



Aquatic Fitness Professional Certification Examination Study Objectives

AEA's Mission

The Aquatic Exercise Association (AEA) is a nonprofit organization committed to the advancement of aquatic fitness, health and wellness worldwide.

- **ALL Study Objectives are covered in the Aquatic Fitness Professional Manual, Sixth Edition (AFP Manual); additionally, ALL examination questions have been developed from the content of the AFP Manual.**
- **ONLY Study Objectives marked with an asterisk (*) are covered in the AFP Practical & Skill Applications Course.**

GENERAL CATEGORIES

BASED ON THE SIXTH EDITION AFP MANUAL CHAPTER TITLES

1. Physical Fitness
2. Exercise Anatomy
3. Movement Analysis
4. Exercise Physiology
5. The Aquatic Environment
6. The Physical Laws as Applied to the Aquatic Environment
7. Aquatic Fitness Equipment
8. Aquatic Exercise Programming & Leadership
9. Shallow Water Exercise
10. Deep Water Exercise
11. Special Populations
12. Emergencies, Injuries & Instructor Health
13. Basic Nutrition & Weight Management
14. Health Risk Appraisal & Physical Screening
15. Exercise Behavior
16. Business Issues & Legal Concerns

PHYSICAL FITNESS

1. Define the primary and the skill-related components of fitness.
2. Understand ballistic and static stretching in relationship to the stretch reflex.
3. Understand the American College of Sports Medicine's (ACSM) guidelines for exercise.
4. Demonstrate methods for monitoring exercise intensity. Know how to calculate an aquatic exercise target heart rate range by using the recommended formula.
5. List the theories why aquatic heart rates may be lower than heart rates achieved during comparable land exercise.
6. Understand the difference between continuous training, circuit training, and interval training.
7. List the health and psychological benefits of regular exercise.
8. Explain the difference between physical activity and exercise to improve physical fitness.

EXERCISE ANATOMY

1. Name the 11 systems of the human body.
2. * Define the anatomical reference terms and use them in an example.
3. Identify the major bones in the human skeleton.
4. Describe the four classifications of bone, the structural composition of bone and how bones grow.
5. Understand the characteristics of human muscle tissue.
6. Define the terms agonist and antagonist and use them in an example.
7. * Identify the major muscle groups in the body, their location, the joint(s) moved, and basic movements.
8. Understand the basic organization of the nervous system.
9. Describe the flow of oxygen in the respiratory system.
10. Understand the basic anatomy of the heart muscle. Be able to trace the pathway of blood in the cardiovascular system.
11. Define general cardiovascular terms.

MOVEMENT ANALYSIS

1. * Define and describe anatomical position and the anatomical movement terms.
2. * Understand the three planes around which the human body moves.
3. Describe a third class lever and its application in the human body.
4. Know the three categories of joints in the human body and identify the various classifications of synovial (freely moveable) joints.
5. Understand the functions of tendons and ligaments.
6. Describe and define the three most common abnormal curvatures in the spine.
7. Understand proper postural alignment.
8. Explain center of gravity and center of buoyancy.

EXERCISE PHYSIOLOGY

1. Define and apply the physiological principles of exercise.
2. Explain the importance of muscle balance by strengthening and stretching both members of a muscle pair.
3. Describe how water promotes muscle balance.
4. * Understand basic energy metabolism.
5. * Describe how the metabolic energy systems work together to supply the body's energy needs.
6. * Understand the sliding filament theory and the basic concept of muscle contraction.
7. * Know the characteristics of fast twitch and slow twitch muscle fibers.
8. * Describe isometric, isotonic, and isokinetic muscle actions.
9. * Describe steady state and high intensity aerobic exercise responses.

THE AQUATIC ENVIRONMENT

1. Compare the body's ability to dissipate heat in land and aquatic exercise.
2. Know the importance of generating body heat during the thermal warm up and stretches.
3. Explain precautions that should be taken by students and instructors in relation to air and water temperatures and humidity. Know water temperature appropriate for various class formats and populations.
4. List problems and possible solutions associated with slippery, rough, or sloped pool bottoms; water depth; pool edges, gutters, or sides; water quality; acoustical factors; and the use of electrical appliances.
5. Discuss the benefits of wearing shoes when leading or participating in aquatic exercise.

THE PHYSICAL LAWS AS APPLIED TO THE AQUATIC ENVIRONMENT

1. * Define Newton's laws of inertia, acceleration, and action/ reaction; explain how they apply to aquatic exercise and describe ways to increase and decrease intensity using the principles of these laws in aquatic movement.
2. Describe how the water's viscosity causes resistance to motion in the aquatic environment.
3. * Describe and demonstrate how intensity is altered in aquatic exercise by altering frontal surface area / frontal resistance.
4. * Demonstrate hand positions that will increase and decrease intensity in aquatic exercise.
5. * List the alternatives to using speed to increase intensity in aquatic exercise. Explain the advantages to using these alternative methods.
6. * Explain and demonstrate how the limbs are used as levers in aquatic exercise and how the length of the lever affects the intensity of the movement.
7. Describe how buoyancy, hydrostatic pressure, surface tension, and turbulence contribute to the aquatic exercise experience.

AQUATIC FITNESS EQUIPMENT

1. Discuss factors for selecting aquatic equipment.
2. Define muscle terminology.
3. * Identify the major muscle(s) responsible for primary movements in exercise.
4. * Describe how gravity affects the muscle action and muscle use for primary exercise movements performed on land.
5. * Explain how and why muscle action and use varies for submerged movement as compared to land movement. Give examples.
6. * Determine the resistance direction and muscle action/ use for buoyant equipment.
7. * Determine the resistance direction and muscle action/ use for weighted equipment.
8. * Determine the resistance direction and muscle action/ use for drag equipment.
9. * Determine the resistance direction and muscle action/ use for rubberized equipment.
10. * Describe the purpose and use of flotation equipment.

AQUATIC EXERCISE PROGRAMMING & LEADERSHIP

1. Demonstrate an understanding of the basic components of an aquatic fitness class and be able to use these components to design a safe and effective class.
2. Describe the differences in aquatic program formatting.
3. * Understand proper form and alignment when teaching aquatic exercise.
4. * Demonstrate audible, visual, and tactile cueing techniques.
5. * Give examples of basic, intermediate, and advanced transitions.

6. * Describe the pros and cons of teaching from on the deck and in the pool. Understand the importance of weight transfer and proper cadence when teaching from the deck. Describe various ways to demonstrate moves from deck.
7. Understand why it is important for aquatic programming to promote muscle balance.
8. * Describe why some movements are considered high risk or ineffective for an aquatic fitness program.
9. Describe professional behavior and attire for an aquatic fitness instructor.

SHALLOW WATER EXERCISE

1. Define basic choreography terms.
2. * Demonstrate base moves for aquatic choreography for the lower and upper torso.
3. * Identify and differentiate between the common choreography styles used in aquatic exercise.
4. * Understand and be able to differentiate between various impact options for aquatic exercise including Levels I, II, and III, grounded/anchored, and propelled/elevated. Describe water specific movements.
5. * Demonstrate five basic ways to vary arm use and arm patterns in aquatic exercise.
6. List the pros and cons of using music in your aquatic workout.
7. * Describe appropriate use and demonstrate execution of movement in the aquatic environment including land tempo, water tempo, and ½ water tempo movement.
8. * Demonstrate safe and effective toning exercises for major muscle groups.
9. * Demonstrate safe and effective stretching exercises for major muscle groups.

DEEP WATER EXERCISE

1. Discuss the physiological benefits of deep-water exercise.
2. Evaluate participants' readiness for deep-water exercise.
3. Describe factors to consider in managing the deep-water exercise environment.
4. * Differentiate the benefits and safety considerations of deep-water exercise equipment.
5. Identify the causes of and solutions to participant problems with technique and alignment in deep-water exercise.
6. Describe the effects of balance, muscle balance, planes and axes, and transitions on body mechanics in deep-water exercise.
7. * Explain how physical laws alter the intensity of deep-water exercise.
8. Discuss the keys to effective deep-water programming.
9. Identify marketing opportunities for deep-water programming.

SPECIAL POPULATIONS

1. Identify recommended water temperature, shallow water depth, tempo, and program formats for special populations.
2. Recognize characteristics, the benefits of exercise, and program considerations for the following special populations: Older Adults, Obese Individuals, Children, Adolescents, Pre and Post Natal, Cardiovascular Disease, Pulmonary Disease, Musculoskeletal Disease, Metabolic Disease, Neurological Disease, and Immunological/ Hematological Disorders.

EMERGENCIES, INJURIES & INSTRUCTOR WELLNESS

1. Understand the difference between acute and chronic injuries.
2. Identify symptoms and treatment for common exercise injuries.
3. Demonstrate procedures for basic first aid including the RICE concept.
4. Adapt your first aid and CPR training to the water environment.

5. Demonstrate basic water safety concepts appropriate for your level of training.
6. Identify common emergency conditions and be aware of a recommended course of action for these situations.
7. Explain why emergency action plans are important.

BASIC NUTRITION & WEIGHT MANAGEMENT

1. List the six basic nutrients found in food.
2. Explain the Dietary Guidelines for Americans and how to use them to ensure nutrition adequacy in the human diet.
3. Explain the role of nutrition in reducing the risk of lifestyle related disease.
4. Understand the importance of proper hydration and replacing fluids during exercise.
5. Define overweight and obesity and discuss the theories of obesity.
6. Be familiar with the benefits of exercise in weight management.
7. Identify unsafe dieting practices and list symptoms for common eating disorders.
8. Recognize and discuss guidelines for safe and effective weight management; be aware of your limitations for providing nutritional advice.

HEALTH RISK APPRAISAL & PHYSICAL SCREENING

1. Understand the basic process for health history, health risk appraisal, and physician's consent for a fitness participant.
2. Understand the appropriate use of physical screening for a fitness participant.
3. Describe commonly assessed physical parameters and commonly used assessments.

EXERCISE BEHAVIOR

1. Identify personal, program, and other factors contributing to exercise dropout.
2. Define exercise behavior. List factors contributing to exercise behavior.
3. Define adherence and compliance. List factors that affect exercise adherence and compliance. Identify strategies to reduce dropout and increase compliance.
4. Understand how to reach individuals with various learning styles by incorporating different methods of instruction.

BUSINESS RESPONSIBILITIES & LEGAL CONCERNS

1. Define the different labor status or business categories of employee, independent contractor (subcontractor), sole proprietorship, partnership, limited liability company (LLC) and corporation. List the responsibilities of each with consideration to requirements for insurance, taxation, and business structure.
2. Identify the need for liability insurance required for fitness professionals.
3. Define legal terminology related to professional responsibility, negligence, duty, and liability. Identify factors that influence determination of liability and awarding damages.
4. Define Standard of Care for AEA certified fitness professionals with reference to an established code of ethics and understand the importance of proper education and training as it relates to legal and moral responsibilities.
5. Understand the need for risk management whenever services are provided to the public.
6. Understand the 1976 U.S. Copyright Act and your legal responsibility in regard to using music in fitness programs.
7. Understand the Americans with Disabilities Act.

Aquatic Fitness Professional Certification Examination

The AFPC Examination is a multiple-choice written examination utilizing a bubble sheet for computer scoring. The test is timed with 1 hour and 45 minutes to complete 100 questions, about 1 minute per question.

The answer to every question on the exam can be found directly in the content of the Aquatic Fitness Professional Manual, Sixth Edition.

The AFPC Examination Study Objectives directly relate to the manual and target 16 general categories (which are the same as the chapters of the manual). The Examination questions are distributed among these general categories/chapters as listed below

Certification Objectives	Related Exam Questions (Total of 100 questions)
Physical Fitness	9
Exercise Anatomy	8
Movement Analysis	8
Exercise Physiology	8
Aquatic Environment	7
Physical Laws as Applied to the Aquatic Environment	8
Aquatic Fitness Equipment	7
Aquatic Exercise Programming & Leadership	8
Shallow Water Exercise	7
Deep Water Exercise	6
Special Populations	5
Emergency, Injuries & Instructor Wellness	5
Basic Nutrition & Weight Management	4
Health Risk Appraisal & Physical Screening	4
Exercise Behavior	3
Business Responsibilities & Legal Concerns	3

In Person Test Taking Hints:

- Photo ID is required to take the examination.
- Bring at least two, sharpened #2 pencils. The exam answer sheet is in the Scantron format (bubble sheet).
- Carefully listen to the Exam Administrator and pay attention to written directions.
- Watch for qualifying words such as *always*, *only*, *all*, *except*, and *never*. These words determine how well each answer applies to the question. They are often triggers that signal an incorrect choice.
- Answer the questions you know first. If you have trouble with a question, come back to it after you have completed the rest of the exam.
- Initially, two answers may appear to be correct, but one of them is a more accurate response to the question. Eliminate the choices you know are wrong; then evaluate the choices you have left and answer to the best of your ability.
- There is only one correct (best) answer for each question. Marking more than one answer will result in the question being scored as incorrect.
- Review your answers. Be sure to fill in any questions that have been skipped. Check that the answers have been marked in the correct spot on the bubble sheet.

Sample Test Questions:

1. In the aquatic environment, heart rate can be affected water temperature, the dive reflex and _____.
 - a. Increased gravity
 - b. Increased body mass
 - c. reduced body mass
 - d. reduced compression
2. Which metabolic pathway is primarily utilized for short bursts of energy or for the initial stages of longer duration activity?
 - a. Oxidative system
 - b. Glycolytic system
 - c. ATP-PCr system
 - d. Anaerobic glycolysis
3. Movements in the frontal plane include all of the following except:
 - a. flexion
 - b. lateral flexion
 - c. adduction
 - d. abduction
4. What piece of equipment is designed specifically to utilize drag as the primary resistance?
 - a. elastic bands
 - b. foam dumbbells
 - c. water filled dumbbells
 - d. webbed gloves

5. Which muscle is responsible for flexion of the knee?

- a. vastus medialis
- b. latissimus dorsi
- c. biceps brachii
- d. biceps femoris

6. Flexing and extending the shoulder under water without equipment trains the _____.

- a. medial deltoid and rhomboids
- b. anterior deltoid and posterior deltoid
- c. middle trapezius and pectoralis
- d. upper trapezius and deltoids

7. Cueing a jumping jack in 3's, with a "Single, Single, Double" would be an example of which type of cueing?

- a. directional
- b. numerical
- c. rhythmic
- d. step

8. What tempo kick does the following chart represent?

Music Beat	1	2	3	4	5	6	7	8
	Right Kick	Left kick						

- a. land tempo
- b. water tempo
- c. 1/2 water tempo
- d. doubles

9. A deconditioned participant begins exercising daily for one hour or more and soon experiences overuse injury. The principle of _____ was ignored.

- a. variability
- b. progressive overload
- c. specificity
- d. adaptation

10. Explosive moves, such as tuck jumps, increase intensity based upon:

- a. the law of acceleration
- b. the law of inertia
- c. the upward vector of buoyancy
- d. the principle of frontal surface area

11. Muscular strength is BEST obtained through:

- a. isometric exercises done several times per week
- b. repetitive action over a long duration
- c. moderate resistance with several repetitions over time
- d. few repetitions with heavy resistance

12. Which of the following represents the most immediate source of energy for a muscle cell?
- Phosphocreatine (PCr)
 - Oxygen
 - Glycogen
 - ATP
13. The principle of levers can be utilized in aquatic exercise to:
- increase intensity only
 - decrease intensity only
 - increase and decrease intensity
 - increase intensity for lower body exercises only
14. Beginning from anatomical position while standing in chest deep water, elbow flexion and extension with hand-held weighted equipment results in:
- both concentric and eccentric actions of the biceps brachii
 - both concentric and eccentric actions of the triceps brachii
 - only concentric actions of the biceps brachii
 - only eccentric actions of the biceps brachii
15. "Press your heels to the pool bottom" is an example of which type of cue?
- motivational
 - form
 - transitional
 - directional

SAMPLE TEST QUESTION ANSWERS

1. C	2. C	3. A	4. D	5. D	6. B	7. C	
8. A	9. B	10. A	11. D	12. D	13. C	14. A	15. B