

PRACTICE EXAMS

ON THE

MUSCULOSKELETAL

SYSTEM

MODEL ANSWERS INCLUDED



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A Message From Our Team

Revising for medical exams is stressful; believe us, we know from experience! Trying to balance depth of knowledge with breadth of knowledge is always the challenge. And as a student, it's often hard to know where the right balance is, and it's easy to go down unnecessary and time-consuming rabbit holes that won't help you in the exams. That's where the experienced team at MedStudentNotes comes in!

In this series of **PRACTICE EXAMS** we have used our medical experience to create a comprehensive set of quizzes that are tailored just right to help you to ACE your exams and maximize retention. We have created numerous mini-quizzes (both multi-choice and short-answer) on all the subtopics relating to this subject. That way you can do them at your own pace and correct the questions you get wrong there and then!

If you are new to us, here are a few things to help get the most out of these Practice Exams:

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What's included: A comprehensive set of university-level multiple-choice (MCQ) and short-answer (SAQ) exam questions covering everything to do with **the Musculoskeletal System**. All answer keys are provided directly after each quiz so that you can revise and reassess as you go, helping you learn better and improve retention.

Quizzes in this booklet:

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MCQ Quiz: General Overview of the Skeletal System

1. What is the primary function of the skeletal system?
 - A. Protection
 - B. Support
 - C. Movement
 - D. All of the above
2. Which of the following cells is responsible for bone resorption?
 - A. Osteoblasts
 - B. Osteoclasts
 - C. Osteocytes
 - D. Chondrocytes
3. What is the main inorganic component of bone?
 - A. Collagen
 - B. Hydroxyapatite
 - C. Elastin
 - D. Chondroitin sulfate
4. Which type of cartilage is found in the articular surfaces of joints?
 - A. Elastic cartilage
 - B. Fibrocartilage
 - C. Hyaline cartilage
 - D. None of the above
5. What type of bone formation occurs during the development of long bones?
 - A. Intramembranous ossification
 - B. Endochondral ossification
 - C. Both A and B
 - D. None of the above
6. Which hormone increases bone resorption and calcium release into the bloodstream?
 - A. Calcitonin
 - B. Parathyroid hormone
 - C. Thyroxine
 - D. Insulin
7. Which cell type is responsible for maintaining the bone matrix and communicating with other cells?
 - A. Osteoblasts
 - B. Osteoclasts
 - C. Osteocytes
 - D. Chondrocytes

8. What is the structural unit of compact bone?
 - A. Osteon
 - B. Lamellae
 - C. Trabeculae
 - D. Periosteum

9. The process of bone remodeling involves which of the following steps?
 - A. Resorption
 - B. Reversal
 - C. Formation
 - D. All of the above

10. Which hormone is responsible for decreasing blood calcium levels?
 - A. Calcitonin
 - B. Parathyroid hormone
 - C. Thyroxine
 - D. Insulin

11. Which type of bone is primarily composed of trabeculae?
 - A. Compact bone
 - B. Spongy bone
 - C. Both A and B
 - D. None of the above

12. Which of the following is NOT a function of the skeletal system?
 - A. Mineral storage
 - B. Synthesis of hormones
 - C. Blood cell production
 - D. Support

Answer Key:

1. D
2. B
3. B
4. C
5. B
6. B
7. C
8. A
9. D
10. A
11. B
12. B

SAQ Quiz: General Overview of the Skeletal System

1. Briefly describe the process of endochondral ossification.
2. What are the main differences between compact bone and spongy bone?
3. How does calcitonin regulate calcium homeostasis in the body?
4. What is the role of chondrocytes in cartilage?
5. Explain the role of Vitamin D in bone metabolism.
6. Briefly describe the three main types of cartilage and provide an example of where each can be found in the human body.
7. Explain the concept of bone remodeling and its importance in maintaining bone health.

Model Answers:

1. Endochondral ossification involves the replacement of a hyaline cartilage template with bone. It starts with chondrocyte proliferation and hypertrophy, followed by the formation of a calcified cartilage matrix, which is eventually replaced by bone tissue formed by osteoblasts.
2. Compact bone is dense, has a well-organized structure, and is found in the outer layer of bones. It is composed of osteons, which contain Haversian canals. Spongy bone is less dense, has a trabecular structure, and is found in the inner parts of bones. It does not contain osteons or Haversian canals.
3. Calcitonin is released by the thyroid gland in response to high blood calcium levels. It inhibits osteoclast activity, reducing bone resorption and promoting calcium deposition in bones, thereby decreasing calcium levels in the bloodstream.
4. Chondrocytes are the primary cell type in cartilage, responsible for producing and maintaining the cartilage matrix. They synthesize and secrete collagen, proteoglycans, and other components of the extracellular matrix.
5. Vitamin D plays a crucial role in bone metabolism by promoting calcium and phosphate absorption in the gut. This helps maintain proper calcium and phosphate levels in the bloodstream, which are necessary for normal bone mineralization.
6. Hyaline cartilage: smooth, glassy appearance, found in articular surfaces, costal cartilages, and the trachea; Fibrocartilage: strong and dense, found in intervertebral discs and the pubic symphysis; Elastic cartilage: flexible, found in the external ear and the epiglottis.
7. Bone remodeling is a continuous process involving bone resorption by osteoclasts and bone formation by osteoblasts. It is important for maintaining bone health as it allows the repair of damaged bone, adjusts bone structure to mechanical stress, and helps regulate calcium levels in the body.

MCQ Quiz: Macro Anatomy of the Skeletal System

1. How many bones are there in the adult human skeleton?
 - A. 126
 - B. 206
 - C. 234
 - D. 285
2. Which part of the human skeleton includes the skull, vertebral column, and rib cage?
 - A. Appendicular skeleton
 - B. Axial skeleton
 - C. Pectoral girdle
 - D. Pelvic girdle
3. What are the two main components of the pectoral girdle?
 - A. Clavicle and scapula
 - B. Ilium and ischium
 - C. Humerus and radius
 - D. Femur and tibia
4. The pelvic girdle consists of which bones?
 - A. Ilium, ischium, and pubis
 - B. Clavicle, scapula, and sternum
 - C. Sacrum and coccyx
 - D. Femur, tibia, and fibula
5. Which of the following is a type of long bone?
 - A. Vertebra
 - B. Humerus
 - C. Patella
 - D. Scapula
6. Which joint type allows the most extensive range of motion?
 - A. Pivot joint
 - B. Hinge joint
 - C. Ball and socket joint
 - D. Saddle joint
7. What type of bone is the scapula?
 - A. Long bone
 - B. Short bone
 - C. Flat bone
 - D. Irregular bone
8. What structure connects bones to other bones in a joint?
 - A. Tendons
 - B. Ligaments
 - C. Cartilage
 - D. Fascia

9. What type of joint is the elbow?
- A. Pivot joint
 - B. Hinge joint
 - C. Ball and socket joint
 - D. Saddle joint
10. The femur is part of which part of the human skeleton?
- A. Appendicular skeleton
 - B. Axial skeleton
 - C. Pectoral girdle
 - D. Pelvic girdle
11. Which part of a long bone contains red bone marrow?
- A. Diaphysis
 - B. Epiphysis
 - C. Metaphysis
 - D. Periosteum
12. Which of the following is a characteristic of synovial joints?
- A. Fibrous connective tissue
 - B. Cartilaginous connections
 - C. Synovial fluid
 - D. Immovable

Answer Key:

1. B
2. B
3. A
4. A
5. B
6. C
7. C
8. B
9. B
10. A
11. B
12. C

SAQ Quiz: Macro Anatomy of the Skeletal System

1. Describe the difference between the axial and appendicular skeleton.
2. Explain the main function of the pectoral girdle.
3. What are the primary differences between the male and female pelvic girdles?
4. Briefly describe the structure of a long bone, including its main parts.
5. Explain the difference between a synarthrosis, amphiarthrosis, and diarthrosis joint.
6. What are the key features of a synovial joint?
7. Classify the different types of synovial joints and provide an example of each.

Model Answers:

1. The axial skeleton consists of the central bones, including the skull, vertebral column, and rib cage. The appendicular skeleton includes the limbs and their supporting structures, such as the pectoral and pelvic girdles.
2. The pectoral girdle, composed of the clavicle and scapula, functions to connect the upper limbs to the axial skeleton, allowing for a wide range of motion and providing stability for the shoulder joint.
3. The male pelvic girdle is generally larger and more robust, with a narrower pelvic inlet and outlet, a more acute pubic angle, and a heart-shaped pelvic cavity. The female pelvic girdle is wider and shallower, with a larger pelvic inlet and outlet, a more obtuse pubic angle, and a round or oval-shaped pelvic cavity to accommodate childbirth.
4. A long bone has a cylindrical shaft called the diaphysis, which is made of compact bone. It has two widened ends called epiphyses, which are made of spongy bone covered by a thin layer of compact bone. The metaphysis is the region between the diaphysis and epiphysis, where growth occurs. The periosteum is a membrane that covers the outer surface of the bone, except for the articular cartilage.
5. Synarthrosis joints are immovable, held together by fibrous connective tissue (e.g., sutures in the skull). Amphiarthrosis joints allow limited movement and are connected by cartilage (e.g., intervertebral discs). Diarthrosis joints, also known as synovial joints, are freely movable and have a synovial cavity filled with synovial fluid (e.g., knee joint).
6. Key features of a synovial joint include a synovial cavity filled with synovial fluid, articular cartilage covering the ends of the bones, a fibrous joint capsule surrounding the joint, and synovial membranes that produce synovial fluid.
7. Six types of synovial joints: (1) Ball and socket joints (e.g., hip and shoulder joints), (2) Hinge joints (e.g., elbow and knee joints), (3) Pivot joints (e.g., atlantoaxial joint), (4) Saddle joints (e.g., carpometacarpal joint of the thumb), (5) Condylloid joints (e.g., radiocarpal joint), and (6) Gliding or plane joints (e.g., intercarpal joints).

MCQ Quiz: General Overview of the Muscular System

1. Which type of muscle is under voluntary control?
 - A. Skeletal muscle
 - B. Cardiac muscle
 - C. Smooth muscle
 - D. None of the above
2. What is the primary function of muscle tissue?
 - A. Support
 - B. Movement
 - C. Protection
 - D. Mineral storage
3. Which of the following best describes the origin of a muscle?
 - A. The more movable end of the muscle
 - B. The less movable end of the muscle
 - C. The middle part of the muscle
 - D. The part of the muscle that contracts
4. What is the term for the main action performed by a muscle when it contracts?
 - A. Reverse action
 - B. Prime action
 - C. Origin
 - D. Insertion
5. Which type of muscle fiber arrangement has fibers running parallel to the long axis of the muscle?
 - A. Parallel
 - B. Pennate
 - C. Convergent
 - D. Circular
6. In which type of muscle fiber arrangement do fibers radiate from a central tendon?
 - A. Parallel
 - B. Pennate
 - C. Convergent
 - D. Circular
7. Which layer of connective tissue surrounds individual muscle fibers?
 - A. Epimysium
 - B. Perimysium
 - C. Endomysium
 - D. Fascia
8. Which type of muscle is found in the walls of hollow organs?
 - A. Skeletal muscle
 - B. Cardiac muscle
 - C. Smooth muscle
 - D. None of the above

9. What term describes the ability of a muscle to return to its original length after being stretched?
- A. Contractility
 - B. Excitability
 - C. Extensibility
 - D. Elasticity
10. What is the basic functional unit of a skeletal muscle called?
- A. Myofibril
 - B. Sarcomere
 - C. Actin
 - D. Myosin
11. Which type of muscle has striations and is found in the heart?
- A. Skeletal muscle
 - B. Cardiac muscle
 - C. Smooth muscle
 - D. None of the above
12. What type of muscle fiber arrangement is found in the muscles of facial expression?
- A. Parallel
 - B. Pennate
 - C. Convergent
 - D. Circular

Answer Key:

1. A
2. B
3. B
4. B
5. A
6. C
7. C
8. C
9. D
10. B
11. B
12. D

SAQ Quiz: General Overview of the Muscular System

1. Briefly describe the main functions of the muscular system.
2. Differentiate between the three types of muscles: skeletal, smooth, and cardiac.
3. What is the difference between the origin and the insertion of a muscle?
4. Explain the concept of a reverse action in the context of muscle movement.
5. Describe the organization of muscle tissue, including the connective tissue layers surrounding muscle fibers, fascicles, and the whole muscle.
6. Explain the roles of actin and myosin in muscle contraction.
7. Briefly describe the different types of muscle contractions: isometric, concentric, and eccentric.

Model Answers:

1. The main functions of the muscular system include producing movement, maintaining posture, stabilizing joints, and generating heat.
2. Skeletal muscles are voluntary, striated muscles that move bones and maintain posture. Smooth muscles are involuntary, non-striated muscles found in the walls of hollow organs, responsible for activities such as peristalsis. Cardiac muscles are involuntary, striated muscles found in the heart, responsible for pumping blood throughout the body.
3. The origin of a muscle is its less movable attachment point, typically closer to the trunk or proximal to the joint. The insertion is the more movable attachment point, usually farther from the trunk or distal to the joint.
4. A reverse action occurs when the muscle's usual origin and insertion switch roles during a movement. Instead of the insertion moving toward the origin, the origin moves toward the insertion.
5. Muscle tissue organization: Individual muscle fibers (cells) are surrounded by the endomysium, a layer of connective tissue. Muscle fibers are bundled together into fascicles, which are surrounded by the perimysium. The entire muscle is covered by the epimysium, another connective tissue layer. Together, these layers help transmit the force generated by muscle fibers during contraction.
6. Actin and myosin are proteins that play key roles in muscle contraction. Myosin is a thick filament that forms cross-bridges with actin, a thin filament. During muscle contraction, the myosin heads pull the actin filaments toward the center of the sarcomere, shortening the muscle fiber and generating force.
7. Isometric contractions occur when the muscle generates force but does not change in length (e.g., holding a heavy object). Concentric contractions involve the muscle shortening as it generates force (e.g., lifting a weight). Eccentric contractions occur when the muscle lengthens while generating force (e.g., lowering a weight).



End of Sample

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