**UNIT 4 STUDY GUIDE**

**4.2.1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Examples of where can you find it? | Voluntary or involuntary? | Striated or not? | 1 or multiple nuclei |
| Skeletal |  |  |  |  |
| Smooth |  |  |  |  |
| Cardiac |  |  |  |  |

1. Sketch a simple drawing of skeletal, smooth, and cardiac muscle.
2. What does it mean to be striated?
3. Describe the organization of muscle from sarcomere to whole muscle.
4. Describe where the cell membrane of the muscle cell is and the organization of the three layers of connective tissue in a skeletal muscle.
5. List 4 different ways that muscles are named
6. What is meant by origin and insertion? Where each is usually found?
7. Why is a muscle considered an organ (give an example of each type of tissue involved)

**4.2.2**

1. Name the 4 muscles of the chest that we modelled in 4.2.2
2. What is the job of the pectoralis major?
3. What is the advantage of multiple “heads” of a single muscle?
4. Is the pectoralis major an adductor or abductor?
5. Explain how the muscles pectoralis major and serratus anterior show two different ways in which muscles are named.
6. Would the part of the pectoralis major that attaches to the ribs and sternum be the insertion or origin of the muscle?

**4.2.4**

1. What two things are required for muscle contraction?
2. Calculate the percent change of a muscle that contracts from 25 mm to 20 mm.
3. Why did solution B show the greatest percent change?

**4.2.5**

1. Describe the structure of actin including the two regulatory proteins that are on it.
2. Describe the structure of myosin and its function in the sliding filament theory.
3. Where is the neuromuscular junction? What does it store? Where is it found in the muscle?
4. Describe the relationship between calcium / tropomyosin / acetylcholine/ troponin
5. List the 4 steps of the sliding filament theory.
6. In a paragraph, starting with the frontal lobe generating an impulse, describe how a skeletal muscle can contract using the 4 steps of the sliding filament theory.
7. Why can muscles go into rigor mortis even after death?

**4.2.6**

1. Define: Plexus
2. What two nerves did we model in this lesson?
3. Which nerve travels along the medial arm? Lateral?
4. Which nerve supplies the back of the forearm and hand?
5. What fingers does the ulnar nerve supply?
6. What is the nerve that is compressed in carpal tunnel syndrome?
7. What are the symptoms of carpal tunnel syndrome?
8. What fingers does carpal tunnel affect?

**4.1.1**

1. What is similar and different about a tendon and ligament?
2. What is a joint?
3. What are the three structural types of joints?
4. Which type of joint allows the greatest movement?
5. What is the purpose of articular cartilage?
6. How do bones, muscles, and joints work together to move the body?

|  |  |  |
| --- | --- | --- |
| Type of Synovial Joint | Example of where found | Movement allowed |
| Saddle |  |  |
| Plane |  |  |
| Ball and socket |  |  |
| Hinge |  |  |
| Pivot |  |  |
| Condyloid |  |  |

**4.1.2**

1. Discuss and give an example of isotonic and isometric contraction.
2. What is the difference between active and passive range of motion?
3. Define each word: flexion/ extension/ circumduction/ dorsiflexion/ plantarflexion/ adduction/ abduction/ depression/ elevation
4. Which tool did we use to measure joint range of motion?
5. What is hyperextension?
6. What kind of joint is every on the measurements we made in this activity?

**4.3.1**

1. Label a heart diagram from memory
2. List the path of a red blood cell through the heart and body.
3. Describe the parts of the electrical system of the heart.
4. Describe the relationship between the cardiovascular and respiratory systems
5. How do smooth, skeletal, and cardiac muscle work to move blood throughout the body?
6. What is hemoglobin’s role in the cardiovascular system?

**4.3.2**

1. Define and artery and vein.
2. Describe why you can have varicose veins, but not arteries.
3. Describe two ways that veins are able to get blood back to the heart against gravity in the body.
4. What are the three main layers of a blood vessel? Which is smooth muscle thickest in?
5. Which type of vessel only has epithelial tissue? Why is this an advantage?

**4.3.3**

1. Locate the major arteries and veins on a picture.

**4.3.4**

1. Name 4 places to palpate a pulse.
2. What is a “normal” resting heart rate?
3. Calculate the cardiac output given that the stroke volume is 75ml/min and the heart rate.

**4.3.5**

1. Define Systole and diastole.. Which valves are closed/ open during systole?
2. Calculate the ABI given BP measurements
3. Describe the role of the endocrine system to blood pressure
4. Describe the role of the kidneys and blood pressure.
5. Which disease is associated with low ABI values?