

Chapter 9 Study Guide

1. What are the functions of muscles?

Heartbeats, muscle tone, distribution of heat, moving bones

2. What is the order of muscular organization from biggest to smallest and what is the outer covering of each part?

Muscle (epimysium) -> fascicle (perimysium) -> Muscle Fiber (endomysium) -> myofibrils -> filaments

Fascia surrounds and separates muscles

3. What are myofibrils made of?

Actin and myosin

4. Compare and contrast tendons with aponeurosis

Tendon cordlike connects muscle to bone, aponeurosis fibrous sheet of connective tissue that connects muscle to muscle

5. What is the importance of sarcomeres?

Give muscles striated appearance, muscles are a collection of sarcomeres, functional unit of muscle contraction

6. What neurotransmitter triggers muscle contraction, and how does your body break it down?

Acetylcholine, which is broken down by acetylcholinesterase

7. What are the benefits to your muscles of working out?

Produce less lactic acid, more mitochondria,

8. What is a synapse?

Space between neurons

Motor unit – motor neuron and the muscle connected to it.

9. What is the relationship between creatine and ATP?

creatine phosphate supplies energy to regenerate ATP from ADP and phosphate, ATP provides energy for myofilament movement

10. What is the difference between concentric, eccentric, and isometric contractions?

Concentric- muscle shortens, eccentric – lengthens, isometric – no movement

11. What is a sustained contraction? What about a tetanic contraction?

Sustained contraction (muscle tone)

12. Compare and contrast fast and slow twitch fibers?

Slow twitch muscle fibers

- Often called red fibers
- Contain myoglobin, which stores oxygen
- Also have a constant flow of oxygen containing blood
- Contain many mitochondria, which produce ATP
- These fibers can contract for a long time without tiring

Fast twitch muscle fibers

- Called white fibers
- Poorer blood supply than slow twitch
- Fewer mitochondria
- reabsorb calcium ions and break up ATP faster
- Fatigue easily
- All muscles are made up of both slow and fast twitch fibers

13. What makes cardiac muscles unique?

Is only in the heart, responds in an all or none manner, excites itself, involuntary

14. What do smooth muscles lack, that other muscles have?

Smooth muscle contracts and relaxes more slowly, lacks striations

15. What is a myogram and draw an example of one with labels?

A recording of a muscle twitch

Latent period – Delay between stimulus and muscle responds

16. How do prime movers, antagonist, and synergist, interact with each other?

Insertion is the movable end of a muscle

Prime mover – muscle responsible for an action

Synergist – helps the prime mover

Fascia – Connective tissue that separates muscle