

Chapter 7 Skeletal System

Skeletal System:

Bone Functions: Describe the role the skeletal system plays in each of the following functions.

support

protection

muscle attachment - movement

blood production

store minerals

What are some of the various tissues that are contained within bone?

Long Bone Structure:

Expanded ends of bones that form joints with adjacent bones are called _____.

_____ (hyaline cartilage) cover the ends at the joints.

The shaft of the bone is called the _____. What type of bone makes up the outside of this part?

The epiphyseal plate (disc) is the site of bone _____.

A tough layer of vascular connective tissue, called the _____, covers the bone and is continuous with ligaments and tendons.

The diaphysis contains a hollow _____ cavity that is lined with _____ and filled with _____.

What is the function of red marrow? Where is it found?

What is yellow marrow?

Where is it found?

A bone's shape makes possible its function; bony processes or grooves indicate places of attachment for _____.

Microscopic Structure

Bone cells called _____ are located within spaces called _____ that lie in concentric circles around _____ canals that contain blood vessels, and nerves.

Osteocytes pass nutrients and wastes back and forth in passageways in the matrix called _____.

The intercellular material consists of _____ and inorganic _____.

Describe how the microscopic structure of spongy bone differs from that of compact bone.

Spongy Bone:

Unlike compact bone, the osteocytes and intercellular material in spongy bone are not arranged around osteonic canals. Rather, they are irregularly arranged and form cross connections called _____. Where is spongy bone found?

Compact Bone:

In compact bone, osteocytes and intercellular material are organized into columns called _____ that are cemented together.

Osteonic canals contain blood vessels and nerve fibers, and extend in what direction through bone?

Osteonic canals are interconnected by _____ canals.

Where is compact bone found?

Bone Development:

Bones form by replacing connective tissue in the fetus.

Intramembranous bone formation:

The flat bones of the skull form as intramembranous bones that develop from layers of _____ tissue.

Cells called _____ deposit bony tissue around themselves.

Once these cells deposit bone they are enclosed within little compartments called _____.

These cells are then called _____.

Cells of the membranous connective tissue that lie outside the developing bone give rise to the outer covering, the _____.

What is a fontanel?

Endochondral bone formation:

Most of the bones of the skeleton fall into this category.

They first develop as _____ models and are then replaced with bone.

Cartilage tissue is invaded by blood vessels and _____ that first form spongy bone at the primary ossification center in the diaphysis.

Osteoblasts beneath the periosteum lay down compact bone outside the spongy bone.

_____ ossification centers appear later in the epiphyses.

A band of hyaline cartilage, the _____ plate, forms between the two ossification centers.

Layers of cartilage cells undergoing mitosis make up the epiphyseal plate.

_____ break down the calcified matrix and are replaced with bone-building

_____ that deposit bone in place of calcified cartilage.
Epiphyseal plates are responsible for _____ bones while
increases in _____ are due to intramembranous ossification underneath the periosteum.
A medullary cavity forms in the region of the diaphysis due to the activity of the cells called
_____.

Epiphyseal plate:

What happens at adulthood?

Skeletal Divisions:

The _____ skeleton consists of the skull, hyoid bone, vertebral column (vertebrae and intervertebral disks), and thorax (ribs and sternum).

The _____ skeleton consists of the pectoral girdle (scapulae and clavicles), upper limbs (humerus, radius, ulna, carpals, metacarpals, and phalanges), pelvic girdle (coxal bones articulating with the sacrum), and lower limbs (femur, tibia, fibula, patella, tarsals, metatarsals, phalanges).

The Bones and Markings of the Skeleton:

The skull is made up of 22 bones, including 8 cranial bones, 13 facial bones, and the mandible.

Name and locate the 8 cranial bones. Be familiar with their markings and processes such as the foramina, sinuses, condyles, sutures, processes and fossae. What is the opening for the ear called?

Name and locate the 13 facial bones.

Which makes up the cheeks?

Which two form the nasal septum?

Which form the hard palate?

What forms the zygomatic arch?

Which two contain the teeth?

What are nasal conchae?

Vertebral Column:

The vertebral column, from skull to pelvis, forms the vertical axis of the skeleton.

It is composed of vertebrae separated by _____ disks.

What is the drum shaped part of the vertebrae called that supports the weight of the head and trunk?

What is the name of the two lateral processes? What is their function?

What is the name of the dorsal process?

Name the first two vertebrae?

How can you tell the cervical vertebrae from the rest of them?

What distinguishes the thoracic vertebrae from the rest?

How many lumbar vertebrae are there

What is unique about the sacral vertebrae?

What is the anatomical name for the tail bone?

Pectoral Girdle:

The pectoral girdle makes an incomplete ring that supports the upper limbs

The clavicle can be recognized because it forms a/an _____ - shape.

The scapula is divided by a _____.

What is the function of the acromion process? Of the coracoid process?

What is the name of the fossa that articulates with the humerus?

Upper Limb:

Bones of the upper limb form the framework for the arm, forearm, and hand.

Humerus:

Where is the head of the humerus? What is its function?

The humerus articulates with the radius at the _____, and with the ulna at the _____.

Name the two fossae of the humerus.

Be able to name the processes of the humerus.

Radius:

The _____ is located on the thumb side of the forearm.

What is the purpose of the flattened head of the radius?

The radius has the radial _____ and _____ process.

Ulna:

The ulna is the longer of the two bones making up the forearm and has a _____ notch that articulates with the humerus.

Other features of the ulna include what four processes?

What is the name of the notch?

Hand

The wrist consists of 8 _____ bones.

The hand has 5 _____ and the bones of the fingers are called _____.

How many bones does each finger have? The thumb?

Pelvic Girdle:

The pelvic girdle consists of the two **coxal bones** and the **sacrum**; it supports the trunk of the body on the lower limbs.

The largest and most superior portion of the coxal bone is the _____.

It joins the sacrum at the aptly named _____ joint.

Name the features of this bone.

The _____ forms the L-shaped portion that supports weight during sitting.

Name its features.

The _____ comprises the anterior portion of the coxal bones and articulates at the _____ with fibrocartilage in between.

What is the name of the large foramen?

Be familiar with the differences in the male and female pelvis.

Lower Limb:

The bones of the lower limb provide the framework for the thigh, lower leg, and foot.

The _____, or thighbone, extends from the hip to the knee and is the longest bone in the body.

Its head articulates with the _____;
it articulates with the tibia at the _____ and _____ condyles.

Other features of the femur include the fovea _____, neck, and greater and lesser _____.

The knee cap is known as the _____.

The _____ (shinbone) supports the weight of the body and articulates with the femur and with the _____ bones of the foot.

Its anterior _____ is the point of attachment for the patellar ligament.

Other features include the _____ (inner ankle).

The _____ is a slender bone lying lateral on the lower leg, it does not bear body weight.

The _____ forms the outside ankle.

Foot:

The ankle is composed of seven _____ bones.

The _____ articulates with the tibia and fibula.

The _____ supports the body weight and attaches to a large tendon.

The instep of the foot consists of five _____ bones and provides an arch.

Each toe is made up of three _____, with the exception of the great toe, which lacks a _____.

Joints and Articulations:

Joints (articulations) are the functional junctions between bones.

Joints can be classified according to the degree of movement possible and can be immovable, slightly movable, or freely movable.

Joints can also be classified according to the type of tissue that binds them together.

_____ are held close together by dense connective tissue and are immovable (sutures of skull) or only slightly movable (joint between the distal tibia and fibula).

Hyaline cartilage or disks of fibrocartilage unite the bones in _____ joints.

Give two examples of this kind of joint.

Most joints of the skeleton are _____ joints, which are more complex than fibrous or cartilaginous joints.

What is the articular end of this kind of joint covered with?

These joints have a joint _____ formed from the _____ and the _____.

This space is filled with _____ fluid.

(Hint, same name as the joint type.)

Some of these joints contain shock-absorbing pads of fibrocartilage called _____ and many have fluid-filled sacs called _____.

What is an inflammation of these sacs called?

There are many types of these joints named for their movement and the shape of the joint.

A _____ joint consists of a bone with a globular or egg-shaped head articulating with the cup-shaped cavity of another bone; a very wide range of motion is possible.

Give two examples of this type of joint.

A _____ joint consists of an ovoid condyle fitting into an elliptical cavity, also permitting a variety of motions.

Give an example of this type.

_____ joints occur where articulating surfaces are nearly flat or slightly curved, allowing a back-and-forth motion.

Give two examples.

In a _____ joint a convex surface fits into a concave surface movement is in one plane only.

Give several examples of this type of joint.

In a _____ joint, a cylindrical surface rotates within a ring of bone and fibrous tissue.

List two examples of this type.

A _____ joint forms where articulating surfaces have both concave and convex areas, permitting a wide range of movements.

Name one example of this type.

Types of Joint Movements:

When a muscle contracts, its fibers pull its movable end called the _____ toward its stationary end called the _____ causing movement at a joint.

These terms describe movements that occur at joints: flexion, extension, dorsiflexion, plantar flexion, hyperextension, abduction, adduction, rotation, circumduction, pronation, supination, eversion, inversion, retraction, protraction, elevation, and depression.

Be prepared to recognize or demonstrate these movements.