

## CPT Study Guide, Version 4

On the actual exam, you will be tested in the following subject areas (exam breakdown):

Basic and Applied Sciences	15 Questions
Assessment	15 questions
Exercise Technique and Training Instruction	20 questions
Program Design	20 questions
Nutrition	12 questions
Client Relations Behavioral Coaching	10 questions
Professional Development, Practice and Responsibility	8 questions

### **National Academy of Sports Medicine Code of Ethics (In the beginning of your book)**

Be sure to read all the sections as there will be test questions on this. You may see something like how long should a personal trainer keep client records for? The correct answer would 4 years. (Located under Business Practice)

## **Chapter 2 Basic Exercise Science**

- Know all definitions
- Figure 2.34
- Figure 2.38
- Table 2.5 Muscle Fiber Types
- Table 2.6 Muscle as Movers

## **Chapter 3 The Cardiorespiratory System:**

- Figure 3.3 Atria and Ventricles know the functions of the right and left atrium and the right and left ventricles
- Table 3.1 Support Mechanisms of Blood
- Table 3.2 Structures of the respiratory pump.

## **Chapter 4 Exercise Metabolism and Bioenergetics:**

Be Familiar with all definitions throughout the chapter

## **Chapter 5 Human Movement Science:**

- Know definitions throughout the chapter in detail.
- Figure 5.3 Planes of Motion

- Table 5.1 Examples of Planes, Motions, and Axes

The planes of motion can be a bit tricky, so here is a little bit of clarification:

### Frontal Plane

- NOT front to back movements
- Side to side movements
- Exercises involving abduction and/or adduction of the limbs
- Example: side lunge, lateral dumbbell raise, ice skater

Imagine a wall in front and in back of you. The ONLY movement this would allow is along that plane-sideways movements.

### Sagittal Plane

- Forward and backwards movements
- Movements involving pushing and/or pulling
- Movements involving flexion and/or extension at joints
- Example: bicep curl, front lunge, bench press, and rows

Imagine a wall on your right and left side. The ONLY movement this would allow is along that plane-or front and back movements.

### Transverse Plane

- Rotational movements
- Diagonal movements
- Example: rotation, wood-chop throw, medicine ball rotation chest pass
- Figure 5.4 Joint Motions
- Figure 5.5 Joint Motions
- Figure 5.6 Joint Motions
- Figure 5.7 Joint Motions
- Table 5.2 Muscle Action Spectrum
- Isotonic
  - Eccentric
  - Concentric
- Isometric
- Isokinetic
- Table 5.3 Common force couples

- Figure 5.15 Levers

## **Chapter 6 Fitness Assessment:**

This is going to be a very important chapter to know as a lot of test question will be taken from this chapter.

- Table 6.1 Guidelines for Health and Fitness Professionals
- Figure 6.1 Subjective vs. Objective information
- Figure 6.2 Sample Physical Activity Readiness Questionnaire
- Figure 6.3 Sample questions: client occupation
- Figure 6.4 Sample questions: client lifestyle
- Figure 6.5 Sample questions: client medical history
- Table 6.2 Common medications by classification
- Table 6.3 Effects of medication on heart rate and blood pressure
- Heart rate and blood pressure assessments
- Table 6.4 Target heart rate training zones
- Max Heart Rate formula (straight percentage method) for each zone
- Body Composition Assessments
- Circumference measurements
- Body Mass Index
- YMCA 3-minute step test
- Rockport Walk Test
- Table 6.9 Pronation Distortion Syndrome
- Table 6.10 Lower Crossed Syndrome
- Table 6.11 Upper Crossed Syndrome
- Be familiar with all of the assessment protocols and for the posture assessments all compensations

## **Chapter 7 Flexibility Training Concepts:**

Know all definitions throughout the chapter

- Figure 7.10 Integrated flexibility Continuum
- Table 7.2 Examples of stretching within the Flexibility Continuum
- Myofascial Release
- Table 7.3 Static Stretching Summary
- Table 7.4 Active-Isolated Stretching summary
- Table 7.5 Dynamic Stretching summary

Mechanoreceptors = a Golgi tendon organ (GTO) and muscle spindle fibers

## GTO

Senses muscle tension  
Relaxes the muscle in response  
Normal reaction to avoid injury

## Muscle Spindle Fibers

Senses muscle lengthening  
Contracts the muscle in response  
Normal reaction to avoid injury

There is a lot of useful information in table 7.6 of the NASM Essentials of Personal Fitness Training and it will take some time to remember all of that information. There are various strategies you can try as you attempt to retain that information. One is to make your studying interactive by asking friends and family members to volunteer for the Overhead Squat Assessment and practice trying to locate compensations. Another way to learn the probable overactive and probable underactive muscles is by creating flash cards.

You can also look at each overactive muscle and refer back to Appendix D (in the back of the book). Look at each muscle's "Isolated Function". Some muscles will over-do their "Isolated Function". Other muscles tend to be "victims of association". This means that they may become synergistically dominant because a muscle nearby becomes underactive/lengthened/weak.

In addition, by having a general idea of what each muscle's "Isolated Function" is, you will be able to figure out exercises that directly work those muscles.

Think of muscles in terms of antagonistic (one is an agonist while the other is an antagonist) actions. When an agonist contracts, the antagonist will relax. Also keep in mind that several muscles may have similar actions and that the exact movement of a bone will be the result of a coordinated effort involving many muscles (force couples). Muscles function in integrated groups to allow for neuromuscular control during movement. A muscle's integrated muscle function is the action it naturally tends to perform when it works in conjunction with other muscles. By isolating each muscle on the other hand, and tracing them from their point of origin to their insertion, one can gain a better understanding of that muscle's main function. A muscle's isolated function is what that individual muscle is meant to do, alone, and isolated from all other muscles.

An advanced knowledge in anatomy is required to identify muscle functions such as agonists, antagonists, synergists, and stabilizers. For example, most stabilizers are proximal to the joint they stabilize, but it is dependent on the movement that is occurring. Stabilizers are generally smaller in size, made up of type I muscle fibers (slow twitch), and they are prone to weakness.

Some examples of stabilizers include (1) rotator cuff – shoulder (2) core inner unit – multifidus, transverse abdominus, pelvic floor muscles, internal oblique – stabilize pelvis and spine (3) knee- VMO, popliteus – knee. For the exam you only need an understanding of this concept to the degree the textbook discusses. If you want to learn more, then the CES does a good job explaining these concepts in more detail.

## **Chapter 8 Cardiorespiratory Fitness Training:**

Know all definitions throughout the chapter:

- Overtraining page
- General vs. Specific Warm-up
- Cool down Phase
- Figure 8.1 FITTE factors
- Table 8.9 Training Zones
- Circuit Training

## **Chapter 9 Core Training Concepts:**

- Know all definitions throughout the chapter
- Local Stabilization System
- Global Stabilization System
- Table 9.1 Muscles of the Core
- It is your responsibility to learn how to categorize, progress, and regress body position while performing certain types of exercises.
- The OPT model is divided into three different blocks of training and each building block contains specific phases of training that systematically advances the student in a safe and progressive manner. Exercises can be categorized by adaptation and by type of exercise:
- OPT Level (adaptation): Stabilization, Strength, or Power (be familiar with all exercises listed, as well as how to regress and progress the exercises listed)
- Type of Exercise: Core
- Table 9.3 Core training program design

## **Chapter 10 Balance Training Concepts:**

- Figure 10.2 Effects of joint dysfunction
- Table 10.1 Balance training parameters
- OPT Level (adaptation): Stabilization, Strength, or Power

- Be familiar with all exercises listed, as well as how to regress and progress the exercises listed
- Type of Exercise: Balance
- Table 10.2 Balance training program design

## **Chapter 11 Plyometric Training Concepts:**

- Know all definitions throughout the chapter
- Integrated performance paradigm
- The phases of Plyometric Exercise
- Figure 11.2 Program design parameters for reactive training
- OPT™ Level (adaptation): Stabilization, Strength, or Power (be familiar with all exercises listed, as well as how to regress and progress the exercises listed)
- Type of Exercise: Balance
- Table 11.1 Plyometric training program design

## **Chapter 12 Speed, Agility, and Quickness Training:**

- Know all definitions throughout the chapter
- Table 12.1 Kinetic Chain checkpoints during running movements- pay attention to the foot/ankle complex
- Table 12.2 SAQ Program Design

## **Chapter 13 Resistance Training Concepts:**

- General Adaptation Syndrome
- Table 13.1 Adaptive benefits of resistance training
- Table 13.2 The general adaptation syndrome
- SAID Principle
- Adaptations for resistance training
- Table 13.3 Resistance training systems
- Table 13.4 Peripheral heart action system

On the exam, some questions may ask about how to properly progress body position during an exercise. You need to be able to progress (make more difficult), or regress (make easier) a client's body position. Below, progressions are listed from easy to difficult and you can see that two-legs on a stable surface (the floor) is easier than standing on one leg (single-leg), on the floor. With the arms, start a client with two arms, before progressing on to an alternating arm, and then to a single arm exercise. For example:

**What would be the immediate progression of a “Single-Leg Dumbbell Curl”?**

- a. *single-leg, alternating arm, stable*
- b. *single-leg, single-arm, stable*
- c. *two-leg, alternating arm, unstable*
- d. *two-leg, single-arm, unstable*

## **Chapter 14 Integrated Program Design and the Optimum Performance Training (OPT) Model:**

Know all definitions throughout the chapter.

Tempo controls the amount of time that the muscle is active or producing tension – concentrically, isometrically, and/or eccentrically.

NASM writes tempos this way: “a/b/c”. Tempo is always written in this way:

a = eccentric

b = isometric

c = concentric

**Therefore, assuming the above, a 4/2/1 tempo on a one repetition of a bench press would be:**

- 4 counts, controlled, eccentric deceleration, bringing the weight back down (before the push)
- 2 counts on the isometric stabilization at the bottom of the exercise
- 1 count on the push (upward)

**Another example: a 2/0/2 tempo on one repetition of a bench press would be:**

- 2 counts, controlled, eccentric deceleration, bring the weight down (into position, before the push upward)
- 0 no counts of isometric stabilization at the bottom
- 2 counts of concentric pushing (upward)

**Focus on the following tables from Chapter 14:**

- Table 14.2 Training volume adaptations
- Table 14.7 Phase 1: Stabilization Endurance Training
  - (all of the resistance training acute variable and tempo for core)

- Table 14.8 Phase 2: Strength Endurance Training
  - (all of the resistance training acute variable and tempo for core)
- Table 14.9 Phase 3: Hypertrophy Training
  - (all of the resistance training acute variable and tempo for core)
- Table 14.10 Phase 4: Maximal Strength Training
  - (all of the resistance training acute variable and tempo for core)
- Table 14.11 Phase 5: Power
  - (all of the resistance training acute variable and tempo for core)

## **Chapter 15 Introduction to Exercise Modalities:**

There are no specific study tips for chapter 15, but be sure to be familiar with the different modalities such as:

- Machines
- Free weights
- Bands and rubber tubing
- Cable Machines
- Medicine Ball
- Kettlebell
- Body weight training
- TRX suspension training
- BOSU

You will not see very much on the exam for this chapter but it will help you with categorizing exercise for resistance, core, and reactive training.

## **Chapter 16 Chronic Health Conditions and Physical or Functional Limitations:**

For this chapter, read through the text and highlight the training guidelines and have a general idea on how to design a program for the special populations mentioned in this particular chapter. Don't worry too much about the acute variables (reps, sets, tempo, etc.) but rather on contraindications and more appropriate techniques for these populations.

## **Chapter 17 Nutrition**

- Know all Definitions throughout the chapter
- Table 17.4 Know all of the Essential Amino Acids
- Table 17.6 Recommended Protein Intake



- Daily recommendations for fiber
- Specific recommendations for endurance athletes
- Fatty acids
- Lipids in the body
- Daily recommendations and importance of water
- Table 17.11 The effects of dehydration
- Be familiar with guidelines for altering body composition
- Risks of very low calorie diets
- Calorie count for proteins, carbohydrates, fats

## **Chapter 18 Supplementation:**

- Table 18.2 Dietary reference intake terminology
- Units of measure used on dietary supplement labels
- Adverse effects of excess for specific vitamins & minerals
- Be familiar with the ergogenic aids and dosage

## **Chapter 19 Lifestyle Modification and Behavioral Coaching:**

- Figure 19.1 Stages of Change Model
- Know the stages of Change
- Be familiar with the initial session
- Effective Communication skills
- Goal setting- SMART Goals
- Cognitive Strategies
- Positive Self talk
- Exercise Imagery

## **Chapter 20 Developing a Successful Personal Training Business:**

- Providing uncompromising customer service
- Know who your customers are
- Ten steps to success

## **Appendix D**

Understand the “isolated function” of the muscles, which is the same as the muscles concentric muscle action. You will not be tested on the origin, insertion, or the integrated function.

## **The BOC Candidate Handbook (located in your eLearning center under Exam Prep)**

Make sure to review this before the exam, it contains important information on how the test was developed and other relevant information.

### **In Conclusion**

Keep in mind that it is a good idea to take the practice exam a couple of times; however, taking the exam over and over again could steer you away from learning the material and have you focus more on memorizing questions. Remember that the practice exam does not mirror the actual exam and more focus needs to be placed on the textbook.

It can be easy to misinterpret the actual exam questions and there are many members that do just that. The exam questions can be very confusing, especially if you do not take the time to read each one carefully. This is why I typically advise members to read the questions carefully and look for key words that will indicate what the question is really asking.