

AMERICAN BOARD OF PHYSICAL THERAPY RESIDENCY AND FELLOWSHIP EDUCATION

Description of Residency Practice
Cardiovascular and Pulmonary

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Preamble

The American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE), a board-appointed group of the American Physical Therapy Association (APTA), has created the following Description of Residency Practice (DRP) to reduced unwarranted curriculum variability; provide residents minimum consistency in learning experiences for that area of practice; and streamline the accreditation process for reporting.

This DRP is the product of collaborative work by ABPTRFE and the APTA Physical Therapy Outcomes Registry staff, and is based on feedback received from members of the American Board of Physical Therapist Specialties (ABPTS) and directors of residency programs. Feedback was analyzed and incorporated into the DRP as ABPTRFE refined the document.

While all programs are required to meet the comprehensive curriculum and program requirements as outlined within the *ABPTRFE Quality Standards for Clinical Physical Therapist Residency and Fellowship Programs*, the purpose of the DRP is to: (1) establish a consistent curriculum expectation for residency programs within the same specialty area, and (2) provide consistency in program reporting for accreditation processes. The DRP allows flexibility for programs to incorporate additional learning experiences unique to the program's environment that are beyond the minimum standard expectations.

The DRP for each residency area will undergo revalidation at least once every 10 years. The process for revalidation will be a collaborative process with ABPTS, for specialty areas recognized by ABPTS, and will occur as part of the revalidation of that specialty area by ABPTS.

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I. Type of Program

Cardiovascular and Pulmonary is a clinical area of practice.

II. Learning Domain Expectations

A residency program must have a curriculum inclusive of the learning domains identified within that area's current validated analysis of practice.

The following information is extracted directly from chapter 2 of the *Cardiovascular and Pulmonary Description of Specialty Practice*.¹

A. Knowledge Areas of Cardiovascular and Pulmonary Practice

Foundation Sciences

- Cardiovascular and pulmonary anatomy, including embryologic development
- Cardiovascular and pulmonary physiology
- Exercise physiology
- Kinesiology
- Pharmacology
- Pathology/pathophysiology

Behavioral Sciences

- Psychology
- Sociology/cultural competence
- Management sciences
- Teaching and learning
- Medical ethics and legal implications

Clinical Sciences

- Cardiovascular and pulmonary pathophysiology
- Critical care medicine
- Cardiology and pulmonology (pediatric/adult/geriatric)
- Epidemiology/public health
- Emergency/trauma medicine
- Cardiac and pulmonary rehabilitation

- Cardiac, vascular, and thoracic surgery
- Clinical decision analysis

Critical Inquiry Principles and Methods

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates advanced knowledge and skills in critical inquiry by:

- Identifying appropriate cardiovascular and pulmonary physical therapy research questions, developing and implementing a research plan, and interpreting the results.
- Developing appropriate methods to answer the research question, including identifying independent/dependent variables, population and sample characteristics, and necessary statistical analysis.
- Synthesizing the current theory/literature supporting the identified problem.
- Designing procedures and accurately collecting data necessary to answer a research question or to identify quality assurance indicators.
- Mentoring others in the collaborative investigation process.
- Disseminating results of research and collaborative investigation endeavors through presentations to peers, other health care professionals, and the public, as appropriate.

B. Professional Competencies of Cardiovascular and Pulmonary Physical Therapists

Professional Behaviors Reflecting the Core Values

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist exhibits the following behaviors reflecting the core values of a professional by:

- Effectively recognizing and resolving problems in difficult situations.
- Willingly devoting time and effort to resolve a complex problem.
- Recognizing when health care issues go beyond an individual level to the institutional and societal

¹Cardiovascular and Pulmonary Physical Therapy Description of Specialty Practice, 2nd ed. Alexandria, VA: American Physical Therapy Association; 2007. Reproduced with permission. © 2007 American Physical Therapy Association. All rights reserved.

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health care issues and tenaciously advocating for such issues.

- Demonstrating life-long learning through pursuit of advanced knowledge, skills, and abilities.
- Demonstrating leadership or active membership and involvement in professional organizations related to cardiovascular and pulmonary practice.

Leadership

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates leadership by:

- Modeling prioritization in patient/client examination and intervention.
- Modeling professionalism and maturity in decision-making and interpersonal interactions.
- Seeking opportunities to mentor others.
- Identifying multiple strategies to resolve a problem.
- Facilitating conflict resolution by guiding others in identifying appropriate strategies.
- Using evidence-based practice to shape system policies and procedures, selecting the most effective method to build consensus.
- Participating in activities beyond his or her immediate scope of responsibility in order to expand, improve, or define the practice or awareness of cardiovascular and pulmonary physical therapy.

Education Theory and Practice

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates ability to educate others by demonstrating the ability to:

- Educate physical therapy students and other physical therapists, including other master clinicians, to increase knowledge and skills in cardiovascular and pulmonary physical therapy using educational approaches appropriate to the level of the learner.
- Provide interdisciplinary education to other health care professionals and outside agencies demonstrating mastery of cardiovascular and pulmonary physical therapy.

Administration

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates administrative ability by effectively:

- Identifying the structure and function of the cardiovascular and pulmonary physical therapy practice in a given practice setting.
- Identifying the administrative needs of the cardiovascular and pulmonary practice, including priorities and resource availability.
- Developing and/or implementing sound cardiovascular and pulmonary physical therapy policies and procedures to meet the needs of the practice setting.
- Evaluating the effect of policies and procedures on the cardiovascular and pulmonary physical therapy practice.
- Addressing and resolving issues related to delivery of services, staff productivity, quality assurance, cost containment, and third-party reimbursement in cardiovascular and pulmonary physical therapy practice settings—including designing, collecting, and analyzing clinical outcomes related to cardiovascular and pulmonary physical therapy practice.

Consultation

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates consultation through:

- Identifying and evaluating feasibility of individual, program, or regional project goals, including identification of discrepancies between the program status and the goals.
- Identifying his or her own and other health professionals' available resources and potential contribution to the project.
- Developing and assessing the feasibility of alternative methods to meet goals.
- Assisting in selection and implementation of a method for attaining the project goals.
- Providing a second opinion regarding patient/client impairment, functional limitation, or disability status.

- Analyzing risk factors for cardiovascular or pulmonary dysfunction across practice settings.

Evidence-Based Practice

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates evidence-based practice through:

- Identifying, synthesizing, and integrating current literature into clinical practice.
- Demonstrating leadership and skill through formal presentations that rely on the current literature related to cardiovascular and pulmonary physical therapy practice.
- Evaluating the efficacy and effectiveness of new and established examination tools, interventions, and technologies.
- Participating in clinical outcome data collection and interpretation.

C. Psychomotor Skills of Cardiovascular and Pulmonary Physical Therapists in the Patient/Client Management Model

Examination

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates examination by:

1. History

- Conducting a highly efficient, effective, and focused patient/client interview to anticipate and detect cardiovascular and/or pulmonary impairments by ascertaining such things as current/previous symptoms, physical and psychological lifestyle, environmental exposures, risk factor information, understanding of the cardiovascular and/or pulmonary disease and the related impairments, motivation for lifestyle change, and patient/family goals.
- Reviewing and interpreting the clinical significance for physical therapy of all available patient/client data, including the following:
 - Patient/client chief complaint,

symptomatology, and goals for physical therapy.

- Medical, surgical, social, psychological, and family history, including health habits and risk factors for cardiovascular and pulmonary disease.
- Employment/work history.
- Functional status/living environment.
- General health status and physical examination findings.
- Cardiovascular and pulmonary clinical tests, diagnostic studies, radiological studies, physiologic monitoring (including life support requirements and hemodynamic stability monitoring, eg, mechanical ventilators, intra-aortic balloon pumps, ventricular assist devices), and laboratory analysis.
- Medical interventions, including pharmacological interventions affecting the cardiovascular and pulmonary systems.
- Progress notes from other health care team members.

2. Systems Review

- Identifying and describing tools appropriate for screening the cardiovascular/pulmonary, musculoskeletal, neuromuscular, and integumentary systems for the population being tested.
- Applying tools in a timely and efficient manner, within the constraints of available equipment and environment, and with appropriate delegation.
- Observing the patient/client response, collects data in an appropriate manner, and assigns to patient/client appropriate classification.
- Recommending action(s) based on the results. Possible actions include: decision to evaluate, referral to other providers, and no further intervention recommended.

3. Tests and Measures

- Selecting and prioritizing appropriate tests and measures based on the results of initial

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history and systems review examination.

- Prioritizing test selection based on scientific merit and clinical utility as determined by best available evidence.
- Performing clinical tests and measures such that data collection is accurate and precise, including the following:
 - Aerobic capacity/endurance/exercise—initial exam and reexamination.
 - Independently conducting or assisting with maximum symptom-limited exercise tests using an ergometer, treadmill, or appropriate modality with or without metabolic measurements.
 - Independently conducting submaximal exercise tests.
 - Assessing cardiac pump function, differentiating patient-driven versus mechanical support (eg, ventricular assist device (VAD) parameters, pulmonary artery pressures).

Evaluation

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates evaluation by:

- Differentiating among impairments, functional limitations, disabilities, and risk factors that require compensatory strategies versus intervention strategies, focusing on recovery of normal movement.
- Linking impairments, functional limitations, disabilities, and psychosocial factors to the patient's/client's and caregiver's expressed goals.
- Analyzing and interpreting observed physiological response to interventions in complex patients.
- Analyzing and interpreting the results of an exercise test to write an individual and specific exercise prescription.
- Analyzing, interpreting, and recommending interventions in the presence of risk factors for cardiovascular and/or pulmonary disease.
- Recognizing and appropriately responding to

potentially life-threatening changes in physiologic status.

- Integrating data from monitors, tests, screens, and evaluations used or performed by other health care professionals.

Diagnosis

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates diagnosis by:

- Analyzing and interpreting data from the examination to develop a physical therapy differential diagnosis.
- Differentiating among impairments, functional limitations, disabilities, and risk factors that are responsive to intervention.
- Referring patient/client to other professionals for findings that are outside the scope of the physical therapist's knowledge, experience, or expertise.

Prognosis

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates prognostication by:

- Predicting optimal level of improvement in function, including time to achieve that level, with a high level of accuracy.
- Developing a plan of care that prioritizes interventions related to the recovery process, patient/client goals, resources, risk factors, health, and wellness.

Interventions

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates intervention by:

1. Coordination, Communication, and Documentation
 - Indicating the plan of care is based on sound physiologic principles, the ability of the patient/client to participate and the resources available.
 - Consulting and communicating regarding critical and potentially life-threatening

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conditions and changes in patient/client status to member(s) of the health care team in a timely and appropriate manner.

- Demonstrating leadership skills in cardiovascular and pulmonary specialty practice by leading patient rounds, conferences, and team meetings.
 - Actively seeking to increase utilization of cardiovascular and pulmonary specialty services by referring practitioners.
 - Implementing programs or services designed to prevent cardiovascular and pulmonary disease in collaboration with one or more of the following: patients, families, care providers, organizations, and the public.
 - Providing consultation services to peer professionals in multiple practice settings regarding patients and clients with cardiovascular and pulmonary risk factors, impairments, functional limitations, and disabilities.
2. Patient/Client-Related Instruction
- Educating patient/clients about diagnosis, prognosis, treatment interventions, responsibility for health maintenance, and self-management within plan of care—adeptly translating complex concepts into lay terms.
 - Effectively instructing caregivers in therapeutic interventions that integrate specialty techniques (eg, airway clearance, suctioning, exercises) into the patient/client plan of care.
 - Instructing patient/client in self-monitoring (eg, pulse, blood pressure, pulse oximetry, dyspnea scale, perceived exertion scale, angina, claudication, or other pain scales) through therapeutic intervention and activities of daily living.
 - Instructing patient/client in functional activities and disability management that correspond appropriately to patient/client cardiovascular and pulmonary diagnosis/status and available resources and support system.

- Instructing patients/clients in health promotion and wellness, risk factor modification, screening for cardiovascular and pulmonary disease presence/progression or impairments, nutrition, energy conservation, and stress management.
- Consistently evaluating the result of instructional efforts by observing a learner's ability to perform the skills that were taught and by responding to deficits.

3. Procedural Interventions

- Modifying or continuing intervention based on on-going evaluation and best available evidence.
- Selecting and specifically prescribing or modifying interventions based on the patient's/client's anatomic and physiological changes across the lifespan and the current medical status/stability.
- Selecting and specifically prescribing or modifying interventions based on type and severity of the cardiovascular and pulmonary pathology, impairment, functional limitation, or disability.
- Negotiating barriers to interventions with the patient/client, including cognition, literacy, language, emotional state, socioeconomic status, and scarcity of resources, resulting in improved/optimized adherence.

Specific Intervention Techniques

Therapeutic Exercise

- Prescription and performance of training techniques to improve strength or endurance of ventilatory muscles and to develop breathing retraining strategies.
- Prescription and performance of training methods for patients/clients using electrocardiogram (ECG), ventilatory volume/pattern, oximetry, and other monitoring devices to titrate intensity, duration, frequency, and need for supportive devices (eg, oxygen).

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- Appropriate prescription and performance of training methods for patients/clients with hemodynamic support/monitoring devices (eg, ventricular assist device [VAD], pulmonary arterial [PA] catheters, etc).
- Utilization of mechanical ventilation methods to support physical therapy interventions (eg, bi-level positive airway pressure [BiPAP], positive pressure ventilator).
- Appropriate prescription and performance of training techniques for patients/clients requiring cardiovascular assist devices (VAD, intra-aortic balloon pump [IABP]).
- Prescribe therapeutic exercise interventions and appropriately implement and monitor responses of patients/clients on ventilatory assist devices (mechanical ventilators, BiPAP/continuous positive airway pressure [CPAP]).
- Instruct and direct patient/client-driven and independent self-management intervention techniques, such as autogenic drainage, active cycle of breathing, and self-suctioning.

Outcomes

The physical therapist practicing as a cardiovascular and pulmonary clinical specialist demonstrates outcomes assessment by:

- Managing the patient/client with adverse responses to treatment, including basic cardiopulmonary resuscitation and advanced cardiac life support as state law allows.
- Using outcomes data to modify own future practice.

III. Practice Settings

The clinical curriculum of all accredited residency programs must include a variety of practice settings, as noted below. A resident should experience a minimum of 5% of their time in each setting, as required by the *ABPTRFE Quality Standards for Clinical Physical Therapist Residency and Fellowship Programs*.

If a residency program is unable to provide each participant with an opportunity to engage in patient care activities within these settings, the program must provide additional learning opportunities (eg, observation, didactic, journal club, research) related to patient care within these settings for the minimum required hours noted above.

The minimum required practice settings for cardiovascular and pulmonary residency programs are:

- Acute care facility
- Outpatient facility

IV. Patient Populations

The clinical curriculum of all accredited residency programs must include a variety of patient populations, specific to sex and age group as listed below, for a minimum of 5% of the program hours required by the *ABPTRFE Quality Standards for Clinical Physical Therapist Residency and Fellowship Programs*.

Airway Clearance Techniques

- Perform nasotracheal suctioning.
- Perform endotracheal (via artificial airway, oral or tracheal) suctioning.
- Recommend, select, and appropriately manage oxygen delivery systems for purpose of treatment.
- Appropriately manage ventilatory support systems during physical therapy intervention and recommend the use of ventilatory support systems to maximize ventilation during functional movement.
- Provide manual ventilation during intervention.
- Perform assistive cough techniques—manual and mechanical.
- Recommend and appropriately manage mechanical airway clearance devices, such as high-frequency chest wall oscillators (eg, Vest®), positive expiratory pressure (PEP) devices, and oscillating PEP (eg, Acapella®, Flutter®, intrapulmonary percussive ventilation).

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If a residency program is unable to provide each resident with an opportunity to engage in patient care activities within these populations, the program must provide additional learning opportunities (eg, observation, didactic, journal club, research) related to patient care within these populations for the minimum required hours noted above.

The minimum required patient populations for cardiovascular and pulmonary residency programs are:

Age:

- Pediatrics (0-21 years of age)
- Adults (22-59 years of age)
- Geriatrics (60 years of age to end of life)

Sex:

- Female
- Male

V. Primary Health Conditions

The clinical curriculum of all accredited residency programs must include a variety of primary health conditions associated with the program's area of practice (see below list).

If a residency program is unable to provide each resident with an opportunity to engage in patient care activities within the majority of these populations, the program must provide additional learning opportunities (eg, observation, didactic, journal club, research) related to patient care within these conditions.

The following template must be used when logging resident–patient encounters as part of the residency curriculum. Patients evaluated, treated, or managed by the resident as part of the resident's education throughout the course of the residency program should be included within the template. The patient's primary health condition is only counted during the first patient encounter. **Patient encounters beyond the initial visit should not be included in the frequency count.**

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Name of Resident:	
Primary Health Conditions Cardiovascular and Pulmonary	Number of Patients Evaluated, Treated, or Managed by the Resident as Part of the Program's Curriculum
CARDIOVASCULAR SYSTEM	
Aneurysms	
Cardiac dysrhythmias	
Claudication	
Coronary arteriosclerosis/Coronary artery disease	
Heart failure (acute, chronic, cor pulmonale, left-sided)	
Heart transplant	
Heart valve disorders	
Hyperlipidemia	
Myocardial Infarction	
Peripheral vascular disease	
PULMONARY SYSTEM	
Adult respiratory distress syndrome	
Angina	
Asthma	
Atelectasis	
Bronchiectasis	
Chronic obstructive pulmonary disease	
Cystic Fibrosis	
Emphysema	
Fibrosis of the lung (eg, pulmonary, interstitial)	
Hypertension disorder	
Lung Transplant	
Malignant tumor of lung	
Pleurisy	
Pneumothorax	
Pneumonia	
Pulmonary edema	
Pleural effusion	
Pulmonary embolism	
Pulmonary hypertension	
Respiratory failure	
OTHER	