

Osteoporosis and Diabetes: Healthy Bones for Life

WHAT IS OSTEOPOROSIS?

Low bone mass, deterioration of bone tissue and disruption of bone architecture, compromised bone strength, and an increase in the risk of fracture.

- **Osteoporosis is a Serious Problem**
 - 10.2 million people have osteoporosis, and 43.4 million people have low bone mass, putting them at risk of osteoporosis and fracture.
 - People with diabetes are at increased risk of osteoporosis and fracture.
- **Risk Factors for Osteoporosis**
 - **Unmodifiable:** Female gender, genetics, older age, history of fractures, medical conditions, and some medications.
 - **Modifiable:** Low calcium and vitamin D intake, being physically inactive, excessive alcohol consumption, smoking or vaping, having a low body weight (BMI <20), and some medications.
- **Conditions that Cause Bone Loss**
 - Excessive alcohol
 - Cancer and cancer treatments
 - Cushing's disease
 - Diabetes (types 1 and 2)
 - Eating disorders
 - Hormone deficiencies
 - Liver disease
 - Malabsorption—Celiac, Crohn's disease, lactose intolerance
 - Organ transplant
 - Rheumatoid arthritis

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- **Medications that Cause Bone Loss**

- Anticonvulsants (Dilantin)
- Aromatase inhibitors
- Androgen deprivation therapy
- Blood thinners (heparin)
- Chemotherapy drugs, methotrexate
- Cyclosporine
- Lithium
- Proton pump inhibitors (Nexium, Prilosec)
- Selective serotonin reuptake inhibitors (Prozac, Zoloft, Paxil)
- Steroids (Prednisone)
- Tamoxifen (premenopausal use)
- Thiazolidinediones (e.g. Actos®, Avandia®)
- Thyroxine (high doses)

- **Diagnosing Osteoporosis**

- Dual-energy x-ray absorptiometry (DXA) is the gold standard for diagnosing osteoporosis.
- Consider requesting a DXA if you are over 65 years old or younger with a risk factor.
- FRAX® is a tool used to determine 10-year risk of a fracture for women and men 50 years and older. This can guide osteoporosis treatment. FRAX® is available online.
- American Bone Health Fracture Risk Calculator™ estimates 10-year risk of a fracture for women and men 45 years and older. It has more questions related to your health history than FRAX®.
- History of a fracture from a low- or no-trauma incident or loss of height of more than one-inch warrants request for a DXA.
- Individuals with diabetes are at increased risk of fracture, even with normal or above-normal bone density. As part of the DXA, a trabecular bone score may be done to evaluate strength of the bones.

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PREVENTING BONE LOSS AND FRACTURE

- **Steps you can take to decrease the loss of bone and fractures:**
 - Good nutrition
 - Calcium
 - Vitamin D
 - Physical activity
 - Don't smoke
 - Don't drink too much alcohol
 - Fall prevention
- **Exercise to Increase/Maintain Bone Density**
 - Pre- and post-menopausal females benefit from exercises that place stress on the bones through:
 - Aerobic-style exercises with impact
 - Resistance/strength training
 - If you are not currently exercising, and are at risk of osteoporosis or a fracture, consult a physical or occupational therapist or exercise professional who specializes in osteoporosis.
- **Safe posture and body mechanics**
 - It is important to move with your body in safe positions, especially at the spine, to avoid osteoporosis-related fractures.
 - Exercises may be needed to improve your posture and body mechanics with a focus on:
 - Stretching short muscles (neck, shoulder girdle, hips, knees, and calves)
 - Strengthening weak muscles (spine, hip, shoulder girdle, abdominals, and extremities)
 - It is helpful to practice your normal activities with good body mechanics including those done at home, work, recreation, and sport (for example, yoga and Pilates). It may help to work with a physical or occupational therapist to learn safe movements to protect your spine.

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- **Improving balance to decrease the risk of falls**

- Most osteoporosis-related fractures are the direct result of a fall: wrist, shoulder, vertebral, pelvis, ribs, and others.
- Over 90% of hip fractures in adults ages 65 years or older are caused by falls.
- People with diabetes may have an increased risk of falls.
- An exercise program to decrease falls and fractures should:
 - Include balance-challenging/agility exercises.
 - Include leg strength and power exercises focused on the hip, knee, and ankle muscles.
 - Primarily be done in standing.
 - Be high intensity, challenging enough for you, to provide benefit.
 - Include static positions (such as standing still on one leg) and dynamic/moving activities (such as walking heel to toe down a hallway).
- If you have balance problems, your program could be prescribed for you by a physical or occupational therapist or an exercise specialist.
- Consider tai chi as an exercise program to improve balance.

- **Medications for Osteoporosis**

- If you are at high risk for fracture, you may benefit from treatment.
- Work with your healthcare provider to determine your risk, discuss all options, and decide what's best.

Resources

- Patient Resource Library: <https://www.bonehealthandosteoporosis.org/patients/bhof-resource%20library>
- Bone Basics – Who Gets Osteoporosis?: https://www.bonehealthandosteoporosis.org/wp-content/uploads/Who-Gets-Osteoporosis_update.pdf
- Communicating with your provider: <https://www.bonehealthandosteoporosis.org/patients/communication-with-your-doctor>
- Preparing for Your Visit: <https://www.bonehealthandosteoporosis.org/wp-content/uploads/TalkingWithYourDr.pdf>
- FRAX ®Fracture Risk Assessment Tool: <https://www.sheffield.ac.uk/FRAX/tool.aspx?country=9>

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- Fracture Risk Calculator: <https://americanbonehealth.org/calculator>
- Bone Basics – Osteoporosis Medicines: https://www.bonehealthandosteoporosis.org/wp-content/uploads/Bone-Basics_Osteoporosis-Medicines_update-June-2024.pdf
- Nutrition: <https://www.bonehealthandosteoporosis.org/patients/treatment/nutrition>
- Your Guide to a Bone Healthy Diet: https://www.bonehealthandosteoporosis.org/wp-content/uploads/2016/04/Healthy-Bone-Brochure_FINAL.pdf
- Bone Basic – Exercise: <https://www.bonehealthandosteoporosis.org/wp-content/uploads/ExcerciseForYourBoneHealth.pdf>
- Safe Movement in English: <https://www.bonehealthandosteoporosis.org/wp-content/uploads/Safe-Movement-Brochure-COMBINED.pdf>
- Be Bone Strong™ – Exercise to Stay Healthy: <https://www.bonehealthandosteoporosis.org/preventing-fractures/exercise-to-stay-healthy>
- Posture Power™ (Webinar): <https://www.bonehealthandosteoporosis.org/patients/patient-support/bhof-events>
- Spanish BHOF Website, Huesos Sanos: <https://huesosanos.org>
- Safe Movement Brochure in Spanish: <https://huesosanos.wpengine.com/wp-content/uploads/Safe-Movement-Brochure-SPANISH.pdf>

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