# Personal Trainer

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# Practice Questions

Try all 30 first, then check the answer key at the back.



**1. During the concentric phase of a barbell back squat, which muscle group acts as the primary agonist to extend the knee?**

A. Gluteus maximus
B. Gastrocnemius
C. Hamstrings
D. Quadriceps

**2. A 42-year-old client presents with an excessive forward lean during the overhead squat assessment. The trainer notes tightness in the gastrocnemius and hip flexor complex. What is the MOST appropriate corrective stretch for this client?**

A. Static calf stretch
B. Standing adductor stretch
C. Static latissimus dorsi stretch
D. Standing biceps femoris stretch

**3. A client performing a standing cable row demonstrates excessive lumbar extension during the pulling phase. Which muscle is most likely underactive, contributing to this compensation?**

A. Deep cervical flexors
B. Latissimus dorsi
C. Posterior deltoid
D. Transverse abdominis

**4. A 27-year-old beginner client has completed 4 weeks of stabilization endurance training in the OPT model. They have consistently performed well with proper form and endurance. Which is the MOST appropriate next step in their progression?**

A. Remain in Phase 1 for another 4 weeks
B. Progress to Strength Endurance Training (Phase 2)
C. Advance directly to Hypertrophy Training (Phase 3)
D. Begin Power Training (Phase 5)

**5. The shoulder joint (glenohumeral joint) is classified as which type of joint, allowing movement in all three cardinal planes?**

A. Hinge joint
B. Pivot joint
C. Ball-and-socket joint
D. Condyloid joint

**6. A 55-year-old client with no major medical concerns reports occasional dizziness when rising quickly from the floor to standing. Which adjustment should the trainer recommend FIRST?**

A. Eliminate resistance training and focus on flexibility only
B. Refer immediately to a physician for emergency evaluation
C. Transition more slowly between seated and standing positions
D. Avoid all lower-body training to prevent blood pressure changes



**7. Tightness in the iliopsoas on the right side would most likely produce which postural deviation at the pelvis and lumbar spine?**

A. Right lateral pelvic tilt and right lumbar lateral flexion
B. Anterior pelvic tilt and increased lumbar lordosis
C. Posterior pelvic tilt and lumbar flexion
D. Left lateral pelvic tilt and contralateral hip drop

**8. During a pushing assessment, a 30-year-old client demonstrates shoulder elevation when performing a standing cable chest press. Based on this movement compensation, which muscle is MOST likely underactive?**

A. Levator scapulae
B. Upper trapezius
C. Sternocleidomastoid
D. Mid and lower trapezius

**9. Movement occurring in the sagittal plane around a mediolateral (frontal) axis includes which of the following?**

A. Trunk rotation and spinal rotation
B. Shoulder internal and external rotation
C. Knee flexion and extension
D. Hip abduction and adduction



**10. According to NASM's OPT model, what is the recommended repetition range for Phase 1: Stabilization Endurance Training?**

A. 12–20 reps
B. 6–12 reps
C. 1–5 reps
D. 8–10 reps

**11. A sprinter driving powerfully off the starting block requires rapid, forceful hip extension. Which force-couple most efficiently generates this movement at the hip?**

A. Adductor magnus and gracilis acting together
B. Rectus femoris and iliacus acting together
C. Gluteus maximus and hamstrings acting together
D. Gluteus medius and tensor fasciae latae acting together

**12. Which of the following BEST defines muscular endurance according to NASM?**

A. The ability to produce and maintain force for prolonged periods
B. The maximum amount of force a muscle can generate once
C. The greatest amount of weight lifted at a moderate speed
D. The speed of force production during explosive movements

**13. Which of the following best describes the antagonist muscle during a biceps curl (elbow flexion)?**

A. Brachioradialis
B. Triceps brachii
C. Brachialis
D. Pronator teres

**14. All of the following are overactive muscles when the knees move inward during the overhead squat assessment EXCEPT:**

A. Adductor complex
B. Gluteus medius
C. Tensor fascia latae (TFL)
D. Vastus lateralis

**15. The knee joint is most vulnerable to valgus collapse when the hip's abductors are underactive because they cannot resist which combined force at the knee?**

A. Anterior cruciate ligament compression from quadriceps dominance alone
B. Lateral tibial torsion and peroneal overpull
C. Medial femoral rotation and adduction converging on the tibia
D. Excessive knee hyperextension and posterior tibial glide



**16. During Phase 5: Power Training, NASM recommends a typical rest interval of:**

A. 30–60 seconds
B. 0–90 seconds
C. 3–5 minutes
D. 1–2 minutes

**17. During a single-leg Romanian deadlift, the stance-side gluteus medius must generate sufficient force to prevent contralateral hip drop (Trendelenburg sign). This represents which function of the gluteus medius?**

A. Concentric hip abduction of the stance leg
B. Eccentric deceleration of hip adduction in the sagittal plane
C. Concentric internal rotation of the femur during the descent phase
D. Isometric stabilization of the pelvis in the frontal plane

**18. A 33-year-old client reports knee discomfort when running and demonstrates knees moving inward during the overhead squat assessment. The client's primary goal is weight loss, but they also want to continue running recreationally. What should the trainer address FIRST in program design?**

A. Increase running mileage gradually while monitoring pain
B. Add plyometric drills to improve dynamic leg stability
C. Incorporate corrective strengthening of the gluteus medius and stretching of the adductors
D. Shift focus entirely to upper-body strength training until pain subsides



**19. Which of the following correctly pairs a muscle with its action at the ankle?**

A. Tibialis anterior — plantar flexion and eversion
B. Gastrocnemius — plantar flexion and knee flexion
C. Peroneals (fibularis longus and brevis) — dorsiflexion and inversion
D. Soleus — plantar flexion and knee extension

**20. A 58-year-old client with controlled hypertension wants to improve cardiovascular endurance. They have limited time (3 days per week) and show excessive forward lean in the overhead squat assessment. Which program approach is MOST appropriate to begin with?**

A. Start with high-intensity interval training (HIIT) to maximize cardiovascular benefits in limited time
B. Focus on hypertrophy resistance training combined with daily running sessions
C. Implement advanced plyometric training to improve posture and endurance simultaneously
D. Begin with Phase 1 Stabilization Endurance training, emphasizing postural control and moderate-intensity cardio

**21. Scapular retraction (adduction of the scapulae toward the spine) is primarily produced by which muscles?**

A. Rhomboids and middle trapezius
B. Upper trapezius and levator scapulae
C. Subscapularis and infraspinatus
D. Serratus anterior and pectoralis minor



**22. When would a trainer be permitted to legally offer counseling to a client?**

A. A trainer should always offer counseling to clients
B. A trainer should always refer clients to a licensed professional counselor
C. The client doesn't show any progress
D. If the client is struggling to meet their training appointments

**23. When the foot is in a closed kinetic chain (fixed on the ground), contraction of the tibialis posterior primarily produces which motion at the subtalar joint?**

A. Dorsiflexion and toe extension
B. Inversion and supination, raising the medial longitudinal arch
C. Eversion and abduction of the forefoot
D. External tibial rotation and knee valgus

**24. Which of the following is not a way to create a proprioceptively enriched environment?**

A. Performing active isolation exercises
B. Using a foam pad
C. Balancing on one leg
D. Exercising in the sand

**25. A client complains of anterior shoulder pain that worsens during overhead pressing. Assessment reveals overactive upper trapezius and underactive lower trapezius. Which scapular movement dysfunction does this imbalance most directly produce?**

A. Excessive scapular protraction and winging during pressing movements
B. Excessive scapular depression and downward rotation during elevation
C. Reduced scapular retraction during the eccentric return phase only
D. Excessive scapular elevation and reduced upward rotation during overhead movement

**26. Which of the following is released into the synaptic terminal to stimulate muscular contraction?**

A. Calcium
B. Troponin
C. Acetylcholine
D. Actin

**27. During the late swing phase of gait, the hamstrings shift from concentric to eccentric activity. What is the primary purpose of this eccentric hamstring action?**

A. To decelerate knee extension and prevent hyperextension before heel strike
B. To initiate hip flexion for the next stride
C. To plantarflex the ankle in preparation for initial contact
D. To concentrically extend the hip and propel the body forward



**28. Which muscle can internally rotate the hip when the foot is in the planted position touching the floor?**

A. Gluteus Maximus
B. Adductor Longus
C. TFL
D. Vastus Medialis

**29. Which of the following best illustrates the concept of regional interdependence within the kinetic chain?**

A. A tight pectoralis minor limiting glenohumeral abduction directly at the shoulder joint
B. Weak ankle dorsiflexors causing increased dorsiflexion range of motion
C. Overactive quadriceps causing direct patellar tendon pain at the knee
D. Limited hip extension mobility causing compensatory lumbar extension during a lunge

**30. Which exercise follows the Half Foam Roll in the lower extremity proprioceptive progression continuum?**

A. Bosu Ball
B. Balance Beam
C. Foam Pad
D. Balance Disc

# Answer Key & Explanations



**1. D — Quadriceps**
The quadriceps (rectus femoris, vastus lateralis, vastus medialis, vastus intermedius) are the primary knee extensors and drive the concentric upward phase of the squat, while the hamstrings and gluteus maximus act as agonists for hip extension simultaneously.

**2. A — Static calf stretch**
Excessive forward lean is often caused by overactive gastrocnemius, soleus, and hip flexors. A static calf stretch directly targets the gastrocnemius/soleus and helps correct this compensation.

**3. D — Transverse abdominis**
The transverse abdominis is the primary stabilizer of the lumbar spine and pelvis; when it is underactive, the lumbar spine cannot resist extension forces generated by the pulling musculature, producing the observed hyperextension compensation.

**4. B — Progress to Strength Endurance Training (Phase 2)**
After successful adaptation in Phase 1, the NASM OPT model recommends progression to Phase 2 (Strength Endurance).

**5. C — Ball-and-socket joint**
The glenohumeral joint is a ball-and-socket joint, granting the greatest range of motion of any joint in the body, permitting flexion, extension, abduction, adduction, internal/external rotation, and circumduction across all three planes.

**6. C — Transition more slowly between seated and standing positions**
For clients with mild postural hypotension, the recommended adjustment is to transition gradually between positions, such as moving more slowly from seated to standing.

**7. B — Anterior pelvic tilt and increased lumbar lordosis**
The iliopsoas attaches to the lumbar vertebrae and lesser trochanter; when chronically shortened, it pulls the lumbar spine into extension and tilts the pelvis anteriorly, producing increased lumbar lordosis — a hallmark of Lower Crossed Syndrome.

**8. D — Mid and lower trapezius**
Shoulder elevation during pushing indicates overactive upper trapezius and levator scapulae, while the mid and lower trapezius are underactive.

**9. C — Knee flexion and extension**
The sagittal plane divides the body into left and right halves; movements in this plane (flexion and extension) rotate around a mediolateral axis, which includes knee flexion and extension, hip flexion and extension, and elbow flexion and extension.

**10. A — 12–20 reps**
Phase 1 of the OPT model emphasizes muscular endurance and stabilization, prescribing 12–20 repetitions at 50–70% of 1RM with controlled tempo.

**11. C — Gluteus maximus and hamstrings acting together**
The gluteus maximus is the prime mover for powerful hip extension, and the hamstrings (biceps femoris, semimembranosus, semitendinosus) act as strong synergists; together they form the primary force-couple driving explosive hip extension during sprinting.

**12. A — The ability to produce and maintain force for prolonged periods**
NASM defines muscular endurance as the ability to produce and maintain force for prolonged periods, particularly under repeated contractions.

**13. B — Triceps brachii**
The antagonist is the muscle that opposes the prime mover's action; during elbow flexion the biceps brachii is the agonist, and the triceps brachii — the primary elbow extensor — is the antagonist, eccentrically lengthening to allow controlled movement.

**14. B — Gluteus medius**
The gluteus medius is typically underactive when the knees move inward (valgus collapse), contributing to poor lateral stabilization.

**15. C — Medial femoral rotation and adduction converging on the tibia**
Weak hip abductors (primarily gluteus medius) fail to prevent femoral adduction and internal rotation; this medial collapse of the femur toward an externally rotated tibia creates the characteristic valgus stress pattern at the knee joint.

**16. C — 3–5 minutes**
Phase 5 (Power Training) requires long recovery to restore ATP-CP energy stores fully. NASM prescribes 3–5 minutes of rest between sets to maximize power output.

**17. D — Isometric stabilization of the pelvis in the frontal plane**
When the non-stance hip drops, the gluteus medius on the support side must isometrically contract to level the pelvis against gravity — a frontal-plane stabilization function distinct from its concentric abduction role in open-chain movements.

**18. C — Incorporate corrective strengthening of the gluteus medius and stretching of the adductors**
The priority is to correct the movement impairment. Knee valgus during the squat is typically linked to weak gluteus medius and overactive adductors.

**19. B — Gastrocnemius — plantar flexion and knee flexion**
The gastrocnemius crosses both the ankle and the knee joint; it produces plantar flexion at the ankle and assists knee flexion at the knee, making it a two-joint muscle, unlike the soleus which crosses only the ankle and has no action at the knee.

**20. D — Begin with Phase 1 Stabilization Endurance training, emphasizing postural control and moderate-intensity cardio**
For older adults with hypertension, NASM prioritizes safety and stabilization before advancing to higher intensities. Phase 1 addresses postural issues while moderate-intensity cardio safely develops cardiovascular

fitness.

**21. A — Rhomboids and middle trapezius**
The rhomboids (major and minor) and middle trapezius are the primary scapular retractors, pulling the medial border of the scapula toward the thoracic spine to produce adduction in the transverse plane.

**22. B — A trainer should always refer clients to a licensed professional counselor**
Trainers operate within defined scope of practice; referring clients to licensed professionals is appropriate for counseling matters.

**23. B — Inversion and supination, raising the medial longitudinal arch**
In closed-chain function, the tibialis posterior is the primary dynamic supporter of the medial longitudinal arch; it inverts and supinates the subtalar joint, counteracting excessive pronation and preventing arch collapse during stance phase.

**24. A — Performing active isolation exercises**
Active isolation exercises target specific muscles rather than challenging proprioceptive feedback mechanisms.

**25. D — Excessive scapular elevation and reduced upward rotation during overhead movement**
Proper overhead elevation requires coordinated upward scapular rotation driven by the lower trapezius and serratus anterior; when the upper trapezius is dominant and the lower trapezius is underactive, the scapula elevates excessively and fails to upwardly rotate, narrowing the subacromial space.

**26. C — Acetylcholine**
Acetylcholine is the neurotransmitter that crosses the synaptic cleft during the muscle contraction process.

**27. A — To decelerate knee extension and prevent hyperextension before heel strike**
In late swing, the knee is rapidly extending under momentum; the hamstrings eccentrically contract to decelerate this extension, protecting the knee from hyperextension and positioning the limb appropriately for controlled heel strike — a critical eccentric/deceleration function within the kinetic chain.

**28. C — TFL**
The tensor fasciae latae performs internal rotation under this specific condition. The planted foot position changes the biomechanical action.

**29. D — Limited hip extension mobility causing compensatory lumbar extension during a lunge**
Regional interdependence describes how dysfunction at one joint influences mechanics at distant, non-adjacent joints; limited hip extension (often from tight hip flexors) forces the lumbar spine to hyperextend to complete the movement pattern, demonstrating how a hip restriction creates a lumbar compensation.

**30. C — Foam Pad**
The foam pad represents the next progression level according to the official training progression table.

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