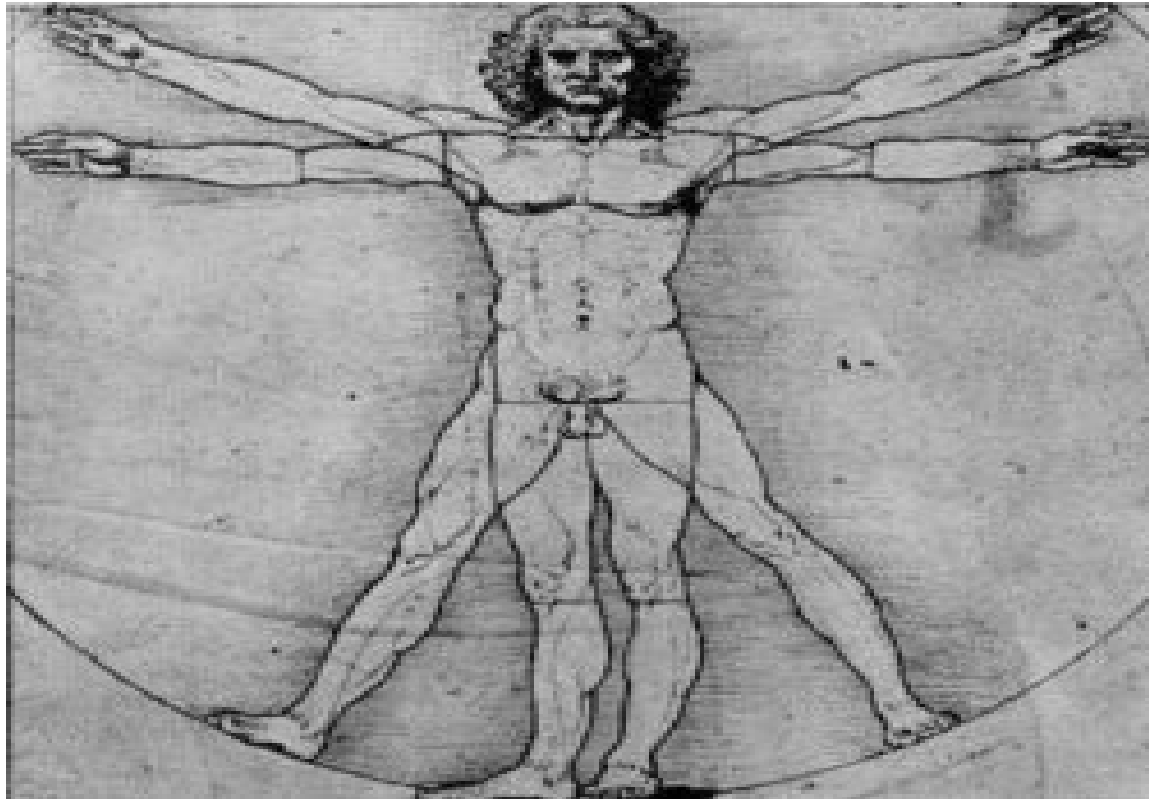
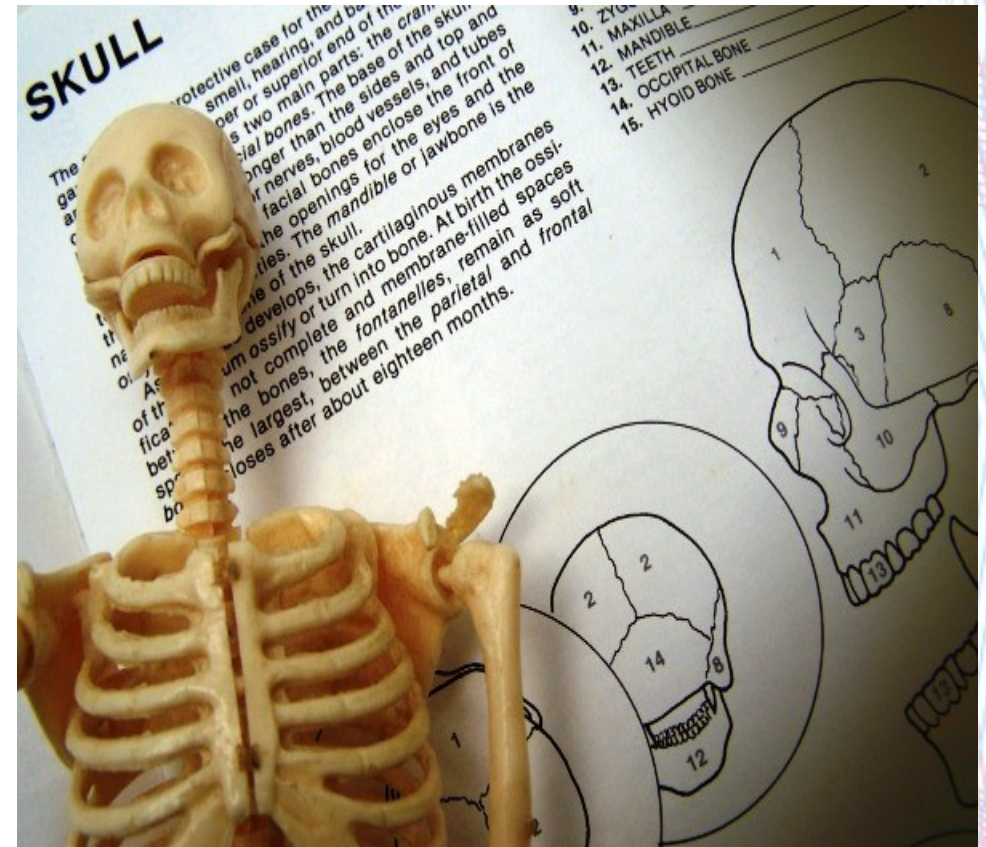


Personal Care & Body Systems



A. The Skeletal System

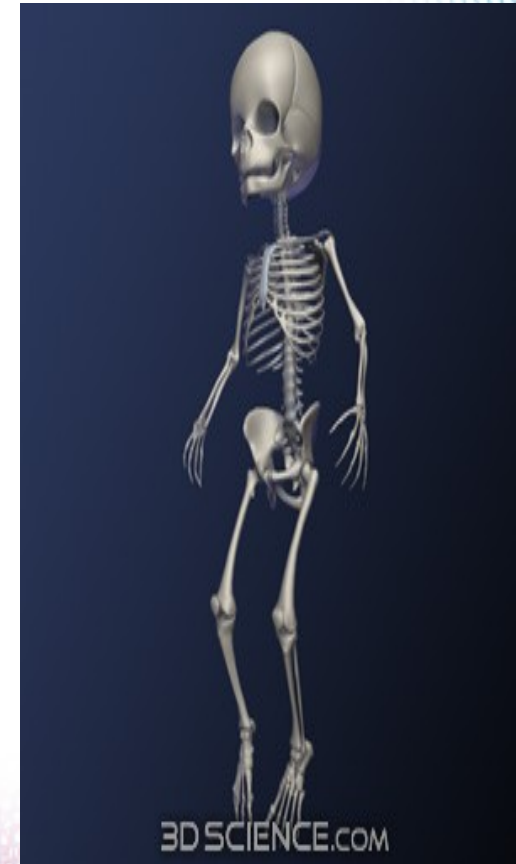
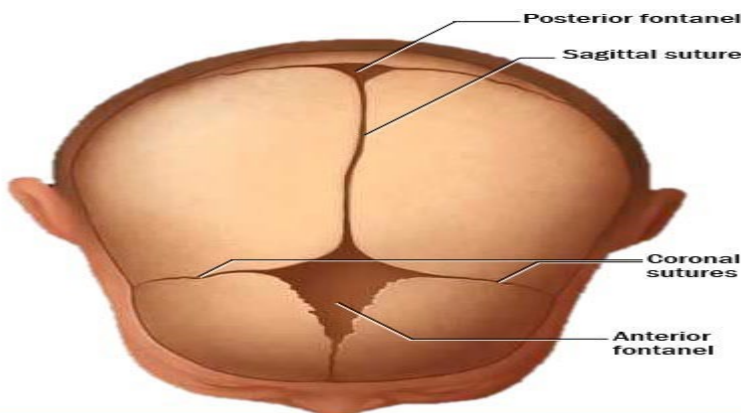


1. How the Skeletal System Works

a. 206 bones in the adult skeleton; up to 350 for an infant; the femur is the longest bone

b. Functions

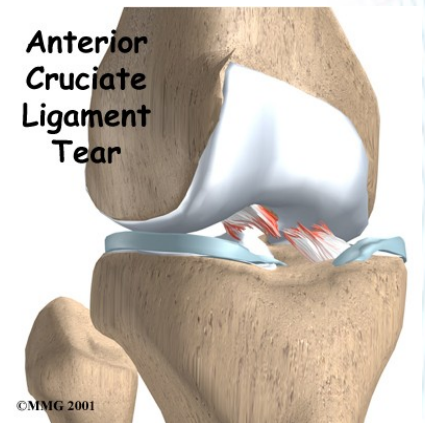
1. provides support
2. protects organs
3. acts as a framework
4. allows movement
5. produces blood cells
6. stores fat & minerals



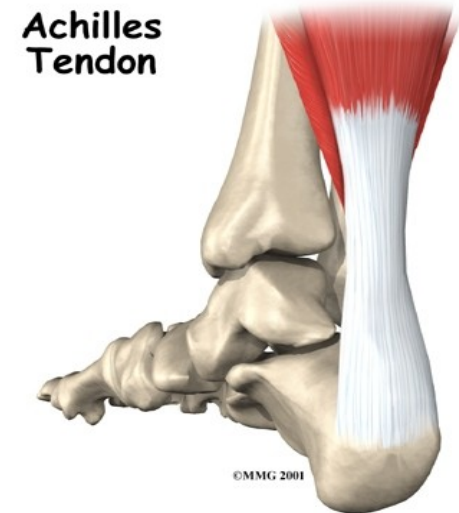
c. Connective tissue

1. cartilage- acts as a cushion between bones;
 - a. ossification- process by which cartilage turns to bone

2. ligament- attaches one bone to another

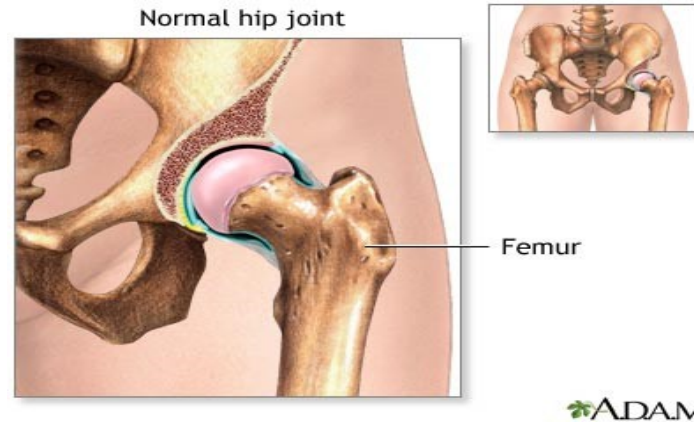


3. tendon- attaches muscle to bone

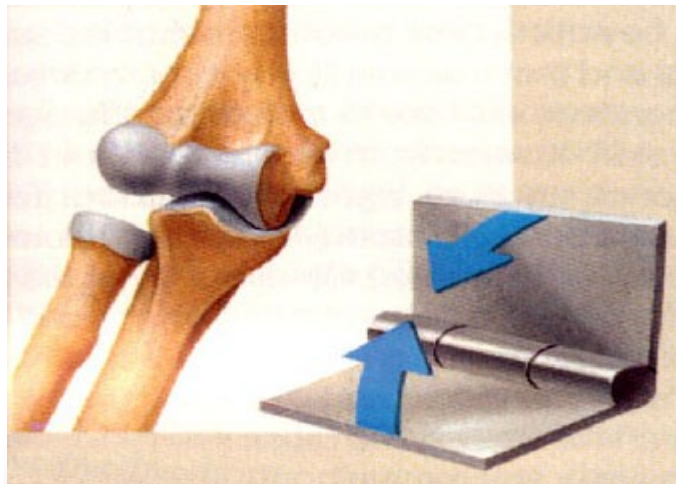


d. joints- place where two bones meet

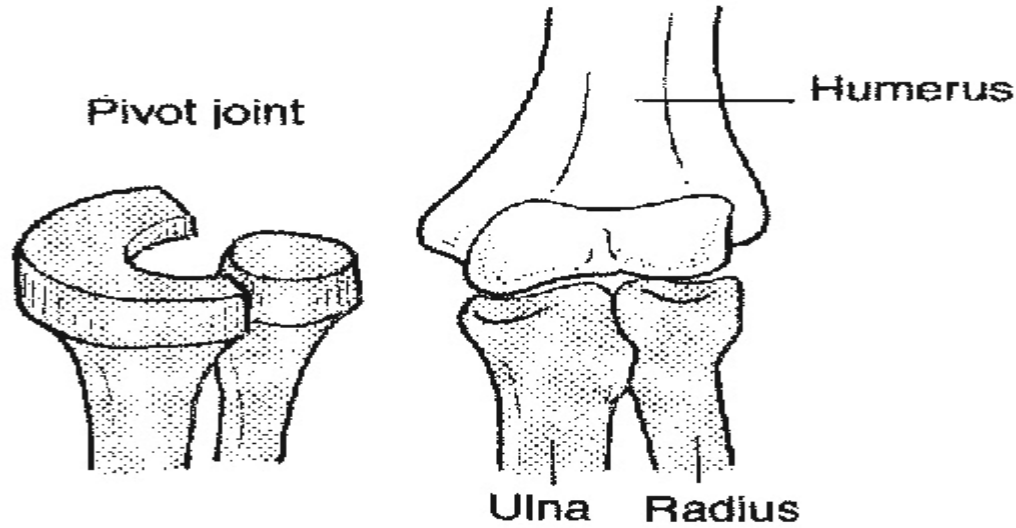
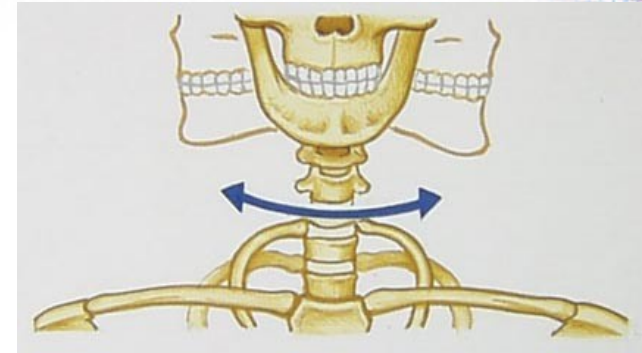
1. ball and socket- shoulder or hip; most freely movable



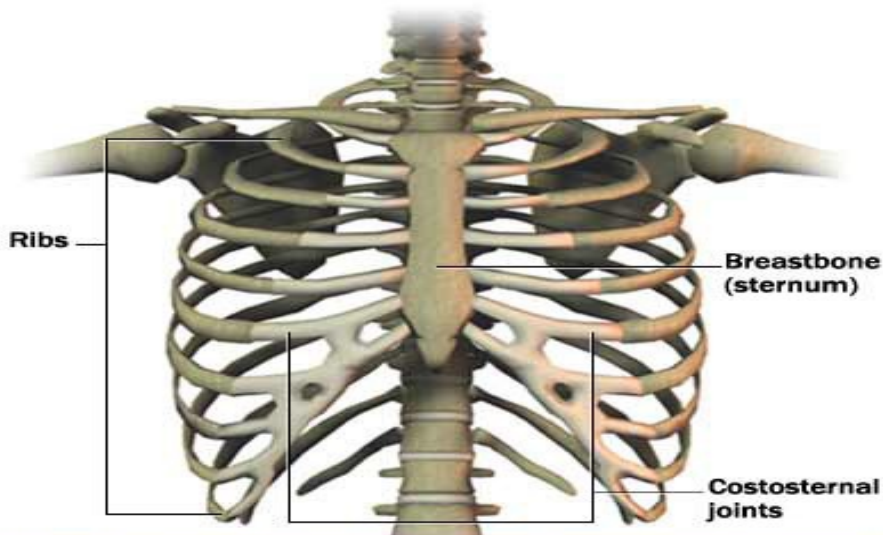
2. hinge- in the knee and elbow



3. pivot- the head turning on the spine



4. immovable- in the skull

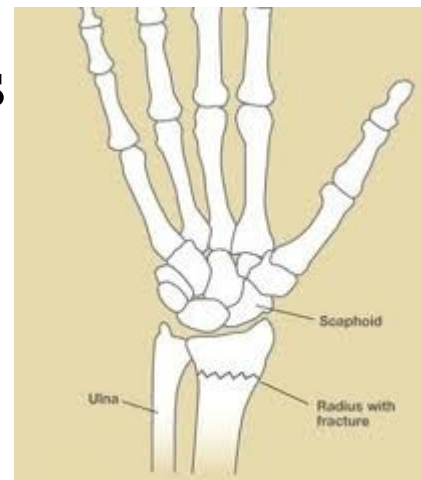
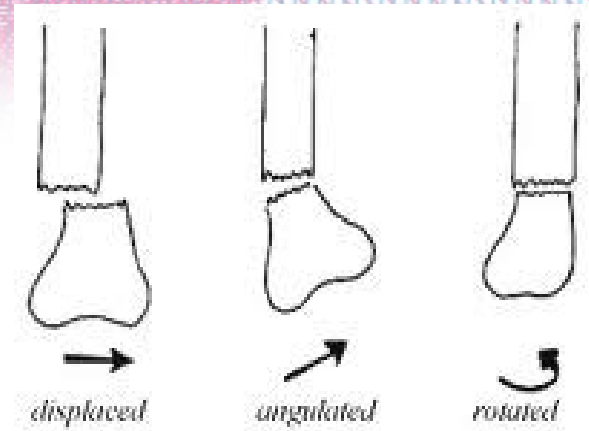


2. Understanding Skeletal Problems

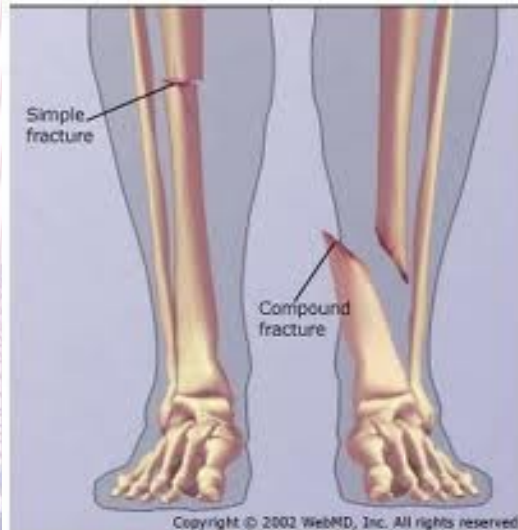
a. fracture- break in a bone

Categories of fractures- do not write

1. Hairline- bones don't separate
2. Transverse- completely across the bone
3. Open/Compound
4. Comminuted- shatters



Bone Fractures



Joe Theisman

Kickboxing

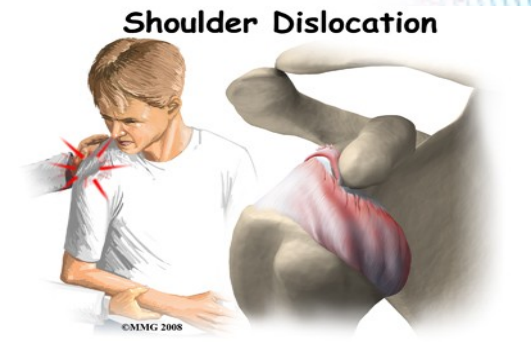
b. Injuries to joints

Gymnastics Vault

1. dislocation- when a bone slips out of place, tearing the ligaments
2. torn cartilage- results from a sharp blow or twisting of a joint

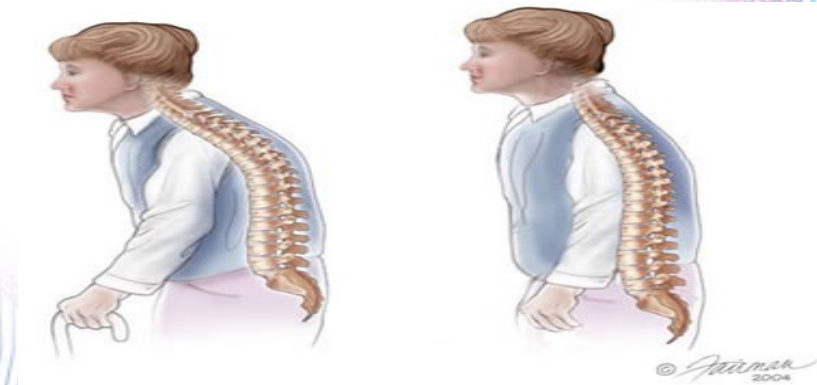
ACL Injury

3. arthritis- an inflammation of a joint



c. Osteoporosis- a condition in which there is a progressive loss of bone tissue

d. Scoliosis- lateral curvature of the spine

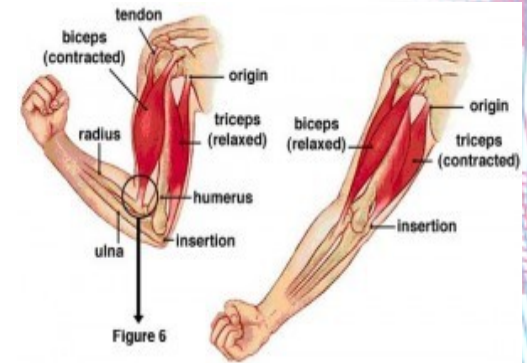


B. The Muscular System

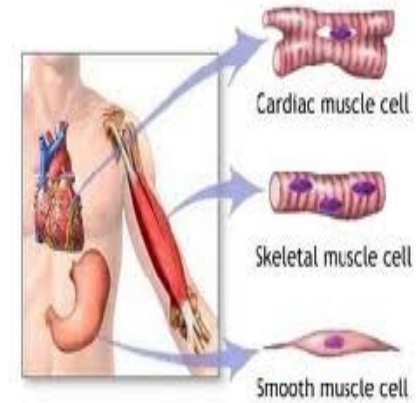


1. Skeletal muscle- muscles attached to bone; cause movements

- a. voluntary- you control it
- b. makes up about 40% of our body weight
- c. has a striated (striped) appearance under microscope
- d. perform opposite actions to produce a movement
 1. flexor- muscle that closes a joint
 2. extensor- muscle that opens a joint



2. Cardiac muscle- lines the walls of the heart; striated
 - a. involuntary- works on its own
 - b. pumps blood through the cardiovascular system



Real heart beating

3. Smooth muscle- act on the lining of the body's passageways and hollow organs; digestive system

Peristalsis

- a. involuntary
- b. unstriated muscle- not striped

Stomach- after eating

Digestion in Stomach



4. Understanding Muscular Problems

a. bruise- areas of discolored skin; caused by blood vessels that rupture and leak

b. strain- when muscles are stretched or partially torn

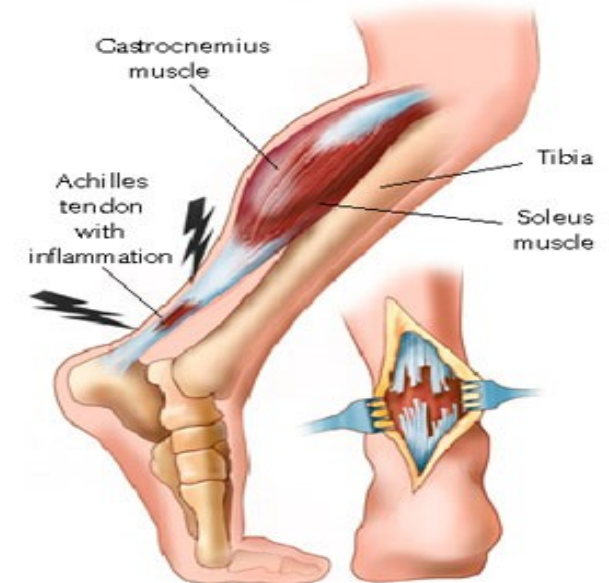
1992 Olympics

c. tendinitis- inflammation of a tendon

1992 Olympics Short Version



Side view of lower leg

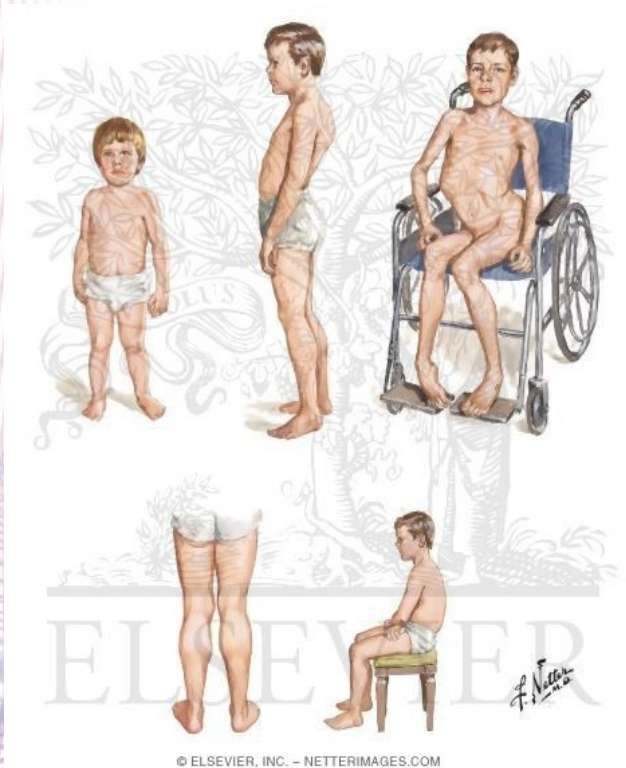


Surgical view of torn achilles tendon

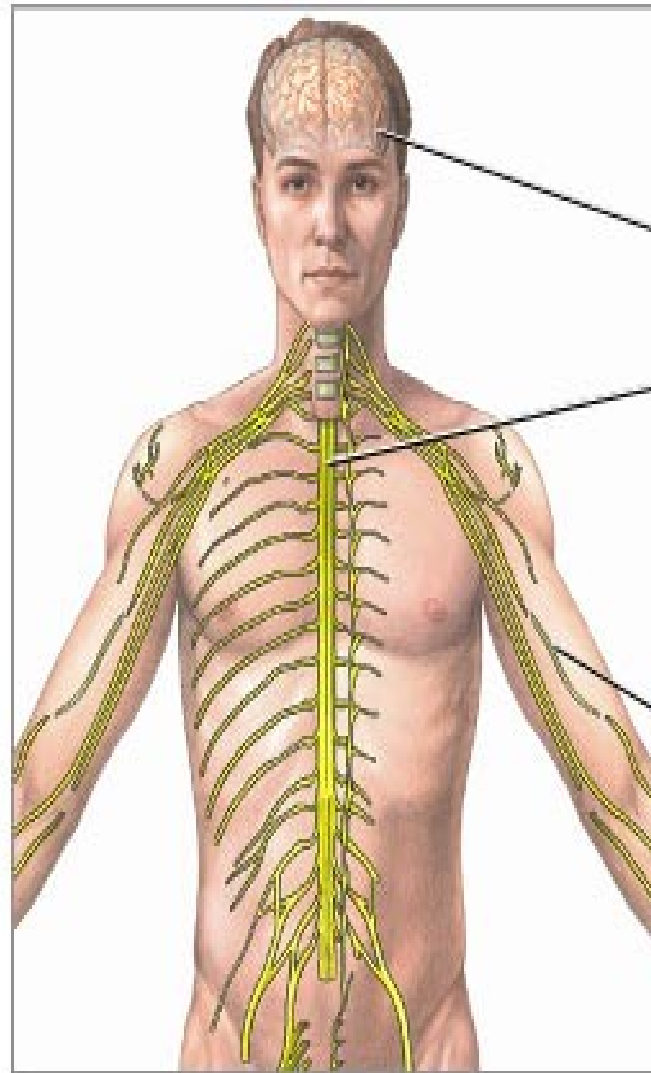
d. hernia- when an organ or tissue protrudes through an area of weak muscle



e. muscular dystrophy- an inherited disorder in which skeletal muscle fibers are progressively destroyed



C. The Nervous System



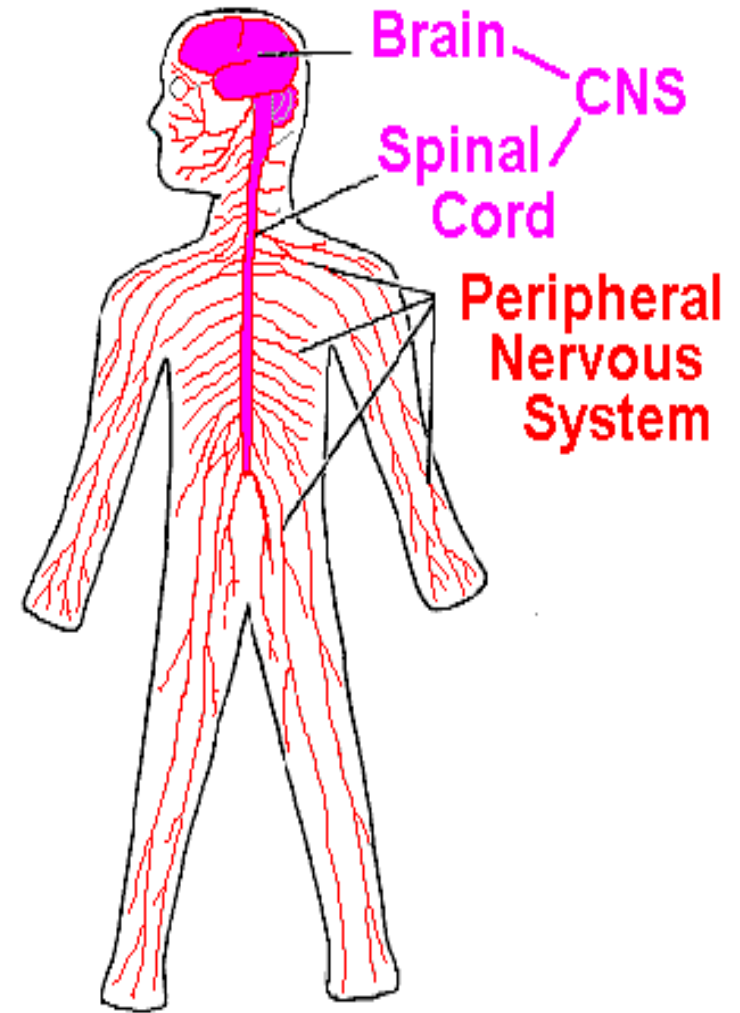
Central nervous system

Brain

Spinal cord

Peripheral nervous system

Peripheral nerve



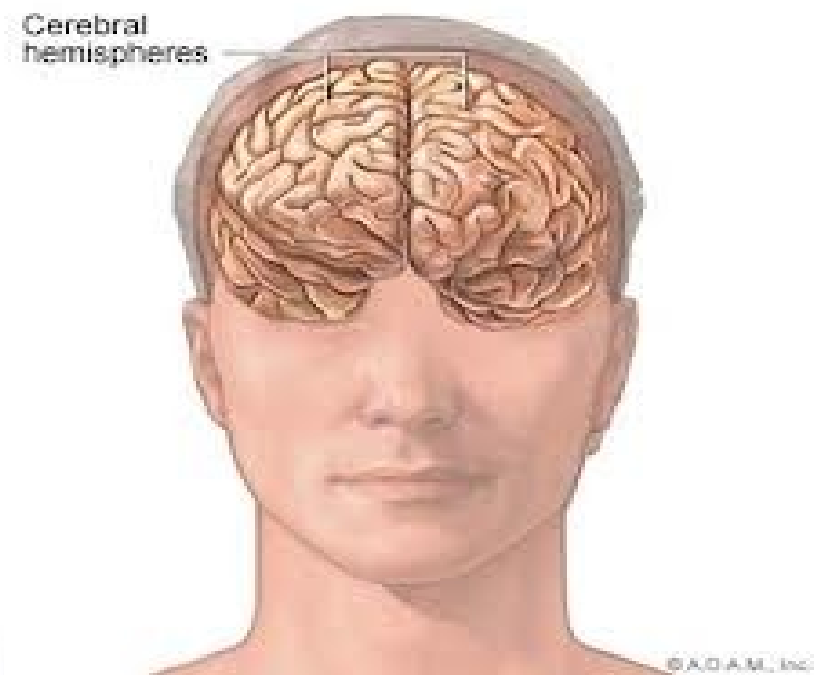
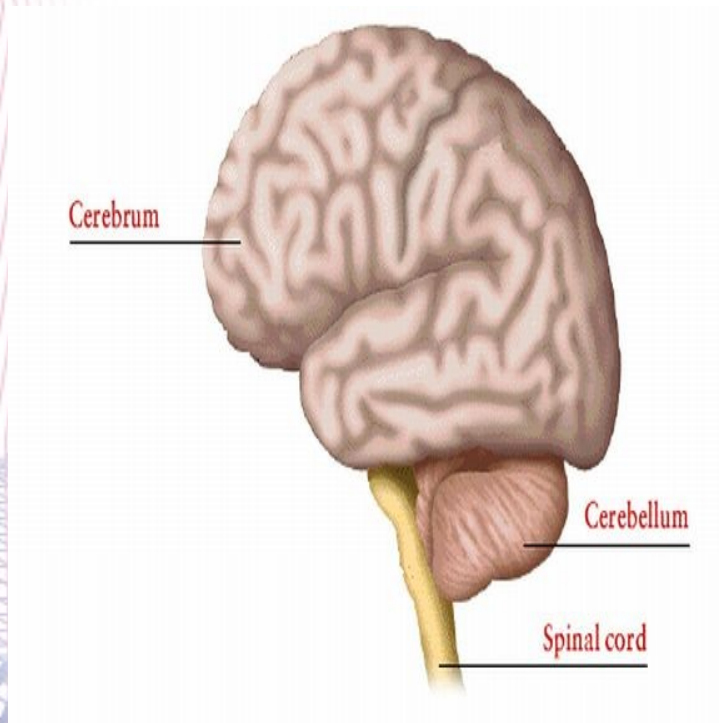
1. The Central Nervous System (CNS)- made up of the brain & spinal cord

a. brain- coordinates and controls activities of the nervous system

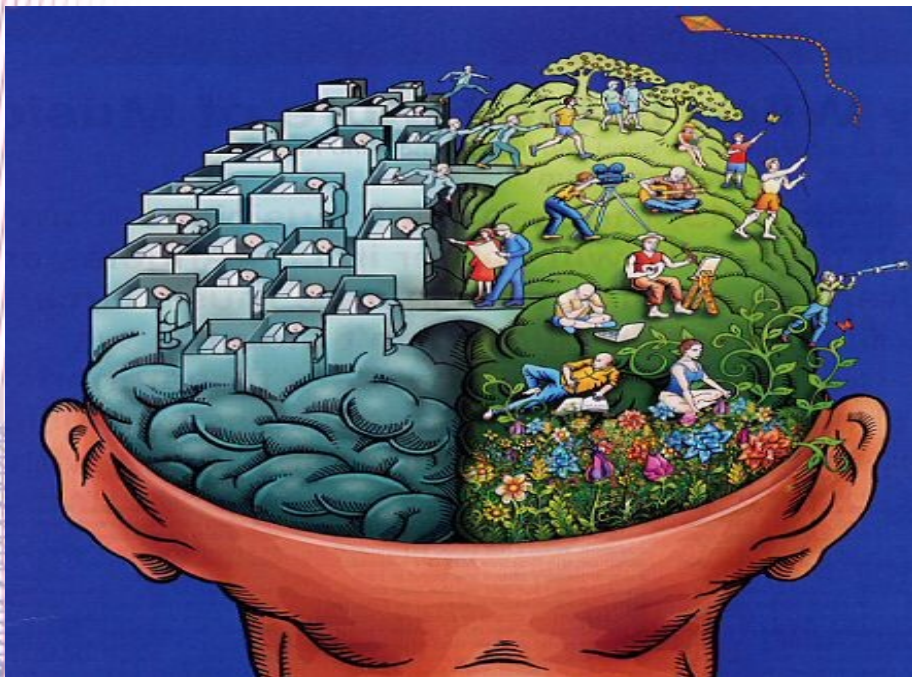
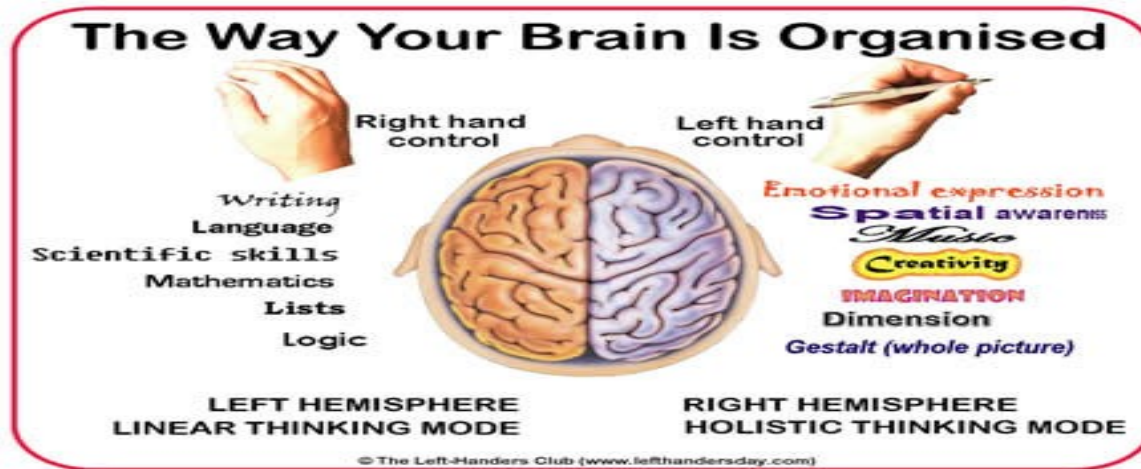
The Brain

CNS Explained

1. cerebrum- largest, most complex part of brain



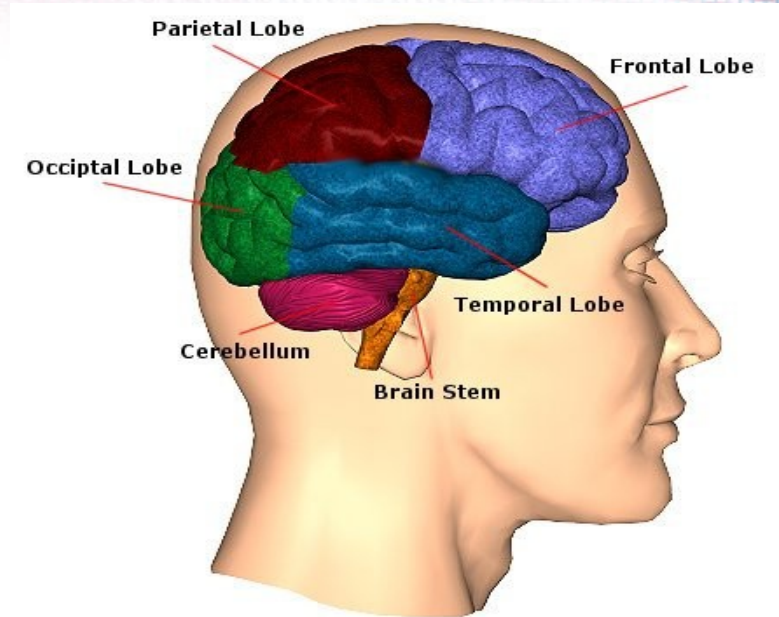
- a. right hemisphere- controls left side of the body; center of music, art, etc.



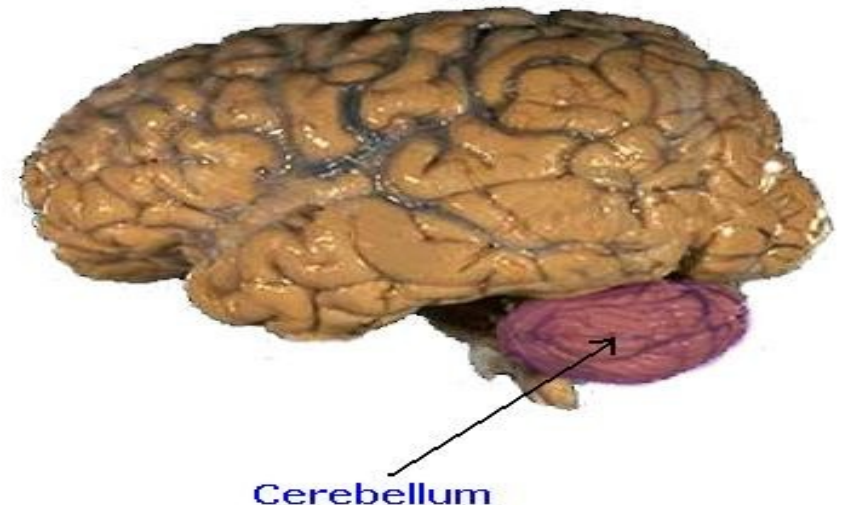
- b. left hemisphere- controls right side of the body; center of language & critical thinking

2. lobes of the brain

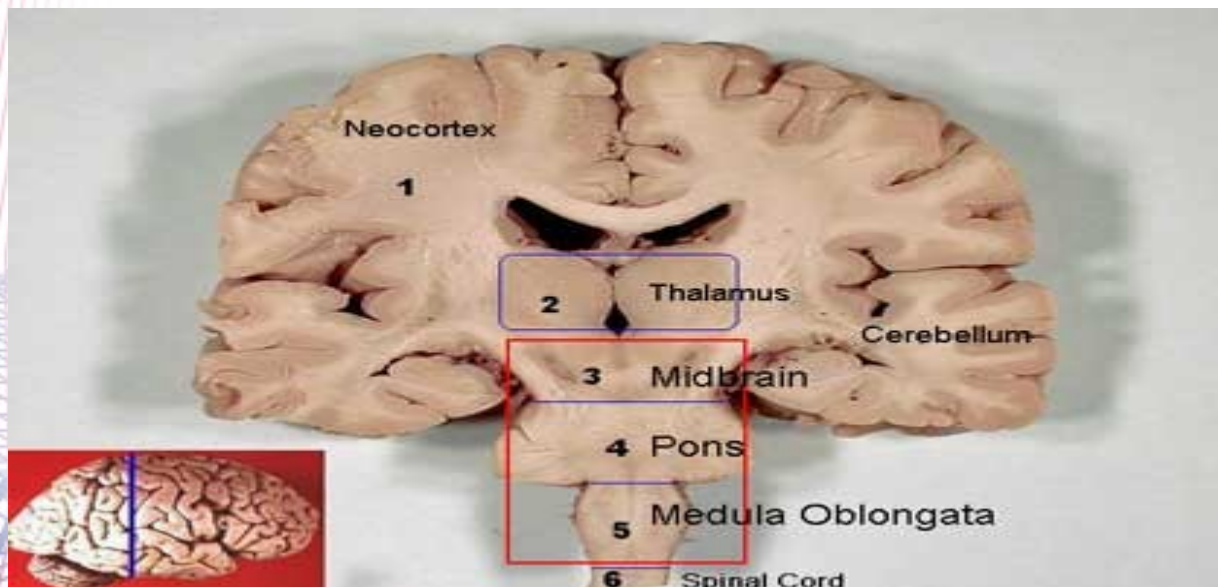
- a. frontal- personality; dec. making
- b. parietal- senses
- c. occipital- sight
- d. temporal- hearing



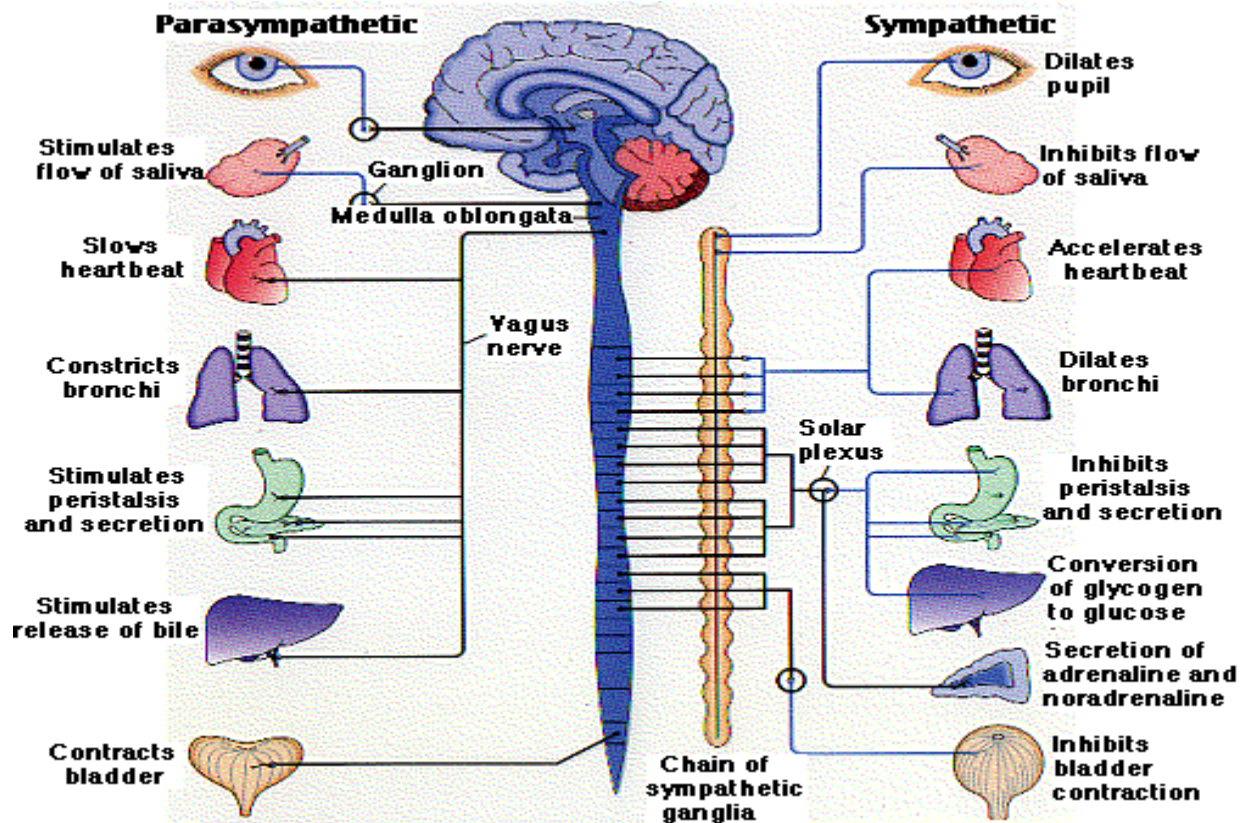
- ## 3. cerebellum- coordinates movement of skeletal muscles; 2nd largest section



4. brain stem- 3-inch-long stalk of nerve cells and fibers that connects the spinal cord to the rest of the brain
 - a. medulla oblongata- heartbeat
 - b. pons- breathing
 - c. midbrain- eye movement
 - d. thalamus- sensory impulses from the body
 - e. hypothalamus- regulates body temperature, appetite, and sleep

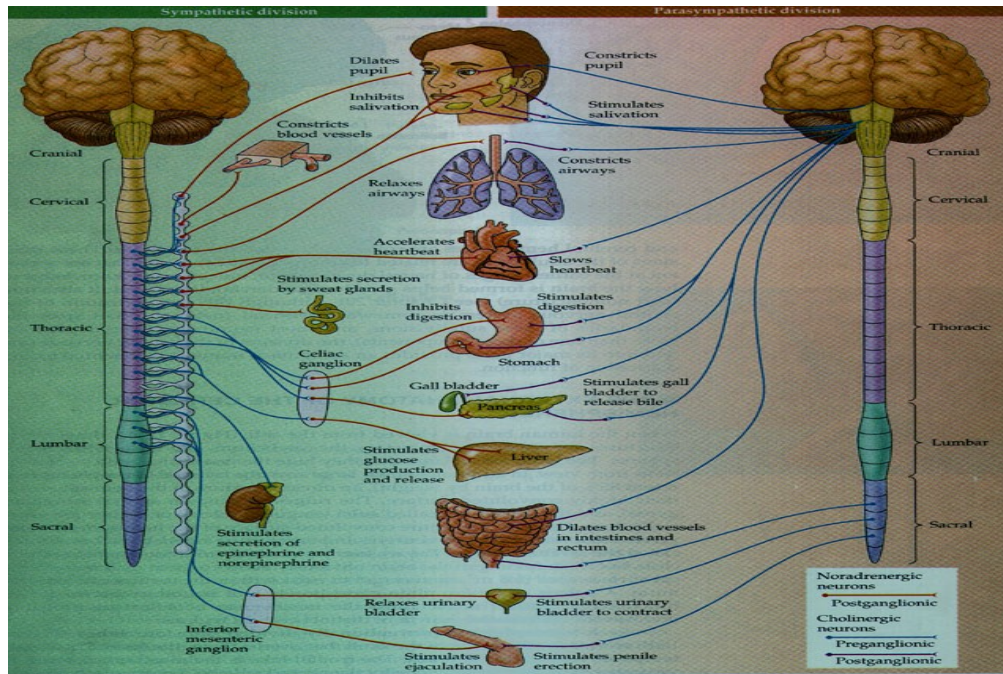


2. The Peripheral Nervous System (PNS)- made up of nerves that are not in the brain or spinal cord; carries messages between CNS & parts of the body



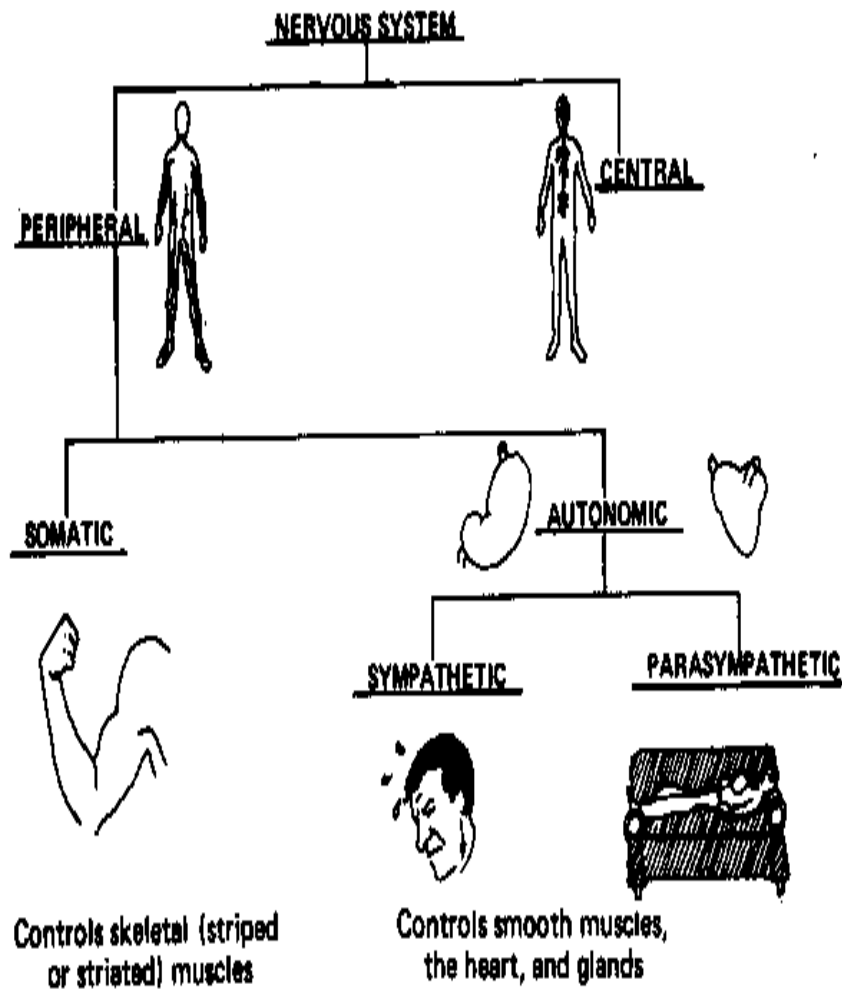
a. autonomic nervous system- deals with HR and digestion

1. sympathetic nervous system- kicks in when you're startled; “fight-or-flight” response

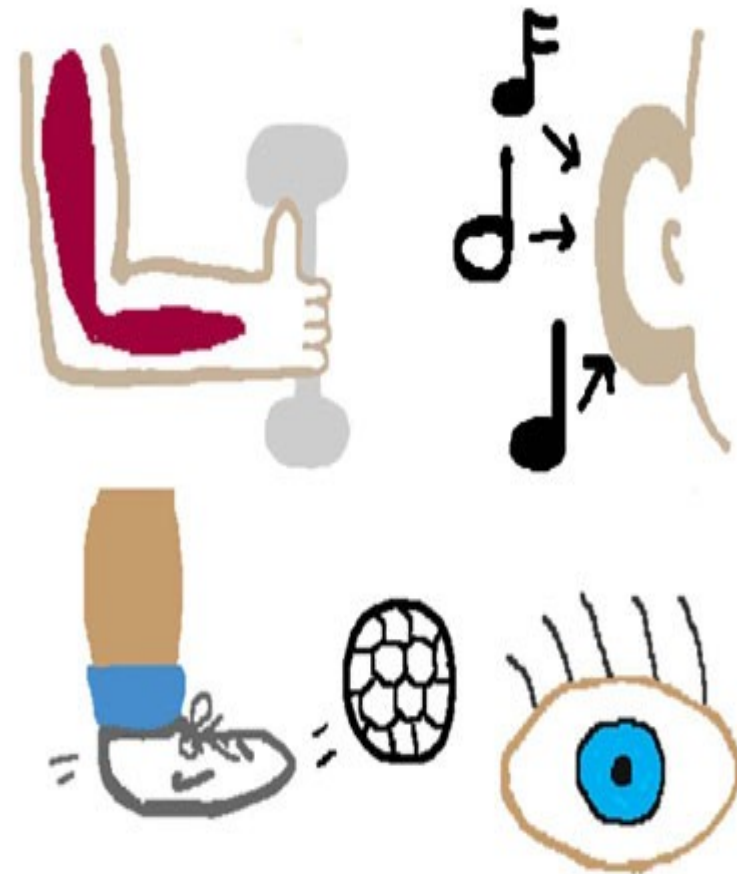


2. parasympathetic nervous system- opposes the action of the sympathetic NS by slowing body functions

b. somatic nervous system- part of the nervous system for which we are conscious; involved in voluntary movements



Somatic Nervous System

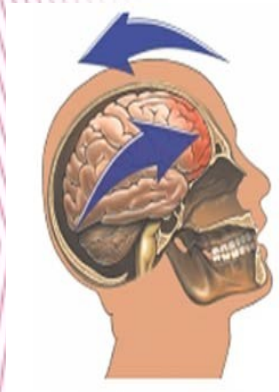


3. Problems of the Nervous System

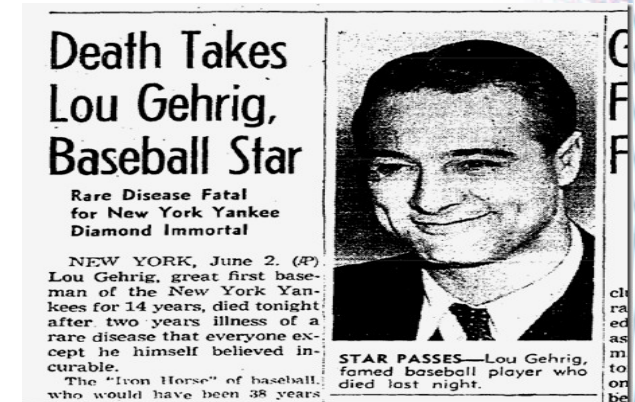
a. head or neck injuries- concussion (brain bruise); paralysis

Johnny Damon Injury

b. ALS- Amyotrophic Lateral Sclerosis; a disease that causes degeneration of motor neurons that go from brain to spinal cord and spinal cord to muscles



The head strikes a hard object creating a concussion-type injury

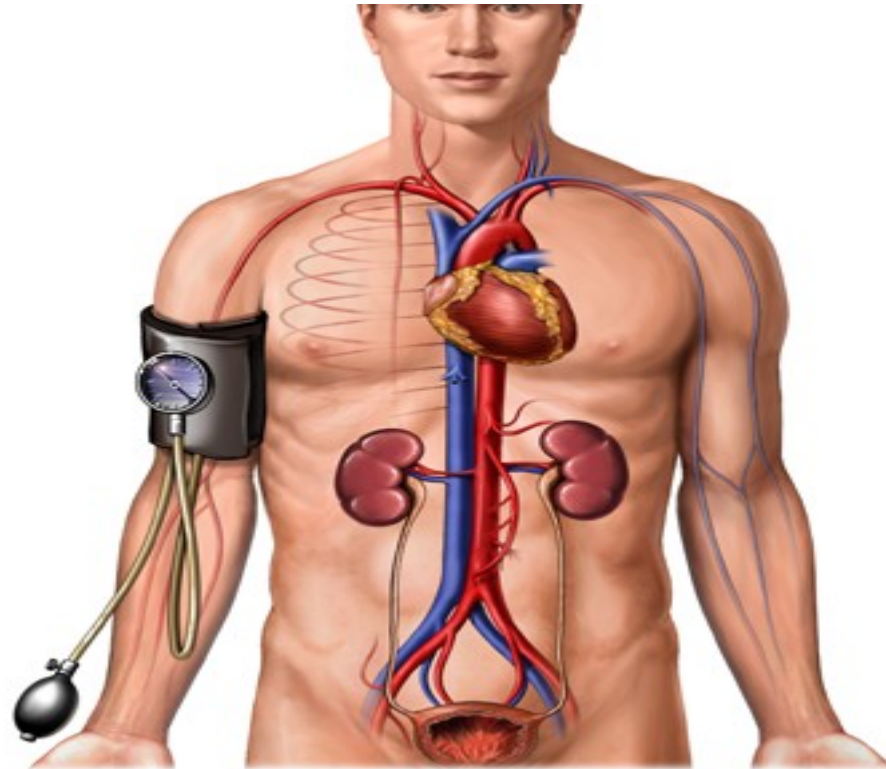


c. meningitis- inflammation of spinal and cranial meninges

d. epilepsy- characterized by recurrent seizures

e. cerebral palsy- disorders that are the result of damage to the brain before, during, or just after birth

D. The Cardiovascular System



1. Functions of the Cardiovascular System (CVS)

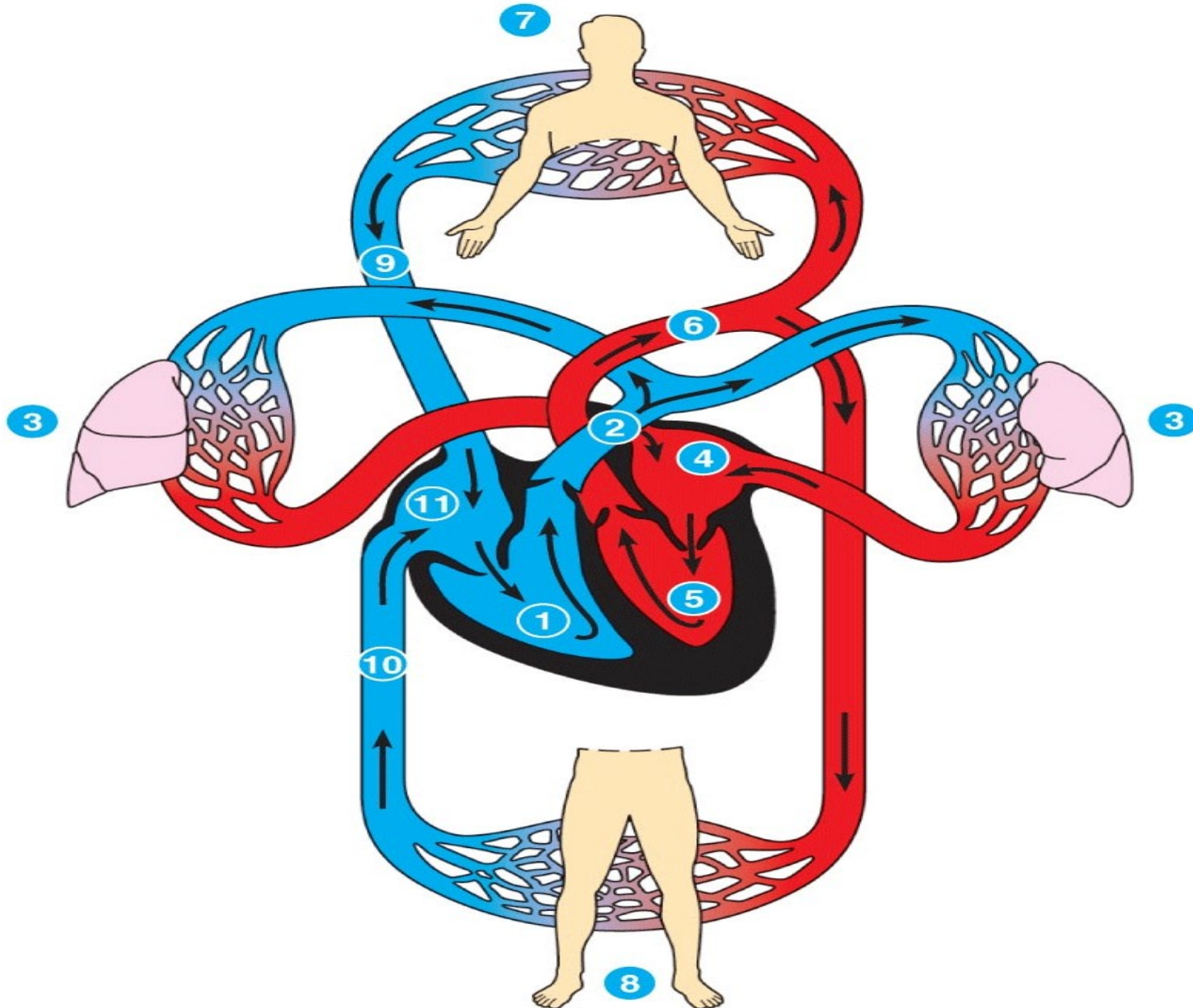
- a. carries oxygen and nutrients throughout the body
- b. gets rid of carbon dioxide and other waste
- c. attacking infectious organisms

2. Circulation of blood in the CVS

- a. pulmonary (lungs) circulation- from the heart, to the lungs and back to the heart
- b. systemic circulation- to all body parts except the lungs

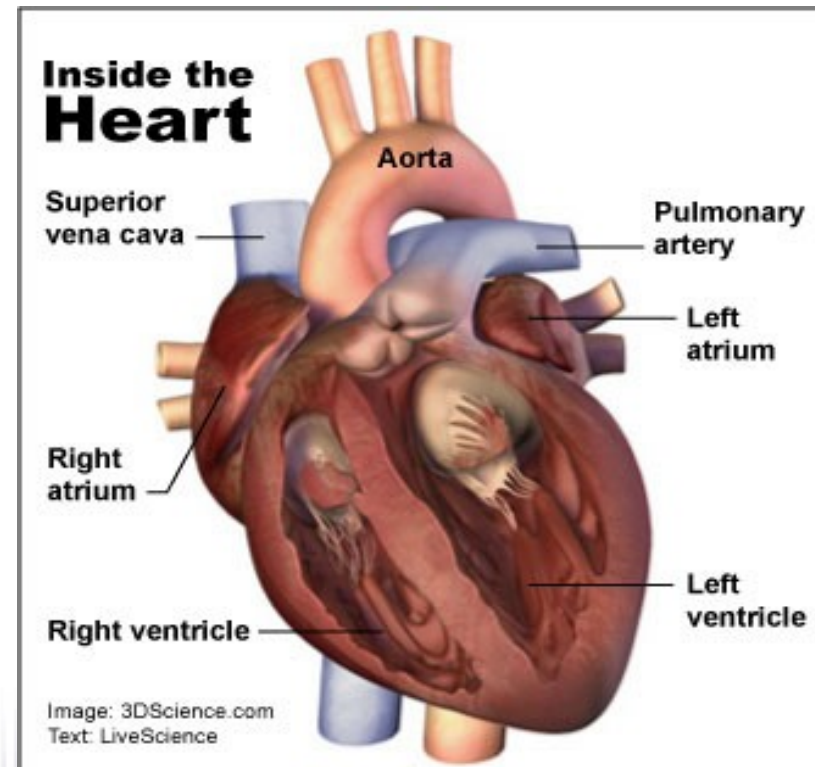
Pumps Your Blood

Pulmonary & Systemic Circulation



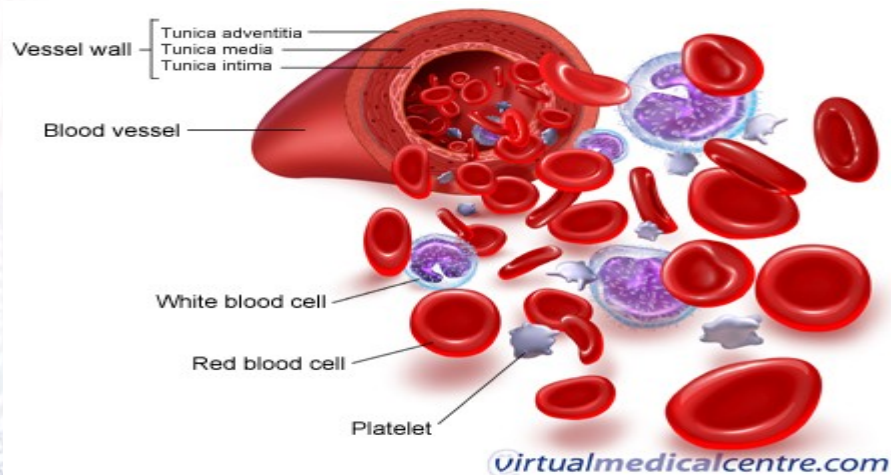
3. Heart- pumps the blood; about the size of the fist
 - a. top chambers- left and right atrium (atria)
 - b. bottom chambers- left and right ventricle
 - c. left ventricle is the strongest chamber

Singing Heart



4. Components of the Blood

- a. plasma- fluid part of blood; 55% of blood volume; not a cell
- b. Red Blood Cell (RBC)- carry oxygen; make up 40% of blood
- c. Hemoglobin- makes blood red; oxygen carrying part of RBC
- d. White Blood Cell (WBC)- protect against infection by ingesting an organism, forming antibodies, or fighting allergic reactions
- e. Platelets- cell that helps blood clot after cuts



Blood Donation

Needle Fear

5. Blood types- blood can be donated once every 56 days

a. A, B, AB, O (+ and – for each type)

b. Rh factor- determines if it is positive or negative type; 85% of people have the Rh factor (+ blood type)

c. Type O- is universal donor blood

d. Type AB+ is universal recipient blood

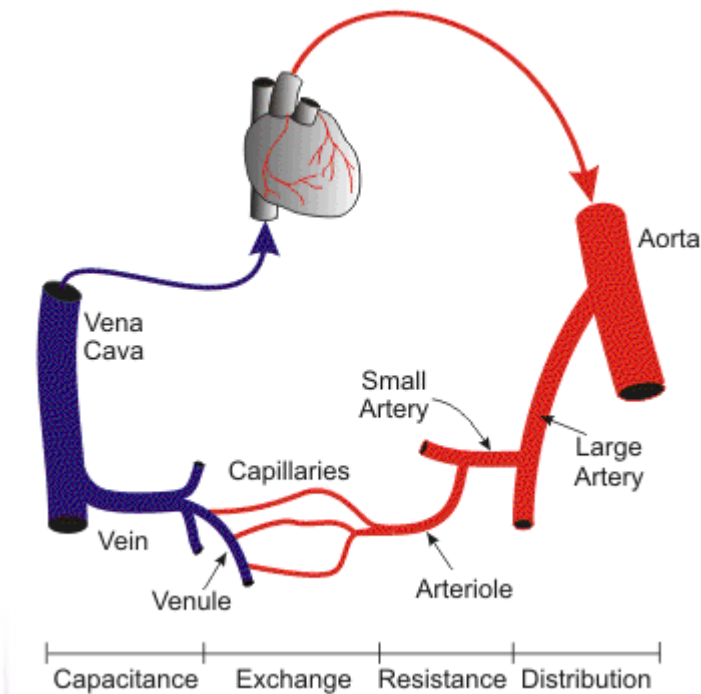
BLOOD TYPE & RH	HOW MANY HAVE IT?	BLOOD TYPE & RH
O Rh Positive	1 Person in 3	37.4%
O Rh Negative	1 Person in 15	6.6%
A Rh Positive	1 Person in 3	35.7%
A Rh Negative	1 Person in 16	6.3%
B Rh Positive	1 Person in 12	8.5%
B Rh Negative	1 Person in 67	1.5%
AB Rh Positive	1 Person in 29	3.4%
AB Rh Negative	1 Person in 167	.6%

How is my blood type determined?

Parent 1	AB	AB	AB	AB	B	A	A	O	O	O
Parent 2	AB	B	A	O	B	B	A	B	A	O
O					X	X	X	X	X	X
A	X	X	X	X		X	X		X	
B	X	X	X	X	X	X		X		
AB	X	X	X			X				

6. Blood Vessels- transport blood throughout the body; we have 60,000 miles of vessels if stretched out
 - a. artery- carry blood away from the heart; aorta is largest artery
 - b. vein- take blood toward the heart
 - c. capillaries- smallest blood vessels; where gas exchanges occur

Circulatory Song

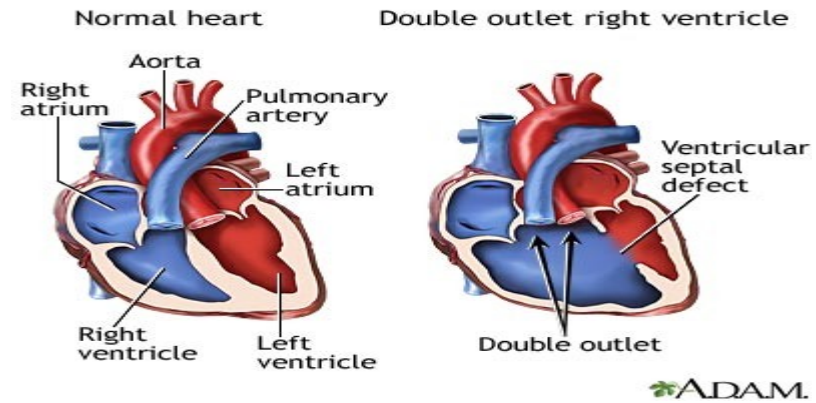


7. Maintaining Circulatory health

- a. well-balanced diet
- b. maintain a healthy weight
- c. regular aerobic exercise
- d. avoid tobacco products
- e. avoid illegal drug use
- f. get regular checkups
- g. maintain normal blood pressure- the amount of force that the blood places on the walls of blood vessels

8. Cardiovascular system problems

a. congenital heart defect- conditions present at birth



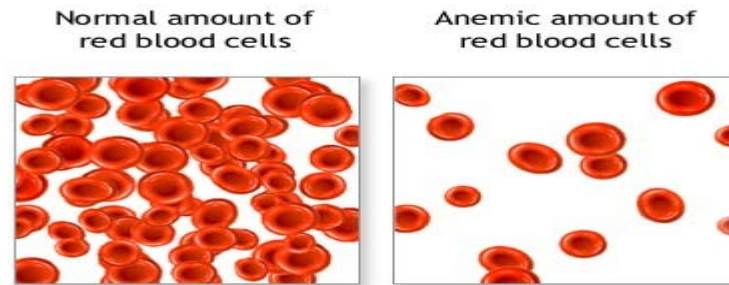
b. heart murmur- caused by a hole in the heart or malfunctioning valve

Heart Murmur Sounds

c. varicose veins- enlarged veins, usually in the legs



d. anemia- a condition in which the ability of the blood to carry oxygen is reduced

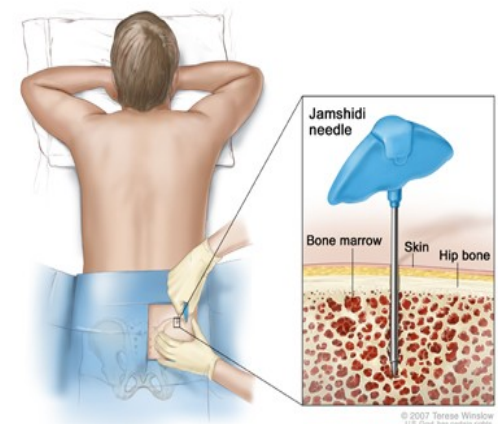


ADAM.

e. hemophilia- inherited disorder; blood does not clot properly

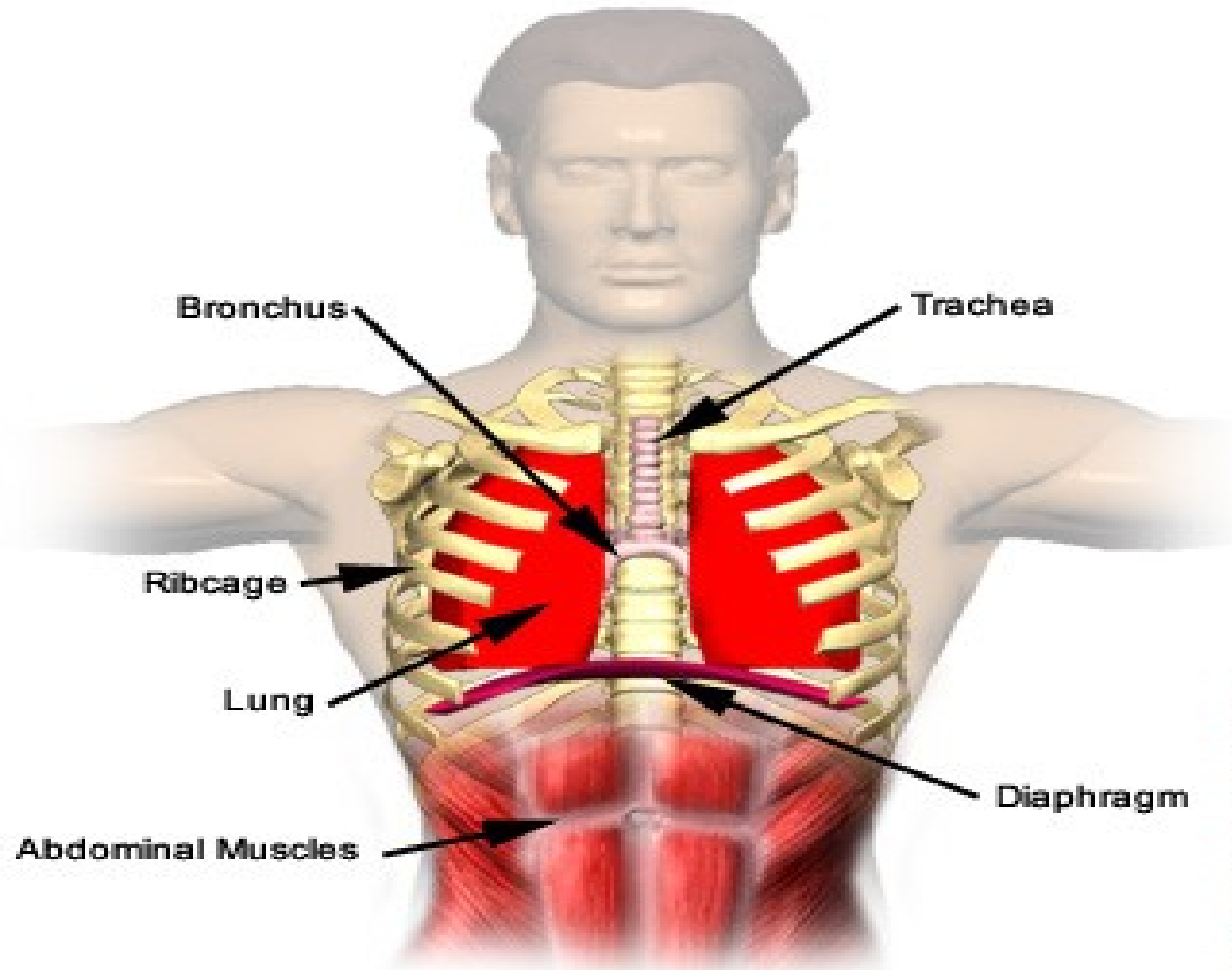


f. leukemia- a form of cancer in which the white blood cells are produced excessively and abnormally



E. The Respiratory System

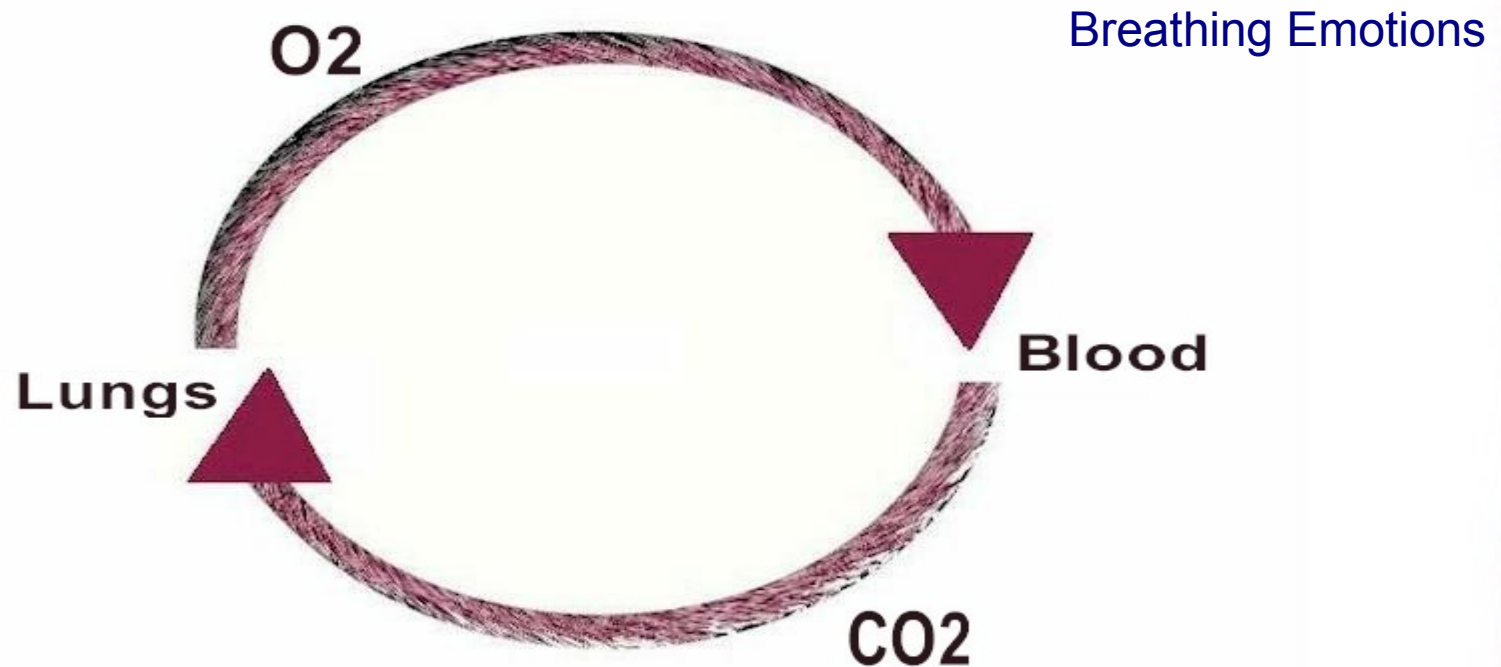
Lower Respiratory Tract



Breastplate has been removed to show Respiratory System

1. There are two types of respiration

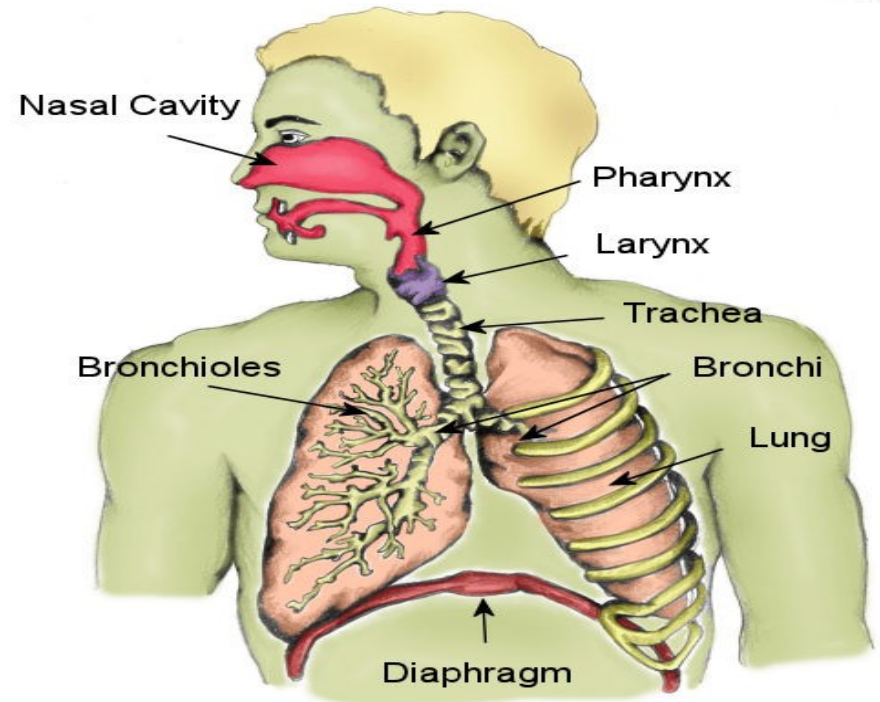
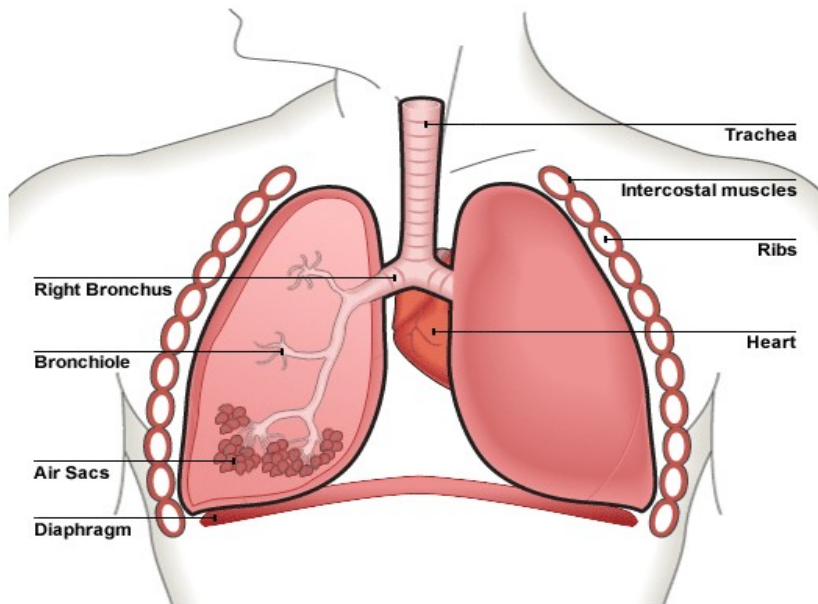
a. external respiration- O₂ moves from lungs into blood and CO₂ moves from blood into lungs (pulmonary)



b. internal respiration- O₂ moves from blood into cells and CO₂ moves from cells into the blood (systemic)

2. How respiration works

- a. diaphragm- muscle that separates the chest from abdominal cavity

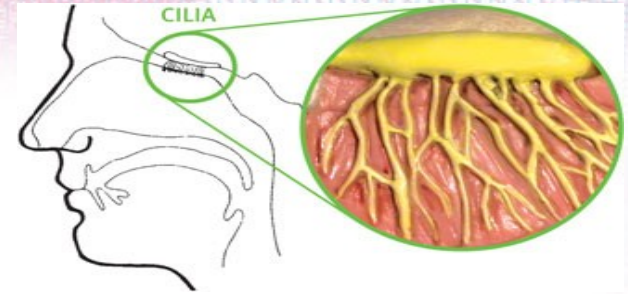


- b. lungs

1. air moves into lungs through trachea (windpipe)
2. bronchi, the main airways that reach into each lung
3. bronchioles- bring air closer to site of external respiration
4. alveoli- tiny structures at the end of each bronchiole; allow gas exchange

3. Other respiratory structures

- a. cilia- hairlike structures in the nose



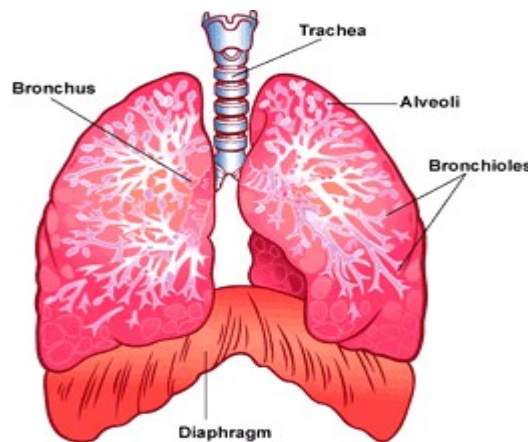
Cilia in Action

- b. pharynx- throat



- c. trachea- windpipe

Trachea View



Larynx in Action

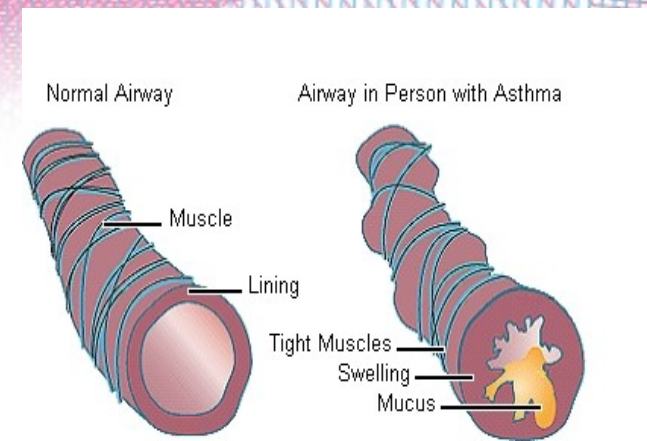
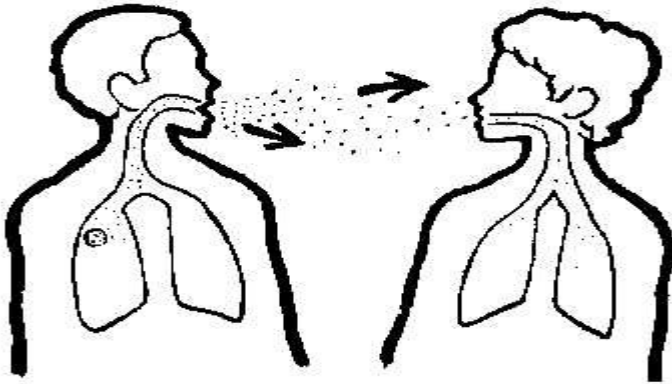
- d. larynx- voice box; connects throat and trachea

4. Respiratory system problems

Bronchitis

No Time

- bronchitis- inflammation of bronchi
- asthma- inflammatory condition in which tubes become narrowed
- pneumonia- inflammation of the lungs; bacterial or viral
- tuberculosis- a contagious bacterial infection of the lungs

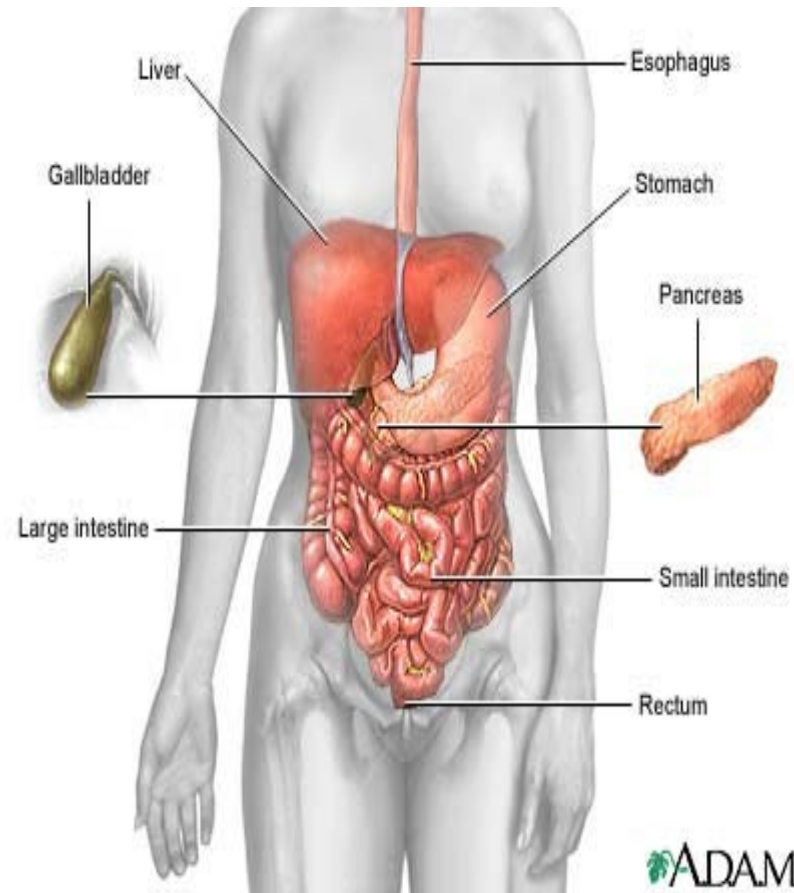


- emphysema- a disease that progressively destroys the walls of the alveoli; often caused by smoking

A smoker's story

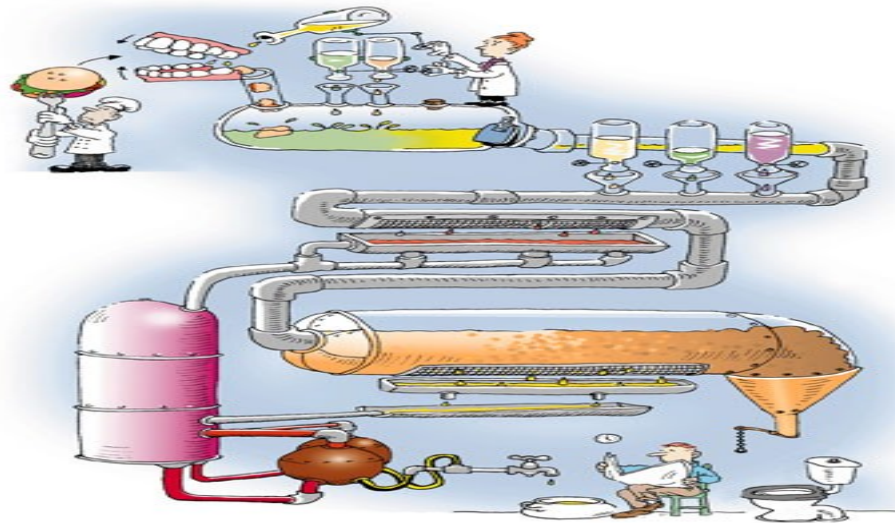


F. The Digestive System



1. The Digestive System Functions

a. Digestion- mechanical & chemical breakdown of food



Joey Chestnut

b. Absorption- the passage of digested food from the digestive tract to the cardiovascular system

c. Elimination- the body's expulsion of undigested food

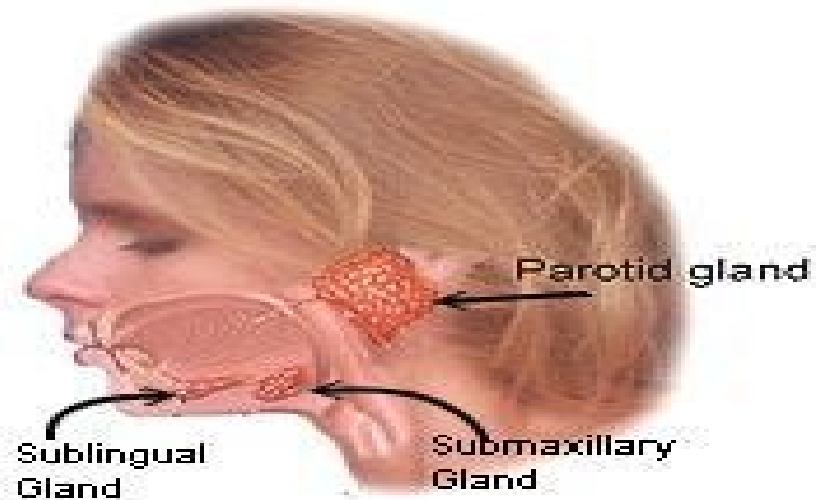


2. How digestion works

a. teeth- break food into pieces; mastication- chewing

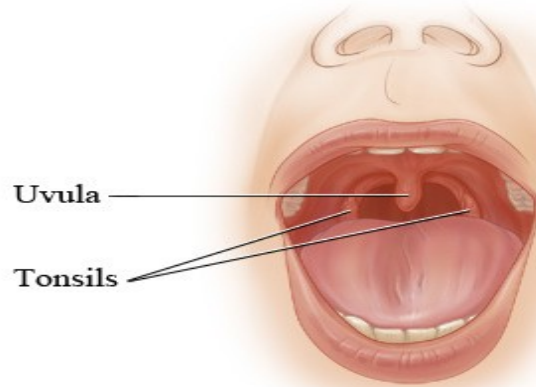


b. salivary glands- produce saliva; contains an enzyme to break down starches



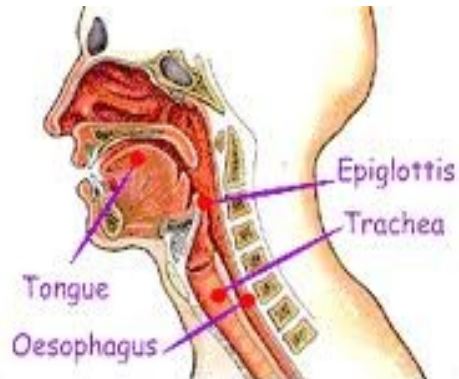
c. tongue- prepares chewed food for swallowing by shaping it

1. uvula- small flap that keeps food out of nasal passages



© Healthwise, Incorporated

2. epiglottis- small flap that keeps food out of the trachea



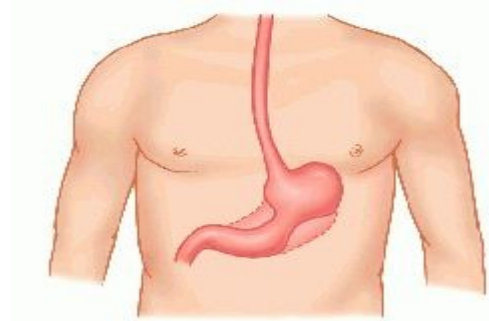
Trachea/Esophagus View

d. esophagus- connects throat to stomach;

1. peristalsis- series of involuntary contractions that move food in digestion

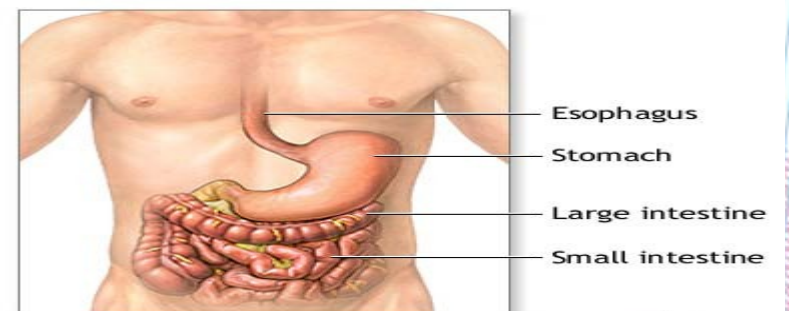
e. stomach- holds food 3-4 hours

1. mixes food with gastric juices, creating chyme
2. stores partially digested food



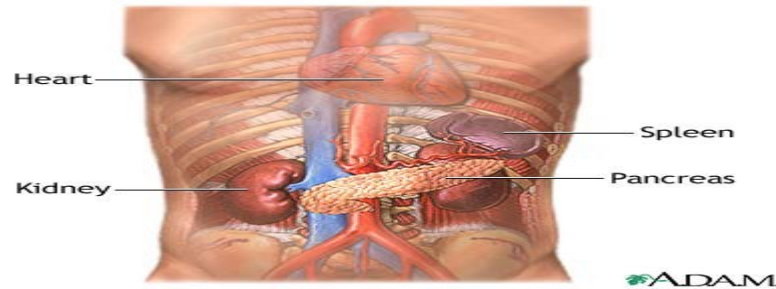
f. small intestine- 20-23 feet in length; where most digestion/absorption of nutrients occurs;

1. three sections of small intestine- duodenum, jejunum, and ileum

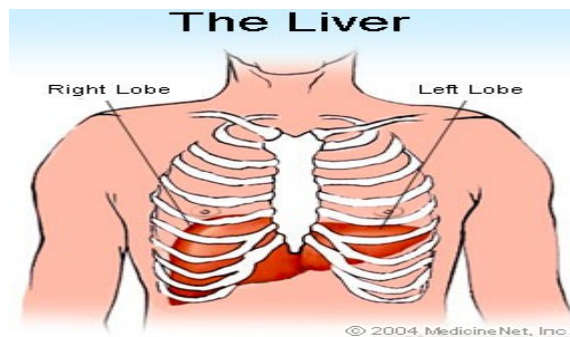


g. large intestine- also called the colon; absorbs water and eliminates waste; 5-6 feet long

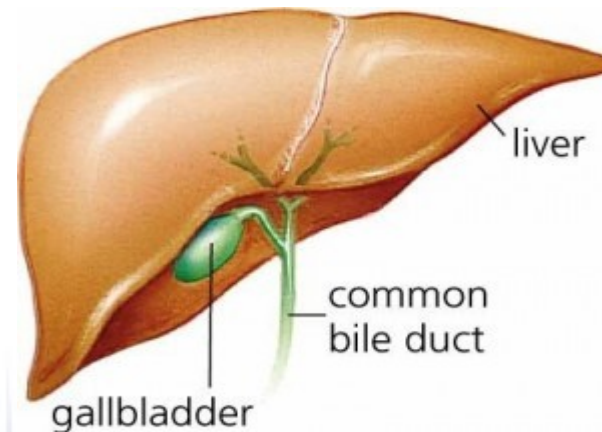
h. pancreas- produces insulin & enzymes to break down food



i. liver- produces bile, a yellow-green fluid that breaks down fats



j. gallbladder- stores bile



3. Digestive system problems

a. indigestion- discomfort in the upper abdomen

b. constipation- causes feces to become dry/hard

c. diarrhea- frequent passage of watery feces

d. heartburn- burning sensation in the chest

e. peptic ulcer- sore in the lining of the digestive tract



**Don't Let Heartburn Run
Your Life Any Longer!**
*The inside scoop on natural
heartburn remedies.....*

Heartburn

f. gallstones- form when cholesterol in bile crystallizes

Gall bladder

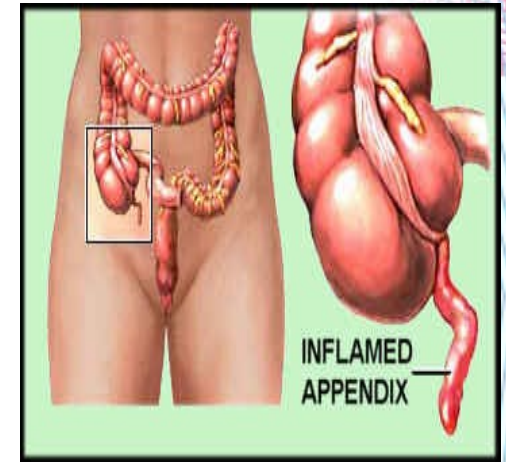


g. lactose intolerance- an inability to digest lactose, a sugar found in dairy products

h. appendicitis- inflammation of the appendix

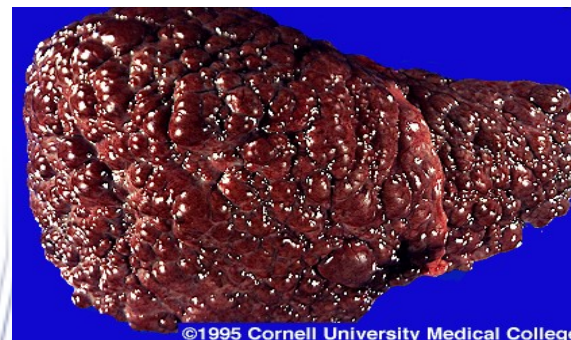
i. colon cancer- 2nd leading cancer death in the U.S.

Colon Polyp



j. hemorrhoids- veins in the rectum & anus become swollen

k. cirrhosis- scarring of the liver tissue caused by alcohol use



Define or explain each of the following

1. 206 bones
2. Artery
3. A, B, AB, O
4. 350 bones
5. HGH
6. Fracture
7. Leukemia
8. Aorta
9. Universal donor
10. Smooth muscle
11. Osteoporosis
12. Red blood cell
13. Vein
14. Rh factor
15. Tendon
16. Ventricles
17. Blood doping
18. Bone types
19. ACL
20. Universal recipient
21. Skeletal muscle
22. Cardiovascular system
23. Plasma
24. Capillary
25. Ligament
26. Cardiac muscle
27. R. & L. atrium
28. Hemoglobin
29. Scoliosis
30. Concussion
31. PED's
32. Joint types
33. Platelets

Bingo Review Word Bank

1. Platelets
2. Ligament
3. Liver
4. Ventricles
5. Frontal
6. Cerebrum
7. Diaphragm
8. WBC's
9. Anemia
10. AB+
11. Larynx
12. Skeletal
13. Small intestine
14. Heart murmur
15. Atria
16. Vein
17. Left atrium
18. Ball & Socket
19. Strain
20. Plasma
21. RBC's
22. Trachea
23. Hemophilia
24. Pancreas
25. Smooth
26. Muscular dystrophy
27. Bronchi
28. Arthritis
29. Pharynx
30. Peristalsis
31. CNS
32. Arteries
33. Fist
34. Hemoglobin
35. Cardiac
36. Rh factor
37. Blood pressure
38. Pulmonary
39. O-
40. Left ventricle
41. Pneumonia
42. Cilia
43. Emphysema
44. Sympathetic
45. Epiglottis
46. Capillaries
47. Scoliosis
48. Elimination

Guess The Fib

Quiz Review

- 1a. pulmonary circulation goes from heart, to lungs, and back to heart
 - b. systemic circulation goes from heart, to lungs, and back to heart
 - c. systemic circulation carries blood to all body parts, except the lungs
-
- 2a. blood type O- is the universal donor
 - b. blood type AB+ is the universal recipient
 - c. blood type O- is the universal recipient
-
- 3a. platelets are the liquid part of the blood
 - b. plasma is the liquid part of the blood
 - c. plasma makes up 55% of the blood volume
-
- 4a. the right and left atrium are the top chambers of the heart
 - b. the right ventricle is the strongest chamber of the heart
 - c. the right and left ventricle are the bottom chambers of the heart
-
- 5a. arteries take blood to the heart
 - b. veins take blood to the heart
 - c. capillaries are the smallest blood vessels

- 6a. hemophilia is a type of cancer
- b. leukemia is a type of cancer
- c. a heart murmur causes an unusual sound in the heart

- 7a. the pharynx is also known as the windpipe
- b. the pharynx is also known as the throat
- c. the larynx is also known as the voice box

- 8a. asthma is an inflammatory condition that causes narrowed tubes
- b. pneumonia is an inflammation of the bronchi
- c. tuberculosis is a bacterial infection of the lungs

- 9a. the uvula keeps food out of the nasal passages
- b. the epiglottis keeps food out of the trachea
- c. the epiglottis keeps food out of the nasal passages

- 10a. the esophagus carries food to the stomach
- b. the epiglottis carries food to the stomach
- c. the stomach holds food for 3-4 hours

- 11a. most digestion of food happens in the small intestine
 - b. elimination of waste happens in the large intestine
 - c. most digestion of food happens in the stomach
-
- 12a. the small intestine is 5-6 feet long
 - b. the large intestine is 5-6 feet long
 - c. the large intestine is also called the colon
-
- 13a. peristalsis is the actions of smooth muscle
 - b. peristalsis is the actions of cardiac muscle
 - c. peristalsis is a series of involuntary contractions
-
- 14a. the liver produces bile
 - b. the gallbladder stores bile
 - c. the liver produces insulin
-
- 15a. digestion is the passage of broken down food into the bloodstream
 - b. absorption is the passage of broken down food into the bloodstream
 - c. digestion is a mechanical and chemical process
-
- 16a. red blood cells make up 40% of the blood
 - b. white blood cells make up 40% of the blood
 - c. hemoglobin makes the blood red

Directions: create a KWL chart like the one shown below

Know	Would like to know	Learned
5 items	5 questions	5 items

Extended response: respond to the following items on your paper

1. Should it be a requirement to register as an organ donor? Why or why not? Respond in 30+ words
2. What are your thoughts about individuals who require an organ donation as a result of damage they have inflicted on themselves through drug use, risky sex, poor dietary habits, or lack of exercise? Respond in 30+ words.