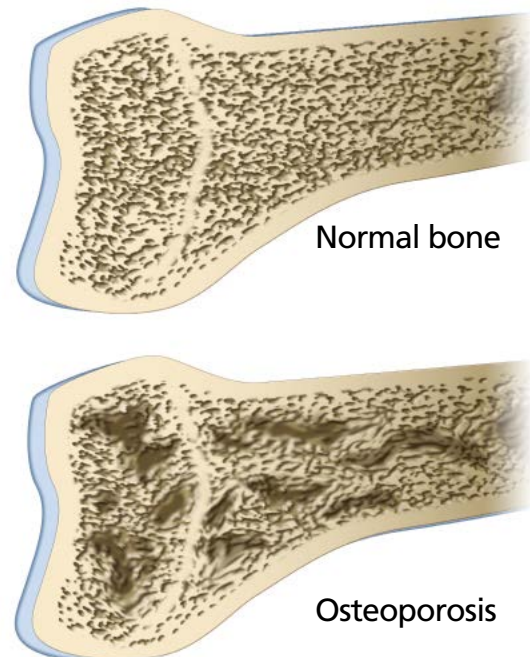


Bone Health, Osteoporosis and Fractures

What is osteoporosis?

- Osteoporosis means “porous bone.” It is a condition in which bones lose density and become thinner, weaker and more likely to break.
- It is a common condition in people with SCI at any age. In the general population, osteoporosis usually occurs in older people, particularly women after menopause.
- For people with SCI, osteoporosis usually affects the body areas below the injury that cannot bear weight (arms and legs for those with tetraplegia, or legs for those with paraplegia). It is typically more severe if you have no strength in your legs or do not walk.
- Loss of bone density starts immediately after injury, peaks about 3-6 months later, and slows by 16 months after injury. Some studies have shown it may continue for at least 3-8 years but at slower rate.



How is osteoporosis diagnosed?

Osteoporosis involves a loss of bone mineral density. This is most often studied by a dual-energy x-ray absorptiometry (DXA scan), which is a painless test performed in Radiology.

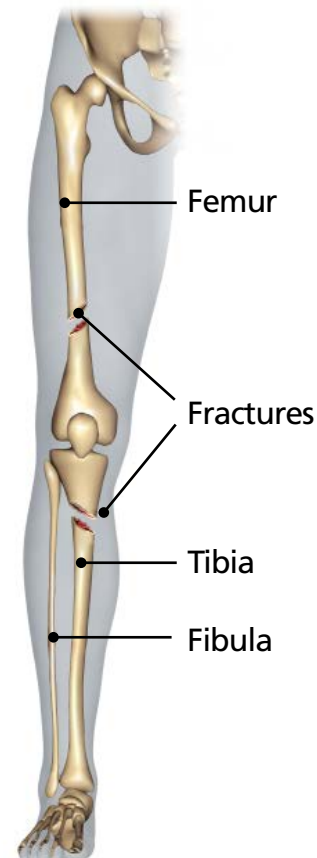
What is my risk of fracturing a bone?

- Your risk of fracturing a bone is significantly higher than the risk for individuals without SCI.
- Fractures are most common in the distal femur (thigh bone, above the knee) and proximal tibia (shin bone).
- Fracture risk is greater the longer you have been injured.

How can I tell if a bone is broken?

- Since a bone can break without any traumatic event like a fall, you can break a bone without knowing it at the time.
- Signs that you may have a fracture are swelling, bruising, warmth, redness, unexplained fevers, sudden increase in spasticity, pain if you have some preserved sensation, or episodes of autonomic dysreflexia (AD).

Common fracture sites after SCI



How are fractures treated?

- Fractured bones after SCI often heal, but healing may take longer than usual or may result in some deformity or shortening. Many fractures can be treated with custom-made padded splints or bi-valved (two-piece) padded casts that can be removed for daily skin inspection. Proper fitting is key, and orthotists (brace makers) are often involved. The use of regular casts around a limb should be avoided, as much as possible, due to the very high risk for skin breakdown.
- Surgery may be needed for fractures of the femoral or tibial shafts, otherwise wheelchair seating posture may be affected by improper alignment. This decision will need to be made after careful consideration on a case-by-case basis.
- Your risk for a blood clot forming in your veins is higher after a fracture. Your health care provider will determine if you can safely receive blood thinners.
- There will likely be a period where no weight-bearing is allowed in the fractured area.
 - With immobilization and weight-bearing restrictions, your care and equipment needs may change.
 - Wheelchair seating and components (for example, an elevating leg rest)
 - Bathroom equipment
 - Transfer technique
 - Consider if you need additional caregiver help at home.

How can I prevent and treat osteoporosis? How can I reduce my fracture risk?

- Weight-bearing by standing or walking, exercise, and electrical stimulation may help preserve bone health, although the research evidence is still limited. These activities are probably most effective when started soon after injury and continued intensively.
- At present, there are no medications that are widely used and proven to prevent osteoporosis after SCI.
- Because low testosterone levels may contribute to low bone density, your health care provider may check your hormone levels to see if hormone supplementation is needed. Vitamin D levels should be checked regularly and treated if low because this can boost the body's ability to absorb calcium from the diet. Vitamin D deficiency should be treated before trying other medications to prevent bone mineral loss.
- Preventing falls and using steady and gentle movements for ROM may help to reduce your risk for fractures.

Resources

For patients:

SCI Forum on Osteoporosis and Fractures in Persons with Spinal Cord Injury:
Retrieved from: <http://sci.washington.edu/info/forums/reports/osteoporosis.asp>

For health care providers:

Bauman WA and Cardozo CP. *Osteoporosis in Individuals with Spinal Cord Injury*. PM R 2015; 7(2): 188-201.

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Disclaimer: This information is not meant to replace the advice from a medical professional. You should consult your health care provider regarding specific medical concerns or treatment.

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