

# Coaching Science 3: Aquatics and Athletics Exam Practice (Sample)

## Study Guide



**Everything you need from our exam experts!**

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# Table of Contents

<b>Copyright</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>How to Use This Guide</b> .....	<b>4</b>
<b>Questions</b> .....	<b>5</b>
<b>Answers</b> .....	<b>8</b>
<b>Explanations</b> .....	<b>10</b>
<b>Next Steps</b> .....	<b>15</b>

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# 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

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- 1. What is the purpose of the '3-3-3' drill in backstroke?**
  - A. To improve kick tempo**
  - B. To practice shoulder rotation**
  - C. To practice breathing**
  - D. To improve streamline position**
  
- 2. What is the purpose of the '3 kicks: 1 pull' drill?**
  - A. To improve timing and length in breaststroke.**
  - B. To increase power in freestyle pull.**
  - C. To reduce turn times.**
  - D. To improve breathing technique.**
  
- 3. Which swim-specific protocol would you use to assess aerobic capacity, and what variables would be recorded?**
  - A. Land-based treadmill VO<sub>2</sub> max test only**
  - B. Swim-specific VO<sub>2</sub> max test or lactate threshold test; record pace, VO<sub>2</sub>, heart rate, lactate, stroke rate, and distance per stroke**
  - C. Measure vertical jump height to estimate aerobic capacity**
  - D. Count laps without physiological measurements**
  
- 4. In pool safety planning for coaching sessions, which role is primarily responsible for initiating an emergency response?**
  - A. Enforcing pool rules**
  - B. Having a trained lifeguard or lifeguard plan**
  - C. Maintaining depth markers**
  - D. Keeping rescue equipment accessible**
  
- 5. Hydrostatic pressure is defined as pressure exerted by a fluid at rest due to gravity. How does it change with depth?**
  - A. Hydrostatic pressure increases with depth.**
  - B. Hydrostatic pressure is caused by surface tension.**
  - C. Hydrostatic pressure decreases with depth.**
  - D. Hydrostatic pressure stays constant with depth.**

- 6. During a taper, what change is recommended?**
- A. Increase Volume And Intensity**
  - B. Eliminate All Training**
  - C. Switch To Entirely Different Sport**
  - D. Reduce Volume While Maintaining Or Slightly Reducing Intensity**
- 7. Which statement correctly defines the Centre of Gravity in humans?**
- A. The Centre of Gravity is the average location of body weight (hips).**
  - B. It is the average center of upward lift in water.**
  - C. It is the point where water pressure is greatest.**
  - D. It is the point of maximal muscle density.**
- 8. Which term describes a specific training block lasting several weeks or months?**
- A. Macrocycle.**
  - B. Microcycle.**
  - C. Mesocycle.**
  - D. Monocycle.**
- 9. What is a key characteristic of the butterfly stroke?**
- A. It requires strength and body undulation, with both arms moving symmetrically.**
  - B. It uses alternating arm strokes with irregular timing.**
  - C. It relies on a rigid body with no undulation.**
  - D. It is performed on the back.**
- 10. In distance running technique, what is the effect of minimizing upper body movement?**
- A. It reduces energy waste and improves efficiency.**
  - B. It increases oxygen consumption.**
  - C. It slows pace by restricting arm drive.**
  - D. It causes excessive fatigue in legs.**

## Answers

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

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## **Explanations**

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**1. What is the purpose of the '3-3-3' drill in backstroke?**

- A. To improve kick tempo**
- B. To practice shoulder rotation**
- C. To practice breathing**
- D. To improve streamline position**

Backstroke propulsion comes from a smooth rotation of the shoulders that powers the arm through a long, efficient pull. The 3-3-3 drill is designed to train that shoulder rotation by guiding the swimmer to move the arm in a rotated, arc-like path with each stroke. By focusing on rotating the shoulders, you feel the chest open, the elbow lead, and the hand travel along a more powerful catch and finish. This rotation also helps synchronize the body roll with the arm movement, so the pull stays connected to the core rather than relying on the arm alone. In short, the drill builds the feel of proper shoulder rotation that underpins an effective backstroke pull. While kick tempo, breathing, and streamline are important, this drill specifically reinforces the rotational action of the shoulders that drives propulsion.

**2. What is the purpose of the '3 kicks: 1 pull' drill?**

- A. To improve timing and length in breaststroke.**
- B. To increase power in freestyle pull.**
- C. To reduce turn times.**
- D. To improve breathing technique.**

Three kicks, one pull trains the swimmer to complete the leg kick sequence and hold a glide before initiating the arm pull, which is essential for breaststroke timing and a longer stroke. By forcing three kicks before the arms move, you reinforce the correct order and rhythm of the stroke, so the body stays streamlined and propulsion comes from a well-timed kick rather than a rushed arm pull. This approach helps you lengthen each cycle, since you're not rushing into the arm movement and you're maintaining a solid glide after the kick. The result is smoother, more efficient propulsion and better control of body position. It's less about power in the arm pull, turn speed, or breathing technique, and more about getting the timing and stroke length right for breaststroke.

**3. Which swim-specific protocol would you use to assess aerobic capacity, and what variables would be recorded?**

**A. Land-based treadmill VO<sub>2</sub> max test only**

**B. Swim-specific VO<sub>2</sub> max test or lactate threshold test; record pace, VO<sub>2</sub>, heart rate, lactate, stroke rate, and distance per stroke**

**C. Measure vertical jump height to estimate aerobic capacity**

**D. Count laps without physiological measurements**

Assessing aerobic capacity in swimmers relies on swim-specific protocols that provoke sustained aerobic stress and provide data in the water. A swim-specific VO<sub>2</sub> max test or a lactate threshold test directly measures how the body uses oxygen during swimming or the point at which lactate begins to accumulate, both of which reflect aerobic capacity in this context. In practice, record multiple variables to capture both capacity and efficiency: pace (swim speed) to link performance with energy cost, VO<sub>2</sub> to quantify oxygen uptake, heart rate to track cardiovascular response, lactate to identify sustainable effort, stroke rate to see how often the arms are moving, and distance per stroke to assess propulsion efficiency per movement. Together, these measurements give a complete picture for designing training and pacing strategies. Other options don't fit as well: a land-based VO<sub>2</sub> max test misses water-specific technique and drag, a vertical jump height measures power rather than aerobic endurance, and simply counting laps provides little physiological information.

**4. In pool safety planning for coaching sessions, which role is primarily responsible for initiating an emergency response?**

**A. Enforcing pool rules**

**B. Having a trained lifeguard or lifeguard plan**

**C. Maintaining depth markers**

**D. Keeping rescue equipment accessible**

The essential idea is that the person who initiates an emergency response is the trained lifeguard or the formal lifeguard plan. Lifeguards are specifically trained to recognize emergencies, make rapid assessments, and trigger the proper steps immediately—activate the emergency action plan, call for help or EMS, coordinate with others, and begin rescue or first aid as needed. Having a lifeguard or a documented lifeguard plan ensures there is a clear, rehearsed chain of actions so help arrives quickly and everyone knows who leads the response. Other elements support safety but don't start the emergency process. Enforcing rules helps prevent incidents; keeping rescue equipment accessible ensures tools are ready when needed; maintaining depth markers provides vital information, but none of these by themselves initiates the response—that role is covered by the lifeguard or the plan that specifies who takes action.

5. Hydrostatic pressure is defined as pressure exerted by a fluid at rest due to gravity. How does it change with depth?

- A. Hydrostatic pressure increases with depth.**
- B. Hydrostatic pressure is caused by surface tension.**
- C. Hydrostatic pressure decreases with depth.**
- D. Hydrostatic pressure stays constant with depth.**

Pressure in a fluid at rest increases with depth because every layer of fluid above adds its weight to the pressure felt below. The relationship is  $P = P_0 + \rho g h$ , where  $P_0$  is the surface pressure,  $\rho$  is density,  $g$  is gravity, and  $h$  is depth. As you go deeper,  $h$  grows, so  $P$  increases linearly (assuming uniform density). Surface tension isn't what sets this bulk pressure change; it mainly affects interfaces and capillary effects, not the steady increase with depth in a large body of fluid. So the correct idea is that hydrostatic pressure rises with depth, not decreases or stays the same, and not due to surface tension.

6. During a taper, what change is recommended?

- A. Increase Volume And Intensity**
- B. Eliminate All Training**
- C. Switch To Entirely Different Sport**
- D. Reduce Volume While Maintaining Or Slightly Reducing Intensity**

Tapering aims to lower accumulated fatigue without losing fitness, so performance on race day is enhanced. The recommended change is to reduce training volume while keeping intensity at the same level or only slightly lower. Lowering volume cuts down the total work, recovery demands, and metabolic stress, allowing the body to clear fatigue and restore energy stores. Keeping intensity where it is, or easing it only a touch, preserves the neural and speed-related adaptations that are important for performing at a high level, so athletes arrive fresh but still race-ready. If you increased volume and intensity, fatigue would accumulate, likely undermining performance when you need to feel sharp. Eliminating all training would lead to a loss of fitness and readiness. Switching to an entirely different sport wastes the specificity needed to perform well in the intended event.

7. Which statement correctly defines the Centre of Gravity in humans?

- A. The Centre of Gravity is the average location of body weight (hips).**
- B. It is the average center of upward lift in water.**
- C. It is the point where water pressure is greatest.**
- D. It is the point of maximal muscle density.**

Centre of Gravity is the point where the body's weight can be considered to act; it's the balance point, the weighted average of all body masses. In humans, because different body parts have different densities and masses, the CG sits in the lower torso region, around the hips/pelvis, and shifts with posture. This is why describing it as the average location of body weight around the hips is the best way to define it. The other ideas refer to buoyancy in water, water pressure, or tissue density, which are not what determines the Centre of Gravity.

**8. Which term describes a specific training block lasting several weeks or months?**

- A. **Macrocycle.**
- B. **Microcycle.**
- C. **Mesocycle.**
- D. **Monocycle.**

In periodization, training is organized into blocks that vary in length to target different adaptations. A block that lasts several weeks to months is called a mesocycle. It sits within a larger season-long plan known as the macrocycle and contains several shorter blocks that make up the weekly or daily work, the microcycles. The macrocycle defines the overall goal and timeline for the season, while microcycles lay out the specific sessions for a week or so. The term monocycles isn't part of the standard framework, so it doesn't describe these typical training blocks.

**9. What is a key characteristic of the butterfly stroke?**

- A. **It requires strength and body undulation, with both arms moving symmetrically.**
- B. **It uses alternating arm strokes with irregular timing.**
- C. **It relies on a rigid body with no undulation.**
- D. **It is performed on the back.**

Butterfly relies on a strong, coordinated wave-like motion through the body and a symmetric arm action. Both arms move together in the same moment, pulling simultaneously through the water before they recover in unison, while the hips and chest undulate to help drive propulsion. This combination of simultaneous arm movement and body undulation is the defining feature that makes butterfly unique and effective. The other descriptions fit other strokes or principles: alternating, irregular arm timing is more characteristic of freestyle; using a rigid body with no undulation would not generate the necessary propulsion in butterfly; and performing on the back describes backstroke, not butterfly.

**10. In distance running technique, what is the effect of minimizing upper body movement?**

- A. **It reduces energy waste and improves efficiency.**
- B. **It increases oxygen consumption.**
- C. **It slows pace by restricting arm drive.**
- D. **It causes excessive fatigue in legs.**

Minimizing upper body movement tests running economy—the idea that reducing unnecessary motion lowers the metabolic cost of running. When the arms and upper body swing excessively, extra muscular work is required, increasing oxygen use for the same pace. A relaxed, controlled arm swing keeps balance and rhythm without wasting energy, so the overall energy expenditure drops and efficiency improves. That's why the best outcome is reduced energy waste and better efficiency. The other ideas don't fit because adding energy cost would raise oxygen use, overly restricting arm motion can disrupt rhythm rather than help pace, and simply reducing upper body movement doesn't inherently cause more leg fatigue.

## 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](mailto:hello@examzify.com).**

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

**<https://coachingsci3aquaathletics.examzify.com>**

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

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