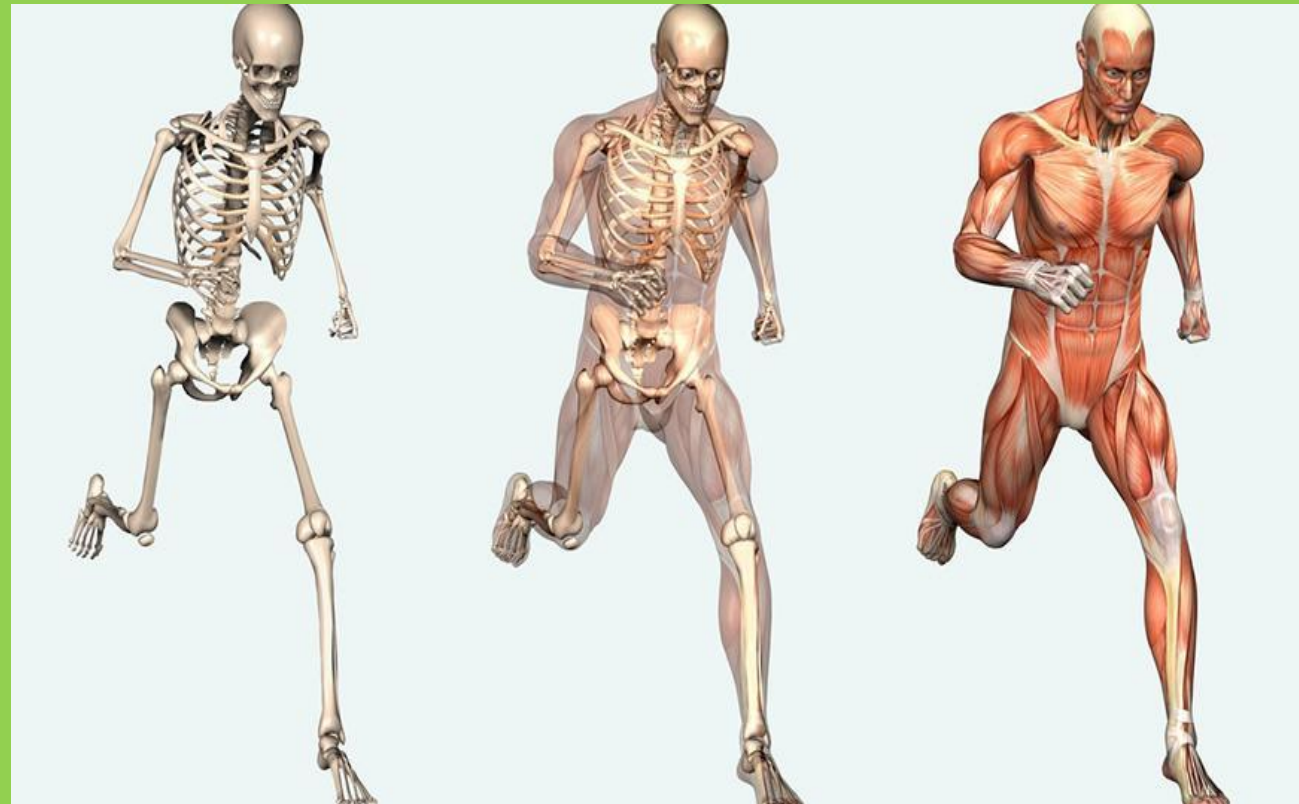
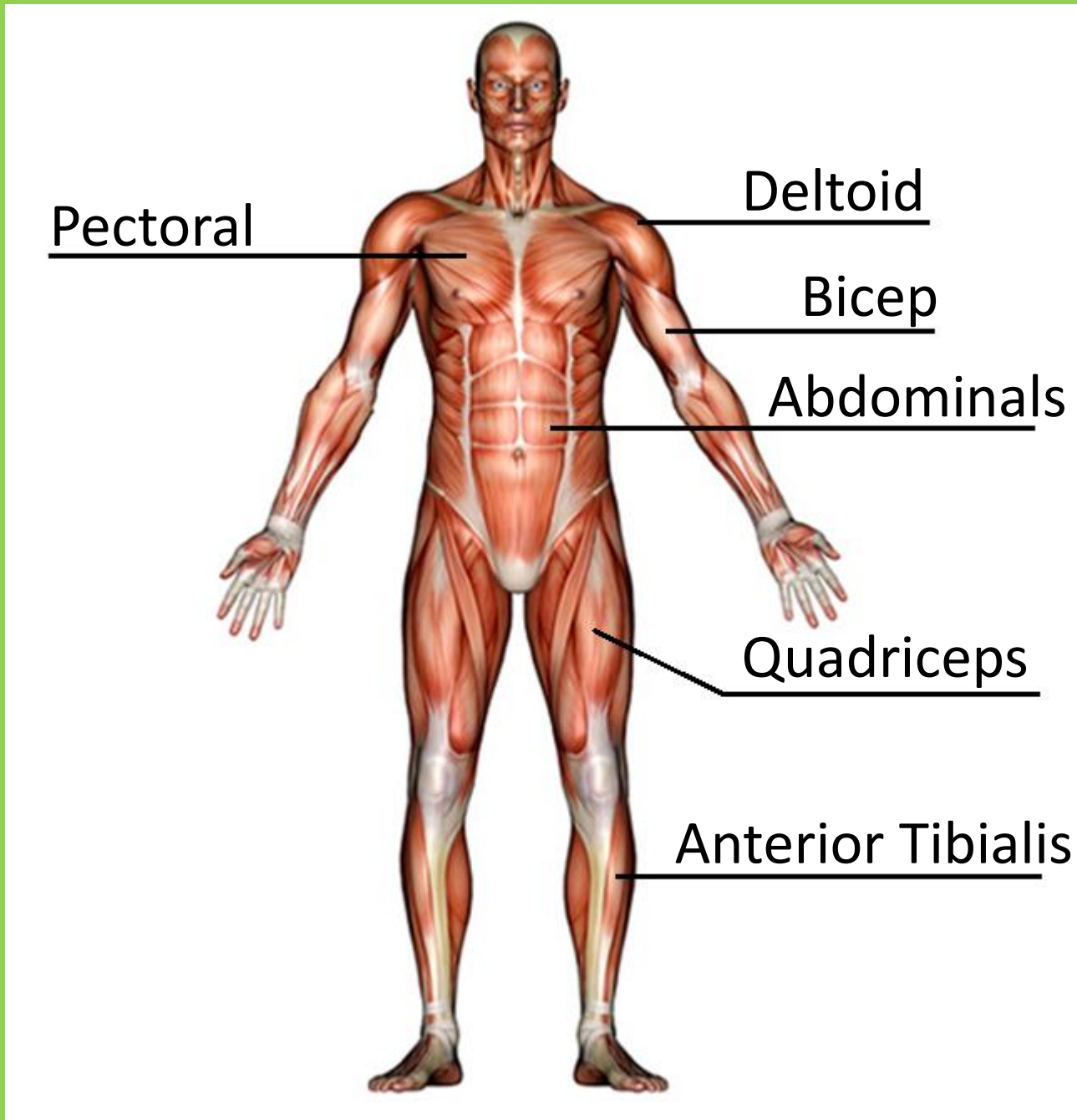


THE MUSCULOSKELETAL SYSTEM



There are over **650** muscles and **206** bones in a 'normal' adult skeleton





Pectoral

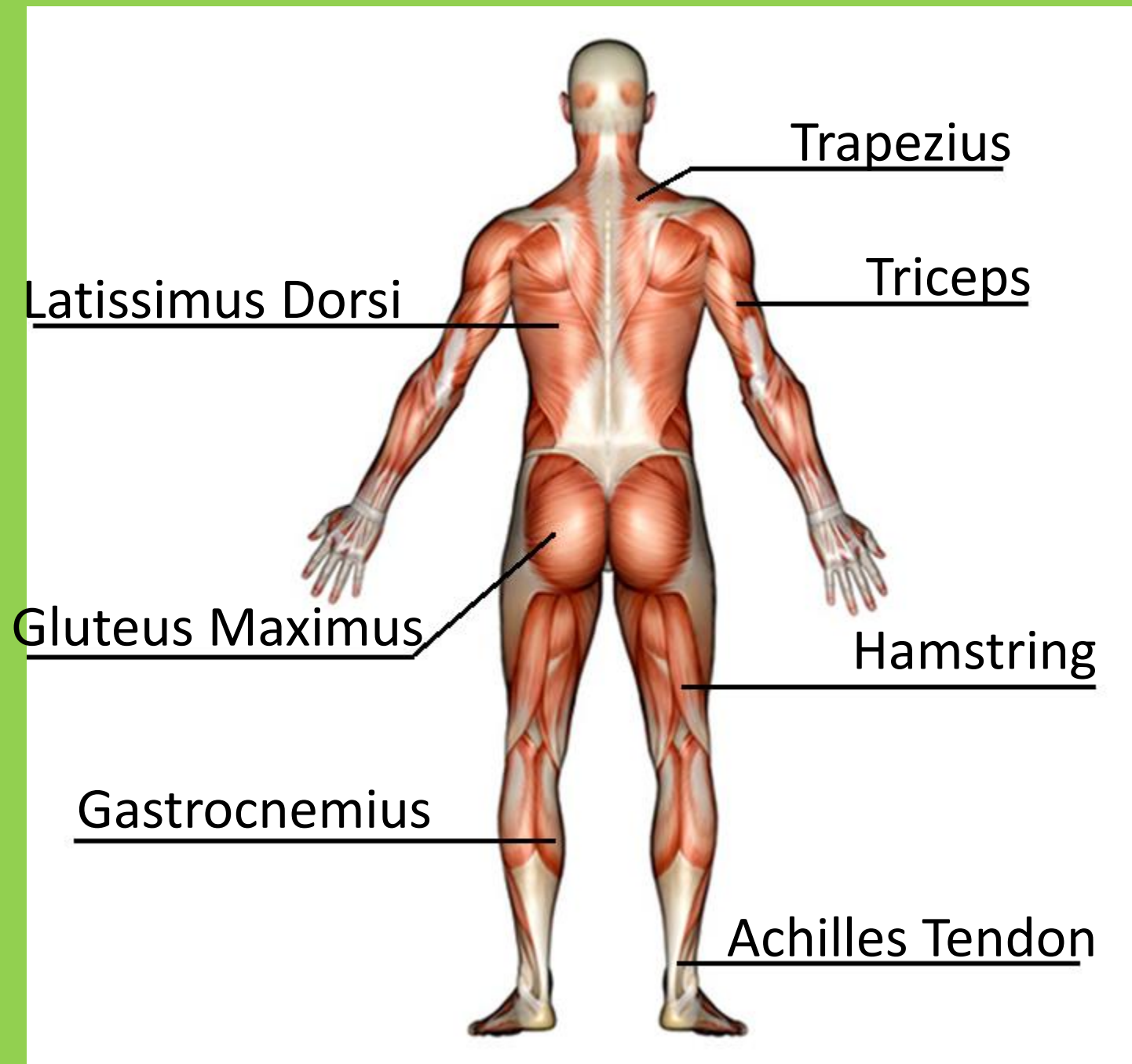
Deltoid

Bicep

Abdominals

Quadriceps

Anterior Tibialis



Trapezius

Triceps

Latissimus Dorsi

Gluteus Maximus

Hamstring

Gastrocnemius

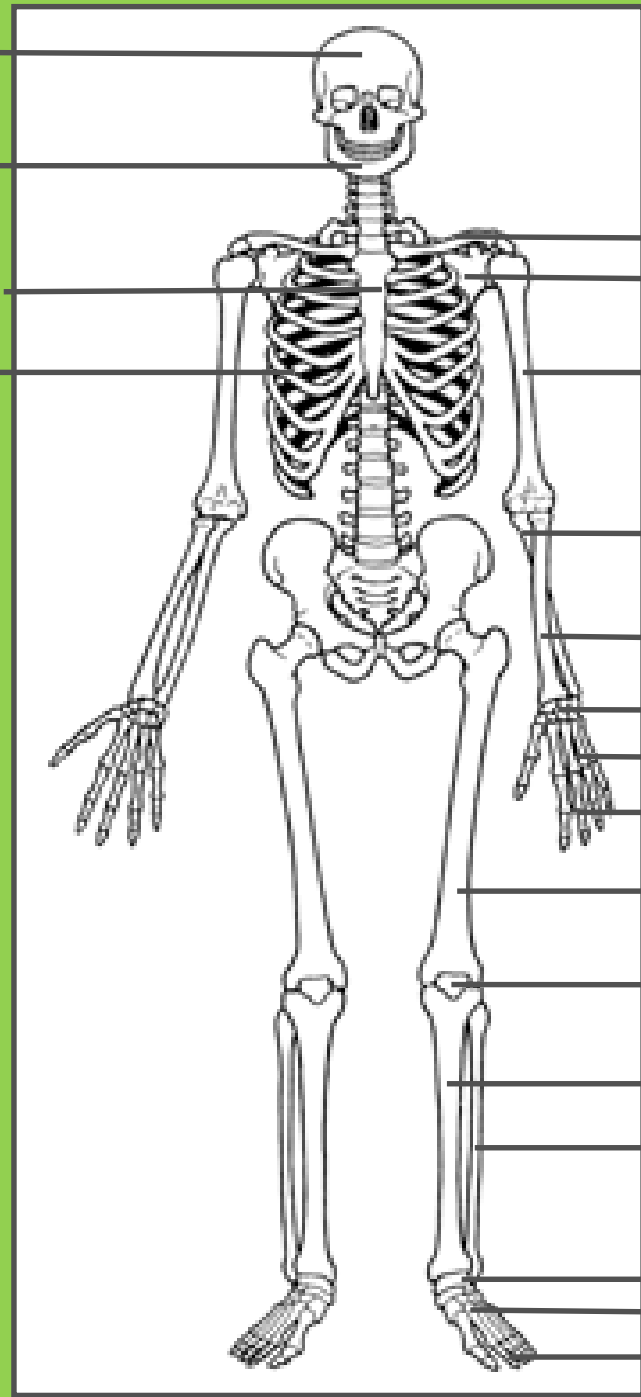
Achilles Tendon

Cranium

Mandible

Sternum

Ribs



Clavicle

Humerus

Ulna

Radius

Carpals

Metacarpals

Phalanges

Femur

Patella

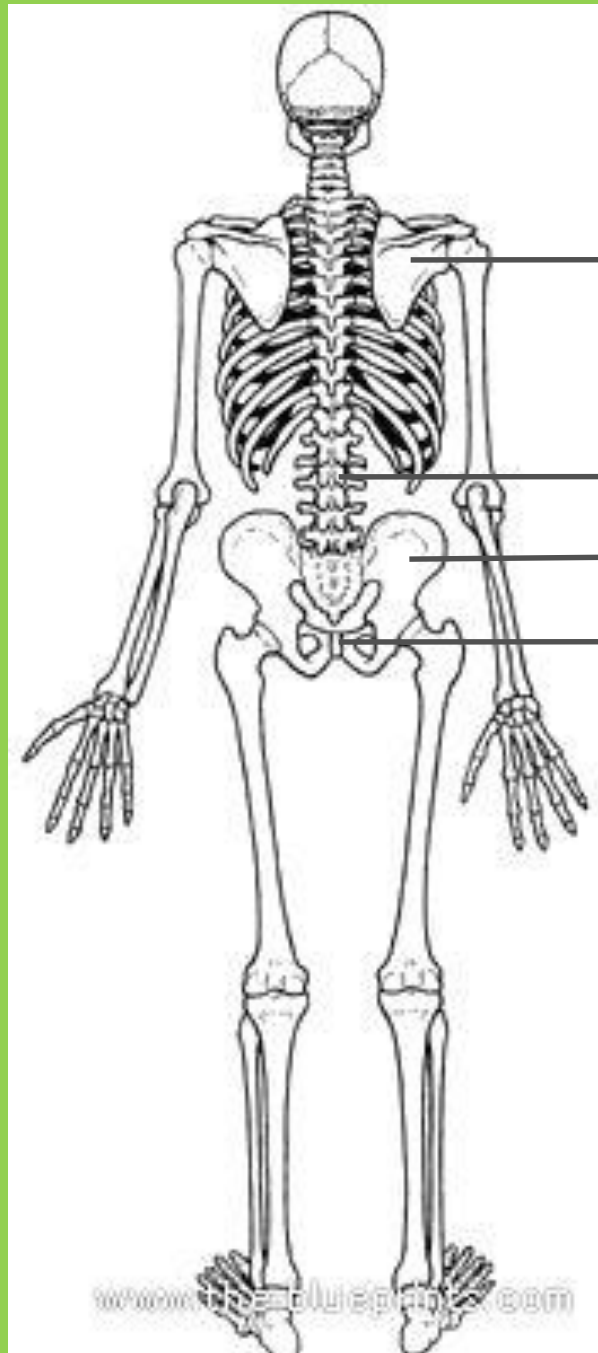
Tibia

Fibula

Tarsals

Phalanges

Metatarsals



Scapula

Vertebrae

Pelvis

Coccyx

JOINTS

A joint is the junction between 2 or more bones.

LIGAMENTS

- Attaches bone to bone
- Helps support a joint and hold bones together

TENDONS

- Attaches muscle to bones

CARTILAGE

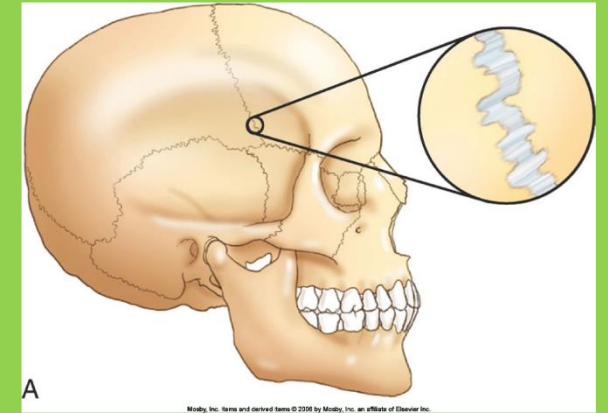
- Coats the end of bones
- Provides a smooth surface that reduces friction between moving bones.



TYPES OF JOINTS

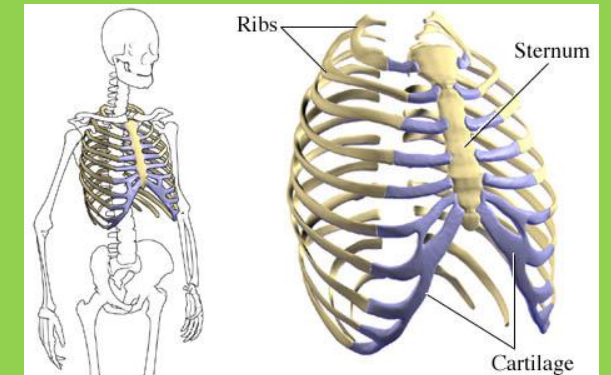
Fibrous Joints

- Immovable joints that are fixed together by fibrous tissue, e.g. – cranium.



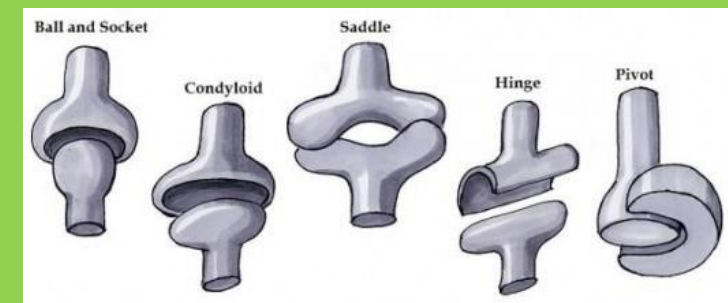
Cartilaginous Joints

- Slightly moveable joints where bones are firmly united by cartilage, e.g. – between the ribs and the sternum & also the intervertebral joints.



Synovial Joints

- Freely movable joints which are the most common joint in the body.

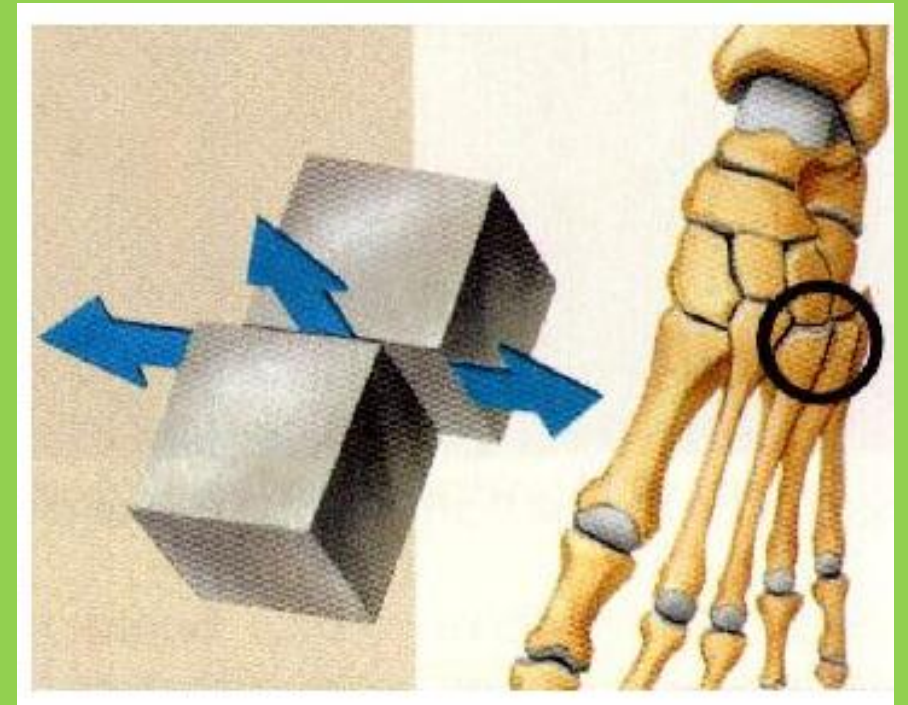


SYNOVIAL JOINTS

Gliding and/or Sliding Joint

- One bone slides or glides across another bone.

e.g, joints between the carpal & tarsal bones.

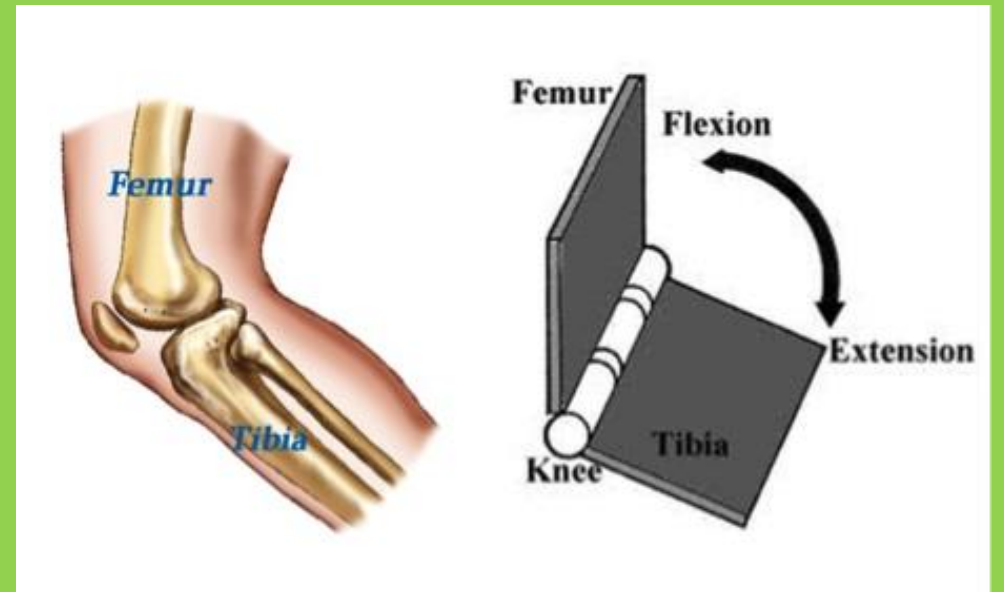


SYNOVIAL JOINTS

Hinge Joint

- Allows only back and fourth movement such as bending and straightening.

e.g, knee & elbow

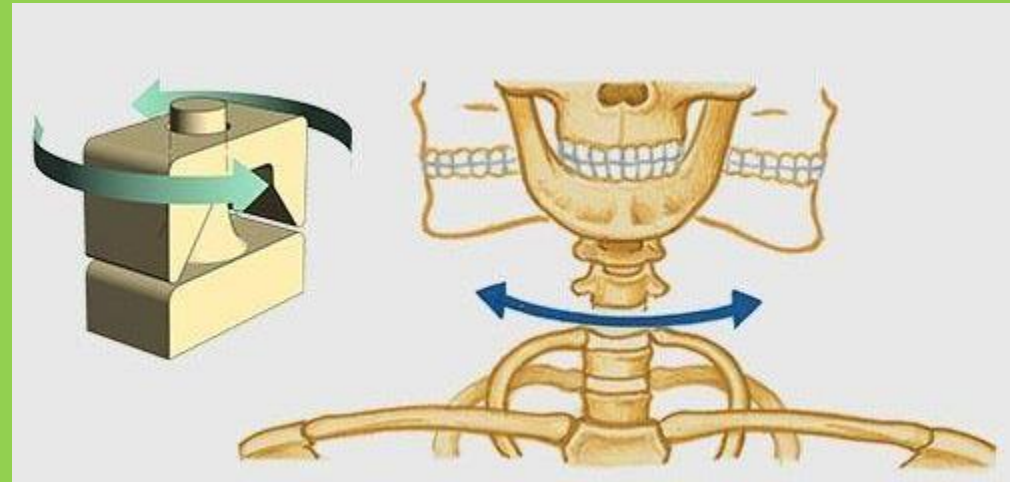


SYNOVIAL JOINTS

Pivot Joint

- Allows only rotation

e.g, top of the spine

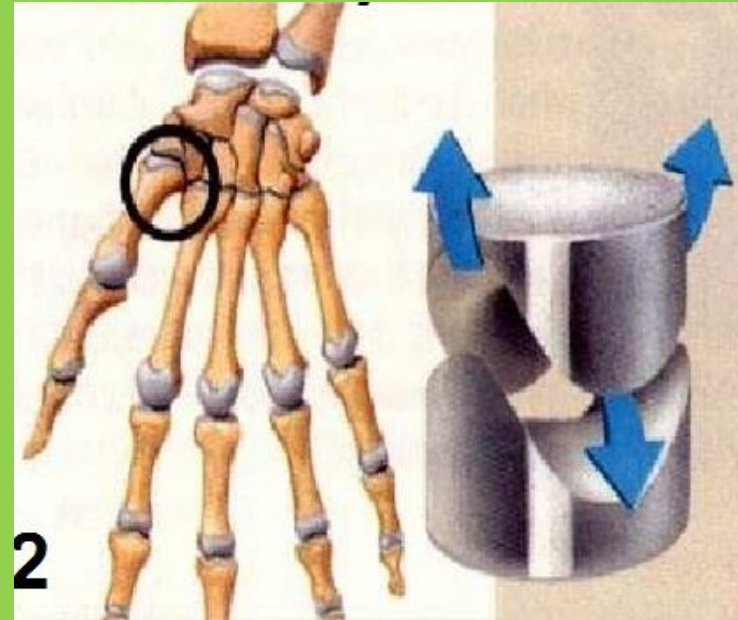


SYNOVIAL JOINTS

Saddle Joint

- Allows side to side & back and forth movement.

e.g, thumb joint – crossing over the palm.

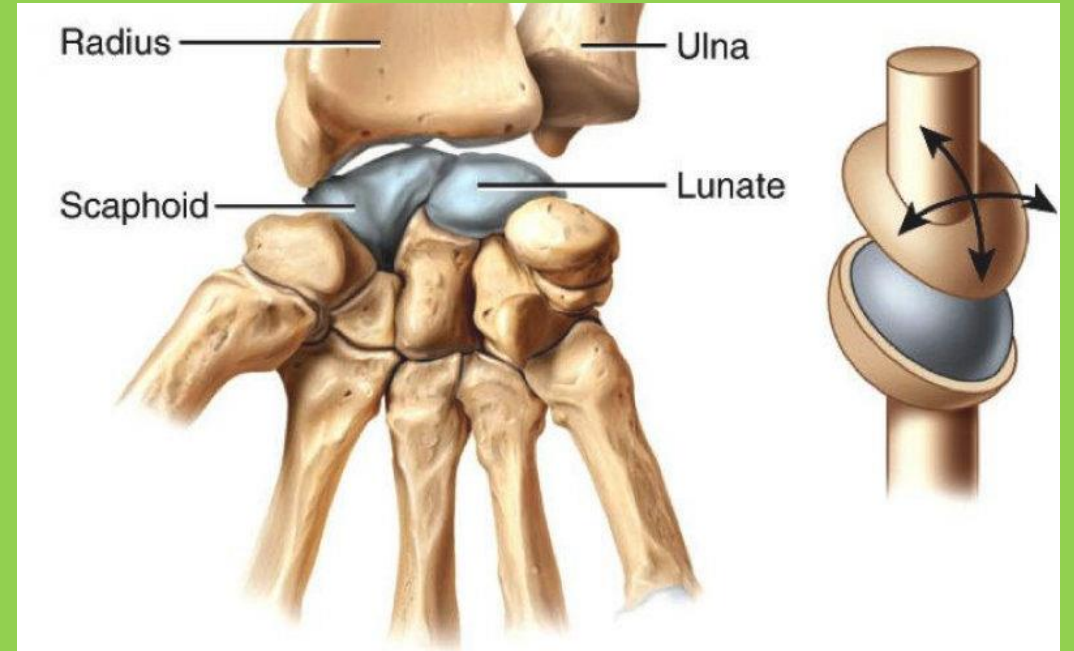


SYNOVIAL JOINTS

Condyloid Joint

- Allows back and forth, side to side & some rotation.

e.g, wrist

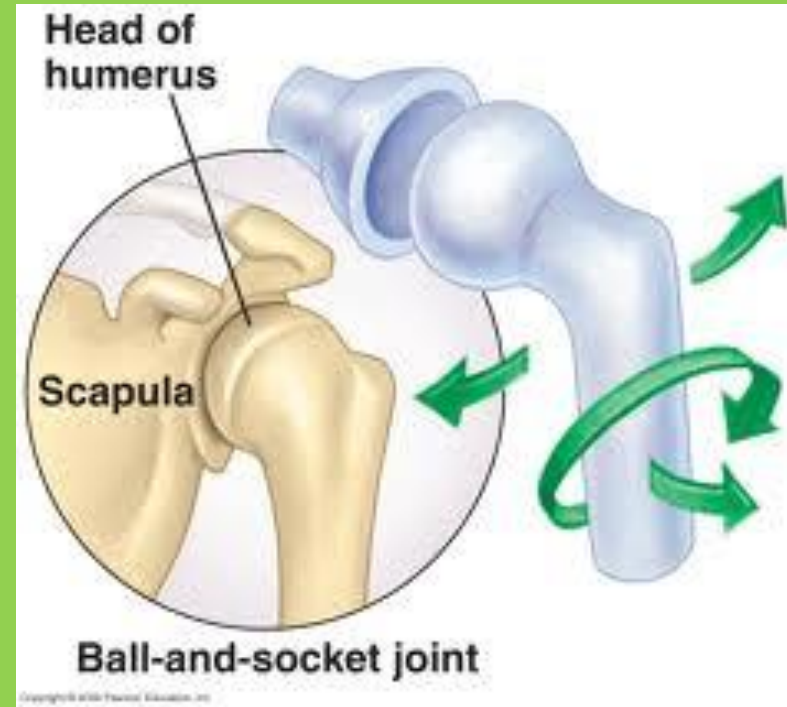


SYNOVIAL JOINTS

Ball & Socket Joint

- Allows movement in all directions.

e.g, shoulder & hip



JOINTS REVIEW VIDEO

- <https://www.youtube.com/watch?v=DLxYDoN634c>
 - 4:40 onwards

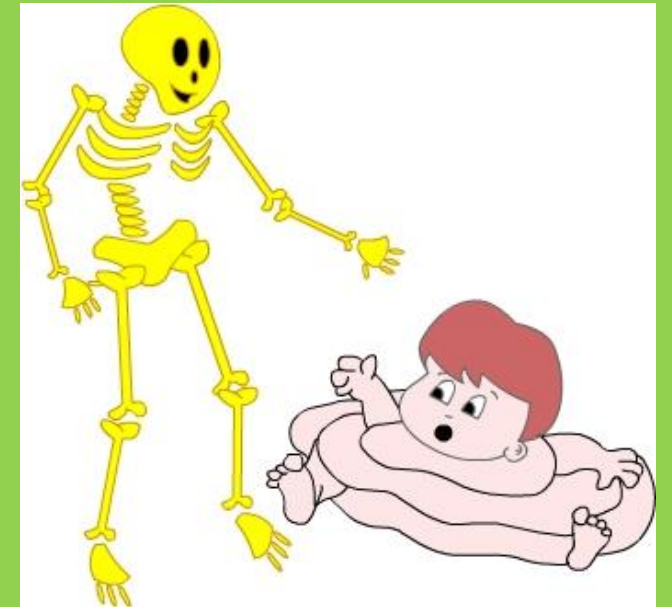
FUNCTIONS OF BONES

1. **SUPPORT** - is provided for soft tissues. The skeleton provides the framework for our body shape.
2. **PROTECTION** - for our vital organs **e.g.** our skull protects the brain and our ribs protect the lungs.
3. **MOVEMENT** - Our bones act as leavers when the muscles work in pairs.

FUNCTIONS OF BONES

4. **BLOOD CELLS** - production of red blood cells, predominantly found in the marrow of long bones.

5. **STORAGE OF MINERALS** - bones store calcium, phosphorus, small amounts of magnesium and sodium.



TYPES OF BONES

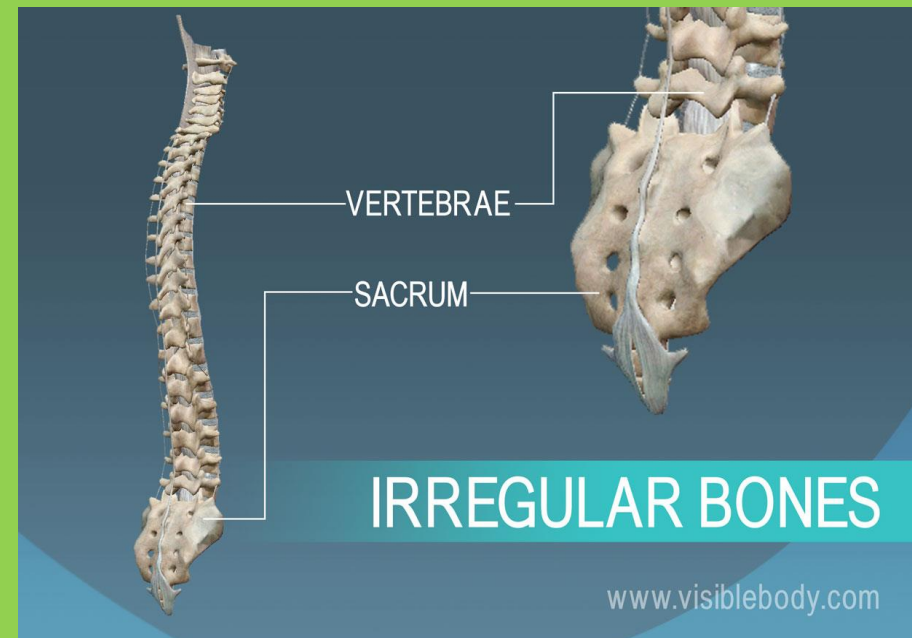
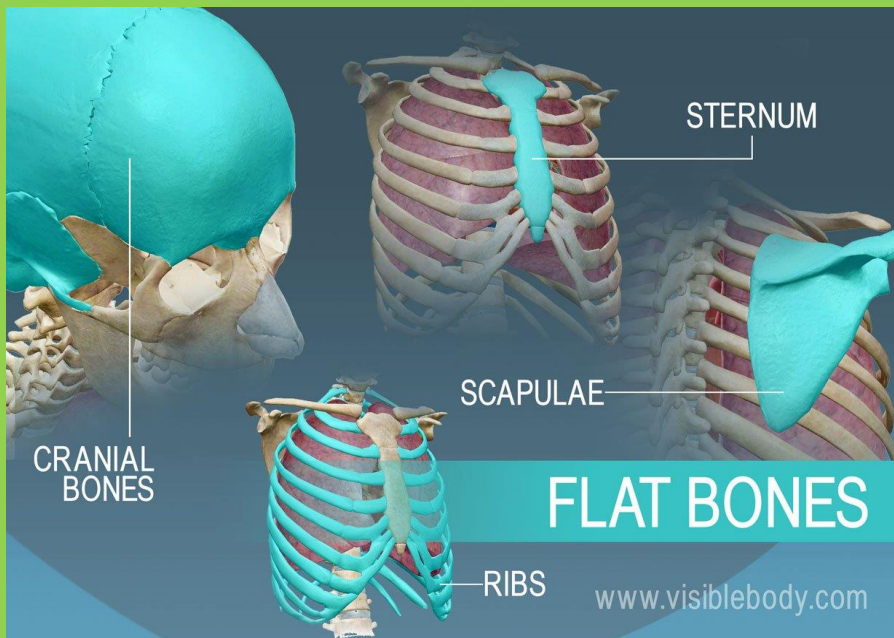
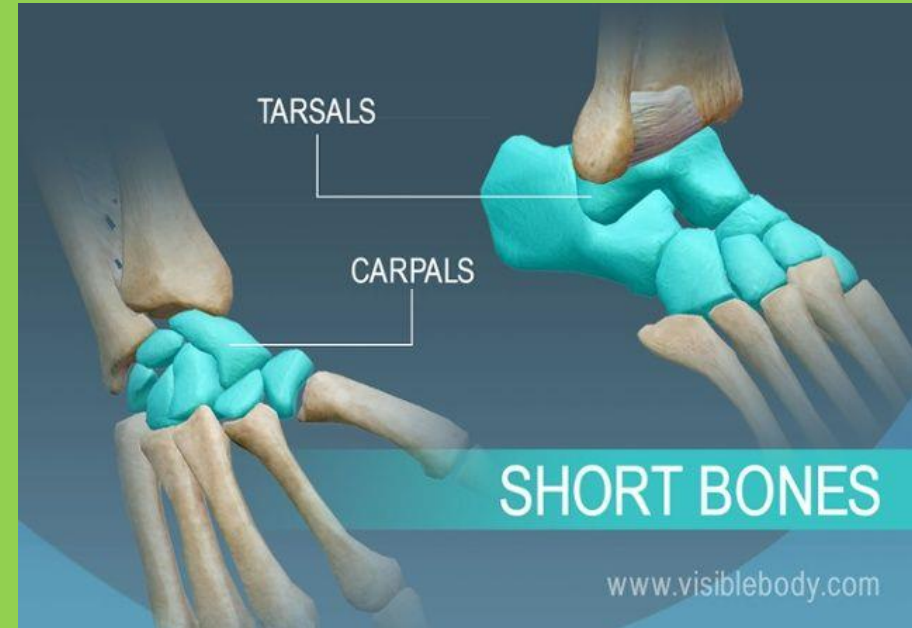
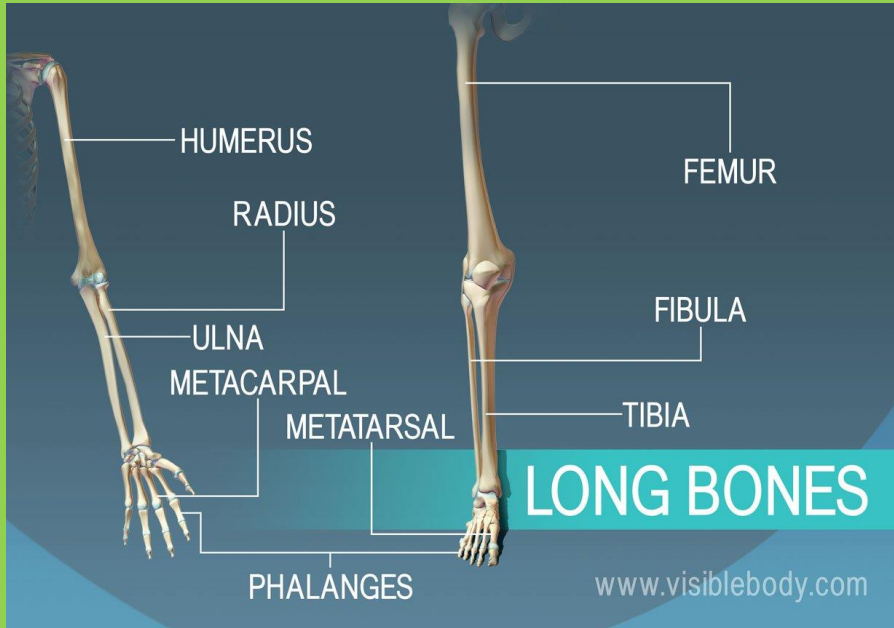
LONG BONE - light weight for movement
e.g. femur, humerus

SHORT BONE - rounded and used for partial movement e.g. carpals, tarsals

FLAT BONE - broad and smooth for protection e.g. skull, sternum etc

IRREGULAR BONE - different shapes with special functions e.g. vertebrae, pelvis

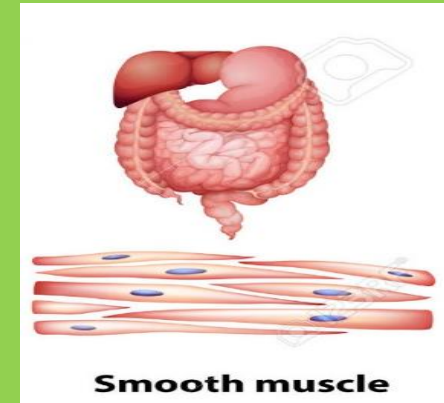
You tube: "The Skeletal System" 50 sec mark – 5 minute mark only



MUSCLE TYPES

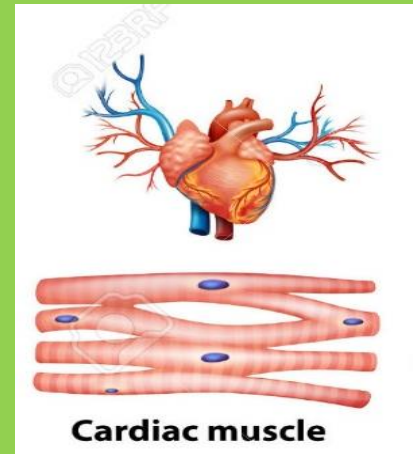
Smooth

They make up the walls of the internal organs such as the stomach and blood vessels.



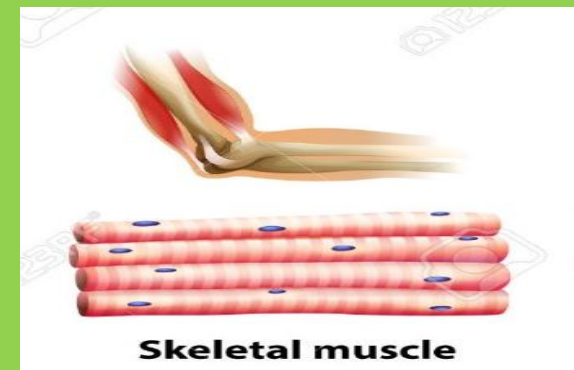
Cardiac

is your heart muscle.



Skeletal

These are the muscles that are attached to your bones and make movement possible.




INVOLUNTARY & VOLUNTARY MUSCLES

Both **smooth** and **cardiac** muscles are classified as Involuntary muscles because you cannot consciously control their movement.


Skeletal muscles are called voluntary muscles because you can control them.

INVOLUNTARY MUSCLES

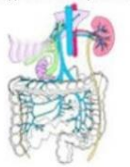
You CAN'T CONTROL this type of muscle.



heart




eyelids



digestive system

VOLUNTARY MUSCLES

You CAN CONTROL this type of muscle.



-The Face, Arms, and Legs have got voluntary muscles.

SCIENCEPHOTOLIBRARY

MUSCLE CONTRACTIONS

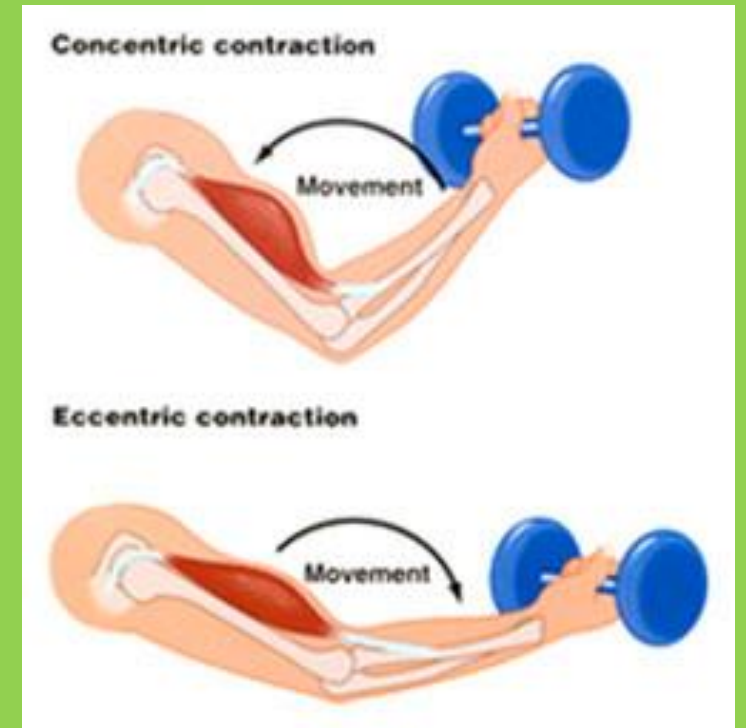
An **isotonic contraction** is a muscle contraction that pulls on the bones and produces movement of body parts. There are 2 types of isotonic contractions.

1) Concentric contraction

e.g, the shortening of the muscle.

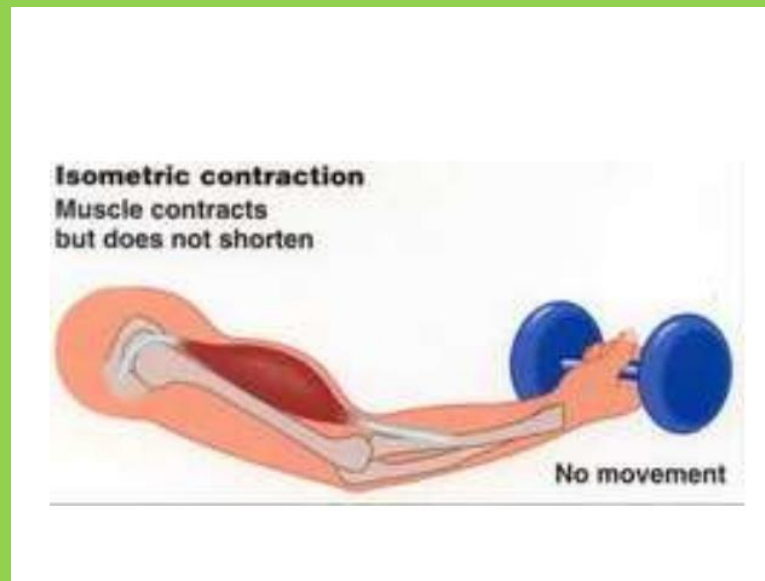
2) Eccentric contraction

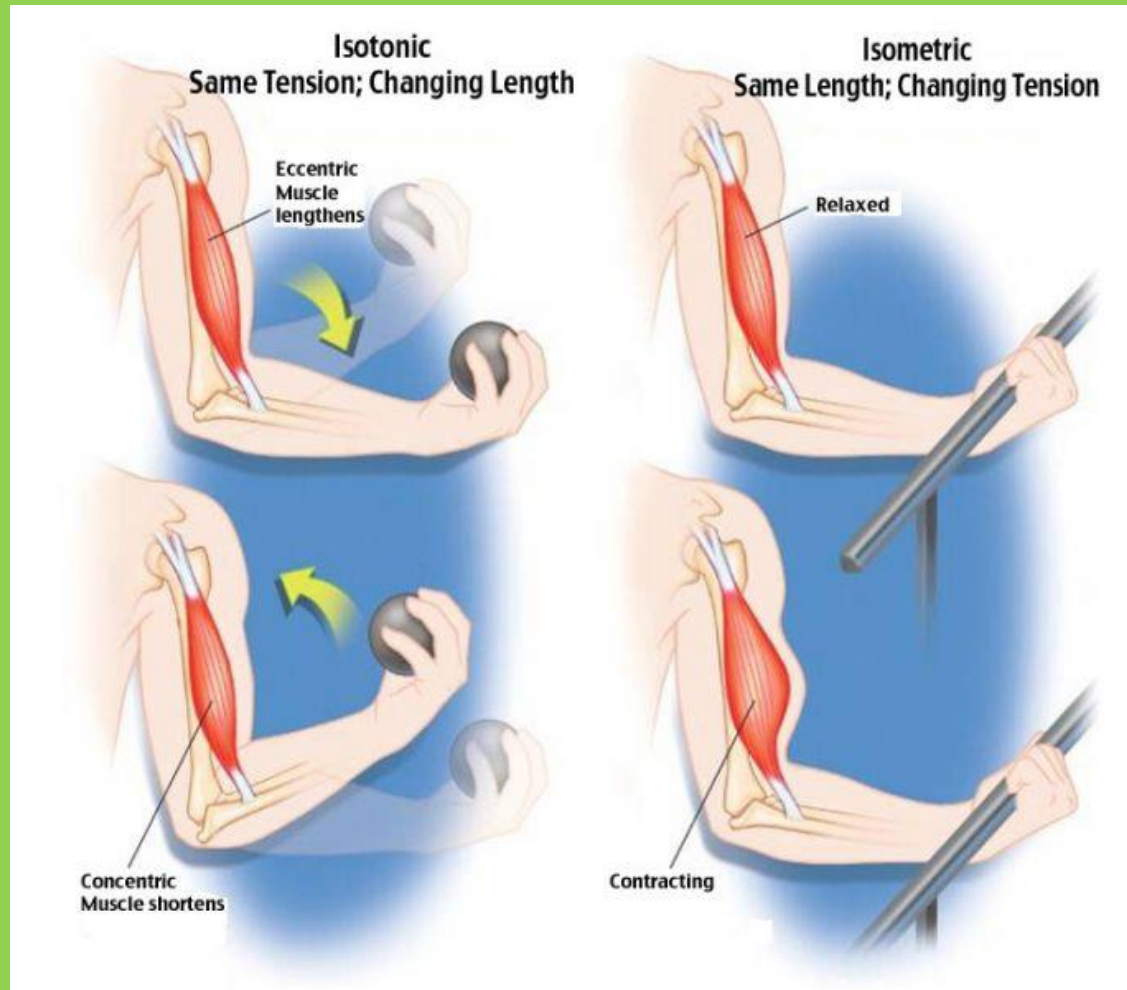
e.g, the lengthening of the muscle.



MUSCLE CONTRACTIONS

An **isometric contraction** occurs when muscles contract and pull with equal force in opposite directions, so no movement can occur.





Muscles review - <https://youtu.be/VVL-8zr2hk4>

VERTEBRAE AND VERTEBRAL COLUMN

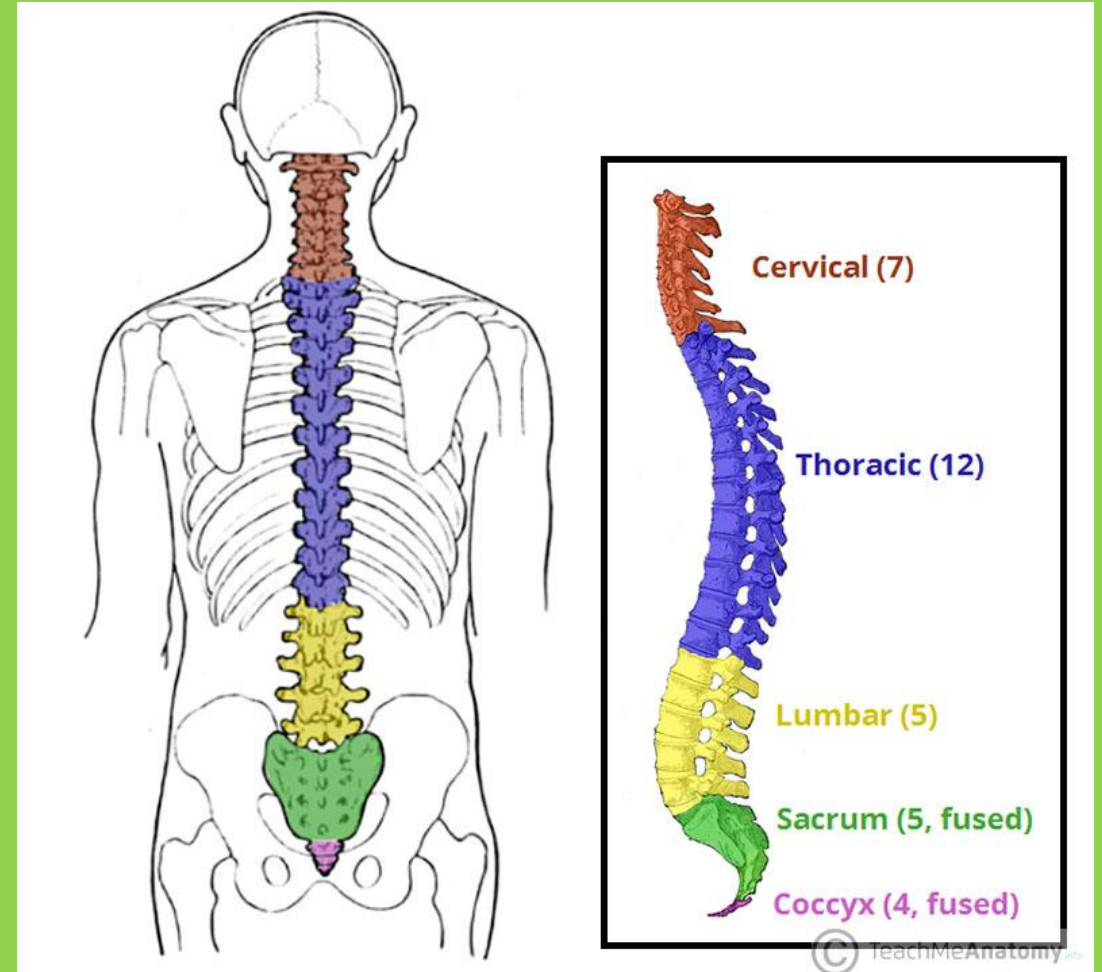
Cervical - 7

Thoracic - 12

Lumbar - 5

Sacrum – 5 (fused)

Coccyx – 4 (fused)



You tube: "[Spine anatomy](#)" 1:44sec

The Skeletal System

Vertebrae and Vertebral Column

FOLLOW INSTRUCTIONS:

1. Colour the individual cervical vertebrae in both posterior and lateral views.
2. Do the same for the thoracic and lumbar vertebrae, as well as the sacrum and coccyx. Avoid the intervertebral foramina, seen in the lateral view, and the sacrum (posterior view).
3. Colour in the intervertebral discs.
4. Do not colour the skull.

7 CERVICAL

This flexible group of cervical vertebrae supports the skull and neck. Holding the head erect develops and maintains its curvature. The 1st and 2nd vertebrae are unique as is the 7th with its prominent spine. The foramina in the transverse processes of C1-C6 transmit the vertebral arteries to the base of the brain. The series of vertebral foramina form a canal for the spinal cord.

12 THORACIC

This rather rigid group of thoracic vertebrae and the 24 ribs with which they articulate support the thorax. Its prominent curvature is developed in fetal life. Thoracic vertebrae are characterized by long, slender spines, heart-shaped bodies and facets for rib articulation.

5 LUMBAR

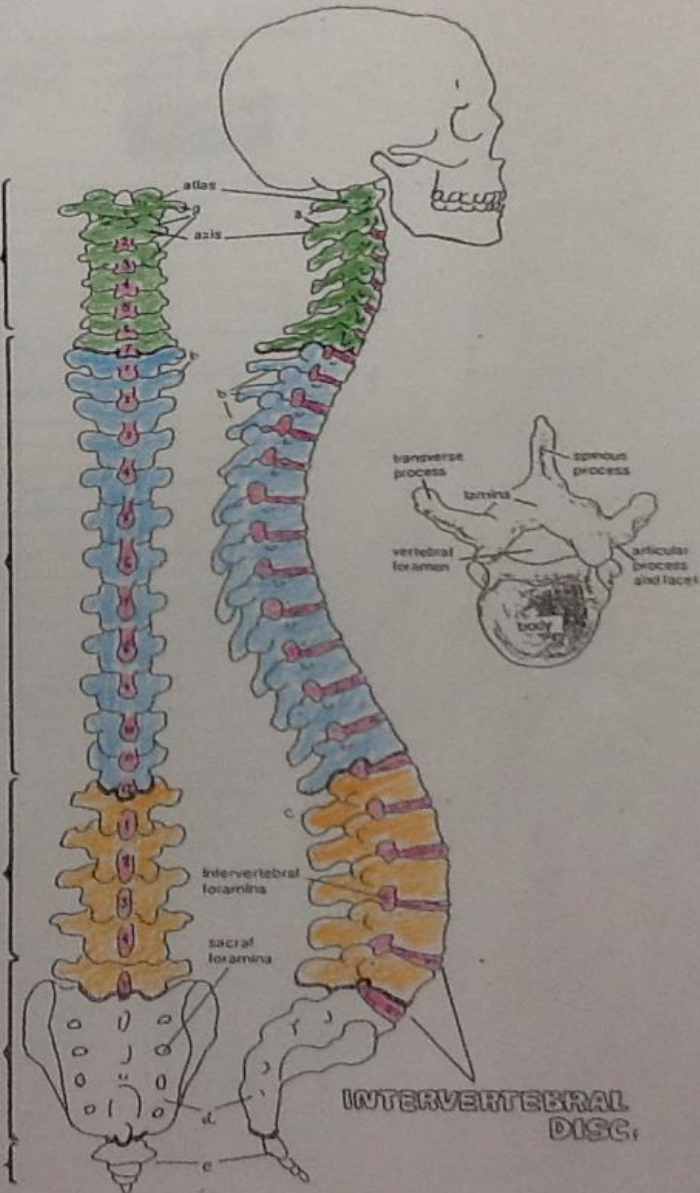
These sturdy, quadrilateral lumbar vertebrae, the mainstays of the column, carry a large share of the bodyweight, balancing the torso on the sacrum. The lumbar curvature results from walking and standing erect. This vertebral group is quite mobile when lifting from the floor by flexing this group, great pressure is often put on their discs, which may induce their rupture. This may injure the spinal nerves which pass from the spinal cord through their intervertebral foramina.

SACRUM

Five sacral vertebrae fuse to form this single bone. It transmits the body weight to the hip joints via its articulation with the pelvic girdle.

COCCYX

Consisting of 2-4 fused coccygeal vertebrae, this bone is functionally insignificant.



Worksheet
colour in diagram of
vertebrae

You tube: "Cervical spine anatomy"
3:10sec

THE MUSCULOSKELETAL SYSTEM

