ACE CPT - Quiz Questions with Answers

Domain I: Interviews and Assessments

1.

During an assessment that includes a 1.5-mile run, a 1-RM bench press, a vertical jump, a sit-and-reach, and resting blood pressure, which test should occur FIRST?

Resting blood pressure

1.5-mile run

Sit-and-reach

1-RM bench press

Correct answer: Resting blood pressure

The sequence of assessments to determine a client's health-related physical fitness level is determined most by the setting and equipment available. However, resting measures, such as heart rate and blood pressure, should take place before body composition measurements, which should occur before any cardiovascular, muscular fitness, or flexibility assessment. Assessments should only take place after a client has completed a pre-participation screening.

2.

All the following are treatment options for plantar fasciitis EXCEPT:

Stretching and strengthening exercises for the anterior calf muscles

Shoe inserts to correct hyperpronation

Medication to reduce inflammation

Surgery

Correct answer: Stretching and strengthening exercises for the anterior calf muscles

Plantar fasciitis is a persistent inflammatory condition that results in pain at the calcaneal insertion of the plantar fascia. Plantar fasciitis is typically caused by chronic pulling on the plantar fascia, a tight Achilles tendon, or hyper-pronation. Other factors that put too much work on the fascia, such as obesity, also contribute.

Treatment of plantar fasciitis includes stretching and strengthening exercises for the posterior calf muscles, shoe inserts to correct hyper-pronation, physiotherapy exercises, and medication to reduce inflammation. Sometimes, surgery is required to release the plantar fascia.

3.

In which of the following populations are Achilles tendon ruptures most commonly seen?

Male athletes between 30 and 40 years of age

Female athletes between 15 and 25 years of age

Male athletes between 15 and 25 years of age

Female athletes between 30 and 40 years of age

Correct answer: Male athletes between 30 and 40 years of age

Achilles tendon rupture is considered one of the most serious acute leg injuries. Nearly 75% of Achilles tendon ruptures occur in male athletes between 30 and 40 years of age. The cause is typically the mechanism of forceful plantarflexion while the knee is extended. More often than not, this type of injury requires surgical repair and extensive long-term rehabilitation.

4.

A 53-year-old female client has a body fat percentage of 23.8%. In which category of body composition does this client belong?

Good

Fair

Excellent

Very lean

Correct answer: Good

Along with the determination of the percentage of body fat, it is also desirable to determine an ideal or desired body weight based on a desired percentage of fat for the individual.

For a female who is 53 years old, any percentage between 23.5% and 26.6% is considered good.

5.

Which of the following increases at the beginning of exercise?

Oxygen deficit

Post-exercise oxygen consumption

Relative contribution of aerobic metabolism

pH of muscle tissue

Correct answer: Oxygen deficit

The lag in oxygen consumption at the beginning of exercise is known as oxygen deficit. From the initial stage of rest to submaximal exercise, oxygen consumption builds up gradually until it reaches an optimal level to support the energy demand of exercise (steady-state); therefore, oxygen deficit is incurred. After the exercise stops, the oxygen deficit accumulated will be replenished during recovery by consuming more than usual amounts of oxygen.

6.

The gastrocnemius is considered which type of muscle during a calf-raise exercise?

Agonist

Antagonist

Passive

Synergist

Correct answer: Agonist

Muscles can be classified depending on the roles they play during movement. A prime mover or agonist is when a muscle or group of muscles is responsible for the action or movement.

The antagonist is the opposing group of muscles. It relaxes, allowing the primary movement, and contracts to act as a brake at the completion of the movement.

Most movements also involve other muscles called synergists, which prevent unwanted movements. This helps the prime movers perform more efficiently.

During a calf raise or any other plantar-flexion movement, the major agonist muscles are the gastrocnemius, soleus, and tibialis posterior.

7.

Which structure in the heart allows the ventricles to fill with blood before contraction occurs?

Atrioventricular node

Sinoatrial node

Purkinje fibers

Pulmonary trunk

Correct answer: Atrioventricular node

The electrical impulse that causes the heart to contract originates in the sinoatrial (SA) node. This impulse causes the atria to contract, pushing blood into the ventricles. The atrioventricular (AV) node delays the impulse for about 0.12 seconds, giving the blood time to fill the ventricles before ventricular contraction occurs.

8.

Which of the following is NOT appropriate for a personal trainer to do during an assessment?

Diagnose a medical condition

Screen for exercise limitations

Identify potential risk factors

Educate about health and fitness

Correct answer: Diagnose a medical condition

Personal trainers perform a wide range of activities, including the following:

- *Educating clients about health and fitness*
- *Identifying potential risk factors*
- *Screening for exercise limitations*
- *Designing exercise programs*
- *Providing general information on healthy eating, according to the MyPlate Food Guidance System*
- *Documenting progress*
- *Coaching and working with clients*

Diagnosing a medical condition falls outside a trainer's scope of practice. With that said, personal trainers can refer clients to an appropriate medical practitioner.

9.

Self-efficacy can be BEST described as:

One's belief in their ability to succeed

What an individual thinks will happen as a result of their new behavior

One's view of their own worthiness

One's overall view of oneself as a person

Correct answer: One's belief in their ability to succeed

Individuals who believe in their ability to succeed possess self-efficacy. While self-efficacy and self-concept are similar, self-efficacy specifically refers to an individual's confidence given a certain situation, whereas self-concept is much broader. Self-esteem, self-concept, and self-efficacy are interrelated yet distinct constructs that can help explain an individual's psychological well-being.

10.

Which of the following is NOT one of the primary ways in which the body avoids excessive heat loss?

Thermogenesis

Peripheral vasoconstriction

Non-shivering thermogenesis

Shivering

Correct answer: Thermogenesis

When the skin or blood temperature drops, the thermoregulatory center activates mechanisms that conserve body heat and increase heat production. There are three primary ways to do this:

- ***Peripheral vasoconstriction**: By narrowing blood vessels in the skin, peripheral vasoconstriction reduces heat loss through conduction and convection.*
- ***Non-shivering thermogenesis**: Non-shivering thermogenesis is an energy-consuming process that uses brown adipose tissue to raise body temperature. Brown adipose tissue is a type of fat found in newborns and hibernating animals that produces heat when stimulated by the nervous system or hormones.*
- ***Shivering**: Shivering is an involuntary process in which the body shakes to generate heat. Although shivering increases the oxygen demand of muscles, it is a very efficient way to produce heat.*

These processes are usually enough to maintain a normal body temperature but when they fail, as in hypothermia, medical intervention is needed.

11.

Scoliosis is defined as which of the following?

A lateral deviation of the spine

An anterior curve of the spine

A posterior curve of the spine

A compressed intervertebral disc

Correct answer: A lateral deviation of the spine

The spinal column is not a straight line; rather, it has four curves. These curves give the spine a mechanical advantage and improved load-bearing capabilities. In the frontal plane, the spinal column should normally be positioned in the midline.

Scoliosis is a condition where the spine has a significant lateral deviation and is no longer a straight line.

12.

In regard to the knee, which ligament is injured the most, ESPECIALLY in athletes?

Anterior cruciate ligament

Posterior cruciate ligament

Lateral cruciate ligament

Medial cruciate ligament

Correct answer: Anterior cruciate ligament

Sprains and tears of knee ligaments are common injuries, especially in athletes. Specifically, due to its structure and insertion points, the anterior cruciate ligament (ACL) is injured more often than the posterior cruciate ligament. ACL injuries occur when external rotation of the tibia is combined with a valgus force on the knee.

13.

Cardiac output comprises which of the following pairs?

Stroke volume and heart rate

Heart rate and systolic blood pressure

Stroke volume and end-diastolic volume

Heart rate and diastolic blood pressure

Correct answer: Stroke volume and heart rate

The volume of blood pumped by the heart per minute is measured in liters and is known as cardiac output. It is the product of heart rate and stroke volume (HR x SV). The typical cardiac output is 4 to 5 liters per minute.

14.

All the following are typically found in a health history questionnaire EXCEPT:

Individual goals

Medications

Surgical history

Present health behaviors

Correct answer: Individual goals

In order to establish a client's medical/health risks for participation in a workout program, it is necessary to use a health history questionnaire (HHQ). In general, the HHQ should assess the following:

- *Family history of CMR disease*
- *Personal history of various diseases and illnesses*
- *Surgical history*
- *Past and present health behaviors/habits*
- *Current use of various drugs/medications*
- *Specific history of various signs and symptoms suggestive of CMR diseases*

15.

At which diastolic blood pressure reading would you note that your client is pre-hypertensive?

Between 80 and 89 mmHg

Less than 80 mmHg

Greater than 120 mmHg

Higher than 90 mmHg

Correct answer: Between 80 and 89 mmHg

Blood pressure is the amount of pressure against the walls of blood vessels as blood circulates throughout the body.

- *A normal diastolic blood pressure level is under 80 mmHg.*
- *A pre-hypertensive blood pressure level is between 80 and 89 mmHg.*
- *A hypertensive blood pressure level is 90 mmHg or higher.*

Diastolic blood pressure is the minimum pressure in the arteries when the ventricles relax.

16.

All the following foods or drugs should be avoided leading up to a cardiovascular fitness assessment EXCEPT:

Vitamin C

Caffeine

Nicotine

Alcohol

Correct answer: Vitamin C

For all clients who undergo Cardiorespiratory Fitness (CRF) assessments, it is important to standardize pre-testing conditions. Standardization can also increase the accuracy of prediction of CRF as well as help with ensuring client safety. General instructions include the following:

- *Abstain from caffeine ingestion for at least 12 hours*
- *Abstain from nicotine use for at least 3 hours*
- *Abstain from alcohol use for at least 24 hours*

17.

Dyspnea is BEST defined as which of the following?

Abnormally uncomfortable awareness of breathing

Knifelike, sharp jabs aggravated by respiration

Unpleasant awareness of the forceful or rapid beating of the heart

The pain that occurs in a muscle with an inadequate blood supply

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Correct answer: Abnormally uncomfortable awareness of breathing

Abnormally uncomfortable awareness of breathing is one of the telltale symptoms of cardiac and pulmonary disease and this is known as dyspnea. It happens during strenuous exertion in healthy, well-trained individuals, as well as during moderate exertion in healthy, untrained persons. It should be considered abnormal when it occurs at a level of exertion that is not expected to lead to this symptom.

18.

Which of the following assessments is contraindicated for a previously sedentary client?

VT2 test

Step test

Swim test

Talk test

Correct answer: VT2 test

Some—but not all—ventilatory threshold tests are contraindicated for the following populations:

- *Unconditioned beginners*
- *Obese clients*
- *Individuals with symptoms of heart disease*
- *Those with known heart disease or risk factors for heart disease*

A more appropriate test for an unconditioned beginner would be the talk test or a swim test, since the latter allows the client to be buoyant.

One ventilatory threshold test that might be appropriate for a sedentary client is a low-to-moderate intensity talk test.

When choosing which assessments to perform, a personal trainer must consider a client's needs, goals, and abilities. Other considerations include the personal trainer's training and experience, as well as the setting and available equipment.

19.

Which set of components should a health history evaluation include?

Medical history, medications, and exercise history

Family history, medications, and nutrition

Medical history, medications, and sleep patterns

Food log, medications, and sleep patterns

Correct answer: Medical history, medications, and exercise history

While there is no standard health history form, there are important pieces of information that a personal trainer should always gather from a new client, including the following:

- *Medical and surgical history*
- *Medications*
- *Exercise history*
- *Past and present behaviors and habits*

By obtaining this information, a personal trainer can gain a well-rounded view of the new client's health.

20.

Which of the following cervical muscles can also directly cause movement in the scapulothoracic joint?

Levator scapulae

Sternocleidomastoid

Anterior scalene

Longus capitis

Correct answer: Levator scapulae

The levator scapulae, sternocleidomastoid, anterior scalene, and longus capitus are all cervical muscles that exist in pairs, with one of each on both sides of the neck.

The levator scapulae is considered a lateral cervical muscle, which creates lateral cervical flexion and rotation with contraction on one side (unilateral). This muscle also plays a role in creating shoulder (scapulothoracic) movement and is therefore also considered a posterior shoulder girdle muscle. The levator scapula attaches to the four upper cervical vertebrae and to the scapulae.

The sternocleidomastoid, anterior scalene, and longus capitus are all classified as anterior cervical muscles. These muscles create neck flexion when they contract bilaterally, and can also contribute to lateral cervical flexion and cervical rotation if just one side contracts.

21.

The push-up is a measure of muscular endurance. In which plane of motion does the torso move when performing a push-up?

Sagittal plane

Transverse plane

Frontal plane

Anterior plane

Correct answer: Sagittal plane

There are three planes of motion that each divide the body into two sections when viewed in an anatomical position:

- *The sagittal plane creates a left side and right side — This is where forward and backward movements occur.*
- *The frontal plane creates anterior (front) and posterior (back) sections — This is where side-to-side movements occur.*
- *The transverse plane creates superior (upper) and inferior (lower) sections — This is where rotational movements occur.*

Movement in these planes occurs along the division line. Therefore, movement in the sagittal plane involves anterior-posterior movement patterns. The torso moves in the sagittal plane when performing a push-up.

An example of a movement in the frontal plane would be a lateral lunge, and a transverse plane movement would involve a rotational motion such as a Russian twist.

22.

If a client wants to improve their muscular endurance, which of the following assessments should a personal trainer administer?

Push-up test

1-RM bench press

Partial curl-up test

Sit-and-reach

Correct answer: Push-up test

The ability to produce force repeatedly over time is known as muscular endurance. A common assessment for muscular endurance is the push-up test. Specifically, the push-up test measures upper body endurance of the pectoralis muscle, triceps, and anterior deltoids.

While the push-up test is joint- and muscle-group-specific, it can give an indication of whole-body muscular endurance. Assessing a client at the beginning of their training program and then again in the future helps them see their improvements over time.

The 1-RM bench press test specifically measures maximum force production for a single repetition.

The partial curl-up test focuses on abdominal strength.

The sit-and-reach test is a common measurement of flexibility, specifically in the lower back.

23.

What is the lean body mass of a 190-pound man with a body fat percentage of 22.3 percent?

147.63 lb

144.37 lb

173.68 lb

67.1 lb

Correct answer: 147.63 lb

Along with the determination of percent body fat, it is often desirable to determine an ideal or desired body weight based on a desired percentage of fat for the individual.

Fat weight = body weight x (% body fat/100)

- *In this example: Fat weight = 190 x (22.3%/100) = 42.37*

Lean body mass = body weight - fat weight

- *In this example: Lean body mass = 190 - 42.37 = 147.63 lb*

24.

Tony, a 56-year-old male, has a blood pressure of 165/99 mmHg. Which classification of resting blood pressure is he in?

Stage 2 hypertension

Prehypertension

Stage 1 hypertension

Hypotension

Correct answer: Stage 2 hypertension

The force of blood against the walls of the arteries and veins created by the heart as it pumps blood to every part of the body is known as blood pressure.

BP is expressed in millimeters of mercury (mmHg) and it comprises two measurements: systolic blood pressure (SBP) and diastolic blood pressure (DBP). Hypertension is a condition in which the resting blood pressure, either SBP or DBP, or both, is chronically elevated. An SBP over 160 and/or a DBP over 100 is considered stage 2 hypertension.

25.

Eccentric muscle training often leads to which of the following?

Delayed onset muscle soreness (DOMS)

Injury

Elevated systolic blood pressure (SBP)

Increased cardiac output

Correct answer: Delayed onset muscle soreness (DOMS)

After an intense bout of exercise, delayed onset muscle soreness (DOMS) usually occurs, and it can last a number of days. It is often a result of minor muscle fiber damage.

Individuals who train eccentrically often experience DOMS. This is likely due to the greater force production that occurs during the eccentric action, which is a result of a greater recruitment of motor units and a slow movement velocity.

26.

You are conducting a fitness assessment on Amy, who is a potential client. When you measure her resting blood pressure, her result is 145/79 (mmHg). If repeated testing on subsequent days produces similar results, and the standard for comparison is 120/80, what condition might this indicate?

Systolic hypertension

Systolic hypotension

Diastolic hypertension

Diastolic hypotension

Correct answer: Systolic hypertension

Hypertension refers to an elevation above a standard level of arterial pressure, either during ventricular contraction (systolic) or during ventricular relaxation (diastolic). The opposite is hypotension, which indicates low blood pressure.

The top number in a blood pressure measurement represents the systolic blood pressure and the lower number represents the diastolic blood pressure. Your measurement of Amy's blood pressure (BP) shows an elevated systolic number, which could be an indication of systolic hypertension.

Amy's measurement could indicate the possibility of systolic hypertension. The measurement should be taken on multiple days for comparison, as it's possible for the BP to be acutely elevated. In addition, only a medical professional can provide a diagnosis. Therefore, Amy should be recommended to a health care professional for further evaluation.

27.

Which of the following waist-to-hip ratios (WHR) would be considered to elevate the risk of disease for a male client?

0.96

0.81

0.93

0.5

Correct answer: 0.96

The following waist-to-hip ratios (WHR) are considered a very high health risk for a number of diseases:

- *Greater than 0.86 for women*
- *Greater than 0.95 for men*

The waist-to-hip ratio is one of the most used clinical applications of girth measurement, as the pattern of body weight distribution is recognized as an important predictor of health risks of obesity. Individuals with more weight or circumference on the trunk are at higher risk of hypertension, type 2 diabetes, hyperlipidemia, and coronary artery disease.

28.

All the following are markers of intensity in an exercise prescription plan EXCEPT:

Exercise time

Amount of resistance

Target heart rate

Rating of perceived exertion

Correct answer: Exercise time

As a personal trainer, it is important to develop and implement a clear and concise plan of action for each client. In this plan, the exercise session date(s), primary goal(s) for each session, exercise mode, the order of exercise, the name of exercises, duration, and intensities should be included.

Examples of intensity markers include target heart rate, rating of perceived exertion, and amount of resistance. Exercise time is an example of a duration variable.

29.

Which piece of equipment is MOST appropriate when measuring subcutaneous fat?

Skinfold calipers

Scale

Tape measure

Handheld bioelectrical impedance device

Correct answer: Skinfold calipers

Determining the amounts of fat mass and fat-free muscle, connective tissue, bone, and organs in the body is known as a body composition measurement.

Skinfold measurements can be very accurate if performed correctly and are an easily accessible tool that can be used in a wide variety of environments. Skinfold estimates are based on the principle that the amount of subcutaneous fat is proportionate to the total amount of fat; however, the proportion of subcutaneous fat to total fat varies with sex, age, and ethnicity.

30.

Which condition is a potential symptom of cardiovascular, metabolic, and/or renal (CMR) disease?

Ankle edema

Low muscular endurance

Excessive dehydration

Muscle atrophy

Correct answer: Ankle edema

There are several signs or symptoms of a cardiovascular, metabolic, and/or renal (CMR) disease. Ankle edema is one of eight common signs or symptoms of CMR disease. It is often a sign of a blood clot, heart failure, or chronic bilateral venous insufficiency, and is characterized by swelling that is not due to injury.

31.

Which of the following types of muscle action can produce the MOST force?

Eccentric contraction

Concentric contraction

Isometric contraction

Isotonic contraction

Correct answer: Eccentric contraction

Eccentric muscle action is when the resistance is greater than the force applied by the muscle and the muscle lengthens. Significantly heavier loads can be moved eccentrically. In fact, in non-fatigued muscles, the ratio of eccentric to concentric strength can be as high as 1.4:1.

For example, the maximal eccentric weight is 1.4 times the maximal concentric weight in the same muscle group or movement. The greater force production occurring during the eccentric action compared with the concentric action probably results from the greater recruitment of motor units and a slow movement velocity.

32.

At which place in the body is the concentration of oxygen in the blood the HIGHEST?

Pulmonary vein

Pulmonary artery

Aorta

Superior vena cava

Correct answer: Pulmonary vein

After contact with the pulmonary capillaries, where gas exchange occurs to remove carbon dioxide and oxygenate the blood, concentrations of blood oxygen are highest immediately. The blood vessel that returns this blood to the left atrium from the lungs is the pulmonary vein.

33.

When taking skinfold measurements, how long should a personal trainer wait to read the caliper results after pinching the skin?

1 to 2 seconds

Read as soon as possible

4 to 5 seconds

2 to 3 seconds

Correct answer: 1 to 2 seconds

When performed by a skilled technician, skinfold measurements can be used to determine body composition and provide an accurate measurement. A personal trainer should wait for one to two seconds after pinching the skin to allow the pinched skin to settle, which will provide a more accurate caliper reading.

34.

A male client is 40 years of age, has not smoked in the last ten years, has a BMI of 26.2, has a blood pressure of 125/87 mmHg, and has no known personal or family history of cardiovascular disease.

In which category of risk classification does he belong?

Low risk

High risk

Moderate risk

No risk

Correct answer: Low risk

This particular client has no known cardiovascular, metabolic, or renal (CMR) disease or any signs or symptoms to suggest these diseases. He also has no cardiovascular disease (CVD) risk factors. Risk classification is based upon whether an individual has a known CMR disease, signs or symptoms of these diseases, or whether they have two or more CVD risk factors.

Determining risk is important during the assessment process to ensure client safety.

35.

Which of the following situations would warrant retesting of skinfold measurements?

If two measurements at the same site are not within 1-2 mm of each other

If measurements are not taken when the client is hydrated

If the client has just finished eating

If the client has just finished exercising

Correct answer: If two measurements at the same site are not within 1-2 mm of each other

Percentage of body fat can be accurately determined through the use of skinfold measurements. However, the technician must be properly trained in the use of skinfold calipers, and the calipers need to be of high quality.

The subject needs to be standing upright during a measurement. All measurements should take place on the right side of the body with the calipers placed directly on the skin surface. If measurements at one site are not within 1-2 mm of each other, then duplicate measures should be taken and should be retested.

36.

A BMI value of 24.8 is classified as which of the following?

Normal

Underweight

Class I obesity

Overweight

Correct answer: Normal

Body Mass Index is calculated by dividing weight (in kilograms) by height (in meters squared). The BMI gives a single number for comparison and is classified into seven different classes, ranging from underweight to class III obesity.

A BMI value of 24.8 is classified as normal, with the normal range being 18.5 to 24.9.

37.

All the following are causes of plantar fasciitis EXCEPT:

Ankle sprains

Obesity

Tight Achilles tendon

Hyper-pronation

Correct answer: Ankle sprains

Plantar fasciitis is a chronic inflammatory condition that causes pain at the calcaneal insertion of the plantar fascia. Plantar fasciitis can be caused by chronic pulling on the plantar fascia, a tight Achilles tendon, or hyper-pronation. Other factors that overwork the fascia, such as obesity, can also cause the condition.

38.

Which of the following types of movement is NOT allowed by the glenohumeral joint?

Elevation

Abduction

Flexion

Horizontal adduction

Correct answer: Elevation

There are two synovial ball and socket joints that allow for movement in every plane of motion, one of which is the glenohumeral joint.

The glenohumeral joint is a highly mobile joint and its ability to allow for optimal movement depends on the stability of the scapulothoracic region (e.g., scapulae). While movement in every plane occurs at this joint, elevation does not. Instead, elevation occurs in the shoulder girdle.

The other ball and socket joint found in the body is the hip.

39.

The study of forces on living organisms is known as which of the following?

Biomechanics

Kinesiology

Physiology

Exercise science

Correct answer: Biomechanics

The branch of science that applies the study of forces to living organisms is known as biomechanics. This field of knowledge helps provide insight into bodily motion and the causes behind these motions. By understanding biomechanics, a personal trainer can better promote safe and effective exercise techniques while improving injury prevention.

40.

Hyperkyphosis typically affects which of the following curves of the spine?

Thoracic curve

Coccyx curve

Lumbar curve

Cervical curve

Correct answer: Thoracic curve

The spinal column is not a straight line; rather, it normally has four curves. These curves give the spine a mechanical advantage and improved load-bearing capabilities. When the convexity of the curve is posterior, the curve is known as kyphosis. On the other hand, when the convexity of the curve is anterior, the curve is known as lordosis. The cervical and lumbar regions have lordosis, while the thoracic and sacral regions have kyphosis.

Hyperkyphosis is characterized by an extremely rounded upper back (thoracic curve).

41.

Which of the following BEST describes intermittent claudication?

The severe pain that occurs in a muscle with an inadequate blood supply

An unpleasant awareness of the forceful or rapid beating of the heart

Loss of consciousness

Abnormally uncomfortable awareness of breathing

Correct answer: The severe pain that occurs in a muscle with an inadequate blood supply

Intermittent claudication is the severe pain that occurs in a muscle that is lacking adequate blood supply, specifically calf pain. This pain indicates a lack of oxygenated blood flow to the working muscles, similar in origin to chest pain.

It can happen from day to day, and it is more intense when walking upstairs or up a hill. It is often described as similar to a cramping sensation and disappears within one to two minutes after stopping exercise.

42.

Which of the following time periods is the MOST accurate for recording resting HR?

60 seconds

6 seconds

10 seconds

30 seconds

Correct answer: 60 seconds

To determine heart rate (HR), a personal trainer should count the number of pulsations in a given time period at the radial or brachial artery. It is recommended that a full 60-second count is performed for accuracy.

43.

Steady-state exercise utilizes which of the following energy systems?

Aerobic metabolism (oxidation)

Adenosine diphosphate (ADP)

Anaerobic glycolysis

Creatine phosphate (CP)

Correct answer: Aerobic metabolism (oxidation)

The contributions from an anaerobic or an aerobic metabolic pathway depend on the following, at rates that correspond with the energy demands of the activity:

- *Oxygen exchange*
- *Oxygen delivery*
- *Oxygen usage*

Steady-state exercise refers to the balance between the energy required by the muscles to perform work and the production of ATP through aerobic metabolism.

44.

Which of the following muscles dorsiflexes the foot?

Tibialis anterior

Gastrocnemius

Soleus

Plantaris

Correct answer: Tibialis anterior

The anterior muscles of the ankle (tibialis anterior, peroneus tertius, extensor digitorum longus, and extensor hallucis longus) are responsible for dorsiflexion. The tibialis anterior also inverts the foot.

The superficial posterior muscles of the ankle (gastrocnemius, soleus, and plantaris) are responsible for plantar flexion.

45.

Which of the following systems of the human body is NOT directly involved in movement?

Cardiovascular system

Neurological system

Muscular system

Skeletal system

Correct answer: Cardiovascular system

Through the integration of the nervous, muscular, and skeletal systems, human movement is made possible. These systems must work together as one linked system to produce motion. The primary role of the cardiovascular system is to deliver nutrients to and remove metabolic waste products from the tissues; therefore, it is not directly involved in movement.

The nervous system initiates movement by sending electrochemical signals to the muscles to contract. The muscular system generates movement by contracting muscles that pull on bones to move them. The bones are part of the skeletal system and are utilized in limb movements.

46.

Which respiratory muscle is constantly involved with breathing at any exercise intensity, including rest?

Diaphragm

Internal intercostals

Rectus abdominis

External intercostals

Correct answer: Diaphragm

The only skeletal muscles vital to life are the muscles of respiration. The major muscle of inspiration is called the diaphragm. It is innervated by the phrenic nerve, which originates from the third to fifth cervical spinal segments.

The diaphragm functions as a piston as it causes the contraction and relaxation of the vertical fibers. With each contraction, the muscle fibers move downward, displacing the abdominal contents in order to allow the abdomen to move outward and to the chest wall. Expiration is normally passive under quiet breathing because of elastic recoil of the lung, meaning it requires no work.

47.

Which theory of behavioral change puts an emphasis on the client's thoughts and feelings?

Social cognitive theory

Theory of planned behavior

Health belief model

Transtheoretical model

Correct answer: Social cognitive theory

Social Cognitive Theory (SCT) states that outcome expectations and self-efficacy are the most important to behavior change. Outcome expectations are what an individual thinks will happen as a result of their new behavior. Self-efficacy is defined as "situation-specific self-confidence," which means a belief in one's self in a variety of situations.

SCT puts great emphasis on a client's thoughts and feelings, as proponents of this model believe that clients actively shape their lives by thinking about, feeling, reflecting on, and observing themselves.

48.

Which of the following pieces of data is NOT needed to predict an individual's oxygen consumption during the Rockport Walking Test?

Height

Age

Time of completion

Heart rate

Correct answer: Height

One submaximal cardiorespiratory fitness test that can be used to estimate a cardiovascular starting point based on ability level is the Rockport Walking Test.

In order to perform the test, clients walk as fast as they can around a measured one-mile course. The time it takes to walk this mile is recorded. Immediately at the end of the one-mile walk, the client counts the recovery heart rate for 15 seconds and multiplies by four to determine a one-minute recovery HR. Age is also necessary to calculate an individual's VO2 max.

Height is not relevant for the Rockport Walking Test.

49.

Which of the following would be the MOST appropriate example of a dynamic stretch before a sprint race?

Long walking strides

Jump squats

Arm circles

Farmer's carry

Correct answer: Long walking strides

Dynamic stretching is a form of stretching that involves controlled movements through a joint's full range of motion. Unlike static stretching, which focuses on holding the muscles in one position for a period of time, dynamic stretching uses momentum and speed to take the muscle beyond its normal range of motion. This type of stretching helps increase flexibility and prepares the body for activity.

An appropriate example of a dynamic stretch for a sprinter would be long walking strides that emphasize hip extension while maintaining a posterior pelvic tilt.

50.

Safe and sustainable weight loss typically happens at a rate of how many pounds per week?

1-2 pounds per week

2-3 pounds per week

0.5-1 pound per week

3-4 pounds per week

Correct answer: 1-2 pounds per week

Individuals often set weight-loss goals that are unrealistic. It is important for a personal trainer to help clients set achievable, realistic goals. Safe and sustainable weight loss typically happens at a rate of 1 to 2 pounds per week.

51.

All the following are pretest conditions for a Bio-Electrical Impedance Analysis measurement EXCEPT:

Urinating completely within 60 minutes of the test

No eating or drinking in the 4 hours before the test

No exercise in the 12 hours before the test

No alcohol consumption in the 48 hours before the test

Correct answer: Urinating completely within 60 minutes of the test

Bio-Electrical Impedance Analysis (BIA) is a noninvasive and easy-to-administer method for determining the volume of fat-free tissue in the body. It is based on the idea that fat is a poor electrical conductor containing little water, whereas lean tissue contains mostly water and is a good electrical conductor.

For the most accurate BIA measurement, the subject should follow these rules:

- *Do not eat or drink within 4 hours of the test*
- *Do not complete any exercise within 12 hours of the test*
- *Completely urinate within 30 minutes of the test (not 60)*
- *Do not consume any alcohol in the 48 hours before the test*

52.

All of the following are considered open-ended questions EXCEPT:

Do you like to eat fruits and vegetables?

What are your barriers to exercise?

When did you start working out?

How do you stay hydrated during the day?

Correct answer: Do you like to eat fruits and vegetables?

The client-centered approach to coaching focuses on motivational interviewing techniques such as rapport building, exhibiting empathy, and active listening. To create and build rapport with a client, a personal trainer should practice using open-ended questions, which elicit details instead of yes-or-no responses. When asking open-ended questions, the probability of gathering meaningful detailed responses is higher.

Here are some open-ended questions a personal trainer could potentially use in a client consultation:

- *What are your barriers to exercise?*
- *When did you start working out?*
- *How do you stay hydrated during the day?*

53.

What does the "A" stand for in the S.M.A.R.T. acronym?

Attainable

Advantageous

Actual

Aerobic

Correct answer: Attainable

The best way for a personal trainer to help clients become intrinsically motivated to exercise and set intrinsically motivated goals that will work is to use the S.M.A.R.T. goal philosophy. S.M.A.R.T. stands for Specific, Measurable, Attainable, Relevant, and Timely.

Attainable goals should be realistically achievable by your client. Each new achievement reinforces commitment to the program and encourages your client to continue exercising.

A S.M.A.R.T. goal includes detailing specific, measurable, attainable, relevant, and time-bound measures to ensure success. A client who is intrinsically motivated to exercise is more likely to demonstrate improvements in self-worth and to continue to participate in exercise for the long-term. For example, a S.M.A.R.T. goal would be to lose 10 pounds in two months by completing three days of cardiovascular training and two days of weight training per week.

54.

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?

It allows for very little movement

The articulating surfaces of the bones are covered in hyaline cartilage

The joint cavity is lined with a synovial membrane

The joint capsule encloses the joint cavity

Correct answer: It allows for very little movement

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*

55.

When manually recording a client's pulse, which of the following is NOT a preferred location for measurement due to the associated drop in blood pressure that can occur?

Neck

Wrist

Chest

Brachial groove

Correct answer: Neck

There are three commonly used anatomical sites for the measurement of heart rate: radial, brachial, and carotid.

- ***Radial:*** *The radial artery is located in the groove on the anterior surface of the lateral wrist.*
- ***Brachial:*** *This site is located in a groove between the triceps and biceps muscles on the medial side of the arm, anterior to the elbow.*
- ***Carotid:*** *This site is located along the medial border of the sternocleidomastoid muscle in the lower neck region, on either side. The carotid palpation site should be used only if you or the client fail to feel the pulse in the radial or brachial sites. This is because of the reflexive slowing of heart rate or the drop in blood pressure by the baroreceptor reflex that occurs if the carotid sinus area is pressed on.*

56.

Which of the following factors related to adherence involves the planning, organizing, and tracking of physical activity?

Self-regulation

Motivation

Social support

Self-worth

Correct answer: Self-regulation

A large portion of the job of a personal trainer is to provide clients with the skills necessary to learn and stick with an exercise program. Self-regulation is a factor related to adherence that involves strategies for planning, organizing, and managing exercise activities to help a client stay on track. Specific self-regulation strategies include planning exercises and self-monitoring exercise behavior.

57.

Which of the following is demonstrated during the jump-and-reach test?

Length-tension relationship

All-or-none principle

Force-couple relationship

Force-velocity relationship

Correct answer: Length-tension relationship

A physiological consequence of a muscle's ability to produce both active and passive force (tension) is known as the length-tension relationship of a muscle.

The elastic component will begin creating muscle force as a muscle is stretched from its resting length. The active component of muscle force can be generated through the range of motion of a muscle, but is maximal at the resting length (not shortened or lengthened), and becomes less as the muscle is either shortened or lengthened.

An example of using the length-tension relationship of muscle to maximize performance can be found in the jump-and-reach test, in which an individual jumps against a tape measure to record the maximum vertical jumping height. Before executing the jump, the jumper first lowers the body down into a partial squat position. This lowering of the body pre-stretches the body down in order to use the elastic or passive muscle force of these muscles as the person jumps forcefully upward.

58.

What does the abbreviation "ATP" stand for?

Adenosine triphosphate

Aerobic Target Pace

Anaerobic Target Pace

Anaerobic triphosphate

Correct answer: Adenosine triphosphate

Adenosine triphosphate (ATP) is the energy agent that powers the cell. It is produced within the muscles and it is depleted through strenuous, anaerobic training that only lasts a few seconds, such as power lifting and high jumping.

59.

Which of the following are the two types of bones?

Compact and trabecular

Long and short

Diaphysis and epiphysis

Axial and appendicular

Correct answer: Compact and trabecular

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.

60.

Which of the following assessments is the BEST predictor for total dynamic strength?

1-RM bench press

1-RM back squat

3-RM bench press

Partial curl-up

Correct answer: 1-RM bench press

Research has shown that the single best weightlifting test for predicting total dynamic strength is the one-repetition maximum (1-RM) bench press. This test measures the strength of the muscles involved in arm extension: triceps, pectoralis major, and anterior deltoid.

While this test produces useful information concerning the total dynamic strength of the client, it may not be appropriate for certain populations, including the elderly or those with an injury. The risk-to-benefit ratio should be considered by the personal trainer before administering this assessment.

61.

All the following are components of the Social Cognitive Theory (SCT) model EXCEPT:

Situational factors

Physical-activity factors

Personal factors

Environmental factors

Correct answer: Situational factors

The focus of the Social Cognitive Theory (SCT) model is a client's thoughts and feelings, and it emphasizes behavior at the interpersonal level.

The SCT model states that outcome expectations (i.e., what you think will happen as a result of your new behavior), as well as self-efficacy, are the most influential factors in behavior change. These factors are further divided into:

- *Environmental factors including access to facilities, time, and social support.*
- *Physical-activity factors such as intensity and injury.*
- *Personal factors including demographic variables, health status, activity history, psychological traits, knowledge, attitudes, and beliefs.*

By taking the time to realize that these factors are all connected and can influence each other, clients can gain a much more well-rounded understanding of themselves.

"Situational factors" are not a real thing in the SCT model. Instead, environmental factors are a more appropriate term and measurement as they encompass access to facilities, time, and social support.

62.

Which coaching technique is demonstrated when a personal trainer does not focus on inserting their personal interpretation into a conversation?

Active listening

Empathy

Rapport development

Appreciative inquiry

Correct answer: Active listening

For effective conversation, active listening is essential. During active listening, the listener accepts what the speaker is saying at face value and resists the urge to insert their own personal interpretation into the conversation.

Active listening combines both verbal and nonverbal cues. For example, a verbal cue is restating important information. A nonverbal cue is nodding the head or making eye contact.

63.

A one-repetition bench press can be categorized as which type of assessment?

Strength assessment

Power assessment

Submaximal assessment

Cardiorespiratory fitness assessment

Correct answer: Strength assessment

A one-time maximal force that is localized to a joint or muscle group assesses muscular strength. The one repetition (1-RM) refers to a one-time maximum amount of weight lifted. Research has shown that the single best weightlifting test for predicting total dynamic strength is the 1-RM bench press.

64.

When should a fitness assessment take place when consulting with a new potential client?

After a medical history and other general subjective information is gathered

During the first appointment

Prior to recording a medical history

Before any subjective questioning occurs

Correct answer: After a medical history and other general subjective information is gathered

It is time to perform the fitness assessment once any health limitations or restrictions are verified via the health/medical history form and medical clearance form. Also, it will be important to establish client goals before the assessment.

65.

An antalgic gait is defined as:

An abnormal gait resulting from injury to the pelvis, hip, knee, ankle, or foot

An abnormal gait due to a difference in leg length

An abnormal gait that results from stiffness, laxity, or deformity

An abnormal gait resulting from inadequate dorsiflexion range

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Correct answer: An abnormal gait resulting from injury to the pelvis, hip, knee, ankle, or foot

An antalgic gait is a self-protective gait. It happens after an injury to the pelvis, hip, knee, ankle, or foot. It is painful and characterized by the stance phases of the legs not being equal in time because the swing phase of the unaffected limb is shorter.

66.

The average normal resting heart rate (HR) is approximately:

60 to 80 bpm

75 to 80 bpm

40 to 60 bpm

50 to 70 bpm

Correct answer: 60 to 80 bpm

The average normal resting heart rate (HR) differs between men and women, as well as between adults and children. The resting HR of a woman is typically 10 bpm higher than that of a man. Children have higher heart rates than adults. In general, the average resting heart rate is approximately 60 to 80 beats per minute (bpm).

One of the primary adaptations to exercise training can be seen with HR when comparing fit with unfit individuals.

67.

Which of the following calculations for finding LEAN body mass is correct?

Body weight - fat weight = lean body mass

Body weight x fat weight = lean body mass

Body weight / muscle weight = lean body mass

Body weight + muscle weight = lean body mass

Correct answer: Body weight - fat weight = lean body mass

Along with the determination of percent body fat, it is often desirable to determine an ideal or desired body weight based on a desired percentage of fat for the individual.

- *Fat weight = body weight x (% body fat / 100)*

For example: Fat weight = 190 x (20% / 100) = 38 lb

- *Lean body mass = body weight - fat weight*

For example: Lean body mass = 190 - 38 = 152 lb

68.

Which of the following tests is recommended to measure sprint speed?

40-yard dash

100-yard dash

10-yard dash

30-yard dash

Correct answer: 40-yard dash

Speed and agility are essential to athletic performance. Sprint speed is the product of stride length and frequency (rate) and can be assessed using the 40-yard dash. While other tests may be used, the 40-yard dash is common, and the standards are well known.

69.

Which of the following assessments is designed to measure range of motion?

Sit-and-reach

Partial curl-up

Posture assessment

Skinfold measurements

Correct answer: Sit-and-reach

The sit-and-reach test is the most common and practical test to use. This test specifically measures the flexibility of the hamstrings, hips and hip flexors, and lower back.

The practical significance of using this specific test to measure flexibility is that many people (80% over their lifetime) complain of low back pain. This is because a common source of this pain can be linked to decreased flexibility, especially in the hamstrings.

70.

All the following are major muscle types EXCEPT:

Rough

Cardiac

Smooth

Skeletal

Correct answer: Rough

There are almost 600 muscles in the human body, and each one performs a range of functions. The body has three major types of muscle:

1. *Skeletal: This is the muscle tissue that is attached to bones, and it allows for movement. Skeletal muscles and bones are called the musculoskeletal system.*
2. *Smooth: This type of muscle is located throughout various internal structures such as arteries and the digestive tract.*
3. *Cardiac: This is the muscle that is specific to the heart, allowing it to contract and relax without conscious awareness.*

There is no such thing as "rough" muscle tissue.

71.

During which stage of the client consultation should the personal trainer be prepared to respond to objections?

Obtaining client commitment

Initial client contact

Program review

Health and fitness assessment

Correct answer: Obtaining client commitment

Obtaining client commitment in the form of the purchase of a package of training sessions can be a potentially stressful situation for everyone involved. Making recommendations is important, but securing the sale is another aspect that does not always come easily.

Ideally, the selling process at this point of the initial client consultation should be a positive one for both individuals involved. However, objections to personal training package purchases may arise from the client because of money, time, or procrastination.

No matter the objection, the personal trainer should maintain a positive attitude and listen to what the client has to say before responding with empathy and truthfulness.

72.

Which of the following sensory receptors is stimulated during the ECCENTRIC portion of a plyometric movement?

Muscle spindle

Golgi tendon organ

Joint receptor

Pacinian corpuscle

Correct answer: Muscle spindle

Located within a muscle and running parallel with the muscle fibers, muscle spindles are sensory receptors. They are sensitive to changes in muscle length and the rate of change.

During the eccentric portion of a plyometric exercise, in which the muscle is lengthened at a rapid rate, the muscle spindle is stimulated. When a quick stretch is initiated, the muscle spindles respond by invoking an involuntary concentric contraction known as the stretch reflex. This increases the activity in the agonist muscle as well as force production.

73.

Which of the following physiological variables will increase with physical activity for untrained individuals at both submaximal- and maximal-effort exercise?

Blood volume

Blood-lactate accumulation

Cardiac output

Systolic blood pressure

Correct answer: Blood volume

There are many physiological adaptations that occur in untrained individuals, and several are dependent on the intensity of exercise.

Blood volume is a variable that increases with both submaximal- and maximal-effort exercise. This is due to an elevated oxygen-carrying capacity (i.e., red blood cell volume).

Blood lactate accumulation, cardiac output, and systolic blood pressure all decrease at submaximal-effort bouts of training but increase with maximal-effort exercise.

74.

Which of the following systems transports oxygen and vital nutrients throughout the body?

Cardiovascular system

Muscular system

Lymphatic system

Endocrine system

Correct answer: Cardiovascular system

The cardiovascular system comprises the heart and blood vessels. Together, they pump blood and deliver oxygen and nutrients to the entire body. The cardiovascular system also helps to remove wastes, transport hormones, and manage fluid loss and body temperature fluctuations.

75.

Which of the following BMI values is considered normal?

19.1

17.4

25.1

27.4

Correct answer: 19.1

Body Mass Index, or BMI, compares an individual's weight, in kilograms, with their height in meters squared, assessing weight relative to height.

- *A BMI value under 18.5 is considered underweight.*
- *A BMI value between 18.5 and 24.9 is considered normal.*
- *A BMI value between 25.0 and 29.9 is considered overweight.*
- *A BMI value over 30.0 is considered obese.*

76.

Which of the following calculations for finding an individual's fat mass is correct?

Body fat percentage x body weight = fat weight

Body fat percentage / body weight = fat weight

Body fat percentage + body weight = fat weight

Body fat percentage - body weight = fat weight

Correct answer: Body fat percentage x body weight = fat weight

To calculate lean body mass, an individual's body weight should be subtracted from their fat mass, which looks like this:

- *body weight - fat weight*

In order to find an individual's fat weight, body weight would be multiplied by the percent body weight divided by 100, which looks like this:

- *fat weight = body weight x (% body fat / 100).*

Lean body mass includes all the muscles, bones, organs, skin, etc. of the body that does not include adipose tissue. Fat weight specifically refers to the amount of adipose tissue that an individual has.

77.

What is the purpose of measuring blood pressure (BP) during a comprehensive fitness assessment?

To screen for hypertension or hypotension

To diagnose hypertension

To measure cardiorespiratory fitness

To diagnose cardiorespiratory disease

Correct answer: To screen for hypertension or hypotension

An integral component of a resting health-related physical fitness assessment is the measurement of blood pressure. Blood pressure measurement is a relatively simple technique and may be used in risk stratification. Several measurements must be obtained on separate days because hypertension cannot be diagnosed from a single measurement.

While there are classifications for hypertension, the personal trainer is not making a clinical diagnosis; instead, the trainer may refer the client to a health care professional for follow-up.

78.

All the following are pre-test considerations for a cardiorespiratory fitness assessment EXCEPT:

Abstain from drinking water for 30 minutes before test

Abstain from eating for 4 hours before test

Abstain from caffeine ingestion for 12 to 24 hours before test

Abstain from strenuous exercise for 24 hours before test

Correct answer: Abstain from drinking water for 30 minutes before test

Cardiorespiratory Fitness (CRF) assessments can help to measure the following:

- *Maximal aerobic capacity*
- *VO2 max*
- *Cardiovascular endurance*

Examples of these assessments are the Rockport 1-Mile Walk Test, Queens College Step Test, and Astrand-Rhyming Test. As a personal trainer, it is important to standardize pre-testing conditions for all clients who undergo the various CRF assessments, as this can increase the accuracy of prediction of CRF, as well as aid in client safety.

Some general instructions prior to completing a CRF assessment:

- *Abstain from eating for 4 hours before test*
- *Abstain from caffeine ingestion for 12 to 24 hours before test*
- *Abstain from strenuous exercise for 24 hours before test*

79.

A client is working on writing SMART goals with his trainer. He wants to lose 20 pounds, improve his mood, and sleep better. He is nervous and apprehensive about starting a new routine.

Which of the following goals would be the BEST option for measuring his progress in three months?

Average 10,000 steps each day

Lose 10 pounds

Reduce body fat percentage by 3%

Stretch for 10 minutes each day

Correct answer: Average 10,000 steps each day

It is best practice to break larger goals into small goals to improve adherence and motivation. Especially since this client is initially apprehensive, creating simple goals will help him better transition to a new routine without feeling overwhelmed. Walking is something this client already does each day, so adding additional steps to his daily routine is an excellent way to incorporate additional exercise into his routine.

Adding complexity such as an entirely new stretching routine or making goals too broad and general are not the best options for an inexperienced client.

80.

Where does gas exchange occur between the outside air and the bloodstream?

Alveoli

Bronchial arteries

Capillaries

Bronchioles

Correct answer: Alveoli

Ventilation of the pulmonary system is accomplished in two major divisions: the upper and lower respiratory tracts.

Composed of the nose, sinuses, pharynx, and larynx, the upper respiratory tract acts as a pathway for air to move into the lower respiratory tract. The sole function of the upper respiratory tract is to purify, warm, and humidify the air before it reaches the gas exchange units (alveoli).

81.

Dan had two resting blood pressure readings, 122/88 mmHg and 130/95 mmHg, which were taken a minute apart. What should occur NEXT during the assessment process?

Take another blood pressure reading on a different day

Move on to body composition measurements

Begin exercise

Refer to a physician

Correct answer: Take another blood pressure reading on a different day

The measurement of blood pressure is an important component of a resting health-related assessment. Since serial measurements must be obtained on separate days, hypertension cannot be diagnosed from a single measurement. The blood pressure of a client should be based on the average of two or more resting blood pressure measurements during each of two or more visits.

Only when an individual has high blood pressure measured on two separate occasions should the personal trainer refer them to a physician for possible hypertension.

82.

You have a new client who admits to eating too much junk food and not enough vegetables. She is hoping to develop healthier eating habits.

Which of the following is within the scope of a personal trainer as it relates to nutrition?

Educate her on the principles of healthy nutrition.

Create a personalized meal plan for her based on her dietary preferences.

Recommend that she reduces her caloric intake by 200 calories for the first week.

Instruct her to track her nutritional intake for the next week.

Correct answer: Educate her on the principles of healthy nutrition.

It is within the scope of a personal trainer to share evidence-based guidelines and resources. Personal trainers cannot provide any personalized nutritional services, recommendations, or specific recommendations for nutritional intake.

83.

Which of the following is NOT a common site for skinfold measurement?

Subradial

Subscapular

Triceps

Midaxillary

Correct answer: Subradial

There are nine common skinfold measurement sites:

1. *Abdominal*
2. *Triceps*
3. *Biceps*
4. *Chest*
5. *Medial calf*
6. *Midaxillary*
7. *Subscapular*
8. *Suprailiac*
9. *Thigh*

If a technician is properly trained in the use of skinfold calipers and the caliper is of high quality, skinfold determination of the percentage of body fat can be quite accurate. Skinfold measurement can also be very useful without determination of a body fat percent estimation.

84.

During what stage of the client-personal trainer relationship would a trainer adapt their communication style to any social and cultural differences?

Rapport

Investigation

Planning

Action

Correct answer: Rapport

During the rapport stage, it is imperative that the trainer establishes mutual understanding and trust. Practicing cultural competence during this stage allows the trainer to learn about different beliefs, attitudes, values, and lifestyles. Adapting communication styles is essential in establishing trust and rapport with clients prior to advancing to the next stage.

In the investigation stage, personal trainers will gather more personal information and most likely complete questionnaires to identify concerns and goals.

During the planning stage, the trainer takes a more active role in goal setting, generating a plan for the client, and evaluating their current exercise program.

The action stage occurs after the planning and program design is complete. In this stage, the trainer evaluates the client's progress and overall adherence to their program.

85.

Syncope can BEST be defined as which of the following?

Loss of consciousness

Abnormally uncomfortable awareness of breathing

Knifelike, sharp jabs aggravated by respiration

Unpleasant awareness of the forceful or rapid beating of the heart

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Correct answer: Loss of consciousness

Syncope is also known as fainting. It is most commonly caused by reduced blood flow to the brain. Dizziness, as well as syncope, during exercise may result from cardiac disorders that prevent the normal rise in cardiac output.

86.

Which of the following waist-to-hip ratio (WHR) measurements is considered high risk for a woman?

0.88

0.80

0.75

0.82

Correct answer: 0.88

The waist-to-hip ratio is a common girth measurement, and it has a correlation between chronic disease and fat stored in the midsection.

A higher-risk waist-to-hip ratio (WHR) for women is greater than 0.86; for men, it is greater than 0.95.

WHR can be obtained by measuring an individual at their waist (the smallest circumference above the navel) and at their hip (the largest circumference around the buttocks) and then dividing the two measurements.

87.

All the following are purposes of pre-participation screening EXCEPT:

Identification of a client's physical abilities

Identification of clients with medical contraindications to exercise

Identification of clients who should receive a medical exam and clearance prior to exercise

Identification of a client's health/medical concerns

Correct answer: Identification of a client's physical abilities

The overall purpose of screening is to optimize client safety during exercise participation. The personal trainer is looking to identify any health and medical concerns a client might have, as well as risk factors and/or symptoms of the following:

- *Cardiovascular disease*
- *Metabolic disease*
- *Renal (CMR) disease*
- *Conditions that may be aggravated by exercise*

88.

As a personal trainer, you may often need to encourage your clients to make certain changes that will benefit their health and fitness levels. When you help your client compare the positives and negatives of making healthy lifestyle changes, what are you asking them to assess?

Their decisional balance

Their resistance to change

Their readiness to change

Their perceived behavioral control

Correct answer: Their decisional balance

An individual's decisional balance compares the positive and negative outcomes they identify with a specific change. For example, a client who wants to increase their activity level with personal training must contrast the benefits of making healthy changes with sacrifices such as time commitment.

A decisional balance activity or evaluation can often help a client identify and work through their challenges in order to make healthier changes.

The five stages of the Transtheoretical Model determine an individual's readiness for change.

Perceived behavioral control is a component of the theory of planned behavior and is a consideration in determining an individual's intent to make a change.

89.

Which of the following would NOT be included in a comprehensive fitness assessment?

Psychological evaluation

Pre-participation activity screening

Health-related fitness tests

Resting physiologic measurements

Correct answer: Psychological evaluation

Anything that keeps the client safe as well as helps to design a training program to meet the client's training goals should be a part of a comprehensive fitness assessment. It is not meant to diagnose any physical or mental health conditions.

The exact sequence of assessments is dictated mostly by the setting and equipment available; however, a few generalizations can be made. After completing a pre-participation activity screening, resting measures typically should then be taken prior to any exertional assessments.

90.

How can an untrained individual and a trained individual who has a lower resting heart rate have similar resting cardiac outputs?

Larger stroke volume in trained individuals

Lower blood pressure in trained individuals

Decreased resistance to blood flow in trained individuals

Higher blood volume in trained individuals

Correct answer: Larger stroke volume in trained individuals

The product of heart rate and stroke volume (HR x SV) is known as cardiac output. When individuals perform maximal-effort exercise, one adaptation is increased stroke volume. As a result, a trained individual's resting heart rate will be lower to maintain resting cardiac output, which does not change significantly at rest.

91.

To facilitate post-exercise recovery, which of the following is the BEST option to refuel for a 90-lb male after an intense circuit training workout?

Within the first several minutes post-exercise, consume a medium banana and applesauce.

Wait for one hour post-exercise before eating a bowl of oatmeal and an apple.

Consume a handful of peanuts immediately after exercise.

After 20 minutes post-exercise, eat a spinach salad.

Correct answer: Within the first several minutes post-exercise, consume a medium banana and applesauce.

Refueling should begin within 30 minutes of exercise, then be followed by a high-carbohydrate meal within two hours. Carbohydrate intake should be 1.5 g/kg (1.5 x 90= 135 g) every two hours for up to four to six hours. The correct answer must contain enough carbohydrates to adequately refuel the individual.

A handful of peanuts is roughly 100 calories or around 25 grams, which is not adequate given the equation mentioned above. Peanuts are dense in protein as well as fats. Even though this is a potential option post-exercise, a carbohydrate-rich snack such as a banana and applesauce is the best choice.

92.

What is the numeric range of intensity for the RPE Scale?

6 to 20

1 to 10

50 to 100

1 to 7

Correct answer: 6 to 20

The Rating of Perceived Exertion (RPE) scale is used to measure exertion levels during physical activity. It is a subjective measure of how hard an individual feels they are working during exercise.

The RPE scale is based on Borg's category-ratio 10-point scale, which ranges from 6 (no exertion at all) to 20 (maximal exertion). During physical activity, an individual can rate their perceived level of exertion on a scale from 6-20.

Depending on the intensity and duration of the activity, different RPE levels may be appropriate. For example, if an individual is walking slowly for 10 minutes, they might rate their exertion as a 6 or 7. If the individual is running fast for 15 minutes, they might rate their exertion as a 13 or 14.

The RPE scale is a valuable tool that can help individuals assess and adjust the intensity of physical activity to meet their goals. It provides an easy-to-use method for monitoring exercise intensity and can be used to help make sure that an individual is pushing themselves enough to get the desired results.

The RPE scale is commonly used in exercise science and sports medicine, but it can also be used by individuals outside of these fields as a helpful tool for monitoring physical activity intensity.

93.

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

Blood pressure

Heart rate

Maximum heart rate

Stroke volume

Correct answer: Blood pressure

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.

94.

What does the "S" stand for in the S.M.A.R.T. acronym?

Specific

Structured

Simulated

Sanctioned

Correct answer: Specific

The best way for a personal trainer to help clients become intrinsically motivated to exercise and set intrinsically motivated goals that will work is to use the S.M.A.R.T. goal philosophy. S.M.A.R.T. stands for Specific, Measurable, Attainable, Relevant, and Timely.

Specific goals should be clear, not vague. The client needs to state exactly what they want to accomplish.

A S.M.A.R.T. goal includes detailing specific, measurable, attainable, relevant, and time-bound measures to ensure success. A client who is intrinsically motivated to exercise is more likely to demonstrate improvements in self-worth and to continue to participate in exercise for the long-term. For example, a S.M.A.R.T. goal would be to lose 10 pounds in two months by completing three days of cardiovascular training and two days of weight training per week.

95.

Which of the following is a limitation of the Health Belief Model?

May not be as effective for clients who do not have identified health risks

May be more effective for some behaviors than others

May not address factors such as thoughts, emotions, and environment

Many factors to consider in one treatment program

Correct answer: May not be as effective for clients who do not have identified health risks

Behavioral change is predicted by one's awareness of health consequences, the perceived seriousness of the consequences, and the belief that making changes will diminish the risk, according to the Health Belief Model (HBM).

A client can gain a better understanding of their health by exploring health concerns and possible areas of vulnerability, as well as by identifying barriers to and benefits of change. However, the HBM may not be as effective for clients who do not have identified health risks.

96.

Which physiological measure will increase only through submaximal exercise and will possibly decrease at maximal exertion?

Stroke volume

Arterial-ventricular oxygen difference

Blood volume

VO2 max

Correct answer: Stroke volume

Stroke volume is the amount of blood that is ejected from the left ventricle in one contraction (or heartbeat). At maximal exercise, it's normal for there to be a decrease in stroke volume. This is because the heart is beating too fast to allow ventricular filling.

Stroke volume increases curvilinearly with intensity until reaching near-maximal levels, at approximately 40% to 50% of maximum aerobic capacity, increasing only slightly thereafter.

97.

The one-repetition-maximum barbell bench press that is often used to measure muscular strength involves what type of muscle action?

Isotonic

Isometric

Isokinetic

Concentrated

Correct answer: Isotonic

An isotonic muscle action involves force application that results in movement. Resistance training exercises, including a one-repetition-maximum bench press, involve isotonic muscle actions. Concentric and eccentric muscle actions are both isotonic.

An isometric muscle action refers to static force application. Force is applied, but no movement occurs.

An isokinetic muscle action refers to force application at a constant speed, controlled by a machine that increases or decreases tension to maintain a constant speed of movement.

98.

Which of the following sets of assessments are MOST appropriate for children?

None are needed

Medical clearance from a physician, resting heart rate and blood pressure

Maximal cardiorespiratory fitness test, muscular endurance tests

Resting blood pressure and heart rate, maximal cardiorespiratory fitness test

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Correct answer: None are needed

It is safe for young people to initiate moderate-intensity activities without medical screening because most are healthy. Medical exams and exercise testing prior to participation are generally unnecessary in this population unless clinically indicated.

99.

Which of the following is an appropriate strength ratio for the anterior deltoids and posterior deltoids?

2:3

3:2

1:1

3:1

Correct answer: 2:3

A muscle imbalance is when there is a discrepancy between the strength of two opposing muscles. This can lead to a decrease in mobility, increased risk of injury, decreased muscular performance, and even pain.

The most common causes of muscle imbalances are postural misalignments due to poor posture, overtraining of certain muscle groups, or incorrect exercise form when performing exercises.

Muscle balance is crucial for optimal functioning and to avoid injury. One way to measure whether or not your client has a muscle imbalance is to refer to the Appropriate Strength Ratios chart. If you are focusing on shoulder muscles, the appropriate strength ratio for the anterior deltoids and posterior deltoids is 2:3.

100.

Which of the following plantar flexors is used more during postural and static contractions?

Soleus

Gastrocnemius

Tibialis anterior

Peroneus tertius

Correct answer: Soleus

The superficial posterior muscles of the ankle (gastrocnemius, soleus, and plantaris) are responsible for plantar flexion. The gastrocnemius has more fast-twitch fibers than the soleus. This is why the gastrocnemius is used more during dynamic, higher-force activities. The soleus is activated more during postural and static contractions.