

COACHING SCIENCE 3: AQUATICS AND ATHLETICS EXAM PRACTICE (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

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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. Which training methods are used for aerobic endurance?**
 - A. Long runs, threshold runs, fartlek, and interval training.
 - B. Sprint intervals, plyometrics, weightlifting only.
 - C. Easy runs and stretching only.
 - D. Hill sprints and tempo runs only.
- 2. What does the FITT principle stand for in training planning?**
 - A. Frequency, Intensity, Time, Type
 - B. Frequency, Tempo, Time, Type
 - C. Frequency, Intensity, Tempo, Type
 - D. Frequency, Intensity, Time, Technique
- 3. Which statement best describes the density and viscosity of water relative to air?**
 - A. Water is much denser and more viscous than air.
 - B. Water is less dense than air.
 - C. Water has the same density as air.
 - D. Water is denser but less viscous than air.
- 4. Describe the dolphin kick in butterfly.**
 - A. A kick driven by ankle flexion only.
 - B. A wave-like movement initiated from the hips, with knees bending and extending.
 - C. A straight leg kick from the knees.
 - D. An arm-only motion with no leg involvement.
- 5. What should a coach understand about individual swimmers?**
 - A. Only their skill level.
 - B. Their favorite workouts.
 - C. Their equipment preferences.
 - D. Personality, skill level, strengths, goals, and susceptibilities.

- 6. Which energy system is primarily used for very short, high-intensity efforts such as a 60-meter dash?**
- A. Adenosine triphosphate-phosphocreatine (ATP-PC) system.
 - B. Glycolytic system.
 - C. Oxidative system.
 - D. Lactic acid system.
- 7. Define deliberate practice and apply it to improving a swimmer's starts.**
- A. Focused, High-Quality Practice With Clear Goals, Immediate Feedback, Repetition, And Increasing Difficulty To Push Skill Level
 - B. General Play Without Feedback
 - C. Random Practice Without Goals
 - D. Practice Only Occurs In Competition
- 8. What is the primary aim of sprinting?**
- A. To maintain a slow, controlled pace throughout a race.
 - B. To accelerate to maximum speed in the shortest time and maintain it.
 - C. To focus on endurance rather than speed.
 - D. To sprint only when not fatigued.
- 9. What is the primary purpose of using slow-motion video in swimming analysis?**
- A. To edit footage for promotional purposes.
 - B. To increase the file size of recordings.
 - C. To measure overall event duration only.
 - D. To assess stroke rate, stroke length, symmetry, body position, kick timing, and breakout technique, and monitor changes over time.
- 10. Which training method combines varied pace to promote endurance?**
- A. Static stretching
 - B. Long easy jogs only
 - C. Pure sprinting
 - D. Fartlek

Answers

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

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Explanations

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1. Which training methods are used for aerobic endurance?

A. Long runs, threshold runs, fartlek, and interval training.

B. Sprint intervals, plyometrics, weightlifting only.

C. Easy runs and stretching only.

D. Hill sprints and tempo runs only.

Developing aerobic endurance comes from training that stresses the cardiovascular and oxidative systems across sustained efforts, including varied intensities. Long runs build a solid aerobic base, improving steady-state pace, fat utilization, and the body's capacity to sustain effort for extended periods. Threshold runs push you at or just below lactate threshold, increasing the pace you can hold comfortably and enhancing fatigue resistance at higher intensities. Fartlek trains your body to switch between intensities smoothly, boosting both aerobic capacity and pace control in a more flexible way. Interval training, with hard work bouts followed by recoveries, elevates VO₂ max and overall cardiovascular efficiency, teaching the system to perform at high intensities more efficiently. The other options either emphasize strength, power, or short, non-sustained efforts, which don't provide the broad aerobic stimulus needed for endurance development. Easy runs with stretching alone lack sufficient intensity to drive aerobic adaptations, while hill sprints and tempo-only programs cover some aspects but don't deliver the full spectrum of endurance training described above.

2. What does the FITT principle stand for in training planning?

A. Frequency, Intensity, Time, Type

B. Frequency, Tempo, Time, Type

C. Frequency, Intensity, Tempo, Type

D. Frequency, Intensity, Time, Technique

FITT is a framework for planning training by adjusting four elements: how often you train, how hard you train, how long each session lasts, and what type of activity you do. Frequency covers the number of training sessions per week, shaping how often you stimulate the body and allow for recovery. Intensity describes how hard the work is, using measures like heart rate, pace, power, or perceived effort to set the training load. Time refers to the duration of each session, influencing the overall weekly volume. Type is the kind of exercise you perform, such as endurance, strength, or skill-focused work, guiding the nature of the adaptations you're targeting. The standard acronym uses Frequency, Intensity, Time, Type, so the correct answer aligns with these four elements. The other options mix in Tempo or Technique, which are not part of the FITT letters—Tempo relates to pace within a session, and Technique concerns movement form—so they don't represent the defined components of FITT.

3. Which statement best describes the density and viscosity of water relative to air?

A. Water is much denser and more viscous than air.

B. Water is less dense than air.

C. Water has the same density as air.

D. Water is denser but less viscous than air.

The idea being tested is how density and viscosity compare between water and air. Water is about 1000 kg per cubic meter, while air at sea level is roughly 1.2 kg per cubic meter, so water is around 800 times denser. In terms of viscosity, water is roughly 1 mPa·s, whereas air is about 0.018 mPa·s, meaning water is about 50 times more viscous. So water is both much denser and more viscous than air. This combination explains why moving through water offers far more resistance and buoyancy effects than moving through air: the higher density increases immovable mass per volume and buoyant forces, while the higher viscosity increases resistance to flow and shear.

4. Describe the dolphin kick in butterfly.

- A. A kick driven by ankle flexion only.
- B. A wave-like movement initiated from the hips, with knees bending and extending.**
- C. A straight leg kick from the knees.
- D. An arm-only motion with no leg involvement.

The dolphin kick in butterfly is an undulatory, wave-like movement generated by the body's midsection. Power comes from the hips and torso, creating a ripple that travels down the spine to the legs. As the wave moves, the knees bend and then extend in a synchronized sequence, allowing the feet to drive water backward with a continuous, fluid motion. This coordinated hip-driven ripple keeps both legs working together, rather than relying on just the ankles, knees alone, or an arm-only action. That's why the best description is a wave-like movement initiated from the hips, with knees bending and extending.

5. What should a coach understand about individual swimmers?

- A. Only their skill level.
- B. Their favorite workouts.
- C. Their equipment preferences.
- D. Personality, skill level, strengths, goals, and susceptibilities.**

Understanding swimmers as individuals is essential for coaching. Each swimmer brings a unique mix of personality, skill level, strengths, goals, and susceptibilities that shape how they train, adapt, and perform. The personality affects motivation, persistence, and how they cope with feedback and pressure; skill level and strengths indicate where to target technical work and how to structure progression; goals guide event selection, pacing, and the level of challenge that keeps them engaged; susceptibilities—such as tendencies toward fatigue, overuse injuries, stress, or sleep disruption—drive monitoring, recovery needs, and risk management. With this holistic view, a coach can tailor training design, including swim stimulus, rest, and progression, to the individual, maximize adaptation, and support sustainable improvement. Focusing only on skill level ignores motivational and risk factors; prioritizing favorite workouts or equipment preferences misses how the swimmer will respond to training plans, so those aspects alone aren't enough to drive effective coaching.

6. Which energy system is primarily used for very short, high-intensity efforts such as a 60-meter dash?

- A. Adenosine triphosphate-phosphocreatine (ATP-PC) system.**
- B. Glycolytic system.
- C. Oxidative system.
- D. Lactic acid system.

The energy for a very short, all-out sprint comes from the phosphagen (ATP-PC) system because it uses the muscles' immediate stores of ATP and phosphocreatine to generate energy instantly without oxygen. These stores are ready at the start and can power maximal effort for roughly up to 10 seconds, which aligns with the typical duration of a 60-meter dash. Because it delivers energy so rapidly, it is the dominant source for this kind of race. Once those stores are depleted, other systems take on a larger role—glycolysis becomes more involved for longer bursts and oxidative metabolism remains minimal for such a brief effort. The oxidative system supports endurance, and the lactic acid term is tied to glycolysis' byproducts and becomes more relevant as efforts extend beyond a few seconds.

7. Define deliberate practice and apply it to improving a swimmer's starts.

- A. Focused, High-Quality Practice With Clear Goals, Immediate Feedback, Repetition, And Increasing Difficulty To Push Skill Level
- B. General Play Without Feedback
- C. Random Practice Without Goals
- D. Practice Only Occurs In Competition

Deliberate practice is intentional, high-quality training designed to push performance beyond current ability through clearly defined goals, immediate feedback, repetition, and progressively increasing difficulty. That description fits best because it emphasizes purpose, feedback, and gradual challenge rather than just doing more reps or playing around. Applied to improving a swimmer's starts, you'd define precise, measurable targets for each start component—stance on the block, grip, knee and hip extension, reaction time, body angle, drive off the block, entry into the water, and the first stroke. Practice would be task-specific and feedback-driven: after each attempt, you'd use immediate feedback from video analysis, timing devices, or coach cues to adjust technique. Repetition would be purposeful, focusing on one or two aspects at a time, not random reps. You'd gradually increase difficulty by adding elements like start fatigue, variable block heights, or different reaction cues, so the swimmer maintains accuracy under stress. Dry-land work on posture and leg drive would precede in-water starts, then progress to more complex, speed-focused starts, always with clear goals and feedback guiding improvement.

8. What is the primary aim of sprinting?

- A. To maintain a slow, controlled pace throughout a race.
- B. To accelerate to maximum speed in the shortest time and maintain it.
- C. To focus on endurance rather than speed.
- D. To sprint only when not fatigued.

Sprinting is all about rapid velocity development and holding that high speed as long as the race distance requires. It starts with an explosive acceleration from the start, driving powerful leg action and an efficient drive phase to reach maximum velocity as quickly as possible. Once top speed is reached, the athlete's aim is to maintain that high speed for as long as feasible, minimizing loss of pace due to fatigue. This relies on fast-twitch power, optimal mechanics, and speed endurance to resist deceleration toward the finish. The energy system that powers this sudden, high-intensity effort is the phosphagen (ATP-CP) system, which provides quick bursts of energy to enable that rapid acceleration. Training supports this by emphasizing explosive starts, improving drive mechanics, attaining a higher maximum velocity, and developing speed endurance to sustain velocity without a steep drop-off. Options that describe a slow, controlled pace, a focus on endurance, or sprinting only when not fatigued don't align with sprinting's purpose, which centers on speed and velocity rather than sustained slow pacing or avoidance of fatigue.

9. What is the primary purpose of using slow-motion video in swimming analysis?

- A. To edit footage for promotional purposes.
- B. To increase the file size of recordings.
- C. To measure overall event duration only.
- D. To assess stroke rate, stroke length, symmetry, body position, kick timing, and breakout technique, and monitor changes over time.**

Slow-motion video in swimming analysis lets you break down technique frame by frame, revealing details that speed hides. It enables precise assessment of stroke rate and stroke length, checks for symmetry between sides, and allows you to evaluate body position and alignment in the water. You can also scrutinize kick timing and how the kick coordinates with the arm pull, as well as the breakout from underwater to surface to ensure a smooth, propulsive transition. By watching the footage slowed down, coaches can observe timing, positions, and subtle movements clearly and track how these aspects change over time to measure progress. It's not about editing for promotion, increasing file size, or merely measuring how long an event lasts; the value lies in detailed, actionable technique analysis.

10. Which training method combines varied pace to promote endurance?

- A. Static stretching
- B. Long easy jogs only
- C. Pure sprinting
- D. Fartlek**

Varying pace within a single workout is a powerful way to build endurance because it trains the body to sustain effort despite changing demands, improving both aerobic and anaerobic systems and teaching you how to recover quickly between faster efforts. This approach, often described as speed play, mixes periods of faster running with easier recovery, helping you maintain tempo over longer durations and adapt to real race conditions. Fartlek fits this idea perfectly: you jog and then insert surges of faster running, with the length and intensity of those surges varying based on how you feel or the terrain. The flexibility and unpredictability mimic competition, where you don't always know when you'll need a stronger effort. In contrast, static stretching focuses on range of motion and flexibility rather than endurance training; long easy jogs alone provide steady, low-intensity aerobic work but keep pace uniform and miss the varied stimulus; pure sprinting builds speed and power with high intensity but doesn't train the body to maintain endurance across longer efforts with pacing changes.

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:

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

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