Central Sterile Services Department (CSSD) Practice Exam (Sample)

Study Guide

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Questions

1. **How often should adolescents with low bone mineral density be reassessed?**
   - A. Every 6 months
   - B. Every 12 months
   - C. Every 18 months
   - D. Every 24 months

2. **When is carbohydrate loading particularly beneficial?**
   - A. Endurance events lasting over 60 minutes
   - B. Endurance events lasting over 90 minutes
   - C. Powerlifting competitions
   - D. Sprint races

3. **What is the protein recommendation for endurance athletes?**
   - A. 0.8-1 g/kg/day
   - B. 1.2-1.4 g/kg/day
   - C. 1.6-2.0 g/kg/day
   - D. 2.0-2.5 g/kg/day

4. **What is the primary role of hemoglobin in the body?**
   - A. Transports carbon dioxide from muscles
   - B. Transports oxygen to working muscle
   - C. Accepts oxygen from mitochondria
   - D. Delivers blood to the heart

5. **What is the adequate intake (AI) level of potassium per day?**
   - A. 4500 mg
   - B. 4700 mg
   - C. 5000 mg
   - D. 4000 mg

6. What type of muscle fiber is characterized as slow twitch and aerobic?

A. Type 1

B. Type 2A

C. Type 2B

D. Type 3

7. What is the recommended fluid intake before physical activity lasting more than an hour?

A. 8-12 oz

B. 15 min before - 8-16 oz

C. 30 min before - 16-20 oz

D. 1 hour before - 24-32 oz

8. How is energy availability calculated?

A. Energy intake + exercise energy expenditure

B. (Energy intake + exercise energy expenditure)/kg of FFM

C. (Energy intake - exercise energy expenditure)/kg of FFM

D. Energy intake - body weight

9. How is most water lost from the body at a temperature of 68 degrees Fahrenheit?

A. Sweat

B. Feces

C. Urine

D. Respiratory tract

10. What is the caloric content of an exchange of whole milk?

A. 90 Kcal

B. 120 Kcal

C. 150 Kcal

D. 180 Kcal

Answers

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

Explanations

1. How often should adolescents with low bone mineral density be reassessed?

A. Every 6 months

B. Every 12 months

C. Every 18 months

D. Every 24 months

Reassessing adolescents with low bone mineral density every 6 months is important for monitoring changes in their bone health. Adolescents are in a crucial period of skeletal development, and their bone density can fluctuate due to various factors, including growth spurts, physical activity, and nutritional changes. Frequent assessments allow healthcare providers to evaluate the effectiveness of any interventions that have been implemented, such as lifestyle modifications, dietary changes, or medical treatments. This regular monitoring can help identify whether the bone density is improving, stabilizing, or worsening, facilitating timely adjustments to management strategies to enhance bone health and prevent potential complications such as fractures. Longer intervals between assessments, such as 12, 18, or 24 months, may not provide sufficient data to track the progression of bone density in growing adolescents. Given the dynamic nature of bone development during adolescence, a 6-month reassessment ensures that any necessary interventions can be made promptly to optimize their bone health.

2. When is carbohydrate loading particularly beneficial?

A. Endurance events lasting over 60 minutes

B. Endurance events lasting over 90 minutes

C. Powerlifting competitions

D. Sprint races

Carbohydrate loading is particularly beneficial for endurance events lasting over 90 minutes. This practice involves increasing carbohydrate intake prior to an event, which maximizes glycogen stores in the muscles and liver. In endurance sports, where sustained energy is crucial, having an ample supply of glycogen can significantly enhance performance and delay fatigue. Events lasting over 90 minutes, such as marathons or long-distance cycling, put significant energy demands on the body, making the increased availability of carbohydrates vital. While endurance events lasting over 60 minutes can benefit from carbohydrate loading, the advantages are more pronounced in longer events where energy depletion becomes a greater concern. In contrast, powerlifting competitions and sprint races typically rely on short bursts of energy, where immediate fuel sources like ATP and creatine phosphate are utilized rather than glycogen stores. Therefore, carbohydrate loading would not provide the same benefits in these contexts, as the duration and energy systems involved differ significantly from those of prolonged endurance activities.

3. What is the protein recommendation for endurance athletes?

A. 0.8-1 g/kg/day

B. 1.2-1.4 g/kg/day

C. 1.6-2.0 g/kg/day

D. 2.0-2.5 g/kg/day

For endurance athletes, the protein recommendation is typically in the range of 1.2 to 1.4 grams of protein per kilogram of body weight per day. This level of protein intake supports the recovery, repair, and adaptation of muscle tissues that endurance athletes frequently require due to their high training volumes. Endurance activities, such as long-distance running or cycling, predominantly rely on aerobic metabolism which can lead to muscle breakdown during prolonged exercise. Therefore, sufficient protein intake is essential for maintaining muscle mass and aiding in recovery processes, which helps improve performance and reduces the risk of injury. While other options suggest higher protein intake, they are generally reserved for specific situations, such as muscle building or intense strength training where muscle hypertrophy is the primary goal. For endurance athletes, the recommended intake ensures they receive enough protein to support their specific recovery needs without excessive consumption that may not provide additional benefits in their training context.

4. What is the primary role of hemoglobin in the body?

A. Transports carbon dioxide from muscles

B. Transports oxygen to working muscle

C. Accepts oxygen from mitochondria

D. Delivers blood to the heart

Hemoglobin's primary role in the body is to transport oxygen from the lungs to the tissues, particularly to working muscles. This protein found in red blood cells binds with oxygen during its passage through the lungs and efficiently carries it to various parts of the body where it is needed for metabolic processes. Once it arrives at the tissues, hemoglobin releases the oxygen, allowing cells to use it for energy production, especially during periods of increased physical activity when muscles require more oxygen. In contrast, while hemoglobin does also play a role in the transport of carbon dioxide, its primary function is centered on oxygen delivery. The other options mention functions that are not characteristic of hemoglobin, such as accepting oxygen from mitochondria or delivering blood to the heart, which are related to different physiological processes rather than the direct function of hemoglobin itself.

5. What is the adequate intake (AI) level of potassium per day?

A. 4500 mg

B. 4700 mg

C. 5000 mg

D. 4000 mg

The adequate intake (AI) level of potassium for adults is established at 4700 mg per day. This recommendation is based on the importance of potassium in maintaining various physiological functions, such as regulating blood pressure, maintaining fluid balance, and facilitating muscle and nerve function. Adequate potassium intake is crucial in preventing the risk of hypertension and may reduce the risk of stroke. This value has been determined through extensive research and is supported by various health organizations, including the Institute of Medicine. It accounts for average dietary intake sufficient to meet nutritional needs and promote optimal health outcomes. Other values listed, such as 4500 mg, 5000 mg, and 4000 mg, do not align with the established AI because they either fall below or exceed the recommended intake without sufficient evidence to justify a higher or lower level. Therefore, 4700 mg is the accurate representation of the AI for potassium for adults.

6. What type of muscle fiber is characterized as slow twitch and aerobic?

A. Type 1

B. Type 2A

C. Type 2B

D. Type 3

The type of muscle fiber characterized as slow twitch and aerobic is Type 1. These fibers are designed for endurance activities and rely primarily on aerobic metabolism for energy, making them more fatigue-resistant than other types of muscle fibers. They contain a high number of capillaries and mitochondria, as well as a high concentration of myoglobin, which allows them to efficiently utilize oxygen. This is why Type 1 fibers are typically engaged during long-duration activities such as marathon running or cycling. In contrast, other fiber types such as Type 2A and Type 2B are more fast-twitch fibers, designed for short bursts of strength and power. Specifically, Type 2A fibers can utilize both aerobic and anaerobic metabolism, while Type 2B fibers rely mainly on anaerobic metabolism and are not as fatigue-resistant. There is no recognized classification for "Type 3" muscle fibers in the standard muscle fiber categorization, which focuses primarily on Type 1 and Type 2 fibers. This understanding of muscle fiber types is crucial for training in various sports and exercise regimens, as it helps tailor conditioning programs to meet specific performance goals.

7. What is the recommended fluid intake before physical activity lasting more than an hour?

A. 8-12 oz

B. 15 min before - 8-16 oz

C. 30 min before - 16-20 oz

D. 1 hour before - 24-32 oz

For physical activity lasting more than an hour, the recommended fluid intake is to drink 8 to 16 ounces approximately 15 minutes before engaging in the exercise. This amount is crucial for proper hydration, especially before a prolonged activity, as it allows the body to absorb the fluids effectively and prepare for the physical exertion ahead. Consuming this quantity within the specified time frame helps ensure adequate hydration levels, enhances performance, and reduces the risk of dehydration during the activity. This recommendation is widely supported by guidelines from sports nutrition and exercise physiology, emphasizing the importance of pre-hydration. While other time frames and amounts suggest different volumes of fluids, they either fall outside the optimal range or are intended for hydration strategies at different intervals, like longer pre-activity hydration or immediate intake closer to exercise start times.

8. How is energy availability calculated?

A. Energy intake + exercise energy expenditure

B. (Energy intake + exercise energy expenditure)/kg of FFM

C. (Energy intake - exercise energy expenditure)/kg of FFM

D. Energy intake - body weight

Energy availability is a crucial concept in understanding how the energy balance in the body impacts health, performance, and other physiological functions. The correct method to calculate energy availability takes the total energy intake and adjusts it for the energy expended through exercise, providing a measure that reflects the energy left over for vital bodily functions after the energy used for physical activity has been accounted for. Using the formula that involves subtracting exercise energy expenditure from energy intake gives a more accurate assessment of the energy available for the body's metabolic needs, which is particularly important for athletes or individuals involved in regular intense physical activity. This calculation ensures that the energy left over after exercise is evaluated relative to the individual's fat-free mass (FFM), which is typically further used to understand the capacity to support bodily functions such as muscle repair, hormone production, and maintaining overall health. Other options do not provide the correct calculation for energy availability. For instance, simply adding energy intake and exercise energy expenditure would not consider the critical factor of understanding how much energy is left for physiological processes after exercise is taken into account. Similarly, dividing by body weight or using only body weight without focusing on fat-free mass does not appropriately convey metabolic demands connected with lean body mass. Therefore, the calculation of energy availability specifically requires that

9. How is most water lost from the body at a temperature of 68 degrees Fahrenheit?

A. Sweat

B. Feces

C. Urine

D. Respiratory tract

At a temperature of 68 degrees Fahrenheit, the primary route for water loss from the body is through urine. The kidneys filter blood and remove waste products, which are then excreted as urine. This process is critical for maintaining the body's fluid balance and eliminating unnecessary substances. While other forms of water loss, such as perspiration (sweat), fecal matter, and respiration also contribute, their levels at this moderate temperature are generally lower than that of urine. Sweat loss typically increases with higher temperatures or physical activity but is minimized at cooler, stable temperatures. Likewise, fecal water loss is relatively constant and typically does not vary much with external temperature, while the respiratory system does lose some moisture, but again, this loss is often less significant compared to urine output in a stable, cool environment. Thus, urine is the predominant means of water loss at this particular temperature.

10. What is the caloric content of an exchange of whole milk?

A. 90 Kcal

B. 120 Kcal

C. 150 Kcal

D. 180 Kcal

The caloric content of an exchange of whole milk is typically around 150 Kcal. This caloric value is derived from the composition of whole milk, which contains not only water but also fats, proteins, and carbohydrates. Whole milk generally has a fat content of about 3.25% to 4%, which contributes significantly to its total caloric value. In dietary contexts, an exchange of whole milk is often used in meal planning, particularly for nutrition standards that guide caloric intake for various populations. Understanding the caloric content of whole milk is important for individuals managing their dietary intake for health reasons, such as weight management or specific nutritional requirements. In contrast, the lower values presented do not accurately reflect the amount of energy provided by whole milk due to its higher fat content compared to skim or reduced-fat milk, which would have fewer calories. Thus, recognizing the caloric density of whole milk helps inform dietary choices in a balanced nutrition plan.