

Medical Terminology

Lesson 3:

MUSCULOSKELETAL SYSTEM TERMS

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Quiz

- **Choose the correct answer.**

1. Which term means inflammation of the tear sac?

- a. Dacryolithiasis
- b. Dacryocyst
- c. Dacryocystitis
- d. Lacrimitis

2. Immunoglobulins that are formed to act against foreign cells or substances are called

- a. antibodies.
- b. neoplasms.
- c. phagocytes.
- d. thrombocytes.

3. Organs that are located inside the body are termed

- a. dorsal.
- b. external.
- c. internal.
- d. plantar.

4. You're treating a patient who has a swollen eyelid caused by an infected eyelash. What's the proper term for the eyelid condition?

- a. Blepheral
- b. Blepharitis
- c. Blepharoplegia
- d. Blepharospasm

THE MUSCULOSKELETAL SYSTEM

- ***Musculoskeletal*** refers to the muscles and the skeleton.
- The musculoskeletal system protects, supports, and aids in the movement of body parts.
- Apart from these functions, the musculoskeletal system, particularly the bones, are essential in *hematopoiesis* or blood production (*hemat/o* = blood, *-poiesis* = production).
- The bones also function to store fat in the bone marrow and to store and release minerals.

STRUCTURES OF THE MUSCULOSKELETAL SYSTEM

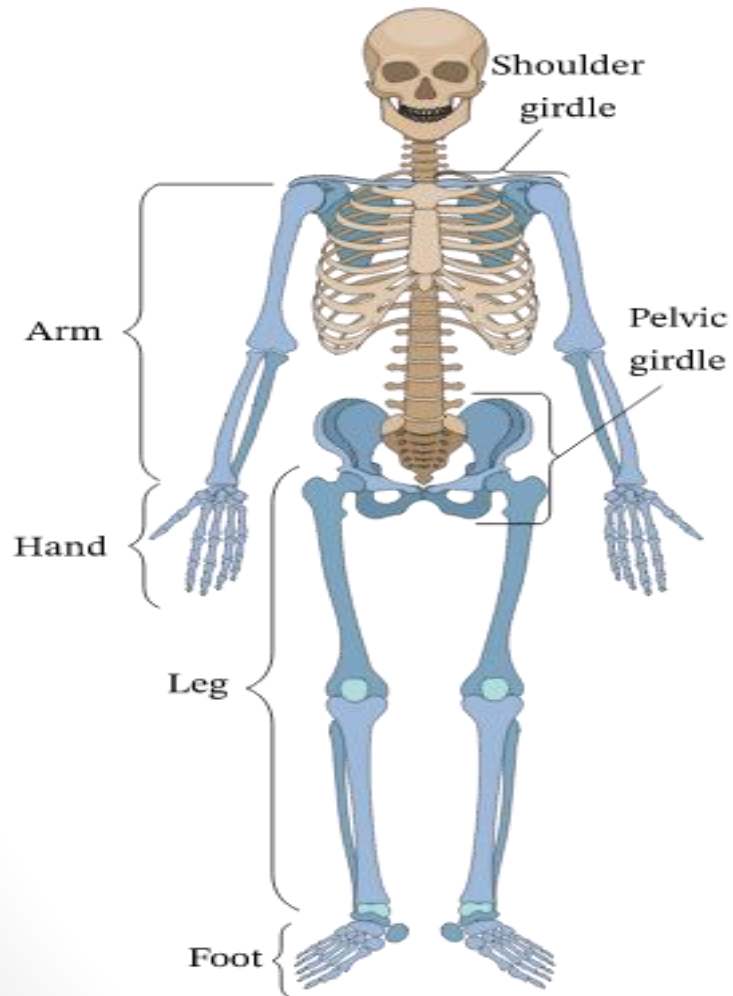
- The musculoskeletal system involves all the muscles, bones, joints, and other related structures.
- The branch of medicine that aims to prevent and correct problems concerning the bones and the muscles is known as *orthopedics* (*orth/o* = straight, *ped/o* = child, *-ic* = pertaining to).

MAJOR BONES OF THE BODY

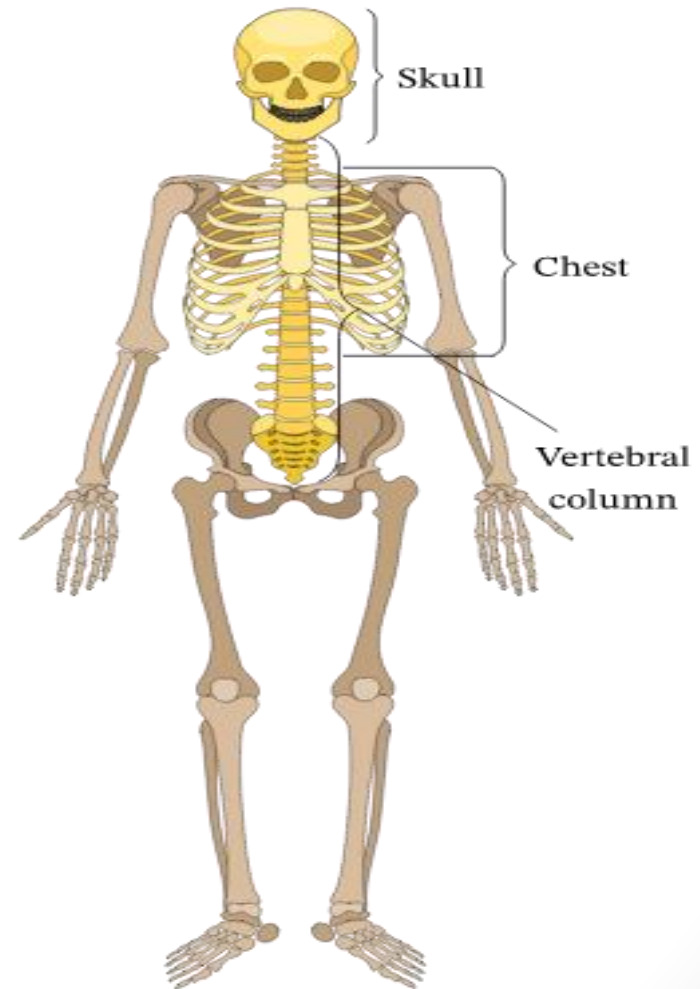
- The human body is made up of **206** bones.
- There are **two** main divisions of the **human skeleton**:
 - >> **Axial skeleton**:
 - consists of **80** bones, including the bones of the skull, hyoid bone, auditory ossicles (bones of the ears), vertebral column, sternum, and ribs
 - >> **functions**:
 - include central weight-bearing,
 - and protection
 - and maintenance of posture
 - >> **Appendicular skeleton**:
 - consists of **126** bones, including the shoulder girdle (scapula and clavicle), upper and lower extremities, and the pelvic bones
 - >> **functions**:
 - include balance, stability, movement, and manipulation.

Human skeleton

Appendicular skeleton



Axial skeleton



Axial skeleton

Bone	Combining Form	Common Name	Word Association
<i>Bones of the Axial Skeleton</i>			
cranium	crani/o	skull	craniotomy
costa	cost/o	rib	intercostal
sternum	stern/o	breastbone	sternotomy
spine (vertebrae)	rachi/o, spin/o spondyl/o, vertebr/o	backbone	spondylosis
■ cervical	cervic/o	spinal bones	cervicalgia
■ thoracic	thorac/o	spinal bones	thoracolumbar
■ lumbar	lumb/o	spinal bones	lumbosacral
■ sacrum	sacr/o	spinal bones	sacroiliac
■ coccyx	coccyg/o	tailbone	coccygeal

Appendicular skeleton

<i>Bones of the Appendicular Skeleton</i>			
clavicle	clavicul/o	collarbone	clavicular
scapula	scapul/o	shoulder blade	subscapular
<i>Bones of the Upper Extremities</i>			
humerus	humer/o	upper arm bone	humeral
radius	radi/o		radial
ulna	uln/o		ulnar
carpals	carp/o	wrist bones	carpophalangeal
metacarpals	metacarp/o	bones of the hand	
phalanges	phalang/o	bones of the fingers	phalangitis

(Continued)

Appendicular skeleton

Bone	Combining Form	Common Name	Word Association
<i>Bones of the Pelvis</i>			
ilium	ili/o	pelvic bones	iliac
ischium	ischi/o	pelvic bones	ischial
pubis	pub/o	pelvic bones	pubic
<i>Bones of the Lower Extremities</i>			
femur	femor/o	thigh bone	femoral
patella	patella/o	kneecap	patellar
fibula	fibul/o	bones of the lower leg	fibulator
tibia	tibi/o	bones of the lower leg	tibialis
tarsals	tars/o	ankle bones	tarsus
calcaneus	calcane/o	heel bone	calcaneal
metatarsals	metatars/o	bones of the feet	metatarsalgia
phalanges	phalang/o	bones of the toes	interphalanges

CARTILAGE



- **Cartilage** is a **dense, elastic connective tissue** that covers and protects the ends of long bones.
- The skeleton of the *embryo* is made up largely of **cartilage**.
- As one matures, the cartilage is replaced with bones, *except* for some structures such as the **external ear and the nasal septum**.
- The medical term **chondral** refers to cartilage.

Muscles

- *Muscles* consist of cells and fibers that contract and produce body movement.
- The three types of muscles are:

Smooth muscle

- >> otherwise known as visceral or *involuntary* muscle
- >> found in the *internal organs* such as the *stomach*

Skeletal muscle

- >> the only muscle that can be controlled *voluntarily*
- >> attached to the *bones*

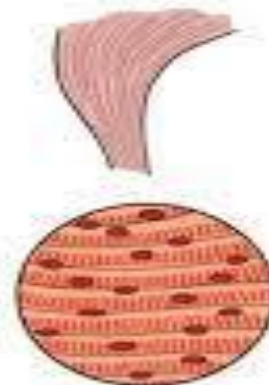
Cardiac muscle

- >> *heart* muscle

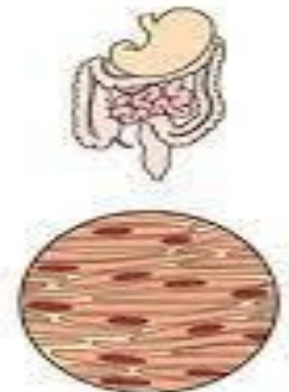
Cardiac muscle



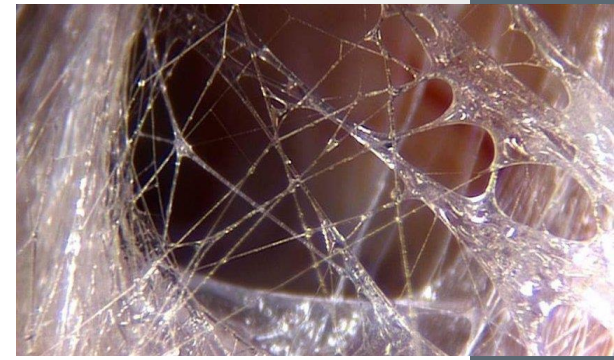
Skeletal muscle



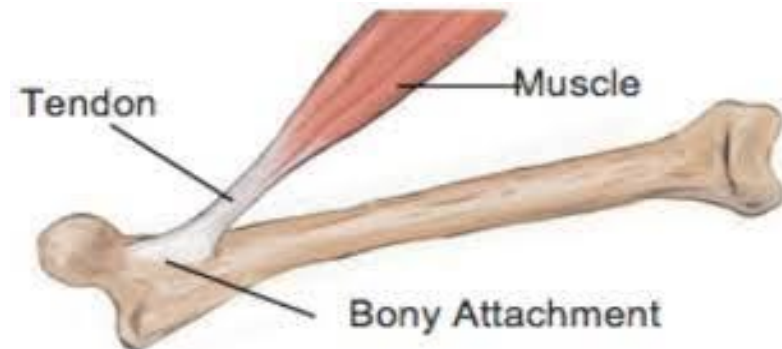
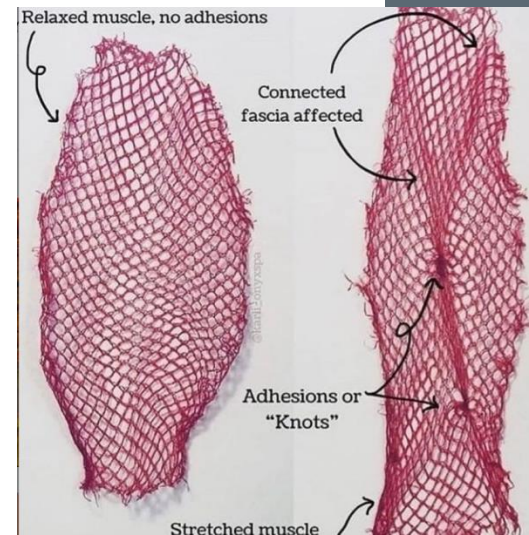
Smooth muscle



Fascia and tendons



- **Fascia** is a fibrous tissue that's responsible for covering, supporting, separating, and allowing muscles to slide easily.
- **Tendons**, on the other hand, are tissue fibers that connect the muscles to the bone.



Articulations



- **Articulation**, commonly known as **joint**, is the connection made between bones.
- Articulations that have cavities between adjoining bones are known as **synovial joints**.
- **Ligaments** are bands of **connective tissues** responsible for connecting **bones** and **cartilages** and, at the same time, are essential in supporting and strengthening joints.

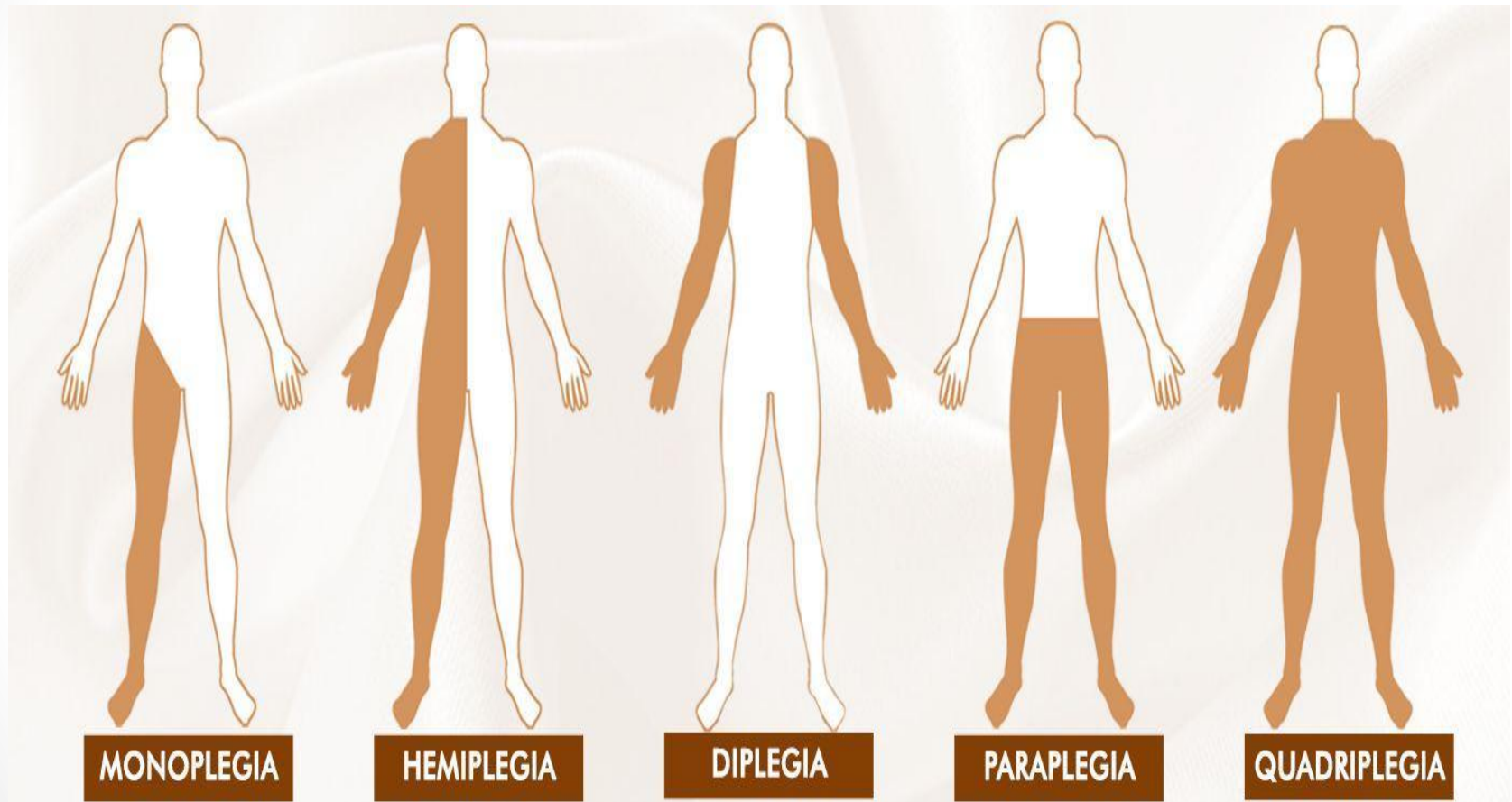
Diseases, Disorders, And Diagnostic Terms

- Although the most **common** cause of musculoskeletal problems is **injury**, other pathologies—such as *infections*, *malignancies*, and *connective tissue disorders* can also affect the muscles and the bones.
- Most common traumatic injuries:
- **Bone**>> *Fractures and dislocations*
- **Muscles**>>*sprain and strain*
- **Spinal cord** >> Cord injury may cause *paralysis* or *paresis* below the injured part.

para = beside

- *quadri-*, *tetra-* = four
- *plegia* = paralysis
- *paresis* = weakness

Spinal cord injury



- **Paraplegia:** paralysis of both legs
- **Quadriplegia/tetraplegia:** paralysis of upper and lower extremities
- **Paraparesis:** weakness of the both legs
- **Quadriparesis/tetraparesis:** weakness of all four extremities

>> **infections affecting the musculoskeletal system:**

- | | |
|---------------------------------|--|
| ■ <i>cellul/o</i> (little cell) | + <i>itis</i> = <i>cellulitis</i> |
| ■ <i>my/o</i> (muscle) | + <i>itis</i> = <i>myocellulitis</i> |
| ■ <i>oste/o</i> (bone) | + <i>itis</i> = <i>osteitis</i> |
| ■ <i>chondro/o</i> (cartilage) | + <i>itis</i> = <i>osteochondritis</i> |

- Several types of malignancies or tumors affect the muscles and the bones. They may be classified as *primary* (starts from the **bones**) or *secondary* (starts from **another tissue**, but metastasizes to the bone).

>> **Sarcomas = tumors that originate from the connective tissues, such as muscles and bones**

■ *Chondrosarcoma* = *chondro* + *sarcoma* (masses of cartilage)

■ *Fibrosarcoma* = *fibro* + *sarcoma* (tumor with fibrous tissue)

- Alterations with **metabolism** can lead to bone destruction and problems with **bone formation**.

■ *deformans* (deformity/ disfiguring) : *osteitis deformans*

■ *malacia* (softening) : *osteomalacia*

■ *-porosis* (thinning) : *osteoporosis*

- **Developmental defects** that cause **skeletal malformation**.

■ *Spina bifida*

bifida: divided into two parts

■ *Scoliosis*

scoliosis: curvature

■ *Kyphosis*

kyphos: hunchback

■ *Muscular dystrophy*

dys (bad) + *trophy* (nutrition)

■ *Craniocele*

crani/o (skull) + *-cele* (herniation)

■ *Tarsoptosis*

tars/o (ankle) + *-ptosis* (prolapsed)

Activity

- Any disease of the joint is known as **arthropathy**.
- ■ Arthroscopy >>.....?
- ■ Arthroscope >>.....?
- ■ Arthrotomy >>.....?
- ■ Arthritis >>.....?
- *Arthritis* denotes any joint inflammation. There are several types of arthritis:
 - Osteoarthritis
 - Rheumatoid arthritis
 - Spondylarthritis
 - Polyarthritis



- Other **connective tissue disorders** include the following:

- *Bursitis*: inflammation of the bursa
- *Lupus erythematosus*: autoimmune disease involving the connective tissues
- *Gout*: acute form of arthritis caused by a metabolic disease
- *Ankylosis*: stiffening of the joints

Surgical And Therapeutic Interventions

- *Orthopedic* surgeons perform surgical procedures to **restore** bones to their **normal function**.

-plasty: repair

-ectomy: removal or excision

-otomy: creation of opening

-centesis: extraction of fluid from a body cavity

Common surgical procedures:

vertebroplasty	vertebro + plasty	repair of the vertebrae
arthroplasty	arthro + plasty	repair or reconstruction of a joint
tendoplasty	tendo + plasty	repair of tendons
myoplasty	myo + plasty	repair of muscle
tendomyoplasty	tendo + myo + plasty	repair of the tendons and the muscles
cranioplasty	cranio + plasty	repair of the skull
bunionectomy	bunion + ectomy	excision of a bunion
ostectomy	osteo + ectomy	excision of a bone
costectomy	cost + ectomy	excision of a rib
craniectomy	crani + ectomy	excision of a skull segment

laminectomy	lamina + ectomy	removal of a lamina (portion of the vertebra)
diskectomy	disk + ectomy	total excision of an intervertebral disk
chondrectomy	chondro + ectomy	excision of a cartilage
arthrocentesis	arthro + centesis	extraction of accumulated fluid in the synovial joint

- *Anti-inflammatories* and *anti-arthritics* are various forms of medications that treat arthritis and other connective tissue disorders.
- *Anti-inflammatories*: drugs that reduce inflammation and pain
- *Anti-arthritis*: drugs that provide relief from arthritic symptoms

ANY
Questions?

Thank You