

# Fitness

NSCA-TSAC-F

National Strength and Conditioning Association: Tactical Strength and Conditioning Facilitator®

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# Latest Version: 6.0

## Question: 1

An athlete performs a lower body workout involving a power snatch, front squat, and lunge. Which of the following groups of exercises is in the correct order as recommended for strength and power training?

- A. Lunges, power snatch, front squat
- B. Power snatch, front squat, lunges
- C. Power snatch, lunges, front squat

**Answer: B**

Explanation:

Exercise order refers to the sequence of resistance exercises performed during one training session. The general recommendation for exercise order for strength and power training begins with more complex, power exercises first, followed by other structural or basic strength exercises, then assistance exercises. Multi-joint exercises should be performed before single-joint exercises.

Therefore, in this case, the correct order is power snatch, front squat, and then lunges.

## Question: 2

Which of the following is not an element of negligence?

- A. Standard of care
- B. Duty
- C. Proximate cause

**Answer: A**

Explanation:

Negligence is failure to act as a reasonable and prudent person would in a similar situation.

Four elements must exist for a strength and conditioning professional to be found negligent:

1. Duty: the situation needed to be acted upon
2. Breach of duty: failed to act on that duty
3. Proximate cause: did not provide appropriate standard of care
4. Damages: physical or economic injury resulted

## Question: 3

During what part of a training day should speed and agility drills be performed?

- A.At the end of a training session
- B.After core resistance exercises are performed
- C.At the beginning of a training session

**Answer: C**

Explanation:

Correct answer: At the beginning of a training session

Because of their high neuromuscular and motor coordination demands, speed and agility tasks should be conducted early in a training session, before other fatiguing exercises.

### Question: 4

An athlete is about to perform a wide-grip pulldown. The trainer observes their grip closely for the correct form. What grip is required for this type of exercise?

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

**Answer: C**

Explanation:

The wide-grip pulldown requires the lifter to perform the exercise with a pronated grip (palms face away from the body) to achieve the desired results, which is to strengthen the latissimus dorsi, teres major, middle trapezius, rhomboids, and posterior deltoids.

The lifter grabs the bar overhead with the elbows fully extended, then pulls the bar down to the upper chest, keeping the torso upright with a slight backward lean.

This is similar to the traditional pull-up, which also utilizes a pronated grip.

### Question: 5

An endurance athlete performs an exercise at 85% of VO2 max. When would you expect to notice muscle fatigue in this client?

- A.20-30 minutes
- B.2 hours
- C.50-60 minutes

**Answer: A**

Explanation:

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Exercise duration is influenced by training intensity, with higher intensities often resulting in shorter training sessions. For example, when training at 85% of VO<sub>2</sub> max, muscle fatigue will set in somewhere around 20-30 minutes.

In contrast, if you work at 70% of VO<sub>2</sub> max, which doesn't seem that big of a difference, you may exercise for several hours before you experience fatigue.

### Question: 6

What is the ACSM standard depth for males in the push-up test?

- A. When the arms are parallel with the ground
- B. When the chest makes contact with the recorder's fist held vertically against the ground
- C. When the chest hits an 8-inch foam roller placed under the athlete's chest

**Answer: B**

Explanation:

The push-up test can be performed in a couple of ways, and various institutions require different forms and depths.

According to the ACSM standards, the low position for males is when the chest makes contact with the recorder's fist held vertically against the ground. There is no standard for female low position.

### Question: 7

Which of the following can decrease one's resting metabolic rate?

- A. Increase in lean body tissue
- B. A low caloric intake
- C. Being young

**Answer: B**

Explanation:

Resting metabolic rate (RMR) is the largest contributor to total energy expenditure, and increasing RMR can help a person lose weight.

Factors increasing RMR are an increase in lean body tissue, being young, abnormal body temperature, menstrual cycle, and hyperthyroidism.

Factors decreasing RMR include low caloric intake, loss of lean tissue, and hypothyroidism.

### Question: 8

If Jared performs a set of 10 repetitions of the push press, pressing the bar up a distance of 2 feet with a bar weighing 50 pounds, what is his positive mechanical work for that set?

- A. 500 foot-pounds

- B.1000 foot-pounds  
C.200 foot-pounds

**Answer: B**

Explanation:

Mechanical work is defined as the product of force and displacement. This being said, in order to calculate work in a set, we need to know three numbers:

The amount of weight lifted, how far they lifted the weight on each repetition, and how many repetitions were performed.

Then we can calculate work in this way:

$(\text{weight} \times \text{distance} \times \text{reps}) = (50 \times 2 \times 10) = 1000 \text{ foot-pounds}$

### Question: 9

What total yardage is completed during the T-drill?

- A.10 yards  
B.20 yards  
C.40 yards

**Answer: C**

Explanation:

The T-drill uses four cones and is set up in the shape of the letter "T".

To perform the T-Drill:

- The runner first straddles the cone at the base of the T
  - First, they sprint 10 yards and touch the center cone
  - The athlete should then shuffle 5 yards to the left and touch the left cone
  - The athlete then shuffles 10 yards to the right and touches the right cone
  - The athlete then shuffles left, going back to touch the center cone
  - Finally, they backpedal 10 yards back to the starting line
- The runner begins by running 10 yards, then shuffles 20 yards (5 yd + 10 yd + 5 yd), then backpedals another 10 yards. This totals 40 yards

### Question: 10

What is the maximum recommended exposure time for firefighters working in an environment over 100 degrees Celsius (212 degrees F)?

At this temperature, there is no recommended time limit

- A.60 minutes  
B.25 minutes  
C.15 minutes

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**Answer: B**

Explanation:

Thermal stress is a significant concern for firefighters, especially when working in a hot environment—which can be a result of fire or weather or both. When the ambient temperature is above 100 degrees celsius, the maximum recommended exposure time is 25 minutes. The hazards of a high ambient temperature are amplified by an increase in body temperature due to personal protective equipment (PPE) as well as the heat produced by the working muscles.

Thermal stress can affect performance due to the increase in heat storage and decreased ability to maintain heat balance. Dehydration also amplifies the risk for heat related illnesses. It's important to note that firefighters who have better aerobic capacity may have an increased tolerance to thermal stress.

### Question: 11

Which of the following is an appropriate recommendation for a tactical athlete performing rigorous training in a cold environment?

- A. Daily fat intake of 35% or more
- B. Daily protein intake of .4 g/lb of bodyweight
- C. Daily caloric intake of 25-30 kcal/kg of bodyweight
- D. Daily carbohydrate intake of 3-5 g/kg bodyweight

**Answer: A**

Explanation:

Environmental factors such as heat, cold, and altitude can significantly alter nutritional requirements in order to adequately provide energy for activity and performance. Cold environments and periods of caloric restriction may require a greater daily fat intake, of 35% or more. In addition, the cold environment also increases total daily caloric intake requirements, of 35-68 kcal/kg of bodyweight. Recommendations in a temperate environment are between 32-63 kcal/kg of bodyweight. Individuals who perform rigorous activity need higher intakes of protein and carbohydrates. Protein requirements for these individuals are at least 0.5 g/lb of bodyweight and may be as high as 0.9 g/lb. A daily carbohydrate intake of 3-5 g/kg of bodyweight is recommended for individuals performing light training. Rigorous activity requires higher intakes, up to 8-12 g/kg of bodyweight for individuals performing 4-5 hours of high-intensity training.

### Question: 12

How would you calculate one's rate-pressure product?

- A. Heart rate x diastolic blood pressure
- B. Heart rate x (systolic pressure - diastolic pressure)
- C. Heart rate x systolic blood pressure

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**Answer: C**

Explanation:

Resistance training can sometimes create adaptations to one's rate-pressure product (heart rate x systolic blood pressure), changing either the resting heart rate or systolic blood pressure, sometimes both. It seems to affect those who have a slightly higher blood pressure to begin with, where adaptations are easier to make.

### Question: 13

What type of training device uses variable resistance to ensure that the rate of movement remains constant throughout a range of motion?

- A. Isometric
- B. Isokinetic
- C. Eccentric
- D. Isotonic

**Answer: B**

Explanation:

Isotonic muscle contractions are those used with general resistance training and daily movements. These include both concentric (shortening) and eccentric (lengthening) muscle actions and occur when lifting and lowering objects. These involve movement against an unchanging resistance through a range of motion (ROM). Isotonic means "same tension".

Isometric muscle actions involve creating tension and generating force in a muscle without any change to joint angle or the length of the muscle. Isometric means "same tension". Holding equipment, such as a firehose, for any length of time is an example of an isometric contraction that would be used on the job for a tactical athlete.

Isokinetic (same speed) exercise devices automatically adjust the resistance up or down during movement in order to keep the rate of movement constant throughout the entire range of motion. If you try to speed up the movement, the resistance will increase and if your movement slows down, the resistance will decrease.

### Question: 14

An athlete is currently working with a nutritionist to maintain a negative calorie balance. Which of the following options would best describe what this means?

- A. More calories are consumed than are expended
- B. More calories are from protein than carbohydrates
- C. Fewer calories are consumed than are expended

**Answer: C**

Explanation:

During a negative calorie balance, protein can be metabolized as a source of energy, and this causes great concern for anyone, especially athletes who rely on their muscular structure for on-the-job performance. When calorie intake decreases, protein need increases to avoid protein catabolism. It's important for tactical athletes to focus on meeting their nutrient and energy needs, and to support physical and cognitive performance. This can sometimes be challenging for tactical athletes during missions and, therefore, particular attention should be paid to nutrition during times when this is possible.

### Question: 15

A trainer is programming a comprehensive total body workout for an athlete. Which of the following exercises would be considered an effective core exercise?

- A. Hammer curl
- B. Front squat
- C. Lateral dumbbell raise

**Answer: B**

Explanation:

Core exercises are multi-joint movements that recruit one or more larger muscle areas (chest, shoulder, back, hip, or thigh) and receive priority when selecting exercises because of their distinct application to sport.

The front squat is an example of a core exercise, while hammer curl and lateral dumbbell raise are assistance exercises. Assistance exercises usually recruit smaller muscle areas.

### Question: 16

Daniel is performing a barbell deadlift for ten repetitions. What type of muscle action are his abdominals performing?

- A. Isometric
- B. Eccentric
- C. Concentric

**Answer: A**

Explanation:

There are three basic types of muscle actions: concentric, eccentric, and isometric.

Isometric muscle actions occur when the muscle length does not change because the contractile force is equal to the resistive force.

During a deadlift, the hamstrings are eccentrically lengthening while the abdominals are staying still and keeping the torso rigid throughout the entire exercise. This indicates the abdominals are performing an isometric muscle action.



### Question: 17

In what exercise must the lifter use a neutral grip to perform the exercise?

- A. Bench press
- B. Biceps curl
- C. Hammer curl

**Answer: C**

Explanation:

A neutral grip refers to the palms facing one another, and an example using this grip is the hammer curl exercise, in which the lifter curls a dumbbell up to shoulder height, with hands moving together or alternating, keeping the palms facing inward throughout the whole range of motion.

### Question: 18

What muscle is most involved in a step-up?

- A. Gluteus medius
- B. Rectus abdominis
- C. Gluteus maximus

**Answer: C**

Explanation:

The step-up exercise is a great tool for enhancing leg and hip strength.

The exercise involves a person holding weights in their hands or a barbell on their back while stepping up onto a box or bench that places the knee of the working leg at the same height or lower than the hip. The step up exercise is considered a regression for individuals who cannot yet perform a walking lunge. The muscles used to perform this movement include the gluteus maximus as well as the hamstrings and quadriceps.

### Question: 19

Which muscle group is not involved in the barbell military press?

- A. Posterior deltoids
- B. Anterior deltoids
- C. Triceps brachii

**Answer: A**

Explanation:

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To perform the barbell military press, the lifter uses the arms and shoulders to press the barbell from their shoulders to above their head for a specified number of repetitions. It can be done standing or seated. The major muscle groups involved are the anterior and medial deltoids and the triceps brachii.

### Question: 20

When recording the number of push-ups performed by an incoming army recruit, you, as the tester, are more lenient on depth of the push-ups than you were with the last recruit. What type of variability is this?

- A. Interrater agreement
- B. Intrasubject variability
- C. Intrarater variability

**Answer: C**

Explanation:

Intrarater variability is the lack of consistent scores by a given tester.

For example, a coach eager to see improvement may unintentionally be more lenient on a person on their posttest than on their pretest.

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