

Test 3

Module 5 & 6

Define the terms:

Muscle - A tissue that has the ability to contract to help with movement

Involuntary - A type of muscle that contracts without conscious control

Voluntary - A type of muscle that is controlled by the individual, such as the striated muscle

Striated - A type of muscle that connects to bone

Smooth - A type of involuntary muscle that makes up the walls of various organs

Cardiac - Type of muscle that is found only in the heart

Sarcomere - Basic unit of muscle contraction; segment between two neighboring Z-lines

Actin - A muscle protein. It is the major component of the I-band and helps to compose the thin filaments

Myosin - A muscle protein that is a component of the A-band; thick filaments

Myofibril - located within muscle cells, composed of thick myosin) and thin (actin) filaments

Muscle Contraction - when the sarcomere shortens and the Z-lines move closer together

A-band - area where actin and myosin overlap

I-band - small gap between the myosin and the Z band at the end of the sarcomere

Z-line - proteins that link sarcomeres together

ATP - energy source for muscle contraction and relaxation

Calcium - trigger for muscle contraction

Sprain - an injury to the joints caused by overstretching

Strain - an injury to the muscles caused by overstretching

Cramp - a painful, involuntary muscle contraction, usually caused by fatigue or strain

1. During muscle contraction, what roles do heart rate, oxygen, carbon dioxide and heat play in maintaining homeostasis?

During a workout the heart revs up to twice the normal rate. Blood must carry more oxygen to feed straining muscles. Heat is a waste product that must be eliminated through the body. As glycogen fuel is consumed, muscles produce carbon dioxide. The blood rushes it back to the lungs to be exhaled. (Taken directly from the GA Virtual website)

2. What percent of a person's weight is due to muscle? 50%

3. How many different muscles are located in human body? 656

4. All people have the same number of muscle cells. True or False? true

5. Why is a high protein diet needed by body builders? Muscles are made of protein.

6. Muscles are attached to bones by: tendons

7. How are glycogen and oxygen delivered to muscle cells? They are conveyed to the muscles by blood. Blood provides a constant flow of oxygen into the muscles and brings fresh supplies of glycogen. (Taken directly from the GA Virtual website.)

8. Strong connect tissue that connects bones is called: ligaments

9. Describe the following injuries involving muscles:

- a. sprain- When a ligament is stretched or torn
- b. muscle strain- When a muscle is overstretched.
- c. cramp- a sudden strong contraction of a muscle

Label the muscles:

(NEED THE MUSCLE DIAGRAM HERE)

Define the terms:

Central Nervous System - portion of the nervous system that includes the brain and the spinal cord

Brain - contained within the skull, includes the higher nervous centers

Spinal Cord - conducts sensory and motor nerve impulses to and from the brain

Peripheral Nervous System - part of the nervous system not including the brain and spinal cord

Nerve - a bundle of nerve fibers running to and from all parts of the body

Neuron - a cell that can conduct nerve impulses

Dendrite - short fiber that conducts toward the cell body of the neuron

Axon - a long fiber that conducts away from the cell body of the neuron

Ganglia - clusters of nerve cells

Resting Membrane Potential -the charge a neuron has when it is at rest; results in a negative charge

Action Potential - the charge a neuron has when it sends information down an axon; results in a positive charge

Myelin Sheath - a protective covering around a neuron that increases the speed of electrical current

nodes of Ranvier - gaps between the myelin sheath in different cells

Concentration Gradient - difference in solute within a solution

Synaptic Vesicles -stores various neurotransmitters that get released at the synapse

Synaptic Cleft - the space between two nerve cells

Cerebrum - upper part of the brain; consciousness and control of behavior

Cerebellum - located underneath the brain; important in motor control

Brain Stem - part of the brain that connects the brain to the spinal cord

Pons - bridge between two hemispheres of the brain

Thalamus - receives messages from the senses and relays it to the correct part of the brain

Hypothalamus - links the nervous system to the endocrine system

Cranial Vault - space in the skull within the neurocranium, occupied by the brain

Vertebral Column - composed of 24 vertebrae that houses the spinal cord

Foramen Magnum - large opening in the occipital bone of the cranium; one of the openings where the medulla oblongata enters and exits the skull vault

Describe the parts of the neuron. There is the cell body which contains the nucleus. Dendrites are thread-like substances that carry messages to the cell body. The axon and axon terminals carry information in and out of the cell. The myelin keeps the electrical charge from traveling out of the axon. (Taken directly from the GA Virtual website)

Name the three kinds of neurons and describe what job they perform. The three kinds of neurons are sensory neurons, interneurons, and motor neurons. The sensory neurons carry messages into the cell, interneurons carry the messages from the sensory neurons to the motor neurons, and the motor neurons send signals into the motor cells. (Taken directly from the GA Virtual website.)

What is a synapse and how do nerve impulses pass across a synapse? A synapse is the gap between neurons. Nerve impulses change to a chemical signal when they near the synapse and it triggers an electrical signal when it enters the next neuron.

What is a reflex action and how is this a good test of the nervous system? A reflex action is when signals are sent out very quickly by being sent straight to the spinal cord and then to motor neurons for quick action. The brain becomes aware of the situation after it has taken place. This is a good test of the nervous system because it insures that our body will be protected from immediate danger.

Why is the surface of the brain covered with folds and grooves? The brain is covered with folds and grooves because it increases the surface area of the cerebrum.

Why is sleep important to maintaining a healthy body? Sleep is important to maintain a healthy body because it gives the body time to grow.

How is comparing the human brain to a computer an unfair comparison for the computer? It is unfair because a computer is just a fast calculating tool whereas the brain can do and store much more than a computer.

Why does the brain require 20% of the energy produced by the body? It requires 20% of our body's energy because the body is trying to nourish it and keep it healthy.

What are the five senses that supply the brain with information? Sight, smell, touch, taste, and hearing. All of the above answers were taken directly from the GA virtual Website.

Define the functions of these parts:

a. cerebellum- lies between the brain stem and the rear of the cerebrum. Controls posture, balance, and coordination.

b. parietal lobe- top of the head. It receives the data from the skin. Processes touch and sensation information

c. temporal lobe- just above the ears. Controls hearing, speech perception and memory.

d. frontal lobe- lie under the forehead. Controls planning, reasoning, movement, and some aspects of speech

e. occipital lobe- lies at the back of the head just above the cerebellum. Controls sight and all visual information.

f. brain stem- Manages breathing, heartbeat, sleeping, waking, digestion, body temperature, and elimination of wastes all without higher level thinking involved.

g. corpus callosum- connects the left and right hemispheres of the brain. Carries the messages needed in order to coordinate the left and right brain functions.

Give a brief description and the cause of each of these disorders and injuries:

Head Injuries Category:

Concussion- a jarring injury to the brain generally caused by a blow to the head.

brain contusion- a bruise of the brain. Means there is some bleeding of the brain

skull fracture- an injury in which the skull cracks

hematoma- bleeding the brain that collects and clots forming a bump

Disorders:

Stroke- happens when an artery that carries blood to the brain becomes blocked

Dementia- a problem in the brain that makes it hard for a person to remember, learn, and communicate.

Parkinson's Disease- disorder of nerve cells that control muscles. Death of cells that transport dopamine.

Migraines- headaches caused in part by changes in the level of serotonin.

Epilepsy- a brain disorder that causes people to have recurring seizures.

Bell's Palsy- a condition in which the muscles of one side of the face become temporarily paralyzed.

Multiple Sclerosis- an autoimmune disease that affects the nervous system and damages the myeline.

What is the function of the central nervous system? The central nervous system interprets incoming sensory information and send out responses based on past experiences and current conditions

The central nervous system consists of the brain and the spinal cord.

The brain and spinal cord are bathed and protected by

cerebrospinal fluid.

Is the following sentence true or false?

The left hemisphere of the cerebrum controls the body's left side. False, it controls the right side of the body.

Is the following sentence true or false?

The outer surface of the cerebrum is called the cerebral cortex. true

What is gray matter, and where is it found? Gray matter is nervous tissue of cells. It is found in the cortex of the brain. It is a main component of the brain that passes sensory information to other cells.

Reference:

www.medterms.com

23. The three regions of the brain stem are the pons, medulla oblongata, and the midbrain