

# Fitness

ISSA-CPT

*International Sports Sciences Association: Certified Personal Trainer*

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## Question: 1

Motor neurons are also referred to as which of the following?

- A. Interneurons
- B. Sensory neurons
- C. Efferent neurons
- D. Afferent neurons

**Answer: C**

Explanation:

Efferent neurons stimulate muscle contraction, which is why they are also referred to as motor neurons because they create movement.

Afferent (sensory) neurons are responsible for recognizing environmental stimuli, thus eventually leading to a response of movement, stimulated by efferent neurons. Interneurons transmit information between neurons.

## Question: 2

Cardiac output is comprised of what two factors?

- A. Heart rate  $\times$  stroke volume
- B. Heart rate  $\times$  systolic blood pressure
- C. Heart rate / stroke volume
- D. Systolic blood pressure / heart rate

**Answer: A**

Explanation:

Stroke volume is the amount of blood that is contracted out with each heartbeat. Multiply the stroke volume by an individual's heart rate (number of times the heart beats per minute) to find the cardiac output.

Simply put, the total volume of blood pumped out of the heart per minute is called the cardiac output.

## Question: 3

All of the following flexibility exercises are recommended for pregnant people except:

- A. Active-isolated stretching
- B. Dynamic stretching

- C. Static stretching
- D. Self-myofascial release (SMR)

**Answer: B**

Explanation:

For clients who are pregnant, flexibility exercises should be performed in the seated or standing position, especially in the second and third trimesters. Static and active stretching should be used as well as self-myofascial release (SMR). However, SMR should only be used as long as the client avoids using the foam roll on varicose veins or anywhere there is swelling.

### Question: 4

Which of the following maladies that can be uncovered by a medical history poses the least immediate danger to a client beginning an exercise program?

- A. Metabolic disease
- B. Coronary artery disease
- C. Chronic obstructive pulmonary disease
- D. Orthopedic conditions

**Answer: D**

Explanation:

Orthopedic conditions is correct because these are the conditions that are least likely to result in death. This is not to say that these should be taken lightly, because relatively minor issues, such as a sprained ankle, knee tendonitis, or low back pain, present challenges that must be addressed in the program, and more serious concerns such as degenerative bone disease or rheumatoid arthritis have implications that lead to advanced complications. Even though these issues are not life-threatening, they may still require physician referral and medical clearance prior to beginning an exercise regime.

Chronic obstructive pulmonary disease and coronary artery disease are incorrect because these could lead to death if not managed before beginning an exercise regime.

### Question: 5

Which of the following types of grip is used during the flat dumbbell fly exercise?

- A. Supinated
- B. Neutral
- C. Pronated

**Answer: B**

Explanation:

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Neutral is correct because this exercise is performed with the palms facing together. The flat dumbbell fly can be used to improve upper body strength, muscular endurance or hypertrophy. This exercise primarily trains the pectoralis major and anterior deltoid muscles. Pronated is incorrect because the palms do not face the feet during this exercise. Supinated is incorrect because the palms do not face the head during this exercise.

### Question: 6

What are the three phases of plyometric training?

- A. Unloading, strength, concentric
- B. Loading, transition, power
- C. Eccentric, amortization, concentric
- D. Stabilization, transition, unloading

**Answer: C**

Explanation:

For efficient movement, eccentric, isometric, and concentric actions must take place. In plyometric training, these are divided into the following phases:

- Eccentric: Also called the loading phase, this is the phase for the pre-loading or stretching of the agonist muscle.
- Amortization: Better known as the transition phase, this is the time between the eccentric phase and the initiation of the concentric contraction.
- Concentric: This unloading phase is the final phase, and it is when the stored elastic energy is used to enhance muscle force production or dissipate as heat energy.

### Question: 7

A personal trainer wants to determine whether a client may be predisposed to low back pain. Which two fitness assessments are the most appropriate to predict the possibility of low back pain?

- A. Prone double straight-leg raise and sit-and-reach
- B. YMCA bench press and 1-repetition maximum leg press
- C. Resting blood pressure and partial curl-up

**Answer: A**

Explanation:

Prone double straight-leg raise and sit-and-reach is correct because these are measures of low back muscular endurance and low back flexibility, respectively. However, it cannot be said that every client who performs poorly on these assessments will have low back pain, and not every low back pain client will perform poorly on these assessments. These tests simply measure two physical abilities that have been associated with low back pain.

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YMCA bench press and 1-repetition maximum leg press is incorrect because neither of these tests addresses the muscles of the low back. Resting blood pressure and partial curl-up is incorrect because neither of these tests addresses the musculature of the low back.

### Question: 8

Which kinetic chain checkpoints should be monitored during kettlebell training?

- A. Hips, knees, and feet
- B. Foot and ankle, knee, lumbo-pelvic-hip complex, shoulders, and head and cervical spine
- C. Head, shoulders, and hips
- D. Shoulders, hips, and knees

**Answer: B**

Explanation:

Kettlebell training uses the entire body and supports improved stability. All the kinetic chain checkpoints should be monitored during these movements to assess muscle and joint mobility and force production and to prevent injury.

These checkpoints are part of the human movement system and allow the personal trainer to quickly assess the body as a whole. Toes, elbows, and wrists are not central to the human movement system and will not support assessment of postural misalignments.

- Foot and ankle
- Knee
- Lumbo-pelvic-hip complex
- Shoulders
- Head and cervical spine

### Question: 9

Which of the following is a balance-stabilization exercise?

- A. Single-leg box hop-down
- B. Lunge to balance
- C. Single-leg hip rotation
- D. Single-leg squat

**Answer: C**

Explanation:

Balance-stabilization exercises must increase joint stability by improving reflexive contractions in the joints. The single-leg hip rotation does this by maintaining hips in a neutral position while rotating one hip outward.

The lunge to balance and single-leg squats are balance-strength exercises, and the single-leg box hop-down is a balance-power exercise.

### Question: 10

If your client loses 2 pounds during a workout, what would be the recommended amount of fluids to drink to rehydrate?

- A. 12 to 18 ounces
- B. 20 to 24 ounces
- C. 32 to 40 ounces
- D. 40 to 48 ounces

**Answer: D**

Explanation:

A simple way to monitor dehydration resulting from a workout involves weighing oneself before and after the workout. It's important to replace fluid and electrolytes that are depleted during physical activity, particularly through sweating.

It is recommended that an individual consume 20 to 24 fluid ounces for every pound lost during activity. Therefore, if a client loses 2 pounds, they should drink 40 to 48 fluid ounces to rehydrate:

$2 \times 20 = 40$  ounces;  $2 \times 24 = 48$  ounces

It's also important to consider and replenish the depletion of electrolytes. Adding sodium-rich foods or drinks that contain electrolytes can help replenish electrolytes in the body, which can positively affect hydration status.

It's also important to focus on hydration status before and during the workout to help keep fluid levels more balanced.

### Question: 11

Which of the following is an acute variable?

- A. Group exercise vs. individual training
- B. Exercise selection
- C. Exercise location
- D. A substitute trainer

**Answer: B**

Explanation:

The trainer may alter the exercises for each phase of training based on the client's preferences and goals. Location, the presence of one or more clients, or a substitute trainer do not necessarily impact training intensity, etc. if the program is well-designed.

### Question: 12

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When referring to the Optimum Performance Training (OPT) model, all of the following phases make up the strength component except:

- A. Strength endurance
- B. Power
- C. Maximal strength
- D. Hypertrophy

**Answer: B**

Explanation:

The Optimum Performance Training (OPT) model involves five major phases. Progression through all five phases is built upon the base of stabilization training (Phase 1), which then progresses through to strength training (Phases 2-4), and eventually ends with power training (Phase 5).

Strength training comprises strength endurance (Phase 2), hypertrophy (Phase 3), and maximal strength (Phase 4). As a fitness professional, it is crucial to have a client properly master each phase before moving on to the next phase to ensure proper adaptations have taken place and to reduce the risk of injury.

### Question: 13

Which of the following resistance training protocols is likely to result in the highest increase in anabolic hormone levels?

- A. 3 sets of 12 repetitions with 45-second rest intervals
- B. 3 sets of 12 repetitions with 3-minute rest intervals
- C. 3 sets of 4 repetitions with 3-minute rest intervals

**Answer: A**

Explanation:

3 sets of 12 repetitions with 45-second rest intervals is correct because this protocol has a high volume with short rest intervals. This type of protocol elicits a greater anabolic hormonal response than lower volumes and longer rest intervals. In addition, exercises with a large muscle mass recruitment have a greater hormonal response than those with smaller muscles.

3 sets of 4 repetitions with 3-minute rest intervals is incorrect because the volume is lower and rest interval longer. 3 sets of 12 repetitions with 3-minute rest intervals is incorrect because the rest interval is too long.

### Question: 14

When using a sphygmomanometer, what other piece of equipment is required to measure blood pressure?

- A. Heart rate monitor
- B. Stethoscope

C. Stopwatch

**Answer: B**

Explanation:

Stethoscope is correct because this is used to listen for the Korotkoff sounds. The first audible detection of these sounds represents the systolic blood pressure, and the pressure at which they disappear corresponds to the diastolic blood pressure. The pressure should be released slowly in order for an accurate measurement to occur.

Stopwatch is incorrect because time is not a factor when measuring blood pressure. Heart rate monitor is incorrect because heart rate is not part of a blood pressure measurement.

### Question: 15

Which of the following is the most important factor in promoting weight loss with a client?

- A. Achieve a negative energy balance
- B. Perform regular physical activity
- C. Eat low-energy-dense foods

**Answer: A**

Explanation:

Achieve a negative energy balance is correct because when a client is in a negative energy balance, they must use stored energy (hopefully fat) to meet energy needs. Achieving this negative energy balance can occur through a combination of increasing caloric expenditure through physical activity and decreasing caloric intake by altering the diet. The best weight loss programs achieve this negative energy balance within a lifestyle that the client can sustain for the long term.

Perform regular physical activity is incorrect because this factor in itself may not lead to a negative energy balance. Eat low-energy-dense foods is incorrect; despite this practice, a negative energy balance may still not be achieved.

### Question: 16

In which of the following exercises is the five-point body contact position used?

- A. Standing dumbbell shoulder press
- B. Bent-over row
- C. Lying triceps extension

**Answer: C**

Explanation:

Lying triceps extension is correct because this is an exercise in which the client is lying supine on a bench. The five-point body contact position is also used for seated exercises. This position involves the



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back of the head, upper back and rear shoulders, lower back, and buttocks in contact with the bench or floor.

Bent-over row is incorrect because this exercise does not use a bench. Standing dumbbell shoulder press is incorrect because this exercise is not performed seated or lying supine.

### Question: 17

Which risk stratification of clients suggest a medical exam and graded exercise test before participating in vigorous exercise?

- A. Every risk level
- B. Moderate and high risk
- C. High-risk level only

**Answer: B**

Explanation:

Moderate and high risk is correct because both of these categories show an increased risk for cardiovascular disease which can be exacerbated by vigorous exercise. Using risk stratification can aid in decision making to keep client safety at an optimal level. The goal of the medical exam and graded exercise test is to obtain medical clearance for the client to exercise at the desired level.

Every risk level is incorrect because a low-risk client would not require a referral. High-risk level only is incorrect because moderate clients also require medical clearance for vigorous exercise.

### Question: 18

During a vertical loading session, how long should the rest period be between each exercise?

- A. 45 seconds
- B. 60 seconds
- C. 30 seconds
- D. Little to no rest

**Answer: D**

Explanation:

Vertical loading is a resistance training system that alternates the body parts trained from set to set, starting at the upper extremity and moving to the lower extremity. This type of training supports maximal recovery to each body part while other body parts are working. This reduces the need for rest time. It is typically done in a circuit training style with little to no rest between exercises and a longer rest between sets.

### Question: 19

What is the most important component of a fitness goal?

- A. The trainer and client should agree that the goal is achievable
- B. The trainer and client should agree that the goal is important
- C. The client should create the goal based on their desire for a certain outcome
- D. The trainer should create the goal based on what is beneficial for the client

**Answer: A**

Explanation:

After establishing a good first impression and discussing health concerns, it is important to talk with clients about their fitness goals. Goals energize performance by motivating people to exert effort, to persist over time, and to direct attention to relevant behaviors and information that can help them achieve their goals.

Fitness goals should be important to the client and recognized as beneficial by the trainer, but they must also be realistically achievable. The client and trainer should create the fitness goal together based on the client's desired outcome, the fitness assessment, and the trainer's knowledge of fitness.

### Question: 20

What is the primary determining factor in an individual's upper limit for muscular growth?

- A. Type of training
- B. Frequency of training
- C. Volume of training
- D. Genetics

**Answer: D**

Explanation:

Resistance training leads to hypertrophy. And, volume, type, and frequency of resistance training certainly affect an individual's success in gaining muscle tissue. But, the upper limit for muscle growth potential is predetermined by individual genetics.

An individual with high growth potential still needs to perform resistance training in order to experience growth. They may simply have an easier time gaining muscle than individuals with a lower growth potential.

### Question: 21

Which of the following resistance-training modalities can lead to greater kinesthetic awareness?

- A. Body-weight training
- B. Medicine ball training
- C. Free-weight training
- D. Kettlebell training

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**Answer: A**

Explanation:

Body-weight exercises allow the individual's own body weight to interact with gravity to create resistance. Body-weight training exercises incorporate all planes of motion and can encourage greater kinesthetic awareness. Many body-weight exercises are closed-chain exercises. Compared to open-chain exercises, closed-chain exercises typically result in greater motor unit activation and synchronization.

### Question: 22

Which of the following endocrine responses occurs in reaction to a bout of aerobic exercise?

- A. Decrease in both insulin and glucagon secretion
- B. Increase in glucagon secretion, decrease in insulin secretion
- C. Increase in insulin secretion, decrease in glucagon secretion

**Answer: B**

Explanation:

Increase in glucagon secretion, decrease in insulin secretion is correct because an increase in glucagon secretion stimulates a conversion of glycogen to glucose to increase the glucose available to be transported into cells. Therefore, the increased transport of glucose to cells provided by insulin is not needed as much. Increased glucagon release also enhances fat breakdown in tissues and increases plasma fatty acids to be used in exercise metabolism.

### Question: 23

All of the following are employment advantages of a commercial fitness club except:

- A. Salespersonship provides business learning opportunity
- B. Updated equipment and exercise protocols
- C. Pay rates structured on client retention with incentives and fitness professional's level of education
- D. The professional may control the schedule

**Answer: D**

Explanation:

Commercial fitness facilities provide an environment where existing club members can interact with the fitness professional. Typically, the trainer will have a sales quota to maintain and will be provided with training, updated equipment, and an incentivizing pay rate scale. However, they are usually required to be present at the gym for specific hours each week and are not in control of their work schedule.

### Question: 24

Which of the following dictates the mechanical specificity of the training protocol for a client?

- A. A client's metabolic function
- B. A client's ability to recruit and synchronize motor units for firing
- C. A client's fitness goals and physical capabilities
- D. A client's ability to use the appropriate energy system

**Answer: C**

Explanation:

The specific adaptation to imposed demands (SAID) principle states that the body will adapt to the specific demands that are placed on it. Mechanical specificity refers to the weight and movements placed on the body, also known as resistance and repetitions. Increasing muscular endurance requires lighter resistance and high repetitions, while strength gains require heavier resistance and fewer reps. Therefore, a client's goals and physical capabilities will dictate the activity-specific movement patterns and external forces (weights) that will make up their program.

### Question: 25

A client has been training with a variety of resistance training methods for nine months and wants to perform a split routine. How many days per week should this client perform resistance training?

- A. Four
- B. Six
- C. Three

**Answer: A**

Explanation:

Four is correct because the client would be considered to have an intermediate training status and is cleared to train with a split routine at this frequency. Training status and fitness level are the primary determinants of training frequency. Other factors, such as overall stress level and the overall training program, can factor into choosing frequency as well.

Six is incorrect because this training frequency is only appropriate for advanced training status clients. Three is incorrect because this client is looking to perform a split routine; three is more appropriate for full body resistance training.

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