenance:

- Stay up to date on medical statuses.
- Monitoring responses to treatment
- Progressing Exercises and programs
- Consume a healthy diet (Calcium, Vitamin D, Fruits, Vegetables, Protein (and protein supplements)).
- Avoid Smoking, Alcohol, and Caffeine consumption

Good News about Osteoporosis

March 21, 2024 — President Biden issued a sweeping Executive Order directing Federal government agencies to take bold actions to improve women’s health research and to assure that the “gains made in research laboratories are translated into real-world clinical benefits for women.” In his published statement accompanying the Executive Order, the President specifically highlighted osteoporosis as a critical women’s health condition that was being targeted for action.

Take-Home Points

Basic bone health - All individuals over age 50 should:

- Participate in regular weight-bearing exercise, balance programs, and movement activities.

Review your medications

- Take a daily calcium supplement (1,200 mg)
- Take a daily Vitamin D supplement (800-2,000 IU)

Implement fall prevention strategies

- Your risk of a fracture can be estimated with a Bone Mineral Density test. Ordered by your physician.
- Speak with your physician about your bone health

Resources

- **Bone Health and Osteoporosis: What It Means to You**
<https://www.niams.nih.gov/health-topics/surgeon-generals-report-bone-health-and-osteoporosis-what-it-means-you>
- **Path to Good Bone Health**
<https://www.pathtogoodbonehealth.org/>
- **Medicare** offers bone mass measurement (bone density) for Medicare beneficiaries who meet certain eligibility requirements and conditions for coverage. <https://www.medicare.gov/coverage/bone-mass-measurements>
- **NIHAN Home Health Exercise Videos for Older Adults**
<https://www.nihan.care/older-adults-families/older-adults-and-families-welcome-and-login-2/>
- **NIHAN Mobility Tip Sheets** <https://www.nihan.care/older-adults-families/tip-sheets-2/>

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Creating an Age-Friendly Health System & Dementia-Friendly Community in Nevada

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LISTENING**

ANY QUESTIONS? 