BONES FOR LIFE

Movement is basic to life. Strong and healthy bones are as essential as strong muscles. Sitting up straight, walking and jumping are all functions that require the use of the skeletal system. Understanding the location and the function of the major bones of the body helps a person understand how the skeletal system affects movement, how to improve and maintain bone health, as well as how the skeletal system affects performance and improves physical appearance.

Today's children and adolescents are not active enough and consume far too little calcium in their daily diet to maintain bone health for a lifetime. The majority of bone density is determined by the end of the teen years. This means that during these years the skeletal system is developing bone density at a faster rate than at any other time in a person's life. Bone density can be continually improved during a person's life by leading a lifestyle that includes a high level of physical activity, including weight-bearing exercise, a nutritious diet rich in calcium and Vitamin D, and healthy behaviors such as not smoking or drinking.

For a person to perform activities at his/her best, it is important to have a strong skeletal system. A strong skeletal system plays a key role by providing structure, protecting the internal organs and decreasing the likelihood of broken bones. The skeletal system provides structure by giving the body form. For example, standing up would be impossible without the bones in the legs. The bones also protect the internal organs, such as the ribs protecting the lungs and heart and the cranium protecting the brain. A strong skeletal system decreases the chances of broken bones. In other words, a simple fall in a game of basketball could result in a broken bone if a healthy level of bone density is not maintained.

A strong skeletal system improves appearance by providing a strong structure for good posture and the prevention of osteoporosis. The disease of osteoporosis occurs when bone loss exceeds bone formation and continues until bone density levels become dangerously low. Low bone density leads to an increased risk of bone fractures in the wrist, hip and spine. This ultimately will lead to deformed bones and affect a person's appearance.

To develop strong bones in the body, it is important to be active and eat a healthy diet every day. When bones are stressed through weight-bearing activity, they become stronger. Examples of weight-bearing activities are walking, running, jumping, stair climbing, dancing, hiking, basketball and resistance training. A healthy diet rich in calcium and Vitamin D should be consumed every day. Calcium is an important mineral that is needed by the body for formation of healthy bones. The body cannot produce calcium. Therefore calcium must be obtained from food. High calcium foods include dairy products, dark green, leafy vegetables, nuts and calcium-fortified foods such as orange juice, cereal and soy products. To increase bone density and decrease the chance of breaking a bone, weight-bearing activity and a healthy diet should be a regular part of a person's life.

There are approximately 206 bones in the human body. Where two or more bones meet a joint is formed and a joint is needed for movement. For example, bending the arm while doing the bicep curl can occur because of the elbow joint. There are several types of joints in the body. Common joints that play a greater role in large movements necessary for a physically active lifestyle are the ball and socket and hinge joints.

Ball and socket joints allow for a great deal of movement in many directions and are made up of one bone that has a smooth round head that fits into a cup-like socket in the other bone. The shoulder joint is one example of a ball and socket joint. The head of the humerus fits into a cup-like socket in the scapula. Another example of the ball and socket is the hip joint. The head of the femur fits into the cup-like socket of the pelvic bone.

Hinge joints, like the elbow and knee joints, allow for movement in one direction and its reverse, such as bending and straightening the arms and legs.

Movements in the joints have specific names that help to describe actions. Bending a joint, or reducing the joint angle, is referred to as flexion. Straightening a joint or increasing the joint angle is referred to as extension. For example, bending the elbow while doing a bicep curl would be flexion and straightening the arm would be extension.

Keeping your bones strong and healthy is important for a person's health, performance and appearance.

Following are the basic bones that are important to know, a description of where they are located, what they do and how to strengthen them:

Cranium (Skull)
Location: Head
Function: Protects the brain

Clavicle (Collar Bone)
Location: Across the top and front of the chest
Function: Provides structure for shoulders and upper body

Sternum
Location: Center of the chest
Function: Protects the heart and other internal organs, supports the chest

Scapula (Shoulder Blade)
Location: Upper part of the back
Function: Provides structure for shoulders and upper body

Ribs
Location: Chest
Function: Protect the internal organs, supports the chest

Vertebrae (Backbone)
Location: Center of the back
Function: Protects spinal cord and supports upper body
Strengthening Exercises: Walking, running and jumping

Humerus
Location: Upper bone in the arm
Function: Provides structure for upper arm
Strengthening Exercises: Push-Ups, cartwheels and squat thrusts

Radius
Location: Bone between the elbow and wrist, located on the thumb side
Function: Provides structure for lower arm
Strengthening Exercises: Push-Ups, cartwheels and squat thrusts

Ulna
Location: Bone between the elbow and wrist, located on the pinky side
Function: Allows movement through the wrist and elbow
Strengthening Exercises: Push-Ups, cartwheels and squat thrusts

Pelvis
Location: The hipbones
Function: Provides support for the legs
Strengthening Exercises: Walking, running, jumping

Femur
Location: Upper leg bone
Function: Gives the leg support. Longest, heaviest bone in the body
Strengthening Exercises: Walking, running and jumping

Patella (Kneecap)
Location: Between the upper land lower leg bones
Function: Covers knee joint

Fibula
Location: Smallest bone in the lower leg
Function: Gives support to lower leg
Strengthening Exercises: Walking, running and jumping

Tibia
Location: Biggest bone in the lower leg
Function: Gives support to lower leg
Strengthening Exercises: Walking, running and jumping

Strong bones are necessary for support and protection of the body. Keeping bones strong through weight-bearing activity and eating a healthy diet will help prevent osteoporosis and keep a person moving for a lifetime.

Key vocabulary words that will be introduced during this unit are:

- **Clavicle (Collar Bone)** – Located across the top and front of the chest; provides structure for shoulders and upper body
- **Cranium (Skull)** – Located in the head; protects the brain
- **Extension**- Straightening a joint or increasing the joint angle
- **Femur** – The upper leg bone; gives the leg support. Longest, heaviest bone in the body
- **Fibula** – Located in the lower leg; gives support to lower leg. Smallest bone in lower leg
- **Flexion** - Bending a joint or reducing the joint angle
- **Humerus** – The upper bone in the arm; provides structure for upper arm
- **Joint**- Where two or more bones meet
- **Osteoporosis** – A disease in which the loss of bone density causes bones to deteriorate and become weak leading to an increased risk of bone fractures
- **Patella (Kneecap)** – Located between the upper and lower leg bones; covers the knee joint
- **Pelvis** – The hip bones; provides support for the legs
- **Radius** – Located between the elbow and wrist, on the thumb side; provides structure for lower arm
- **Ribs** – Located in the chest; protect internal organs and support upper body
- **Scapula (Shoulder Blade)** – Located on the upper part of the back; protects internal organs and supports the chest
- **Sternum** – Located in the center of the chest; protects the heart and other internal organs, supports the chest
- **Tibia** – Located in the lower leg; gives support to lower leg. Largest bone in lower leg
- **Ulna** – Located between the elbow and wrist, on the pinky side; allows movement of the wrist and elbow
- **Vertebrae (Backbone)** – Located in the center of the back; protects spinal cord and supports upper body