

Anatomy/Physiology Final review

Skeletal system

1. **Function:** support

- a. Protection
- b. leverage
- c. mineral storage
- d. blood production
- e. energy storage

2. **Types of bones**

- a. Long bones
- b. Short bones (including Sesamoid bones)
- c. Flat
- d. Irregular
- e. Sutural bones

3. **Histology of bones**

- a. Composition: collagen fibers & mineral salts
- b. Cell types
 - i. Osteoblasts
 - ii. Osteoclasts
 - iii. Osteocyte

4. **Long Bone anatomy**

- a. Metaphysis
- b. articular cartilage
- c. periosteum
- d. medullary cavity
- e. endosteum

5. **Bone structure**

- a. Compact bones
 - i. Osteon
 - ii. Haverian canals
 - iii. Lamellae
 - iv. Volkmann's canals
 - v. Lacunae
 - vi. Canaliculi

b. Spongy bone

- i. Trabeculae
- ii. Red marrow
- iii. Yellow marrow

6. **Bone ossification**

- a. Intramembranous
- b. Endochondral
 - i. Epiphyseal plate

7. **Bone growth**

- a. Hormones
 - i. hGH (disorders: gigantism and acromegaly)
 - ii. Thyroid hormone
 - iii. Estrogen & testosterone
- b. Diet
 - i. Calcium and Phosphorus
 - ii. Vitamin D (Rickets disease)
 - iii. Vitamin C
- c. Bone remodeling
 - i. Stress response
 - ii. Aging

8. **Types of fractures**

- a. Transverse
- b. Oblique
- c. Spiral
- d. Comminuted
- e. Avulsion
- f. Impacted
- g. Fissure/hairline
- h. greenstick

SKELETAL SYSTEM - MASTER LIST

AXIAL SKELETON

Skull

Thorax

Vertebral Column

APPENDICULAR SKELETON

Pectoral Girdle

Upper Extremities

Pelvic Girdle

Lower Extremities

AXIAL SKELETON

SKULL

Sutures

Coronal Suture

Lambdoidal (Lambdoid) Suture

Sagittal Suture

Cranial Bones:

Frontal Bone

Ethmoid Bone

Occipital Bone

Foramen Magnum

Occipital Condyles

Parietal Bone

Sphenoid Bone

Temporal Bone

External Acoustic Meatus

Mastoid Process

Facial Bones

Lacrimal Bone

Mandible

Mental Foramen

Maxilla

Nasal Bone

Palatine Bone

Vomer

Zygomatic Bone

Hyoid Bone

Additional Content:

- Fontanel
- Cleft Palate

VERTEBRAL COLUMN

Vertebrae:

vertebral body

Cervical Vertebra—Atlas Axis, 5 other)

Coccyx

Inferior Articular Process(es) and facets

Intervertebral Disc(s)

Intervertebral Foramina

Laminae

Lumbar Vertebra

Pedicles

Sacrum

Spinous Process(es)

Superior Articular Process(es) and facets

Thoracic Vertebra

Transverse Foramina

Transverse Process(es)

Vertebral Canal

Vertebral Foramen

Additional Content:

- Abnormal spinal curvatures:
 - Scoliosis, kyphosis, lordosis
- Spina Bifida
- Herniated disk

THORAX

Rib Cage: (p. 157)

Sternum

Manubrium (upper)

Body (middle)

Xiphoid Process (lower)

Ribs

Costal Cartilage

False Ribs

Floating Ribs

True Ribs

APPENDICULAR SKELETON

PECTORAL GIRDLE

Clavicle:

Acromial End
Sternal End

Scapula:

Acromion Process
Borders – Lateral/Medial
Coracoid Process
Glenoid Fossa (Cavity)
Spine

UPPER EXTREMITY

Humerus:

Anatomical Neck
Condyles
 Capitulum
 Trochlea
Coronoid Fossa
Deltoid Tuberosity
Epicondyles
 Lateral
 Medial
Greater Tubercle
Lesser Tubercle
Olecranon Fossa

Radius:

Radial Head
Radial Tuberosity
Styloid Process

Ulna:

Coronoid Process
Olecranon Process
Radial Notch
Styloid Process
Trochlear Notch
Ulnar Head

Hand:

Carpals
Metacarpals
Phalanges—Distal, intermediate, & Proximal

Pelvis:

Ilium -Anterior Superior Iliac Spine
 Anterior Inferior Iliac Spine
 Greater Sciatic Notch
 Iliac Crest
 Iliac Fossa
Ischium - Acetabulum
Pubis -
 Obturator Foramen
 Pubic Symphysis

LOWER EXTREMITY

Femur:

Head
Neck
Condyles
 Lateral
 Medial
Epicondyles
 Lateral
 Medial
Gluteal Tuberosity
Trochanters
 Greater
 Lesser

Patella

Tibia:

Anterior Crest
Lateral Condyle
Medial Condyle
Tibial Tuberosity (bony landmark- front top)
Medial Malleolus

Fibula:

Lateral Malleolus

Foot:

Tarsals
 Calcaneus
 Talus
 Navicular
 Cuboid
 Lateral, Intermediate, and medial
 cuneiform
 Talus
Metatarsals
Phalanges

Muscles

1. Structure of skeletal muscle
 - a. Tendons & aponeurosis
 - b. Connective tissue layers: fascia, epimysium, perimysium, endomysium
 - c. Microscopic anatomy: muscle
 - i. Fascicles
 1. muscle fibers
 - a. myofibrils
 - i. myofilaments
 1. Actin
 2. Myosin
 - ii. Sarcomere
2. How a muscle fiber contracts
 - a. Basic steps
 - b. Synapse/neuromuscular junction
 - c. Issues related to neuromuscular junction: Botulism, tetanus, nerve gas
3. Types of muscle contractions
 - a. Concentric
 - b. Isometric
 - c. Eccentric
4. Fast Twitch vs. Slow twitch muscles
5. Joint movements
 - a. Flexion/Extension
 - b. Dorsiflexion/Plantar Flexion
 - c. Abduction/Adduction
 - d. Circumduction
 - e. Rotation
 - f. Pronation/Supination
 - g. Inversion/Eversion
 - h. Elevation/Depression
 - i. Protraction/Retraction

Skeletal Muscles

Achilles (Calcaneal) Tendon	Gluteus maximus	Pectoralis Major	Spenius capitis
Adductor Longus	Gluteus medius	Pectoralis Minor	Subscapularis
Adductor Magnus	Gluteus minimus	Platysma	Supinator
Biceps Brachii	Gracilis	Pronator teres	Supraspinatus
Biceps Femoris	Iliopsoas	Pronator quadratus	Temporalis
Brachialis	Iliocostalis	Pyramiformis	Tensor Fascia Latae
Brachioradialis	Iliotibial Tract	Quadratus lumborum	Teres Major
Buccinator	Internal Oblique	Rectus Abdominis	Teres Minor
Deltoid	Infraspinatus	Rectus Femoris	Tibialis Anterior
Diaphragm	Latissimus Dorsi	Rhomboid Major	Transverse Abdominis
Extensor digitorum	Levator Scapulae	Sartorius	Trapezius
Extensor digitorum longus	Masseter	Scalenes	Triceps Brachii
External Oblique	Mentalis	Semimembranosus	Vastus Intermedius
Fibularis longus	Nasalis	Semitendinosus	Vastus Lateralis
Flexor digitorum	Occipitalis	Semispinalis capitis	Vastus Medialis
Flexor digitorum longus	Orbicularis Oculi	Serratus Anterior	Zygomaticus
Frontalis	Orbicularis Oris	Soleus	
Gastrocnemius	Patellar tendon	Sternocleidomastoid	

Nervous System

1. The neuron
 - a. Types of Neurons: Sensory, motor, interneurons
 - b. Structure of a neuron:
 1. cell Body (Soma)
 2. Dendrites
 3. Axon
 4. Axon Ending
 5. Myelin Sheaths (multiple Sclerosis)
 - c. Types of Glial Cells
 - d. How a neuron transmits an impulse (action potential)
 - e. Synapse (neurotransmitters)
2. The Brain
 - a. Cerebrum
 - i. Frontal Lobe
 1. Motor cortex
 2. Broca's Area
 - ii. Parietal Lobe
 1. Somatosensory Cortex
 - iii. Temporal Lobe
 1. Wernicke's Area
 - iv. Occipital Lobe
 - v. Corpus Collosum
 - b. Cerebellum
 - c. Brain Stem
 - i. Midbrain
 - ii. Pons
 - iii. Medulla Oblangata
 - d. Diencephalon
 - i. Thalamus
 - ii. Hypothalamus
 - iii. Pituitary
 - iv. Optic Chiasma

Circulatory System

1. Structure/Function blood vessels
 - a. Arteries
 - b. Capillaries
 - c. Veins
2. Heart structures and flow of blood
 - a. R/L Atria
 - b. R/L Ventricles
 - c. Pulmonary Arteries/Pulmonary Veins
 - d. Superior/Inferior Vena Cava
 - e. Aorta
 - f. Chordae tendonae/papillary muscles
 - g. Valves (tri/bicuspid & pulmonary/aortic valves)
3. Heart Sounds
4. Blood Pressure
5. Cardiac Conduction pathway
6. Basic reading of an EKG

Respiratory System

1. Structure and Function
 - a. Nasal Cavity
 - b. Pharynx
 - i. Tonsils
 - ii. epiglottis
 - c. Larynx
 - i. True/False Vocal chords
 - ii. glottis
 - d. Trachea
 - e. Bronchi/Bronchioles
 - f. Alveoli
2. Ventilation
 - a. Inhalation
 - b. Exhalation
3. Factors affecting breathing