

Skeletal System and Injury Prevention

The Skeletal System includes all of the bones of the body. Your bones provide support for your body. Your skeleton helps protect your internal organs and other body tissue such as the brain, eyes, heart, lungs and spinal cord. Bones are attached to other bones by ligaments. Muscles are attached to bones with tendons. Muscles contract and pull on tendons which make the bones move. Babies have over 300 bones. Small bones fuse together as you grow leaving 206 bones in your body as an adult.

Growth Plate is the area of growing tissue near the ends of the long bones in children and adolescents. These areas on the bones are made of cartilage cells. The cartilage allows the bone to grow. Once a person has reached maturity, usually around 18-25, the cartilage hardens into solid bone.

Calcium is stored in the skeletal system. It is absorbed and is deposited on the surface of bones while they are growing to help the bones stay hard and strong. As you get older, the body absorbs less calcium from food and your body will begin to utilize calcium stored in the skeletal system. This could weaken the skeletal system. Consuming adequate calcium is necessary for bone health later in life. Calcium can be found in dairy foods, dark green, leafy vegetables, nuts and calcium fortified foods (milk, cheese, yogurt, bok choy, broccoli, and almonds).

Injury Prevention

Improving how you move is important to injury prevention. **Biomechanics** is the study and the application of the principles of physics to human motion. Steps to improve your biomechanical technique when you are jogging include: developing a smooth, even stride; breathing deeply through your nose and mouth; relaxing your fingers, hands, arms, shoulders, neck, and jaw; swinging your arms straight forward and back instead of across your body; making sure you stride from heel to toe with toes pointed straight ahead; standing upright, holding your head up, minimizing head motion; walking or jogging on a soft surface.

Choosing the right clothing and equipment while participating in physical activities can improve comfort and help reduce injuries. For instance, nonskid footwear can help you avoid slipping and falling. Being dressed properly and wearing safety equipment that is appropriate for your activities can reduce the risk of injury and keep you safe.

Inflammation of a tendon or muscle in the leg, commonly called **shin splints**, is often caused by overexertion or overuse. Also poorly fitted footwear, running on hard surfaces or incorrect jogging form can cause shin splints. A pull or rip in a tendon is a **strain**. Strains are caused by insufficient warm-ups, lack of flexibility, or overuse. A tear in a ligament is called a **sprain**. Sprains result from a twisting force to a joint, such as the wrist or ankle.

To relieve symptoms from a strain or sprain that becomes swollen, a first-aid procedure known as the **RICE** formula is helpful. The letters in RICE correspond to the steps in the formula: **R**est the injured area, **I**ce it to reduce swelling by using an icepack or ice wrapped in a towel, **C**ompress the area by wrapping it in an elastic bandage, and **E**levate, or raise, the body part.

Check for Understanding

- What is the purpose of the skeletal system?
- Why is it important to consume calcium throughout your life?
- How can you prevent injuries when exercising?
- Explain the acronym RICE.

Coach's Reflection: