

# Fitness

ACE-CPT

American Council on Exercise®: Certified Personal Trainer

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# Latest Version: 6.0

## Question: 1

All the following are appropriate goals for a pregnant client, EXCEPT:

- A. Reduce the risk of gestational diabetes
- B. Increase cardiorespiratory fitness
- C. Avoid excessive weight gain
- D. Lower the incidence of lower back pain

**Answer: B**

Explanation:

Current research suggests that, unless a specific obstetric or medical condition is present, the likelihood of adverse events or complications in the mother or fetus following acute exercise or training is minimal. The personal trainer should recognize that physical activity by people who are pregnant and those in the postpartum period presents numerous benefits and should be encouraged. Together with an individual's obstetric health care provider, the personal trainer can establish the following exercise program goals:

- Avoid excessive weight gain
- Reduce the risk of gestational diabetes
- Lower the incidence of lower back pain
- Prevent excessive decreases in cardiorespiratory and muscular fitness

## Question: 2

Which of the following components is necessary to keep in a client's record in the event of an injury?

- A. Past and present medical history
- B. Incident report
- C. All of these
- D. The exercise program changes in each session

**Answer: C**

Explanation:

In this situation, it is better to have more or too much information than not enough for defense in a potential lawsuit. More documentation will protect you by keeping a detailed account of what actually occurred.

## Question: 3

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You are training a 13-year-old basketball player for the first time this week. You want to make sure that the environment is as safe as possible.

Which of the following choices would NOT minimize the risk of injury during muscular training?

- A. Using free weights for strength training
- B. Reminding him to drink water throughout the session
- C. Performing exercises within the frontal and sagittal plane
- D. Using weight machines only as he learns techniques with free weights

**Answer: D**

Explanation:

Traditional exercise machines may not provide the proper appropriate lever arm for children and can increase the incidence of injury. Free weights or bodyweight exercises are best practices.

It is important to encourage the client to drink plenty of fluids throughout the session to remain hydrated. Performing exercises within the frontal (side to side) and sagittal (front and back) plane are perfectly safe and avoid any unnecessary torque that may occur during the first few sessions.

### Question: 4

All the following are skinfold measurement sites EXCEPT:

- A. Chest
- B. Abdominal area
- C. Biceps
- D. Hamstrings

**Answer: D**

Explanation:

If the personal trainer is suitably trained in the use of skinfold calipers and the caliper is of high quality, skinfold determination of the percentage of body fat can be very accurate. Calculating the sum of skinfolds can provide a client with useful information on how the training program is impacting change in body composition. There are nine skinfold measurement sites:

1. Abdominal
2. Triceps
3. Biceps
4. Chest
5. Medial calf
6. Mid-axillary
7. Subscapular
8. Suprailiac
9. Thigh

The thigh measurement is taken on the anterior midline of the thigh, not the posterior side, which is where the hamstrings are located.

### Question: 5

Which of the following is NOT included as a psychological need to help drive intrinsic motivation?

- A. Social support
- B. Autonomy
- C. Competence
- D. Relatedness

**Answer: A**

Explanation:

Most individuals are initially extrinsically motivated when they begin an exercise program. However, long-term success relies on increasing intrinsic motivation strategies. Targeting three key psychological needs can help an individual shift toward intrinsic motivation. These are:

- Autonomy: The sense of choice in one's actions and behaviors
- Relatedness: To connect and feel understood
- Competence: The belief in one's capabilities to succeed

Social support can be a positive form of motivation, but it is a form of extrinsic motivation.

### Question: 6

You are working to establish a statute of frauds with a company you recently began working with as an independent contractor. You know that this agreement is necessary because:

- A. It will require over six months to complete the project
- B. You expect to eventually buy a share in the company
- C. It will mitigate time and stress
- D. You expect to make over \$500 from your services

**Answer: D**

Explanation:

It is necessary to establish a statute of frauds if the services involved are worth \$500 or more or require more than one year to complete.

A statute of frauds will mitigate time and stress, but this is not why the agreement is necessary. It does not involve stocks, partnerships, or ownership.

### Question: 7

The degree of movement within a joint is known as:

- A. Range of motion
- B. Range of change

- C. Flexibility
- D. Range of muscles

**Answer: A**

Explanation:

Range of motion (ROM) is the degree of movement within a joint. ROM is assessed with goniometer tests, and each joint has normal ROM values. It can be active or passive.

Active is when the ROM is reached by voluntary movement from contraction of a skeletal muscle. Passive is when the ROM is achieved by external means.

### Question: 8

What is an appropriate repetition range for resistance training if the training goal is increased muscular endurance?

- A. 5-8 repetitions
- B. 12-15 repetitions
- C. 3-5 repetitions
- D. 8-12 repetitions

**Answer: B**

Explanation:

Different repetition ranges can be used to target different goals, as long as the corresponding adjustments to intensity are made as well.

Lower repetition ranges, such as 1-6 repetitions, using heavier loads (intensities) are typically used in training programs designed to build maximum strength levels, while moderate to higher volumes in conjunction with moderate and heavier loads are used for the purposes of hypertrophy.

The ability to sustain performance without getting tired is known as muscular endurance. The recommended repetition range to target and improve muscular endurance is 12-15+ repetitions.

It's important to note that although the loads are lighter (lower % 1RM), the load still needs to be sufficient to create training fatigue within the prescribed repetition range. If a load is too light and the individual could have performed many more repetitions but stops at 12-15 reps, this will not be sufficient to elicit the desired training effect.

### Question: 9

If a client is trying to stretch her triceps brachii, what position should she get in?

- A. Place palms of the hands on the back of the head
- B. Place one arm across the chest
- C. Cross the arms around the body
- D. Place one elbow behind the head

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**Answer: D**

Explanation:

There are many ways an individual can improve their flexibility and increase joint range of motion (ROM), and nearly all of them use some form of stretching. There are three types of stretching that are performed using active or passive techniques to improve flexibility:

- Static
- Dynamic
- Proprioceptive neural facilitation (PNF)

In order to have a client stretch their triceps brachii, the personal trainer should instruct the client to bring her left arm up, bending from the elbow, and drop the left hand behind her head. The client should try to reach over and touch her right shoulder with her left hand. Then, have the client bring her right hand to her elbow and pull rightward to increase tension on her arm.

### Question: 10

All the following need to remain consistent in a daily routine for an individual with diabetes EXCEPT:

- A. Time of day of physical activity
- B. When water is consumed
- C. The amount and type of food eaten
- D. When medications are taken

**Answer: B**

Explanation:

Consistency in a daily routine is very important to help an individual manage their diabetes. This regularity refers to when meals are eaten; the amount and type of food; when medications are taken; and the frequency, intensity, and time (duration and time of day) of physical activity.

Therefore, personal trainers should keep in regular contact with the client's physician or another healthcare provider when designing or making changes to the exercise program, as this will enable a more regular and suitable treatment plan for the client.

### Question: 11

Which of the following are the two types of bones?

- A. Long and short
- B. Compact and trabecular
- C. Diaphysis and epiphysis
- D. Axial and appendicular

**Answer: B**

Explanation:

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Compact (dense) and trabecular (spongy) are the two types of bone. The main differences between the two types are the architecture and the amount of matter and space they contain.

Compact bone is structured in osteons, which contain very few spaces. Compact bone forms the external layer of all the bones of the body. Cancellous bone is characterized as being much less dense and is composed of beams called trabeculae. These beams and spaces are oriented to provide strength against the stresses normally encountered by the bone.

### Question: 12

How long should the isometric contraction last during the contraction phase of contract-relax PNF stretching?

- A. 1-2 seconds
- B. 3-6 seconds
- C. 10-15 seconds
- D. 6-10 seconds

**Answer: B**

Explanation:

PNF stretching, which stands for proprioceptive neuromuscular facilitation, involves alternating between a passive stretch and an active isometric contraction of the same muscle. The isometric contraction results in relaxation of the muscles being stretched, allowing for an increase in the range of motion (ROM) at the joint.

The method begins with a passive stretch, followed by a 3-6 second active isometric contraction. This contraction can be anywhere from 20-75% intensity to achieve the desired result. After this contraction, another passive stretch is applied for an additional 10-30 seconds.

As with any flexibility training, it's important to perform a warm-up prior to stretching.

### Question: 13

The force of blood acting on the walls of arteries and veins is known as which of the following?

- A. Heart rate
- B. Maximum heart rate
- C. Blood pressure
- D. Stroke volume

**Answer: C**

Explanation:

The product of the amount of blood pumped from the heart and the resistance of flow encountered in the vessel is known as blood pressure. It is measured in millimeters of mercury (mmHg) and it is divided into two values:

- Systolic Blood Pressure (SBP): The pressure exerted on the arterial wall during the ventricles' contraction phase.

- Diastolic Blood Pressure (DBP): The pressure exerted on the arteries during the relaxation phase of the ventricles.

Average values for SBP and DBP are 120 over 80 mmHg, respectively.

### Question: 14

Of the following exercises, which should be performed first during a resistance-training session?

- A. Leg extension
- B. Biceps curl
- C. Push-up
- D. Power clean

**Answer: D**

Explanation:

An important program variable that affects the quality and focus of the workout is the order in which exercises are performed. A superior training stimulus is presented to all the muscles involved by exercising the larger muscle groups first. Exercising the larger muscles first is thought to stimulate optimal neural, metabolic, endocrine, and circulatory responses.

With that said, the more complex multi-joint technique-intensive exercises such as power cleans and squats should be performed initially, followed by less complex single-joint exercises like leg extension and biceps curl.

### Question: 15

All the following are considered high-carbohydrate foods, EXCEPT:

- A. 1 oz. of cheese
- B. 1 oz. of corn flakes cereal
- C. 8 oz. of yogurt
- D. 1 baked potato

**Answer: A**

Explanation:

Cheese is a high-fat food and it is considered a low-carb option.

Carbohydrates come in many forms: simple carbohydrates, which are more commonly known as glucose, fructose, galactose, sucrose, lactose, and maltose; and polysaccharides, which are either digestible or indigestible.

Carbohydrate recommendations range from 3 to 12 grams per kilogram of body weight, depending on energy needs, sex, activity levels, and environmental conditions of the individual. In other terms, 55% of total calories should come from carbohydrates for the average individual.

Some foods contain a higher percentage of calories from carbohydrates than others. Examples of these foods are yogurt, baked potato, and corn flakes cereal.



### Question: 16

At what age are children generally physically and mentally ready to begin resistance training with proper guidance?

- A. 14-15 years old
- B. 7-8 years old
- C. 17-18 years old
- D. 10-11 years old

**Answer: B**

Explanation:

It is recommended that children spend 60 minutes per day in general physical activity. Resistance training has been shown to be a safe activity for children and adolescents, starting as young as 7-8 years old. This can include traditional methods of resistance training, utilizing implements such as weights, resistance bands, and weighted balls.

Emphasis should be placed on performing exercises with high-quality techniques using submaximal loads. Time spent on a playground or climbing trees can also be considered to be resistance training using their own body weight.

### Question: 17

When implementing a resistance training program using linear periodization, what happens to the volume and intensity components throughout the course of the program?

- A. Volume decreases and intensity increases
- B. Volume and intensity both decrease
- C. Volume increases and intensity decreases
- D. Volume and intensity both increase

**Answer: A**

Explanation:

Linear periodization is also referred to as classic periodization. This model involves creating a complete program, broken down into different phases, or micro-cycles, of training. The first phase begins with lower intensity and higher volume and, over the course of the program, volume is systematically decreased while intensity is progressively increased.

For example, a commonly prescribed set and rep scheme is as follows:

- Microcycle 1: 3-5 sets, 12-15 repetitions
- Microcycle 2: 4-5 sets, 8-10 repetitions
- Microcycle 3: 3-4 sets, 4-6 repetitions
- Microcycle 4: 3-5 sets, 1-3 repetitions
- Microcycle 5: Active rest to improve recovery before beginning the next training block

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As the number of repetitions per set decreases, the amount of weight used (intensity) can be increased. The early phases focus more on hypertrophy, while the later phases focus more on strength and potentially also on power.

### Question: 18

Which of the following is contraindicated for pregnant women?

- A. Resistance training
- B. Exercising at an RPE of 12-13
- C. Static stretching
- D. Activities at elevations greater than 6,000 feet

**Answer: D**

Explanation:

Exercise is encouraged for pregnant individuals, provided appropriate medical clearance has been obtained and a pre-participation screening has been completed. Many factors determine a safe intensity level for aerobic exercise, but an RPE of 12-13 (on the 6-20 scale) is generally acceptable. Some individuals may be able to safely perform more vigorous training, but this must be approved by their obstetrician.

Static stretching and resistance training can both be beneficial throughout pregnancy. It's important to know how the hormone relaxin affects joint stability during pregnancy. Also, heavy lifting can cause a spike in blood pressure or heart rate and should be avoided. Moderate and lighter loads are more appropriate.

Activities performed at a high elevation (over 6,000 feet) are contraindicated for pregnant individuals, as this can lead to complications. In addition, it's also important to avoid training in the supine position, as this position can affect venous return, causing a decrease in blood pressure.

### Question: 19

Chris is a healthy, 35-year-old male. In his fitness assessment, he demonstrated a limited range of motion (ROM) moving into dorsiflexion. Which of the following is an appropriate static stretch to include in his program to improve his ROM?

- A. Seated hamstring stretch
- B. Side-lying quadriceps stretch
- C. Anterior tibialis stretch
- D. Standing calf stretch

**Answer: D**

Explanation:

If Chris has a limited range of motion (ROM) going into dorsiflexion, the muscles that should be targeted are those that create the opposite movement—plantarflexion.

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The muscles of the calf, including the gastrocnemius and soleus, are responsible for this movement. To stretch these muscles and work toward improving his ROM, a standing calf stretch would be an appropriate choice.

The anterior tibialis is the muscle responsible for creating dorsiflexion, but it's the opposite muscles that need to be stretched to improve this ROM in that position.

### Question: 20

The most common type of joint in the body is the synovial joint. Which of the following statements about the synovial joint is NOT true?

- A. The articulating surfaces of the bones are covered in hyaline cartilage
- B. The joint cavity is lined with a synovial membrane
- C. The joint capsule encloses the joint cavity
- D. It allows for very little movement

**Answer: D**

Explanation:

The most common type of joint in the body is the synovial joint. Synovial joints allow for freedom of movement with a significant range of motion to absorb shock and reduce friction. Other characteristics include the following:

- It is enclosed by a fibrous joint capsule
- The joint cavity is lined with a synovial membrane
- The articulating surfaces of the bones are covered in hyaline cartilage
- Synovial fluid occupies the joint cavity

### Question: 21

Which of the following BEST explains how cancer develops?

- A. Benign tumors develop and become malignant
- B. Deoxyribonucleic acid (DNA) of mutated cells is damaged, resulting in duplication
- C. Deoxyribonucleic acid (DNA) of normal cells is damaged, resulting in mutations
- D. Malignant tumors develop and divide

**Answer: C**

Explanation:

When DNA becomes damaged, it leads to uncontrolled cell growth. This results in solid tumors, aka masses of tissue. Other types of cancer involve other manifestations, such as blood cancers. However, all cancers root in the mutations from damaged normal cells.

Benign tumors do not spread to other tissues and cannot suddenly turn malignant. Malignant tumors can separate and invade other sites of the body, but they are not the cause of cancer.

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## Question: 22

All the following are incorrect techniques for the leg extension exercise EXCEPT:

- A. Having the legs under the padded lever, just below the ankles
- B. Locking out the knees at the top of the movement
- C. Ensuring the knees are aligned with the machine's center of rotation
- D. Keeping the back arched against the seat throughout the movement

<b>Answer: C</b>
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Explanation:

It is important that an individual aligns the machine's center of rotation with his knees during the leg extension exercise. The correct form is as follows:

- Sit on the machine with the back straight against the back pad and grasp the handles on the side of the machine.
- Place the legs underneath the padded lever, making sure that they are positioned just above the ankles.
- Lift the legs until the legs are almost straight and return to the starting position to complete the repetition.

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