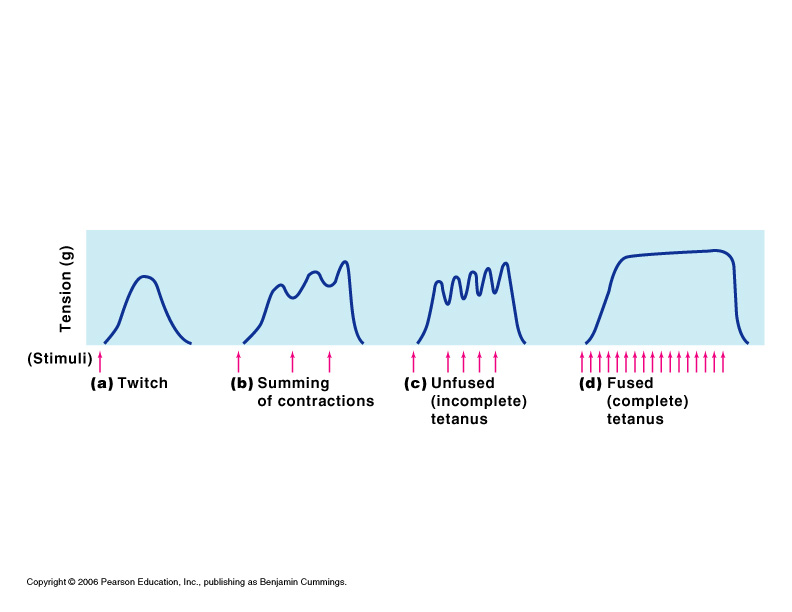
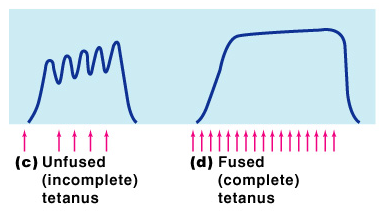
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Muscular Systems Test

**Section 1: For the questions below, choose ONE correct answer.**

1. A twitch is…
   1. Also called “treppe”
   2. A single contraction that does not completely return to a resting state
   3. A summing of contractions
   4. A brief contraction
2. “Muscle fiber contraction is all or none” means that when received a signal…
   1. all muscle fibers either contract fully or none contract at all
   2. all muscle fibers contract to various degrees or none contract at all
   3. each individual muscle fiber either contracts fully or not at all
   4. each individual muscle fiber contracts to a specific degree based on signal strength
3. For a given muscle, the “insertion”…
   1. is attached to the moveable bone
   2. is connected to a joint
   3. mostly lies along the immoveable bone
   4. is attached to the immoveable bone
4. One way to avoid losing 50% of muscle strength by age 80 would be to…
   1. Run marathons
   2. Jog at least five times a week
   3. Drink protein shakes
   4. Lift weights
5. Which Image below best depicts a “twitch”? A
6. Which image below best represents “fused tetanus”? D

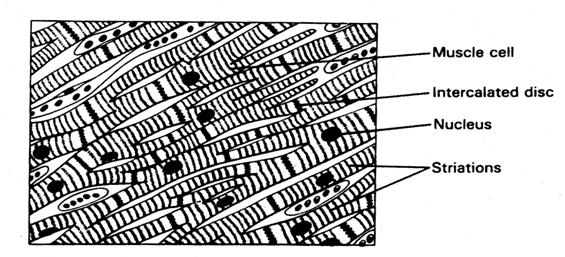
A B C D

1. A lizard can only undergo anaerobic glycolysis. Which of the following is the easiest way to catch one?
   1. Slowly sneak up on it from behind and you will catch it by surprise.
   2. Keep chasing it and it will eventually run out of energy.
   3. Stare at it for a long time and it will become petrified.
   4. Set a trap for it using one of its favorite foods.
2. To remove lactic acid from your muscles, you need…
   1. Oxygen
   2. Carbon Dioxide
   3. Glucose
   4. Pyruvic Acid
3. A tendon…
   1. Connects bone to bone
   2. Connects bone to muscle
   3. Connects muscle to muscle
4. Muscles only store about \_\_\_\_\_ seconds worth of ATP.
   1. 1-3
   2. 4-6
   3. 7-10
   4. Muscles do not store ATP
5. “A” bands are also known as…
   1. light bands
   2. dark bands
   3. thin filaments
   4. thick filaments
6. Which of the following is in order from largest to smallest?
   1. Muscle Tissue, Myofibril, Muscle Cell, Myofilament
   2. Muscle Tissue, Myofilament, Muscle Cell, Myofibril
   3. Muscle Tissue, Muscle Cell, Myofibril, Myofilament
   4. Muscle Tissue, Muscle Cell, Myofilament, Myofibril
7. Sarcomeres…
   1. Appear once in every muscle fiber
   2. Appear once in every muscle cell
   3. Repeat many times within a single muscle cell
8. When a sarcomere contracts…
   1. Myosin filaments stretch
   2. Myosin filaments contract
   3. The H zone becomes larger
   4. The H zone becomes smaller
9. About how many muscles are there in the human body?
   1. 100-200
   2. 300-400
   3. 600-700
   4. 900-1000
10. The reason we do not know the exact number of muscles in the body is…
    1. We have not yet discovered them all
    2. It is hard to tell which fibers make up one set muscle
    3. Everybody develops a slightly different number of muscles
    4. If you engage in anaerobic exercise you develop more muscles than other people
11. How many Z discs can be found in 3 connected sarcomeres? **Hint: Draw them**
    1. 1
    2. 3
    3. 4
    4. 6
12. If I draw a vertical line (up and down) through a sarcomere and I only go through myosin filaments, I am in the…
    1. Z disc
    2. I band
    3. H zone
    4. Sarcolemma
13. ATPase is…
    1. A molecule that is broken down to release energy
    2. An enzyme molecule that breaks down ATP to release energy
    3. Another term for ATP
    4. The molecule that ATP turns into once it is broken down
14. Stretching and massaging muscles can help to alleviate pain from…
    1. Pulled muscles
    2. Tetanus
    3. Muscle cramps
    4. Muscular dystrophy
15. Pain, swelling, and internal bleeding are symptoms of…
    1. Pulled muscles
    2. Tetanus
    3. Muscle cramps
    4. Muscular dystrophy

**Section 2: For the questions below, choose A for Aerobic Exercise or B for Anaerobic Exercise.**

1. Muscle size increases B
2. Muscle becomes more fatigue resistant A
3. Heart Enlarges A
4. Muscle fibers increase number of mitochondria A
5. Oxygen storage in muscle fibers improves A
6. Increased blood supply A
7. Lifting weights B
8. Sprinting B
9. More contractile filaments are made within individual cells B

**Section 3: For the questions below, choose ALL correct answers (there may be one or many).**

1. Which of the following muscle types are usually voluntary?
   1. Cardiac
   2. Smooth
   3. Skeletal
2. Which of the following muscle types are usually striated?
3. Cardiac
4. Smooth
5. Skeletal
6. Which of the following muscle types are usually multinucleated?
7. Cardiac
8. Smooth
9. Skeletal
10. Which of the following is a result of aging?
11. Connective tissue increasing
12. Amount of muscle tissue decreasing
13. Muscles becoming stringier
14. Loss of muscle mass
15. Which of the following is true for skeletal muscle?
16. All muscles must cross a joint
17. The bulk of a muscle lies proximal to the joint crossed
18. Muscles only push (they never pull)
19. Muscles always work in pairs
20. What happens within a muscle cell during oxygen debt?
    1. Decreased lactic acid
    2. Increased lactic acid
    3. Increased ATP
    4. Decreased ATP
21. Which prefix(es) below refer(s) to muscles?
    1. Myo
    2. Sarco
    3. Mys
    4. Sarno
22. Thick filaments…
    1. Are made of myosin protein
    2. Are made of actin protein
    3. Contain ATPase enzymes
23. Thin filaments…
    1. Are made of myosin protein
    2. Are made of actin protein
    3. Contain ATPase enzymes
24. Which of the following are functions of muscles?
    1. Produce movement
    2. Maintain posture
    3. Stabilize joints
    4. Generate heat
25. Smooth muscle can be found in your…
    1. Intestines
    2. Stomach
    3. Bladder
26. Which of the following can be found within a skeletal muscle cell?
    1. Nucleus
    2. Myofibril
    3. Sarcolemma
    4. Myofilament
27. What type of muscle tissue is represented in the image below?
    1. Cardiac
    2. Smooth
    3. Skeletal

**Section 4: For the questions below, choose A for Aerobic Respiration or B for Anaerobic Glycolysis.  
You may choose A & B if both answers are correct.**

1. Requires oxygen A
2. Pyruvic acid is formed B
3. Glucose is broken down to produce ATP AB
4. Glucose is broken down to carbon dioxide and water A
5. Lactic acid is formed B
6. Faster process than the other (only one answer) B
7. Requires much more glucose than the other (only one answer) B