IB Sports, Exercise and Health Science (SEHS) Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

Table of Contents

Copyright **1**

Table of Contents **2**

Introduction **3**

How to Use This Guide **4**

Questions **5**

Answers **8**

Explanations **10**

Next Steps **15**

Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. **On a distance-time graph, what is the correct progression as the line changes from horizontal to a positive-curved line to a negative-curved line?**

   A. Constant velocity, acceleration, no motion

   B. No motion, acceleration, deceleration

   C. Deceleration, acceleration, no motion

   D. Acceleration, deceleration, constant velocity

2. **What is the total ATP yield from one glucose molecule under aerobic conditions according to the source material?**

   A. 34

   B. 38

   C. 30

   D. 26

3. **According to the material, which factor contributes to a higher VO2 max in males than in females?**

   A. Higher hemoglobin concentrations

   B. Larger body size

   C. Both higher hemoglobin concentrations and larger body size

   D. Neither factor contributes

4. **What is the approximate energy content per 100 g of lipids?**

   A. 1600 kJ

   B. 1700 kJ

   C. 1000 kJ

   D. 3700 kJ

5. **In aerobic metabolism, what are the main end products of complete glucose oxidation?**

   A. Lactic acid and water

   B. Carbon dioxide and water

   C. Glucose and oxygen

   D. Methane and CO2

6. Which term describes instruments that measure are accurate and operate correctly?

A. Validity

B. Specificity

C. Accuracy

D. Reliability

7. Sedentary individuals should aim for what percentage of daily calories from carbohydrates?

A. 40-50%

B. 60-70%

C. 55-60%

D. 70-80%

8. How is the term skill best defined?

A. Consistent production of goal-oriented movements

B. Random, uncoordinated actions

C. A physically demanding action

D. A movement based on chance

9. Within a sarcomere, which structure is the thick filament?

A. Actin

B. Myosin

C. Z-line

D. Tropomyosin

10. Reciprocal inhibition involves relaxation of one muscle when its antagonist contracts. Which statement best describes this mechanism?

A. The agonist contracts and the antagonist relaxes

B. The antagonist contracts to produce movement

C. Both the agonist and antagonist contract simultaneously

D. The agonist relaxes while the antagonist contracts

Answers

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

Explanations

1. On a distance-time graph, what is the correct progression as the line changes from horizontal to a positive-curved line to a negative-curved line?

A. Constant velocity, acceleration, no motion

B. No motion, acceleration, deceleration

C. Deceleration, acceleration, no motion

D. Acceleration, deceleration, constant velocity

In a distance-time graph, the slope represents velocity, and how that slope changes shows acceleration. A horizontal line means distance isn't changing, so there's no motion at all. If the line then becomes steeper as time progresses, the slope is increasing, which means velocity is increasing—positive acceleration or speeding up. If it later becomes less steep, the slope is decreasing, so velocity is getting smaller even though distance is still increasing; that's deceleration. So the progression from no motion to speeding up to slowing down aligns with no motion, acceleration, and deceleration.

2. What is the total ATP yield from one glucose molecule under aerobic conditions according to the source material?

A. 34

B. 38

C. 30

D. 26

Total ATP yield from glucose under aerobic conditions is found by adding up all the ATP produced during glycolysis, pyruvate oxidation, and the citric acid cycle, using the convention this source material specifies for how many ATP each NADH and FADH2 generates. Glycolysis gives 2 ATP directly, plus 2 NADH. If each NADH is worth 3 ATP, that adds 6 ATP from the NADH, bringing glycolysis to 8 ATP total. Pyruvate oxidation produces 2 NADH, which equals 6 ATP. In the citric acid cycle per glucose, you get 6 NADH (18 ATP), 2 FADH2 (4 ATP), and 2 GTP (2 ATP). That stage contributes 24 ATP. Add them up: 8 from glycolysis, 6 from pyruvate oxidation, and 24 from the citric cycle, totaling 38 ATP. Note this is based on the older convention (NADH = 3 ATP, FADH2 = 2 ATP). Some modern counts using different shuttle mechanisms give about 30–32 ATP, but the source material here uses 38.

3. According to the material, which factor contributes to a higher VO2 max in males than in females?

A. Higher hemoglobin concentrations

B. Larger body size

C. Both higher hemoglobin concentrations and larger body size

D. Neither factor contributes

VO2 max depends on how much oxygen is delivered to and used by working muscles. Two factors that differ between males and females help explain why males often have higher absolute VO2 max: the oxygen-carrying capacity of the blood and the size of the body. Higher hemoglobin concentration means each liter of blood can carry more oxygen, so arterial oxygen content is greater. With more oxygen available in the blood, more can be delivered to muscles during maximal effort, increasing VO2 max. Larger body size typically comes with more muscle mass and a bigger heart, which supports a higher maximal cardiac output. A greater cardiac output means more oxygen-rich blood is pumped to the muscles at peak exercise, further elevating VO2 max. Since VO2 max is the product of cardiac output and the oxygen extracted by tissues, both a higher oxygen content (from more hemoglobin) and a greater delivery capacity (from larger body size) contribute to higher VO2 max in males. When VO2 max is expressed relative to body mass, the difference can lessen, but these factors still explain the higher absolute values typically seen in males.

4. What is the approximate energy content per 100 g of lipids?

A. 1600 kJ

B. 1700 kJ

C. 1000 kJ

D. 3700 kJ

Lipids have the highest energy density among macronutrients. Each gram of fat provides about 9 kcal, which is roughly 37 kJ. If you have 100 g of lipids, the energy content is about 100 × 37 kJ ≈ 3700 kJ. This is why the approximate energy content per 100 g of lipids is about 3700 kJ. For context, carbohydrates and proteins supply about 17 kJ per gram (4 kcal/g), so 100 g of those would give around 1700 kJ, highlighting why fats yield much more energy per gram.

5. In aerobic metabolism, what are the main end products of complete glucose oxidation?

A. Lactic acid and water

B. Carbon dioxide and water

C. Glucose and oxygen

D. Methane and CO2

In aerobic metabolism, complete glucose oxidation ends with carbon dioxide and water. Glucose is fully broken down through glycolysis, the TCA cycle, and the electron transport chain, with the carbon atoms converted to CO2 and the oxygen from the air forming H2O at the end of the chain. The overall reaction can be summarized as glucose plus oxygen producing carbon dioxide and water, plus energy stored as ATP. Lactic acid arises under anaerobic conditions when oxygen is limited, not during complete aerobic oxidation. Glucose and oxygen are reactants, not end products, and methane isn't involved in human glucose metabolism.

6. Which term describes instruments that measure are accurate and operate correctly?

A. Validity

B. Specificity

C. Accuracy

D. Reliability

Accuracy is about how close a measurement is to the true value. When an instrument is accurate, its readings reflect the real value and are free from systematic bias, meaning it measures correctly. Reliability, by contrast, is about consistency across repeated measurements—an instrument can be reliable (always reads the same) but not accurate if that consistent value is off from the true value. Validity concerns whether the instrument measures what it's supposed to measure, not necessarily how close the readings are to the actual value. Specificity isn't the relevant idea in this general measurement context.

7. Sedentary individuals should aim for what percentage of daily calories from carbohydrates?

A. 40-50%

B. 60-70%

C. 55-60%

D. 70-80%

The question tests how much energy should come from carbohydrates for someone with a sedentary lifestyle. Carbohydrates are the body's main fuel, especially for daily activities, but when energy expenditure is low you don't need a very high carb share. Aim for a middle range that provides enough glucose for daily function and brain activity without supplying excess calories. Around 55-60% of daily calories from carbohydrates fits inside the general guideline of roughly 45-65% for the total population and aligns with lower energy needs, while leaving room for fats and proteins to meet remaining energy requirements. Options at the lower end (40-50%) could risk insufficient carbohydrate for energy and glycogen stores in some people, and options at the higher end (60-70% or 70-80%) would give more energy from carbs than typically needed for sedentary individuals, potentially contributing to excess total calories. Thus, 55-60% is the most appropriate choice.

8. How is the term skill best defined?

A. Consistent production of goal-oriented movements

B. Random, uncoordinated actions

C. A physically demanding action

D. A movement based on chance

Skill is the ability to perform movements that are goal-directed and produced consistently through practice. This description fits best because it emphasizes reliability, control, and purpose in a movement, not random or spontaneous action. When a person has skill, their actions follow a practiced, efficient pattern that reliably achieves a specific outcome, even under varying conditions. For example, delivering a serve in tennis or placing a free throw in basketball involves a smooth, repeatable sequence aimed at a target, not chance or heavy but aimless effort. The other ideas describe actions that aren't purposeful or repeatable, which doesn't capture what it means to perform a skilled movement.

9. Within a sarcomere, which structure is the thick filament?

A. Actin

B. Myosin

C. Z-line

D. Tropomyosin

Thick filaments in a sarcomere are composed of myosin. Myosin molecules align to form a central, rod-like filament with globular heads that extend outward to form cross-bridges with the actin filaments of the thin filament. These cross-bridges enable the sliding of filaments that shortens the sarcomere during contraction. The other components—actin as the thin filament (with tropomyosin regulating access to binding sites) and the Z-lines that define the sarcomere's boundaries—play different roles and are not the thick filament. So the structure that makes up the thick filament is myosin.

10. Reciprocal inhibition involves relaxation of one muscle when its antagonist contracts. Which statement best describes this mechanism?

A. The agonist contracts and the antagonist relaxes

B. The antagonist contracts to produce movement

C. Both the agonist and antagonist contract simultaneously

D. The agonist relaxes while the antagonist contracts

Reciprocal inhibition is the process where, as one muscle contracts to produce movement, its opposite muscle—the antagonist—relaxes to allow that movement to occur. This happens through neural wiring in the spinal cord: when the agonist is activated, inhibitory signals are sent to the antagonist's motor neurons, reducing its activity so it does not oppose the movement. For example, when you bend the elbow, the biceps (the agonist) contracts and the triceps (the antagonist) relaxes, letting the elbow flex smoothly. If the antagonist were to contract or both muscles contracted together, movement would be hindered or unstable, which is not how this mechanism operates.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://ibsehs.examzify.com

We wish you the very best on your exam journey. You've got this!