

ACSM Certified Exercise Physiologist (CEP) Certification Preparation Course

Prepare for the ACSM Certified Clinical Exercise Physiologist® (ACSM CEP) exam with this convenient online course. Learn and at your own pace with audio and PowerPoint presentations. Each of the 27 modules, grouped into five sections, covers a specific portion of the exam-preparation materials, so you know what resources to go to if you need additional information.

Section 1

1. Introduction
2. Benefits and Risk Assessment
3. Risk Management
4. Risk Stratification and Behavior
5. Clinical GXT Procedures
6. ECG Interpretation I
7. ECG Interpretation II

Section 2

1. Cardiorespiratory Pathophysiology
2. Pathophysiology of Obesity and Diabetes
3. Pharmacology
4. Resistance Training for Individuals with Cardiac and Clinical Conditions
5. Frailty Assessment and Exercise Prescription

Section 3

1. Special Considerations for Cardiovascular Disease (CVD)
2. Assessing Cardiac GXTs for Exercise Prescription
3. Exercise Prescription Techniques for CVD
4. Exercise Prescription for CVD Special Populations
5. Special Considerations & Prescription Techniques for individuals with PAD
6. CVD Case Studies

Section 4

1. Diabetes Classification and Diagnosis
2. Special Considerations When Prescribing Exercise for Individuals with Metabolic Disease
3. Prescription and Testing Techniques for Obesity and Diabetes
4. Diabetes Management and Treatment

Section 5

1. Special Populations: Cancer (testing, prescription and considerations)
2. Special Populations: Kidney Disease (testing, prescription and considerations)
3. Special Considerations When Prescribing Exercise for Individuals with Neuromuscular and Musculoskeletal Disorders
4. Special Considerations and Prescription for Pulmonary
5. ACSM-CEP Exam Strategies

Learning Objectives

After completing the exam-prep course, participants will be able to:

- Understand what is expected of a CEP in preparing for the ACSM-CEP certification exam and in clinical practice.

Graded Exercise Testing

- Maximal and Submaximal Graded Exercise Testing (GXT) Procedures
 - Understand the indications for performing a GXT.
 - Identify absolute and relative contraindications.
 - Determine the appropriate testing modality relative to the individual's characteristics.
 - Select the appropriate testing protocol to achieve maximal effort within 8-12 minutes of exercise.
 - Understand appropriate test-termination criteria for a submaximal exercise test.
 - Understand normal and abnormal heart rate, blood pressure, oxygen saturation and EKG responses before, during and after a GXT.
- Assessing GXTs for Exercise Prescription
 - Understand how to modify an exercise prescription based on abnormal EKG, blood pressure, oxygen saturation and symptoms.
 - Understand the purpose of using heart rate to guide exercise intensity.
 - Understand the heart rate reserve, VO_2 reserve, percent of maximal heart rate and VO_2 thresholds for light, moderate and vigorous intensity.
 - Understand how to calculate respective intensity thresholds using the reserve and percent maximum methods.

Cardiovascular Disease

- Electrocardiography (ECG)
 - Understand the basics of electrocardiography, including calculation of HR and axis deviation.
 - Understand and perform ECG interpretation of sinus rhythms, conduction disturbances, ventricular and supraventricular arrhythmias, ischemia and infarct patterns, chamber enlargements and pacemakers.
 - Understand the pathophysiology of all arrhythmias.
- Cardiovascular Disease (CVD)
 - Identify common risk factors for the development of CVD.
 - Understand the underlying pathophysiology of CVD.
 - Understand common treatment procedures for reestablishing normal coronary blood supply.
- Peripheral Artery Disease (PAD)
 - Identify common risk factors for the development of PAD.
 - Understand the underlying pathophysiology of PAD.
 - Identify signs and symptoms of PAD.
 - Understand PAD severity thresholds using the ankle brachial index.
- Congestive Heart Failure (CHF)
 - Understand recommended exercise modalities and intensities necessary for improving cardiorespiratory fitness.
 - Identify common exercise-related symptoms associated with CHF.
 - Understand how to modify the exercise prescription for low fit and/or frail CHF patients to promote improvements.

Pulmonary Disease

- Interpret data from a pulmonary function test and determine whether obstructive or restrictive pulmonary disease is present.
- Chronic obstructive pulmonary disease (COPD)
 - Identify common risk factors for the development of COPD.
 - Understand the underlying pathophysiology of COPD.
 - Understand the difference between chronic bronchitis and emphysema.
 - Understand how to modify exercise and conditions when it is appropriate to adjust supplemental oxygen.
 - Understand techniques to help clear the airway of sputum.
 - Understand inspiratory muscle training recommendations.
- Restrictive lung disease
 - Understand the underlying pathophysiology.
- Understand how to modify exercise interventions relative to special considerations for those with interstitial lung disease, pulmonary arterial hypertension or lung transplant.

Pharmacology

- Provide information that CEPs can apply to clinical practice regarding mechanism of action, therapeutic use, special considerations and possible effects on exercise for the following medications:
 - Medications affecting BP
 - Medications supporting cardiac function
 - Blood modifiers
 - Medications used for asthma and COPD
 - Anti-hyperglycemic agents
 - Anti-obesity agents
- Understand techniques to help individuals with medication compliance.
- Understand the CEP scope of practice related to discussion of medications.
- Provide education on when to take medications around exercise.
- Provide concurrent education to complement the physician's directions as to how specific medications work and what specific medications do for an individual's condition.
- Understand the potential side effects and drug-drug interactions of a specific medication.

Metabolic Diseases (Obesity and/or Diabetes)

- Diabetes mellitus
 - Understand the underlying pathophysiology related to type 1 and 2 diabetes mellitus and gestational diabetes.
 - Understand the classification and diagnostic criteria for type 1 and 2 diabetes mellitus and gestational diabetes.
 - Understand diabetes management that can be used in clinical practice.
 - Treatment goals for type 1 and 2 diabetes
 - Monitoring of blood glucose before during and after exercise
 - Interpretation of hemoglobin A1c
 - Assessing and treating hypoglycemia
 - Understanding the role ketones play in identifying diabetic ketoacidosis (DKA)
 - Understanding the importance of controlling postprandial hyperglycemic surges
 - Cardiovascular risk factor control
 - Special issues for women of childbearing age
 - Prevention of macro- and microvascular complications
 - Understand insulin preparations and means for administration of insulin.

- Instruct individuals on ways to prevent or minimize hypoglycemia before, during and after exercise.
- Understand how to instruct insulin-dependent individuals on special precautions when exercising.
- Understand how to select exercise tests for individuals with type 1 and 2 diabetes mellitus and understand situations when professionals should and should not conduct exercise testing.
- Identify differences in exercise prescription and testing for individuals with type 1 and 2 diabetes mellitus to healthy populations, including aerobic, resistance and flexibility exercise.
- Understand special considerations and how to provide exercise for individuals experiencing complications from type 1 and 2 diabetes mellitus.
- Obesity
 - Understand the underlying pathophysiology related to obesity and the development of chronic diseases.
 - Understand obesity management that can be used in clinical practice.
 - Identify the role of different types of exercise and physical activity in weight loss and in preventing weight re-gain.
 - Understand select exercise tests for individuals with obesity.
 - Understand situations when professionals should and should not conduct exercise testing.
 - Identify differences in exercise prescription for individuals with obesity compared to healthy populations, including aerobic, resistance and flexibility exercise.

Special Populations

- Kidney disease
 - Understand the underlying pathophysiology related to kidney disease diagnosis and progression, and changes to exercise response.
 - Understand select exercise tests for individuals with kidney disease and understand situations when professionals should and should not conduct exercise testing.
 - Identify differences in exercise prescription and testing for individuals with CKD, ESRD and transplants compared to healthy populations, including aerobic, resistance and flexibility exercise
 - Understand the effect of renal replacement on the exercise prescription in ESRD and transplants
 - Understand special considerations for individuals with CKD, ESRD and transplants.
- Neuromuscular and musculoskeletal disorders
 - Understand the underlying pathophysiology and signs and symptoms of Parkinson's disease (PD), multiple sclerosis (MS), osteoarthritis (OA) and osteoporosis.
 - Understand the effect that PD, MS, OA and osteoporosis have on an individual's ability to exercise, and changes to exercise response.
 - Understand how to select exercise tests for individuals with PD, MS, OA and osteoporosis and understand situations when professionals should and should not conduct exercise testing.
 - Understand the effect of exercise timing in coordination with medications for PD, MS, OA and osteoporosis.
 - Identify differences in exercise prescription and testing for individuals with PD, MS, OA and osteoporosis compared to healthy populations, including aerobic, resistance and flexibility exercise.

- Understand special considerations for individuals with PD, MS, OA and osteoporosis.
- Cancer
 - Understand the underlying pathophysiology related to a cancer diagnosis and changes to exercise response, as well as the impact of physical activity on survivorship.
 - Understand how to appropriately select exercise tests for individuals with cancer and understand situations when professional should and should not conduct exercise testing.
 - Understand the effect of chemotherapy, radiation and surgery on the exercise response and range of motion for individuals with cancer.
 - Identify differences in exercise prescription and testing for individuals with cancer vs. healthy populations.
 - Understand special considerations for individuals with different types of six common cancers.
- Falls risk
 - Understand how to appropriately identify individuals who are at risk for falls.
 - Understand the recommended types of exercise for individuals at risk for falling.
 - Understand how to modify difficulty of balance, strength and agility exercises.
- Individuals with pacemakers and/or defibrillators
 - Understand the purpose, pacemaker codes and basic function of pacemakers and defibrillators.
 - Understand exercise precautions and modifications for individuals who have recently had a pacemaker implanted.
 - Understand how to interpret heart rate response during an exercise test to determine if the pacemaker is functioning inappropriately.
 - Understand how to modify exercise intensity based on the defibrillator's programmed threshold for defibrillation.
- Sternotomy
 - Be able to identify common cardiac procedures that require a sternotomy.
 - Understand how to modify the exercise (aerobic and resistance) prescription based on the phase of recovery the individual is in.
- Left ventricular assist device (LVAD)
 - Understand how to measure mean arterial pressure and identify normal resting and exercise values.
 - Identify exercise contraindications
 - Understand precautions associated with wearing the LVAD.
 - Understand how to modify the exercise prescription based on individual's fitness level, fatigue status and use rating of perceived exertion to adjust the intensity of exercise.
- Heart transplant
 - Understand which comorbidities are common in individuals who have gone through a heart transplant.
 - Understand the additional health consequences associated with undergoing immunosuppression therapy to prevent organ rejection.
 - Understand exercise considerations associated with sternotomy precautions, heart rate and blood pressures responses.