

Nombre del alumno: Cecilia Jhaile Velázquez Vázquez

Nombre del profesor: Jezabel Ivonne Silvestre Montejo



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PASIÓN POR EDUCAR

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“the human boy system”

the human boy system

SKELETAL SYSTEM

what is it for?

- Some bones provide a framework for the body
- Some bones contain red marrow that produces blood cells and yellow marrow that also stores fat
- Some bones protect our internal organs.

what shapes it?

consists of all our bones, teeth, cartilage, and joints

types of bones

- Cartilage
 - Cartilage is softer than bones and is somewhat flexible, like rubber. Much of an infant's skeleton consists of cartilage, which is gradually replaced by bone.
- The Skull
 - the bones that enclose the brain and support the face and teeth
- The Backbone

bones that make it up

- Skull
- Spinal column (backbone)
- Clavicle (collar bone)
- Scapula (shoulder blade)
- Sternum (breast bone)
- Ribs
- Humerus
- Radius
- Ulna
- Pelvis
- Tailbone (coccyx)
- Carpals
- Metacarpals
- Phalanges
- Femur
- Patella
- Fibula
- Tibia
- Tarsals
- Metatarsals
- Phalanges
- Calcaneus

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MUSCULAR SYSTEM

what is it for?

- for body movements
- generate heat
- as protection of internal organs

How do muscles?

Tendons attach one end of the biceps and triceps to the shoulder blade and the other end to the radius or ulna. Each muscle can pull, but it cannot push. That is why two muscles are needed to bend the arm back and forth at the elbow

types of muscles.

- Skeletal muscle** — These muscles are attached to bones. They are also called 'voluntary muscles' because we can consciously contract them
- Smooth muscle** — These are found in the walls of the digestive tract, urinary bladder, arteries, and other internal organs. They are 'involuntary muscles' because we do not consciously control them
- Cardiac muscle** — These are the muscles of the heart. Their contraction is involuntary and continues in a coordinated rhythm as long as we live

muscles that compose it

- Frontali
- Occuli Orbicularis
- Orbicularis oris
- Trapezius
- Deltoid
- Pectorals
- Biceps
- Triceps
- Rectus abdominus
- Finger flexors
- Finger extensors
- Sartorius
- Adductor
- Quadriceps femoris
- Gastrocnemius
- Soleus
- Peroneus

the human digestive system

DIGESTIVE SYSTEM

what is it for?

breaks down food into materials the body can use
breaks down food into materials the body can use
breaks down food into materials the body can use

stages of digestion

- ✚ Mouth starts mechanical and chemical digestion of food with the help of teeth, tongue, and saliva
- ✚ Salivary glands produces saliva, which helps lubricate food for easier swallowing; contains antibacterial agents and the enzyme amylase, which breaks down starch
- ✚ Pharynx entering food triggers its swallowing reflex
- ✚ Oesophagus a muscular tube that squeezes food along to the stomach
- ✚ Stomach stores, mixes, and digests food with the gastric juice it produces, which consists of mucus, enzymes, and hydrochloric acid, producing acid chime
- ✚ Liver blood carrying nutrients from the small intestine passes through the liver, which filters it and breaks down and synthesizes proteins, breaks down carbohydrates into glucose and glycogen, produces bile
- ✚ Gallbladder collects bile from the liver, and discharges it into the small intestines, where it helps digest fat
- ✚ Pancreas a gland that produces digestive enzymes and an alkaline solution that neutralizes the acid chyme that comes from the stomach; it also secretes the hormone, insulin
- ✚ Small intestine a 6 metre long tube in which most of chemical digestion occurs; nutrients are absorbed from here into the bloodstream
- ✚ Large intestine absorbs water from the food wastes that have not been digested in the small intestine; also absorbs some important vitamins that are produced by the large numbers of bacteria it harbours
- ✚ Rectum stores feces (which consist mainly of indigestible plant fibres, bacteria, and water) until they can be eliminated from the body through the anus

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RESPIRATORY SYSTEM

what is it for?



bring oxygen from the air into the blood and remove carbon dioxide (CO₂) into the air

what is the breathing process?

1. In our lungs, O₂ passes from the air into our blood, and CO₂ passes from our blood into the air. Some water vapour is also released into the air.
2. Our circulatory system transports O₂ and CO₂ to and from all the parts of our body. Haemoglobin molecules in our red blood cells transport O₂.
3. Cells take up O₂ and release CO₂

parts

- Sinuses hollow spaces in the skull that are normally filled with air
- Nasal cavities the temperature and humidity of the air we breathe is adjusted in these cavities
- Pharynx its muscles help shape the sounds of our speech
- Larynx contains the vocal cords
- Trachea (windpipe)
- Bronchus
- Bronchiole
- Lung where gas exchange occurs
- Diaphragm the muscular structure that makes us breathe - when it contracts, it pulls down and increases the volume of air in the lungs
- Heart
- Epiglottis
- Oesophagus

What happens in the aveoli?

O₂ from the air diffuses through the thin layer of cells that forms the aveoli walls. Then it enters the web of capillaries that surround each aveoli. CO₂ goes in the opposite direction, from the capillaries to the air. In the capillaries, O₂ diffuses into red blood cells. Red blood cells contain protein molecules called haemoglobin, which contain iron atoms. Each iron atom can carry an O₂ molecule. When haemoglobin binds O₂ it turns red. Blood without oxygen looks bluish - after passing through the

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CIRCULATORY SYSTEM

what is it for?

- Transports respiratory gases, nutrient molecules, wastes and hormones throughout the body
- regulates our body temperature

how does it work?

- The heart pumps the blood to keep it circulating. It is made of cardiac muscle, which is relaxed when blood enters the atria and ventricles.
- Then there is a slight contraction of the muscles at the top of the heart, which forces more blood into the ventricles.
- The main heart muscles (at the bottom of the heart) contract to force blood out of the ventricles. One-way valves prevent blood from going back into the atria. Blood flows out of the right ventricle through the pulmonary arteries into the lungs, and out the left ventricle through the aorta to the rest of the body
- When the heart relaxes again, blood starts to flow from the aorta and pulmonary valves back towards the relaxed ventricles. But it pushes against the semilunar valves, which snap shut.

where does it start?

An electrical signal is generated by the SA node, and it makes the muscles of the atria contract. The signal spreads, but is slightly delayed in the AV node, which allows the atria time to empty. Then it reaches the bottom of the heart and travels up the sides of the ventricles, causing them to strongly contract.

types of blood

- Arteries: carry blood from the heart to all parts of the body; all arteries (except the pulmonary arteries) carry oxygenated, red blood.
- Veins: carry blood from all parts of the body back to the heart; all veins (except the pulmonary veins) carry blood that is depleted of oxygen and therefore bluish in colour
- Capillaries: very narrow tubes not shown in this diagram, they connect the ends of all arteries to to veins; they deliver and pick up gases, nutrients, and waste products

parts that make it up?

- Carotid artery
- Jugular vein
- Superior vena cava
- Aorta
- Pulmonary vein carries blood from the lungs to the left atrium
- Pulmonary artery carries blood from the right ventricle to the lungs
- Heart pumps blood to the body
- Abdominal aorta
- Inferior vena cava
- Hepatic artery carries blood to the liver
- Portal vein carries blood from the stomach, intestines, spleen, and pancreas to the liver
- Iliac artery
- Femoral artery
- Femoral vein

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LYMPHATIC SYSTEM

what is it for?

- supplies your food and carry waste products
- provides a way to return excess fluid to the circulatory system, thus keeping fluids in balance