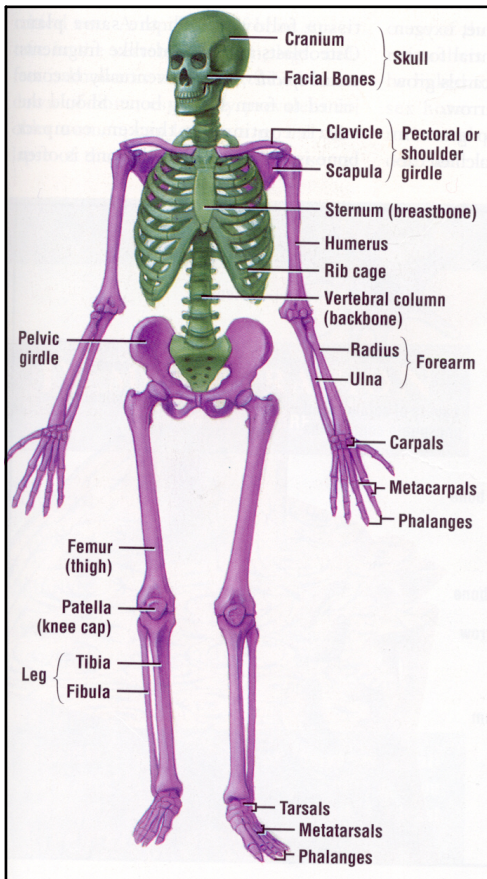


Support and Movement

An endoskeleton is a frame that gives our bodies shape. Cartilage is tough flexible tissue that protects the ends of bones from rubbing against each other. The axial skeleton is made up of the skull, backbone, and rib cage. The appendicular skeleton is made up of bones such as the bones of the arms and legs.



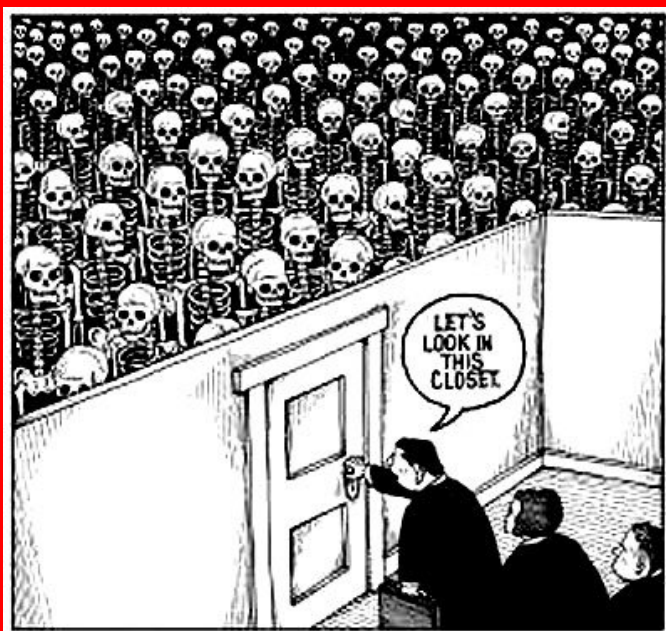
The skeleton has 5 main functions.

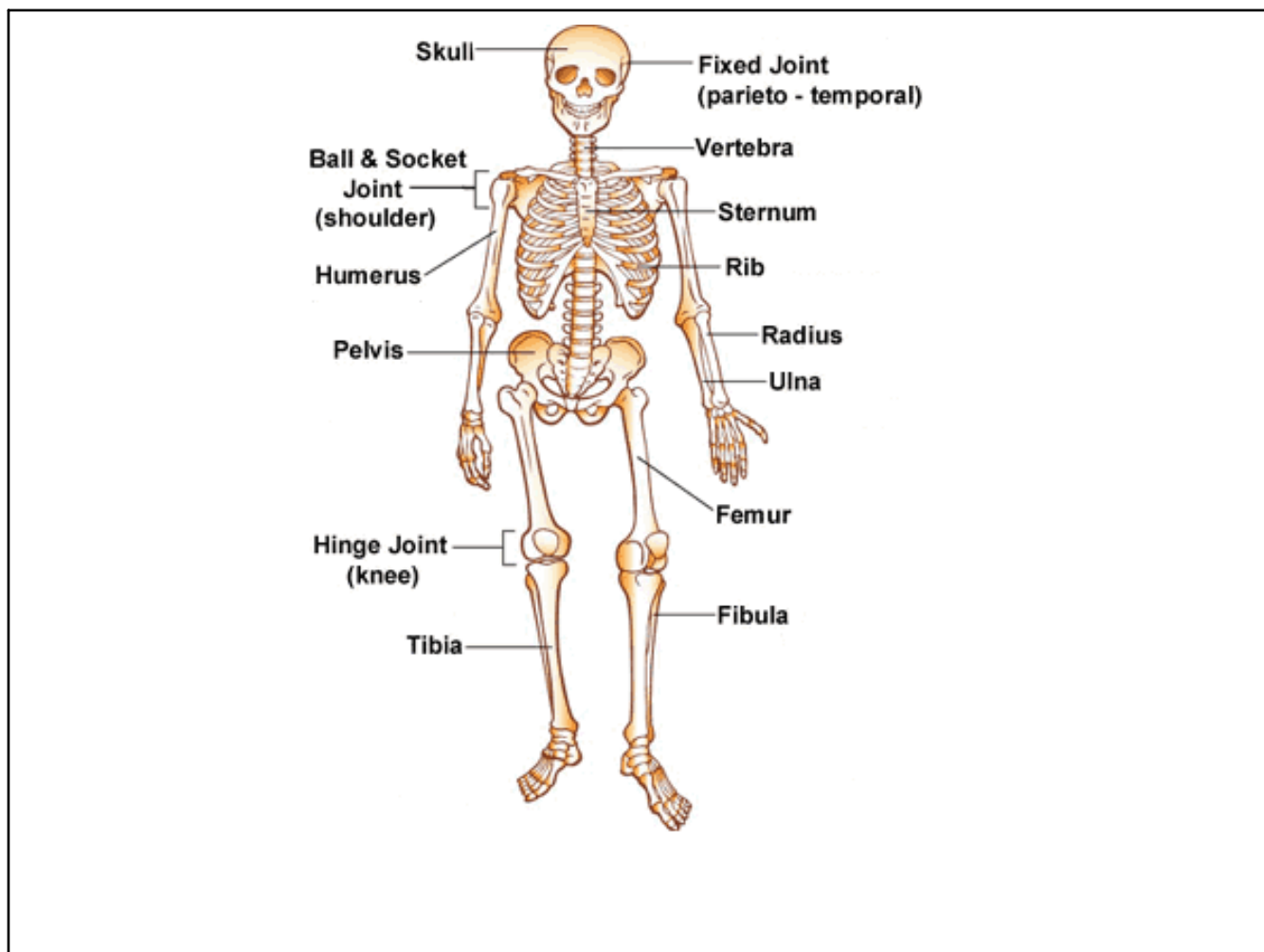
1. The skeleton supports and gives shape to the body.
2. The skeleton covers and protects organs such as the skull protecting the brain.
3. Bones work with muscles to allow movement.
4. Some bones make blood cells.
5. Bones store minerals such as calcium.

Bones

<https://askbiologist.asu.edu/bone-lab>

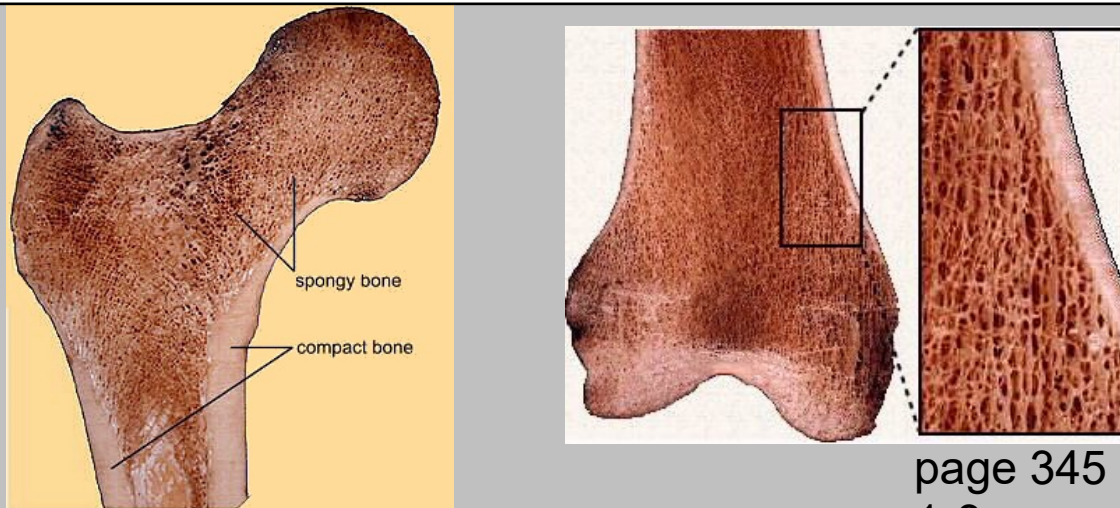
Skeletal Links





The structure of Bone

Bones are made from living and non-living tissue. A tough membrane called the periosteum covers bones. It has blood vessels and supplies the bone with food and oxygen. Compact bone is made up of calcium and is very strong and hard. Milk products contain calcium and are good for bone. Spongy bone is found at the end of bones and it contains marrow, which can produce blood cells and store fat.

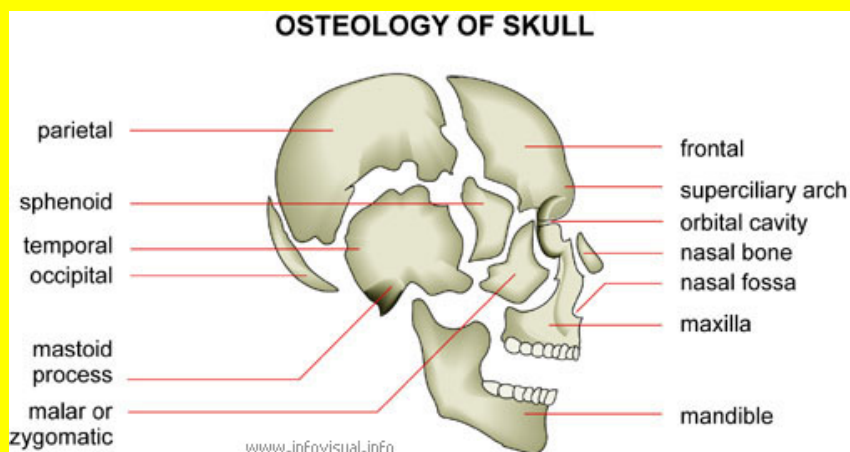


Compact and Spongy bone

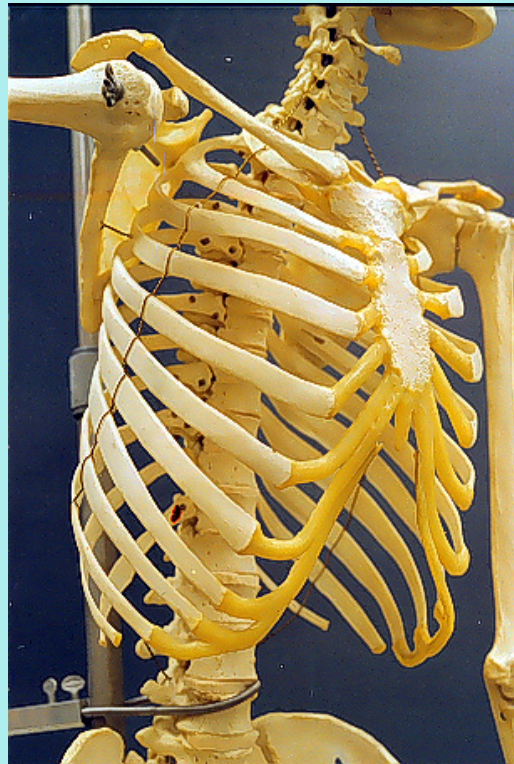
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There are two basic structural types of bone, compact and spongy. Compact bone forms the outer shell of all bone and also the shafts in long bones. Spongy bone is found at the expanded heads of long bones and fills most irregular bones.

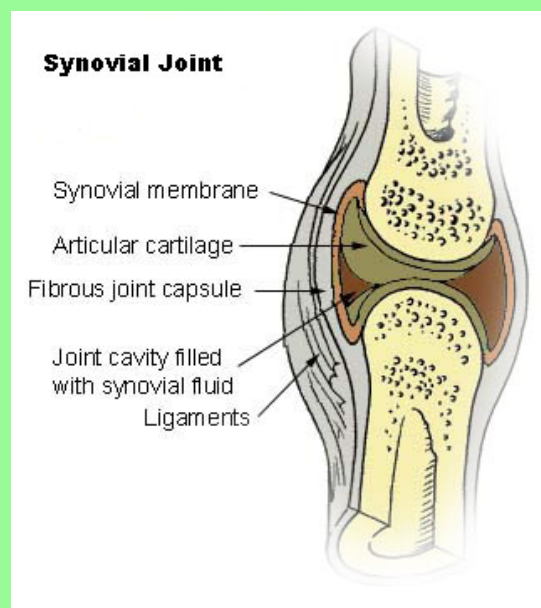
Joints allow movement to occur. Ligaments hold bones together. There are three types of joints. 1. Fixed joints, such as the skull bones are fused together.



2. Partially
moveable joints,
such as the ribs
and sternum allow
little movement.



3. Moveable joints, such as the hinge joints of the lower and upper arm, and the leg and thigh. Also, ball and socket joints such as the upper arm and shoulder, pivotal joints such as the skull and the vertebrae, and gliding joints such as the wrist, are all moveable joints.

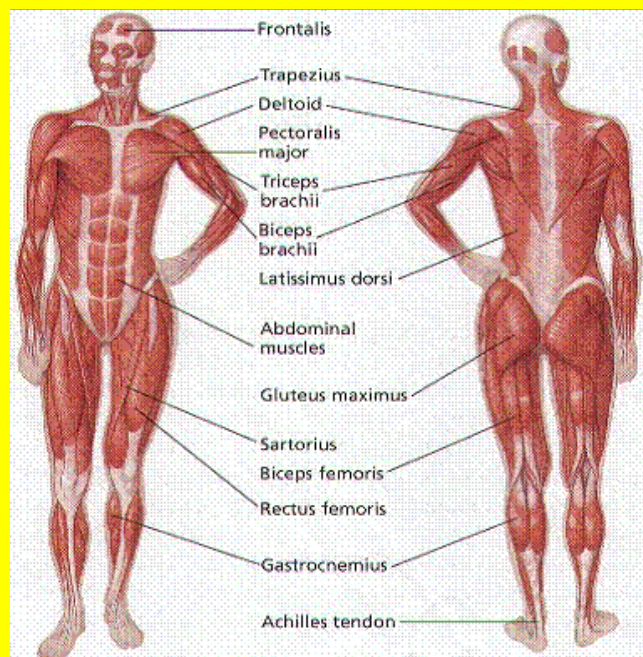


Bones form from cartilage. As a baby grows, bone cells replace cartilage and the bone becomes hard. If bone is under too much pressure they may break. Arthritis is another medical condition associated with bone. Movement of joints becomes very painful and difficult. Arthritis usually occurs as cartilage between bones is replaced by bone cells. Scoliosis is another medical condition in which the backbone has an unusual curve.

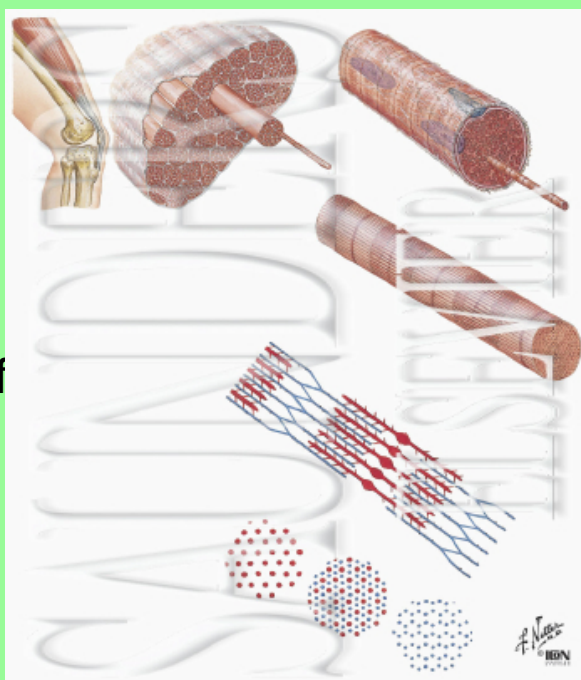


Muscular System

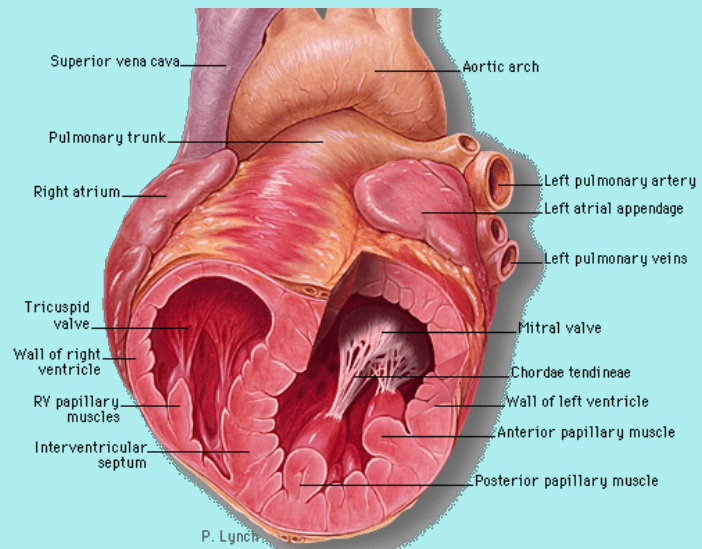
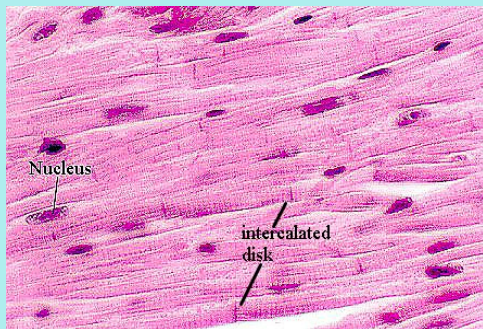
Muscles work together with bones to allow movement. There are more than 600 muscles in the human body.



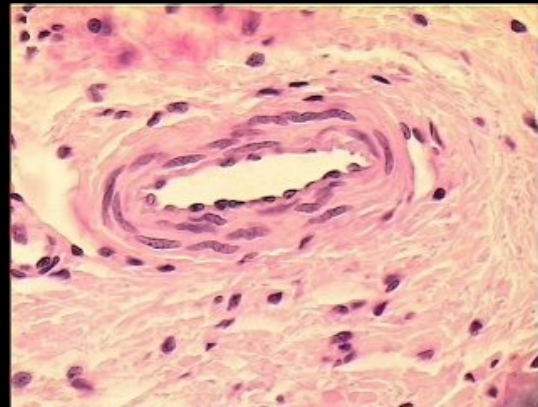
1. Skeletal muscle is attached to bone and allow movement. At moveable joints, skeletal muscle is attached to bone by tendons. Tendons are tough bands of elastic tissue. Skeletal muscle is under voluntary control and moves when a person wants it to.



2. Cardiac muscle pumps blood through the heart and the rest of the body. Cardiac muscle is involuntary.



3. Smooth muscle is found in the walls of blood vessels, the stomach and other organs. They are involuntary muscles.

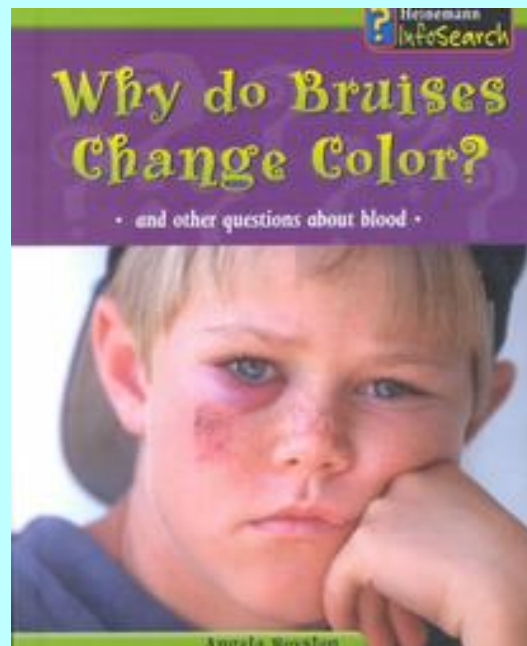


Muscle Action

Muscle cells change length as they contract and expand. This allows movement to occur. Muscles work in pairs to allow movement. For example, the bicep muscle bends the arm, and the triceps muscle straightens the arm. The bicep is a flexor muscle, and the triceps is an extensor muscle.

Muscle Problems

Muscle cramps may occur when muscle contract strongly and suddenly. Bruising and tearing of muscle cause a Charlie horse. It may cause small blood vessels to rupture resulting in a bruise. Sore muscles can occur if a person does not exercise on a regular basis. A person should always do a good warm-up before they exercise. Muscular dystrophy is a disease of the skeletal muscle causing it to degenerate.



The Skin is the largest organ in the body. The outer layer is made up of a dead layer of skin cells called the epidermis. The outer skin helps support and protects the body. It is waterproof and also helps to protect from invading microbes such as bacteria. Dead skin cells are constantly being replaced by new ones.

The inner skin is made up of living skin cells and is called the dermis. The dermis contains hair follicles, sweat glands, oil glands, muscle and nerve tissue, blood vessels, fat, and pores.

