

Final-Term Assignment

Course Title: Human Physiology I

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MLT

Q1: What is pituitary gland? Explain different lobes and hormones release from form it.

Ans. Anatomy of the Pituitary Gland

The pituitary has two lobes, the anterior and the posterior lobe. Each of the two lobes of the pituitary gland contains different types of cells and produces different types of hormones. The posterior lobe produces two hormones, vasopressin and oxytocin.

The pituitary gland secretes multiple hormones, including melanocyte-stimulating hormone MSH, or intermedin, adrenocorticotrophic hormone (ACTH), and thyrotropin thyroid-stimulating hormone, or TSH

What hormones does my pituitary gland produce?

adrenocorticotrophic hormone, which stimulates the adrenal glands to secrete steroid hormones, principally cortisol.

growth hormone, which regulates growth, metabolism and body composition.

luteinising hormone and follicle stimulating hormone, also known as gonadotrophins.

Q2: Write a difference between Appendicular and Axial skeleton ?

The main difference between axial and appendicular skeleton is that the axial skeleton makes up the central axis of the body whereas the appendicular skeleton connects the appendages to the axial skeleton. Furthermore, the axial skeleton consists of six parts: the skull, the ossicles of the middle ear, the vertebral column, hyoid, rib cage, and the sternum while the appendicular skeleton consists of limbs and girdles.

Axial and appendicular skeleton are the two main parts of the endoskeleton of vertebrates including humans.

What is the Axial Skeleton

The axial skeleton is the central core of the vertebrate skeleton. Human axial skeleton contains 80 bones. The six components of the axial skeleton are;

The skull Consists of 8 cranial and 14 facial bones

Hyoid bone A horseshoe-shaped bone in the anterior midline of the neck

Auditory ossicles The three bones in the middle ear

Vertebral column The 26 bones that make up the backbone

Sternum

Ribs The 24 ribs and the sternum collectively form the thorax

What is the appendicular skeleton

The appendicular skeleton is the structure that supports appendages. It consists of 126 bones in humans. The six components of the appendicular skeleton are;

Pectoral girdles – Left and right clavicle and 2 scapulae

Arms and forearms – Left and right humerus in the arms and 2 ulna and 2 radii in the forearm

Hands – The 16 carpals (16) in the wrist, 10 metacarpals, 10 proximal phalange, 8 intermediate phalanges and 10 distal phalanges

Pelvis – Left and right hip bone

Legs – Left and right femur in the thighs, 2 patellae in the knee, 2 tibiae and 2 fibulae in the leg

Feet and ankles – The 14 tarsals in the ankle, 10 metatarsals, 10 proximal phalanges, 8 intermediate phalanges, and 10 distal phalanges

Q3: What is Muscular tissue? Explain different Types of muscles.

Ans

Muscle Tissue

Muscle is a soft tissue that is highly specialized for the production of tension which results in the generation of force. Muscle cells, or myocytes, contain myofibrils comprised of actin and myosin myofilaments which slide past each other producing tension that changes the shape of the myocyte. Numerous myocytes make up muscle tissue and the controlled production of tension in these cells can generate significant force.

>Types of Muscle Tissue

Muscle tissue can be classified functionally, voluntary or involuntary and morphologically striated or non-striated. Voluntary refers to whether the muscle is under conscious control, striation refers to the presence of visible banding within myocytes which occurs due to organization of myofibrils to produce a constant direction of tension.

Skeletal Muscle

Skeletal muscle mainly attaches to the skeletal system via tendons to maintain posture and control movement for example contraction of the biceps muscle, attached to the scapula and

radius, will raise the forearm. Some skeletal muscle can attach directly to other muscles or the skin, as seen in the face where numerous muscles control facial expression.

Skeletal muscle is under voluntary control, although this can be subconscious for example when maintaining posture or balance. Morphologically skeletal myocytes are elongated and tubular and appear striated with multiple peripheral nuclei.

Cardiac Muscle Tissue

Cardiac muscle tissue is found only in the heart where cardiac contractions pump blood throughout the body and maintain blood pressure.

As with skeletal muscle cardiac muscle is striated, however it is not consciously controlled and so is involuntary. Cardiac muscle can be further differentiated from skeletal muscle by the presence of intercalated discs which control the synchronized contraction of cardiac tissues. Cardiac myocytes are shorter than skeletal equivalents and contain only one or two centrally located nuclei.

Smooth Muscle Tissue

Smooth muscle tissue is found associated with numerous other organs and tissue systems such as the digestive system or respiratory system. It plays an important role in the regulation of flow in such tissues for example aiding the movement of food through the digestive system via peristalsis.

Smooth muscle is non-striated, although it contains the same myofilaments they are just organized differently, and involuntary. Smooth muscle myocytes are spindle shaped with a single centrally located nucleus.

Q4: Write a note on Cycle of Breathing.?

Ans .

The Breathing Cycle is a description of the changes in pressure, lung volume, and airflow that occur during a single cycle of breathing. The major pressure gradient which controls expansion and contraction of the lung during the breathing cycle is that between the alveolar air and the intrapleural space; consequently, we will be focusing on this gradient. The breathing cycle can be divided into three basic stages including rest, inspiration, and expiration which are discussed separately below.

During rest there is no net movement of air into or out of the lungs and the lung volume is equivalent to the Functional Residual Capacity. Given that there is no net movement of air it is clear that the air pressure in the alveoli is equivalent to that of atmospheric pressure. However, the intrapleural pressure in a resting lung is roughly -5 cm H₂O, that is five centimeters of water, below that of atmospheric pressure at rest. The negative intrapleural pressure is a result of the opposing forces of the lung and chest wall

As explained in Integrated Pulmonary Compliance, the lungs display strong recoiling forces at FRC whereas the chest wall displays a tendency to spring outward. These opposing forces generate a negative pressure within the intrapleural space which is responsible for maintaining the lungs in an inflated state while at rest. If the negative intrapleural pressure were eliminated, say by raising it to that of atmospheric pressure as might occur in a pneumothorax, the lungs would collapse under their own recoiling force.

Q5: Write a detail note on Function of Integumentary system.

Ans

The skin and accessory structures perform a variety of essential functions, such as protecting the body from invasion by microorganisms, chemicals, and other environmental factors; preventing dehydration; acting as a sensory organ; modulating body temperature and electrolyte balance; and synthesizing vitamin D.

The skin performs six primary functions which include, protection, absorption, excretion, secretion, regulation and sensation.

- Protection. The skin functions as our first line of defense against toxins, radiation and harmful pollutants.
- **Absorption.**
- **Excretion.**
- **Secretion.**
- **Regulation**

- **Sensation.**