

# Exercising for Bone Health

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BONE

HEALTH



# The Musculoskeletal System



The skeletal system is comprised of all the bones and joints in the body



Bones protect vital organs and provide support and structure

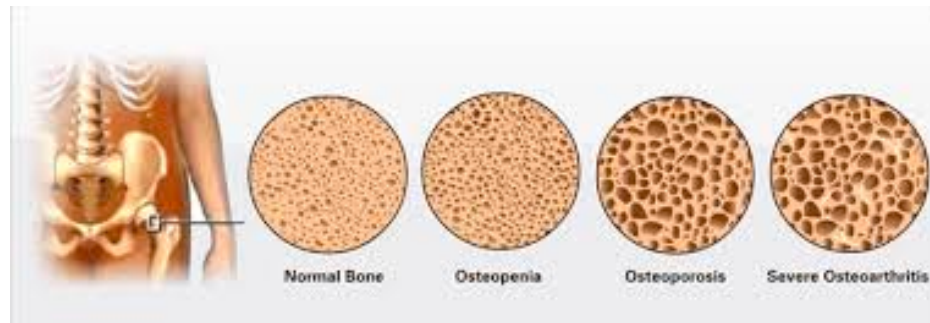


The musculoskeletal system: bones keep your muscles connected

Provide attachment points for muscles to allow movements at the joints

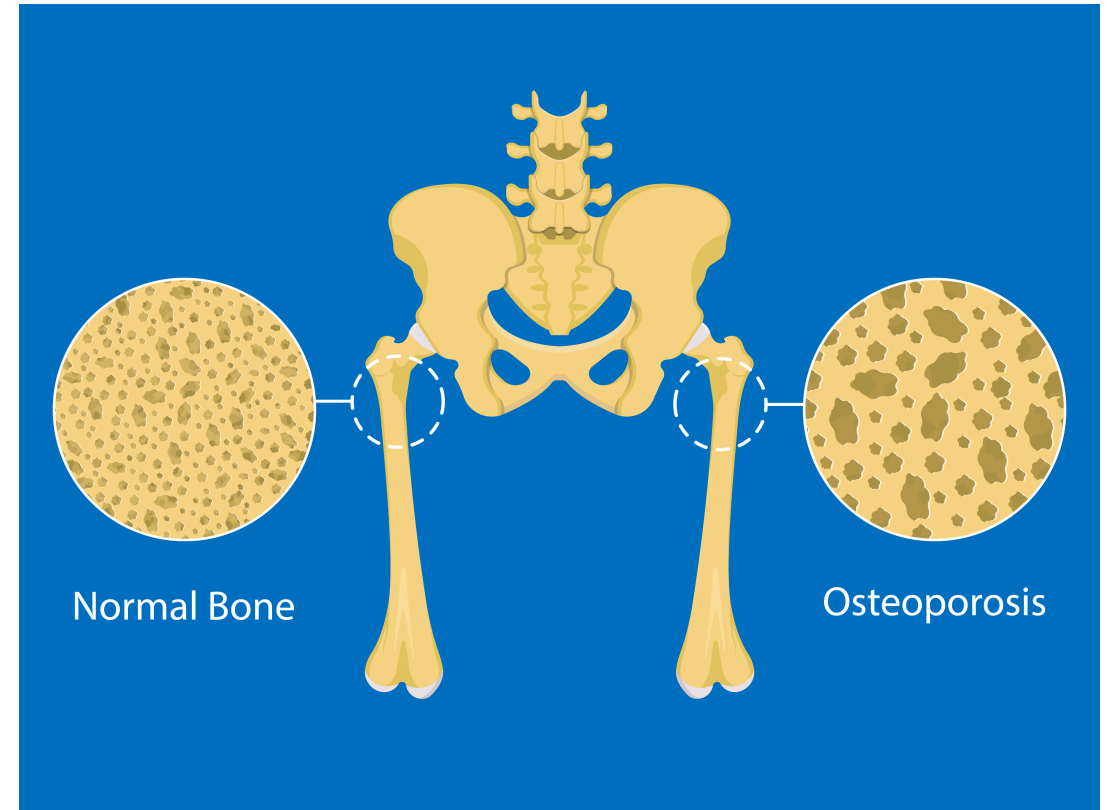
# Bone Metabolism

- ▶ Bones are living tissue
- ▶ Our bodies constantly make new bone and break down old bone tissue
- ▶ Structural adaptation for bones to get stronger
  - ▶ Stimulate building of bone
  - ▶ Instead of bone breakdown



# Bone Density

- ▶ We have bone mass
- ▶ We have muscle mass
- ▶ How to measure bone mass: bone mineral density
- ▶ There are a variety of exercises you can implement into your routine to improve bone density
- ▶ Prevent bone loss, osteoporosis and fractures



# Bone Health As We Age

In men, bone density starts to diminish at age 35

In women, this process occurs even earlier, with peak bone density occurring at around age 30, and postmenopausal women experience an accelerated rate of bone loss

The foot arches become less pronounced, contributing to reduced height

The discs that separate your vertebrae lose fluid, which aggravates this affect even more

The long bones of the arms and legs become brittle due to mineral loss

Joints become stiffer and less flexible and can lose some of their fluid, causing the cartilage to rub together and wear out.

# Bone Health As We Age



After thirty, skeletal muscle mass declines more than 20 percent in both men and women in the absence of triggers such as regular exercise, muscle loading and adequate protein.



With this gradual muscle loss, strength and flexibility decreases, along with coordination, balance and height. The deterioration of the central nervous system can also lead to a reduced ability to recruit muscle fibers.



Posture deteriorates and the overall risk of bone breakage increases.



The gradual breakdown of the joints can lead to inflammation, pain, stiffness and even physical deformities such as a hunched back or bowlegs.

# Bone Health: Skeletal Fitness

- ▶ Physical activity - particularly stressing the muscles and long bones of the skeletal system - can help to slow many aging mechanisms
- ▶ Your exercise routine should include practices that improve your balance, coordination and stability
- ▶ Fall prevention and protection
- ▶ Reduce your risk of fractures through exercises



# Exercise Physiology and Bone Health

- ▶ Choose exercises that challenge muscles to grow, reinforce bone strength and work on balance
- ▶ Strengthen joints, tendons, ligaments
- ▶ Structural adaptations for bones to get stronger
  - ▶ Stimulate building of bone
  - ▶ Instead of bone breakdown

# Resistance Training: Lifting Weights

- ▶ Resistance training involves working against a resistance
- ▶ Strength training is great for conditioning your muscles
- ▶ Weightlifting stimulates muscles to grow
- ▶ Resistance training exercises are beneficial in providing stress on your bones



# Resistance Training

- ▶ Strength and conditioning
- ▶ How often?
  - ▶ At least twice a week to prevent muscle loss associated with aging
- ▶ Rep range?
- ▶ Proper form is crucial
- ▶ Strengthen your bones
- ▶ Fall prevention
- ▶ Fracture prevention

# Weight-Bearing Exercises

- ▶ **Weight-Bearing Exercises:** force you to work against gravity
- ▶ Bodyweight training
- ▶ Walking
- ▶ Dancing
- ▶ Hiking
- ▶ Climbing stairs
- ▶ Yoga
- ▶ Tai Chi



# Mobility and Aging

- ▶ Yoga combines lengthening postures with breath work
- ▶ A Yoga practice is a low impact form of exercise that encourages proper body alignment
- ▶ Connecting with your breathing as you flow through each pose strengthens your mind-muscle connection

