Anatomy & Physiology Flashcards

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1. Cranial Nerves: Chart and Functions

34 cards

QUESTION	ANSWER
CN I: name, type and function?	Olfactory nerve, sensory. Smell.
CN II: name, type and function?	Optic nerve, sensory. Vision.
CN III: name, type and function?	Oculomotor nerve, motor. Most eye movements, raising the eyelid, constricting the pupil.
CN IV: name, type and function?	Trochlear nerve, motor. Superior oblique: turns the eye down and in.
CN V: name, type and function?	Trigeminal nerve, both. Sensation of the face; chewing muscles.
CN VI: name, type and function?	Abducens nerve, motor. Lateral rectus: turns the eye outward.
CN VII: name, type and function?	Facial nerve, both. Facial expression, taste on the front of the tongue, tears and saliva.
CN VIII: name, type and function?	Vestibulocochlear nerve, sensory. Hearing and balance.
CN IX: name, type and function?	Glossopharyngeal nerve, both. Taste on the back of the tongue, throat sensation, swallowing, parotid saliva.
CN X: name, type and function?	Vagus nerve, both. Swallowing and voice; parasympathetic supply to the heart, lungs and gut.

QUESTION	ANSWER
CN XI: name, type and function?	Accessory nerve, motor. Sternocleidomastoid and trapezius: turning the head, shrugging.
CN XII: name, type and function?	Hypoglossal nerve, motor. Movements of the tongue.
Which cranial nerves are purely sensory?	I, II and VIII. Smell, sight, hearing and balance.
Which cranial nerves are motor only?	III, IV, VI, XI and XII. The three eye movement nerves, plus accessory and hypoglossal.
Which cranial nerves are both sensory and motor?	V, VII, IX and X. Trigeminal, facial, glossopharyngeal, vagus.
Which cranial nerves carry parasympathetic fibers?	III, VII, IX and X. Read backward: 10, 9, 7, 3, “1973.”
Which three cranial nerves move the eye?	Oculomotor (III), trochlear (IV) and abducens (VI). VI pulls the lateral rectus, IV the superior oblique, III all the others.
Which two cranial nerves do not attach to the brainstem?	Olfactory (I) and optic (II). They connect to the forebrain; the other ten attach to the brainstem.
What are the three branches of the trigeminal nerve?	Ophthalmic (V1), maxillary (V2), mandibular (V3). Only the mandibular branch carries motor fibers, for chewing.
Which cranial nerve carries taste from the front two-thirds of the tongue?	Facial (CN VII). Touch from the same area travels in the trigeminal (V3).
Which cranial nerve carries taste from the back third of the tongue?	Glossopharyngeal (CN IX). It also carries touch from that part of the tongue.

QUESTION	ANSWER
Which nerves make up the gag reflex?	IX senses the touch, X contracts the pharynx. Glossopharyngeal is the sensory limb, vagus the motor limb.
Which nerves make up the pupillary light reflex?	II detects the light, III constricts the pupil. Both pupils constrict, even when only one eye is lit.
Which nerves make up the corneal (blink) reflex?	V1 feels the touch on the cornea, VII closes the eyelids. Trigeminal is the sensory limb, facial the motor limb.
One eye is “down and out,” with a drooping eyelid and a dilated pupil. Which nerve is damaged?	Oculomotor (CN III). Only the lateral rectus (VI) and superior oblique (IV) still pull on the eye.
When one hypoglossal nerve is damaged, which way does the stuck-out tongue point?	Toward the damaged side. The healthy side pushes the tongue across.
Bell’s palsy is a paralysis of which cranial nerve?	Facial (CN VII). One whole side of the face droops, forehead included.
Hoarseness after thyroid surgery points to injury of which nerve?	Recurrent laryngeal nerve, a branch of the vagus (CN X). It supplies most muscles of the larynx.
Which cranial nerve slows the heart rate?	Vagus (CN X). Its parasympathetic fibers act on the heart’s pacemaker.
Which cranial nerve reaches the farthest into the body?	Vagus (CN X). Its name means “wandering”: it runs down to the abdomen.
Which cranial nerve is the largest?	Trigeminal (CN V). It carries sensation from almost the whole face.
How do you test the olfactory nerve (CN I)?	Familiar smells (coffee, mint), one nostril at a time, eyes closed.
How do you test the accessory nerve (CN XI)?	Shrug the shoulders and turn the head against resistance. Look for weakness or a difference between sides.

QUESTION	ANSWER
Which two tuning fork tests check hearing (CN VIII)?	Weber (fork on top of the head) and Rinne (fork on the mastoid, then beside the ear). They tell conductive from sensorineural hearing loss.

2. Anatomical Directional Terms With Examples

25 cards

TERM	DEFINITION
Anatomical position	The standard reference posture: standing upright, feet parallel, arms at the sides, palms facing forward. All directional terms assume it, even if the patient is lying down.
Superior	Above, or toward the head. Opposite of inferior. The orbits are superior to the mouth.
Inferior	Below, or toward the feet. Opposite of superior. The pelvis is inferior to the abdomen.
Anterior	Toward the front of the body. Opposite of posterior. The kneecap is on the anterior side of the leg.
Posterior	Toward the back of the body. Opposite of anterior. The spine is posterior to the stomach.
Medial	Toward the midline of the body. Opposite of lateral. The nose is medial to the ears.
Lateral	Away from the midline, toward the side. Opposite of medial. The thumb is lateral to the other fingers in the anatomical position.
Proximal	In a limb, closer to the trunk or the point of attachment. Opposite of distal. The humerus is proximal to the radius and ulna.
Distal	In a limb, farther from the trunk or the point of attachment. Opposite of proximal. The wrist is distal to the elbow.
Superficial	Closer to the surface of the body. Opposite of deep. The skin is superficial to the bones.

TERM	DEFINITION
Deep	Farther from the surface of the body. Opposite of superficial. The brain is deep to the skull.
Cranial	Toward the head; also called cephalic. In a human in anatomical position, it means the same as superior. The skull is cranial to the neck.
Caudal	Toward the tail, so toward the tailbone in a human. In a human, it means the same as inferior. The sacrum is caudal to the lumbar vertebrae.
Ventral	Toward the belly. In a human it matches anterior; in a four-legged animal it is the underside. The navel is on the ventral side of the trunk.
Dorsal	Toward the back. In a human it matches posterior; in a four-legged animal it is the upper side. The shoulder blades are on the dorsal side of the trunk.
Ipsilateral	On the same side of the body as another structure. The right hand and the right foot are ipsilateral.
Contralateral	On the opposite side of the body from another structure. The right hand and the left foot are contralateral.
Bilateral	On both sides of the body. Bilateral swelling of the ankles affects the left and the right ankle.
Palmar	Toward the palm of the hand, the front surface of the hand. The fingerprints are on the palmar side of the fingertips.
Plantar	Toward the sole of the foot. The heel pad lies on the plantar side of the foot.
Supine	Lying on the back, face up. Opposite of prone. A patient lying face up on an exam table is supine.

TERM	DEFINITION
Prone	Lying on the stomach, face down. Opposite of supine. A patient lies prone to be examined on the back.
Sagittal plane	A vertical plane that divides the body into right and left parts. A midsagittal (median) cut runs through the exact midline; a parasagittal cut makes unequal parts.
Frontal plane	A vertical plane that divides the body into anterior (front) and posterior (back) parts. Also called the coronal plane. It separates the face from the back of the head.
Transverse plane	A horizontal plane that divides the body into superior (upper) and inferior (lower) parts, giving cross sections. A CT slice through the abdomen is a transverse section.

3. Bones of the Skull: List of the 22 Bones

34 cards

QUESTION	ANSWER
How many bones make up the adult skull?	22. 8 cranial bones and 14 facial bones; 21 are immobile, the mandible moves.
Name the 8 cranial bones.	Frontal, 2 parietal, 2 temporal, occipital, sphenoid, ethmoid. Together they form the brain case.
Name the 14 facial bones.	2 maxillae, 2 zygomatic, 2 nasal, 2 lacrimal, 2 palatine, 2 inferior nasal conchae, vomer, mandible. Six pairs plus two single bones.
Which cranial bones are paired?	Parietal and temporal. The other four cranial bones are single.
Which cranial bones are single (unpaired)?	Frontal, occipital, sphenoid and ethmoid. Parietal and temporal come in pairs.
Which facial bones are single (unpaired)?	Vomer and mandible. The other 12 facial bones are six pairs.
Which is the only movable bone of the skull?	The mandible. It joins the temporal bone at the temporomandibular joint.
Which cranial bone forms the forehead?	Frontal bone. It also forms the roof of the orbits and the floor of the anterior cranial fossa.
Which cranial bones form most of the upper sides of the skull?	The parietal bones. They meet at the top of the skull and touch the frontal, temporal and occipital bones.
Which cranial bone has the foramen magnum?	Occipital bone. The spinal cord passes through this opening as it leaves the skull.

QUESTION	ANSWER
Which cranial bone houses the middle and inner ear?	Temporal bone. Its petrous portion holds them; the ear canal opens at the external acoustic meatus.
Which cranial bone holds the sella turcica?	Sphenoid bone. The sella turcica lies at the midline of the middle cranial fossa.
Which cranial bone has the cribriform plate and the crista galli?	Ethmoid bone. The cribriform plate has the olfactory foramina; the crista galli is a midline upward projection.
Which cranial bone is the “keystone” with greater wings and pterygoid plates?	Sphenoid bone. Its greater wings form the anterior floor of the middle cranial fossa.
Which temporal bone process can you feel just behind the earlobe?	The mastoid process. The styloid process is the thin downward spike.
Which temporal bone process is a long, thin projection pointing downward?	The styloid process. It lies behind the mandibular fossa; the mastoid process is the bump behind the ear.
Which bone forms the cheekbone?	Zygomatic bone. It forms much of the lateral wall of the orbit.
Which two small bones form the bridge of the nose?	The nasal bones. They are the bones damaged in a broken nose.
Which bones form the upper jaw?	The maxillae. The alveolar process holds the upper teeth.
Which bone forms the lower jaw?	The mandible. Its condyle articulates with the temporal bone; its ramus is the vertical part.
Which small facial bone forms the front part of the medial wall of the orbit?	Lacrimal bone. Its lacrimal fossa leads to the canal that drains tears into the nose.

QUESTION	ANSWER
Which facial bones form the back quarter of the hard palate?	The palatine bones. The maxillae form the front three-quarters.
Which bones form the front three-quarters of the hard palate?	The maxillae. The palatine bones form the back quarter.
Which unpaired facial bone is the triangular bone of the lower back part of the nasal septum?	Vomer. The perpendicular plate of the ethmoid forms the upper part.
Which facial bones project from the lower side wall of the nasal cavity?	The inferior nasal conchae. Unlike the other nasal conchae, they are independent bones.
Which bones form the bony nasal septum?	Perpendicular plate of the ethmoid (upper part) and vomer (lower and back part). Septal cartilage fills the front.
Which seven bones form the wall of each orbit?	Frontal, zygomatic, maxilla, palatine, ethmoid, lacrimal, sphenoid. The frontal forms the roof; the maxilla forms most of the floor.
Which suture joins the frontal bone to the two parietal bones?	The coronal suture. It runs across the top of the skull from side to side.
Which suture joins the two parietal bones?	The sagittal suture. It runs along the midline, from front to back.
Which suture joins the occipital bone to the parietal and temporal bones?	The lambdoid suture. It lies at the back of the skull.
Which suture joins the temporal bone to the parietal bone?	The squamous suture. It runs along the side of the skull.
What is the pterion?	The spot where the frontal, parietal, squamous temporal and greater wing of the sphenoid meet. It is a junction of four bones on the side of the skull.

QUESTION	ANSWER
Which four skull bones contain paranasal sinuses?	Frontal, maxillae, sphenoid and ethmoid. The sinuses are air-filled spaces within these bones.
Is the hyoid bone part of the skull?	No. It is a U-shaped bone in the upper neck that touches no other bone.

4. Endocrine Glands and Hormones: Chart

51 cards

QUESTION	ANSWER
Into which two groups are hormones divided by chemical structure?	Amino acid-derived and lipid-derived. Amines, peptides and proteins come from amino acids; steroids come from lipids.
Which class of hormones is made from cholesterol?	Steroid hormones. Cortisol, aldosterone, testosterone and the estrogens are examples.
Where do lipid-soluble hormones such as steroids and thyroid hormones bind their receptors?	Inside the target cell. The complex then acts on DNA and changes gene transcription.
Where do water-soluble hormones such as peptides bind their receptors?	On the surface of the target cell. They cannot cross the membrane, and usually act through a second messenger such as cAMP.
Which brain structure controls the anterior pituitary with releasing and inhibiting hormones?	The hypothalamus.
Which two hormones are made in the hypothalamus but stored and released by the posterior pituitary?	ADH and oxytocin.
What is the main effect of ADH (antidiuretic hormone)?	It increases water reabsorption by the kidney tubules. At high levels it also constricts blood vessels.
What are the main effects of oxytocin?	Uterine contractions in childbirth and milk ejection from the breast. It is also linked to bonding.
What does growth hormone (GH) do?	It promotes growth and protein synthesis. It acts on the liver, bone and muscle, partly through IGFs.
What does prolactin (PRL) do?	It promotes milk production in the mammary glands.
Which hormone of the anterior pituitary stimulates the thyroid?	TSH, thyroid-stimulating hormone. It makes the thyroid release T3 and T4.

QUESTION	ANSWER
Which hormone of the anterior pituitary stimulates the adrenal cortex?	ACTH, adrenocorticotropic hormone. It triggers the release of corticosteroids such as cortisol.
What does FSH (follicle-stimulating hormone) do?	It stimulates gamete production and follicle growth in the gonads.
What does LH (luteinizing hormone) do?	It triggers ovulation and sex hormone production in the gonads.
Which hypothalamic hormone stimulates the release of TSH?	TRH, thyrotropin-releasing hormone.
Which hypothalamic hormone stimulates the release of ACTH?	CRH, corticotropin-releasing hormone.
Which hypothalamic hormone stimulates the release of FSH and LH?	GnRH, gonadotropin-releasing hormone.
Which hypothalamic hormone inhibits the release of prolactin?	PIH, which is dopamine.
In what order do the hypothalamus, pituitary and thyroid act to raise T3 and T4?	Hypothalamus (TRH), then anterior pituitary (TSH), then thyroid (T3 and T4). Rising T3 and T4 inhibit TRH and TSH: negative feedback.
In what order do the hypothalamus, pituitary and adrenal cortex act to raise cortisol?	Hypothalamus (CRH), then anterior pituitary (ACTH), then adrenal cortex (cortisol).
What are the main effects of thyroid hormones (T3 and T4)?	They raise basal metabolic rate and produce heat. They also support growth and nervous system development.
Which dietary mineral does the thyroid need to make T3 and T4?	Iodine.
Which thyroid cells make calcitonin?	Parafollicular (C) cells.
What does calcitonin do?	It lowers blood calcium, mainly by inhibiting osteoclasts. Its role is minor: the parathyroid glands are the main regulators of calcium.
What does parathyroid hormone (PTH) do to blood calcium?	It raises it. It is released when calcium is too low.

QUESTION	ANSWER
How does PTH raise blood calcium in bone and in the kidneys?	It activates osteoclasts to release calcium from bone, and increases calcium reabsorption in the kidneys. The kidneys also make more calcitriol, which raises calcium absorption in the gut.
What happens to blood calcium when the parathyroid glands make too little PTH?	It falls (hypocalcemia). Muscle twitching, cramps and spasms follow.
Blood calcium has risen above normal. Which thyroid hormone is released?	Calcitonin.
What is the main effect of aldosterone?	It makes the kidneys retain sodium and excrete potassium. This raises blood volume and blood pressure.
What are the main effects of cortisol?	It raises blood glucose and suppresses inflammation and immune activity. It breaks down glycogen, fats and muscle protein.
Which zone of the adrenal cortex makes aldosterone?	The zona glomerulosa, the outermost zone.
Which zone of the adrenal cortex makes cortisol?	The zona fasciculata, the middle zone.
Which zone of the adrenal cortex makes androgens such as DHEA?	The zona reticularis, the innermost zone. These androgens supplement gonadal sex hormones.
Which hormones does the adrenal medulla release?	Epinephrine and norepinephrine. Epinephrine makes up about four times more of the output.
A person faces sudden danger. Which gland releases the hormones of the fight-or-flight response?	The adrenal medulla. Heart rate, blood pressure and blood glucose rise, and the airways dilate.
Which pancreatic hormone lowers blood glucose?	Insulin, made by beta cells. It helps cells take up glucose and promotes glycogen storage in the liver.

QUESTION	ANSWER
Which pancreatic hormone raises blood glucose?	Glucagon, made by alpha cells. It makes the liver break down glycogen and stimulates fat breakdown.
Which pancreatic hormone inhibits the release of both insulin and glucagon?	Somatostatin, made by delta cells.
Which pineal gland hormone regulates the sleep-wake cycle?	Melatonin. Light lowers its production; darkness raises it and causes drowsiness.
What is the main role of testosterone?	It drives male reproductive development, sperm maturation and secondary sex characteristics. The testes make most of it.
What are the main roles of the estrogens?	They support female reproductive development, regulate the menstrual cycle and help maintain pregnancy. The ovaries make most of them.
What is the main role of progesterone?	It helps regulate the menstrual cycle and prepares and maintains the body for pregnancy. The ovaries and the placenta secrete it.
Which hormone made by the testes and ovarian follicles suppresses FSH?	Inhibin.
Which hormones from the thymus help T lymphocytes develop?	Thymosins.
Which hormone from the atria of the heart lowers blood volume and blood pressure?	ANP, atrial natriuretic peptide. It also lowers blood sodium.
Which kidney hormone stimulates red blood cell production in response to low oxygen?	Erythropoietin (EPO). It acts on the bone marrow.
Which kidney hormone is released when kidney blood flow falls and triggers the RAAS?	Renin. It promotes sodium and water reabsorption.

QUESTION	ANSWER
Which hormone from fat tissue signals satiety to the brain?	Leptin. Its level is proportional to body fat.
Which stomach hormone stimulates the release of hydrochloric acid?	Gastrin. It is released when the stomach is distended.
Which small intestine hormone makes the pancreas release bicarbonate?	Secretin. The bicarbonate buffers acidic chyme.
Which small intestine hormone promotes pancreatic enzyme secretion and bile release from the gallbladder?	Cholecystokinin (CCK).