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**ACSM Certified  
Exercise  
Physiologist®**

*Exam Content Outline*

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# ACSM Certified Exercise Physiologist®

## Exam Content Outline

A job task analysis study was completed in 2017 to describe the job functions of an ACSM Exercise Physiologist® (ACSM-EP®). The job task analysis serves as the foundation for the ACSM-EP® exam blueprint (also known as an exam content outline) which assesses the practice-related knowledge of professionals seeking certification as a requirement of the job of an exercise physiologist. It is important to note that all ACSM-EP® examination questions are based on the exam content outline.

### Job Definition

The ACSM Certified Exercise Physiologist® (ACSM-EP®) works with apparently healthy clients and those with medically controlled diseases to establish safe and effective exercise and healthy lifestyle behaviors to optimize both health and quality of life. The ACSM-EP® conducts preparticipation health screenings, submaximal graded exercise tests, strength, flexibility, and body composition assessments. The ACSM-EP® subsequently develops and administers programs designed to enhance cardiorespiratory fitness, muscular strength and endurance, balance, and range of motion. The ACSM-EP® has a minimum of a bachelor's degree in exercise science and is usually self-employed or employed in commercial, community, studio, worksite health promotion, university, and hospital-based fitness settings.

### Overview

The ACSM-EP® exam has a seat time of 210 minutes and consists of 140 items; 125 items are scored and 15 are non-scored. The percentages listed in Table 1 indicate the proportion of scored questions representing each performance domain.

**Table 1. 2017 ACSM-EP® Performance Domains**

Performance Domains (2017)	Domain Weights
Health and Fitness Assessment	35%
Exercise Prescription and Implementation	35%
Exercise Counseling and Behavior Modification	25%
Risk Management and Professional Responsibilities	5%
<b>Total</b>	<b>100%</b>

Before an item can be used on an exam, it is subjected to Credentialing Committee review and pre-testing. Pre-testing allows the test developers to gather statistical information about new items for evaluation purposes without affecting candidate scores. Statistical information gathered from pre-test items is analyzed to determine if the items function properly and are ready for use as scored items. Pre-test items are randomly placed throughout the exam and will appear the same as scored items. Candidates should treat every item as if it will be scored.

## Cognitive Level

The job of an exercise physiologist can range between simple and complicated tasks. Much in the same way, the ACSM-EP® exam items are written at different levels of cognitive complexity. Cognitive complexity is a way of describing the extent to which a candidate should know or be able to perform a task. A low level of cognitive processing is simple recall of information whereas a higher level of cognitive processing includes analysis, evaluations, and judgments. ACSM uses three levels of cognitive challenge: recall, application, and synthesis.

**Recall** = remember basic facts, information or steps in a process.

Example:

When should an exercise physiologist administer a health history form to a client?

- A. before the fitness evaluation
- B. following the first exercise session
- C. during the physician's medical examination
- D. after creating an exercise prescription

**Application** = comprehend and implement processes, interpret simple results or summarize information.

Example question:

An exercise physiologist is conducting a Bruce submaximal treadmill test. Near the end of stage 2, the client reports that they are starting to experience chest discomfort. The client indicates that they would like to continue. Which of the following is the most appropriate?

- A. Continue to stage 3.
- B. Maintain the speed and gradient.
- C. Decrease the speed and gradient by 2%.
- D. Discontinue the test.

**Synthesis** = differentiate, relate parts of a system, make judgments on new information based on given criteria, critique a process or product, make recommendations.

Example:

During the preparticipation screening, a 53-year-old male client presents with the following information:

Physical activity history:

- Enjoys gardening at home
- Likes to walk/jog 2-3 times per week at 3-4 MET for 20 minutes

Health history:

- Successfully completed an outpatient cardiac rehabilitation three years ago
- A routine physical was conducted 10 months ago
- Cleared for moderate to vigorous exercise at that time

Goal:

- Run in a local 5K race in six months
- Complete in under 30 minutes

The client would like to begin an exercise program right away. Which of the following is the most appropriate to perform next?

- A. Discontinue the screening and request a more current exercise clearance.
- B. Administer a Cooper 12-min test and determine the client's aerobic capacity.
- C. Start the client on a moderate intensity aerobic exercise program 3-4 times/week.
- D. Begin the client on a vigorous intensity aerobic exercise program 2-3 times/week.

### Example keys

Recall: A

Application: D

Synthesis: B

## Job Tasks

Each performance domain is divided into job tasks. Within each task is a list of statements that describe what an exercise physiologist should know and/or be able to perform as part of their job. Table 2 should provide candidates with a sense of the breadth and depth of information that will be covered on the ACSM-EP® exam.

**Table 2. Job tasks and related knowledge and skill statements**

<b>Task Name</b>	<b>Cognitive Level</b>
<b>I. Health and Fitness Assessment</b>	
<b>A. Administer and interpret preparticipation health screening procedures to maximize client safety and minimize risk.</b>	<b>Application</b>
1. Knowledge of: <ul style="list-style-type: none"><li>a. the preparticipation screening algorithm and tools that provide accurate information about the client's health/medical history, current medical conditions, risk factors, sign/symptoms of disease, current physical activity habits, and medications.</li><li>b. the key components included in informed consent and health/medical history.</li><li>c. the limitations of informed consent and health/medical history.</li></ul>	
<b>B. Determine client's readiness to participate in a health-related physical fitness assessment and exercise program.</b>	<b>Recall</b>
1) Knowledge of: <ul style="list-style-type: none"><li>a. the preparticipation screening algorithm as delineated in the current edition of ACSM's Guidelines for Exercise Testing and Prescription.</li><li>b. cardiovascular risk factors or conditions that may require consultation with medical personnel prior to exercise testing or training (e.g., inappropriate changes in resting heart rate and/or blood pressure; new onset discomfort in chest, neck, shoulder, or arm; changes in the pattern of discomfort during rest or exercise; fainting, dizzy spells, claudication).</li><li>c. pulmonary risk factors or conditions than may require consultation with medical personnel prior to exercise testing or training (e.g., asthma, exercise-induced asthma/bronchospasm, extreme breathlessness at rest or during exercise, chronic bronchitis, emphysema).</li><li>d. metabolic risk factors or conditions than may require consultation with medical personnel prior to exercise testing or training (e.g., obesity, metabolic syndrome, diabetes or glucose intolerance, hypoglycemia).</li><li>e. musculoskeletal risk factors or conditions than may require consultation with medical personnel prior to exercise testing or training (e.g., acute or chronic pain, osteoarthritis, rheumatoid arthritis, osteoporosis, inflammation/pain, low back pain).</li><li>f. ACSM preparticipation screening algorithm and the implications for medical clearance before participation in an exercise program.</li><li>g. risk factors that may be favorably modified by physical activity habits.</li></ul>	

- h. medical terminology (e.g., total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides, impaired fasting glucose, impaired glucose tolerance, hypertension, atherosclerosis, myocardial infarction, dyspnea, tachycardia, claudication, syncope, ischemia).
- i. recommended plasma cholesterol levels (e.g., National Cholesterol Education Program/ATP Guidelines).
- j. recommended blood pressure levels.
- k. recommendations for medical clearance before initiating an exercise program.
- l. the components of a health-history questionnaire (e.g., past and current medical history, family history of disease, orthopedic limitations, prescribed medications, activity patterns, nutritional habits, stress and anxiety levels, smoking, alcohol use).

2) Skill in:

- a. the administration of the preparticipation screening algorithm and recognition of major signs or symptoms suggestive of cardiovascular, pulmonary, or metabolic disease, and/or the presence of known cardiovascular, pulmonary, and metabolic disease status.
- b. the administration of the preparticipation screening algorithm to determine the need for medical clearance prior to initiating an exercise program and to select appropriate physical fitness assessment protocols.

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**C. Determine and administer physical fitness assessments for apparently healthy clients and those with controlled disease.**

**Application**

1) Knowledge of:

- a. physiological basis of the components of health-related physical fitness (cardiorespiratory fitness, muscular strength, muscular endurance, flexibility, body composition).
- b. selecting the most appropriate testing protocols for each client based on preliminary screening data.
- c. calibration techniques and proper use of fitness testing equipment.
- d. the purpose and procedures of fitness testing protocols for the components of health-related physical fitness.
- e. test termination criteria and best practice procedures to be followed after stopping an exercise test.
- f. fitness assessment sequencing.
- g. the effects of common medications and substances on exercise testing (e.g., antianginals, antihypertensives, antiarrhythmics, bronchodilators, hypoglycemics, psychotropics, alcohol, diet pills, cold tablets, caffeine, nicotine).
- h. the physiologic and metabolic responses to exercise testing associated with chronic diseases and conditions (e.g., heart disease, hypertension, diabetes mellitus, obesity, pulmonary disease).

2) Skill in:

- a. analyzing information obtained from assessment of the components of health-related physical fitness.
  - b. modifying protocols and procedures for testing children, adolescents, older adults and clients with special considerations.
- 

**D. Conduct and interpret cardiorespiratory fitness assessments.**

**Application**

1) Knowledge of:

- a. common submaximal and maximal cardiorespiratory fitness assessment protocols.
- b. blood pressure measurement techniques.
- c. Korotkoff sounds for determining systolic and diastolic blood pressure.
- d. the blood pressure response to exercise.
- e. techniques of measuring heart rate and heart rate response to exercise.
- f. the rating of perceived exertion (RPE).
- g. heart rate, blood pressure and RPE monitoring techniques before, during, and after cardiorespiratory fitness testing.
- h. the anatomy and physiology of the cardiovascular and pulmonary systems.
- i. cardiorespiratory terminology (e.g., angina pectoris, tachycardia, bradycardia, arrhythmia, hyperventilation).
- j. the pathophysiology of myocardial ischemia, myocardial infarction, stroke, hypertension, and hyperlipidemia.
- k. the effects of myocardial ischemia, myocardial infarction, hypertension, claudication, and dyspnea on cardiorespiratory responses during exercise.
- l. oxygen consumption dynamics during exercise (e.g., heart rate, stroke volume, cardiac output, ventilation, ventilatory threshold).
- m. methods of calculating  $\text{VO}_2\text{max}$ .
- n. cardiorespiratory responses to acute graded exercise of conditioned and unconditioned clients.

2) Skill in:

- a. analyzing and documenting cardiorespiratory fitness test results.
  - b. locating anatomic landmarks for palpation of peripheral pulses and blood pressure.
  - c. measuring heart rate, blood pressure, and RPE at rest and during exercise.
  - d. conducting submaximal exercise tests (e.g., cycle ergometer, treadmill, field testing, step test).
  - e. determining cardiorespiratory fitness based on submaximal exercise test results.
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**E. Conduct and interpret assessments of muscular strength, muscular endurance, and flexibility.**

**Application**

1) Knowledge of:

- a. common muscular strength, muscular endurance, and flexibility assessment protocols.
- b. relative strength, absolute strength, and repetition maximum (1-RM) estimation.
- c. the anatomy of bone, skeletal muscle, and connective tissues.
- d. the definition of the following terms: anterior, posterior, proximal, distal, inferior, superior, medial, lateral, supination, pronation, flexion, extension, adduction, abduction, hyperextension, rotation, circumduction, agonist, antagonist, and stabilizer.
- e. the planes and axes in which each movement action occurs.
- f. the interrelationships among center of gravity, base of support, balance, stability, posture, and spinal alignment.
- g. the location and function of muscles (e.g., pectoralis major, trapezius, internal and external obliques, gastrocnemius).
- h. joints and their associated movement.

2) Skill in:

- a. conducting muscular strength, muscular endurance and flexibility assessments (e.g., 1-RM, hand grip dynamometer, push-ups, curl-ups, sit-and-reach).
  - b. estimating 1-RM using lower resistance (2-10 RM).
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**F. Conduct and interpret anthropometric and body composition assessments.**

**Application**

1) Knowledge of:

- a. the advantages, disadvantages and limitations of body composition techniques (e.g., air displacement plethysmography (BOD POD®), dual-energy x-ray absorptiometry (DEXA), hydrostatic weighing, skinfolds, bioelectrical impedance).
- b. the standardized descriptions of circumference and skinfold sites.
- c. procedures for determining BMI and taking skinfold and circumference measurements.
- d. the health implications of variation in body fat distribution patterns and the significance of BMI, waist circumference, and waist-to-hip ratio.

2) Skill in:

- a. locating anatomic landmarks for skinfold and circumference measurements.
- b. analyzing and documenting the results of anthropometric and body composition assessments.

## II. Exercise Prescription and Implementation

### A. Determine safe and effective exercise programs to achieve desired outcomes and goals, and translate assessment results into appropriate exercise prescriptions.

### Synthesis

#### 1) Knowledge of:

- a. strength-, aerobic-, and flexibility-based exercise.
- b. the benefits and precautions associated with exercise training in apparently healthy clients and those with controlled disease.
- c. program development for specific client needs (e.g., sport-specific training, performance, health, lifestyle, functional ability, balance, agility, aerobic, anaerobic).
- d. the six motor skill-related physical fitness components (agility, balance, coordination, reaction time, speed and power).
- e. the physiologic changes associated with an acute bout of exercise.
- f. the physiologic adaptations following chronic exercise training.
- g. the FITT-VP principle for apparently healthy clients, clients with increased risk, and clients with controlled disease.
- h. the components and sequencing incorporated into an exercise session (e.g., warm-up, stretching, conditioning or sports-related exercise, cool-down).
- i. the physiological principles related to warm-up and cool-down.
- j. the principles of reversibility, progressive overload, individual differences and specificity of training, and how they relate to exercise prescription.
- k. the role of aerobic and anaerobic energy systems in the performance of various physical activities.
- l. the basic biomechanical principles of human movement.
- m. the psychological and physiological signs and symptoms of overtraining.
- n. the signs and symptoms of common musculoskeletal injuries associated with exercise equipment (e.g., sprain, strain, bursitis, tendonitis).
- o. the advantages and disadvantages of exercise equipment (e.g., free weights, selectorized machines, aerobic equipment).

#### 2) Skill in:

- a. teaching and demonstrating exercises.
  - b. designing safe and effective training programs.
  - c. implementing the FITT-VP principle for apparently healthy clients, clients with increased risk, and clients with controlled disease.
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**B. Implement cardiorespiratory exercise prescriptions for apparently healthy clients and those with controlled disease based on current health status, fitness goals and availability of time.**

## 1) Knowledge of:

- a. the recommended FITT-VP principle for the development of cardiorespiratory fitness.
- b. the benefits, risks and contraindications of a wide variety of cardiovascular training exercises based on client experience, skill level, current fitness level and goals.
- c. the minimal threshold of physical activity required for health benefits and/or fitness development.
- d. determining exercise intensity using HRR,  $VO_2R$ , peak HR method, peak  $VO_2$  method, peak METs method, and the RPE Scale.
- e. the accuracy of HRR,  $VO_2R$ , peak HR method, peak  $VO_2$  method, peak METs method, and the RPE Scale.
- f. abnormal responses to exercise (e.g., hemodynamic, cardiac, ventilatory).
- g. metabolic calculations (e.g., unit conversions, deriving energy cost of exercise, caloric expenditure).
- h. calculating the caloric expenditure of an exercise session ( $\text{kcal}\cdot\text{session}^{-1}$ ).
- i. methods for establishing and monitoring levels of exercise intensity, including heart rate, RPE, and METs.
- j. the applications of anaerobic training principles.
- k. the anatomy and physiology of the cardiovascular and pulmonary systems including the basic properties of cardiac muscle.
- l. the basic principles of gas exchange.

## 2) Skill in:

- a. determining appropriate FITT-VP principle for clients with various fitness levels.
  - b. determining the energy cost, absolute and relative oxygen costs ( $VO_2$ ), and MET levels of various activities and applying the information to an exercise prescription.
  - c. identifying and correcting improper exercise technique in the use of cardiovascular equipment.
  - d. teaching and demonstrating the use of a variety of cardiovascular exercise equipment.
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**C. Implement exercise prescriptions for flexibility, muscular strength, muscular endurance, balance, agility, and reaction time for apparently healthy clients and those with controlled disease based on current health status, fitness goals and availability of time.**

1) Knowledge of:

- a. the recommended FITT-VP principle for the development of muscular strength, muscular endurance and flexibility.
- b. the minimal threshold of physical activity required for health benefits and/or fitness development.
- c. safe and effective exercises designed to enhance muscular strength and/or endurance of muscle groups.
- d. safe and effective stretches that enhance flexibility.
- e. indications for water-based exercise (e.g., arthritis, obesity).
- f. the types of resistance training programs (e.g., total body, split routine) and modalities (e.g., free weights, variable resistance equipment, pneumatic machines, bands).
- g. acute (e.g., load, volume, sets, repetitions, rest periods, order of exercises) and chronic training variables (e.g., periodization).
- h. types of muscle contractions (e.g., eccentric, concentric, isometric).
- i. joint movements (e.g., flexion, extension, adduction, abduction) and the muscles responsible for them.
- j. acute and delayed onset muscle soreness (DOMS).
- k. the anatomy and physiology of skeletal muscle fiber, the characteristics of fast- and slow-twitch muscle fibers, and the sliding filament theory of muscle contraction.
- l. the stretch reflex, proprioceptors, golgi tendon organ (GTO), muscle spindles, and how they relate to flexibility.
- m. muscle-related terminology including atrophy, hyperplasia, hypertrophy.
- n. the Valsalva maneuver and its implications during exercise.
- o. the physiology underlying plyometric training and common plyometric exercises (e.g., box jumps, leaps, bounds).
- p. the contraindications and potential risks associated with muscular conditioning activities (e.g., straight-leg sit-ups, double leg raises, squats, hurdler's stretch, yoga plough, forceful back hyperextension, standing bent-over toe touch, behind neck press/lat pull-down).
- q. spotting positions and techniques for injury prevention and exercise assistance.
- r. periodization (e.g., macro, micro, mesocycles) and associated theories.
- s. safe and effective Olympic weight lifting exercises.
- t. safe and effective core stability exercises (e.g., planks, crunches, bridges, cable twists).

2) Skill in:

- a. identifying and correcting improper technique in the use of resistive equipment (e.g., stability balls, weights, bands, resistance bars, water exercise equipment).
  - b. teaching and demonstrating appropriate exercises for enhancing musculoskeletal flexibility.
  - c. teaching and demonstrating safe and effective muscular strength and endurance exercises (e.g., free weights, weight machines, resistive bands, Swiss balls, body weight and all other major fitness equipment).
  - d. prescribing exercise using the calculated %1-RM.
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**D. Establish exercise progression guidelines for flexibility, muscular strength, muscular endurance, balance, agility, and reaction time for apparently healthy clients and those with controlled disease based on current health status, fitness goals and availability of time.**

**Synthesis**

1) Knowledge of:

- a. the basic principles of exercise progression.
- b. adjusting the FITT-VP principle in response to individual changes in conditioning.
- c. the importance of performing periodic reevaluations to assess changes in fitness status.
- d. the training principles that promote improvements in muscular strength, muscular endurance, cardiorespiratory fitness, and flexibility.

2) Skill in:

- a. recognizing the need for progression and communicating exercise prescription updates to clients.
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**E. Implement a general weight management program as indicated by personal goals, as needed.**

**Synthesis**

1) Knowledge of:

- a. exercise prescriptions for achieving weight related goals, including weight gain, weight loss and weight maintenance.
- b. energy balance and basic nutritional guidelines (e.g., MyPlate, USDA Dietary Guidelines for Americans).
- c. weight management terminology (e.g., obesity, overweight, percent fat, BMI, lean body mass, anorexia nervosa, bulimia nervosa, binge eating, metabolic syndrome, body fat distribution, adipocyte, bariatrics, ergogenic aid, fat-free mass (FFM), resting metabolic rate (RMR) and thermogenesis).
- d. the relationship between body composition and health.

- e. the unique dietary needs of client populations (e.g., women, children, older adults, pregnant women).
- f. common nutritional ergogenic aids, their purported mechanisms of action, and associated risks and benefits (e.g., protein/amino acids, vitamins, minerals, herbal products, creatine, steroids, caffeine).
- g. methods for modifying body composition including diet, exercise, and behavior modification.
- h. fuel sources for aerobic and anaerobic metabolism including carbohydrates, fats, and proteins.
- i. the effects of overall dietary composition on healthy weight management.
- j. the importance of maintaining normal hydration before, during and after exercise.
- k. the consequences of inappropriate weight loss methods (e.g., saunas, dietary supplements, vibrating belts, body wraps, over-exercising, very low-calorie diets, electric stimulators, sweat suits, fad diets).
- l. the kilocalorie levels of carbohydrate, fat, protein, and alcohol.
- m. the relationship between kilocalorie expenditures and weight loss.
- n. published position statements on obesity and the risks associated with it (e.g., National Institutes of Health, American Dietetic Association, American College of Sports Medicine).
- o. the relationship between body fat distribution patterns and health.
- p. the physiology and pathophysiology of overweight and obese clients.
- q. the recommended FITT-VP principle for clients who are overweight or obese.
- r. comorbidities and musculoskeletal conditions associated with overweight and obesity that may require medical clearance and/or modifications to exercise testing and prescription.

2) Skill in:

- a. applying behavioral strategies (e.g., exercise, diet, behavioral modification strategies) for weight management.
  - b. modifying exercises for clients limited by body size.
  - c. calculating the volume of exercise in terms of kcal·session<sup>-1</sup>.
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**F. Prescribe and implement exercise programs for clients with controlled cardiovascular, pulmonary, and metabolic diseases and other clinical populations and work closely with clients' healthcare providers, as needed.**

## 1) Knowledge of:

- a. ACSM preparticipation screening algorithm and the FITT-VP principle for clients with cardiovascular, pulmonary, and metabolic diseases and other clinical populations.
- b. relative and absolute contraindications for initiating exercise sessions or exercise testing, and indications for terminating exercise sessions and exercise testing.
- c. physiology and pathophysiology of diseases and conditions (e.g., cardiac disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, musculoskeletal injuries, overweight and obesity, osteoporosis, peripheral artery disease, pulmonary disease).
- d. the effects of diet and exercise on blood glucose levels in diabetics.
- e. the recommended FITT-VP principle for the development of cardiorespiratory fitness, muscular fitness and flexibility for clients with diseases and conditions (e.g., cardiac disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, musculoskeletal injuries, overweight and obesity, osteoporosis, peripheral artery disease, pulmonary disease).

## 2) Skill in:

- a. progressing exercise programs, according to the FITT-VP principle, in a safe and effective manner.
- b. modifying the exercise prescription and/or exercise choice for clients with diseases and conditions (e.g., cardiac disease, arthritis, diabetes mellitus, dyslipidemia, hypertension, metabolic syndrome, musculoskeletal injuries, overweight and obesity, osteoporosis, peripheral artery disease, pulmonary disease).
- c. identifying improper exercise techniques and modifying exercise programs for clients with low back, neck, shoulder, elbow, wrist, hip, knee and/or ankle pain.

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**G. Prescribe and implement exercise programs for healthy special populations (e.g., older adults, children, adolescents, pregnant women).**

## 1) Knowledge of:

- a. normal maturational changes across the lifespan and their effects (e.g., skeletal muscle, bone, reaction time, coordination, posture, heat and cold tolerance, maximal oxygen consumption, strength, flexibility, body composition, resting and maximal heart rate, resting and maximal blood pressure).
- b. techniques for the modification of cardiovascular, flexibility, and resistance exercises based on age, functional capacity and physical condition.
- c. techniques for the development of exercise prescriptions for children, adolescents and older adults with regard to strength, functional capacity, and motor skills.

- d. the unique adaptations to exercise training in children, adolescents, and older adults with regard to strength, functional capacity, and motor skills.
- e. the benefits and precautions associated with exercise training across the lifespan.
- f. the recommended FITT-VP principle for the development of cardiorespiratory fitness, muscular fitness, balance, and flexibility in apparently healthy children and adolescents.
- g. the effects of the aging process on the musculoskeletal and cardiovascular structures and functions during rest, exercise, and recovery.
- h. the recommended FITT-VP principle necessary for the development of cardiorespiratory fitness, muscular fitness, balance, and flexibility in apparently healthy older adults.
- i. common orthopedic and cardiovascular exercise considerations for older adults.
- j. the relationship between regular physical activity and the successful performance of activities of daily living (ADLs) for older adults.
- k. the recommended FITT-VP principle necessary for the development of cardiorespiratory fitness, muscular fitness, balance, and flexibility in apparently healthy pregnant women.

2) Skill in:

- a. teaching and demonstrating appropriate exercises for healthy populations with special considerations.
- b. modifying exercises based on age, physical condition, and current health status.

**H. Modify exercise prescriptions based on various environmental conditions.**

**Synthesis**

1) Knowledge of:

- a. the effects of various environmental conditions on the physiologic response to exercise (e.g., altitude, variable ambient temperatures, humidity, environmental pollution).
- b. special precautions and program modifications for exercise in various environmental conditions (e.g., altitude, variable ambient temperatures, humidity, environmental pollution).
- c. the role of acclimatization when exercising in various environmental conditions (e.g., altitude, variable ambient temperatures, humidity, environmental pollution).
- d. appropriate fluid intake during exercise in various environmental conditions (e.g., altitude, variable ambient temperatures, humidity, environmental pollution).

### III. Exercise Counseling and Behavior Modification

#### A. Optimize adoption and adherence of exercise and other healthy behaviors by applying effective communication techniques.

#### Application

- 1) Knowledge of:
    - a. verbal and nonverbal behaviors that communicate positive reinforcement and encouragement (e.g., eye contact, targeted praise, empathy).
    - b. group leadership techniques for working with clients of all ages.
    - c. learning preferences (auditory, visual, kinesthetic) and how to apply teaching and training techniques to optimize training session.
  - 2) Skill in:
    - a. applying active listening techniques.
    - b. using feedback to optimize a client's training sessions.
    - c. effective use of a variety of communication modes (e.g., telephone, newsletters, email, social media).
- 

#### B. Optimize adoption and adherence of exercise and other healthy behaviors by applying effective behavioral strategies and motivational techniques.

#### Application

- 1) Knowledge of:
  - a. behavior change models and theories (e.g., transtheoretical model, social cognitive theory, social ecological model, health belief model, theory of planned behavior, self-determination theory, cognitive evaluation theory).
  - b. the basic principles involved in motivational interviewing (MI).
  - c. intervention strategies and stress management techniques.
  - d. behavioral strategies to enhance exercise and health behavior change (e.g., reinforcement, S.M.A.R.T. goal setting, social support).
  - e. behavior modification terminology (e.g., self-esteem, self-efficacy, antecedents, cues to action, behavioral beliefs, behavioral intentions, reinforcing factors).
  - f. behavioral strategies (e.g., exercise, diet, behavioral modification strategies) for weight management.
  - g. the role that affect, mood and emotion play in exercise adherence.
  - h. barriers to exercise adherence and compliance (e.g., time management, injury, fear, lack of knowledge, weather).
  - i. techniques that facilitate intrinsic and extrinsic motivation (e.g., goal setting, incentive programs, achievement recognition, social support).

- j. the role extrinsic and intrinsic motivation plays in the adoption and maintenance of behavior change.
- k. health coaching principles and lifestyle management techniques related to behavior change.
- l. strategies to increase non-structured physical activity (e.g., stair walking, parking farther away, biking to work).

2) Skill in:

- a. explaining the purpose and value of understanding perceived exertion.
- b. using imagery as a motivational tool.
- c. evaluating behavioral readiness to optimize exercise adherence.
- d. applying the theories related to behavior change to diverse populations.
- e. developing intervention strategies to increase self-efficacy and self-confidence.
- f. developing reward systems that support and maintain program adherence.
- g. setting effective behavioral goals.

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**C. Provide educational resources to support clients in the adoption and maintenance of healthy lifestyle behaviors.**

**Recall**

1) Knowledge of:

- a. the relationship between physical inactivity and common chronic diseases and conditions (e.g., diabetes mellitus, obesity, stroke, dyslipidemia, arthritis, low back pain, hypertension).
- b. the dynamic inter-relationship between fitness level, body composition, stress and overall health.
- c. modifications necessary to promote healthy lifestyle behaviors for diverse populations.
- d. stress management techniques and relaxation techniques (e.g., progressive relaxation, guided imagery, massage therapy).
- e. activities of daily living (ADLs) and how they relate to overall health.
- f. specific, age-appropriate leadership techniques and educational methods to increase client engagement.
- g. community-based exercise programs that provide social support and structured activities (e.g., walking clubs, intramural sports, golf leagues, cycling clubs).

2) Skill in:

- a. accessing and disseminating scientifically-based, relevant fitness-, nutrition-, and wellness-related resources and information.
  - b. educating clients about benefits and risks of exercise and the risks of sedentary behavior.
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**D. Provide support within the scope of practice of an ACSM Certified Exercise Physiologist and refer to other health professionals as indicated.**

**Application**

1) Knowledge of:

- a. the side effects of common over-the-counter and prescription drugs that may impact a client's ability to exercise.
- b. signs and symptoms of mental health states (e.g., anxiety, depression, eating disorders) that may necessitate referral to a medical or mental health professional.
- c. symptoms and causal factors of test anxiety (i.e., performance, appraisal threat during exercise testing) and how they may affect physiological responses to testing.
- d. client needs and learning styles that may impact exercise sessions and exercise testing procedures.
- e. conflict resolution techniques that facilitate communication among exercise cohorts.

2) Skill in:

- a. communicating the need for medical, nutritional, or mental health intervention.

**IV. Risk Management and Professional Responsibilities**

**A. Develop and disseminate risk management guidelines for a health/fitness facility to reduce member, employee, and business risk.**

**Application**

1) Knowledge of:

- a. employee criminal background checks, child abuse clearances and drug and alcohol screenings.
- b. employment verification requirements mandated by state and federal laws.
- c. safe handling and disposal of body fluids and employee safety (OSHA guidelines).
- d. insurance coverage common to the health/fitness industry including general liability, professional liability, workers' compensation, property, and business interruption.
- e. sexual harassment policies and procedures.
- f. interviewing techniques.
- g. precautions taken in an exercise setting to ensure client safety.
- h. preparticipation screening algorithm, medical release and waiver of liability for normal and at-risk clients.
- i. emergency action plan (EAP); response systems and procedures.
- j. the legal implications of documented safety procedures, the use of incident report documents, and ongoing safety training documentation.

- k. maintaining employee records/documents (CPR/AED certification, certifications for maintaining job position).
- l. the components of the ACSM Code of Ethics and the ACSM Certified Exercise Physiologist scope of practice.

2) Skill in:

- a. developing and/or modifying a policies and procedures manual.
  - b. enforcing confidentiality policies.
  - c. maintaining a safe exercise environment (e.g., equipment operation and regular maintenance schedules, safety and scheduled maintenance of exercise areas, overall facility maintenance, proper sanitation, proper signage).
  - d. clearly communicating human resource risk management policies and procedures.
  - e. training employees to identify and limit/reduce high-risk situations.
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**B. Ensure that emergency policies and procedures are in place.**

**Recall**

1) Knowledge of:

- a. emergency procedures (i.e., telephone procedures, written emergency action plan and procedures, personnel responsibilities) in a health fitness setting.
- b. the initial management and first-aid procedures for exercise-related injuries (e.g., bleeding, strains/sprains, fractures, shortness of breath, palpitations, hypoglycemia, allergic reactions, fainting/syncope).
- c. the responsibilities, limitations, and legal implications for the ACSM Certified Exercise Physiologist of carrying out emergency procedures.
- d. safety plans, emergency procedures and first-aid techniques needed during fitness evaluations, exercise testing, and exercise training.
- e. potential musculoskeletal injuries (e.g., contusions, sprains, strains, fractures), cardiovascular/pulmonary complications (e.g., chest pain, palpitations/arrhythmias, tachycardia, bradycardia, hypotension/hypertension, hyperventilation) and metabolic abnormalities (e.g., fainting/syncope, hypoglycemia/hyperglycemia, hypothermia/hyperthermia).
- f. appropriate documentation of emergencies.

2) Skill in:

- a. applying first-aid procedures for exercise-related injuries (e.g., bleeding, strains/sprains, fractures, shortness of breath, palpitations, hypoglycemia, allergic reactions, fainting/syncope).
- b. applying basic life support, first aid, cardiopulmonary resuscitation, and automated external defibrillator techniques.
- c. developing and/or modifying an evacuation plan.
- d. demonstrating emergency procedures during exercise testing and/or training.





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