

# Medical Terminology

## Lecture 5

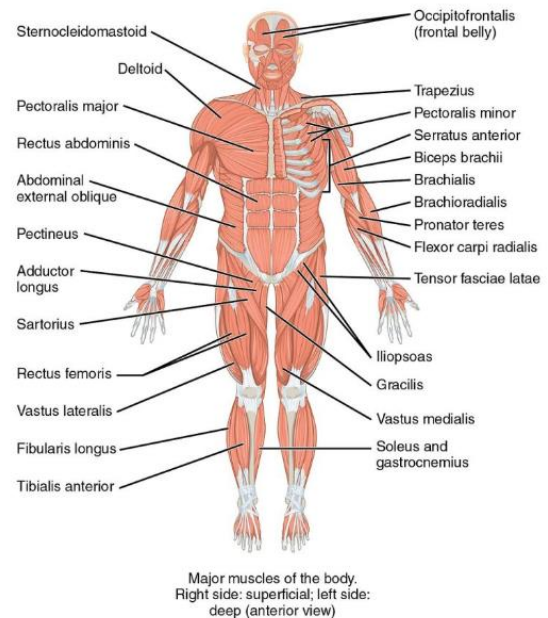
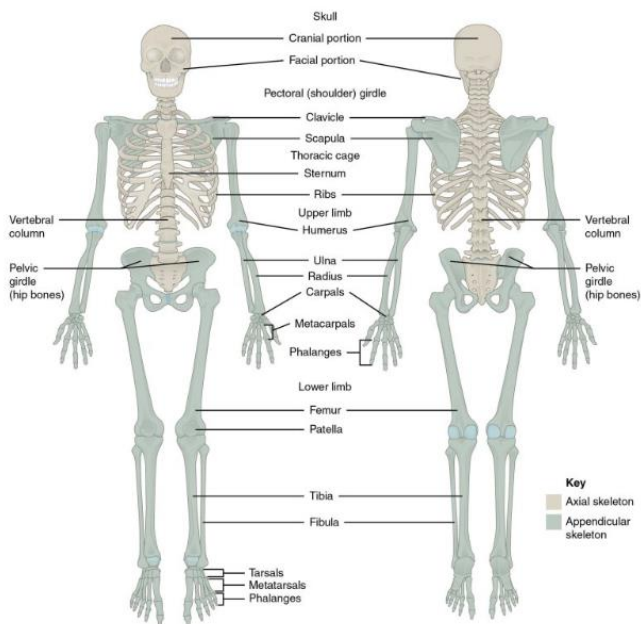
### Musculoskeletal System

#### Learning Objects:

- Examine the anatomy of the skeletal system and muscular system
- Determine the main functions of the skeletal system and muscular system
- Recognize common diseases, disorders, and procedures related to the skeletal system and muscular system

### Introduction to the Skeletal System

The musculoskeletal system consists of all the bones, muscles, joints, tendons, and cartilage found in the human body. The purpose of this system is to **support the body, facilitate movement, and protect the internal organs**. Bones are also vital in the production of red blood cells. Some resources show the muscular and skeletal systems as separate; however, they are combined to provide a basic overview of their components, functions, and pathologies.



## Components of the Musculoskeletal System

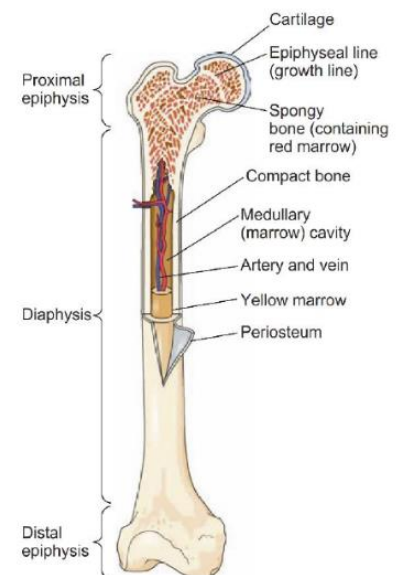
The skeleton is subdivided into two major components:

**Axial skeleton:** The axial skeleton forms the vertical, central axis of the body and includes all the bones of the head, neck, chest, and back. It protects the brain, spinal cord, heart, and lungs. It also serves as the attachment site for muscles that move the head, neck, and back, and for muscles that act across the shoulder and hip joints to move their corresponding limbs. There are 80 bones in the axial skeleton.

**Appendicular skeleton:** The appendicular skeleton includes all the bones of the upper and lower limbs, plus the bones that attach each limb to the axial skeleton. There are 126 bones in the appendicular skeleton.

**Bone** is made up of **osseous** tissue, which consists of special mature bone cells called **osteocytes**. The bones of the skeleton are of different shapes and sizes. They may be essentially flat, such as those found in the cranium and ribs. They also may be short, such as those in the wrist and ankles, or long, such as those found in the arms, legs, hands, and feet.

Long bones have subparts that are named. The term **diaphysis** [a Greek word (growing between)] is the shaft of a long bone, and the term **epiphysis** [epi- (upon); -physis (growth)] is the name given to each end of a long bone. The term for the inside of the diaphysis is the medullary cavity. Because it's a cavity, it is hollow, of course, and medullary means that the cavity contains marrow. The Latin word *medius*, meaning "middle," is also the basis for the word *medulla* (marrow).



**Muscle:** This is one of the four primary tissue types of the body. The body contains three kinds of muscle tissue: **skeletal muscle, cardiac muscle, and smooth muscle.**

**Joints:** These are also known as articulation and are any place where adjacent bones or bone and cartilage come together to form a connection.

**Tendons:** These dense, fibrous connective tissues anchor muscle to bone.

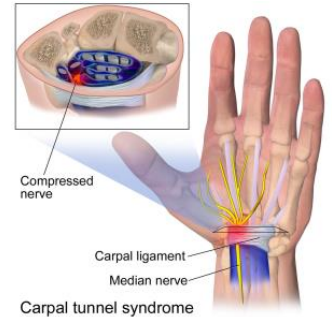
**Cartilage:** This elastic connective tissue is found at the ends of bones as well as in other locations such as the tip of the nose.

**Ligaments:** These tough, elastic connective tissues connect bone to bone.

## Common Pathologies

**Ankylosing scoliosis:** This is a lateral curvature and twist of the spine. It is most common among girls and typically gets worse during adolescent growth spurts. Many people who have this pathology do not require treatment, but some must wear a back brace or, in rare instances, may require surgery.

**Carpal tunnel syndrome:** This pathology is common among those with occupations requiring repetitive movements of the hand, such as office workers and cashiers. It is characterized by pain or numbness accompanied by muscle weakness in the area of the wrist and hand where the median nerve becomes compressed.



**Arthritis:** By definition, arthritis means “inflammation (-itis) of the joint (arthr/o).” Individuals with arthritis often present with joint pain, redness, and swelling. There is no cure for arthritis, and it is treated through exercise, medications, and, in some cases, joint replacement.

**Gout:** This condition occurs when uric acid builds up in a joint. Symptoms of gout include swelling, pain, and redness in the affected joint. Gout can flare up, then dissipate and reoccur at a later date. It can affect any joint, but most often occurs in the toes.

**Kyphosis:** This is a forward curvature of the spine in the thoracic (upper back) region.

**Lordosis:** This is an excessive inward (anterior) curvature of the spine in the lumbar region and is often associated with obesity or the late stages of pregnancy. It is sometimes called swayback.

**Muscular dystrophy:** This condition is a progressive weakening of the skeletal muscles. It is an inherited disorder and mostly affects males. Symptoms usually start with balance issues and then progress to inability to walk. Eventually, muscular dystrophy causes respiratory failure and death.

**Osteoarthritis:** This is the most common form of arthritis and involves the breakdown of cartilage and bone over time. The most common symptoms are pain and stiffness that progressively worsen.



## Osteoarthritis

**Osteomyelitis:** This is an infection within the bone that is caused by staphylococcus bacteria. The bacteria can travel through the bloodstream to the bone or gain access via a wound or surgery.

**Osteoporosis:** This pathology is characterized by progressive bone loss that causes bones to become weak and thin over time. There can be an increased chance of fractures because the bones are weakened. The likelihood of developing osteoporosis increases with age, and the condition is more common in females.

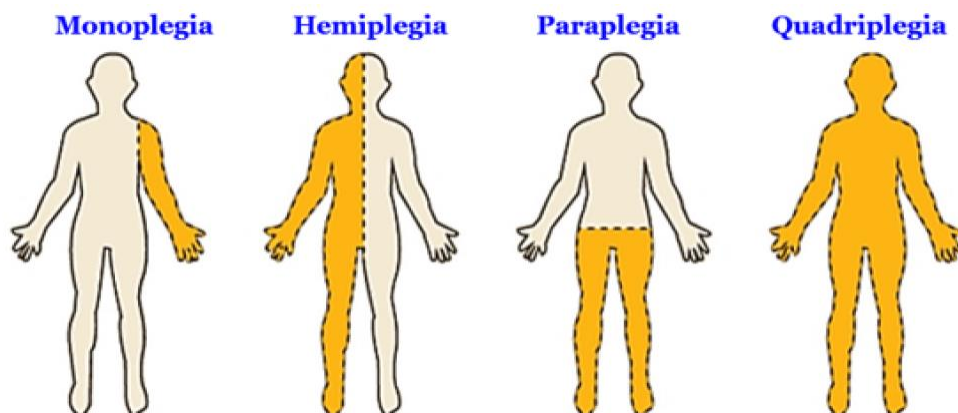


## **Osteoporosis**

**Rheumatoid arthritis (RA):** This autoimmune disease presents with inflammation to the joint tissues of the hands, wrists, and knees. Symptoms include debilitating pain and swelling in the affected area.

**Paralysis:** Paralysis is the loss of sensation and voluntary muscle movement caused by injury or disease. The following terms name kinds of paralysis:

- Hemiparesis [hemi- (half); -paresis (paralysis)]: slight paralysis of one side of the body.
- Myoparesis [my/o (muscle); -paresis (paralysis)]: weakness or partial paralysis of a muscle.
- Paraplegia [para- (not normal); -plegia (paralysis)]: paralysis of both legs and the lower part of the body.
- Quadriplegia [quadri (four); -plegia (paralysis)]: paralysis of all four extremities.
- Hemiplegia [hemi- (half); -plegia (paralysis)]: total paralysis of one side of the body.



## Combining Forms of Musculoskeletal System


COMBINING FORM	MEANING	EXAMPLE OF USE IN MEDICAL TERMS
arthr/o	joint	arthritis
cervic/o	neck	cervical
chondr/o	cartilage	chondrocytes
coccyg/o	coccyx, tailbone	coccygeal
cost/o	rib	costectomy
crani/o	skull	craniotomy
ligament/o	ligament	ligamentitis
lumb/o	loin, waist	lumbar
muscul/o	muscle	muscular
my/o	muscle	myectomy
myos/o	muscle	myositis
myel/o	bone marrow	myeloma
odont/o	tooth	orthodontist
oste/o	bone	osteomyelitis
pelv/o	pelvis, hip bone	pelvic
sacr/o	sacrum	sacroiliitis
spin/o	spine, backbone	spinal stenosis
spondyl/o	vertebra	spondylosis
ten/o	tendon	tenotomy
tendin/o	tendon	tendinopathy
vertebr/o	vertebra	vertebral

# HOMEWORK

## Exercise

Find the words within the Crossword

O	A	P	P	E	N	D	I	C	U	L	A	R
S	V	E	R	T	E	B	R	A	A	N	O	S
T	A	X	I	A	L	O	R	D	O	S	I	S
E	L	C	S	U	M	B	X	D	J	S	N	N
O	J	T	C	S	K	G	N	R	O	K	A	K
M	Q	N	K	P	I	E	U	H	E	L	E	E
Y	Z	E	S	H	T	T	P	Q	V	Y	Y	D
E	I	M	L	P	J	Y	I	D	C	F	F	C
L	K	A	V	J	K	G	N	R	P	N	P	M
I	R	G	B	V	I	W	U	P	H	C	I	Q
T	S	I	S	O	R	O	P	O	E	T	S	O
I	Y	L	S	K	E	L	E	T	O	N	R	X
S	U	C	A	R	T	I	L	A	G	E	N	A

 Find the words

osteoporosis    osteomyelitis    lordosis    kyphosis    arthritis    vertebra    muscle  
ligament    cartilage    appendicular    axial    skeleton    tendon