Programme of the Human anatomy for Odontology faculty students

2018/2019

I. Musculoskeletal system

Lectures

1. Overview of the musculoskeletal system

Anatomical overview of the human body organization. Parts, axes, and planes. Skeletal system. Bone structure, types, growth, and aged changes. Vertebral column: structure, joints, curvatures, and movements.

2. Morphofunctional overview of the joints

Types of the joints. Structure of the solid joints. Fibrous joints. Cartilaginous joints. Synovial joints: structure, types, and movements. Aged changes of the joints.

3. Anatomical features of the skull

Facial (viscerocranium) skull. Cerebral part of the skull (neurocranium). Morphological features of the skull bones. Neonatal and aged skull. Gender variations of the skull. Joints of the skull. Clinically important regions of the skull.

4. Regional and morphofunctional anatomy of the skeletal muscular system

Muscular system. Anatomical structure of the skeletal muscles. Shape and nomenclature of the skeletal muscles. Adnexal structures of the muscles: fascia, vaginas, and bursae. Regional and functional groups of the muscles.

Practical works

1. Bones and joints of the trunk

Content. Vertebra: body, arch, foramen, processes (spinous, transverse, upper and inferior articular). Cervical vertebrae: transverse opening. Atlas: anterior and posterior arches, fovea dentis. Axis, dens. Thoracic vertebrae: superior and inferior costal demifacets, complete facet, transverse costal facet. Lumbar vertebrae. Sacrum. Coccyx.

Ribs: true, false, and floating ribs. Bony part of the rib and costal cartilage.

Sternum.

Hyoid bone, greater and lesser horns.

Joints of vertebral column. Anterior and posterior longitudinal ligaments. Ligamenta flava. Intervertebral discs (symphyses): anulus fibrosus and nucleus pulposus. Zygapophysial (intervertebral) synovial joints. Vertebral canal and intervertebral foramina. Costovertebral joints. Intercostal spaces.

Thorax. Superior and inferior thoracic apertures. Costal margin (arch).

2. Bones and joints of the upper and lower limbs

Bones of the upper limb. Bones of the shoulder (pectoral) girdle. Clavicle: shaft, acromial and sternal ends. Scapula: spine, acromion, glenoid cavity.

Bones of the arm. Humerus: proximal end (head), shaft, distal end (condyle), epicondyles. Grooves for radial and ulnar nerves.

Bones of the forearm. Radius: proximal end (head), shaft, and distal end. Ulna: olecranon (proximal end), shaft, and distal end (head).

Bones of the hand. Carpal (wrist) bones. Metacarpal bones. Phalanges: proximal, middle, distal.

Joints of the shoulder (pectoral) girdle: sternoclavicular and acromioclavicular joints.

Joints of upper arm. Glenohumeral (shoulder) joint: structural components. Type of the joint and movements.

Elbow joint: humeroulnar, humeroradial and proximal radioulnar joints, movements.
Distal radioulnar joint, movements.
Interosseous membrane.
Wrist (radiocarpal) joint: structural components, type, and movements.
Carpometacarpal joints, carpometacarpal joint of the thumb. Metacarpophalangeal joints.
Interphalangeal joints.
Bones of the lower limb. Bones of the pelvic girdle. Hip bone. Acetabulum. Obturator foramen. The ilium. The ischium. The pubis.
Bones of the thigh. Femur: proximal end (head), neck, shaft, greater trochanter, distal end (medial and lateral condyles). Patella.
Bones of the leg. Tibia: proximal end (medial and lateral condyles, superior articular surfaces); shaft: tuberosity; distal end (inferior articular surface, medial malleolus). Fibula.
Bones of the foot. Tarsal bones. The metatarsal bones. Phalanges: proximal, middle and distal.
Joints of the pelvis. Sacroiliac joint. Pubic symphysis. Sacrospinal and sacrotuberal ligaments. Greater and lesser sciatic foramina.
Greater (false) and lesser (true) pelvis, pelvic brim.
Hip joint: structural components, acetabular labrum, iliofemoral ligament, type of the joint, and movements.
Knee joint: structural components, patellar ligament, cruciate ligaments, menisci, type of the joint, and movements.
Interosseous membrane.
Ankle (talocrural) joint, type and movements. Tarsal, tarsometatarsal, metatarsophalangeal, and interphalangeal joints.

3. Bones of the skull facial part

Ethmoid bone: cribriform, perpendicular and orbital plates, labyrinth, ethmoid air cells, superior and middle nasal conchae.
Maxilla. Body: anterior, posterior, nasal, and orbital surfaces. Frontal, zygomatic, palatine and alveolar processes. Canine fossa. Infraorbital sulcus, infraorbital canal, infraorbital foramen. Maxillary sinus. Sockets (alveoli), interalveolar septa, interradicular septa.
Palatine bone: perpendicular and horizontal plates, greater palatine foramen.
Mandible: body, ramus and angle. Body of mandible: base and alveolar process, sockets (alveoli), interalveolar and interradicular septa, mylohyoid line, submandibular and sublingual fossae, mental protuberance, mental tubercles, mental foramen. Mandibular ramus: coronoid and condylar (head) processes, mandibular notch. Neck of the mandible, pterygoid fovea, roughening for attachment of masseter muscle, roughening for attachment of medial pterygoid muscle, mandibular foramen, lingula, and mandibular canal.
Inferior nasal concha. Zygomatic bone. Nasal bone. Lacrimal bone. Vomer.
Temporal bone. Petrous part: mastoid process (petromastoid part). Facial, carotid, and pharyngotympanic tube canals, hiatus for the greater and lesser petrosal nerves, trigeminal impression, tegmen tympany, jugular notch, internal acoustic meatus, styloid process, stylomastoid foramen. Petrotympanic fissure. Tympanic part: external acoustic meatus. Squamous part: zygomatic process. Mandibular fossa, and articular tubercle.

4. Bones of the skull cerebral part. Joints of the skull

Sphenoid bone: body, sella turcica, chiasmatic groove, hypophyseal fossa, dorsum sellae, sphenoid sinus, sphenoid apertures, lesser and greater wings, optic canal, foramina rotundum, ovale, and spinosum, pterygoid processes, pterygoid canals, grooves for internal carotid artery.
Frontal bone: squamous, orbital and nasal parts, supraorbital margin, supraorbital foramen (notch), frontal sinus, glabella, fossa for lacrimal gland, groove for superior sagittal sinus.
Parietal bone: groove for superior sagittal sinus.

Occipital bone: basilar, lateral and squamous parts, foramen magnum, condyles, hypoglossal canal, jugular notch, internal and external occipital protuberances, grooves for transverse and sigmoid sinuses.

Joints of the skull bones. Sutures: sagittal, coronal, lambdoid, squamosal, and plana. Anterior and posterior fontanelles. Gomphosis. Synchondroses. Temporomandibular joint, structural components, articular disc, lateral and stylomandibular ligaments, movements. Atlantooccipital and atlantoaxial joints, structural components and movements.

5. The internal and external base of the skull

External base of the skull: anterior, middle, and posterior parts. Boundaries.

Anterior part. Upper (maxillary) alveolar arch. Bony palate: palatine processes of maxillae and horizontal plates of palatine bones. Intermaxillary, palatomaxillary and interpalatine sutures. Incisive fossa, incisive canal. Greater and lesser palatine foramina.

Middle part: choanae, pterygoid fossa, pterygoid canal, pharyngeal tubercle, foramen ovale, foramen spinosum, extracranial opening of the carotid canal, foramen lacerum, styloid process, foramen stylomastoideum, mandibular fossa.

Posterior part: foramen magnum, occipital condyles, hypoglossal canal, jugular foramen.

Internal base of the skull: anterior, middle, and posterior cranial fossae. Boundaries.

Anterior cranial fossa: cribriform plate, foramen cecum, crista galli, orbital parts of the frontal bone, lesser wings of sphenoid bone.

Middle cranial fossa: sella turcica: chiasmatic sulcus, tuberculum sellae, hypophyseal fossa, dorsum sellae. Optic canal, superior orbital fissure, foramen rotundum, foramen ovale, foramen spinosum, intracranial opening of the carotid canal, foramen lacerum, trigeminal impression, hiatus for the lesser and greater petrosal nerves, and tegmen tympany.

Posterior cranial fossa: clivus, foramen magnum, grooves for the inferior petrosal and sigmoid sinus, internal acoustic meatus, jugular foramen, hypoglossal canal.

6. Bony orbit. Bony nasal cavity. Pterygopalatine, temporal, and infratemporal fossae

Bony orbit. Skeletal framework: bones of the roof (superior), floor (inferior), medial, and lateral walls. Orbital rim, optic canal, superior and inferior orbital fissures, fossa for lacrimal gland, lacrimal groove for lacrimal sac, infraorbital groove and canal, and nasolacrimal canal.

Bony nasal cavity. Piriform aperture and choanae. Bones of the septum, superior, inferior, and lateral walls. Superior, middle, and inferior conchae. Superior, middle, inferior, and common nasal meatuses. Sphenoethmoidal recess. Frontal, ethmoidal, sphenoidal, and maxillary sinuses, their sites of drainage into nasal cavity. Gateways: cribriform plate, sphenopalatine foramen, and incisive canal.

Pterygopalatine fossa: bones of the anterior, posterior, medial, and superior walls. Gateways: foramen rotundum, pterygoid canal, sphenopalatinum foramen, inferior orbital fissure, pterygomaxillary fissure.

Temporal and infratemporal fossae, borderline between them: zygomatic arch and infratemporal crest. Skeletal framework of the temporal fossa. Infratemporal fossa: bones of the roof, lateral, medial, and anterior walls.

Skeletal framework of the oral cavity: maxilla, mandible, palatine, temporal, sphenoid and hyoid bones.

7. Muscles of the head and neck

Muscles of the face: groups, location, and functions. Orbital group: orbicularis oculi, corrugator supercilii muscle. Oral group: orbicularis oris, depressor anguli oris, and levator labii superioris, depressor labii inferioris, levator anguli oris, buccinator, zygomatic, mental, and risorius muscles. Nasal group: nasalis muscle. Muscle of scalp: occipitofrontalis muscle.

Masticatory muscles: masseter, temporalis, medial and lateral pterygoid muscles.

Muscles of the neck: groups, location, and functions. Superficial: platysma and sternocleidomastoid muscles. Suprahyoid muscles: mylohyoid, digastric, stylohyoid, geniohyoid muscles. Infrahyoid muscles: omohyoid, sternohyoid, thyrohyoid, and sternothyroid muscles. Deep muscles of the neck. Lateral group: anterior, middle, posterior scalene muscles. Medial group: longus colli, longus capitis muscle.

Anterior and posterior neck triangles. Carotid triangle. Interscalene space.

Fascia of the neck: superficial, investing, and prevertebral layer.

8. Muscles of the trunk

Muscles of the trunk: groups, location, and functions.

Superficial (appendicular) back muscles: trapezoid, latissimus dorsi, levator scapulae, rhomboid major, and rhomboid minor muscles. Intermediate back muscles: serratus posterior superior and inferior muscles.

Deep muscles of the back: erector spinae muscle.

Muscles of the pectoral region: pectoralis major, anterior serratus muscles. Muscles of the thoracic wall: external and internal intercostal muscles. Diaphragm: sternal, costal and lumbar parts. Central tendon. Aortic, oesophageal and inferior vena cava foramina of the diaphgram.

Muscles of the abdomen: anterolateral muscles: rectus abdominis, external, internal oblique, and transversus muscles. Posterior abdominal muscle: quadratus lumborum.

Abdominal press. Linea alba. Anulus umbilicalis. Inguinal canal: superior, inferior, anterior and posterior walls. Superficial and deep rings.

9. Muscles of the upper and lower limbs

Upper limb muscles: groups, location, and functions.

Muscles of the shoulder girdle: deltoid and subscapularis muscles.

Anterior group of the arm muscles: biceps brachii and brachialis muscles. Posterior group of the arm: triceps brachii muscle.

Anterior group and posterior groups of the forearm muscles, functions. Hand muscles: thenar, hypothenar and middle group.

Axilla: anterior (pectoralis major muscle), medial (serratus anterior muscle), posterior (subscapularis, latissimus dorsi muscles), lateral (humerus) walls. Axillary inlet. Cubital fossa. Flexor and extensor retinacula. Carpal tunnel.

Muscles of the lower limb: groups, location, and functions.

Gluteal muscles: gluteus maximus and medius. Piriform and iliopsoas muscles.

Anterior compartment of thigh: sartorius and quadriceps femoris muscle. Posterior compartment of thigh: hamstrings: biceps femoris, semitendinosus and semimembranosus muscles. Medial compartment of thigh: adductor longus and magnus, and gracilis muscles.

Anterior, lateral, and posterior compartments of the leg muscles, functions. Calcaneal (Achilles) tendon. Muscles of the foot: dorsal and plantar group.

Greater sciatic foramen. Suprapiriform and infrapiriform foramina. Lacuna vasorum, lacuna musculorum. Obturator and adductor canals. Popliteal fossa.