

BETTER BONE HEALTH FOR OLDER ADULTS

About Bones

Bones are a vital part of our health. They help us to stand tall, move, and store minerals (calcium, phosphorus, and magnesium). It also protects organs such as the brain, heart, and lungs. Bones are mostly made of collagen protein holding calcium and phosphorus, making them stronger and more flexible to withstand significant physical stress (Mayo Clinic, 2021; National Institute of Health (NIH): National Institute of Arthritis and Musculoskeletal, and Skin Diseases (NIAMS), 2019).

Bone Mass and Remodeling

Bone mass is the amount of minerals present in bones. Bone remodeling is the continuous regeneration of bones. Did you know that bone remodeling is observed throughout our lives? Remodeling is the regeneration of new bones. Even though our bone mass is predetermined by our genetics, we can maintain bone mass through a healthier lifestyle. Individuals who have a good bone mass during the early years of their life are more likely to maintain good bone health. It is also dependent on your eating and exercise habits. Women tend to have lower bone mass than men, making them more prone to Osteoporosis (Mayo Clinic, 2021; NIH: NIAMS, 2019).



What Affects Our Bone Health?

AGE

Age is one of the significant factors that affect our bone health. Gradual bone loss is usually observed after the age of 40 (Mayo Clinic, 2021; NIH: NIAMS, 2019). Women in their Menopausal age are more prone to bone health issues due to lack of estrogen production. (Mayo Clinic, 2021; NIH: NIAMS, 2019). Eating foods with calcium and vitamin D and taking supplements if needed can benefit individuals above 50 years of age (Mayo Clinic, 2020).

CALCIUM

Calcium is an essential mineral to maintain good bone health. More than 99% of the calcium in our bodies is stored in bones. Calcium helps to maintain your bone mass and prevents

excess bone loss. As we age, digesting lactose-based high-calcium products can be more challenging. In that case, opt for lactose-free options or talk to your healthcare professional regarding supplements. If you are between 50-70 years of age, consume 1,000 mg of calcium every day. If you are above 70 years of age, consume 1,200 mg of calcium daily to maintain your bone health (Mayo Clinic, 2020). Consume vitamin D to enhance the absorption of calcium in the body. The general recommendation of 600 IU (international units) for 50-70 years and 800 IU for 70 and older (Bobroff et al., 2017; Mayo Clinic, 2020).

TOBACCO AND ALCOHOL

Tobacco and alcohol can interfere with calcium absorption and circulation, which are essential to depositing calcium in bones. Excessive smoking can reduce estrogen levels needed for good bone health in women. Excessive alcohol consumption is also connected to bone loss leading to osteoporosis (Boden, 2023; NIH: NIAMS (2019)).



PHYSICAL ACTIVITY

When we perform physical activities, they create a healthy stress response that encourages more bone generation. In addition, exercising is beneficial for maintaining good posture, balance, and strength to do everyday tasks without too much effort. To improve flexibility and balance, perform stretching, yoga, and tai chi. To improve the strength of your muscles and bones do weight-bearing exercises such as jogging, walking, stair climbing, dumbbell exercises, etc. (Mayo Clinic, 2020; Mayo Clinic 2021; NIH: NIAMS, 2023). Strength exercising (bodyweight, free weights, or weight-bearing exercises) can improve muscle strength and bone generation capacity.

Develop a goal to engage in at least 150 minutes of moderate-intensity aerobic activity for 75 minutes of higher-intensity aerobic activity or an equivalent combination of each per week (US Office of the Surgeon General, 2004).

MEDICATIONS

Long-term usage of corticosteroid medications prescribed to treat asthma allergies, lupus, and arthritis may damage your bones. Examples of these medications are prednisone, cortisone, prednisolone, and dexamethasone. Other drugs that might increase the risk of osteoporosis are aromatase inhibitors to treat breast cancer and anti-seizure medications, such as phenytoin. Calcium supplements can also interact with medications, supplements, and foods. General recommendations for taking iron supplements are to wait two hours before you consume calcium supplements or calcium rich foods such as Greek yogurt or milk. Take your calcium supplement one to two hours before or after you eat high-fiber foods. Always check with your healthcare provider or pharmacist about possible medication and supplement interactions (US Office of the Surgeon General, 2004).

PROTEIN

Protein is a building block for all our bodies. Bones are made of collagen protein that holds calcium and phosphorus. If your diet is deficient in protein, it can lower the protein in bones. If your diet is deficient in protein, it can lower the protein in bones. This protein loss within the bones can further bone loss and slow down bone remodeling (May Clinic, 2020).

CALCIUM AND VITAMIN D RICH FOODS	CALCIUM Soy milk, reduced fat (2% fat), whole milk, firm tofu, salmon (pink, canned, solids with bones), dark leafy greens, and low-fat yogurt (NIH: NIAMS, 2019).
	VITAMIN D Salmon (sockeye, cooked), tuna (canned, drained), sardines (canned in oil and drained), milk 1% (fortified), low-fat vanilla yogurt, and orange juice (fortified) (Bobroff et al., 2017).

Falls and Bone Health

Falls are very common as we age. It can lead to bone fractures and breaks. Consider taking the following measures to prevent falls (NIH: NIAMS, 2019).

1. Exercise

Exercise helps improve balance and coordination. Try to do some form of activity such as walking, seated exercises, tai chi, and stretches.

2. Create a safer space

- Get rid of things that can trip you on the floor and stairs.
- Remove small rugs.
- Add handrails at staircases.
- Keep things within reach and avoid stepping stools.
- Use grab bars in the bathroom and near the toilet.



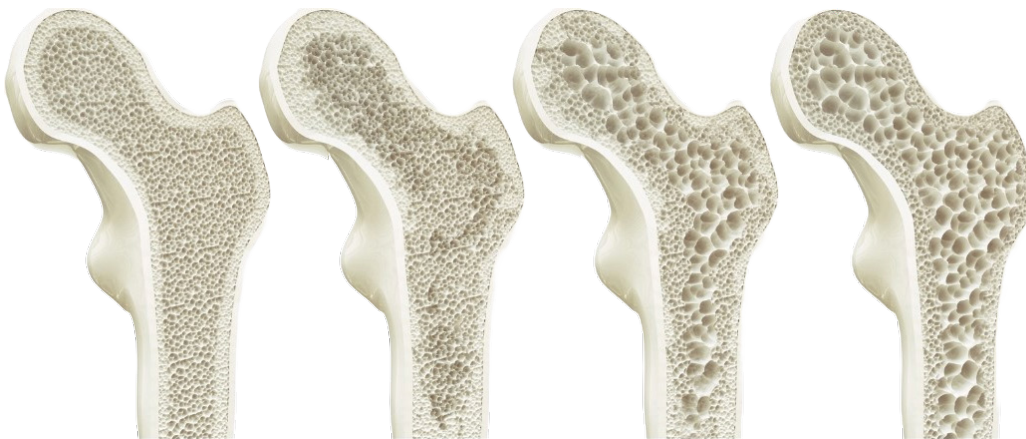
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- Use nonslip mats in the shower.
- Use brighter lights.
- Wear sturdy shoes that provide support and nonslip soles.

Osteoporosis

Osteoporosis is a bone disease known and experienced by many individuals, regardless of age, gender, and race. This bone disease develops when the amount of mineral deposited in your bone decreases or when the quality or structure of bone changes. Osteoporosis is often called a silent disease and may go unnoticed until you experience severe symptoms or break a bone. It is a major cause of fractures among post menopausal women, usually observed in the spine, hip, and wrist bones (NIH, 2022; NIH: NIAMS, 2019; US Office of the Surgeon General, 2004).

HEALTHY BONE



BONE WITH OSTEOPOROSIS

SYMPTOMS OF OSTEOPOROSIS (NIH, 2022)

- Back Pain
- Loss of height over time
- A stooped posture
- Bones more prone to fracturing/breaking
- Bones become so fragile that even minor stresses, falls, lifting, bending, or even coughing can cause a bone to break

WAYS TO PREVENT OSTEOPOROSIS (Mayo Clinic, 2020; NIH, 2022)

- Stay physically active and perform weight-bearing exercises such as walking and exercising with some weight
- Consume moderate amounts of alcohol
- Avoid smoking
- Take prescribed medication
- Eat a healthy diet high in calcium, vitamin D, zinc, magnesium, and vitamin C

RISK FACTORS OF OSTEOPOROSIS

The following factors can make you prone to osteoporosis (NIH, 2022; US Office of the Surgeon General, 2004)

- Sex: women are more prone than men
- Age: post-menopausal for women, 70 and above for men
- Body size: slender and thin boned
- Family history of osteoporosis
- Diet low in calcium and vitamin D
- Changes in the estrogen hormone levels
- Medications: consult your healthcare professional to assess this risk factor
- Lifestyle: inactivity, drinking and smoking excessively

Seek Guidance From Your Healthcare Professional

Osteoporosis is not the only common bone disease that affects us during older age. Other bone diseases can be debilitating to our health. Talk to your healthcare provider about your



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symptoms to manage and prevent bone diseases.

- **Rickets and osteomalacia:** Cause bone deformities and fractures due to inadequate vitamin D. It can occur in childhood and adulthood.
- **Kidney disease:** *Renal osteodystrophy (usually results from end-stage kidney diseases)* can cause fractures.
- **Paget's disease of bone:** This can be caused by genetic and environmental factors that cause bones to deform and become weaker. (NIH: NIAMS, 2019)

USE THE FOLLOWING CHECKLIST TO DISCUSS BONE HEALTH WITH YOUR HEALTHCARE PROVIDER. (NIH: NIAMS, 2019)

- Ask to check your risk for bone disease.
- Discuss your need for a bone density test.
- Talk about any fall, even ones in which you were not hurt. Be sure to discuss any broken bones you've had.
- If you have fallen, ask about the need for a full evaluation. Tests include vision, balance, walking, muscle strength, heart function, and blood pressure.
- Review the medications you are taking (including over-the-counter ones). Do this at least once a year. This helps avoid dangerous drug interactions and taking higher doses of drugs than you need, which can lead to falls.
- Ask if your doctor checks your vision. Annual vision checks can help eliminate bone-breaking falls.
- Know your calcium and vitamin D intake. Report your totals to your doctor.
- If you would like to try a new physical activity, ask about the best choices for you.

In Summary...

Bones are integral to our health. They help protect vital organs, store minerals, and perform movements. The earlier you start caring for your bone health, the stronger your bones will be no matter the age progression. Eat foods high in calcium, vitamin D, and protein. Include at least 150 minutes of moderate-intensity exercises per week and take

supplements suggested by your healthcare professional. Talk to your healthcare provider about drug interactions between your medications and supplements. Osteoporosis is not the only bone disease that affects bones. Educate yourself and reach out to your healthcare professional with the bone health checklist to support your bones for independence and optimal quality of life.

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