

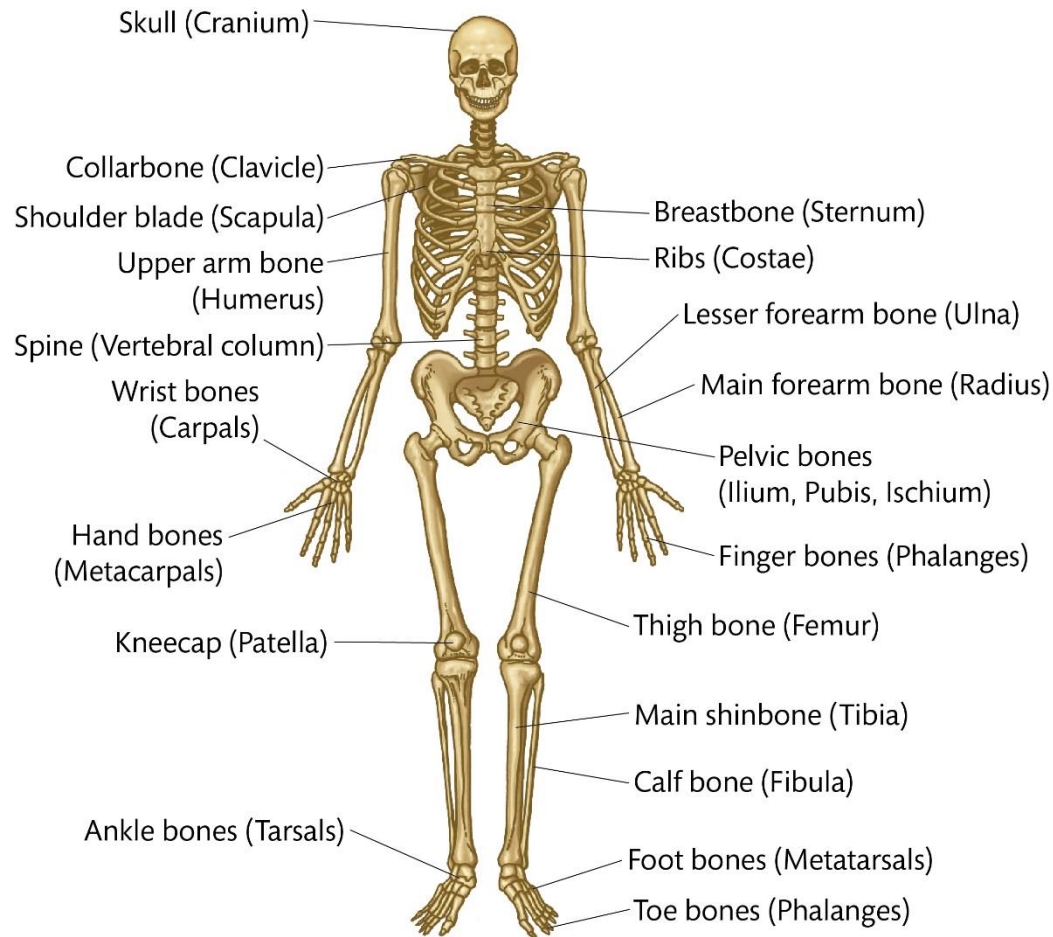
Unit 1: Anatomy and Physiology

Learning aim A

TRANSITION TASK

- To use this PowerPoint to complete the 6 worksheets.
- You can either print this out and complete or edit the documents on your own file.

Structure of the skeletal system



Types of bone

- Long bones e.g. femur
- Short bones e.g. carpals
- Flat bones e.g. sternum
- Irregular bones e.g. spinal vertebrae
- Sesamoid bones e.g. patella

Functions of skeletal system

- **Supporting framework:** Bones give the body shape and support soft tissues. **Examples?**
- **Protection:** Some bones surround and protect vital organs. **Explain; Skull, pelvis, ribs, vertebrae**
- **Attachment for skeletal muscle:** Parts of the skeleton provide surfaces for muscle attachment. Tendons attach muscles to bone. Muscles contract to pull on bones causing movement. **Explain; lifting forearm to flex the arm**

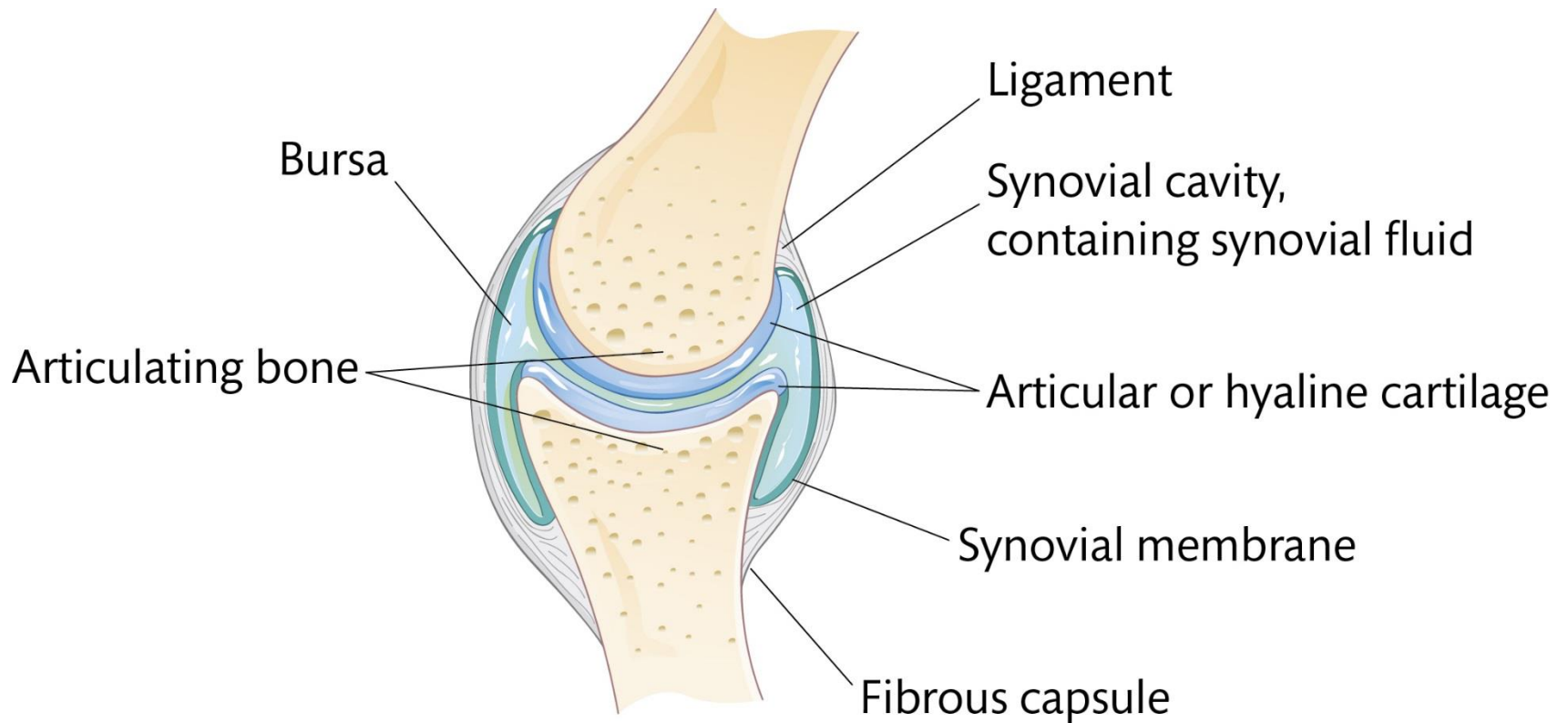
Functions of skeletal system

- **Source of blood cell production:** Blood vessels feed into the centre of the bones and **bone marrow**. The marrow of long bones produces red and white blood cells. This is essential as blood cells die and are recycled
- **Minerals store:** Minerals like calcium and phosphorus are stored in bones and are essential in keeping bones healthy. Minerals can be released into the blood to balance the mineral levels in the body

Functions of skeletal system

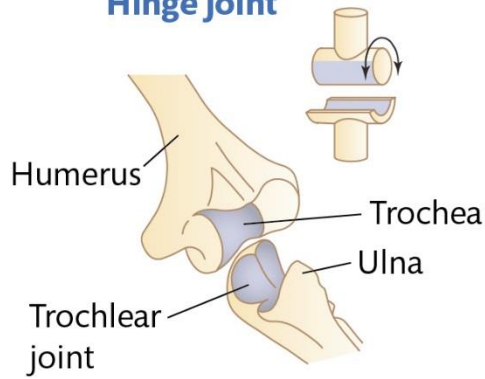
- **Leverage:** Bones act as levers against which muscle pull to create movement. **Explain how bones act as levers in jumping**
- **Weight bearing:** During sport large forces are applied to the body. The skeleton provides structural strength to prevent injury.
- **Reducing friction across a joint:** Synovial joints secrete fluid that prevents bones from rubbing against each other enabling smooth movements. **Explain how the hip joint enables movement.**

Synovial joint structure

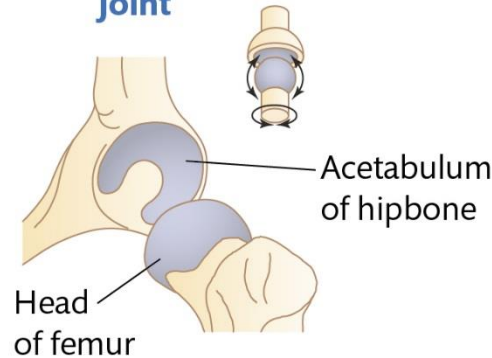


Types of synovial joint

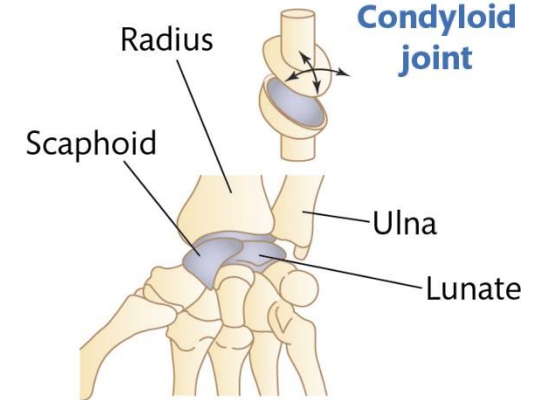
Hinge joint



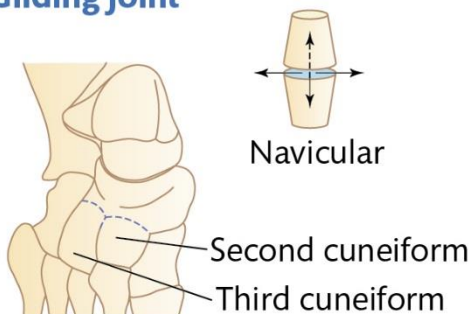
Ball and socket joint



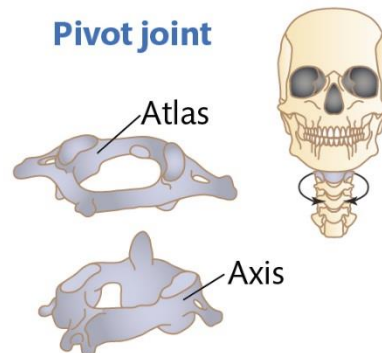
Condyloid joint



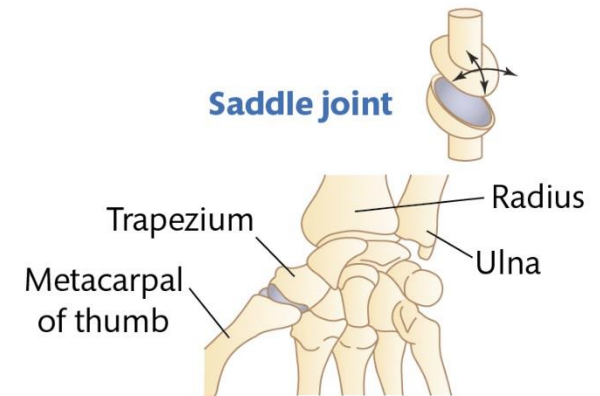
Gliding joint



Pivot joint



Saddle joint



Condyloid = ellipsoid.

Gliding = plane

Joint types

- www.youtube.com/watch?v=0cYal_hitz4

Responses of skeletal system to a single sport session:

- Increase in mineral uptake within bones due to weight-bearing exercises.
- Synovial fluid increases and becomes less viscous.

Adaptations of skeletal system to exercise:

- Increased bone mineral density and strength
- Increased ligament strength and flexibility

Additional factors affecting skeletal system

Arthritis

- Inflammation within a synovial joint

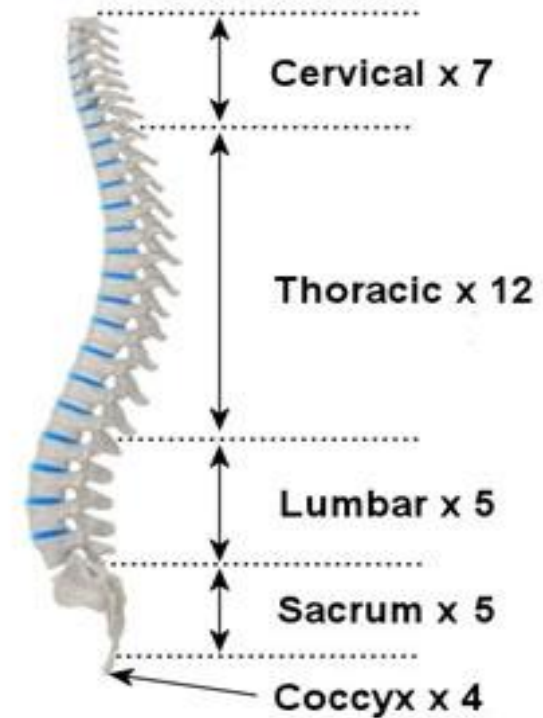
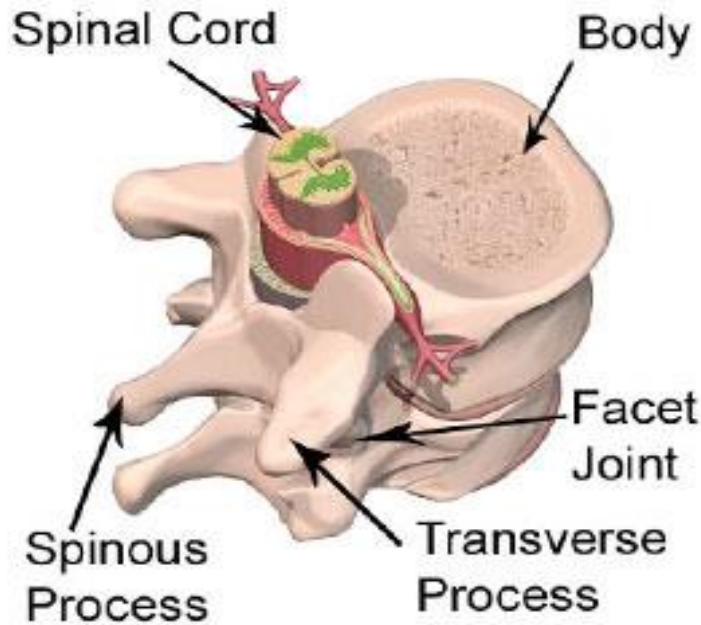
Osteoporosis

- Weakening of bones caused by a loss of calcium or a lack of vitamin D

Age

- Putting too much force on a child's bones can damage the epiphyseal plates, causing stunted growth

Curvature of the spine



Bone Growth

- Osteoblasts
- Osteoclasts
- Epiphyseal plate

https://www.youtube.com/watch?v=B2Uxq_C14d4

