# THE PHYSIOLOGY OF TRAINING 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.

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# 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!

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# Questions

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**1. Identify two key hormonal responses to acute resistance exercise and their time course.**

A. Acute rises in cortisol alone with no other hormonal changes.

B. Acute rises in testosterone and growth hormone; a transient rise in cortisol; insulin typically decreases.

C. No hormonal changes occur during acute resistance exercise.

D. Only growth hormone rises while testosterone remains unchanged and cortisol decreases.

**2. Prolonged endurance training increases the size of the left ventricle with little change in ventricular wall thickness.**

A. True

B. False

C. Cannot be determined

D. Not enough data

**3. Sprint training increases the activities of which enzymes?**

A. Key glycolytic enzymes

B. Mitochondrial enzymes

C. Lipolytic enzymes

D. Antioxidant enzymes

**4. The principle of _____ refers to the types of adaptations occurring in muscle as a result of training.**

A. Specificity

B. Reversibility

C. Overload

D. Individualization

**5. Which receptors detect temperature and chemical changes in muscle tissue?**

A. Small-diameter nerve fibers

B. Large-diameter nerve fibers

C. Mechanoreceptors

D. Muscle spindle receptors

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**6. All training-induced increases in maximum cardiac output must come from a(n) _____.**

A. Increase in stroke volume

B. Increase in heart rate

C. Increase in blood pressure

D. Increase in blood volume

**7. The corollary of the _____ principle is the principle of reversibility.**

A. Overload

B. Specificity

C. Reversibility

D. Progression

**8. The training-induced increase in arteriovenous oxygen difference is due to which of the following?**

A. Increased Cardiac Output

B. Increased Venous Return

C. Increased Oxygen Extraction From The Blood

D. Increased Arterial Oxygen Content

**9. What is glycogen depletion and its implication for endurance performance?**

A. Reduction of muscle glycogen stores during prolonged exercise; leads to fatigue and decreased performance; fueling strategies aim to delay depletion.

B. Increase in muscle glycogen stores during endurance exercise.

C. Glycogen stores remain constant.

D. Glycogen depletion improves endurance performance.

**10. An increase in the end diastolic volume stretches the left ventricular wall, causing cardiac muscle to contract more forcefully via which mechanism?**

A. Frank-Starling Mechanism

B. Bohr Effect

C. Law Of Laplace

D. Renin-Angiotensin System

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# Answers

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

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# Explanations

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**1. Identify two key hormonal responses to acute resistance exercise and their time course.**

A. Acute rises in cortisol alone with no other hormonal changes.

B. Acute rises in testosterone and growth hormone; a transient rise in cortisol; insulin typically decreases.

C. No hormonal changes occur during acute resistance exercise.

D. Only growth hormone rises while testosterone remains unchanged and cortisol decreases.

*During an acute resistance workout the body activates hormones that support muscle work and recovery. The strongest pattern involves rises in testosterone and growth hormone right around the effort, helping to drive muscle protein synthesis and adaptation. At the same time, cortisol surges briefly to help mobilize energy substrates like glucose and fatty acids, then returns toward baseline once the exercise ends. Insulin typically falls during the activity because sympathetic activity and muscle contractions blunt insulin release and shift metabolism toward glucose and fat mobilization for use by working muscles. In terms of timing, growth hormone and testosterone tend to peak during or very soon after the session, cortisol rises during the exercise and declines in the ensuing hours, and insulin remains suppressed during the workout (with potential changes after exercise depending on feeding).*

**2. Prolonged endurance training increases the size of the left ventricle with little change in ventricular wall thickness.**

A. True

B. False

C. Cannot be determined

D. Not enough data

*Endurance training creates a volume overload on the heart, so it adapts by enlarging the left ventricular chamber rather than severely thickening the walls. This type of remodeling, called eccentric hypertrophy, involves adding sarcomeres in series, which lengthens the cardiomyocytes and expands the LV end-diastolic diameter. Wall thickness rises only modestly, so the wall doesn't thicken as much as the chamber enlarges, and relative wall thickness remains normal or even slightly reduced. This pattern contrasts with resistance training, where the heart often thickens its walls (concentric hypertrophy) with less change in chamber size. So the statement accurately reflects how prolonged endurance training features left ventricular enlargement with little change in wall thickness.*

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## 3. Sprint training increases the activities of which enzymes?

A. Key glycolytic enzymes

B. Mitochondrial enzymes

C. Lipolytic enzymes

D. Antioxidant enzymes

*Sprint training pushes muscles to rely on rapid, anaerobic energy production, so the body adapts by boosting the glycolytic pathway. This means increased activity of key glycolytic enzymes—like phosphofructokinase, glyceraldehyde-3-phosphate dehydrogenase, and pyruvate kinase—to speed up glucose breakdown and generate ATP quickly during intense efforts. Enzymes such as lactate dehydrogenase also rise to help recycle NAD+ and sustain glycolysis when oxygen is limited, producing lactate as a byproduct. In contrast, mitochondrial enzymes are more closely tied to endurance training and oxidative metabolism, while lipolytic enzymes focus on fat breakdown—less central during short, high-intensity sprints. Antioxidant enzymes may adapt, but they don't drive the primary sprint adaptation. So the best answer reflects the upregulation of glycolytic enzymes to meet the demands of sprinting.*

## 4. The principle of _____ refers to the types of adaptations occurring in muscle as a result of training.

A. Specificity

B. Reversibility

C. Overload

D. Individualization

*Adaptations in muscle depend on the specific training stimulus applied. This is the principle of specificity: the body changes in the exact muscles, movement patterns, and energy systems that are trained. So, training that targets strength and hypertrophy will produce those adaptations in the trained muscles, while endurance-focused work enhances oxidative capacity and fatigue resistance in the same fibers. Reversibility describes losses after stopping training, overload refers to increasing stress to provoke adaptation, and individualization means tailoring programs to an individual, not the nature of the muscle adaptations themselves. In practice, you get the observed changes by focusing the training on the precise muscles and qualities you want to improve.*

## 5. Which receptors detect temperature and chemical changes in muscle tissue?

A. Small-diameter nerve fibers

B. Large-diameter nerve fibers

C. Mechanoreceptors

D. Muscle spindle receptors

*Small-diameter afferent fibers carry temperature and chemical signals from muscle tissue. These thin fibers, including A-delta and C fibers, convey thermoreception and chemoreception, such as changes in pH, $CO_2$, and metabolite buildup during activity. Mechanoreceptors, by contrast, respond to mechanical changes like stretch or force and are carried by larger-diameter fibers, while muscle spindle receptors are specific proprioceptors that track muscle length and movement. So the receptors detecting temperature and chemical changes in muscle are the ones tied to small-diameter nerve fibers.*

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**6. All training-induced increases in maximum cardiac output must come from a(n) _____.**

A. Increase in stroke volume

B. Increase in heart rate

C. Increase in blood pressure

D. Increase in blood volume

*Maximum cardiac output during intense exercise is determined by heart rate times stroke volume. In trained individuals, heart rate at maximal effort changes little, while the heart's ability to pump blood per beat increases. Endurance training leads to a larger left ventricular chamber, improved filling (preload) partly from expanded plasma volume, and stronger contractility with a more favorable afterload. These adaptations raise stroke volume, so the rise in maximal cardiac output after training is driven mainly by an increase in stroke volume. Blood pressure or blood volume contribute to this process, but the primary limiter and the main driver of the boost in max cardiac output is the increase in stroke volume.*

**7. The corollary of the _____ principle is the principle of reversibility.**

A. Overload

B. Specificity

C. Reversibility

D. Progression

*Maintaining a training effect hinges on keeping the stimulus ongoing. The reversibility principle captures what happens when that stimulus is removed or reduced: the adaptations gained from training decline. So the corollary is that without continued training, improvements are not permanent and will fade over time. This is why ongoing—or at least consistent—training is needed to preserve gains. The other principles describe how to apply training (increasing demands, focusing on the type of work you do, and progressive loading), but they don't describe what happens when the stimulus stops in the same direct way.*

**8. The training-induced increase in arteriovenous oxygen difference is due to which of the following?**

A. Increased Cardiac Output

B. Increased Venous Return

C. Increased Oxygen Extraction From The Blood

D. Increased Arterial Oxygen Content

*Muscles trained for endurance become better at pulling oxygen out of the blood as it passes through them. The arteriovenous oxygen difference is the amount of O2 removed from arterial blood by the tissues, calculated as arterial O2 content minus venous O2 content. With training, muscles increase their oxidative capacity through more mitochondria, greater capillary density, and more oxidative enzymes, which enhances the extraction of O2 from the blood. As a result, venous O2 content falls more during exercise, widening the arteriovenous O2 difference. This is why the training-induced increase in this difference comes from increased oxygen extraction from the blood. Cardiac output can rise with training and help deliver more O2, but the specific rise in arteriovenous O2 difference is driven by the muscles extracting more O2. Venous return affects preload and stroke volume but doesn't directly explain the greater extraction. Arterial oxygen content doesn't typically drive this change; the key factor is how much O2 the tissues extract from the blood.*

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**9. What is glycogen depletion and its implication for endurance performance?**

A. Reduction of muscle glycogen stores during prolonged exercise; leads to fatigue and decreased performance; fueling strategies aim to delay depletion.

B. Increase in muscle glycogen stores during endurance exercise.

C. Glycogen stores remain constant.

D. Glycogen depletion improves endurance performance.

*Glycogen depletion means the muscle's glycogen stores are reduced during prolonged exercise. Glycogen is the fast, readily available fuel for contracting muscles, so as these stores fall, the muscle loses its primary high intensity energy source. That makes it harder to sustain the same pace, increases fatigue, and leads to a drop in endurance performance. In endurance events, delaying glycogen depletion is key. By fueling with carbohydrates before and during exercise, and by training to become more efficient at burning fat, athletes can spare muscle glycogen and maintain a steadier pace for longer. Once glycogen is depleted, the body relies more on fat, which is slower to turn into usable energy at high intensities, so performance suffers. Other options don't fit because glycogen stores do not increase during prolonged exercise, they typically decline unless carb intake is sufficient; stores do not stay constant; and depletion does not improve endurance.*

**10. An increase in the end diastolic volume stretches the left ventricular wall, causing cardiac muscle to contract more forcefully via which mechanism?**

A. Frank-Starling Mechanism

B. Bohr Effect

C. Law Of Laplace

D. Renin-Angiotensin System

*Preload-dependent increase in the force of contraction is the key idea. When the end-diastolic volume rises, the ventricular muscle fibers are stretched more during filling. This lengthening moves the sarcomeres toward an optimal length for actin–myosin cross-bridge formation, so more cross-bridges can form during systole and the heart contracts with greater force. The result is a stronger contraction and a larger stroke volume that helps match the amount of blood returning to the heart. This is an intrinsic property of cardiac muscle, balancing venous return with cardiac output. The Bohr effect deals with oxygen release from hemoglobin, the Law of Laplace describes how wall tension relates to pressure and radius, and the Renin-Angiotensin System governs long-term blood pressure and volume—none explain the immediate length-dependent boost in contractility.*

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# 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://physiologyoftraining.examzify.com

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

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