

The skeletal system

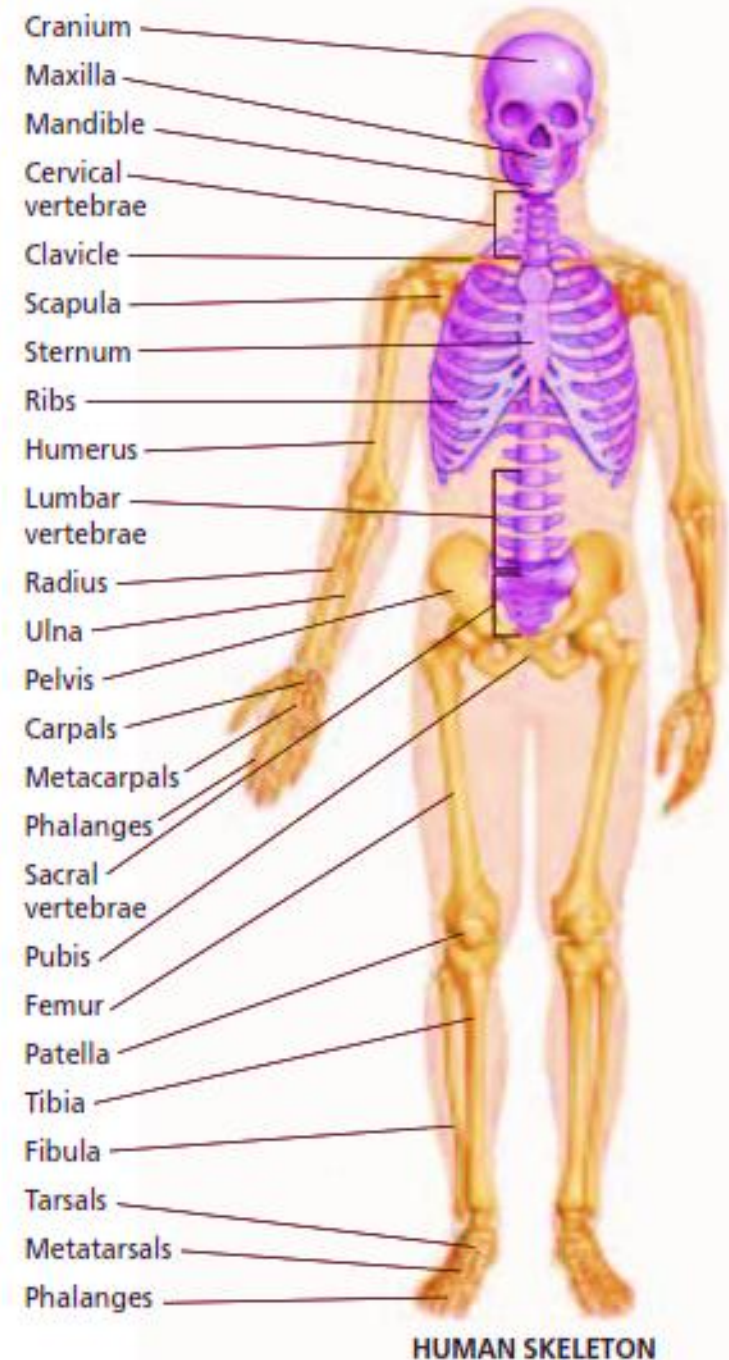
PREPARED BY: BESIR ZENELI

BY THE END OF THIS LESSON, WE WILL BE ABLE TO :

1. Distinguish between the axial skeleton and the appendicular skeleton.
2. Explain the function and structure of bones.
3. Summarize how bones develop and elongate.
4. List three types of joints, and give an example of each
5. Describe a common disorder that affects the skeletal system.

THE SKELETON

The human skeleton is composed of two parts—the axial skeleton and the appendicular skeleton.



BONE FUNCTION AND STRUCTURE

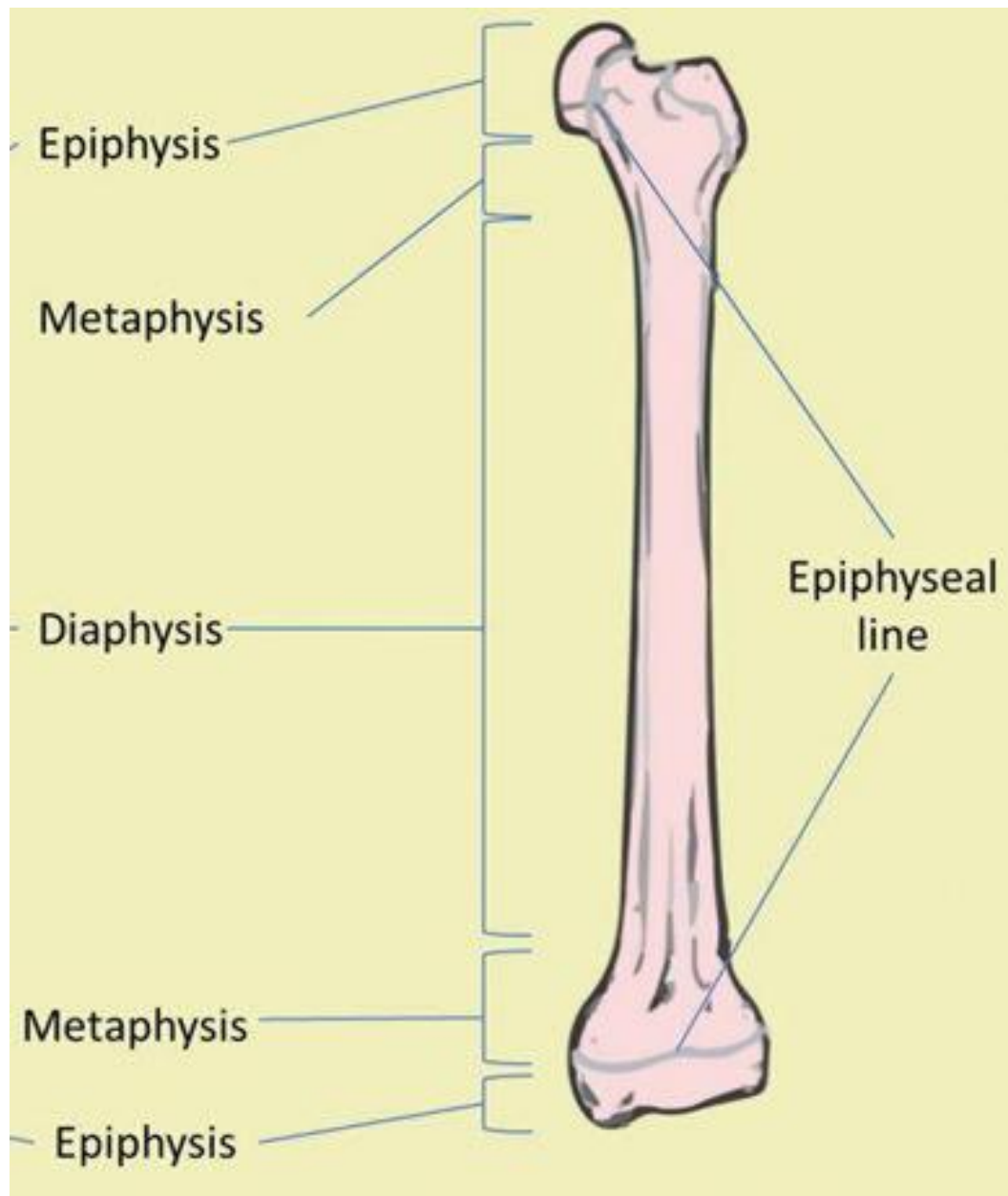
Function :

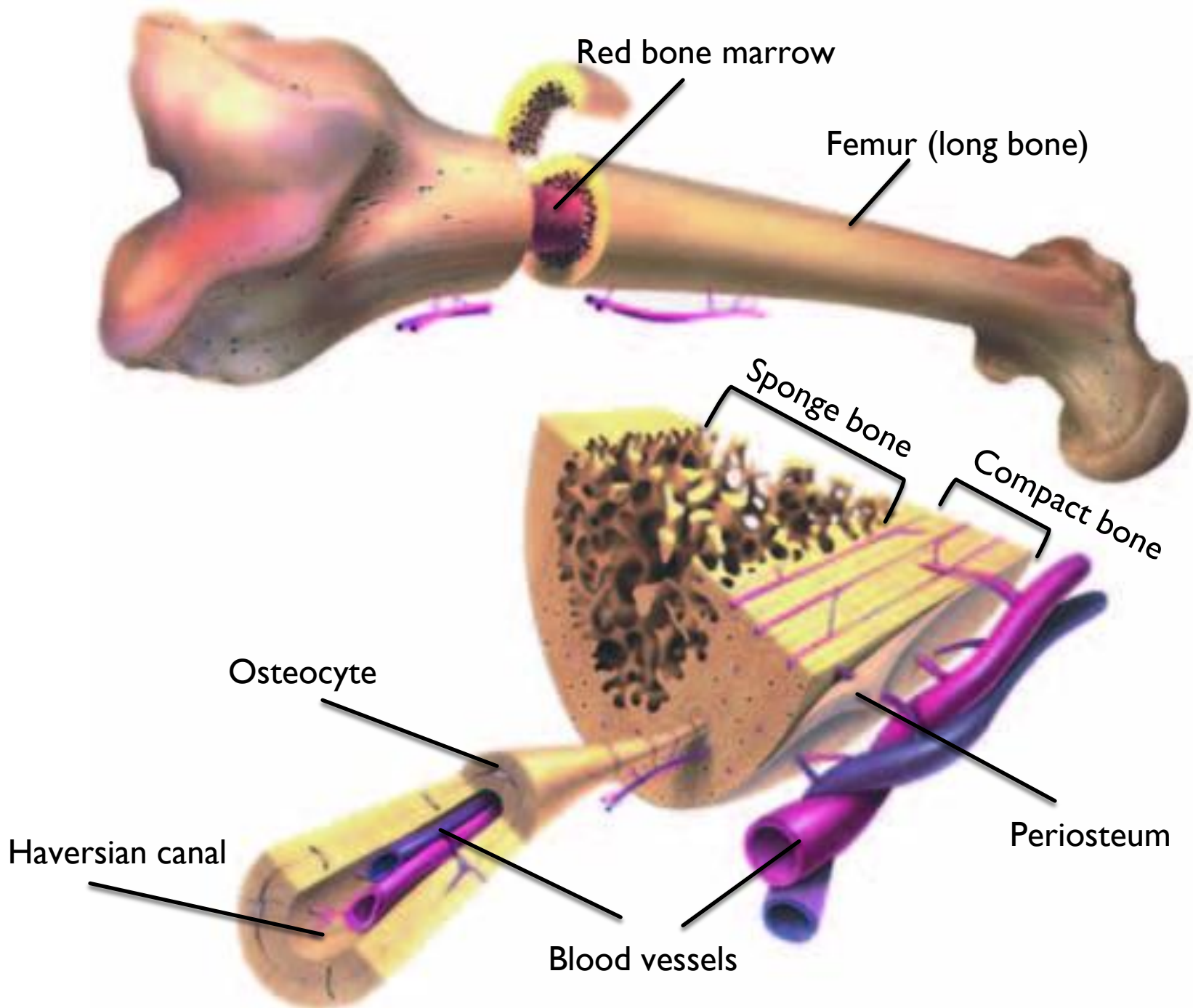
- support and protect delicate internal organs.
- bones store minerals, such as calcium and phosphorus.
- produce red blood cells, platelets, and white blood cells.

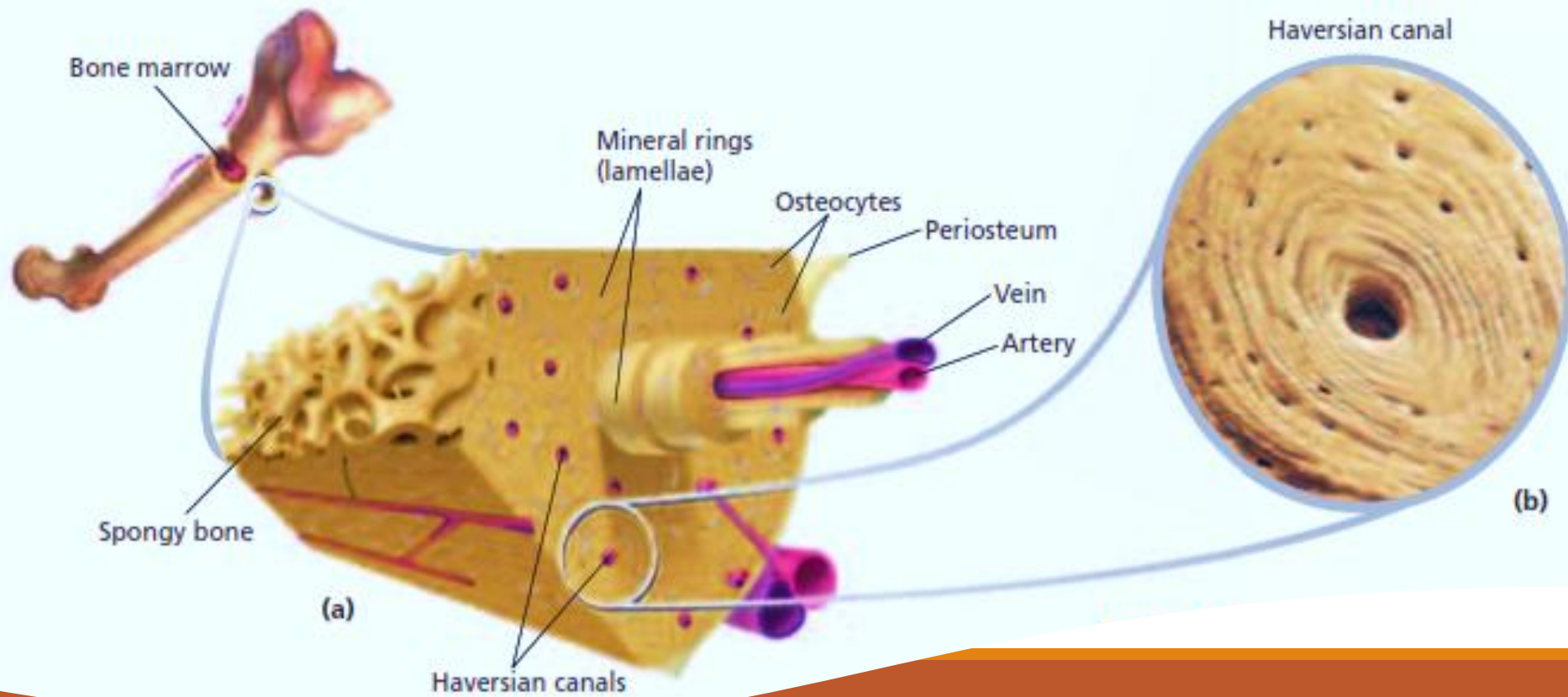
BONE FUNCTION AND STRUCTURE

Structure:

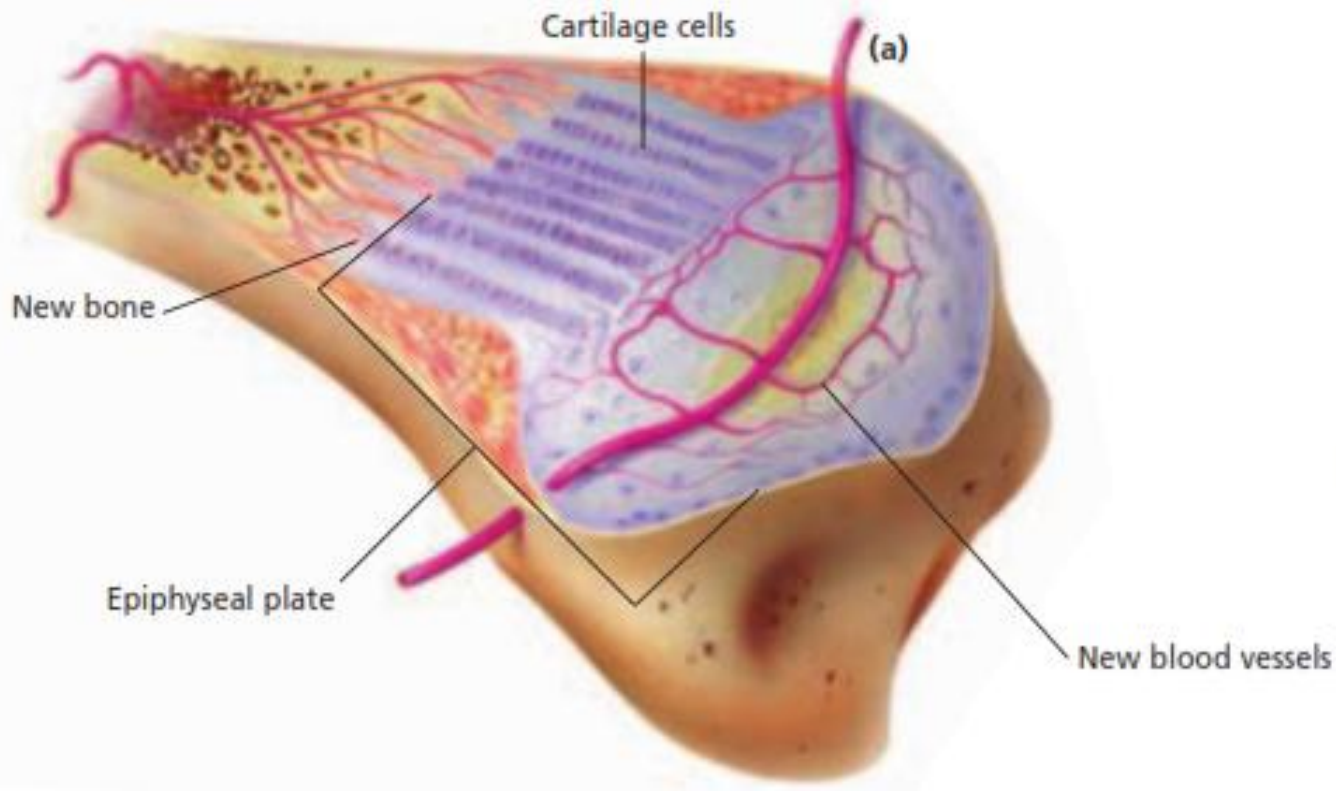
- Bones make up less than 20 percent of the body's mass.
- Bones are not dry, rigid structures, as they may appear in a museum exhibit. They are moist, living tissues.
- Bones are made of some parts.







INJURY AND BONE REPAIR



LONG-BONE GROWTH



BONE DEVELOPMENT AND ELONGATION

- The process by which cartilage is slowly replaced by bone as a result of the deposition of minerals is called **ossification**
- Bone elongation takes place near the ends of long bones in an area known as the **epiphyseal plate**.

Epiphyseal growth

Growth in cartilage
surrounding epiphysis

Cartilage
replaced by bone

Bone remodeled

Growth in length

Cartilage growth
in epiphyseal plate

Cartilage replaced
by bone

Bone remodeled

Bone resorption

Growth in diameter

Bone addition

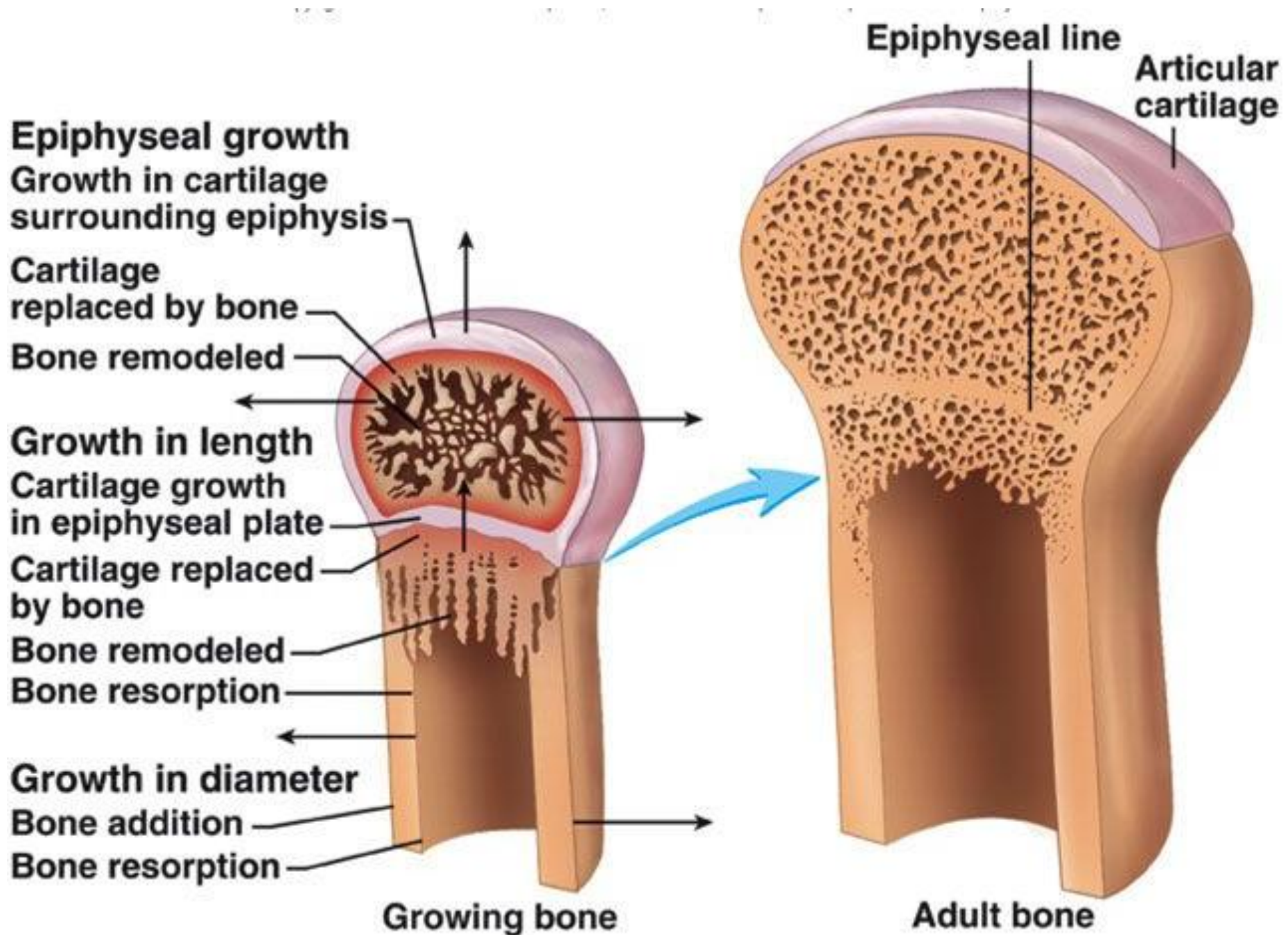
Bone resorption

Growing bone

Epiphyseal line

Articular
cartilage

Adult bone



JOINTS

The place where two bones meet is known as a joint.

Three major kinds of joints are found in the human body:

- Fixed
- Semi-movable
- Movable

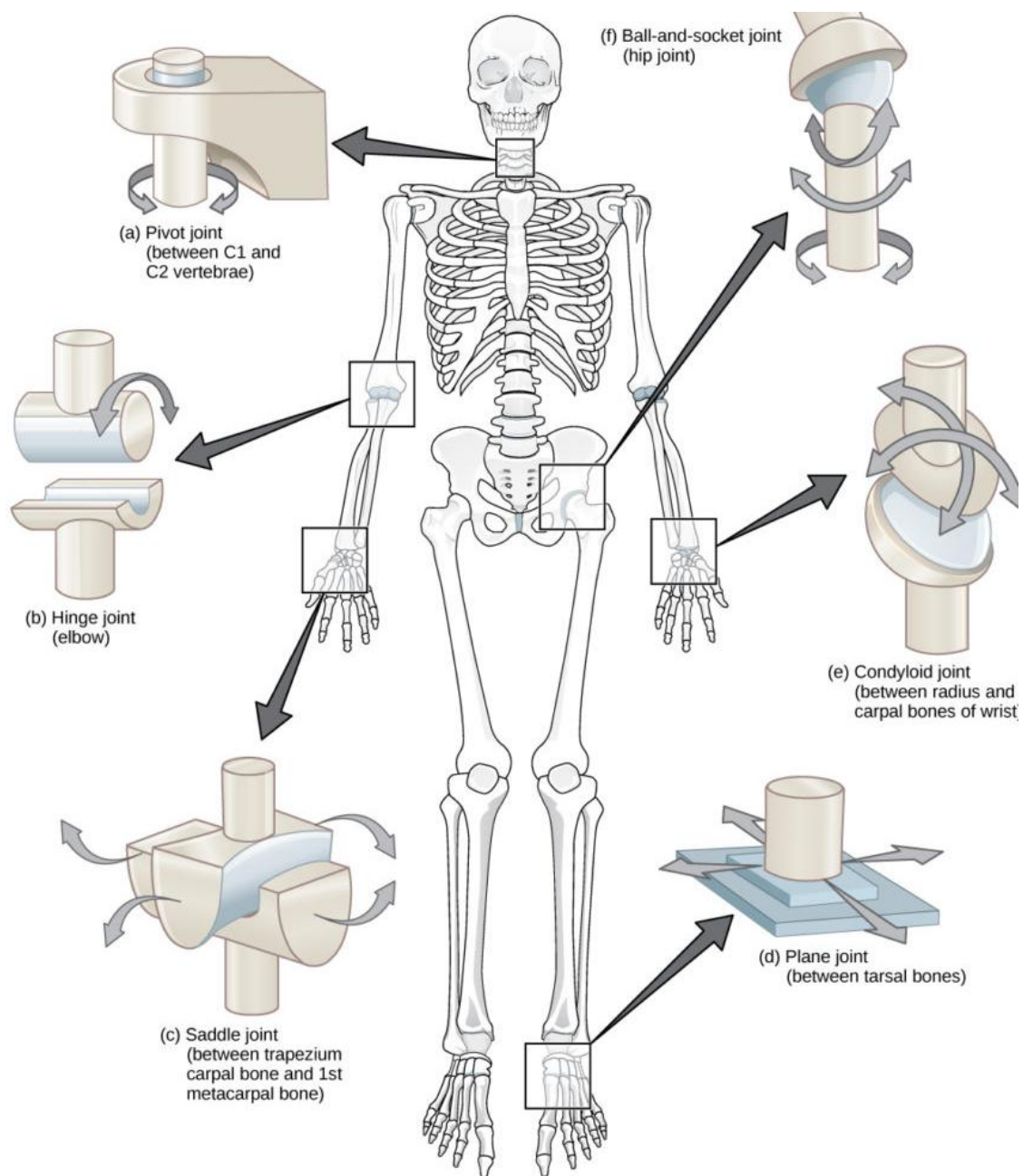
Fixed joints prevent movement. They are found in the skull, where they securely connect the bony plates and permit no movement of those bones.

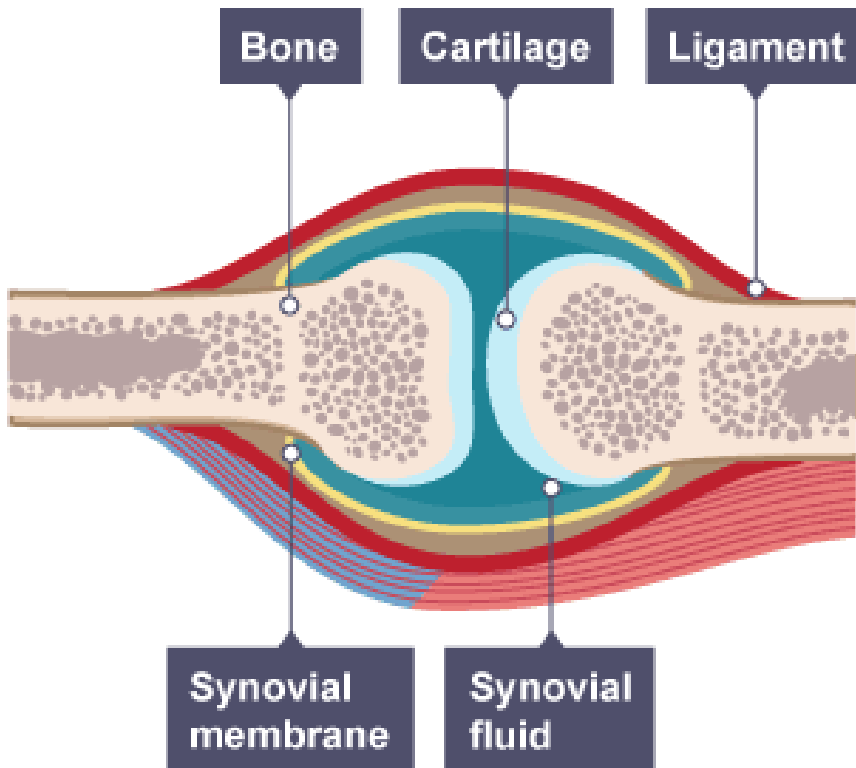
Semimovable joints permit limited movement. Example: semimovable joints hold the bones of the vertebral column in place and allow the body to bend and twist.

Movable joints these joints enable the body to perform a wide range of movements and activities.

hinge, ball-and-socket, pivot, saddle, gliding joints







Bone: The hard tissue that forms the skeleton.

Cartilage: A smooth, flexible tissue that covers the ends of bones in joints to **reduce friction and act as a cushion**.

Ligament: Connective tissue that links bones together and stabilizes the joint.

Synovial membrane: The lining of the joint capsule that produces synovial fluid.

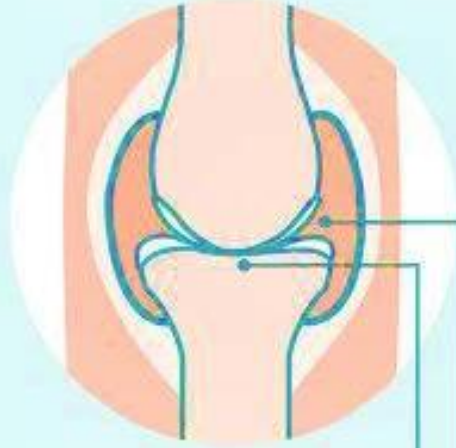
Synovial fluid: A **lubricating fluid** inside the joint that **reduces friction** and **nourishes** the cartilage.

NORMAL JOINT



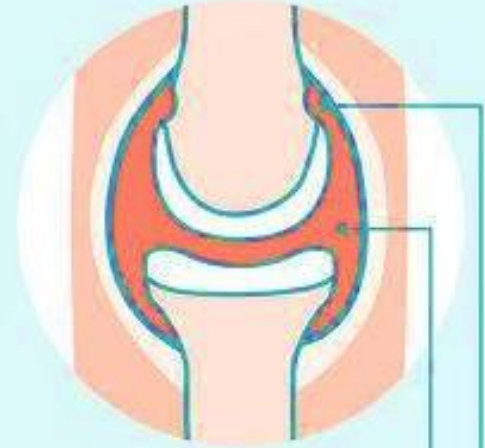
CARTILAGE
JOINT CAPSULE
SYNOVIAL MEMBRANE
BONE

OSTEOARTHRITIS



BONE ENDS
RUB TOGETHER
THINNED CARTILAGE

RHEUMATOID
ARTHRITIS

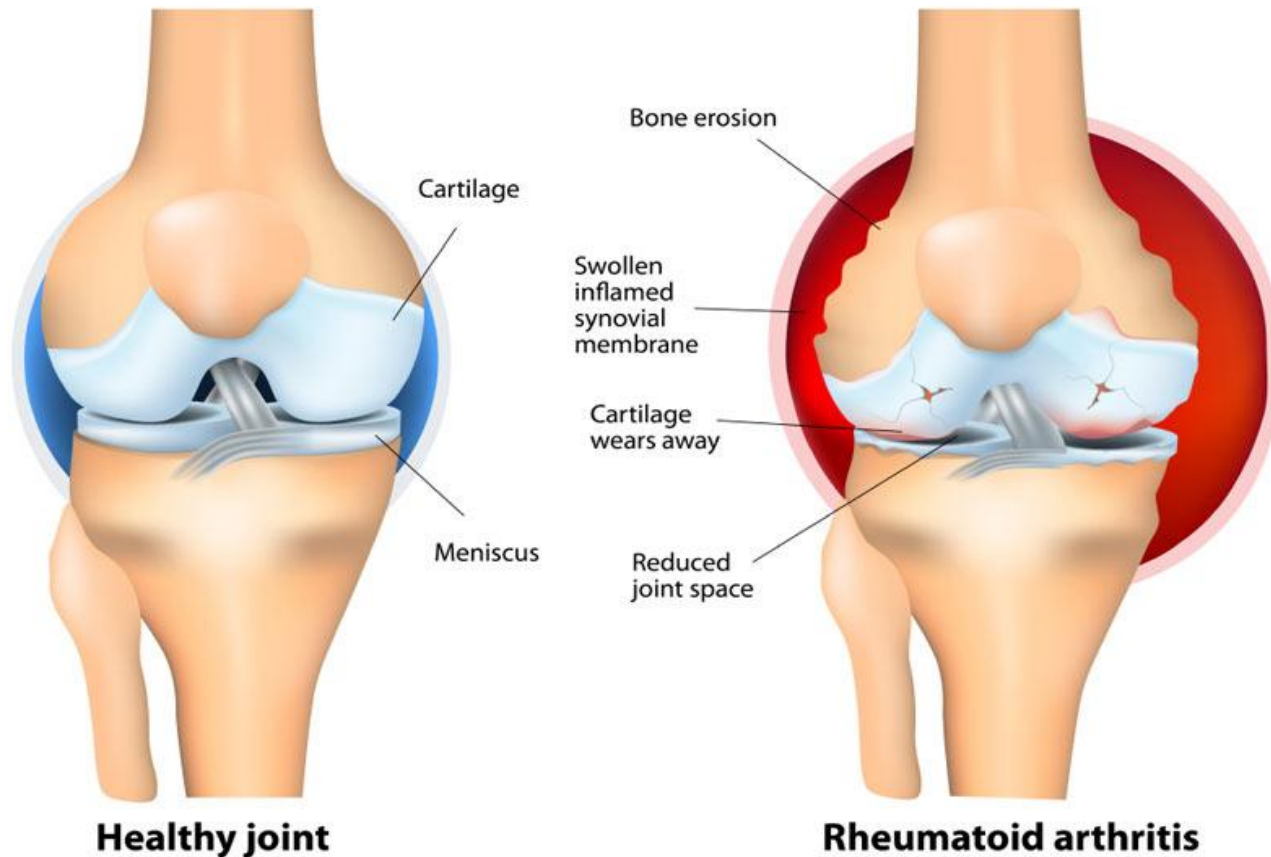


SWOLLEN INFLAMMED
SYNOVIAL MEMBRANE
BONE EROSION

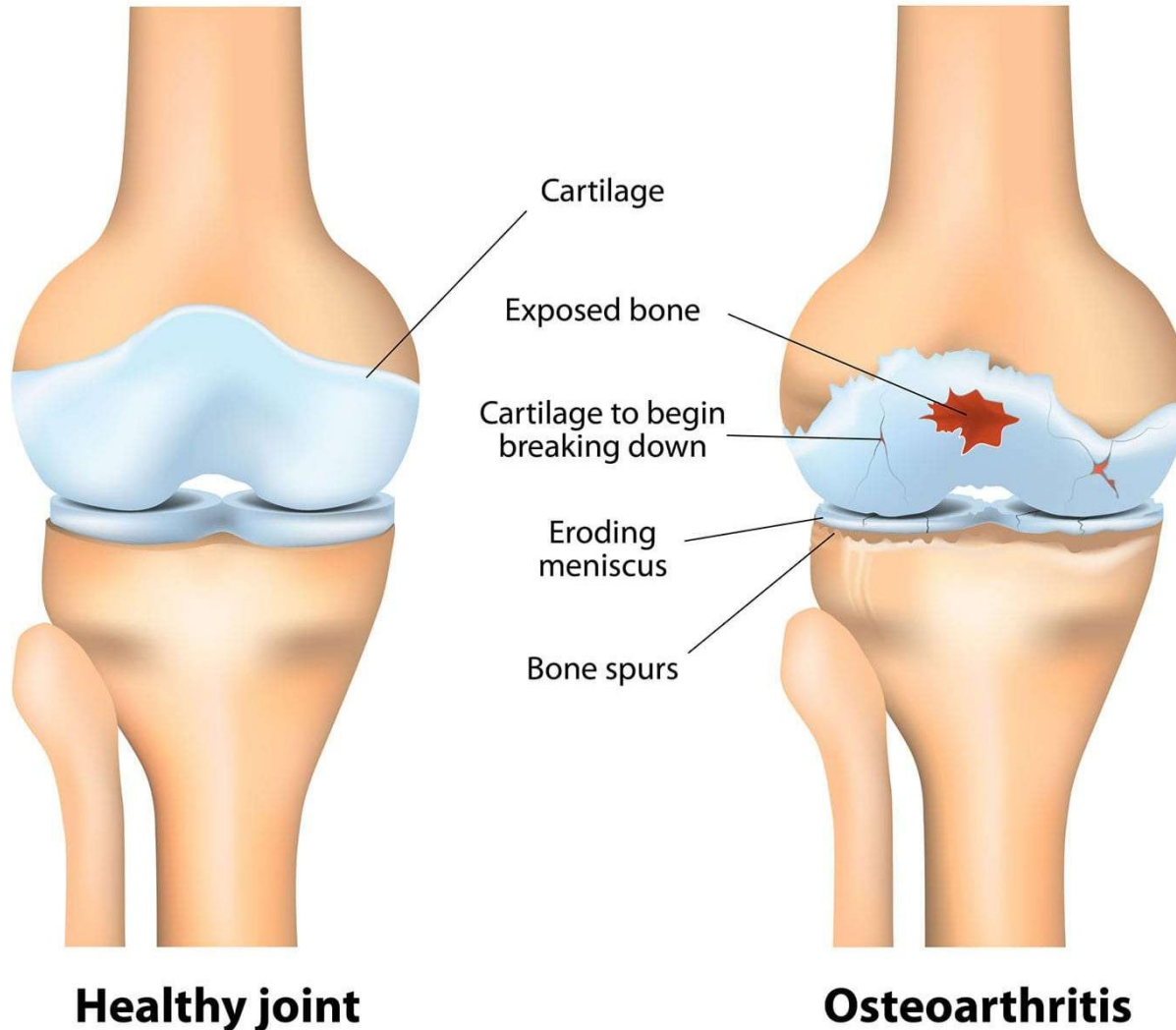
RHEUMATOID ARTHRITIS AND OSTEOARTHRITIS

Rheumatoid arthritis is a **long-term autoimmune disorder** that primarily affects joints. It typically results in warm, swollen, and painful joints

RHEUMATOID ARTHRITIS



Osteoarthritis is a type of **degenerative joint disease** that results from **breakdown of joint cartilage** and underlying bone.



HOMework (PAGE 13) FOR NEXT WEEK

SECTION 2 REVIEW

1. List the major parts of the axial skeleton and the major parts of the appendicular skeleton.
2. Name five functions of bones.
3. Illustrate the structure of a long bone.
4. When does the ossification of most of the bones in the body begin and end?
5. Describe the function of the three major types of joints, and give an example of each.
6. Differentiate between the two types of arthritis.

CRITICAL THINKING

7. **Applying Information** What is the advantage of a cartilaginous skeleton during prenatal development?
8. **Analyzing Information** Which type of arthritis is not related to age?
9. **Relating Concepts** How are the structures of cartilage and bone related to the function each performs in the body?