College of Massage Therapists of British Columbia (CMTBC) Practice Exam (Sample)

Study Guide

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Questions

1. What is a common indicator of glenohumeral joint instability during physical examination?

A. Pain during active motion

B. Restricted range of motion

C. Excessive joint mobility

D. Muscle atrophy

2. What is the primary focus of rehabilitation during the early stages following injury?

A. Strengthening affected areas

B. Restoring range of motion

C. Improving grip strength

D. Enhancing endurance

3. What aids in the absorption of calcium in the gastrointestinal tract?

A. Vitamin K

B. Vitamin D

C. Magnesium

D. Carbohydrates

4. Does the Impingement Test diagnose capsular impingement or rotator cuff impingement?

A. Rotator cuff impingement

B. Capsular impingement

C. Both capsular and rotator cuff impingement

D. Neither capsular nor rotator cuff impingement

5. Where do the lymphatic vessels drain into the venous system?

A. Right Atrium

B. Internal Jugular Vein and Subclavian Vein

C. Hepatic Vein

D. Common Iliac Vein

6. Which part of the heart is responsible for pumping blood into the aorta?

A. Left atrium

B. Right ventricle

C. Left ventricle

D. Right atrium

7. How many calories are required to raise the temperature of 1 gram of water by 1 degree Celsius?

A. 1 calorie

B. 10 calories

C. 100 calories

D. 50 calories

8. What is the term for the process when liquid converts to vapor?

A. Condensation

B. Evaporation

C. Infiltration

D. Filtration

9. What is characterized as bony osteophytic end-feel in PR-ROM assessment?

A. Restriction with a spasm

B. Hard end-feel

C. Soft end-feel

D. Normal end-feel

10. Which of the following is NOT a function attributed to the dorsal scapular nerve?

A. Suppling the trapezius muscle

B. Supplying the rhomboids muscles

C. Supplying the levator scapulae muscle

D. Contributing to scapular stabilization

Answers

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

Explanations

1. What is a common indicator of glenohumeral joint instability during physical examination?

A. Pain during active motion

B. Restricted range of motion

C. Excessive joint mobility

D. Muscle atrophy

A common indicator of glenohumeral joint instability during physical examination is excessive joint mobility. In cases of instability, the normal constraints that the ligaments and surrounding tissues provide to the joint are compromised, allowing for greater movement than is typically seen. This excess motion can lead to a feeling of the joint "giving way" or moving abnormally, which is often assessed through specific physical tests that evaluate the range of motion and stability of the joint. While pain during active motion and restricted range of motion can be present in various shoulder conditions, they do not specifically indicate joint instability. Additionally, muscle atrophy may occur as a consequence of disuse or chronic pain but is not a direct indicator of joint instability on its own. Excessive mobility, however, is a direct symptom that therapists assess to determine the stability of the glenohumeral joint.

2. What is the primary focus of rehabilitation during the early stages following injury?

A. Strengthening affected areas

B. Restoring range of motion

C. Improving grip strength

D. Enhancing endurance

The primary focus of rehabilitation during the early stages following an injury is restoring range of motion. When a person sustains an injury, the immediate response often involves inflammation and pain, which can lead to stiffness and restricted movement in the affected area. Restoring range of motion is crucial during this phase to prevent complications such as joint contractures, muscle atrophy, and further loss of function. Gentle stretching and mobilization techniques are typically employed to encourage movement and facilitate healing while taking care not to exacerbate the injury. This foundational work helps the individual regain the ability to move the injured area properly, which is essential for progressing to more advanced rehabilitation phases that can include strengthening, endurance, and functional training later on. The other options focus on later stages of recovery, where strengthening exercises, grip strength enhancement, and endurance improvements become important as the area stabilizes and function is restored.

3. What aids in the absorption of calcium in the gastrointestinal tract?

A. Vitamin K

B. Vitamin D

C. Magnesium

D. Carbohydrates

Vitamin D plays a crucial role in the absorption of calcium in the gastrointestinal tract. It enhances the intestinal absorption of calcium by promoting the synthesis of calcium-binding proteins within the gut lining. When vitamin D is present, the efficiency with which the intestines absorb calcium increases significantly, ensuring that adequate amounts of calcium enter the bloodstream for various bodily functions, including bone health. In contrast, while Vitamin K is important for bone metabolism and helps in the utilization of calcium within bones, it does not directly facilitate its absorption from the gastrointestinal tract. Magnesium is also important for calcium metabolism and helps maintain normal levels of calcium in the blood, but it does not directly aid in its absorption. Carbohydrates provide energy and are important for overall health, but they do not have a direct role in calcium absorption. Therefore, vitamin D is the key nutrient that supports the effective uptake of calcium from the gastrointestinal tract.

4. Does the Impingement Test diagnose capsular impingement or rotator cuff impingement?

A. Rotator cuff impingement

B. Capsular impingement

C. Both capsular and rotator cuff impingement

D. Neither capsular nor rotator cuff impingement

The Impingement Test is specifically designed to assess the presence of rotator cuff impingement. This test evaluates how the rotator cuff tendons may be compressed during arm movements, particularly overhead motions. It helps identify if the tendons are being impinged upon by the acromion or surrounding structures, which can lead to pain and dysfunction in the shoulder. While the test may yield information about overall shoulder mechanics and can hint at other conditions, its primary focus remains on the evaluation of rotator cuff integrity and function. It is not a definitive diagnostic tool for capsular impingement, which involves the joint capsule rather than the rotator cuff tendons themselves. Therefore, the appropriate interpretation of the Impingement Test leads to the conclusion that it is primarily indicative of rotator cuff impingement, distinguishing it from other types of shoulder issues.

5. Where do the lymphatic vessels drain into the venous system?

A. Right Atrium

B. Internal Jugular Vein and Subclavian Vein

C. Hepatic Vein

D. Common Iliac Vein

The lymphatic vessels drain into the venous system at the junction of the internal jugular vein and the subclavian vein. This anatomical union is significant because the lymphatic system plays a crucial role in returning excess interstitial fluid back to the bloodstream, as well as facilitating the transport of fats and immune cells. At this junction, lymph is emptied into the venous system, which allows it to mix with the blood and maintain homeostasis within the body. The right lymphatic duct drains lymph from the right upper quadrant of the body into the right subclavian vein, while the thoracic duct drains lymph from the rest of the body into the left subclavian vein, which is a vital aspect of the lymphatic circulation process. Understanding this drainage point is essential for recognizing how the lymphatic system contributes to overall fluid balance and immune responses in the body.

6. Which part of the heart is responsible for pumping blood into the aorta?

A. Left atrium

B. Right ventricle

C. Left ventricle

D. Right atrium

The left ventricle is the part of the heart responsible for pumping blood into the aorta. It plays a crucial role in the circulatory system by receiving oxygen-rich blood from the left atrium and then contracting to push this blood into the aorta, which distributes it to the rest of the body. The left ventricle has thick muscular walls that enable it to generate the high pressure needed to propel blood through the aorta and into systemic circulation. In contrast, the left atrium receives blood returning from the lungs via the pulmonary veins. The right ventricle pumps deoxygenated blood to the lungs through the pulmonary artery. Lastly, the right atrium collects deoxygenated blood from the body through the superior and inferior vena cavae before sending it to the right ventricle. Each part of the heart has a specific function, but the left ventricle is uniquely structured and positioned to carry out the task of delivering blood into the aorta effectively.

7. How many calories are required to raise the temperature of 1 gram of water by 1 degree Celsius?

A. 1 calorie

B. 10 calories

C. 100 calories

D. 50 calories

The correct answer is based on the definition of a calorie in the context of specific heat. A calorie is defined as the amount of heat energy required to raise the temperature of 1 gram of water by 1 degree Celsius. This is a fundamental principle in thermodynamics and is crucial for understanding how energy transfer occurs in various physical and biological processes. In this specific case, the question is directly related to the concept of specific heat capacity, which for water is approximately 1 calorie per gram per degree Celsius. This means that for every gram of water, it takes exactly one calorie to increase its temperature by one degree, making this measurement a standard unit in various scientific applications. Other options suggest incorrect values which do not match the established scientific definition of the calorie as it pertains to water. Understanding the energy required for temperature changes in water helps in fields like nutrition, exercise physiology, and environmental science, where temperature, energy, and heat transfer are significant factors.

8. What is the term for the process when liquid converts to vapor?

A. Condensation

B. Evaporation

C. Infiltration

D. Filtration

The term for the process when liquid converts to vapor is evaporation. This process occurs when molecules in the liquid gain enough energy, typically from heat, to overcome intermolecular forces and transition into the gas phase. Evaporation can happen at any temperature, as long as some molecules at the liquid's surface have enough kinetic energy to escape into the air. In contrast, condensation refers to the process where gas transforms back into a liquid, often when the vapor cools down. Infiltration typically refers to the movement of water into the soil or groundwater, while filtration is a method that separates solids from liquids or gases using a porous material. These definitions highlight why evaporation is distinct as the process of liquid turning into vapor, making it the correct answer to the question.

9. What is characterized as bony osteophytic end-feel in PR-ROM assessment?

A. Restriction with a spasm

B. Hard end-feel

C. Soft end-feel

D. Normal end-feel

A hard end-feel is indicative of a bony osteophytic restriction during passive range of motion (PR-ROM) assessment. This type of end-feel is typically encountered when there is an obstruction or barrier created by bone formations or osteophytes, which are outgrowths of bone that can develop due to conditions such as osteoarthritis. When a therapist feels a hard end-feel during the assessment, it suggests that the joint's movement is restricted not by soft tissue structures or muscular resistance, but rather by the presence of bony formations. This sensation is distinct because it generally lacks the give or elasticity associated with softer end-feels. Recognizing a hard end-feel is crucial for practitioners as it can influence their assessment and the development of a treatment plan, indicating potential underlying joint pathology or degenerative changes. Thus, identifying this specific end-feel helps in understanding the limitations of joint movement and directing appropriate therapeutic interventions.

10. Which of the following is NOT a function attributed to the dorsal scapular nerve?

A. Suppling the trapezius muscle

B. Supplying the rhomboids muscles

C. Supplying the levator scapulae muscle

D. Contributing to scapular stabilization

The dorsal scapular nerve primarily innervates the rhomboid muscles and the levator scapulae, thereby playing a vital role in the function and stabilization of the scapula. The primary function of this nerve includes providing motor supply to these muscles, which are crucial for the movement and stabilization of the shoulder girdle. While the trapezius muscle is important for shoulder and neck movement, it is not innervated by the dorsal scapular nerve; rather, its innervation comes from the accessory nerve (cranial nerve XI) and branches of the cervical plexus. Therefore, identifying that the trapezius muscle is not supplied by the dorsal scapular nerve makes option A the correct choice, as it accurately describes a function that is not attributed to this nerve. Overall, understanding the specific muscles innervated by the dorsal scapular nerve helps clarify its role and the functions associated with it in relation to shoulder stability and movement.