

CERTIFIED STRENGTH AND CONDITIONING SPECIALIST (CSCS) EXERCISE SCIENCE PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 primary mechanism by which load-bearing exercise improves bone mineral density?**
 - A. Remodeling responds to mechanical strain.
 - B. Increased bone resorption without gains.
 - C. Bone density improves solely due to calcium supplementation.
 - D. Bone formation occurs independent of mechanical stress.
- 2. When designing a resistance training program for a novice client, which is a key initial priority?**
 - A. Emphasize technique with multi-joint movements.
 - B. Prioritize single-joint isolation exercises to build initial muscle.
 - C. Schedule workouts 5–6 days per week from the start.
 - D. Use maximal loads to establish baseline strength.
- 3. Which energy system dominates energy supply for very short, high-intensity efforts of about 5-15 seconds?**
 - A. Glycolytic system
 - B. Lipid oxidation
 - C. Phosphagen energy system
 - D. Oxidative phosphorylation
- 4. When calculating energy expenditure using MET, which formula correctly uses MET, body weight, and time?**
 - A. Energy expenditure = MET × body weight × time
 - B. Energy expenditure = MET × time
 - C. Energy expenditure = MET × body weight
 - D. Energy expenditure = Time × Weight
- 5. What are important considerations when designing resistance training for youth?**
 - A. Emphasize technique, non-maximal loads, multi-joint movements, age-appropriate progression, adequate supervision, and recovery
 - B. Emphasize maximal loads early to build strength
 - C. Use single-joint isolation movements exclusively
 - D. Avoid supervision and ignore recovery

- 6. Why is test-retest reliability important in athlete performance testing and how is it assessed?**
- A. It ensures consistent results across tests; assessed with intraclass correlation, typical error, and practice trials
 - B. It ensures tests measure different constructs; assessed with factor analysis
 - C. It ensures high validity; assessed by comparing to a gold-standard test
 - D. It ensures tests are quick to administer; assessed by duration of testing
- 7. What does the 2-for-2 progression rule state in resistance training?**
- A. If a client can perform two fewer repetitions than the target for two consecutive workouts at a given load, reduce the load.
 - B. If a client can perform two more repetitions than the target for two consecutive workouts at a given load, increase the load.
 - C. If a client can perform the same number of repetitions as the target for two workouts, decrease the load.
 - D. When two workouts are completed at the same load, advance to a new exercise.
- 8. Which two factors determine the primary energy system used during exercise?**
- A. Environmental Humidity and Altitude
 - B. Exercise Intensity and Exercise Duration
 - C. Muscle Length and Joint Angle
 - D. Training History and Age
- 9. A high school junior 1600-m runner has been aerobically training for 2 years. She improves her performance time over the season. Which factor is PRIMARILY responsible for her performance increases?**
- A. VO₂max improvement
 - B. Lactate threshold
 - C. Hematocrit
 - D. Running economy

10. Is skeletal muscle hyperplasia common in humans, and what is the primary mechanism of hypertrophy with resistance training?

- A. Hyperplasia is common in humans; hypertrophy mainly from increased fiber number.
- B. Hyperplasia is rare in humans; hypertrophy mainly from increased myofibrillar protein synthesis and fiber cross-sectional area.
- C. Hypertrophy results primarily from decreased protein breakdown.
- D. Hypertrophy is achieved mainly through decreased protein degradation.

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Answers

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

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Explanations

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1. What is the primary mechanism by which load-bearing exercise improves bone mineral density?

- A. Remodeling responds to mechanical strain.**
- B. Increased bone resorption without gains.
- C. Bone density improves solely due to calcium supplementation.
- D. Bone formation occurs independent of mechanical stress.

Load-bearing exercise creates mechanical strain in bone, and bone responds to that strain by remodeling to become stronger where the stress is greatest. Osteocytes sense the strain and send signals that favor bone formation by osteoblasts, tilting the balance toward new bone mineral deposition and a denser, stronger structure over time. This adaptation aligns with Wolff's law, which states bone grows and remodels in response to the forces placed on it. Calcium intake helps support bone health, but without the mechanical stimulus, the remodeling response necessary to increase density is limited. So the primary mechanism is the strain-induced remodeling that promotes bone formation in stressed areas.

2. When designing a resistance training program for a novice client, which is a key initial priority?

- A. Emphasize technique with multi-joint movements.**
- B. Prioritize single-joint isolation exercises to build initial muscle.
- C. Schedule workouts 5–6 days per week from the start.
- D. Use maximal loads to establish baseline strength.

Focusing on technique with multi-joint movements builds a foundation for safe and effective strength gains. These compound patterns—like squats, deadlifts, presses, and rows—teach coordinated control across multiple joints, recruit large muscle groups, and develop core stability. When a novice prioritizes form, the nervous system learns efficient movement and stabilizer strength, which lowers injury risk and creates a solid base for progression. Once technique is solid, loads and volume can be increased safely. Isolating a single joint doesn't establish the broad motor control and strength base needed early on, and it can be less functional for real-life tasks. Jumping into a 5–6 day-per-week schedule too soon risks overtraining and form breakdown, which undermines progress and safety. Starting with maximal loads to establish a baseline can compromise technique and injury risk before proper movement patterns are ingrained.

3. Which energy system dominates energy supply for very short, high-intensity efforts of about 5-15 seconds?

- A. Glycolytic system
- B. Lipid oxidation
- C. Phosphagen energy system**
- D. Oxidative phosphorylation

For very short, high-intensity efforts, the muscles rely on the phosphagen energy system because it can produce ATP extremely quickly from stored ATP and phosphocreatine without needing oxygen. This rapid ATP regeneration supports maximal effort right at the start, which is crucial for efforts in the 5–15 second window. The capacity of this system is limited, so its dominance is strongest in that brief burst before other systems take over. Lipid oxidation is too slow for high-intensity bursts, and oxidative phosphorylation depends on oxygen and lags in onset, making them unsuitable for powering such short, intense efforts.

4. When calculating energy expenditure using MET, which formula correctly uses MET, body weight, and time?

- A. Energy expenditure = MET × body weight × time**
- B. Energy expenditure = MET × time
- C. Energy expenditure = MET × body weight
- D. Energy expenditure = Time × Weight

MET represents the energy cost of activity relative to resting metabolic rate, and 1 MET is about 1 kcal/kg/hour. To estimate calories burned, you multiply the activity's MET value by body weight in kilograms and the duration of the activity in hours. So the correct formula is energy expenditure (kcal) = MET × body weight (kg) × time (hours). This accounts for how heavier individuals burn more energy and how longer activity increases total calories. For example, a 70 kg person doing an activity at 6 MET for 0.5 hours would burn $6 \times 70 \times 0.5 = 210$ kcal. The other options omit either weight or time or mix incompatible units, which prevents accurate kcal calculation. If time is given in minutes, convert to hours first (minutes ÷ 60).

5. What are important considerations when designing resistance training for youth?

- A. Emphasize technique, non-maximal loads, multi-joint movements, age-appropriate progression, adequate supervision, and recovery**
- B. Emphasize maximal loads early to build strength
- C. Use single-joint isolation movements exclusively
- D. Avoid supervision and ignore recovery

When designing resistance training for youth, safety and gradual development of movement skills are the priorities. The best approach centers on teaching proper technique first, using loads well below maximal effort, and emphasizing multi-joint movements that train multiple muscle groups and mirror real-life tasks. This foundation supports functional strength and reduces injury risk as the neuromuscular system and growth factors are developing. Progression should be age-appropriate and gradual, allowing for adaptations in strength, coordination, and confidence without overloading developing joints or growth plates. Adequate supervision ensures correct technique, safe exercise selection, appropriate spotting when needed, and a positive training environment. Recovery is essential, including rest between sessions and attention to sleep and nutrition, to support repair and continued growth. Choosing maximal loads early tends to increase injury risk and can outpace a young athlete's maturation. Relying exclusively on single-joint isolation movements misses the value of functional, multi-joint training that better translates to everyday activities and athletic performance. And training without supervision or with ignored recovery creates unsafe conditions and a higher chance of overuse injuries.

6. Why is test-retest reliability important in athlete performance testing and how is it assessed?

- A. It ensures consistent results across tests; assessed with intraclass correlation, typical error, and practice trials**
- B. It ensures tests measure different constructs; assessed with factor analysis
- C. It ensures high validity; assessed by comparing to a gold-standard test
- D. It ensures tests are quick to administer; assessed by duration of testing

Test-retest reliability focuses on whether a test gives stable, consistent scores when the same person takes it more than once under similar conditions. In athlete performance testing, you want to be confident that any observed change in score over time reflects an actual change in ability, not random measurement error, day-to-day fluctuations, or learning effects. That's why consistency across repeated administrations is essential. This reliability is assessed with statistics that quantify agreement across trials. The intraclass correlation coefficient (ICC) tells you how much of the total variation in scores comes from real differences between athletes versus random error; a higher ICC means more dependable scores across tests. The typical error (or standard error of measurement) estimates the average amount a repeated score for the same athlete might vary, giving a practical sense of the noise in the data and helping to determine what magnitude of change matters. Including practice trials before formal testing helps athletes become familiar with the procedures, reducing learning effects and day-to-day variability, which in turn improves reliability. Other options point to different concepts. Factor analysis examines whether tests load on different underlying constructs, not the repeatability of a single test. Validity assessed against a gold-standard test addresses accuracy of measurement, not consistency. Speed of administration concerns practicality, not reliability.

7. What does the 2-for-2 progression rule state in resistance training?

- A. If a client can perform two fewer repetitions than the target for two consecutive workouts at a given load, reduce the load.
- B. If a client can perform two more repetitions than the target for two consecutive workouts at a given load, increase the load.**
- C. If a client can perform the same number of repetitions as the target for two workouts, decrease the load.
- D. When two workouts are completed at the same load, advance to a new exercise.

Two-for-two progression uses performance relative to a target rep count to guide when to add load. The idea is to confirm that the trainee can consistently handle more work before making the training harder. If the client can perform two more repetitions than the target for two consecutive workouts at the same load, that shows they've adapted enough to warrant increasing the resistance. Increasing by the smallest practical amount preserves the balance between overload and recovery, helping continued gains without overloading. This rule also provides a clear signal for backing off: if two consecutive workouts fall short by two reps, you should reduce the load to keep the stimulus appropriate. Hitting the target exactly for two workouts usually means you stay at the same load and reassess in the next sessions. And advancing to a new exercise isn't dictated by this rule; progression focuses on load adjustments based on consistent performance at the current exercise.

8. Which two factors determine the primary energy system used during exercise?

- A. Environmental Humidity and Altitude
- B. Exercise Intensity and Exercise Duration**
- C. Muscle Length and Joint Angle
- D. Training History and Age

The main factor that determines which energy system supplies most of the work is how hard you're working and for how long you're working. Very high-intensity efforts depend mainly on the phosphagen (ATP-PC) system for short bursts, roughly up to 10 seconds. As the duration extends and the intensity remains high, the glycolytic system becomes the primary source for ATP, supporting efforts from about 10 seconds to a couple of minutes. For longer, sustained efforts at moderate to lower intensity, the oxidative (aerobic) system takes over as the main supplier of energy. In real performance, all systems contribute to some degree, but the predominant system is dictated by the combination of exercise intensity and duration. The other factors listed don't determine which energy system is used in the moment—the environment, body mechanics, or age/training history may influence capacity or performance, but not the immediate system selection.

9. A high school junior 1600-m runner has been aerobically training for 2 years. She improves her performance time over the season. Which factor is PRIMARILY responsible for her performance increases?

- A. VO2max improvement**
- B. Lactate threshold
- C. Hematocrit
- D. Running economy

Improvement in VO2max is the main driver of better performance for a middle-distance runner over a season. VO2max represents the maximum rate at which the body can take in, transport, and use oxygen during intense exercise. When aerobic training elevates VO2max, the athlete can sustain a faster pace before fatigue sets in, which directly translates to shorter race times in a 1600 m. Lactate threshold and running economy also improve with training and contribute to performance, but the most impactful, directly measurable change across a training season is an increased VO2max. Hematocrit tends to be less of a factor in season-to-season performance changes for this type of athlete.

10. Is skeletal muscle hyperplasia common in humans, and what is the primary mechanism of hypertrophy with resistance training?

- A. Hyperplasia is common in humans; hypertrophy mainly from increased fiber number.
- B. Hyperplasia is rare in humans; hypertrophy mainly from increased myofibrillar protein synthesis and fiber cross-sectional area.
- C. Hypertrophy results primarily from decreased protein breakdown.
- D. Hypertrophy is achieved mainly through decreased protein degradation.**

The main idea is that resistance training grows muscle mainly by enlarging existing muscle fibers, not by creating new ones. In humans, hyperplasia (an increase in the number of fibers) is rare; most adults add size by increasing the amount of contractile proteins inside each fiber. The stimulus from resistance exercise ramps up myofibrillar protein synthesis, leading to bigger fibers with more actin and myosin and a larger cross-sectional area. Decreased protein breakdown can help the net balance favor growth, but it's not the primary driver—that role is played by increased protein synthesis and the resulting rise in fiber size.

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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