

Introduction to the Skeletal System

Are bones alive? From seeing a skeleton, you might think that bones are just dead, hollow structures. But in a living person, those hollow spaces are full of living cells. In reality, bones are very much alive. Bones are living organs. They are supplied with blood and nerves just like other parts of your body. Can you imagine not having bones? What would you look like? You would be a soft, wobbly pile of skin, muscles, and internal organs. You might look like a lump of clay! Clearly, bones are needed to support and shape the body. They have several other important roles as well.

Roles of the Skeletal System

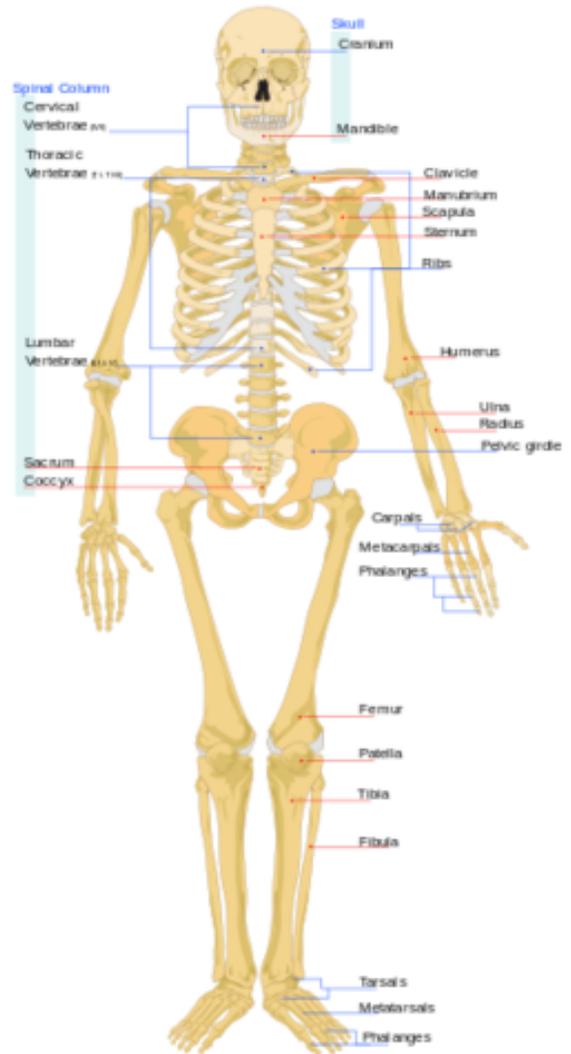
Your **skeletal system** gives shape and form to your body, but it also plays other important roles. The main functions of the skeletal system include:

- Support—the skeleton supports the body against the pull of gravity. This means you won't fall over when you stand up. The bones in your lower body carry all your weight. They are larger than the bones in your upper body. The lower limb bones support your body when standing.
- Protection—the skeleton supports and protects your soft organs. For example, the skull protects the brain. Ribs in your chest help protect the heart and lungs.
- Movement—bones work together with muscles to move the body.
- Making blood cells—blood cells are mostly made inside certain types of bones.
- Storage—bones store calcium. They contain more calcium than any other organ. Calcium is released by the bones when it is needed.

Parts of the Skeletal System

Bones are the main organs of the skeletal system. In adults, the skeleton consists of a whopping 206 bones. Many of those bones are in your hands and feet. You can see many of the bones of the human skeleton in the Figure below. Have you thought about how your bones are connected together? There are actually two ways that bones are connected. The skeletal system includes cartilage and ligaments.

- Cartilage is tough and flexible. It covers the ends of bones where they meet. The gray sections in the Figure above are the cartilage.
- A ligament is like a stretchy band. Ligaments connect your bones together. You can think of ligaments like rubber bands. Rubber bands are used to hold things together. Just like rubber bands, ligaments allow bones to move a bit.



The human skeleton includes bones and cartilage.

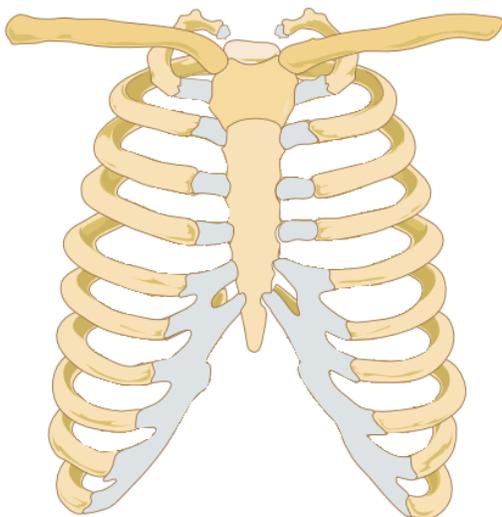
How Bones Grow and Develop

An unborn developing baby's skeleton is made entirely of cartilage. The relatively soft cartilage slowly changes to hard bone. By the time a baby is born, only several areas of cartilage remain. These areas include the ends of the long bones in the arms and legs. This allows these bones to keep growing in length during childhood. By the late teens or early twenties, bones stop growing. By this time almost all cartilage has been replaced by bone. Bones cannot grow in length after this point. However, bones can continue to grow in width. This is due to being placed under more stress. Weightlifters develop very thick bones because they are lifting a lot of weight on a regular basis. To have strong bones, exercise is important.

Joints

A joint is a place where two or more bones meet. There are three different types of joints. These types are based on the amount of movement in the joint. These are called immovable, partly movable, and movable joints.

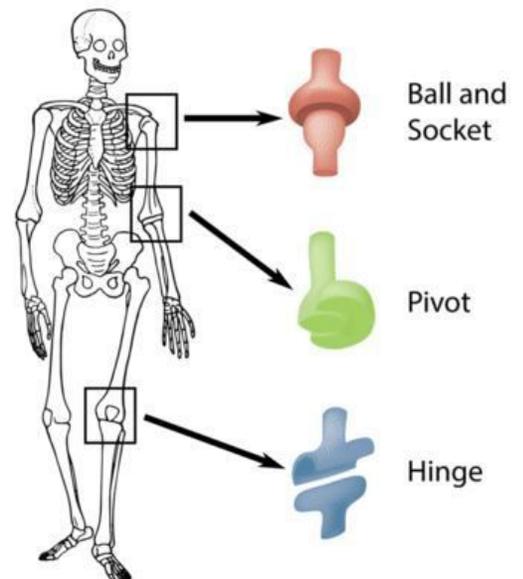
- Immovable joints do not allow the bones to move at all. In these joints, the bones are fused together. A human skull has immovable joints. Example of immovable joints: human skull



- Partly movable joints allow very limited movement. In these joints, the bones are held together by cartilage. Cartilage is somewhat flexible. Examples of partly movable joints, can be found in the rib cage.

- Movable joints allow the greatest movement and are the most complex. They contain ligaments, special cushions, and liquids. The cushions and liquids help reduce friction. Fortunately, these features help our joints move freely. You can think of this like needing to add oil to a squeaky door hinge. There are several different types of movable joints including the shoulder, elbow, and knee. Move these three joints in your own skeleton to experience the range of motion each allows.

Movable Joints



Summary

- Bones are the main organs of the skeletal system. The skeletal system also includes cartilage and ligaments.
- Functions of the skeletal system include supporting and shaping the body, allowing movement, protecting inner organs, producing blood cells, and storing calcium.
- Joints connect bones to help protect vital organs and allow movement.
- Joints may be immovable, partly movable, or movable. Types of movable joints include ball-and-socket, hinge, and pivot joints.

Other Resources:

VIDEO: <https://youtu.be/i42FSNA9bAY>

ARTICLE: <https://kidshealth.org/en/kids/bones.html>