ANATOMY AND PHYSIOLOGY – MUSCULAR SYSTEM PRACTICE TEST (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Table of Contents

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. Which term describes a tendon pathology resulting from repetitive overuse?

A. Myalgia

B. Myopathy

C. Tendinitis

D. Tendinopathy

2. Which of the following best distinguishes muscle tone from muscle strength?

A. Tone is the baseline passive tension.

B. Strength is the rate of fatigue during activity.

C. Tone is the speed of a muscle's contraction.

D. Strength is the maximum force a muscle can generate during active contraction.

3. What method does muscle fiber contraction follow?

A. Contractions proportional to stimulus intensity

B. Contractions are random

C. All-or-none principle states fibers contract completely or not at all

D. Contractions are graded by stimulus frequency

4. Which sequence correctly describes the structural organization from muscle to sarcomere?

A. Muscle myofiber fascicle muscle sarcomere

B. Muscle fascicle myofibril sarcomere mitochondrion

C. Muscle fascicle muscle fiber myofibril sarcomere

D. Muscle fibril fascicle myofiber sarcomere

5. Which are the two main types of smooth muscle and an example for each?

A. Single-unit smooth muscle — example: iris; Multi-unit smooth muscle — example: intestinal

B. Single-unit smooth muscle — example: uterus; Multi-unit smooth muscle — example: iris

C. Single-unit smooth muscle — example: iris; Multi-unit smooth muscle — example: intestinal

D. Single-unit smooth muscle — example: iris; Multi-unit smooth muscle — example: uterus

6. Which statement describes a muscular disorder listed?

A. Myasthenia Gravis is unrelated to acetylcholine receptors

B. Duchenne MD is caused by a lack of a protein to maintain the sarcolemma

C. Muscular Dystrophy is caused by a viral infection

D. Strain is defined as sudden joint dislocation

7. Which region of a sarcomere contains only thick filaments?

A. I-band

B. Z-disc

C. M-line

D. H-zone

8. Which hormone is primarily associated with promoting protein synthesis and muscle growth?

A. Cortisol

B. Testosterone

C. Adrenaline

D. Melatonin

9. After detachment, what energizes the myosin head for the next cycle?

A. The myosin head uses ATP energy to re-cock for the next cycle

B. Calcium is pumped back into the sarcoplasmic reticulum

C. ADP release deactivates the head

D. Sodium influx triggers tightening

10. What are the different types of muscles?

A. Skeletal, Cardiac, Smooth

B. Prime Mover

C. Synergist

D. Prime Mover, Synergist, Antagonist

Answers

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

Explanations

1. Which term describes a tendon pathology resulting from repetitive overuse?

A. Myalgia

B. Myopathy

C. Tendinitis

D. Tendinopathy

Repetitive overuse damages the tendon gradually, causing pain and functional change as the tissue struggles to repair itself. The best term for this pattern of tendon pathology is tendinopathy. It's an umbrella label that covers tendon problems from repetitive loading, including degenerative changes and, in some cases, inflammation. In chronic overuse, the evidence is more about disorganized collagen and failed healing than a classic inflammatory process, so tendinopathy is the more accurate description. Muscle pain is myalgia and a muscle disease is myopathy, which aren't describing tendon pathology. Tendinitis refers specifically to inflammation of a tendon, which can occur with overuse but isn't the most precise fit for a chronic, repetitive-load scenario where degeneration often predominates. Tendinopathy captures the typical outcome of repetitive overuse and explains the symptoms and tissue changes seen in conditions like tendinopathy of the rotator cuff or the common tennis elbow.

2. Which of the following best distinguishes muscle tone from muscle strength?

A. Tone is the baseline passive tension.

B. Strength is the rate of fatigue during activity.

C. Tone is the speed of a muscle's contraction.

D. Strength is the maximum force a muscle can generate during active contraction.

The main idea here is the difference between baseline neural activity that keeps a muscle ready (tone) and the maximum force a muscle can generate during a true contraction (strength). Muscle tone is the ongoing, low-level tension that provides readiness and helps maintain posture, driven by continual neural input even when the muscle isn't actively working. Strength, by contrast, is measured by how much force a muscle can produce in a single, maximal voluntary contraction. That's why defining strength as the maximum force a muscle can generate during active contraction is the best answer. It separates peak capability in a controlled effort from the resting or ready state reflected by tone. The other ideas don't fit as well: tone is not simply baseline passive tension, since it involves active neural drive and sets how the muscle resists stretch rather than how hard it can contract. Fatigue rate describes endurance over time, not peak force. Contraction speed describes how fast the muscle shortens, not the total force it can produce.

3. What method does muscle fiber contraction follow?

A. Contractions proportional to stimulus intensity

B. Contractions are random

C. All-or-none principle states fibers contract completely or not at all

D. Contractions are graded by stimulus frequency

Muscle fiber contraction follows an all-or-none response. Once a threshold stimulus triggers an action potential, the fiber contracts to its maximal tension for that fiber; if the stimulus is below threshold, it remains relaxed. This is why the body grades force not by making a single fiber contract more strongly in response to stronger stimuli, but by recruiting more fibers (motor units) and by adjusting firing frequency across activated fibers.

4. Which sequence correctly describes the structural organization from muscle to sarcomere?

A. Muscle myofiber fascicle muscle sarcomere

B. Muscle fascicle myofibril sarcomere mitochondrion

C. Muscle fascicle muscle fiber myofibril sarcomere

D. Muscle fibril fascicle myofiber sarcomere

At the core of this question is how skeletal muscle is built from large to small units. A muscle is made up of bundles called fascicles, and each fascicle contains many muscle fibers (also called muscle cells). Inside each muscle fiber are long, threadlike structures called myofibrils, and the sarcomere sits within a myofibril as its basic contractile unit. So the correct sequence is: muscle fascicle muscle fiber (myofiber) myofibril sarcomere. Mitochondria are energy-producing organelles scattered within the muscle fibers; they're important for function, but they aren't a distinct structural level in the hierarchy between fibers, myofibrils, and sarcomeres. The term fibril isn't the standard level in this context, and placing the sarcomere after a structure like a mitochondrion would misplace the sarcomere's position inside the myofibril. This is why the described order aligns with the actual organization from whole muscle down to the contractile unit.

5. Which are the two main types of smooth muscle and an example for each?

A. Single-unit smooth muscle — example: iris; Multi-unit smooth muscle — example: intestinal

B. Single-unit smooth muscle — example: uterus; Multi-unit smooth muscle — example: iris

C. Single-unit smooth muscle — example: iris; Multi-unit smooth muscle — example: intestinal

D. Single-unit smooth muscle — example: iris; Multi-unit smooth muscle — example: uterus

Smooth muscle contracts in two organizational patterns. In single-unit (visceral) smooth muscle, many cells are linked by gap junctions so they depolarize together and contract as one coordinated unit. This setup is typical in hollow organs where wave-like, simultaneous contractions move contents, such as the uterus and much of the gastrointestinal tract. In multi-unit smooth muscle, cells contract more independently, each often receiving separate neural input, allowing finer, graded control—this is seen in the iris, which regulates pupil size, and in some other structures like the ciliary muscle. So the pair matches these patterns: the uterus as a single-unit example and the iris as a multi-unit example.

6. Which statement describes a muscular disorder listed?

A. Myasthenia Gravis is unrelated to acetylcholine receptors

B. Duchenne MD is caused by a lack of a protein to maintain the sarcolemma

C. Muscular Dystrophy is caused by a viral infection

D. Strain is defined as sudden joint dislocation

A key idea here is that Duchenne muscular dystrophy results from a missing structural protein that keeps the muscle fiber membrane (sarcolemma) intact during contraction. Dystrophin normally anchors the cytoskeleton inside the muscle cell to the surrounding extracellular matrix, stabilizing the sarcolemma as the muscle contracts. Without dystrophin, membranes tear easily, calcium enters the cells inappropriately, and fibers break down, leading to progressive weakness typical of Duchenne. The other statements don't fit because muscular disorders of this type aren't described that way. Myasthenia gravis involves autoantibodies against acetylcholine receptors at the neuromuscular junction, so it is related to acetylcholine receptors, not unrelated. Muscular dystrophy is not caused by a viral infection; it's genetic, due to mutations in dystrophin or other structural proteins. A strain is not a sudden joint dislocation; a strain is an injury to muscle or its tendon from overstretching or overuse, whereas dislocations involve the joint itself.

7. Which region of a sarcomere contains only thick filaments?

A. I-band

B. Z-disc

C. M-line

D. H-zone

The concept tested is identifying the center region of the sarcomere where thick filaments exist without overlapping thin filaments. Thick (myosin) filaments run through the middle and are anchored toward the center, while thin (actin) filaments extend from the Z-discs and overlap with the thick filaments over much of the sarcomere. The band that has thick filaments with no thin filament overlap is the H-zone, located within the A-band. This zone shortens as contraction pulls thin filaments inward, reducing the non-overlapping region. The I-band contains only thin filaments, the Z-disc marks the boundaries, and the M-line is the central anchor for thick filaments. Thus, the region containing only thick filaments is the H-zone.

8. Which hormone is primarily associated with promoting protein synthesis and muscle growth?

A. Cortisol

B. Testosterone

C. Adrenaline

D. Melatonin

Testosterone is the primary anabolic hormone that drives muscle protein synthesis and growth. It works by binding to androgen receptors in muscle fibers, which increases transcription of genes coding for muscle proteins and stimulates the activity of satellite cells that fuse with existing fibers to enlarge them. It also boosts IGF-1 production and enhances signaling through pathways like mTOR, all of which work together to raise the rate of protein synthesis and result in muscle hypertrophy. Cortisol, in contrast, tends to promote protein breakdown and can counteract muscle growth, especially under stress. Adrenaline mainly provides immediate energy for activity and does not directly promote long-term muscle protein synthesis. Melatonin governs sleep-wake cycles and has limited direct role in promoting muscle protein synthesis compared with testosterone.

9. After detachment, what energizes the myosin head for the next cycle?

A. The myosin head uses ATP energy to re-cock for the next cycle

B. Calcium is pumped back into the sarcoplasmic reticulum

C. ADP release deactivates the head

D. Sodium influx triggers tightening

The energy comes from ATP hydrolysis. After detachment, the myosin head binds ATP and then hydrolyzes it to ADP and inorganic phosphate, which re-cocks the head into a high-energy, primed conformation. This energized state allows the head to form a new cross-bridge with actin, enabling the next contraction cycle once Pi is released and the power stroke occurs.

10. What are the different types of muscles?

A. Skeletal, Cardiac, Smooth

B. Prime Mover

C. Synergist

D. Prime Mover, Synergist, Antagonist

Muscles can be understood by the role they play in a movement. The primary driver of a movement is the prime mover (agonist), the muscle that generates the main force to produce the action. Nearby or assisting muscles are called synergists; they help by adding extra force, controlling the movement, and stabilizing the joint so the action is smooth. The muscle that opposes the prime mover is the antagonist; it provides a braking action that slows or reverses the movement and helps control the motion. For example, during elbow flexion, the biceps brachii typically acts as the prime mover, the brachialis and other nearby muscles serve as synergists to enhance flexion, and the triceps brachii acts as the antagonist to oppose the bending action. Keep in mind that a single muscle can switch roles depending on the movement and the joint being acted upon, but these three categories capture the common functional roles muscles assume during actions.

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://anatomyphysiomuscularsys.examzify.com

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