NCSF Functional Anatomy Practice Test (Sample)

Study Guide

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Questions

1. Which bone is commonly referred to as the collarbone?

A. Sternum

B. Scapula

C. Clavicle

D. Humerus

2. Which exercise corresponds to the action of the infraspinatus?

A. External band rotation

B. High row

C. Bench press

D. Seated row

3. What is the example exercise for the teres major?

A. Shoulder shrug

B. External band rotation

C. Single arm row

D. Chest flyes

4. Which muscle primarily flexes the arm?

A. Biceps brachii

B. Brachialis

C. Triceps brachii

D. Psoas major

5. What does the term iliopsoas refer to?

A. A single muscle in the hip

B. A combination of two hip flexor muscles

C. A stabilizer muscle of the pelvis

D. A group of knee extensor muscles

6. What anatomical term refers to a body part that is located nearest to the midline?

A. Lateral

B. Medial

C. Proximal

D. Distal

7. What movement does inversion refer to?

- **A. Turning the ankle so the plantar surface faces laterally**
- **B. Turning the ankle so the plantar surface faces medially**
- **C. Moving the foot in a circular direction**
- **D. Lifting the heel upward**

8. Which joint is a good example of a fibrous joint?

- **A. Shoulder joint**
- **B. Wrist joint**
- **C. Skull sutures**
- **D. Hip joint**

9. What are the primary functions of the deltoid muscles?

- **A. To flex the knee and extend the hip**
- **B. To rotate and adduct the upper arm**
- **C. To horizontally abduct, flex, extend, and rotate the humerus**
- **D. To stabilize the pelvis during walking**

10. Bone mineral density (BMD) reflects what aspect of bone?

- **A. The flexibility of the bone**
- **B. The growth rate of the bone**
- **C. The concentration of minerals within the bone**
- **D. The age of the bone**

Answers

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

Explanations

1. Which bone is commonly referred to as the collarbone?

A. Sternum

B. Scapula

C. Clavicle

D. Humerus

The bone commonly referred to as the collarbone is the clavicle. This long, slender bone serves as a key structural component of the shoulder girdle, connecting the arm to the body. It functions to stabilize the shoulder and allows for a wide range of motion in the arms. The clavicle is located horizontally across the front of the thoracic cage, extending from the sternum to the acromion of the scapula. Its positioning makes it easily palpable beneath the skin and gives it the commonly known name "collarbone." Understanding the role of the clavicle is essential in anatomy and kinesiology, as it plays a critical part in movements involving the upper limb, as well as in protecting the underlying nerves and blood vessels.

2. Which exercise corresponds to the action of the infraspinatus?

A. External band rotation

B. High row

C. Bench press

D. Seated row

The action of the infraspinatus primarily involves external rotation of the shoulder joint. This muscle is one of the rotator cuff muscles and plays a crucial role in stabilizing the shoulder and allowing for smooth movement during arm positioning. External band rotation specifically targets the infraspinatus by requiring the arm to rotate outward against resistance, which effectively engages this muscle. This exercise helps to strengthen the external rotators of the shoulder, which can improve shoulder stability and function, especially in activities involving overhead and rotational movements. In contrast, the other exercises mentioned do not specifically emphasize the action of external rotation. The high row and seated row primarily engage muscles involved in shoulder retraction and pulling movements, while the bench press focuses on pressing motions that primarily involve the chest, shoulders, and triceps rather than the external rotators of the shoulder. Thus, external band rotation is the most appropriate exercise corresponding to the action of the infraspinatus.

3. What is the example exercise for the teres major?

A. Shoulder shrug

B. External band rotation

C. Single arm row

D. Chest flyes

The single arm row is an effective exercise for targeting the teres major muscle. This muscle, located in the upper back underneath the shoulder, plays a critical role in shoulder adduction, extension, and internal rotation. When performing a single arm row, the shoulder is drawn back and down, engaging the teres major as the arm pulls the weight toward the torso. This movement mimics the action of rowing, effectively stimulating the muscle and promoting strength and stability in the shoulder complex. The other exercises listed do not specifically engage the teres major to the same extent. Shoulder shrugs primarily target the trapezius, while external band rotation focuses on the rotator cuff muscles. Chest flyes emphasize pectoral muscles rather than those in the upper back. Therefore, the single arm row stands out as the most appropriate exercise for activating the teres major.

4. Which muscle primarily flexes the arm?

A. Biceps brachii

B. Brachialis

C. Triceps brachii

D. Psoas major

The biceps brachii is primarily responsible for flexing the arm at the elbow joint. It has two heads, the long head and the short head, that originate from different locations on the scapula and converge into a single tendon that attaches to the radial tuberosity of the radius. When contracting, the biceps brachii pulls the forearm upwards towards the shoulder, effectively flexing the arm. While other muscles, such as the brachialis, also assist in flexion, the biceps brachii is more prominently involved and is often recognized as the main flexor due to its visibility and functionality during exercises like bicep curls. The triceps brachii, in contrast, is a primary extensor of the arm, while the psoas major is primarily involved in hip flexion and does not play a significant role in arm movement at the elbow. Understanding the specific roles of these muscles clarifies why the biceps brachii is accurately identified as the primary muscle for arm flexion.

5. What does the term iliopsoas refer to?

A. A single muscle in the hip

B. A combination of two hip flexor muscles

C. A stabilizer muscle of the pelvis

D. A group of knee extensor muscles

The term iliopsoas refers to a combination of two hip flexor muscles: the iliacus and the psoas major. Together, these muscles play a crucial role in hip flexion, which is essential for activities such as walking, running, and sitting. The iliacus originates from the iliac fossa of the pelvis, while the psoas major originates from the lumbar vertebrae. Their convergence and shared tendon allow them to work synergistically to flex the hip joint and provide stability to the lumbar spine during movement. This anatomical and functional connection is why the answer correctly identifies the iliopsoas as the combination of these two specific muscles rather than a singular muscle or a group associated with knee movements.

6. What anatomical term refers to a body part that is located nearest to the midline?

A. Lateral

B. Medial

C. Proximal

D. Distal

The term that refers to a body part that is located nearest to the midline is "medial." In anatomical terminology, "medial" describes a position that is closer to the center of the body or the midline compared to other structures. Understanding this term is crucial for accurately describing the location of body parts relative to one another. For instance, the nose is considered medial to the eyes, meaning it is closer to the midline that divides the left and right sides of the body. In contrast, "lateral" refers to being farther from the midline, while "proximal" and "distal" pertain to distances from the trunk of the body, particularly in relation to limbs. Proximal indicates a position closer to the point of attachment or the trunk, whereas distal refers to a position farther from that same point. Understanding these terms helps in clearly communicating anatomical locations and relationships.

7. What movement does inversion refer to?

A. Turning the ankle so the plantar surface faces laterally

B. Turning the ankle so the plantar surface faces medially

C. Moving the foot in a circular direction

D. Lifting the heel upward

Inversion specifically refers to the movement of the ankle where the plantar surface of the foot turns medially, or inward, towards the midline of the body. This action brings the inside of the foot toward the other foot, raising the arch and decreasing the angle between the foot and the leg. It is a common term used in anatomy and kinesiology when describing how the foot functions during various activities such as walking, running, or balancing. Understanding this movement is crucial for recognizing how the foot interacts with the ground and facilitates stability. Inversion is also significant in the context of certain injuries, as excessive inversion can lead to ankle sprains or strains. The other options describe different movements that do not accurately capture the definition of inversion. For instance, turning the ankle so the plantar surface faces laterally refers to eversion, whereas moving the foot in a circular direction pertains to circumduction. Lifting the heel upward is an action related to dorsiflexion, which involves raising the toes upwards toward the shin.

8. Which joint is a good example of a fibrous joint?

A. Shoulder joint

B. Wrist joint

C. Skull sutures

D. Hip joint

The skull sutures are a prime example of a fibrous joint, known for their immobility and structural stability. These joints are formed by dense connective tissue that firmly holds the bony plates of the skull together, providing a protective casing for the brain. The lack of movement in these joints enhances the skull's ability to withstand external forces and provides a solid foundation for cranial structure. In contrast, other types of joints listed, like the shoulder joint, wrist joint, and hip joint, are classified as synovial joints. These joints allow for significant movement and are characterized by a fluid-filled joint capsule, contributing to a wide range of motion required for various physical activities. The rigidity and stability of fibrous joints like the skull sutures differ fundamentally from the dynamic nature of synovial joints, making the skull sutures the correct answer in this context.

9. What are the primary functions of the deltoid muscles?

A. To flex the knee and extend the hip

B. To rotate and adduct the upper arm

C. To horizontally abduct, flex, extend, and rotate the humerus

D. To stabilize the pelvis during walking

The primary functions of the deltoid muscles center around the movement and stabilization of the shoulder joint. These muscles are crucial for various actions involving the humerus, which is the bone of the upper arm. The deltoids consist of three distinct heads: the anterior (front), lateral (middle), and posterior (back) fibers. Each head contributes to a range of movements. The anterior fibers facilitate shoulder flexion, the lateral fibers are primarily responsible for abduction of the arm, while the posterior fibers assist in extension and external rotation of the humerus. Therefore, when considering the functions of the deltoid muscles, they indeed play a key role in horizontal abduction (like moving the arm away from the body in a horizontal plane), flexion (lifting the arm forward), extension (lifting the arm backward), and rotation (turning the arm inward or outward). This comprehensive range of movements supports versatility in upper-body activities.

10. Bone mineral density (BMD) reflects what aspect of bone?

A. The flexibility of the bone

B. The growth rate of the bone

C. The concentration of minerals within the bone

D. The age of the bone

Bone mineral density (BMD) primarily measures the concentration of minerals, such as calcium and phosphorus, within the bone tissue. BMD is an important indicator of bone strength and health, as higher mineral density typically correlates with greater structural integrity and a reduced risk of fractures. BMD is assessed through imaging techniques like dual-energy X-ray absorptiometry (DEXA), which provide insights into the amount of mineral content relative to the volume of bone. This measurement is crucial for diagnosing conditions like osteoporosis, where a reduction in mineral density leads to an increased susceptibility to fractures. The other aspects mentioned, such as flexibility, growth rate, or age of the bone, do not directly pertain to BMD. Flexibility relates more to the quality of the collagen matrix within the bone, growth rate would indicate how fast bone is forming or remodeling, and age refers to the chronological duration the bone has existed, which might influence BMD but is not a direct reflection of it.