ACSM-CPT - Quiz Questions with Answers

Domain I: Initial Client Consultation and Assessment

1.

What does the "R" stand for in the SMART acronym?

Realistic

Radical

Relevant

Redundant

Correct answer: Realistic

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 SMART goal philosophy. SMART stands for Specific, Measurable, Attainable, Realistic, and Timely. A SMART goal includes detailing specific, measurable, attainable, realistic, and time-bound measures to ensure success. A client who is intrinsically motivated to exercise is more likely to demonstrate improvements to their self-worth and continue to participate in exercise long-term.

For example, a SMART goal would be to lose 10 pounds in 2 months by completing 3 days of cardiovascular training and 2 days of weight training per week.

2.

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.

3.

All of 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.

4.

During which stage of the Transtheoretical Model is the personal trainer responsible for helping the client set realistic goals and expectations?

Preparation

Action

Pre-contemplation

Contemplation

Correct answer: Preparation

An integrative model used to assess and determine a client's degree of readiness to change is known as the Transtheoretical Model (TTM). There are five stages: pre-contemplation, contemplation, preparation, action, and maintenance.

During the preparation stage, a client has decided that it is worth making the change and is prepared to do so. However, they may need help planning, which is where the personal trainer can be of service.

Here's a breakdown of the stages of change from the transtheoretical model related to an individual's readiness to change or maintain an exercise routine:

1. *Pre-contemplation: Not ready to exercise nor interested in pursuing exercise.*
2. *Contemplation: Thinking about pursuing exercise (thinking about making a behavior change, usually within the next six months).*
3. *Preparation: Doing something related to exercise, but not meeting the ACSM guidelines for physical activity (individual intends to take action, usually within the next month).*
4. *Action: Meeting the ACSM guidelines for exercise for less than six months (engaging in behavior change for less than six months. This is the stage where people are most likely to drop out or give up).*
5. *Maintenance: Meeting the ACSM guidelines for exercise for six months or more (the individual is working on maintaining healthy behaviors).*

5.

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 the 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. Use of skinfold measurement can also be very useful without determination of a body fat percent estimation.

6.

Which of the following muscle actions produces the **most** force?

Eccentric contraction

Concentric contraction

Overcoming isometric contraction

Yielding isometric contraction

Correct answer: Eccentric contraction

An 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 muscle, the ratio of eccentric to concentric strength can be as high as 1.4:1.

For example, 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.

Overcoming isometric contractions are those in which the lifter applies a force against an immovable object for a defined period of time. For example, a person could perform overcoming isometrics for strengthening the chest by using a stiff strap that will not break, no matter how hard they push.

Yielding isometric contractions are those in which the lifter can complete the range of motion, but maintains the same joint angle. An example would be when a person holds the downward push-up position for 10 seconds, then completes the push-up rep.

7.

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.

8.

Which energy system is used during high-intensity exercise lasting a few seconds?

ATP-PC energy system

Glycolysis energy system

ATP energy system

Oxidative energy system

Correct answer: ATP-PC energy system

In order to power the body during exercise and physical activity, adenosine triphosphate (ATP) is required. There are three systems that produce ATP. Depending on the duration of the exercise, one of the following energy systems will be used:

***ATP-PC:** The ATP-PC energy system is used during high-intensity exercise lasting no longer than a few seconds. This is when the body releases stored ATP. The body gets the most out of the ATP by releasing phosphocreatine (PC), extending the benefits for a bit longer than ATP alone. Since oxygen is not required during this form of energy production, it is considered anaerobic. Strength-power activities such as powerlifting and high jumping utilize the ATP-PC energy system.*

***Glycolysis:** The body takes circulating blood glucose or stored glucose (glycogen) and breaks it down to produce ATP. This system is ideal for activities that last between 12 and 30 seconds. Examples of activities that use the glycolysis energy system include runs that are moderately long such as a 400-meter track sprint or a 100 meter freestyle swim.*

***Oxidative:** For long-duration or long-distance exercise, oxidative energy systems are required. The body will break down triglycerides and carbohydrates through the Krebs cycle and the electron transport chain. Examples of activities that use the oxidative energy system include a marathon run.*

9.

All of the following are body composition measurements, **except**:

Blood pressure assessment

BMI assessment

Waist circumference testing

Skinfolds testing

Correct answer: Blood pressure assessment

Body composition measurements can be useful in establishing appropriate client goals. Some are better than others to use with certain populations. As a personal trainer, it is important to be able to discern which measurements are appropriate for a certain clientele. For example, performing skinfolds on a client who is obese might be uncomfortable for the client. Therefore, using other measurements such as waist-to-hip ratio, circumference measurements, or BMI might be more appropriate.

Blood pressure testing serves to determine an important physiological variable related to cardiovascular disease risk.

10.

Which of the following pieces of data is **not** needed to predict an individual's oxygen consumption during the Rockport 1-Mile Walk 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.

11.

When performing the push-up test, how far does the individual have to lower themselves to the ground for the down position?

Until their chin touches the ground

Until their chest touches the ground

Until their stomach touches the ground

Until their nose touches the ground

Correct answer: Until their chin touches the ground

The ability to produce force repeatedly over time is known as muscular endurance. A common assessment for muscular endurance is the push-up test. While the push-up test is joint- and muscle-group-specific, it can give an indication of whole-body muscular endurance. When performing a push-up, the individual must raise the body by straightening the elbows and then return to the down position until the chin touches the mat. The stomach should not touch the mat.

Touching the chest or stomach to the ground could make the test easier and less applicable when one considers different body types, such as those who are obese. Touching the nose to the ground could force the person to assume a worse posture during the movement.

12.

What are the two **most** common tests used to measure agility?

T-test and pro-agility test

Pro-agility test and 40-yard dash

T-test and vertical jump test

T-test and 40-yard dash

Correct answer: T-test and pro-agility test

Speed and agility are essential to athletic performance. Agility requires mobility, coordination, balance, power, stabilization, proper technique, strength, flexibility, and body control. Specific agility drills involve multiple movements, including linear springs, backpedaling, side shuffling, drop-stepping, cariocas, cutting, pivoting, jumps, and cross-overs. Several tests can be used to assess agility, but two of the most common assessments are the T-test, which uses cone sprints, and the pro-agility test, which is a 20-yard shuttle.

13.

Which of the following skinfold measurements involves taking a diagonal fold in order to obtain an accurate reading?

Suprailiac

Thigh

Triceps

Abdominal

Correct answer: Suprailiac

If the personal trainer is adequately trained in the use of skinfold calipers and the caliper is of high quality, skinfold measurements can be an accurate way to determine the percentage of body.

Calculating the sum of skinfolds can provide a client with valuable information on how their training program is affecting 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*

Vertical folds are used to measure the abdominal, triceps, biceps, medial calf, midaxillary, and thigh.

14.

When a motor unit is triggered, what percentage of that motor unit is utilized when performing exercises with a load half of one's maximum?

100%

50%

75%

25%

Correct answer: 100%

The sarcomere is the smallest contractile unit of a muscle cell, and it is composed of two types of muscle protein: actin (thin filament) and myosin (thick filament).

The stimulus for voluntary muscle movement comes from the brain, where the signal is relayed through the brain stem, through the spinal cord, and transformed into a specific motor unit activation pattern. A motor unit consists of the motor neuron and the muscle fibers it innervates. To perform a specific task, the required motor units meet specific demands for force production by activating associated muscle fibers.

Two major principles describe the mechanism for muscle contraction: the sliding-filament theory and the all-or-none principle. Specifically, the all-or-none principle refers to a sarcomere's contraction. It states that the nerve impulse that applies to the muscle cell, regardless of its strength, causes the sarcomere to contract maximally or not at all.

15.

Which muscle group is a synergist for the gluteus maximus?

Hamstrings

Quadriceps

Gluteus medius

Iliopsoas

Correct answer: Hamstrings

A tight and shortened agonist or prime mover has a lowered activation threshold and is described as hypertonic, from a performance standpoint. This simply means that it will not take much stimulus to activate the muscle. In which case, hypertonic muscles suppress the activity of lengthened antagonists and cause further weakening of those muscles.

For example, the hypertonicity of the hip flexors contributes to the progressive weakening of the gluteus maximus. The gluteus maximus is an important hip extensor; thus, when forceful hip extension is necessary, the hamstrings (a synergist of the gluteus maximus) will compensate for a weakened gluteus maximus.

16.

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 (% body fat / 100).

Lean body mass includes all of 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 an individual has.

17.

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.

18.

An antalgic gait is defined as:

An abnormal gait resulting from pain

The type of gait one employs after a stroke

A gait pattern in which one rises up on a toe in order to advance the opposite leg

An abnormal gait resulting from inadequate dorsiflexion range

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Correct answer: An abnormal gait resulting from pain

An antalgic gait is a self-protective gait. It happens after an injury to the pelvis, hip, knee, ankle, foot or other part of the body. 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.

A patient who has had a stroke will often employ a hemiparetic gait pattern. A gait pattern in which an individual rises up on their toe in order to advance the other leg is known as a vaulting gait. An abnormal gait due to decreased dorsiflexion is known as "early toe off".

19.

All of the following are causes of plantar fasciitis **except**:

Ankle sprains

Obesity

Tight Achilles tendon

Hyperpronation

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 hyperpronation. Other factors that over work the fascia, such as obesity, can also cause the condition.

20.

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

Diagnose a medical condition

Screen for exercise limitations

Ask the patient about their family

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*
- *Building rapport by talking to clients about their families, hobbies, etc.*
- *Identifying potential risk factors*
- *Screening for exercise limitations*

With that said, diagnosing a medical condition falls outside of a trainer's scope of practice.

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.

During the Queen’s College Step Test, what is measured in order to assess cardiorespiratory fitness?

Recovery heart rate

Maximum heart rate

Average heart rate

Duration

Correct answer: Recovery heart rate

The Queens College Step Test has the client step up and down on a standardized step or bench for a total of three minutes at a set stepping cadence. For men, the step rate is set at a cadence of 24 steps per minute, and for women the step rate is set at a cadence of 22 steps per minute.

After three minutes of stepping are completed, the client should stop and have their heart rate measured at the radial site within the first five seconds. The personal trainer should take the client's pulse for 15 seconds and then multiply that value by four to get beats per minute. In general, the lower the recovery heart rate, the more fit the individual.

23.

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

1.5-mile test

Step test

Astrand-Ryhming test

YMCA submaximal cycle test

Correct answer: 1.5-mile test

The 1.5-mile test is contraindicated for the following populations:

- *Unconditioned beginners*
- *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 Rockport 1-mile walk 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.

24.

Which of the following should increase with increasing exercise demands?

Systolic blood pressure

Diastolic blood pressure

Lactic acid buildup

VO2 max

Correct answer: Systolic blood pressure

Similar to heart rate, systolic blood pressure (SBP) increases in a linear fashion with exercise demands that progressively become more difficult. Maximal SBP values typically reach 190 to 220 mmHg; however, they should not exceed 250 mmHg. An SBP that fails to rise or that even falls, more than 10 mmHg, may signal a plateau or decrease in cardiac output.

25.

Which of the following motions does **not** occur at the glenohumeral joint?

Scapular elevation

Humeral abduction

Humeral flexion

Horizontal adduction of the humerus

Correct answer: Scapular elevation

In the human body, there are two synovial ball and socket joints that allow for movement in every plane of motion, one of which is the glenohumeral (GH) joint. The other ball and socket joint found in the body is the hip, also known as the femoroacetabular joint.

While movement in every plane occurs at the GH joint, scapular elevation does not. Instead, scapular elevation occurs in the shoulder girdle, or the scapulothoracic joint.

26.

All of the following are benefits of a body composition assessment **except**:

Assessing muscular strength and endurance

Identifying possible health risks

Estimating a healthy body weight

Monitoring progress

Correct answer: Assessing muscular strength and endurance

Muscular strength and endurance testing are separate components of a client assessment. They are related to body composition testing, but they are not a part of this component of health.

Body composition is used to determine an individual's fat-free mass and fat mass. There is a strong correlation between obesity and an increased risk of chronic diseases, including the following:

- *Coronary artery disease*
- *Diabetes*
- *Hypertension*
- *Certain cancers*
- *Hyperlipidemia*

Body composition evaluations can also be done to establish a target, desirable, or optimal weight for an individual.

27.

Which stage of the Transtheoretical Model is characterized by a change being planned to begin within the next 30 days?

Preparation

Contemplation

Pre-contemplation

Action

Correct answer: Preparation

An integrative model used to assess and determine a client's degree of readiness to change is called the Transtheoretical Model (TTM). There are five stages:

1. *Pre-contemplation: Not ready to exercise nor interested in pursuing exercise.*
2. *Contemplation: Thinking about pursuing exercise (thinking about making a behavior change, usually within the next six months).*
3. *Preparation: Doing something related to exercise, but not meeting the ACSM guidelines for physical activity (individual intends to take action, usually within the next month).*
4. *Action: Meeting the ACSM guidelines for exercise for less than six months (engaging in behavior change for less than six months. This is the stage where people are most likely to drop out or give up).*
5. *Maintenance: Meeting the ACSM guidelines for exercise for six months or more (the individual is working on maintaining healthy behaviors).*

Preparation is the stage where a client is getting closer to putting the change into action. The individual has decided that it is worth making this change and will do so in the immediate future (next 30 days).

28.

Which of the following is **not** a component of a SMART goal?

Step-wise

Time-based

Attainable

Measureable

Correct answer: Step-wise

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 SMART goal philosophy. SMART stands for Specific, Measurable, Attainable, Realistic, and Timely. A SMART goal includes detailing specific, measurable, attainable, realistic, and time-bound measures to ensure success. A client who is intrinsically motivated to exercise is more likely to demonstrate improvements to their self-worth and continue to participate in exercise long-term.

For example, a SMART 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.

29.

What is the purpose of measuring blood pressure 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. BP 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, they may refer the client to a health care professional for follow-up.

30.

Mark has completed his pre-participation screening and is scheduled for a fitness assessment in two weeks. He is planning to work with a personal trainer three days a week after completing his assessment. Mark is in which stage of change, based on the transtheoretical model (TTM)?

Preparation

Contemplation

Action

Precontemplation

Correct answer: Preparation

The transtheoretical model describes 5 stages of change. Each is based on an individual's degree of readiness to make a change. The 5 stages are:

1. ***Precontemplation:*** *During this stage, individuals are not interested in or looking to make a change, and typically don't realize that they need to make a change.*
2. ***Contemplation:*** *In this stage, the individual has recognized the need for change and is beginning to think about eventually changing in the future.*
3. ***Preparation:*** *Individuals in this stage are aware of the need to change and are taking the steps to create a concrete plan to implement changes.*
4. ***Action:*** *Individuals move to the action phase when they have implemented their plan and are in the process of making changes, but these changes are still new (generally less than 6 months).*
5. ***Maintenance:*** *An individual enters the maintenance stage when they consistently maintain these changes for 6 months or more.*

Mark is in the preparation stage. He has created his plan for making positive changes—he has met with his personal trainer and completed the necessary paperwork and pre-participation screening but hasn't yet begun any training. He has a concrete plan to move forward and will be starting to make those changes very soon.

31.

Which of the following is **not** a characteristic of type I muscle fibers as compared to type II muscle fibers?

Faster tension development

Less force

Lower recruitment thresholds

More mitochondria

Correct answer: Faster tension development

Muscle fibers that allow for greater oxygen delivery and resistance to fatigue are known as Type I, or slow twitch.

Compared to Type II muscle fibers, Type 1 fibers are slower to develop tension, have lower recruitment thresholds, contain more mitochondria, and produce less force.

32.

Which of the following is a reason for a personal trainer to provide a CVD risk assessment?

To help educate and inform the client about their current health

To diagnose a cardiometabolic disease

To determine a client's baseline muscular fitness

To impart a sense of medical professionalism to the client

Correct answer: To help educate and inform the client about their current health

The ACSM no longer uses the CVD risk assessment as a mandatory component for determining whether medical clearance is warranted before a client begins an exercise program with a personal trainer. However, the assessment still has benefits, such as identifying CVD risk factors in order to prevent or manage disease, as well as educating and informing a client about their current health.

33.

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.

34.

The most important forms for a personal trainer include all of the following **except**:

Client goals list

Preparticipation screening form

Health history questionnaire

Incident reports

Correct answer: Client goals list

The most important forms for a personal trainer include the following:

- *Preparticipation screening form*
- *Health history questionnaire*
- *Physician's statement and medical clearance*
- *Fitness assessment*
- *Client progress notes*
- *Incident reports*

In order to be a competent personal trainer, one must not only have these forms but know when to use them. Blank spaces are unacceptable in these forms; they should be completely filled out to ensure the personal trainer is being as thorough as possible.

35.

All of the following contain mechanoreceptors **except**:

Bones

Skin

Muscles

Fascia

Correct answer: Bones

The sense of knowing where one's body is in space is referred to as proprioception. There are two types of proprioception: static (joint position sense) and dynamic (kinesthetic movement sense).

Proprioception enables us to do the following with closed eyes:

- *Estimate the size of our feet*
- *Describe the width of our pelvis*
- *Scratch our noses*

This sensory input is gathered from specialized nerve endings, termed mechanoreceptors, that are located within the skin, muscles, fascia, and joints, but not the bones.

36.

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, feeling, reflecting, and observing themselves.

37.

Which of the following should be performed **first** when conducting a fitness assessment?

Resting cardiovascular readings

Body composition tests

Muscular fitness tests

Flexibility tests

Correct answer: Resting cardiovascular readings

Before having a client perform any movement testing, resting cardiovascular measurements should be taken. This will serve to provide the most accurate resting measurements possible in this domain. After these measurements are obtained, body composition tests should follow. Next, the trainer should lead the client through appropriate cardiovascular tests, followed by muscular fitness testing and flexibility testing.

38.

What is the minimum number of stages for the YMCA Submaximal Cycle Test?

Two

Three

Four

Five

Correct answer: Two

The YMCA Submaximal Cycle Test uses a multistage setup to establish a relationship between an individual's heart rate and work rate to predict cardiorespiratory fitness.

The test requires a minimum of two stages, with the possibility of four stages. Each stage is three minutes long. The end goal is having the individual complete two separate stages that result in their heart rate being between 110 bpm and 150 bpm.

39.

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 determines 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.

40.

How long should a proper cool-down last?

Approximately 10 minutes

4 to 5 minutes

1 to 5 minutes

6 to 8 minutes

Correct answer: Approximately 10 minutes

Cool-downs should consist of movements that slowly diminish in intensity over the course of about 10 minutes. . The cool-down involves similar cardiovascular and muscular endurance activities as are found in the warm-up, but now the transition is from the higher intensity of the training session toward a resting state. During this time, the heart rate, blood pressure, and breathing rate will slowly return to normal levels. A cool-down can help prevent post-exercise hypotension and dizziness.

The other options listed are generally inadequate for full recovery after exercise. By skipping the cool-down or shortening it too much, clients may be at risk for a cardiovascular event or other problems.

41.

How long should a proper warm-up period last?

5 to 10 minutes

1 to 3 minutes

3 to 5 minutes

2 to 3 minutes

Correct answer: 5 to 10 minutes

A proper warm-up needs to include enough time to properly increase body temperature, improve range of motion, improve muscle function, and reduce the possibility of injuries. A warm-up should consist of at least 5 to 10 minutes of low-intensity cardiorespiratory large muscle activity that continues to an intensity at the lower end of the target exercise range for the endurance phase.

42.

What type of assessment is the Astrand-Ryhming Test?

Submaximal cycle ergometer test

Maximal VO2 test

Step test

Walk/run performance test

Correct answer: Submaximal cycle ergometer test

The Astrand-Ryhming Test is an example of a submaximal cycle ergometer test that measures cardiorespiratory fitness. It serves as a great alternative to a maximal test, since maximal testing is not always a feasible, desirable, or appropriate approach for an individual.

43.

What is lacking in a client's goal of "eating more vegetables daily for the next month"?

Specificity

Measurability

Timeliness

Realism

Correct answer: Specificity

The SMART goal philosophy is the best way for a personal trainer to help clients become intrinsically motivated to exercise and set intrinsically motivated goals that will work. A SMART goal must be specific, measurable, achievable, relevant, and time-sensitive to ensure success. A client who is intrinsically motivated to exercise is more likely to demonstrate improvements to their self-worth and continue to participate in exercise long-term.

For example, a goal of "eating more vegetables daily for the next month," while measurable, achievable, and realistic, lacks specificity. In order to make this goal more effective, change it to something like "eating at least two cups of vegetables daily for the next month."

44.

Which of the body's systems uses a pumping mechanism and is responsible for the delivery of nutrients via the blood to cells and tissues throughout the body?

Cardiovascular system

Respiratory system

Digestive system

Autonomic nervous system

Correct answer: Cardiovascular system

Consisting of the heart and the blood vessels, the cardiovascular system is responsible for transporting blood, nutrients, hormones, and enzymes to the various cells of the body. At the same time, this system is involved with the removal of waste products from these regions. The cardiovascular system is also involved in other processes such as acid-base, water, and temperature balance.

The respiratory system is responsible for extracting CO2 and other gases from the body, while supplying the blood with oxygen. The digestive system is responsible for breaking down food products into nutrients that can be absorbed and used by the body. The autonomic nervous system is a branch of the nervous system that provides unconscious control of body processes.

45.

How long does the Astrand-Ryhming cardiorespiratory fitness test last?

6 minutes

8 minutes

15 minutes

5 minutes

Correct answer: 6 minutes

A cycle ergometer is used for the Astrand-Ryhming test, and it is usually a single-stage test that lasts for six minutes. It is a submaximal test meant to predict VO2 max for an individual. Throughout the course of the test, an individual's heart rate and blood pressure are monitored and recorded by the personal trainer, all while maintaining a cadence of 50 rpm.

46.

All of the following muscles comprise the posterior musculature of the spine **except**:

Rectus abdominis

Erector spinae

Multifidus muscles

Intrinsic rotators

Correct answer: Rectus abdominis

The erector spinae, multifidus muscles, and intrinsic rotators make up the posterior musculature of the lumbar spine.

The lateral muscles of the lumbar spine are the quadratus lumborum and psoas major and minor. On the anterior side of the spine, we find the rectus abdominis, along with other, similarly-functioning musculature.

47.

All of the following are considered SMART goals **except**:

Improve my overall health in 10 weeks by exercising and eating better

Lose ten pounds in three months by performing total body exercises three times a week and eating 500 fewer calories per day

Increase bench press by ten pounds before the holidays by performing regular pec and shoulder strengthening exercises three times per week, gradually increasing the intensity each session

Run four days per week, gradually increasing pace during each run until maintaining a 6:00 minute per mile pace or less

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Correct answer: Improve my overall health in 10 weeks by exercising and eating better

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 SMART goal philosophy. SMART stands for Specific, Measurable, Attainable, Realistic, and Timely. A SMART goal includes detailing specific, measurable, attainable, realistic, and time-bound measures to ensure success. A client who is intrinsically motivated to exercise is more likely to demonstrate improvements to their self-worth and continue to participate in exercise long-term.

Each of these goals are considered SMART, except for "Improve my overall health in 10 weeks by exercising and eating better". This goal provides no specificity or timeline.

48.

A trainer takes a resting blood pressure on a client. The client, Tony, is a 56-year-old male. The trainer obtains a a blood pressure reading of 165/99 mmHg.

Assuming this blood pressure is consistent with past blood pressure readings, how should the trainer interpret this data?

Tony has stage 2 hypertension

Tony has prehypertension

Tony has stage 1 hypertension

Tony has hypotension

Correct answer: Tony has 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). BP is expressed in millimeters of mercury (mmHg) and it is comprised of 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 140 and/or a DBP over 90 is considered stage 2 hypertension.

Stage 1 hypertension is defined by having a systolic BP of 130-139 mmhg and/or a diastolic BP between 80-90 mmhg. Prehypertension is defined by a systolic BP of 120-129 mmhg and a diastolic BP of less than 80 mmhg. There is no widely accepted criteria for hypotension.

49.

Obesity can be defined as having a body mass index equal to or greater than:

30.0

20.0

25.0

35.0

Correct answer: 30.0

BMI 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.

Obesity is defined as having a BMI greater than or equal to 30.0.

50.

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 drop in blood pressure by the baroreceptor reflex that occurs if the carotid sinus area is pressed on.*

51.

Which of the following statements about characteristics of the most common joint type found in the body 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 a synovial joint. Synovial joints allow freedom of movement with 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*

52.

What is the minimum amount of time that should be given between attempts for a 1-RM bench press assessment?

3 minutes

2 minutes

5 minutes

1 minute

Correct answer: 3 minutes

The one-repetition maximum (1-RM) test is the maximum amount of weight a client can lift with perfect form one time. The single best weightlifting test for predicting total dynamic strength is the 1-RM bench press because it measures the strength of the muscles involved in arm extension: the triceps, pectoralis major, and anterior deltoid.

When performing this test, the trainer should have the client first perform 3 to 5 repetitions at about 80% of the perceived maximum. From there, a small amount of weight should be added for each additional attempt. For each successful lift, a rest period of 3 to 5 minutes should be provided. The goal is to find the client's 1-RM in three to five maximal efforts.

53.

A BMI value of 24.8 is classified as:

Normal

Underweight

Class I obesity

Overweight

Correct answer: Normal

Body Mass Index (BMI) 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.

54.

Which of these exercises occurs in the frontal plane?

Side shuffle

Pendulum leg swings (front to back)

Butt kicks

Wood chop

Correct answer: Side shuffle

Sagittal, frontal, and transverse are the three imaginary planes that pass through the body. The frontal plane divides the body into anterior and posterior planes or a movement from side to side. An exercise such as a side shuffle, that activates adduction and abduction, occurs in the frontal plane.

55.

A client who is morbidly obese is recovering after a heart attack she suffered 5 months ago, and arrives a few minutes late for her fitness assessment. The trainer is worried that she won't be able to complete all of the planned testing and assessments during this first visit.

Which of the following fitness assessments would be the **lowest** priority for completing during this initial session with the personal trainer?

Flexibility testing

Resting physiologic measurements

Cardiovascular endurance tests

Body composition measurements

Correct answer: Flexibility testing

Per ACSM recommendations, a personal trainer should perform assessments in a logical order, starting with resting physiological measurements such as resting heart rate and resting blood pressure. These measurements should only be taken after the client has completed a health and physical activity questionnaire.

From there, the trainer can move on to the next most important testing elements. For this client, who is obese, it would make sense to then move on to body composition testing, followed by cardiovascular assessments due to her recent history of a cardiovascular event. If there is time, assessing the client's muscular strength and endurance, as well as her flexibility, should follow.

56.

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

57.

Which of the following **must** be determined during an initial session with a client?

Client's readiness to exercise and current stage of behavior change

Client's knowledge of exercise technique and nutritional compliance

Client's current strength, cardiovascular fitness, and flexibility levels

Expected length of client's contractual commitment

Correct answer: Client's readiness to exercise and current stage of behavior change

An integrative model used to assess a client's degree of readiness to change is known as the Transtheoretical Model (TTM). There are five stages: pre-contemplation, contemplation, preparation, action, and maintenance.

A personal trainer will be able to create a much more effective program if he/she is able to determine a client's readiness to exercise and current stage of behavior change. Therefore, the most important aspect of the initial consultation with a client is to develop a relationship. Knowing the client's needs, goals, and relationship with healthy living is an imperative aspect of this first meeting.

58.

The Jackson-Pollock 3-site formula for calculating percent body fat in women uses which of the following skinfold measurement sites?

Triceps, suprailiac, and thigh

Chest, abdomen, and thigh

Biceps, triceps, and iliac crest

Biceps, abdominals, and iliac crest

Correct answer: Triceps, suprailiac, and thigh

The Jackson-Pollock 3 site formula for women includes the triceps, suprailiac, and thigh. This formula also takes into consideration the client's age in years and is easy to administer as well as accurate for calculating body composition.

59.

As a personal trainer, which of the following would fall under your scope of practice?

Encouraging clients to speak with their doctors about any medical concerns they may have

Providing specific guidance about managing a medical condition

Performing medical treatments or procedures

Diagnosing conditions

Correct answer: Encouraging clients to speak with their doctors about any medical concerns they may have

Personal trainers are not allowed to give, interpret, or alter medical advice, or provide treatment other than exercise prescription. They also cannot diagnose conditions in patients. With that said, as a health and fitness professional, you can and should aid clients in following any medical advice provided by the healthcare provider. What's more, you should refer clients if they are in need of medical advice.

60.

All of the following are major muscle types **except**:

Rough

Cardiac

Smooth

Skeletal

Correct answer: Rough

The body has three major types of muscle:

1. *Skeletal: attaches to the skeleton*
2. *Smooth: forms the internal organs*
3. *Cardiac: heart muscle*

61.

A resting blood pressure measured at 148/80 mmHg would be diagnosed as:

Hypertension

High arterial pressure syndrome

Hyperlipidemia

Hypotension

Correct answer: 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. It is expressed in millimeters of mercury (mmHg) and it is comprised of 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. A blood pressure over 139/89 mmHg is considered hypertensive.

Hypotensive refers to low blood pressure. Hyperlipidemia refers to high cholesterol levels. High arterial pressure syndrome is not a recognized medical term.

62.

What is the **most** important purpose of measuring body composition?

The strong correlation between obesity and the risk of chronic diseases

The strong correlation between obesity and chance of success

The strong correlation between obesity and behavior change

The strong correlation between obesity and other fitness measurements

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Correct answer: The strong correlation between obesity and the risk of chronic diseases

The relative proportion of fat and fat-free tissue in the body is known as body composition. It's important to take body composition measurements for numerous reasons, but above all, due to the fact that there is a strong correlation between obesity and increased risk of chronic diseases such as diabetes, hypertension, and coronary artery disease.

Although assessing risk is important, body composition measurement is also done to establish a target goal or optimal weight for an individual.

63.

Syncope can **best** be defined as:

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

---

Correct answer: Loss of consciousness

Fainting is also known as syncope. It is most commonly caused by a 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.

64.

For an asymptomatic middle-aged woman referred for stress testing, which of the following maximal heart rate equations should be used?

206 - (0.88 x age)

220 - age

216.6 - (0.84 x age)

208 - (0.7 x age)

Correct answer: 206 - (0.88 x age)

Since some equations to predict a client's maximal heart rate have proven to be more appropriate than others, a personal trainer should choose the equation that most represents the population into which their client is classified.

For an asymptomatic middle-aged woman referred for stress testing, the maximal heart rate equation that should be used is 206 - (0.88 x age).

65.

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.

66.

Cardiac output is comprised of:

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.

67.

When should a personal trainer recommend an appropriate training package to a new client?

After the goals are verbalized and assessments are completed

After the informed consent is completed and goals are verbalized

After the PAR-Q is completed

At the beginning of the initial client consultation

Correct answer: After the goals are verbalized and assessments are completed

It is critical for the personal trainer to not only recommend a personal training package at the right time but also to suggest one that is appropriate for the client.

The personal trainer should detail a recommended action plan for training with the client based on the findings of the assessment and the client's verbalized goals. This action plan should include the appointment or session frequency and the number of sessions purchased. This will be determined by the client's needs and goals.

The personal trainer should be clear with the client at the beginning of the assessment and recommend the ideal exercise program that is appropriate for the client to ensure success.

68.

During the upward phase of the overhead press, which movement is the shoulder joint **mainly** performing?

Abduction

Adduction

Flexion

Extension

Correct answer: Abduction

The movement of a joint is usually characterized in terms of anatomical position by its spatial movement pattern in relation to the body. Abduction is described as movement away from the midline of the body, usually in the frontal plane. The middle deltoid and supraspinatus are the major agonist muscles for shoulder abduction, which occurs during an overhead press as well as a lateral raise.

69.

There are a number of substances that should be avoided prior to a cardiovascular fitness assessment. All of the following substances can skew a client's results during a cardiovascular fitness assessment **except** for:

Supplementary protein

Caffeine

Nicotine

Alcohol

Correct answer: Supplementary protein

For all clients who undergo cardiorespiratory fitness (CRF) assessments, it is important to standardize pretesting conditions. Standardization can increase the accuracy of a CRF's predictions, as well as help with ensuring client safety. General instructions include the following:

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

Protein is unlikely to cause any skewing of a client's results during a cardiovascular fitness assessment.

70.

A 42-year-old female client has a BMI of 24.5, has no family history of cardiovascular, metabolic, and/or renal (CMR) disease, walks for an hour four times per week, and sometimes experiences shortness of breath when walking up moderate hills. In which category of risk should this client be placed?

High risk

Low risk

Moderate risk

No risk

Correct answer: High risk

This particular client is experiencing a sign or symptom of cardiovascular, metabolic, and/or renal (CMR) disease: dyspnea, or shortness of breath with mild exertion. It is recommended that this client be referred to a medical professional and obtain a medical clearance before beginning exercise participation with a personal trainer. It is important to note that risk does not equate to a diagnosis.

71.

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.

72.

When is an initial clearance from a physician required to begin an exercise program?

When necessary

Always

Never

Whenever possible

Correct answer: When necessary

Based upon risk determined through preparticipation screening, there may be a need for a medical clearance. Depending on what an individual reports, or if they have certain risk factors for cardiovascular, metabolic, and/or renal (CMR) disease, the personal trainer should refer them to a physician before beginning an exercise program. Receiving a medical clearance from a physician indicates that it is safe for the client to begin exercising.

73.

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 in 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.

74.

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.

75.

Which of the following sites is most commonly used to assess pulse rate?

The radial artery at the wrist

The brachial artery at the medial upper arm

The carotid artery at the neck

The femoral artery at the thigh

Correct answer: The radial artery at the wrist

There are many anatomical sites at which heart rate can be measured. These are some of the most common sites:

1. *Radial artery at the wrist*
2. *Brachial artery at the medial upper arm*
3. *Carotid artery at the neck*
4. *Femoral artery at the thigh*
5. *Pedal artery at the foot*

The radial site measurement is taken by lightly pressing the index and middle fingers against the radial artery in the groove on the anterior surface of the lateral wrist.

Most clinicians will take pulse measurements at the radial artery at the wrist because it tends to be comfortable for the client and reliable. However, some individuals may need to have their pulse taken elsewhere if they have an amputation, a very weak pulse at the wrist, or some other issue that precludes taking a pulse at this site.

76.

The sagittal plane divides the body into which of the following halves?

Right and left

Top and bottom

Anterior and posterior

Inferior and superior

Correct answer: Right and left

There are three imaginary planes that pass through the body. One of which is the sagittal plane, which divides the body into right and left halves. Movements that occur in the sagittal plane are those that are forward, backward, up, and down, such as jumping, running or squatting.

Top and bottom is incorrect as this describes the transverse plane. Movements that occur in the transverse plane are rotational.

Anterior and posterior is incorrect as this depicts the halves that the frontal plane divides the body into. Examples of movements that occur in the frontal plane include jumping jacks, side shuffles, and dumbbell lateral raises.

Inferior and superior is incorrect as this describes the halves of the body that the transverse plane divides. Movements that occur in the transverse plane include swinging a baseball bat or golf club, or internal or external hip rotations.

77.

Which of the following skinfold measurement sites uses a diagonal fold?

Chest

Thigh

Biceps

Midaxillary

Correct answer: Chest

If the personal trainer 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 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*

Diagonal folds are used to measure the following sites: chest, subscapular, and suprailiac.

78.

In which stage of the Transtheoretical Model would exposing a client to the risks of unhealthy eating and a sedentary lifestyle prove **most** effective?

Contemplation

Preparation

Action

Maintenance

Correct answer: Contemplation

An integrative model used to assess and determine a client's degree of readiness to change is known as the Transtheoretical Model (TTM). There are five stages: pre-contemplation, contemplation, preparation, action, and maintenance.

During the contemplation stage, the client is considering the negative consequences of his/her behavior and is considering changes within the next 6 months. Typically, in the beginning, the trainer focuses on cognitive processes of change. This is followed by behavioral processes of change in the later stages. An example of an effective cognitive process for the contemplation stage is increasing awareness of the problems associated with their current unhealthy lifestyle.

This is a breakdown of the stages of change from the transtheoretical model related to an individual's readiness to change or maintain an exercise routine:

1. *Pre-contemplation: Not ready to exercise nor interested in pursuing exercise.*
2. *Contemplation: Thinking about pursuing exercise (thinking about making a behavior change, usually within the next six months).*
3. *Preparation: Doing something related to exercise, but not meeting the ACSM guidelines for physical activity (individual intends to take action, usually within the next month).*
4. *Action: Meeting the ACSM guidelines for exercise for less than six months (engaging in behavior change for less than six months. This is the stage where people are most likely to drop out or give up).*
5. *Maintenance: Meeting the ACSM guidelines for exercise for six months or more (the individual is working on maintaining healthy behaviors).*

79.

Which of the following is a **self-guided** screening method?

PAR-Q+

Health history questionnaire

Medical clearance

Preparticipation physical activity screening process

Correct answer: PAR-Q+

There are two approaches to preparticipation physical activity screening:

- *Self-guided screening*
- *Using a professional to conduct supervised screening*

The PAR-Q+ helps an individual determine their own readiness for physical activity by asking seven yes/no questions. Since it does not require direct input from an exercise professional, it is considered a self-guided screening assessment.

The health history questionnaire, medical examination/clearance, and preparticipation physical activity screening process are all examples of professionally-supervised screening assessments.

80.

The degree of movement within a joint is known as:

Range of motion

Flexibility

Tissue extensibility

Joint mobility

Correct answer: Range of motion

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.

Flexibilty describes the ability of tissue to stretch under passive or active tension. Joint mobility refers to how much "joint play" there is in a given region; this is often tested by physical therapists in different positions in order to diagnose specific joint-related conditions. Tissue extensibility is not a recognized term in this context.

81.

Which of the following joints is distal to the elbow?

Wrist

Humerus

Shoulder

Clavicle

Correct answer: Wrist

The wrist is distal to the elbow. Proximal refers to something that is close to a reference point. In anatomy, this reference point is typically the center of mass. Distal refers to something that is farther away from a reference point. The wrist is farther away from the center of mass than the elbow. Thus, the wrist is distal to the elbow.

The humerus is the upper arm bone directly proximal to the elbow joint.
The shoulder is proximal to the elbow; it is the joint closest to the elbow. The clavicle bone is proximal to the elbow. This bone is located in the upper torso, directly proximal to the shoulder joint.

82.

When using the client-centered approach during a consultation, how much of the time will the personal trainer be speaking?

10% to 15% of the time

15% to 30% of the time

25% to 50% of the time

50% to 75% of the time

Correct answer: 10% to 15% of the time

The first component of the client-centered approach is building rapport. This is developed by focusing on building a trusting and respectful relationship with the client. It is essential to start the working relationship in this manner and this can be achieved by asking open-ended questions. By asking questions meant to gather information, the client will spend the majority of the time talking, with the personal trainer being responsible for pacing the conversation. The personal trainer should be speaking about 10% to 15% of the time, asking the client to elaborate when needed.

83.

When measuring waist circumference, which two body landmarks should the tape be placed between?

Umbilicus and xiphoid process

Gluteal fold and umbilicus

Umbilicus and lowest rib

Xiphoid process and scapula

Correct answer: Umbilicus and xiphoid process

Waist circumference can be used as an indicator of health risk since large amounts of adipose tissue in this area are associated with many chronic diseases. Waist circumference is defined as the smallest circumference above the umbilicus (navel) and below the xiphoid process (beneath the sternum).

84.

Which of the following catabolic hormones is responsible for breaking down proteins?

Cortisone

Growth hormone

Androgens

Insulin

Correct answer: Cortisone

Catabolic substances are those that break down complex structures into their building blocks or simpler components. Proteins in the body are constantly changing, with new proteins being made and old ones being broken down. Cortisone is a catabolic hormone that maintains energy balance by influencing the breakdown of proteins. Other examples of catabolic hormones include hydrocortisone and thyroxine.

Growth hormones, androgens, and insulin are anabolic hormones. Anabolic hormones are those that affect simpler substances and scaffold them toward becoming more complex structures.

85.

All of the following are major symptoms suggestive of a cardiovascular, metabolic, and/or renal disease **except**:

Cigarette smoking

Ankle edema

Dizziness

Orthopnea

Correct answer: Cigarette smoking

Major signs or symptoms that suggest a cardiovascular, metabolic, and/or renal (CMR) disease include the following:

- *Ischemia*
- *Dyspnea*
- *Syncope*
- *Orthopnea*
- *Ankle edema*
- *Palpitations*
- *Intermittent claudication*
- *Known heart murmur*
- *Unusual fatigue with usual activities*

As a personal trainer, it is important to recognize the signs of such conditions for the client's safety, as well as to be able to adequately assess the risk level of the client. Cigarette smoking is incredibly detrimental to one's health, but it is not a sign/symptom of disease; it is an activity. All of the other options listed are signs and symptoms of disease.

86.

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.

87.

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

Psychological evaluation

Cardiovascular endurance testing

Tests of muscular strength

Resting heart rate measurement

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 preparticipation activity screening, resting measures typically should then be taken prior to any exertional assessments.

88.

Scoliosis is defined as:

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.

89.

A client and trainer work together to develop the following goal:

To lose 10 pounds by completing three days of cardiovascular training and two days of weight training each week.

In order to be considered a SMART goal, which of the following additions is needed?

A timeline for achieving the goal

A realistic goal

Specificity

A measurable metric

Correct answer: A timeline for achieving the goal

The best way for a personal trainer to help clients become intrinsically motivated to exercise and set intrinsic goals that will work is to use the SMART goal philosophy. SMART stands for Specific, Measurable, Action-based, Realistic, and Timely. A SMART goal includes detailing specific, measurable, action-based, realistic, and time-bound measures to ensure success. A client who is intrinsically motivated to exercise is more likely to demonstrate improvements to their self-worth and continue to participate in exercise long-term.

For example, a SMART 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.

The goal in the original question is specific, measurable, action-based, and realistic, but it has no timeline for completion.

90.

Which of the following describes the role of the somatic branch of the peripheral nervous system?

Allows for voluntary contraction of skeletal muscles

Involves the motor activities that control internal organs

Regulates visceral activities such as heart rate, digestion, and breathing

Operates as the body's control center where sensory stimuli are received and interpreted

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Correct answer: Allows for voluntary contraction of skeletal muscles

There are two branches of the peripheral nervous system (PNS): the visceral system and the somatic nervous system.

The somatic nervous system regulates the voluntary contraction of skeletal muscles. It is responsible for sending feedback to the central nervous system to adjust responses (afferent division), and sending signals out to the body (efferent division).

The other division of the PNS is the visceral system, which involves the motor activities that control internal organs.

91.

When conducting a health and fitness assessment, at which temperature range should the room be held?

68 to 72 degrees Fahrenheit

64 to 67 degrees Fahrenheit

73 to 76 degrees Fahrenheit

77 to 80 degrees Fahrenheit

Correct answer: 68 to 72 degrees Fahrenheit

The location of the client consultation can set the tone for sharing information and building a successful client-trainer relationship. It is imperative that the personal trainer considers this experience through the eyes of a new client and creates a hospitable and private environment.

One thing to consider for a comfortable environment is the temperature range. In accordance with ACSM recommendations, the assessment area should be held between 68 and 72 degrees Fahrenheit, with a humidity level below 60 percent.

92.

If a client wants to improve his 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. 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.

93.

All of the following muscles can be affected by "whiplash" **except**:

Levator scapulae

Sternocleidomastoid

Upper trapezius

Cervical paraspinal

Correct answer: Levator scapulae

A violent hyperextension and hyperflexion from sudden acceleration or deceleration causes many sprains and strains of the neck muscles. One of the most common forms of this type of injury is called whiplash, which is common in head-on car collisions. Whiplash can cause tears of the anterior and posterior muscles of the cervical spine, which include the sternocleidomastoid, upper trapezius, and cervical paraspinal muscles.

The levator scapulae is a skeletal muscle situated at the back and side of the neck. It is located laterally; therefore, it is not affected by a whiplash injury.

94.

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 fiber, 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.

95.

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

Diaphragm

Internal and external intercostals

Sternocleidomastoid

Scalenes

Correct answer: Diaphragm

The muscles of respiration are essential for life. 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.

The internal intercostals, external intercostals, scalenes, and sternocleidomastoid muscles can help during extremely labored breathing. However, these muscles are not very active in the breathing process while we are at rest and during quiet respiration.

96.

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 preparticipation screening.

97.

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 percent body fat, it is also desirable to determine an ideal or desired body weight based on a desired percent of fat for the individual. For a female who is 53 years old, any percentage between 23.5% and 26.6% is considered good.

98.

Which of the following muscles is a major agonist muscle for upward rotation of the scapulothoracic joint?

Trapezius

Levator scapulae

Serratus anterior

Rhomboids

Correct answer: Trapezius

The scapulothoracic joint has the following major movements:

1. *Fixation*
2. *Upward rotation*
3. *Downward rotation*
4. *Elevation*
5. *Depression*
6. *Protraction*
7. *Retraction*

Specifically for upward rotation, the major agonist muscle performing this movement is the trapezius muscle. The trapezius muscle is a large triangular muscle divided into three fibers: upper, middle, and lower. Together, the upper and lower fibers cause upward rotation of the scapula.

99.

Which energy system can use carbohydrates, fat, or protein as a fuel source?

Oxidative system

ATP-PC system

Glycolysis

Anaerobic system

Correct answer: Oxidative system

To sustain high rates of ATP production for muscular energy over long periods of time, the aerobic system requires adequate delivery and use of oxygen and uses carbohydrates, fats, and proteins and energy substrates.

In general, carbohydrates are used as the primary fuel at the onset of exercise and during high-intensity work. However, during prolonged exercise of low to moderate intensity (longer than 30 minutes), a gradual shift occurs from carbohydrate toward an increasing reliance on fat as a substrate.