13. 10: Skeletal System Problems and Diseases

Do you think this would hurt? Why?

That would probably hurt. And hurt a lot. Broken bones, or fractures, may be one of the more common problems of the skeletal system. And this one would probably need surgery to fix. But, in addition to broken bones, there are other problems and diseases of the skeletal system.

Skeletal System Problems

Despite their hardness and strength, bones can suffer from injury and disease. Bone problems include fractures, osteoarthritis, and rickets.
• **Fractures** are breaks in bone, usually caused by excessive stress on bone. Fractures heal when osteoblasts form new bone. Soon after a fracture, the body begins to repair the break. The area becomes swollen and sore. Within a few days, bone cells travel to the break site and begin to rebuild the bone. It takes about two to three months before compact and spongy bone form at the break site. Sometimes the body needs extra help in repairing a broken bone. In such a case, a surgeon will piece a broken bone together with metal pins. Moving the broken pieces together will help keep the bone from moving and give the body a chance to repair the break.

• **Osteoarthritis** is a condition in which cartilage breaks down in joints due to wear and tear, causing joint stiffness and pain.

• **Osteoporosis** is a disease in which bones lose mass and become more fragile than they should be. Osteoporosis also makes bones more likely to break. Two of the easiest ways to prevent osteoporosis are eating a healthy diet that has the right amount of calcium and vitamin D and to do some sort of weight-bearing exercise every day. Foods that are a good source of calcium include milk, yogurt, and cheese. Non-dairy sources of calcium include Chinese cabbage, kale, and broccoli. Many fruit juices, fruit drinks, tofu, and cereals have calcium added to them. It is recommended that teenagers get 1300 mg of calcium every day. For example, one cup (8 fl. oz.) of milk provides about 300 mg of calcium, or about 30% of the daily requirement.

• **Rickets** is softening of the bones in children that occurs because bones do not have enough calcium. Rickets can lead to fractures and bowing of the leg bones, which is illustrated in the Figure below.

The bones of a child with rickets are so soft that the weight of the body causes them to bend.

Summary

• Skeletal system problems include fractures, osteoarthritis, and rickets.
Review

1. Osteoporosis is a disease in which osteoclasts are more active than osteoblasts. How is this likely to affect the bones? Why would a person with osteoporosis have a greater-than-normal risk of bone fractures?