# HUMAN SKELETON AND ITS CLASSIFICATION

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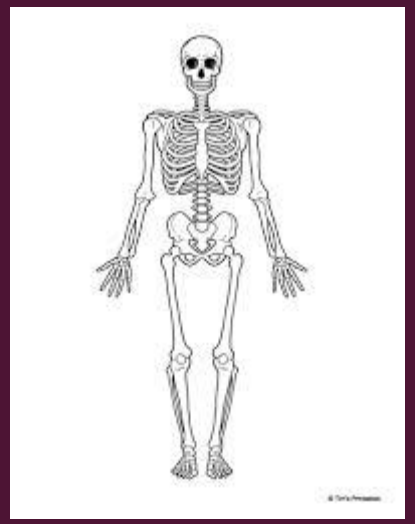
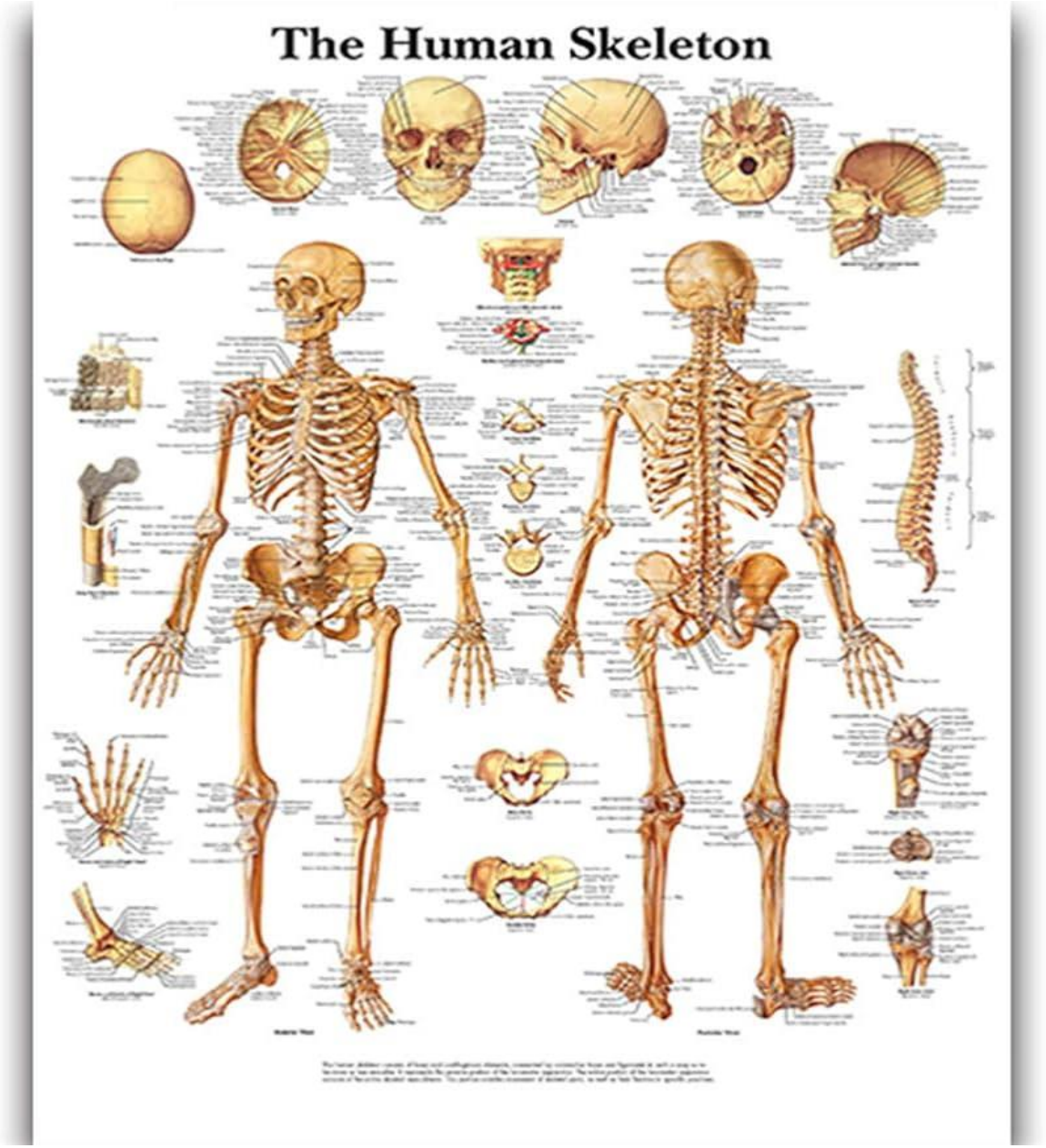


# INTRODUCTION:

- The human skeleton is a framework of bones and cartilage that supports and shapes the body. It serves several essential functions, including providing structure, protecting vital organs, enabling movement, storing minerals, and producing blood cells. The skeleton is a dynamic structure that undergoes remodeling throughout a person's life.
- ***The human skeleton is composed of:***
- 1_Bones: The hard, mineralized structures that provide strength and rigidity.
- 2_Cartilage: Flexible tissue found in joints, the rib cage, ear, nose, and between bones.
- 3_Ligaments: Tough, fibrous tissues that connect bones to other bones, providing stability to joints.
- 4_Tendons: Structures that connect muscles to bones, enabling movement.
- 5_Bone Marrow: The soft tissue inside bones where blood cells are produced

# CLASSIFICATION OF THE HUMAN SKELETON

- ***The human skeleton is divided into two major parts:***
- ***1. Axial Skeleton***
- The axial skeleton consists of the bones along the body's central axis, and it primarily protects the brain, spinal cord, and thoracic organs.
- Components of the Axial Skeleton:
- • Skull: Composed of the cranium (which protects the brain) and the facial bones.
- o Cranium: Includes the frontal, parietal, temporal, occipital, sphenoid, and ethmoid bones.
- o Facial bones: Includes the maxilla, mandible, zygomatic, nasal, lacrimal, palatine, and vomer bones.
- • Vertebral Column (Spine): Made up of 33 vertebrae (7 cervical, 12 thoracic, 5 lumbar, 5 sacral, and 4 coccygeal) that protect the spinal cord.
- • Ribs: There are 12 pairs of ribs, which protect the heart and lungs. The ribs are divided into true ribs, false ribs, and floating ribs.
- • Sternum: The breastbone located in the center of the chest, where the ribs are attached anteriorly.


The Human Skeleton

# CLASSIFICATION OF THE HUMAN SKELETON

- ***2. Appendicular Skeleton***
- The appendicular skeleton includes the bones of the limbs and the structures that attach them to the axial skeleton.
- Components of the Appendicular Skeleton:
- Pectoral Girdle (Shoulder Girdle): Connects the upper limbs to the body. It includes the clavicle (collarbone) and scapula (shoulder blade).
- Upper Limbs: Each upper limb consists of the humerus (upper arm), radius and ulna (forearm), carpals (wrist), metacarpals (palm), and phalanges (fingers).
- Pelvic Girdle: A bony structure that connects the lower limbs to the axial skeleton. It includes the ilium, ischium, and pubis (bones that form the pelvis).
- Lower Limbs: Each lower limb consists of the femur (thigh bone), patella (kneecap), tibia and fibula (leg bones), tarsals (ankle bones), metatarsals (foot), and phalanges (toes).

# TYPES OF BONES IN THE HUMAN SKELETON

- ***Human bones can be classified based on their shape and structure:***
- 1_Long Bones: These are longer than they are wide and have a shaft and two ends. They are primarily found in the limbs. Examples: femur, humerus, tibia, fibula.
- 2_Short Bones: These are roughly cube-shaped and provide support and stability with little movement. Examples: carpals (wrist bones) and tarsals (ankle bones).
- 3_Flat Bones: These bones are thin and flattened. They serve as protective structures and provide areas for muscle attachment. Examples: sternum, ribs, scapulae (shoulder blades), and skull bones.
- 4_Irregular Bones: These bones have complex shapes that do not fit into the other categories. They provide protection and support. Examples: vertebrae and some facial bones.
- 5_Sesamoid Bones: These are small, round bones that form within tendons. Their primary function is to protect tendons from stress and wear. Example: patella (kneecap).

# BONE STRUCTURE AND DEVELOPMENT

- Each bone has an external structure composed of compact bone (dense and hard) and an inner structure made of spongy bone (lighter and more porous). The bone tissue is organized into
- osteons (cylindrical structures) that allow it to withstand mechanical stress

# FUNCTIONS OF THE SKELETON

- ***The human skeleton serves several vital functions:***
- 1_Support: The skeleton provides a framework that supports the body and its organs.
- 2_Protection: Bones protect delicate internal organs such as the brain, heart, and lungs.
- 3_Movement: Bones act as levers for muscles, enabling body movement.
- 4_Mineral Storage: Bones store minerals like calcium and phosphorus, which can be released into the bloodstream as needed.
- 5_Blood Cell Production: The bone marrow inside certain bones produces red blood cells, white blood cells, and platelets.
- 6_Energy Storage: Bone tissue stores lipids, which serve as an energy reserve

# REVIEW QUESTIONS

- 1_What are the two main parts of the human skeleton?
- 2_How are bones classified based on their shape?
- 3_What are the main functions of the skeleton?
- 4_Describe the difference between compact and spongy bone.
- 5_What is the process of bone development called?


Thank You,
Nurses