**Muscular System Study Guide**

* Study your notes
  + Be sure to read a section and take a break to review
  + Note all the terms in the notes
* Study your vocabulary
  + This will help you recognize what exactly the questions are asking
  + If you can’t recognize a term you will have problems
* Study your Checkpoints
  + Questions will be pulled directly from your checkpoint questions
  + Don’t memorize the answer; instead, understand the concepts
* Online Book
  + Take the post test to see where you are at before you take the actual test. Don’t forget we left some stuff out
  + Take the quizzes and games to help test yourself
* Learning Outcomes
  + 10-1 Students can specify the functions of skeletal muscle tissue.
    - Skeletal muscles
    - Make a chart comparing and contrasting the 3 types of muscle tissue. (nuclei/striations/voluntary)
    - Identify and describe the 6 major functions of skeletal muscle.
  + 10-2 Students can describe the organization of muscle at the tissue level.
    - Epimysium
    - Perimysium
    - Fascicle
    - Endomysium
    - Myostatellite cells
    - Tendon
    - Aponeurosis
    - Using figure 10-1, sketch a picture showing the organization of skeletal muscles.
      * Label and briefly describe the 3 connective tissues.
      * Label a tendon, and the location of blood vessels and nerves.
    - How would severing the tendon attached to a muscle affect the muscle’s ability to move a body part?
  + 10-3 Students can explain the characteristics of skeletal muscles fibers, and identify the structural components of a sarcomere.
    - Myoblasts
    - Sarcolemma
    - Sarcoplasm
    - Transverse tubules
    - Myofibrils
    - Myofilaments
    - Thin filaments
    - Thick filaments
    - Sarcoplasmic reticulum
    - Terminal cisternae
    - Triad
    - A bands
    - I bands
    - M line
    - H band
    - Zone of overlap
    - Z lines
    - Titin
    - Filamentous actin
    - G-actin
    - Nebulin
    - Active site
    - Tropomyosin
    - Troponin
    - Cross-bridges
    - Sliding filament theory
    - Using figure 10-3, draw and label the structure of a skeletal muscle fiber.
    - Where would you expect the greatest concentration of Ca2+ in resting skeletal muscle to be?
    - Using figure 10-4a, draw and label the sarcomere structure.
    - Why do skeletal muscle fibers appear striated when viewed through a light microscope?
    - Using terms and figure 10-6, outline the levels of functional organization in a skeletal muscle.
    - Using figure 10-8, describe what happens when a skeletal muscle fiber contracts? (sliding filament theory)
  + 10-4 Students can identify the components of the neuromuscular junction, and summarize the events involved in the neural control of the skeletal muscle contraction and relaxation.
    - Neuromuscular junction
    - Excitation-contraction coupling
    - Contraction cycle
    - Briefly describe/outline the events that occur at a neuromuscular junction.
    - Briefly describe/outline the events that occur during the contraction cycle.
    - What has to happen in order for muscles to relax?
    - How would a drug that blocks Ach release affect muscle contraction?
    - What would happen to a resting skeletal muscle if the sarcolemma suddenly became very permeable to Ca2+?
    - Predict what would happen to a muscle if the motor end plate failed to produce acetylcholinesterase.
  + 10-5 Students can describe the mechanism responsible for tension production in a muscle fiber, and compare the different types of muscle contraction.
    - Motor unit
    - Recruitment
    - Muscle tone
    - What constitutes a motor unit?
    - How are recruitment and motor units related?
    - How is muscle tone and recruitment related?
    - Define and related motor units, recruitment, and muscle tone.
    - List and describe the 3 mechanisms used to return muscle to resting length.
  + 10-6 Students can describe the mechanisms by which muscle fibers obtain the energy to power contractions.
    - Aerobic metabolism
    - Glycolysis
    - Lactic acid
    - Fatigued
    - Recovery period
    - Oxygen debt
    - Compare and contrast aerobic metabolism and glycolysis.
    - Compare energy use and the level of muscular activity.
    - What is produced at peak levels of muscular activity?
    - How do muscle cells continuously synthesize ATP?
    - What is muscle fatigue?
    - List the various causes of muscle fatigue.
    - Define oxygen debt.
    - In what ways do hormones play a role in skeletal muscle?
  + 10-7 Students can relate the types of muscle fibers to muscle performance, and distinguish between aerobic and anaerobic endurance.
    - Force
    - Endurance
    - Fast fibers
    - Slow fibers
    - Myoglobin
    - Intermediate fibers
    - White muscles
    - Red muscles
    - Hypertrophy
    - Atrophy
    - Anaerobic endurance
    - Aerobic endurance
    - Differentiate between force and endurance.
    - Identify and contrast the three types of skeletal muscle fibers.
    - Differentiate between white muscle and red muscle.
    - Contrast hypertrophy and atrophy and provide, and example of each.
    - Compare and contrast anaerobic and aerobic endurance.
    - Why would a sprinter experience muscle fatigue before a marathon runner would?
    - Which activity would be more likely to create an oxygen debt: swimming laps or lifting weights?
    - Which type of muscle fibers would you expect to predominate in the large leg muscles of someone who excels at endurance activities, such as cycling or long distance running?
  + 10-8 Students can identify the structural and functional differences between skeletal muscle fibers and cardiac muscle cells.
    - Cardiac muscle tissue
    - Cardiac muscle cells
    - Intercalated discs
    - Automaticity
    - Pacemaker cells
    - Compare and contrast skeletal muscle and cardiac muscle tissue.
    - What feature of cardiac muscle tissue allows the heart to act as a functional syncytium? How?
    - List the functional characteristics of cardiac muscle tissue.
  + 10-9 Students can identify the structural and functional differences between skeletal muscle fibers and smooth muscle cells, and discuss the role of smooth muscle tissue in systems throughout the body.
    - Smooth muscle tissue
    - Nonstriated
    - Dense bodies
    - Plasticity
    - Pacesetter cells
    - Compare and contrast skeletal muscle and smooth muscle.
    - Identify the structural characteristics of smooth muscle tissue.
    - List and briefly describe the functional characteristics of smooth muscle.