

## **NFPT Study Questions**

### **Basic Human Anatomy**

1. How many muscles are in the average adult human body?
2. What is a prime mover?
3. How are muscles attached to bones?
4. The average adult has how many bones?
5. What is the difference between voluntary involuntary muscles
6. What percentage of your body is made up over muscle cells?
7. What are the two major functions of the circulatory system?
8. The transfer of carbon dioxide & oxygen occur between capillaries and what?
9. What are the four functions of the skeletal system
10. What are synapses?
11. Name the planes of motion?
12. In what part of the digestive system does most of the nutrient absorption into the blood occur?

### **The Cell Fiber**

1. What are Myofibrils?
2. What are actin and myosin?
3. What is the process by which damaged actin and myosin is repaired?
4. What nickname is given to the Mitochondria?
5. What are the main functions of the Mitochondria?
6. What is the Ribosome's function?
7. Which fiber has the most Myofibrils?
8. Which fiber has the most Mitochondria?
9. What are the three reasons why muscle fibers stop contractions?

10. During what rep range does Myofibril failure occur?
11. Intermediate failure occurs to what type of muscle fiber?
12. What are myofibrils comprised of?
13. The greater the oxygen taken up by the muscles during resistance exercise the slower the use of ?
14. The three muscle fiber types all have the same \_\_\_\_\_(internal components) in varying
15. Sarcoplasm
16. Sarcolemma
17. Sarcomeres
18. Sarcoplasmic reticulum

### **Skeletal Muscle Structure and Function**

1. What is the Epimysium?
2. What is the connective tissue surrounding each muscle group?
3. What are the three skeletal muscle fibers?
4. What are the characteristics of white fast twitch fibers?
5. What are the characteristics of red slow twitch fibers?
6. What is a motor unit?
7. Only a minimum number of motor units required to move a given weight, will contract in performing work (True or False)?
8. The sheath of connective tissue surrounding a bundle of muscles, or motor unit, is called a ?
9. Type IIB fibers are \_\_\_\_\_, Type IIA fibers are \_\_\_\_\_ and Type I fibers are \_\_\_\_\_
10. What are the characteristics of red fast twitch fibers?

11. The "pump" should be avoided when training for ?

### **Anatomical terms and Biomechanics**

#### **Planes of Motion: Define**

1. Parallel Sagittal Plane –
2. Frontal Plane –
3. Transverse Plane - →
4. Sagittal Plane - →

#### **Anatomical position: Define**

5. Superior →
6. Inferior →
7. Anterior (Ventral) →
8. Posterior (Dorsal) →
9. Proximal →
10. Distal →
11. Medial →
12. Lateral →
13. Bilateral →
14. Unilateral →
15. Peripheral →
16. Superficial →

### **Muscle Contractions & Functions: Define**

1. **Eccentric contraction**
2. **Concentric contraction**
3. **Isotonic contraction**
4. **Isometric contraction**
5. **Agonists**
6. **Antagonists**
7. **Synergists**
8. **Stabilizers**

### **Biomechanical movements: Define**

1. **Flexion** →
2. **Extension** →
3. **Hypoextension** →
4. **Hyperextension** →
5. **Abduction** →
6. **Adduction** →
7. **Pronation** →
8. **Supination** →
9. **Rotation** →
10. **Circumduction** →
11. **Protraction** →
12. **Retraction** →
13. **Dorsiflexion** →
14. **Plantarflexion** →
15. **Inversion** →
16. **Eversion** →

### **Cardiac and Smooth Muscle Structure and Function**

1. The term Cardiac muscle refers to?
2. Vascular Tissue refers to?
3. Aerobic activity will increase the left ventricle, true or false?
4. How does the nervous system react during a stressful situation?
5. What are the smooth muscles in the Body? Resistance exercises increase or decrease the cardiac muscle?
6. What are the three areas where fluid travels? Where is interstitial fluid found?

### **Protein Requirements and Energy Production**

1. What is a UUN Test?
2. Too much protein intake can lead to
3. How many seconds of ATP are stored in cells?
4. Should Aerobic Metabolism be a result of weight training?

5. When you are excreting more nitrogen than you are ingesting you are maintaining, increasing or decreasing lean tissue?
6. What percentage of protein is Nitrogen?
7. What is the only form of energy muscles can use?
8. A cell has a combined storage of 30-35 seconds of energy. After that is used up, what must it do to create more energy?
9. What is Anaerobic Glycolysis?
10. What does ADP combine with to make ATP?
11. After 30-35 sec how is ATP created?
12. When Pyruvate is broken down into ATP without oxygen what is it called?
13. When Pyruvate breaks down into ATP with little oxygen it is called

### **Eating Before Activity and The Cardiovascular Response**

1. How long should a person wait to endure prolonged and/or intense physical activity?
2. When vessels dilate around digestion, they \_\_\_\_\_ in muscular areas.
3. how much glycogen can the liver store?
4. to fully replenish the energy stores, as much as 480 calories of complex and simple carbohydrates should be ingested about \_\_\_\_\_ prior to long, intense aerobic activity.
5. What is vasoconstriction?
6. What is Vasodilatation
7. What generally terminates aerobic activity?

### **Brain Function, Carbohydrates, and Aging**

1. One of the responsibilities of the liver is to ensure the provision of

\_\_\_\_\_ for brain function.

2. During prolonged periods of inactivity Insulin Receptor Sites become less responsive. True or False
3. Too many carbs in the diet of an aging sedentary individual, whose receptors sites are not functioning well, will result in \_\_\_\_\_.
4. What is the only source of energy for the Brain?
5. What is Glycogenolysis?
6. What is gluconeogenesis?

### **The General Fitness Routine**

1. What constitutes being physically fit?
2. For women fat percentages should not exceed \_\_\_\_\_ of their body weight.
3. For men fat percentages should not exceed \_\_\_\_\_ of their body weight.
4. What are the four measurable parts of being physically fit?
5. What are the two categories of endurance?
6. During the developing the aerobic Phase, what % of functional capacity should one follow?
7. During the developing of the aerobic phase, how many days should the aerobic activity be performed?
8. What are the three stages of progression in the aerobic phase?
9. What are the two types of muscle strength?

10. What is dynamic strength?
11. To increase strength, Compound movements should always be used that target the major muscle groups (T/F)?

### **More on Flexibility, Stability and Core Strength**

1. The root of most injuries and range of motion limitations is \_\_\_\_\_
2. What happens when a muscle is too tight?
3. What part of the body should stability training start at?
4. If not addressed, balance and stability will consistently \_\_\_\_\_
5. What is the most important part of a training program?
6. Regarding stability, training with machines are better than training with free weights (true or false)?
7. Doing sit up and hyperextension are sufficient for training the core (true or false)?
8. What is the best training method to do with someone who wants to lose weight and gain lean muscle mass?

### **Cross Training and Enhancing Sports Skills for the Athlete**

1. What does SAID stand for?
2. What are some of the drawbacks of developing Strength and Power exclusively?
3. Should an athlete train using symmetrical development?
4. Name four techniques you can use to minimize imbalances?
5. What are the 4 training elements of General Training?

6. Cardiovascular training can be broken down into three categories. What are they?
7. What does Threshold Training involve?
8. What are the benefits of Threshold Training?
9. What does Aerobic Efficiency Training involve?
10. What are the benefits of Aerobic Efficiency Training?
11. Staying with one cardiovascular exercise will maximize your conditioning?
12. In Functional Strength & Power Training, what are the three basic tips that will help you avoid muscles imbalances?
13. How can you vary your program to challenge muscles and increase grow?
14. How can you limit Sports injuries?
15. What are some Functional Range of Motion Training methods?

### **The Physiology of Aerobic and Low Level Activity**

1. The higher the intensity of an activity, the more the body will depend on stored \_\_\_\_\_ sources for energy.
2. When you begin any activity over an above resting metabolism , the energy required to perform that activity will first be supplied by \_\_\_\_\_
3. A transition from an anaerobic metabolism to an aerobically dominated metabolism is dependent on what two major factors?
4. What is the primary energy source for anaerobic activity?
5. What is the primary energy source for aerobic activity?
6. What is the most common method to calculate exercise heart rate
7. How do you calculate your maximum heart rate for your age?



8. If your goal is fat reduction, what should your heart rate be during exercise based on the Karvonen formula?
9. What should the exercise duration be if your goal is fat loss?
10. What should the exercise duration be if your goal is general fitness?
11. Less glucose is required for energy for the general fitness client than the fat loss client.
12. 70% and maximum heart rate should be achieved for the Aerobics & Endurance Athlete.

### **Application of Fundamental and Advanced Resistance Exercise Principles**

1. Nutrient uptake from the bloodstream is very \_\_\_\_\_ during rest , recovery, and during the performance of work
2. Most of the energy used during performance of resistance exercise comes from ?
3. If a warm up is too long it can expend limited muscle energy and take away from performance, true or false?
4. Why should a client massage their muscles on light sets and mildly stretch them during heavy sets?
5. The Overloading training principal states that 100% intensity should be achieved on the last set of an specific exercise (True, False)
6. What are the Characteristics of heavy training?
7. What rep ranges build the most myofibrils? What rep ranges build the most Mitochondria?
8. If a client is failing to progress, give four alternative solutions you can try.

### **Antagonist Multi-Set Training Principle**

1. One of the best ways to remove lactic acid build up in the muscles is by using the \_\_\_\_\_
2. A circuit routine should always include a compound pushing movement alternated with a compound pulling movement, true or false?
3. What are Antagonistic muscles?

### **The Beginner**

1. What does DOMS stand for?
2. If a client is allowed to use the same rep ranges and amount of weight, what will happen?
3. The greatest contributor to injury in the beginner is?
4. What will aid in the mitochondrial re-education. .
5. Why does the beginner experience faster strength gains in the first few months than any other period?

### **Finer Points of Administering Resistance Exercises and Warm-Ups**

1. Stretches should be held for \_\_\_\_\_
2. A beginner whos goal is size and strength should start by using dumbbells or barbells?
3. Why is it bad for a client to lock out during a rep?
4. Attempting to apply the maximal contraction of a muscle group against heavy resistance in its stretched position can easily result in \_\_\_\_\_

5. Static stretching should be always be done prior to weight training (T/F)?
6. When performing pressing movements with heavy weight in the 4 to 6 rep range, one should not lock out the weights (T/F)?
7. Temporarily holding ones breath at the point of greatest effort is called what?
8. What are the three major considerations to maintain a health back?
9. What are the truck muscles that are important to develop to prevent back injuries?
10. What are the six general motion of the back?

### **Post Workout Considerations**

1. What is beneficial to include after each workout?
2. After a workout what muscles should you concentrate on stretching?
3. Majority of energy used during resistance exercise comes from 2 possible sources?
4. After a workout what are the benefits of stretching?

### **Client Screening Questionnaire**

1. Is it required that a personal trainer have a CPR Certification?
- 2.
3. What is the most valuable service that a personal trainer can provide to a potential client?
4. List all of the major risk factors.
5. What is the measurement and equation that determines your fat weight?
6. What parts of the body should you take circumference measurements?
7. When should Ketone testing be administered?
8. What exercise do you use to test muscle strength?
9. What is the difference between Catabolism and Anabolism?

## **Client Programming , Stretches, and Exercises**

1. What is the purpose of a Screening and risk factor determination
2. What does BMR stand for?
3. What is the recommended strategy for a weight loss client?
4. What is the recommended strategy for a weight gain client?
4. What is meant by “Informed Consent”?
5. What are the five performance value components of the Physiological Assessment?
6. What are the two recommended exercises for the Chest?
7. The Leg Press targets what muscle groups?
8. What is the Variety Factor?
9. What is the recommended strategy for weight loss?
10. How many glasses of fluid should you drink a day?
11. How many meals should you eat per day?

## **Mental Fitness and the Mind Body Connection**

1. Exercise and diet is proven to increase memory, focus, problem solving and decrease chances of brain aging diseases, true or false
2. What is the only fuel source for the brain?
3. What nutrients does your brain need for repair and regeneration of nerve cells?

## **Physiological Effects of Steroids**

1. Any increased levels of testosterone will lead to an increase in \_\_\_\_\_
2. What does Steroids do to testosterone in the body?
3. What does an increase in Testosterone have on actin and myosin?
4. What is synthetic testosterone on the liver?
5. What is the effect on the kidneys?
6. What is Gynecomastia? .

## **Water...The Most Essential Nutrient**

1. \_\_\_\_\_% of total body weight is water
2. Water helps to maintain body temperature and allows for over 50% of all internal chemical reactions to occur, true or false?
3. The average person loses approximately \_\_\_\_\_ quarts of water per day
4. What makes us thirsty?
5. At 2% dehydration, what is the percentage of body's decrease in work capacity?
6. What is the body's average daily loss of fluids through excretion, respiration, chemical reactions and perspiration?
7. You should take sodium supplements during exercise (T/F)?

## **Special Populations**

1. When training youths it is important to distinguish between chronological age and \_\_\_\_\_.
2. The elderly should perform weight or resistance training 2-3 times per week true or false?
3. It is necessary for all diabetics to consult a physician before training, true or false?

## **Injury Prevention and Management**

1. What does PRICE stand for?
2. What are the characteristics of an acute injury?
3. What is grade one of an acute injury?
4. What is grade three of an acute injury?
5. What does compression accomplish?
6. In the elevation phase of PRICE, how far should the injury be raised above the level of your heart?