

# APTA Specialist Certification

Governed by **ABPTS**

## 2022 Candidate Guide



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

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# 2022 Candidate Guide

## 1. GENERAL DEFINITIONS

### 1.1. American Physical Therapy Association

The American Physical Therapy Association is a national professional organization representing 100,000 physical therapists, physical therapist assistants, and physical therapy students throughout the United States. Its goals are to serve its members and to serve the public by increasing the understanding of the physical therapist's role in the health care system, and by fostering improvements in physical therapy education, practice, research, and professional development.

APTA established the specialist certification program in 1978 to provide formal recognition for physical therapists with advanced clinical knowledge, experience, and skills in a special area of practice, and to assist consumers and the health care community to identify physical therapy specialists.

### 1.2. American Board of Physical Therapy Specialties

Coordination and oversight of the specialist certification process is provided by the American Board of Physical Therapy Specialties, which is the governing body for approval of new specialty areas and certification of clinical specialists. ABPTS comprises board-certified physical therapists from different specialty areas; a physical therapist member of the APTA Board of Directors; an individual with expertise in test development, evaluation, and education; and a non-physical therapist member representing the public.

APTA prohibits preferential treatment or adverse discrimination on the basis of race, creed, color, sex, gender, gender identity, gender expression, age, national or ethnic origin, sexual orientation, disability, or health status in all areas including, but not limited to, its qualifications for membership, rights of members, policies, programs, activities, and employment practices.

### 1.3. Specialty Councils

The specialty councils have been appointed to delineate the advanced knowledge, skills, and abilities for their specialty area; to determine the academic and clinical requirements for certification; and to develop the certification examinations and oversee the maintenance of specialist certification. Each council comprises four or five board-certified specialists in the practice area.

### 1.4. Additional Physical Therapy Examinations

Individuals interested in pursuing board certification in cardiovascular and pulmonary, geriatric, neurologic, oncologic, orthopaedic, pediatric, sports, women's health, and/or wound management physical therapy must complete the online application, accessible through APTA's Specialist Certification Program website (<https://specialization.apta.org/>).

### 1.5. National Board of Medical Examiners

The National Board of Medical Examiners is a nonprofit organization that strives to provide the highest-quality testing and research services to organizations involved in the licensure and certification of medical and health science professionals. NBME provides test development, test administration, editorial production, and psychometric services to ABPTS and the specialty councils.

## 1.6. Prometric

NBME currently delivers the specialist certification examinations by computer through Prometric. Prometric administers testing programs for educational institutions, professional associations, corporations, and other organizations. Examinations are delivered in test centers that have secure rooms dedicated to test delivery.

Note: Prometric test center locations are subject to change, and there is no guarantee that a center listed on the Prometric website at the time of application will be available for a future ABPTS administration. The most efficient way for candidates to check for test center locations is to log on to [www.prometric.com/ABPTS](http://www.prometric.com/ABPTS) and select “locate a test center.” This provides the most up-to-date information.

## 1.7. Restriction of the Term “Board-Certified Specialist”

APTA House of Delegates policy (HOD06- 94-23-39) states that no physical therapist shall purport to be a “board-certified clinical specialist” unless they have successfully completed the certification process as developed by the American Board of Physical Therapy Specialties. In addition, ABPTS does not permit applicants for certification to state that they are “board eligible.”

# 2. CERTIFICATION REQUIREMENTS

## 2.1. General Requirements for Applicants

You must hold a current permanent/ unrestricted license to practice physical therapy in the United States or any of its possessions or territories. In addition, you are required to pay the application review and examination fee.

You must meet the minimum eligibility requirements for the examination by the application deadline.

You must submit a complete application and review fee for each specialist certification exam. ABPTS does not permit you to use the same direct patient care hours for different specialty areas.

## 2.2. Other Requirements

You must meet requirements for Option A or Option B.

### Option A

#### *Licensure*

Applicants must hold a current permanent/unrestricted license to practice physical therapy in the United States or any of its possessions or territories.

#### *Direct Patient Care Experience*

You must submit evidence of 2,000 hours of direct patient care as a licensed United States physical therapist (temporary license excluded) in the specialty area within the last 10 years, 25% (500 hours) of which must have occurred within the last three years. Eligible direct patient care hours only include the time spent practicing within your specific specialty area, and with the permanent/unrestricted license to practice.

Direct patient care must include activities in each element of patient and client management applicable to the specialty area and included in the Description of Specialty Practice for that specialty.

These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

You may not include experience in the specialty area that will occur after the application deadline.

ABPTS does not permit you to use the same direct patient care hours for different specialty areas.

Please see the specialty-specific appendix under Option A for additional requirements to apply for the exams for board-certification in cardiovascular and pulmonary, clinical electrophysiologic, oncologic, sports, women's health, and wound management physical therapy.

## Option B

You must submit evidence of successful completion of an American Board of Physical Therapy Residency and Fellowship Education-accredited postprofessional clinical residency in the specialty for which they are applying. You must have completed this residency within the last 10 years. If you are currently enrolled in an ABPTRFE-accredited clinical residency or enrolled in a residency program that has been granted candidacy status, you may apply for the specialist certification examination in the appropriate specialty area prior to completion of the residency. You will be conditionally approved to sit for the examination, as long as you meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency to APTA's Specialist Certification Program no later than one month before the examination window opens.

To verify your residency program's accreditation status, please visit [www.abptrfe.org](http://www.abptrfe.org).

Please see the specialty-specific appendix for additional requirements under Option B to apply for the exams for board-certification in cardiovascular and pulmonary, clinical electrophysiologic, oncologic, sports, women's health, and wound management physical therapy.

## 2.3. Steps to Complete Certification

Certification as a physical therapy clinical specialist consists of two major steps:

Step 1. You must submit evidence that you have fulfilled the minimum eligibility requirements as defined by the specialty council. This includes completion of all required application forms, fees, documentation of the required practice hours, and other requirements specified by the specialty council.

You must meet all requirements by the application deadline of the specialty for which you are applying.

### 2022 Application Deadlines:

**July 1, 2021:** Cardiovascular and Pulmonary, Clinical Electrophysiologic, Oncologic, Women's Health, and Wound Management

**July 31, 2021:** Geriatric, Neurologic, Orthopaedic, Pediatric

**October 31, 2021:** Sports

Applications submitted after the deadline may not be reviewed.

The specialty council will not consider experience toward the minimum eligibility requirements that was not acquired by the application deadline.

Step 2. Following completion of Step 1 and approval of the application, you must sit for and receive a passing score on the computer-based certification exam.

Certification is awarded for a period of 10 years. ABPTS has adopted a model of continued competency throughout the years of certification rather than a one-time recertification process as the certification period lapses. This model is known as “maintenance of specialist certification,” Or MOSC Please review details of the MOSC program in Section 2.4.

#### **2.4. Maintenance of Specialist Certification**

ABPTS has developed a model for maintaining certification that focuses on continuing competence of the physical therapist specialist. This model is known as “maintenance of specialist certification” and includes the following four requirements:

1. Professional standing and direct patient care hours.
2. Commitment to lifelong learning through professional development.
3. Practice performance through examples of patient care and clinical reasoning.
4. Cognitive expertise through a test of knowledge in the profession.

##### **Requirement 1: Professional Standing and Direct Patient Care Hours**

In years three, six, and nine, the specialist must submit evidence of current licensure as a physical therapist in the United States or any of its possessions or territories.

In years three, six, and nine, the specialist must submit evidence of 200 hours of direct patient care acquired in the specialty area within the last three years. Direct patient care hours accrued in year 10 may be applied to the year three requirements for the next MOSC cycle.

##### **Requirement 2: Commitment to Lifelong Learning Through Professional Development**

the specialist is obligated to participate in ongoing professional development within their designated specialty area that leads to a level of practice consistent with acceptable standards. The specialist may choose to pursue professional development that leads to a level of practice beyond prevailing standards.

A web-based system to track continuing competence in a specialty area provides an individual account tracking mechanism for each specialist to record professional development activities during years three, six, and nine of their certification cycle. There is not an hour requirement in this area, but the specialist must show evidence of professional development activities (equivalent to 10 MOSC credits) within two of the three designated activity categories in years three, six, and nine. By year nine, a specialist must have accrued a minimum of 30 MOSC credits and demonstrated professional development in each of the three designated activity categories. These activities include professional services, continuing education coursework, publications, presentations, clinical supervision and consultation, research, clinical instruction, and teaching.

**Requirement 3: Practice Performance Through Examples of Clinical Care and Reasoning**

The purpose of this requirement is to document continuing competency in patient and client management in the specialty area.

The specialist will use an online system to complete one reflective portfolio submission in years three, six, and nine of their certification cycle. These reflective portfolio submissions will be used to demonstrate the specialist's use of clinical care and reasoning. Each submission must have a reflective component and must have documentation that reflects clinical reasoning.

These reflective portfolio submissions will not be scored but will be screened for completion of required information and reflection.

**Requirement 4: Cognitive Expertise Through a Test of Knowledge in the Profession**

During year 10 of the certification cycle, the specialist will be required to sit for a recertification examination, comprising approximately 100 items. The exam will be specialty specific, assess an individual's cognitive expertise in the specialty area, and reflect contemporary specialist practice.

The exam blueprint breakdown for this exam will mirror that of the initial certification exam, as noted in the various Descriptions of Specialty Practice. Items are developed and coded into an existing item bank that models from each specialty's DSP.

Successful completion of requirements 1-3 are prerequisites for sitting for the recertification exam. Specialists who fail to receive a passing score after the first attempt will be permitted to sit for the exam one additional time and will maintain their certification during this one-year grace period.

Any additional questions or concerns should be addressed to staff at [spec-recert@apta.org](mailto:spec-recert@apta.org) or 703-706-3390.

**2.5. Ineligibility for Certification**

Item writers and reviewers are not eligible to sit for the specialist certification examination in their specialty area for two years from the date of involvement in the process (excluding wound management).

Specialty council members, ABPTS members, and cut-score study participants are prohibited from sitting for the specialist certification exam for a period of two years from the date of participation in the certification process.



### 3. APPLICATION PROCESS

#### 3.1. Application Deadline

Completed applications and application review fees for the 2022 specialist certification examinations must be submitted online to the APTA Specialist Certification Program by the following dates:

**2022 Application Deadlines:**

**July 1, 2021:** Cardiovascular and Pulmonary, Clinical Electrophysiologic, Oncologic, Women's Health, and Wound Management

**July 31, 2021:** Geriatric, Neurologic, Orthopaedic, Pediatric

**October 31, 2021:** Sports

Applications submitted after the deadline may not be reviewed.

#### 3.2. Procedures for Application Review

The Specialist Certification Program staff will review all submitted documents and will notify you by email regarding approval to sit for the exam within approximately eight weeks. If you are advised to revise or provide new documents, you will be instructed to resubmit materials to APTA headquarters by a specified deadline.

If you do not resubmit by the specified deadline, the record will indicate that you have not met the minimum eligibility requirements and are not approved to sit for the 2022 exam.

#### 3.3. Services for People with Disabilities

ABPTS provides reasonable and appropriate accommodations in accordance with the Americans with Disabilities Act for individuals with documented disabilities. The purpose of test accommodations is to provide access to the examination program. While presumably the use of accommodations will enable individuals to better demonstrate their knowledge or skill, accommodations are not a guarantee of improved performance, test completion, or a particular outcome.

ADA defines disability as a physical or mental impairment that substantially limits one or more major life activities as compared with most people in the general population. Examples of major life activities include, but are not limited to, walking, seeing, hearing, and learning.

Any requests must be submitted to ABPTS in advance, accompanied by the appropriate forms and uploaded at the time of the online application submission for the exam. The request for testing accommodations must include verification of the disabling condition from a professional specializing in the relevant area and a description of the requested accommodation. You will be notified in the fall of the decision regarding the request and the accommodations that will be provided. If accommodation is not requested in advance, its availability cannot be guaranteed.

You may also visit [testing accommodations](#) for additional details about available APTA-approved testing accommodations, and to review a list of preapproved personal items permitted during testing that do not require a special testing accommodation request. Preapproved personal items are subject to inspection by test center staff.

### 3.4. Certification in More Than One Specialty Area

You must submit a complete set of online application materials and fees for each specialist certification exam. A certified specialist who applies for certification in a second specialty area is not permitted to submit the same direct patient care hours that they submitted for certification in the first specialty area. The Specialist Certification Program staff will review previously submitted applications for duplication of hours.

### 3.5. Submission of Application

It is your responsibility to ensure that the application is completed according to instructions. In addition, it is imperative that you enter your name on the application exactly as it appears on the identification form you intend to present at the test center. Please note that the way your name is entered on the application is also the way your name will appear in the APTA membership database.

If you opt to pay the review fee by check, send the application fee with the appropriate payment form described in Section 3.6 below in a single mailing to:

**APTA**  
**Specialist Certification Application**  
**P.O. Box 75701**  
**Baltimore, MD 21275**

### 3.6. Application Review Fee

An option for an initial partial payment of the application fee also will be available (excluding reapplicants). The application extension and/or partial payment option is automatically extended to all applicants. Remaining application fee balance due no later than September 30. The nonrefundable application review fee must be submitted with your online application to the APTA Specialist Certification Program by the following dates:

#### **2022 Application Deadlines:**

**July 1, 2021:** Cardiovascular and Pulmonary, Clinical Electrophysiologic, Oncologic, Women's Health, and Wound Management

**July 31, 2021:** Geriatric, Neurologic, Orthopaedic, Pediatric

**October 31, 2021:** Sports

Payment of the review fee may be made by check (payable to APTA) or by credit card (MasterCard, VISA, Discover, or American Express). The applicant review fees are listed below:

**APTA Member:** \$525

**Non-APTA Member:** \$870

**Member/Non-APTA Member Reapplication:** \$170 (in addition to any outstanding balance from previous years' application cycle)

Note: Reapplication fee is due by Aug. 31, 2021.

### 3.7. Time Limit for Active Application/Reapplication

Applicant files will remain active for only two consecutive exam administrations. However, eligibility for the second exam administration requires an online reapplication submission by Aug. 31, 2021, along with the required reapplication fee, as well as the current examination fee, by Nov. 30, 2021. This policy applies to those who choose to delay sitting for the exam, those who are not approved to sit for the examination, and those who do not pass the exam. Eligible reapplicants will receive reapplication information by email directly from the Specialist Certification Program. To reapply, you must submit an online reapplication, verification of current licensure to practice physical therapy, updated direct patient care hours, and any other requested documentation. The Specialist Certification Program must receive this documentation by the reapplication deadline for the next scheduled exam. Reapplicants must meet the current practice requirements to be eligible to sit for the exam.

After two consecutive exam administrations, you must submit an entirely new application and initial applicant review fee to apply for specialist certification.

### 3.8. Address Changes

Should your mailing address, email address, or phone number change, please notify the Specialist Certification Program immediately. The Specialist Certification Program maintains separate records from APTA's membership database, so you must email ([spec-cert@apta.org](mailto:spec-cert@apta.org)) or phone (703-706-8520) the department in addition to notifying APTA for your membership records.

## 4. SCHEDULING THE EXAM

### 4.1. Examination Fee and Scheduling Permit

The examination fee is submitted after you have been notified that you are eligible to sit for the exam. The fee must be received by the Specialist Certification Program on or before Nov. 30, 2021.

You may pay the examination fee by check (payable to APTA) or by credit card (MasterCard, VISA, DISCOVER or AMEX). Please note that both first-time and repeat test takers must pay the following examination fees:

**APTA Member:** \$810

**Non-APTA Member:** \$1,535

Contact the Specialist Certification Program at 703-706-8520, for additional information about sitting for the specialist certification examination in an international location.

After your examination fee has been received, the Specialist Certification Program will send you an email with instructions on how to access and download your electronic scheduling permit online. You must print your scheduling permit before you contact Prometric to schedule a test date. **Check to make sure that the information on your permit is correct, and that your name (first name and last name) exactly matches your name on the identification you will use on the day of the examination.** If the first and last name on your permit does not match the first and last name on your identification, you must contact APTA immediately. The only acceptable difference would be the presence of a middle name, middle initial or suffix on one document and its absence on the other. Name changes or corrections cannot be made within seven business days of your scheduled testing date. You will be denied admission to the test if the name on the permit does not match the name on your identification.

#### **4.2. Test Dates**

The examination will be administered at testing centers worldwide between the dates of February 26–March 12, 2022.

#### **4.3. How to Schedule an Appointment at a Testing Center**

The Specialist Certification Program will notify approved candidates when they may begin to schedule a date to sit for the examination.

You are not eligible to schedule a session until you have paid your exam fee and have your scheduling permit.

You must print or download your scheduling permit before you contact Prometric to schedule a testing appointment. To schedule a testing appointment, you will need to provide Prometric with the scheduling number that is included on your scheduling permit. Appointments are assigned on a first-come, first-served basis; therefore, you should schedule an appointment as soon as possible after you have accessed your scheduling permit. If you delay scheduling, you may not be able to make an appointment at your preferred test site or for your preferred test date. You should report any problems in scheduling a testing appointment to the Specialist Certification Program at least four weeks before the first day of the testing window to give ABPTS an opportunity to resolve the problem.

Prior to your testing appointment, you can log in using the URL provided by the Specialist Certification Program to access and reprint your permit if necessary.

#### **4.4. Refunds and Cancellations**

The Applicant Review Fee is not refundable. You must notify the specialist certification program staff through the online application system deferment process if you decide, for any reason, not to sit for the 2022 exam. Upon receipt of written notification, your examination fee will be refunded minus 20% of the fee. Please allow six to eight weeks for processing.

#### **4.5. Rescheduling an Exam**

If you are unable to keep a testing appointment and would like to reschedule, you must contact Prometric three business days prior to your appointment. The rescheduled test date must fall within the testing window. Fees from your previously scheduled test will be transferred to the rescheduled exam as follows:

- a. If you contact Prometric at least two business prior to your test date, you will be permitted to reschedule without penalty. If you provide less than two business days' notice, Prometric will charge a \$101 fee to reschedule your examination (rescheduling fees vary for international sites).
- b. If you cancel your appointment within two business days or do not appear on your test date, you must contact Prometric Candidate Cares at the phone number listed in the permit and pay a \$101 fee to reinstate your eligibility record in order to reschedule your appointment within the testing window (rescheduling fees vary for international sites).

## **5. PREPARING FOR THE EXAM**

### **5.1. Descriptions of Specialty Practice**

The Descriptions of Specialty Practice are documents developed for each specialty area that outline the knowledge, skills, and abilities related to clinical practice in that area. The DSP content is based on a detailed practice analysis conducted by the specialty council. A practice analysis involves extensive research, including survey data and judgments of subject matter experts, of the knowledge, tasks, and roles that describe advanced specialty practice. The specialty council develops the written exam from the DSP and includes a percentage of questions from each of the major content areas identified in the practice analysis.

Because the DSP for your specialty area will help you in organizing exam preparation, a copy is made available electronically to you upon submission of your application and payment of the application review fee. If you wish to purchase an advance copy of the DSP, visit the APTA Store at [apta.org/store](https://apta.org/store).

### **5.2. Exam Content Outline**

The content outline for the exam that specifies the percentage of questions in each major content area can be found in the addendum of each specialty. The content outline is presented as an approximation of the test construction and should not be interpreted as an exact distribution of test items.

### **5.3. Preparation for the Exam**

You declare your intent to sit for the specialist certification exam at the time of application and are expected to begin preparation for the exam at that time. You are responsible for determining the method and amount of preparation necessary for the exam. Results from candidate surveys suggest that helpful methods of examination preparation include, but are not limited to, advanced level texts, PTJ — Physical Therapy & Rehabilitation Journal, and other journals containing current physical therapy research. You also may want to review the DSP and the content outline to determine what content will be covered on the exam and to direct your study efforts.

### **5.4. Review Materials and Courses**

A resource guide listing prepared by each specialty's academy or section can be found by reaching out to that specialty's academy or section representative. This information can be found in the specialty addendum. Neither ABPTS nor the specialty councils review or endorse the content of review materials and courses.

### **5.5. Study Groups**

The Specialist Certification Program maintains a list of candidates who are interested in participating in study groups.

To be included in study group listings, select "participate in study group" and answer "yes" on the online application. The study group list of candidates who have indicated their interest will be generated by the end of November 2021.

## **5.6. Exam Development**

The specialist certification examinations are developed by specialty councils of ABPTS. APTA has contracted with NBME to assist in the development, administration, scoring, and reporting of results for the certification examinations. Using the DSP as a basis, the specialty councils make the final determinations regarding the exam content and the number of items in each area.

Exam items are solicited from content area experts currently practicing in the specialty area representing the full range of practice settings and focus in all regions of the country. Item writers attend workshops and receive instruction to enable them to write high-quality, practice-related test items. Test items undergo extensive editing and review by subject matter experts and professional test editors before specialty councils approve them to be placed on the examinations.

## **5.7. Exam Question Format**

Items are designed to test synthesis and analysis levels of cognitive skills, as well as content knowledge. The exam is composed of objective multiple-choice questions with four or five answer choices. The questions either stand alone or are part of a series that relates to a presented case study. Sample questions are available in the specialty-specific addendum. They represent the format of questions for each exam but may not necessarily reflect the ability level or content of the items. There are 200 items on the exam, consisting of 50 questions in each 90-minute time block.

## **5.8. Answer Strategy**

You should consider answers to each question carefully and eliminate the least likely ones instead of randomly selecting an answer. There is no penalty for incorrect responses. Since test scores are based on the actual number of questions answered correctly, it is to your advantage to select an answer for each question rather than leaving any blank. There is only one best answer for each question.

## **5.9. Tutorial**

After you are approved to sit for the examination, the Specialist Certification Program will make available a tutorial so that you may practice using the testing software prior to your test day. The tutorial can be accessed on the APTA Specialist Certification website (<http://orientation.nbme.org/Launch/APTA>). You should acquaint yourself with the testing software well before your test date. Test center staff are not authorized to provide instruction on use of the software.

The tutorial will also be available at the beginning of the examination session. You may use up to 10 minutes before beginning the examination. The test driver is easy to understand and requires little prior computer experience.

## **6. SITTING FOR THE EXAM**

### **6.1. Computer Testing**

The specialist certification examinations are administered by computer. The examination questions are presented on computers, and candidates provide their responses using a mouse or keyboard. NBME works with Prometric to deliver these examinations worldwide at more than 300 test centers. Once you have your scheduling permit, you should contact Prometric as soon as possible to schedule a testing appointment. Candidates may take the test on any day that it is offered during the testing window, provided that there is space at the Prometric test center of choice.

### **6.2. Test Centers and Testing Conditions**

Prometric provides computer-based testing services for academic assessment, professional licensure, and certification. Please be aware that there may be test takers from other professions taking examinations during your test administration. Their exam schedule may differ from your schedule, and they may arrive and depart at different times.

These test centers provide the resources necessary for secure administration of the examination, including video and audio monitoring and recording, and use of digital cameras to record the identity of candidates.

### **6.3. Exam Time**

You should arrive 30 minutes before your scheduled testing appointment.

The official exam time begins the moment you enter your candidate identification number. There are 200 questions on the exam. The exam is administered during a seven-hour testing session, which consists of a brief tutorial (up to 10 minutes), four 90-minute test-blocks, and 50 minutes of optional break time to be used after any block. Please note that if you finish a section early, you may not use the extra time for a different section of the exam; however, this time will be available as additional break time.

If you have unused time after you complete the examination, you will be given the opportunity to complete an online survey about the test administration. The purpose of the survey is to evaluate the test scheduling and delivery procedures. Your responses will be kept confidential, and the time you take to complete this survey will not detract from your allotted examination time.

### **6.4. Admission to the Test**

You should arrive at the test center at least 30 minutes before your scheduled testing time on your testing day. If you arrive late, the test center administrator may refuse you admission. If you arrive more than 30 minutes after your scheduled testing time, you will not be admitted. In that event, you must pay a \$101 fee to Prometric to reinstate your eligibility record in order to reschedule your appointment within the testing window (rescheduling fees vary for international sites).

Upon arrival at the test center, you must present a copy of your scheduling permit, either printed or electronically (e.g., via Smartphone) and an unexpired, government-issued form of identification (such as a current driver's license, valid passport, or military ID) that includes both your photograph and signature. If your identification contains your photograph but not your signature, you may use another form of unexpired identification that contains your signature, such as student or employee identification card or a credit card, to supplement your photo-bearing, government-issued identification.



The name on your scheduling permit must exactly match the name on your identification form. The only acceptable difference would be the presence of middle name or middle initial, or suffix on one document and its absence on the other. If you do not present your permit and required identification on the exam day, you will be denied admission to test. In that event, you must pay a fee to Prometric to reschedule your test (see section 4.5 for additional instructions).

As a security procedure, you will be photographed before you begin taking the examination. You will also sign a test center log and store your personal belongings in your assigned locker. You will be scanned with a handheld metal detector and be asked to empty and turn out your pockets prior to entry into the testing room to confirm that you have no prohibited items. You will be required to remove eyeglasses for visual inspection by the test center administrators. Jewelry, except for wedding and engagement rings, is prohibited and hair accessories are subject to inspection. You should not wear ornate clips, combs, barrettes, headbands, and other hair accessories. If you are wearing any of these items you may be prohibited from wearing them in the testing room and asked to store them in your locker. These inspections will take a few seconds and will be done at check-in and upon return from breaks.

If you brought a printed copy of your scheduling permit, the test center staff will collect it. You will be provided with laminated writing surfaces and markers. You will be instructed to write your name and Candidate Information Number on one of the laminated writing surfaces provided.

Your scheduling permit will be retained by the test center administrator.

You may request access to the permit during the examination if it becomes necessary for you to rewrite the Candidate Information Number on the laminated writing surface. Test center staff will escort you to your assigned testing station and provide brief instructions on use of the computer equipment. Laminated writing surfaces and markers are to be used for making notes and/or calculations during the testing session. They should only be used at your assigned testing station, and only after you have begun your examination by entering your Candidate Information Number. The examination will begin with a brief tutorial prior to the first test block. If you have filled the laminated writing surfaces and need additional space for making notes, notify test center staff and a replacement will be provided. Laminated writing surfaces must be returned to test center staff at the end of the testing session.

## **6.5. Testing Regulations and Rules of Conduct**

Test center staff monitor all testing sessions. You must follow the instructions of test center staff throughout the examination. Test center staff are not authorized to answer questions from candidates regarding examination content, testing software, or scoring.

If test center staff observes you violating test administration rules or engaging in other forms of irregular behavior during an examination, they will not necessarily tell you of the observation at the time of the examination. Test center administrators are required to report such incidents to NBME; each is fully investigated.

You may not bring any personal belongings in to the testing area, including but not limited to the following:

- Mechanical or electronic devices, such as cellular telephones, calculators, watches of any type, electronic paging devices, recording or filming devices, and radios.
- Outerwear such as coats, jackets, head wear, and gloves.
- Book bags, backpacks, handbags, briefcases, and wallets.
- Books, notes, study materials, and scratch paper.
- Food, candy, gum, and beverages.



If you bring any personal belongings to the test center, you must store them in a designated locker outside the testing room. You should keep in mind that the lockers are small and mechanical or electronic devices stored in lockers must be turned off. Making notes of any kind during an examination, except on the laminated writing surface provided at the test center, is not permitted, and removal of those materials from the secure testing area during a testing session or break is prohibited.

Note: Although the site provides noise-reducing headphones, you are encouraged to bring your own cordless soft-foam earplugs (subject to inspection).

### **6.6. Irregular Behavior During the Examination Process**

Irregular behavior includes any action by candidates or others when solicited by a candidate that subverts or attempts to subvert the examination process. Test center administrators are required to report any irregular behavior by a candidate during the examination. Irregular behavior may include, but is not limited to, the following:

- Seeking and/or obtaining access to examination materials.
- Impersonating a candidate or engaging another individual to take the examination by proxy.
- Giving, receiving, or obtaining unauthorized assistance during the examination or attempting to do so.
- Making notes of any kind during an examination except on the erasable writing surface provided at the test center.
- Memorizing and/or reproducing examination materials.
- Failing to adhere to test center regulations.
- Possessing unauthorized materials during an examination administration (e.g., recording devices, photographic equipment, electronic paging devices, cellular telephones, and reference materials).
- Any other behavior that threatens the integrity of the specialist certification examinations.

Looking in the direction of the computer monitor of another candidate during the examination may be construed as evidence of copying or attempting to copy, and a report of such behavior may result in a determination of irregular behavior. You must not discuss the examination while a session is in process. Test center administrators are required to report all suspected incidents of irregular behavior.

If you engage in irregular behavior or violate test administration rules you may be subject to invalidation of your examination.

### **6.7. Canceled or Delayed Exam Administration or Problems at the Testing Center**

Every effort is made to administer an examination at the scheduled test time and location. On occasion, however, exam administrations may be delayed or canceled in emergencies such as severe weather, a natural disaster that renders a Prometric Testing Center inaccessible or unsafe, or extreme technical difficulties. If Prometric closes a testing center where you have already scheduled a testing appointment, it will reschedule the examination appointment at no additional charge.

In that event, Prometric will attempt to notify you in advance of your testing appointment to schedule a different time and/or center.

Rescheduling an appointment for a different time or center may occur at the last minute due to limited availability of seats in a testing center.

One week prior to testing, you are advised to confirm your appointment with Prometric and maintain flexibility in any travel arrangements you may make.

If you experience an emergency situation on the day of your examination that you feel may jeopardize your ability to perform effectively on the examination, you may be eligible to postpone sitting for the examination until 2023. However, if you opt to still sit for the examination and are not successful, this is not a basis for appealing examination results, and your ability to sit again in 2023 at no additional cost may be in jeopardy.

Once you are checked in and seated at a test station, if you are delayed to take the examination by more than 30 minutes because of technical difficulties, you are responsible for reporting the delay to the Specialist Certification Program at 703-706-8520, as soon as possible. For such cases, you may be eligible to choose to reschedule your examination at no additional charge. Before deciding to reschedule, be sure that there is another appointment available during the testing-block. The test administration will not be considered “irregular” if you choose to remain and test despite the delay. You will receive the maximum number of hours available to candidates to complete the exam even if the test is delayed.

Once you are checked in and seated at a test station, if you have a concern or complaint about the test center environment, you should immediately report the problem to the test center administrator. If you feel that the problem was not resolved to your satisfaction, you should contact the Specialist Certification Program at 703-706-8520, as soon as possible.

#### **6.8. Exam Deferral**

You may defer your examination by [logging into your application](#), clicking the status button that says either Ready for Testing/Defer or Pay for Testing/Defer, reading the [Deferment Guidelines](#), and clicking the button to Defer Exam. You will receive an email confirming the deferment.

#### **6.9. Equipment Malfunction**

Should you experience any difficulty with the computer while you are taking the exam, please notify the test center administrator immediately. Do not wait until you have completed the exam to bring equipment malfunctions to the attention of the test center administrator. Once again, if you feel that the problem was not resolved to your satisfaction, you should contact the Specialist Certification Program at 703-706-8520, as soon as possible.

Occasionally, a computer at the test center may need to be restarted. Prometric has appropriate safeguards in place to ensure the integrity of your examination data. As soon as you answer a test item, the response is immediately copied and saved on your directory on the server at a center. If there is a computer restart, the driver locates the results from the directory and picks up where you left off. The system does not change or delete any responses. Thus, examination data are captured at the instant you respond to a question; the computer can be restarted, if necessary, without losing or corrupting examination data.

#### **6.10. Incomplete Examinations**

After you start taking an examination, you cannot cancel or reschedule that examination unless a technical problem prevents you from completing it. As noted in section 6.9, if you experience a computer problem during the test, notify test center staff immediately.

The testing software is designed to allow the test to restart at the point it was interrupted. In most cases, your test can be restarted at the point of interruption with no loss of testing time. If you do not finish the exam for any reason you are not permitted to resume the incomplete sections of the test. You must reapply for the next regularly scheduled administration (see section on “Reapplication” 3.7). The examination fee is nonrefundable for incomplete examinations.

## **7. EXAM RESULTS**

### **7.1. Exam Results and Notification**

After ABPTS meets in May 2022 to make certification decisions, score reports will be prepared for online distribution in mid-June 2022. The score report specifies your examination score, the passing score on the examination, and feedback on your performance in the major competency areas tested. In mid-June 2022 Specialist Certification Program staff will send you an email notification announcing that score reports are available online, including instructions on how to access and download your score report. Although there is a time lapse between the close of the examination window and the availability of examination results, much is happening during this period of time. Key validation takes place after the exam window closes in March. Key validation is a process of preliminary scoring and item analysis of the exam data, followed by careful evaluation of the item-level data, to identify potentially flawed or incorrect items prior to final scoring. During April and early May, standard-setting committees are convened at NBME to participate in content-based standard-setting studies. The outcome of each committee’s standard-setting meeting is the recommendation of a passing standard of each of the specialty examinations during their May meeting. NBME then scores the specialist certification examinations, and candidates are notified of their exam results as soon as this information is received by the Specialist Certification Program.

### **7.2. Scaled Scores**

While your score is based on the number of questions answered correctly, it is a scaled score. ABPTS requires a scaled score of 500 to pass the examination. Scaling is a procedure that converts raw scores (number of correct responses) to a more easily interpretable scale. The purpose of scaling scores is to simplify things by keeping the passing score at the same number (e.g., 500) for all exam forms, while the raw scores necessary for passing may vary for different forms.

### **7.3. Passing Scores**

The certification examinations assess a clearly defined domain of knowledge and skills. You will be certified upon achievement of a passing score on the examination. The passing score is based on a detailed analysis of exam data and a recommended performance standard from a panel of clinical subject matter experts. This panel includes physical therapists in the specialty representing diversity in practice setting, years of experience, theoretical perspective, and geographic region.

Upon receiving board certification, you will:

- Receive a certificate recognizing board certification as a specialist in an area of physical therapy.
- Be entitled to identify yourself as “board-certified” in your specialty.
- Receive a board-certified specialist lapel pin in your specialty area.
- Be recognized by your colleagues at APTA’s annual Ceremony for Recognition of Clinical Specialists, usually held at APTA’s Combined Sections Meeting.
- Be included in the online Directory of Certified Clinical Specialists in Physical Therapy.

## **8. CONFIDENTIALITY**

### **8.1. Confidentiality of Applicant Identity**

Your name, application documents, and test scores are considered confidential. Only Specialist Certification Program staff, ABPTS members, members of the specialty council, and designated staff at NBME and its subcontractors have access to this information. Your identity can be released for study group purposes only, and only with your consent. Copies of test scores will be released only at your written request.

### **8.2. Confidentiality of Examination Content**

You must sign/acknowledge the Affidavit & Pledge of Confidentiality in your online application for certification. You must not disclose examination content to others or reproduce any portion of the examination in any manner. If you violate these security rules your examination will not be scored.

## **9. GROUNDS FOR DISCIPLINARY ACTION**

If you are determined to have engaged in fraud, misrepresentation, or irregular behavior in the application or examination process, to have disclosed examination content to others or reproduced any portion of the examination in any manner, or to have violated the Affidavit & Pledge of Confidentiality, you will be subject to disciplinary action, to be determined by ABPTS. This action may include, without limitation, withdrawal of any certification granted and permanent or temporary exclusion from the certification process. Before taking disciplinary action, ABPTS will give you written notice of the evidence against you and an opportunity to respond.

## **10. PROCEDURES FOR REVIEW OF DECISIONS**

### **10.1. Reconsideration of Decision Regarding Eligibility to Sit for the Exam**

If the specialty council has determined you to be ineligible, you may request the council to reconsider its denial of eligibility. The request for reconsideration must specify the grounds on which it is based. You may submit new information in support of your request for reconsideration. You may challenge the specialty council's application of the eligibility requirements to your case, but not the requirements themselves. You may not appeal to ABPTS unless you first have submitted a request for reconsideration to the council.

You must submit your request for reconsideration no later than two weeks from the date of the denial letter. For purposes of determining compliance with the foregoing deadline, a request for reconsideration will be deemed submitted on the postmark date. The specialty council will notify you in writing of its decision on reconsideration.

### **10.2. Appeal to ABPTS of Specialty Council's Decision Regarding Eligibility to Sit for the Exam**

An applicant who wishes to submit an appeal must contact the Specialist Certification Program for a complete copy of the procedures.

If the specialty council has determined upon reconsideration that you are ineligible, you may appeal the decision to ABPTS. You may challenge the council's application of the eligibility requirements to your case, but not the requirements themselves. You must submit your appeal no later than two weeks from the date of the council's decision on reconsideration. The appeal must be in writing and must be addressed to the Chair of ABPTS at the APTA Specialist Certification Program. For purposes of determining compliance with the foregoing deadline, a request for reconsideration will be deemed submitted on the postmark date. The appeal must specify the grounds on which it is based.

The Appeal Committee, a committee of ABPTS, will be responsible for the review and disposition of your request for appeal of a specialty council decision. The Appeal Committee will make its decision no later than 30 days from the date of receipt of the request for appeal. The Appeal Committee will send written notification of its decision to the Chair of the Specialty Council and to you by certified mail, return receipt requested, no later than seven days from the date of its decision.

### **10.3. Procedures for Review of Certification Actions**

If you wish to request that ABPTS reconsider its decision to deny certification, you must request a complete copy of procedures from the Specialist Certification Program.

The purpose of the ABPTS reconsideration procedure is to enable a candidate to challenge an ABPTS decision denying certification and to seek relief from untoward circumstances associated with the onsite administration of the examination and errors in the transmission of examination responses due to technical malfunction. To be considered, the request must include supporting evidence of technical malfunction.

You must submit a request for reconsideration in writing and address the request to the Chair of ABPTS at the APTA Specialist Certification Program. To request reconsideration, you must submit a written request no later than two weeks after the date of the letter notifying you of exam results. For purposes of determining compliance with the foregoing deadline, a request for reconsideration will be deemed submitted on the postmark date. The request for reconsideration must specify the grounds on which it is based and the corrective action sought. Within seven days of the receipt of a request for consideration ABPTS will acknowledge in writing the receipt of the request, including the date on which the request was received.

### **10.4. Appeal to APTA Board of Directors of ABPTS Decision to Deny Certification**

You may not appeal to the APTA Board of Directors unless you have submitted a request for reconsideration to ABPTS.

If you wish to submit an appeal, you must request a complete copy of procedures from the Specialist Certification Program. If you are adversely affected by the ABPTS decision on reconsideration, you may appeal to the APTA Board of Directors within 14 days of receipt of the ABPTS notification of the Appeal Committee's decision. You must submit this appeal in writing and must address it to the President of APTA at the APTA Governance Department. You must also send a copy of the written appeal to the Chair of ABPTS at the APTA Specialist Certification Program. The appeal must set forth arguments in support of your position. ABPTS will send you written acknowledgment of receipt of the appeal within seven days after ABPTS receives your written appeal request.

# APTA Specialist Certification

Governed by **ABPTS**

## Cardiovascular and Pulmonary Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

# Cardiovascular and Pulmonary Candidate Guide

## Initial Certification Deadlines for Cardiovascular and Pulmonary

July 1: Application deadline

Aug. 31: Reapplication deadline

Nov. 30: Exam fee deadline

## Certification Requirements

**Advanced Cardiac Life Support Certification:** Applicants must be currently certified in Advanced Cardiac Life Support by the American Heart Association.

**Research & Evidence-Based Practice Requirement:** All applicants must submit evidence of an activity involving research and evidence-based practice, directly related to the cardiovascular and pulmonary specialty area. This requirement is met by submitting either a data analysis project or a case report. See below for the criteria of each.

### Option 1: Data Analysis Project

Applicants must submit evidence of involvement in the formulation, execution, and completion of a clinical data analysis project directly related to the cardiovascular and pulmonary specialty area within the last 10 years as a licensed physical therapist. Projects start with a question or purpose and must devise a methodology to answer the question, collect data, determine the results, and reach a conclusion.

#### Acceptable data analysis projects include:

- Treatment efficacy studies, such as a quality assurance or utilization review project.
- Program analysis.
- Structured surveys.
- Formal systematic reviews.
- Formal clinical research trials.

#### Projects that will not fulfill this criterion include those:

- That do not start with a question or purpose
- That do not devise a methodology to answer the question, collect data, determine the results, and reach a conclusion

#### Examples of projects that are not acceptable include:

- Literature reviews.
- Case studies or case series submitted under the heading of a data analysis project.
- Development of patient education materials.

Projects must be completed and dissemination concluded at an appropriate level and degree that is congruent with the scope of the project at the time of application submission. For example:

- For a funded research project, a conference presentation or publication would be expected.
- For a quality assurance project, a presentation to the primary stakeholders of the project's results (e.g., an in-service to therapy or medical staff) would be expected.

A candidate whose data analysis project does not meet screening criteria and/or is not rated as competent may submit a written request to the American Board of Physical Therapy Specialties for reconsideration per existing ABPTS policy and procedures for reconsideration requests.

Appropriate institutional approval is required for all research studies.

**The data analysis project requirement will be evaluated according to the following questions:**

- Is the project related to cardiovascular and pulmonary physical therapy?
- Has the applicant submitted evidence of participation that demonstrates scholarly activity and knowledge of the research process?
  - Acceptable roles in the project include defining the study question or purpose, devising the study methodology, and data analysis. Participation in data collection only does not fulfill this requirement.
- Has the project been completed and the results disseminated to advance the practice of cardiovascular and pulmonary physical therapy?
- Are there references related to and/or supporting your project? References should be from peer-reviewed scientific literature and should be less than 10 years since publication unless the article is considered a seminal study. References are to be provided throughout all areas of the data analysis project using American Medical Association formatting. Course manuals are not accepted as supporting references.

Successful applicants will be able to answer yes to the above four questions.

Submission of the data analysis project should include **both** of the following:

- A brief statement that describes your specific involvement, such as study design, data collection, and data analysis.
- A project description that includes introduction, purpose, methods, results, and discussion; and a brief statement of the limitations of the study design and methodology; method of disseminating the results; and how the project has changed the candidate's practice of cardiovascular and pulmonary physical therapy.

See the document posted on the ABPTS website for additional guidance to project submission.

NOTE: Additional information, concerning the "do's" and "don'ts" on the specialty application data analysis project is found at the end of this guide.

### **Cardiovascular and Pulmonary Specialty Council Statement on Submission of the Same Data Analysis Project by Two or More Candidates**

The Cardiovascular and Pulmonary Specialty Council recognizes that the data analysis project may take many forms and may have many physical therapists working on the same project who desire to pursue specialist



certification. The intent of the requirement is not for each candidate to present a unique data analysis project, but to demonstrate an understanding of research methods through project design and development, data collection, data analysis, formulation of results, and dissemination of outcomes at an appropriate level. The council will accept the same project from different candidates; however, the Candidate Guide states that the applicant must submit “evidence of participation that demonstrates scholarly activity and knowledge of the research process.” Each candidate must independently compose and submit evidence of their unique contributions and participation throughout the research process that satisfy the requirements for application. Each candidate must notify ABPTS staff at the time of submission that they are submitting an application with the same data analysis project as another candidate and must provide the other candidate’s name and/or application number.

### **Option 2: Case Report**

Applicants must submit one case report demonstrating specialty practice in cardiovascular and pulmonary physical therapy. This case report must be based on a patient or client seen within the last three years and as a licensed physical therapist.

The purpose of the case report is to document competency in patient and client management in the specialty area. Patient management in a clinical case reveals clinical reasoning skills that are essential to demonstrating competency in the cardiovascular and pulmonary physical therapy specialty area. Patient and client management has five elements — examination, evaluation, diagnosis, prognosis, and intervention — which lead to optimal outcomes of care. Select a typical case in your practice for which you can provide evidence that demonstrates your competency in all five elements. The case should demonstrate the specialized care of a cardiovascular and pulmonary physical therapist. ABPTS may audit your submitted case report to verify its authenticity.

#### **Instructions (see rubric at the end of this document for specific criteria required):**

- Follow the online format to enter information for the case report, addressing each of the required questions in the designated boxes. Relevant clinical information may be presented using tables, graphs, bullet points, etc.
- Each case must include information that supports the appropriate evaluation, plan of care development, and treatment interventions for the case. The applicant should describe the synthesis of information and clinical reasoning that occurred, within the context of what is known in the literature, as well as why the given tests, measures, and interventions were selected.
- At least five references from the literature should support the clinical decision making described in the report. These references should not be more than 10 years old unless the article is considered a seminal study.
- The case should indicate contemporary specialist practice as depicted in the Description of Specialty Practice for Cardiovascular and Pulmonary Physical Therapy.
- An individual evaluating your competency will rate your performance by reading your case using the scoring rubric described at the end of this document.
- All patient identifiers should be removed.

### Process for Submission of a Case Report:

1. The candidate must sign a notarized attestation indicating that the report describes what actually was done for the patient or client and does not represent an embellishment of the case. (Note: this can be done through notarization of the exam application itself. A separate notarization of the case report is not required.)
2. A case report that does not meet the screening criteria and/or is rated as not competent will be returned with an explanation. A case rated as not meeting the screening criteria or not competent may be resubmitted after corrections are made or replaced with another case, but this can only occur once.
3. Each case report will be read by two reviewers who have experience in the cardiovascular and pulmonary specialty area. A case report that does not meet criteria by the initial two reviewers or has discrepancy in review results will be reviewed by a third reviewer.
4. A candidate whose case report does not meet screening criteria and/or is not rated as competent may submit a written request to the American Board of Physical Therapy Specialties for reconsideration per existing ABPTS policy and procedures for reconsideration requests.

In addition, all applicants must meet requirements for Option A or Option B.

### Option A:

**Direct Patient Care:** Applicants must submit evidence of 2,000 hours of direct patient care as a licensed U.S. physical therapist (temporary license excluded) in the specialty area within the last 10 years, 25% (500 hours) of which must have occurred within the last three years. Direct patient care must include activities in each of the elements of patient and client management applicable to the specialty area and included in the Description of Specialty Practice. These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

**Practice Settings:** The Cardiovascular and Pulmonary Specialty Council recommends that direct patient care include patient and client management of individuals with primary injury, diseases, or other conditions involving the cardiovascular and pulmonary system in the acute, outpatient, and rehabilitation settings. Applicants may not include experience in the specialty area that will occur after the application deadline.

### Option B:

Applicants must submit evidence of successful completion of an APTA-accredited postprofessional cardiovascular and pulmonary clinical residency completed within the last 10 years that has a curriculum plan reflective of the Description of Specialty Practice: Cardiovascular and Pulmonary Physical Therapy. Experience from residencies in which the curriculum plan reflects only a portion of the DSP will not be considered.

Applicants who are currently enrolled in an ABPTRFE- accredited clinical residency or enrolled in a residency program that has been granted candidacy status, may apply for the specialist certification examination in the appropriate specialty area prior to completion of the residency. These applicants are conditionally approved to sit for the examination, as long as they meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency to APTA's Specialist Certification Program no later than one month before the examination window opens. To verify your residency program's accreditation status, please visit [abptrfe.com](http://abptrfe.com).

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

All questions on the exam relate to competencies outline in the document Description of Specialty Practice: Cardiovascular and Pulmonary Physical Therapy (2017). The content outline lists major content areas and components of the exam. The exam comprises case histories, each accompanied by multiple choice questions. The cardiovascular and pulmonary diagnoses that may be included in the exam content are listed below in section 11.2 with their frequency of occurrence.

Category	% of Exam
<b>Knowledge areas</b>	
Foundational, behavioral, and clinical sciences	15%
<b>Professional roles, responsibilities, and values</b>	
Professional behaviors, leadership education, administration, consultation	5%
Evidence-based clinical practice, including critical inquiry principles and methods	10%
<b>Patient and client management expectations</b>	
Examination	15%
Evaluation	30%
Diagnosis and prognosis	5%
Plan of care and interventions	15%
Outcomes	5%
<b>TOTAL:</b>	<b>100%</b>

### Diagnoses Seen by Cardiovascular and Pulmonary Clinical Specialists

The following lists the most common patient diagnoses seen by specialists. They are listed by frequency seen and rank ordered within each category. The distribution of cases used in the specialist certification exam will reflect the frequency of these diagnoses, based on the survey of specialists: frequently (60% of exam items), occasionally (30% of exam items), and rarely (10% of exam items).

#### Cardiovascular Diagnoses — Frequently

- Atherosclerotic disease
  - Coronary atherosclerosis
  - Peripheral arterial occlusive disease
  - Peripheral arterial disease
  - Intermittent claudication
- Venous stasis, with or without cellulitis
- Peripheral vascular complications of diabetes
- Aneurysms (aortic, abdominal)
- Cardiomyopathy (all types, including viral, ETOH and others)
- Heart failure with reduced or preserved ejection fraction
- Cor pulmonale/right heart failure
- Patients at high risk for development of cardiovascular disease or complications

- Hypertension
- Hypertensive heart disease
- Cardiovascular complications of diabetes
- Ischemic conditions
  - Angina
  - Myocardial infarction (acute/chronic)
  - Intermediate coronary syndrome
- Valvular disorders
- Rhythm disturbances/dysrhythmias
- S/p ablation
- S/p coronary artery bypass graft
- S/p cardiac pacemaker insertion (permanent, all types)
- S/p aorto- femoral or other vascular bypass grafts
- S/p defibrillator implant
- S/p vascular stent placement
- S/p heart valve replacement

#### **Pulmonary Diagnoses — Frequently**

- Adult respiratory distress syndrome
- Atelectasis, adult primary
- Pulmonary edema
- Pulmonary artery hypertension
- Pulmonary effusion
- Pulmonary embolism
- Pulmonary fibrosis, primary/idiopathic
- Emphysema
- High risk for development of pulmonary disease or complications
- Acute upper respiratory infection
- Pneumonia
- Aspiration
- Bacterial
- Viral
- Post-operative pulmonary complications (other than atelectasis)
- Primary pulmonary hypertension
- Acute respiratory failure
- S/p tracheostomy
- s/p Other thoracic surgery

#### **Cardiovascular Diagnoses — Occasionally**

- S/p heart transplant
- S/p heart-lung transplant
- Ischemic conditions, variant angina
- Postural orthostatic tachycardia syndrome (POTS)
- Other orthostatic intolerance
- Lymphedema
- Pericarditis
- S/p implantable loop recorder
- S/p extra-corporeal membrane oxygenation (ECMO)
- S/p intra-aortic balloon pump (IABP)

- S/p aortic dissection repair
- S/p aortic aneurysm repair
- S/p ventricular assist device placement
- S/p correction of congenital heart defects
- Septal defect, atrial or ventricle

#### **Pulmonary Diagnoses — Occasionally**

- Asthma
- Bronchiectasis
- Bronchitis (acute or chronic)
- Bronchiolitis
- Bronchiolitis obliterans
- Cystic fibrosis
- Pulmonary fibrosis, iatrogenic (radiation/chemotherapy)
- Pneumococcal pneumonia
- Bronchopneumonia
- Influenza
- Lung abscess
- Empyema
- Neoplastic diseases
  - Carcinoma in situ (bronchus/lungs)
  - Malignant neoplasm (larynx/pleura, trachea/bronchus/lung)
- Orthopedic impairment (fractured ribs, flail chest, kyphoscoliosis)
- Paralysis of the diaphragm or hemidiaphragm
- Pneumothorax
- Sarcoidosis
- S/p lung transplant, single or double
- S/p lung reduction or resection
- S/p esophagectomy
- S/p abdominal surgery

#### **Cardiovascular Diagnoses — Rarely**

- Lymphadenopathy
- Patent ductus arteriosus
- Coarctation of the aorta
- Tetralogy of fallot
- Common ventricle
- Transposition of great vessels
- Eisenmenger's syndrome

#### **Pulmonary Diagnoses — Rarely**

- Atelectasis, newborn
- Bronchopulmonary dysplasia
- Graft versus host disease
- Hepatopulmonary syndrome
- Meconium aspiration
- Pneumoconiosis
- Spinal cord lesion or injury (cervical, thoracic, lumbosacral)
- Tuberculosis

## Sample Questions

### Case 1

A 57-year-old man is brought to the emergency department because of right-sided chest pain, worsening shortness of breath, and a three-day history of coughing and fever. He has no recent history of loss of consciousness, trauma, or vomiting. Medical history includes alcohol abuse, peptic ulcer disease, partial gastrectomy, atrial fibrillation treated with rivaroxaban and metoprolol, positive Mantoux screening six years ago that was treated pharmacologically for one year, and multiple pneumonias. The patient is divorced and does not have contact with his two children. He used to work as a baker but is currently unemployed. He lives alone in a second-floor apartment; there are four steps without a railing to enter the building, one flight of stairs with a railing to enter the apartment, and no stairs within the apartment. On examination, he appears cachectic and sallow-skinned. Temperature is 39.4°C (103.0°F), heart rate is 130 beats/min, respiratory rate is 32 cycles/min, and blood pressure is 165/80 mmHg. Physical examination shows moderate shortness of breath. Auscultation of the chest discloses S<sub>1</sub> and S<sub>2</sub> heart sounds, a grade II/VI systolic ejection murmur, and coarse crackles throughout the lung fields that are greater on the right than the left. There is dullness to percussion over the right posterior base and right mid-lung areas. No edema is noted. Complete blood count shows:

Leukocyte count	14,200/mm <sup>3</sup>
Hematocrit	34.9%
Hemoglobin	12.4 g/dL
Platelets	242,000

Arterial blood gas analysis on room air and on 100% oxygen via face mask shows:

	Room air	100% oxygen via face mask
pH	7.38	7.37
Pco <sub>2</sub>	25 mmHg	38 mmHg
PO <sub>2</sub>	40 mmHg	115 mmHg
HCO <sub>3</sub>	18 mEq/L	23 mEq/L

Sputum gram stain shows occasional gram-positive diplococci in chains and 3+ polymorphonucleocytes. Radiography of the chest shows right lower lobe and potential right middle lobe consolidation. Twelve-lead ECG shows sinus rate is 140, PR interval is 0.14, and QRS interval is 0.08.

### Case 1 Questions

- Which of the following is the best rationale for the relationship between the patient's vital signs and arterial blood gas analysis on room air findings?
  - The altered blood pressure is due to the HCO<sub>3</sub> level.
  - The altered heart rate is due to the PaCO<sub>2</sub> level.
  - The altered respiratory rate is due to the PaO<sub>2</sub> level.
  - The altered temperature is due to the pH value.

2. Which of the following is the most likely cause of this patient's pulmonary findings?
  - a. Acquired infection from the community.
  - b. Aspiration due to long-term alcohol abuse.
  - c. Inflammation resulting from inhaled allergen in flour dust.
  - d. Tuberculosis based on previously positive Mantoux screening.
  
3. Which of the following is the best physical therapist treatment for this patient's pulmonary dysfunction at this time?
  - a. Diaphragmatic breathing to improve his cough effort.
  - b. Use of postural drainage, percussion, and shaking for secretion removal.
  - c. Pursed-lip breathing to improve hypocapnia.
  - d. Use of a threshold device for inspiratory muscle training.

### Case 2

A 38-year-old man is admitted to the emergency department because of chest discomfort and weight gain. Medical history includes morbid obesity, obstructive sleep apnea on bilateral positive airway pressure support, nonischemic cardiomyopathy, ejection fraction of 15%, diastolic heart failure, placement of an implantable cardioverter defibrillator (ICD), hypertension, hyperlipidemia, anxiety, and restless leg syndrome. Medications on admission include torsemide, metolazone, spironolactone, aspirin, metoprolol, lisinopril, and albuterol sulfate. The patient is married with two children and receives disability compensation. He is morbidly obese with a body mass index of 60.4 kg/m. Temperature is 36.5°C (97.7°F), heart rate is 106 beats/min and irregular, respiratory rate is 18 cycles/min, and blood pressure is 132/69 mmHg. Oxygen saturation is 92% on room air. Thoracic auscultation discloses decreased breath sounds throughout with no audible crackles. Edema of the lower extremities is noted. Laboratory studies show:

Blood		Serum	
Leukocyte count	10,900	Creatinine	1.1 mg/dL
Erythrocyte count	5.02	Urea nitrogen	18 mg/dL
Hemoglobin	13.4 g/dL	Sodium	138 mEq/L
Hematocrit	40.6%	Potassium	2.2 mEq/L
Platelets	220,000	Calcium	9.4 mg/dL
		Chloride	91 mEq/L
		HCO <sub>2</sub>	32

Cardiac enzyme studies show troponin T of 0.06ng/ml and CK-MB of 2%. Chest radiography shows moderate cardiomegaly and a centrally predominant diffuse interstitial prominence that is compatible with mild pulmonary vascular congestions without frank pulmonary edema. Twelve-lead ECG shows atrial rate of 109 and irregular, PR interval of 0.164, QRS interval of 0.106, and a rhythm with multifocal ventricular premature beats. ICD interrogation shows 10 shocks delivered during the past six weeks for nonsustained ventricular tachycardia at a rate of 150 to 200. Nitroprusside sodium by intravenous drip is administered in the emergency department. Four hours after admission, the patient is transferred to the coronary care unit. Repeat laboratory studies are performed, and furosemide is administered via intravenous drip. On hospital day four, he is switched to oral administration of bumetanide.

## Case 2 Questions

1. Upon admission to the emergency department, which of the following would be the expected results of cardiac auscultation?
  - a. Early diastolic murmur.
  - b. Pansystolic murmur.
  - c. S3 heart sound.
  - d. S4 heart sound.
2. Which of the following best describes the physiologic intention of treatment with nitroprusside sodium?
  - a. Decreasing afterload.
  - b. Decreasing cardiac output.
  - c. Increasing myocardial VO<sub>2</sub> max.
  - d. Increasing preload.
3. Which of the following laboratory findings was most likely responsible for the delay in the initiation of furosemide until the patient arrived in the coronary care unit?
  - a. Decreased creatinine.
  - b. Hypercalcemia.
  - c. Hypokalemia.
  - d. Increased troponin T.
4. The patient begins physical therapy on hospital day three. He reports lower extremity weakness, low back pain, and right ankle pain. He rates the low back pain as a 3/10 and the ankle pain as a 7/10, which increases to 9/10 on weight bearing. On further questioning, he reports that the ankle pain has occurred during other hospitalizations, but not always in the same lower extremity or in the same location in the extremity. The pain does not occur at home. Which of the following best explains this patient's pain?
  - a. Hyperuricemia caused by rapid diuresis.
  - b. Ischemic pain caused by gravity-minimized supine position for days.
  - c. Osteoarthritic pain in the lower extremities caused by three days of bed rest.
  - d. Restless leg syndrome causing trauma from the hospital bed rails.
5. Which of the following is the most appropriate test to determine the patient's ability to take steps in his room with an assistive device?
  - a. Activity Measure for Post-Acute Care.
  - b. Berg Balance Scale.
  - c. Egress Test.
  - d. Functional reach test.



### Case 3

A 74-year-old woman is admitted to the emergency department because of shortness of breath associated with chest tightness. She has a one-week history of dyspnea on exertion that occurs at 30 feet (9 m) of ambulation. She has had moderate improvement with sublingual administration of nitroglycerin. Medical history includes coronary artery disease, coronary artery bypass grafting 10 years ago, anterior myocardial infarction, angioplasty seven years ago, diastolic heart failure one year ago, and supraventricular tachycardia. Heart rate is 130 beats/min and irregular, respiratory rate is 24 cycles/min, and blood pressure is 148/76 mmHg. Oxygen saturation is 92%. Physical examination shows jugular venous distention and a right carotid bruit. Auscultation of the chest discloses an irregular heart rhythm with a grade IV/VI systolic murmur heard best at the apex. An S3 heart sound is present; no S4 is noted. Crackles are heard in the lower lung fields that are greater on the left. Extremities show 2+ distal pulses bilaterally and no edema. ECG discloses atrial fibrillation with a rapid ventricular rate of approximately 130. There is evidence of depressed ST segments in leads II, III, and aVF. Echocardiography shows normal ventricular cavity size, 3+ mitral regurgitation, ejection fraction of 44%, and hypokinesis of the inferior wall.

### Case 3 Questions

1. Which of the following is the best explanation of the auscultatory findings in this patient?
  - a. Hypertrophic cardiomyopathy as indicated by carotid bruit.
  - b. Pneumonia as indicated by crackles in the lower lung fields.
  - c. Pulmonary edema as indicated by the absence of an S4 heart sound.
  - d. Valvular structural abnormality as indicated by systolic murmur.
2. Which of the following is the best rationale to explain this patient's cardiac dysfunction?
  - a. Decreased preload from inactivity resulting in altered jugular venous distention.
  - b. Demand coronary ischemia from pulmonary pathology causing congestive heart failure.
  - c. Hypoperfusion in the posterior descending coronary artery causing congestive heart failure.
  - d. Mitral regurgitation from valvular insufficiency causing anterior descending coronary ischemia.
3. Which of the following is the best indication for a coronary angiography at this time?
  - a. History of congestive heart failure and rapid ventricular response atrial fibrillation.
  - b. History of coronary artery bypass grafting with current ST depression.
  - c. History of myocardial infarction with systolic murmur over the left apex.
  - d. History of supraventricular tachycardia with crackles in the lower lung fields.

#### Case 4

A 45-year-old man receives outpatient physical therapy because of left calf pain that occurs with running at speeds of greater than 10 minutes per mile. The pain is relieved when he slows to a jog or stops. The physical therapist suspects that the pain is related to the peripheral arterial system. Ankle brachial indexes (ABIs) are performed correctly bilaterally: left ABI is 1:1 using the left dorsalis pedis systole, and right ABI is 1:3 using the right dorsalis pedis systole. He has 1+ pulses in the dorsalis pedis bilaterally and 2+ pulses in the posterior tibial arteries. Which of the following is the most appropriate next step to determine the cause of this patient's left lower extremity pain?

- a. Perform a capillary refill test.
- b. Perform an ABI-post exercise test.
- c. Perform a rubor of dependency test.
- d. Perform an ABI test using the posterior tibial systole.

Case questions answer Key:

Case 1: 1-c, 2-a, 3-d

Case 2: 1-c, 2-a, 3-c, 4-a, 5-c

Case 3: 1-d, 2-c, 3-b

Case 4: 1-b

#### Sample Data Analysis Projects

The following four examples are provided to illustrate the kind of information that satisfies the data analysis requirement. Note: The examples are short and very limited in detail and explanation for spacing purposes:

##### Example 1:

###### Description of Applicant's Role

I first reviewed the literature to determine what information was available on the topic of cardiopulmonary content in entry-level physical therapist education programs. I asked colleagues about previous surveys of the content of physical therapist entry-level curricula. With the assistance of my co-workers, a 42-item survey instrument was developed and sent to 154 entry-level physical therapist education programs. I tallied, collated, and conducted standard descriptive analysis of the information from the returned surveys.

**Introduction:** Because of the high prevalence of cardiovascular and pulmonary disease in our society, these conditions are commonly encountered by physical therapists in clinical practice. Entry-level physical therapist education programs must prepare new graduates to manage cardiovascular and pulmonary disease as primary diagnoses or comorbidities, and in the development of preventive intervention strategies. There are no published reports of cardiopulmonary physical therapy content in entry-level physical therapist education programs. Therefore, the purpose of this study was to identify and describe cardiopulmonary curricular content in entry-level physical therapist education programs.

**Methods:** A 42-item survey was developed and mailed to 154 entry-level physical therapist education programs in the United States. The survey addressed the following topics: instructional format, number of credit hours devoted to cardiopulmonary content, faculty characteristics, and overall curricular characteristics.

**Results:** Of the surveys returned, 105 were analyzed. Fifty-two percent of the responding programs are housed in public academic institutions; 47% in private institutions. In approximately 45% of the education programs, cardiopulmonary curricular content is presented as discrete modules or as separate titled courses (=11% and 34%, respectively).

**Discussion:** Regarding the number of hours (semester equivalent) of curricular content devoted to the area of cardiopulmonary physical therapy, approximately 15% of PT programs devote fewer than three hours; 53% provide three to four hours; 12% provide five to six hours; and 19% provide more than six hours of cardiopulmonary content. This information may be useful in future deliberations regarding the structure and content of entry-level physical therapist educational curricula.

**Limitations of Project:** Issues that impacted the implementation of the project included subject availability, institutional limitations, and time constraints. While the data reported here provides a preliminary report on quantity of time dedicated to cardiopulmonary content, it does not offer information about the quality of instruction or teaching methods used, which may be at least as important as to student learning objectives as the metrics reported here.

**Dissemination of Results:** The results of the study were presented during an in-service within the institution, a state meeting, a national meeting, and a poster presentation; and published in a journal.

**Changes to Practice:** Changes that occurred in practice as a result of the study were across multiple institutions. There were also changes in policies and procedures within each program curriculum to include more cardiovascular and pulmonary components to education.

## Example 2:

### Description of Applicant's Role

I participated in a study of the effect of aerobic exercise and weight training on the bone density of young women. My participation entailed recommending several testing tools and procedures to assess aerobic capacity (e.g., VO<sub>2</sub>max) and peak torque generated by selected muscle groups. I was also responsible for conducting and interpreting the tests that were finally selected by the principal investigator.

**Introduction:** It has been widely suggested that physical activity has a beneficial effect on bone mineral density in women. The purpose of this two-year, randomized, intervention trial was to investigate the effect of aerobic exercise and weight training on peak bone mass in young women.

**Methods:** One hundred twenty-seven female subjects (ages 20 to 35) were randomly assigned to either an aerobic exercise program, weight training and stretching program (exercise group), or to a stretching program (non-exercise group). Sixty-three subjects (32 exercise, 31 non-exercise) completed the study. Spinal bone mineral density (spinal trabecular and spinal integral) was determined using quantitative computed tomography and dual x-ray absorptiometry. Aerobic capacity (VO<sub>2</sub>max) was assessed by expired gas analysis in accordance with the recommendations of the American College of Sports Medicine using the Bruce treadmill protocol. Muscle performance (knee flexion/extension and trunk flexion/extension peak torque) was assessed with commercially available isokinetic equipment.

**Results:** The exercise group demonstrated a significant gain in bone mineral density of the spinal integral (1.3±2.8%, p<0.02) compared with the non-exercise group. There were significant between-group differences (p<0.05) in spinal trabecular bone mineral density changes due to a 3% loss in the non-exercise group. The exercise group exhibited significant gains (p<0.05) in VO<sub>2</sub>max (2.3±5.2 gain vs. 1.8±6.0 ml/kg/min loss) and knee flexion (4.6±4.7 vs. 2.1±4.9 ft. lbs), knee extension (4.8±6.4 vs. 0.89±5.8 ft.lbs), and trunk extension peak torques (11.7±12.9 vs. 4.4±12.1 ft. lbs) compared with the non-exercise group.

**Discussion:** This study suggests that over a two-year period, a program of aerobic exercise, weight training, and stretching has beneficial effects on bone mineral density, aerobic capacity, and muscle performance in young women.

**Limitations of Project:** Issues that impacted the project were the subjects' ability to complete their exercise programs and completion of follow-up evaluations for each group. Subjects reported this was due to time constraints and inconvenience to complete exercise sessions.

**Dissemination of Results:** The results of the study were presented during a state conference and are being reviewed for publication in a peer-reviewed journal.

**Changes to Practice:** Changes that occurred in my practice as a result of the study were incorporating aerobic exercise with each home exercise program that I provided to my patients. Other physical therapists also started providing more aerobic exercise instruction at our facility.

### Example 3:

#### Description of Applicant's Role

I participated in a study examining the impact of frailty on exercise capacity in the pre-lung transplant population. Several pulmonary diagnoses with varying degrees of severity were included. My role included direct measure of frailty measures with participants, and co-writing and editing the paper submitted for publication.

**Introduction:** Frail lung transplant candidates are almost twice as likely to die without receiving a transplant or be delisted. Frailty can be defined by using the FFP, a 0-5 scale with 5 being the frailest, that uses measures of muscle strength, daily activity levels, and fatigue. Frailty may represent an objective measure of fitness for surgery, but its relationship to maximal exercise capacity remains unknown. Independent of disease severity, frailty may also capture information that impacts exercise capacity that would have implications for transplant candidacy decisions. The purpose of this study was to determine whether frailty in lung transplant candidates would be associated with reduced exercise capacity, independent of disease severity.

**Methods:** Sixty-eight lung transplant candidates (51% women, mean +/- SD age was 57 +/- 11 years) underwent a frailty assessment using Fried's Frailty Phenotype (FFP) and cardiopulmonary exercise testing (CPET). Primary outcomes were peak workload and peak aerobic capacity (VO<sub>2</sub>).

**Results:** Among the participants, 57% had interstitial lung disease, 32% had chronic obstructive pulmonary disease, 11% had cystic fibrosis. Mean lung allocation score was 40.2 (19.2-94.5). Adjusting for age, gender, diagnosis, and LAS, per one unit increment in FFP (i.e., the more frail a patient is), peak workload decreased by 10W (95% CI 4.7 to 14.6), and peak VO<sub>2</sub> decreased by 1.8 mL/kg/min (95% CI 0.6 to 2.9). After adjustment, frail participants had exercise tolerance that was 38W lower (95% CI 18.4-58.1) and peak VO<sub>2</sub> that was 8.5mL/kg/min lower (95% CI 3.3 to 13.7) than that of non-frail participants.

**Discussion:** The study found that frailty was statistically and clinically associated with reduced maximal exercise capacity among a cohort of lung transplant candidates at Columbia University Medical Center independent of respiratory disease severity and diagnosis.

**Limitations of Project:** Patients were excluded if the CPET was not performed within three months of the frailty assessment. In this study, only 68 of 172 patients met this inclusion criteria. In addition, these findings may not be generalizable to those with lung disease not yet severe enough to merit referral to lung

transplantation, those at transplant centers other than our own, or those who are not eligible for lung transplantation for myriad reasons, such as history of noncompliance, substance abuse, severe comorbidities, and advanced age.

**Dissemination of Results:** The results of the single-center cross-sectional study were published in *Respiratory Medicine* 131 (2017) 70-76.

**Changes to Practice:** Frailty phenotype captures potentially clinically important information about physical fitness above and beyond that available from resting measures of disease severity alone in adults with advanced lung disease. It is possible that targeting frailty using preventive or therapeutic interventions might preserve or even improve exercise capacity and outcomes after lung transplant.

## DATA ANALYSIS PROJECT DO'S AND DON'TS

### Do:

- Clearly define your role in the project:
  - What activities did you do?
  - What was your part of the team?
- Write your presentation as you would when submitting for publication. It should be clear and concise in regards to:
  - Description of Applicant's Role: What was your participation in the project? Were you the primary investigator? Did you perform data collection? Did you develop the tool used in the project?
  - Introduction: What is the impact that this project will have on the field of cardiovascular and pulmonary PT? Provide supporting literature/references related to your topic. What is the question you are attempting to answer?
  - Methods: P Explain in detail how your project was conducted.
  - Results: Complete and report proper statistical analysis.
  - Discussion: Describe the significance of the outcomes of the intervention and statistical analysis. How will the results of your project affect the field of cardiovascular and pulmonary physical therapy in regard to other therapists, other medical disciplines, patients, and others?
  - Limitations: What difficulties were present for the project? This can include the limited number of participants, lack of time to complete the project, constraints placed by the institution, and similar issues.
  - Dissemination: How did you share this information with those who will benefit from it? Did you give an in-service at your place of work or present the information at a meeting such as a district physical therapy meeting, or state or national conference? Was it published in a peer-reviewed journal?
  - Changes to practice: How did this project change your practice of cardiovascular and pulmonary physical therapy? How did this project change cardiovascular and pulmonary physical therapist practice at your institution, regionally, or nationally? If there was no change, why did the findings of your project show no change in practice?
- Be concise with your writing.
- Clearly differentiate the sections of your presentation.

**Don't:**

- Don't cut and paste an entire article that you may have submitted for publication to a journal.
- Don't add extraneous information that does not directly address or relate to your project.
- Don't present your project as one thing when it is really something else, such as a case study or series that is being presented as a research project. This can be determined by the lack of data collection or statistical analysis, lack of inclusion and exclusion criteria, etc.
- Don't submit a project that has not been completed, does not have any conclusions, or has not been disseminated.
- Don't submit the exact same material if you and another PT have both worked on the same project. (See page 1 for the Cardiovascular and Pulmonary Specialty Council Statement on Submission of the Same Data Analysis Project by Two or More Candidates.)
  - Even if you both had the same role, such as both providing data collection and analysis, you will need to submit in your own words what your role was and how you addressed your duties in the project.

## CASE REPORT SCORING RUBRIC

Case Report Criteria	Pass	
<b>Title</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A descriptive and succinct <b>title</b> that describes the phenomenon of greatest interest (symptom, diagnostic test, diagnosis, intervention, outcome). Ends with “: a case report.” <b>Clearly and concisely describe the case topic.</b>		
<b>Abstract</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A brief summary of the relevant information in <b>250 words or fewer</b> without citations. Information should include the following elements: (1) introduction/background, (2) case description/key points from the case; and (3) outcomes (4) discussion: main lessons to be learned from this case report.		
<b>Key words</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Two to five key words that will identify important topics covered by this case report.		
<b>Introduction</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A brief summary of why this case report is important and the conceptual foundation for the report. Provide an adequate background with literature to support the subsequent content.		
<b>Timeline of Episode of Care</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A chronological summary of an episode of care as a figure or table. This should begin with relevant past medical history and finish with the final visit and the patient's discharge location. Could be a graphic representing the case report to provide a visual summary.		

<b>Case Rationale/Purpose</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> <li>State the purpose of the case study.</li> <li>Provide <b>rationale</b> for the case, e.g., diagnosis within those seen most often by a cardiovascular and pulmonary physical therapist or whose treatment is different from that for a general patient, comorbidities, presence of “red flags,” requirement of the skills and knowledge of an advanced practitioner.</li> <li>Insight regarding applicant’s <b>perspective of specialist practice</b>. Rationale for the case clearly outlines the indicators that make it reflective of cardiovascular and pulmonary specialty practice.</li> </ul>		
<b>Narrative of Case</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<ul style="list-style-type: none"> <li>The <b>presenting concerns</b> (chief complaints) and <b>relevant demographic information</b>.</li> <li><b>Clinical findings</b> describe the relevant past medical history, pertinent comorbidities, and important physical examination findings.</li> </ul> <p><b>Specialist must describe decision making and rationale for the following:</b></p> <ul style="list-style-type: none"> <li><b>Examination (systems review, tests and measures, diagnostic assessments):</b> Discuss diagnostic testing and results from both a physical therapy and medical standpoint. For medical tests, state the rationale and the result of each test and how these results may effect physical therapist intervention. For physical therapy tests and measures, state the rationale for performing the test and the results. State the reliability and validity of the physical therapy outcome measurements used. <b>Evaluation and diagnosis</b> demonstrate the synthesis of all the examination findings from the history, systems review, and tests and measures, including the impairments and functional limitations that are involved in establishing the diagnosis and plan of care as supported by current practice and literature.</li> <li><b>Prognosis/plan of care:</b> <ul style="list-style-type: none"> <li>The <b>prognosis</b> includes a predicted optimal level of improvement in function and the amount of time needed to reach that level.</li> <li>The specialist reflects on: <ul style="list-style-type: none"> <li>Favorable and unfavorable prognostic indicators.</li> <li>Patient’s perceptions (i.e., cognitive and affective status).</li> <li>Possible contributing factors.</li> </ul> </li> <li>The <b>plan of care</b> demonstrates the use of interventions to produce changes in the condition that are consistent with the diagnosis and prognosis.</li> </ul> </li> <li><b>Interventions</b> describe the types of intervention (pharmacologic, surgical, preventive, lifestyle, etc.) and how the interventions were administered (type, intensity, duration, and frequency). Description includes: <ul style="list-style-type: none"> <li>Rationale of why each intervention was performed and what impairments and/or functional limitations are being addressed. Literature, if available, is provided to support the interventions. Tables or figures may be used.</li> <li>Information on any intervention modifications, interruptions, or discontinuations that occurred.</li> <li>Information about intervention adherence and how it was assessed.</li> </ul> </li> <li><b>Outcomes:</b> <ul style="list-style-type: none"> <li>Compares final outcomes with the patient’s initial status.</li> <li>States whether the patient demonstrated clinically significant improvement in function (consider use of MID and MCID to support improvement), and any adverse effects or unanticipated events.</li> </ul> </li> <li>Discusses any follow-up needed.</li> </ul>		



<b>Discussion/post-case reflections</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Describes case management, including strengths and limitations with scientific references.		
<b>Conclusion</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Offers the most important findings from the case and suggestions for future directions.		
<b>References</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Includes appropriately chosen references from peer-reviewed scientific literature. All citations should be no more than 10 years since publication unless the article is considered a seminal study. References are to be provided throughout <b>all</b> sections of the case reflection using American Medical Association formatting to support all clinical decision making and intervention techniques. Course manuals are not accepted as supporting references.		
<b>Acknowledgements</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A short acknowledgement section should mention funding support or conflicts of interest, if applicable.		
<b>Informed Consent</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(Option 1 provides the opportunity for deidentified information without consent).The patient should provide informed consent, and the author should provide this information if requested. Rarely, additional approval may be needed.		
<b>Format</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
The case represents specialist practice and is professional in appearance, using correct grammar, spelling, and punctuation.		



## RESOURCE GUIDE INFORMATION

Resource guides are compiled by APTA sections and board-certified specialists to reflect current literature in the specialty area. They are provided for your information only. Neither the ABPTS nor the specialty councils have reviewed or endorsed the content of these lists. In addition, reviewing these resources does not guarantee that a candidate will receive a passing score on the specialist certification examination.

### **Cardiovascular and Pulmonary Physical Therapy Resource Information**

Academy of Cardiovascular & Pulmonary Physical Therapy  
140B Purcellville Gateway Drive, Suite 120  
Purcellville, VA 20132  
Phone: 202-921-4245  
Email: [cardiopt@aptacvp.org](mailto:cardiopt@aptacvp.org)  
Website: <https://www.aptacvp.org>

# APTA Specialist Certification

Governed by **ABPTS**

## Clinical Electrophysiologic Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

# Clinical Electrophysiologic Candidate Guide

## Initial Certification Deadlines for Clinical Electrophysiology

July 1: Application deadline  
Aug. 31: Reapplication deadline  
Nov. 30: Exam fee deadline

## Certification Requirements

All applicants must meet requirements for Option A or Option B. Applicants must also meet the following requirements:

### 1. Clinical Education Experience Documentation

Applicants must submit a list of clinical education experiences (at least one, no more than three) related to the practice of clinical electrophysiologic physical therapy that have been completed within the past 10 years (since July 1, 2011). The experience(s) must have been completed with a physical therapist who is board-certified in clinical electrophysiologic physical therapy or a physician (MD or DO, neurologist or physiatrist) who is board-certified in electrodiagnostic testing. Applicants must include the start and end date of the experience(s), the number of studies performed during the experience, and a brief overview of the nature of the experience. These types of experiences are often referred to as a preceptorship or mentorship. They may be a component of a formal educational experience, but a formal program is not required. The board-certified clinician must provide sufficient in-person oversight of studies performed by the applicant to allow the board-certified clinician to provide the letter described below. There is no minimum time period or number of studies required in the experience(s), but the mentorship or preceptorship should be sufficient to directly evaluate the applicant's ability to conduct and interpret electrophysiological studies. If the clinical education experience includes structured continuing education courses for which a certificate is provided to the applicant, the certificate should be included in the application.

Applicants must submit a letter or letters from the board-certified clinician(s) who provided oversight of the educational experience. The letter(s) must describe the interaction between the colleagues, outline the didactic component of the experience (e.g., continuing education courses, specific reading assignments, university courses completed, symposia and lectures attended) and state that in the opinion of the more experienced clinician, the applicant is prepared to practice clinical electrophysiologic physical therapy independently (see sample letter below). The letter must include contact information (e.g., telephone number, email address, USPS address) of the letter's author. The Clinical Electrophysiologic Specialty Council may request additional information from the mentor or preceptor, the applicant, or both, to determine whether the experience adequately meets the clinical education and experience requirement.

[Sample letter for Clinical Education Experience.](#)

## **2. Patient Reports**

Three actual patient reports must be submitted and will be reviewed by a panel of board-certified physical therapists. See Section 11.3 and 11.4 for details of this requirement, and Section 11.5 for sample reports.

## **3. Testing Logs**

Applicants must submit a log of the most recently completed 500 electrodiagnostic examinations conducted within the last 10 years (since July 1, 2011). This log should include the date of the study (month and year) and outcome of testing (e.g., polyneuropathic process, proximal compromise or nerve root involvement, focal peripheral nerve compromise). Any protected health information must be removed from the log.

### **Option A**

#### **Direct Patient Care Experience in Electrophysiologic Testing**

Applicants must submit evidence of 2,000 hours of direct patient care as a licensed U.S. physical therapist (temporary license excluded) in the specialty area within the last 10 years, 25% (500 hours) of which must have occurred within the last three years. Direct patient care must include activities in each of the elements of patient and client management applicable to the specialty area and included in the Description of Specialty Practice. These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

### **Option B**

Applicants must submit evidence of successful completion of an APTA accredited postprofessional clinical electrophysiologic clinical residency completed within the last 10 years that has a curriculum plan reflective of the Description of Specialty Practice: Clinical Electrophysiologic. Experience from residencies in which the curriculum plan reflects only a portion of the DSP will not be considered.

Applicants who are currently enrolled in an ABPTRFE accredited clinical residency, or enrolled in a residency program that has been granted candidacy status, may apply for the specialist certification examination in the appropriate specialty area prior to completion of the residency. These applicants will be conditionally approved to sit for the examination, as long as they meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency to APTA's Specialist Certification Program no later than one month before the examination window opens.

To verify your residency program's accreditation status, visit [www.abptrfe.org](http://www.abptrfe.org).

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Examination Content Outline

- Approximately 200 questions.
- No questions with negative stems (e.g., “Which of the following is not correct?”).
- Questions may include graphics and video.
- Examination time limit is seven hours.

The following is an outline summarizing the approximate examination percentages for each content domain from the Clinical Electrophysiologic Physical Therapy: Description of Specialty Practice. The outline also contains information on the content based on patient and client conditions. Examination questions can represent knowledge areas, professional roles and responsibilities, and patient and client management.

Topic	% of Exam
Anatomy	7%
Neuroscience	7%
Physiology	7%
Clinical Science	9%
Critical Inquiry	9%
Professional Roles & Responsibilities	4%
<b>Examination</b>	
History, Systems Review & Reexamination	5%
Tests & Measures	15%
<b>Evaluation</b>	
Normal & Abnormal Electrophysiologic Characteristics	12.5%
Interpretation of Abnormal Electrophysiologic Findings	12.5%
Diagnosis	5%
Prognosis	5%
Coordination, Communication & Documentation and Patient and Client-Related Instruction	2%
<b>TOTAL:</b>	<b>100%</b>

The various clinical impressions (diagnoses) that may be identified in the patient report include, but are not limited to:

- Focal peripheral neuropathy (e.g., carpal tunnel syndrome, cubital tunnel syndrome).
- Radiculopathy.
- Polyneuropathy (e.g., demyelinating, axonal, hereditary).
- Motor neuron disease.
- Myopathy (e.g., muscular dystrophy, myositis).
- Neuromuscular junction defect (e.g., myasthenia gravis, botulism).

### Sample Questions

Candidates for the specialist certification examination in clinical electrophysiologic physical therapy are encouraged to review the sample questions below to become familiar with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

4. With a complete neuropraxic lesion of two days duration of the ulnar nerve at the elbow, what is the most likely EMG change observed in the abductor digiti minimi?
- e. No motor unit potentials.
  - f. Normal motor unit potentials.
  - g. Polyphasic motor unit potentials.
  - h. Small amplitude highly polyphasic potentials.
5. Given the following data, what is the conduction velocity (m/sec) from the axilla to above elbow?

Right ulnar	Latency	Distance
Wrist	3.5 ms	8 cm
Below elbow	7.5 ms	28 cm
Above elbow	9.5 ms	12 cm
Axilla	11.5 ms	12 cm

- a. 60
  - b. 65
  - c. 70
  - d. 75
3. The left triceps reflex is absent. There are positive sharp waves in the left cervical paraspinals. There are fibrillation potentials in the left extensor indicis and pronator teres, and the left superficial radial nerve response is normal. Which nerve root is involved?
- a. C5
  - b. C6
  - c. C7
  - d. C8

## Case 1

A 55-year-old woman is referred for NCS/EMG testing to rule out a polyneuropathic process. Her symptoms include pain, numbness, tingling, and a sensation of coldness in both feet from the tips of the toes to the distal leg, gradually progressing from the toes to the distal leg over the past three years, especially over the past six months. Her history includes type 1 diabetes mellitus diagnosed at age 13 years, and her HbA1c has consistently been over 8.0 for the past five years. The NCS data are shown in the following table.

## Case 1 Data

Sensory Nerves									
Site	Peak (ms)	Norm Peak (ms)	P-T Amp (μV)	Norm Amp (μV)	Segment Name	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
<b>Left Sural Antidromic (ankle)</b>									
Distal calf	4.7	<4.0	3.0	>5.0	Calf-Ankle	4.7	14	29.8	>35.0
Mid calf	8.0		2.0	>5.0	Mid-distal calf	3.3	10	30.3	>35.0
<b>Right Sural Antidromic (ankle)</b>									
Distal calf	4.2	<4.0	2.0	>5.0	Calf-Ankle	4.2	14	33.3	>35.0
Mid calf	7.1		1.5	>5.0	Mid-distal calf	2.9	10	34.5	>35.0
<b>Left Median Antidromic (D3)</b>									
Palm	2.0	<1.8	5.0	>10.0	Palm-D3	2.0	7	35.0	>37.0
Wrist	4.0		2.0	>10.0	Wrist-Palm	2.0	7	35.0	>37.0
Elbow	9.5		4.0	>10.0	Elbow-Wrist	5.5	22	40.0	>37.0
Motor Nerves									
Site	Onset (ms)	Norm Onset (ms)	O-P Amp (mV)	Norm Amp (mV)	Segment Name	Delta-O (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
<b>Left Tibial Nerve (AH)</b>									
Ankle	7.0	<6.1	1.2	>3.0	Ankle-AH	7.0	8		
Popliteal Fossa	18.2		1.0	>3.0	Pop Fossa-Ankle	11.2	37	33.0	>35.0
<b>Right Tibial Nerve (AH)</b>									
Ankle	6.8	<6.1	1.4	>3.0	Ankle-AH	6.8	8		
Popliteal Fossa	17.7		1.2	>3.0	Pop Fossa-Ankle	10.9	37	33.9	>35.0
<b>Left Median (APB)</b>									
Palm			3.0	>5.0					
Wrist	4.6	<4.2	2.5	>5.0			14		
Elbow	8.9		2.1	>5.0	Elbow-Wrist	4.3	21	48.8	>50.0

Sural and superficial peroneal (fibular) distance is 14 cm, median sensory distance below wrist is 8 cm and above wrist distance is 14 cm. All motor latencies were recorded over an 8 cm distance.

### Case 1 Question

Which of the following impressions is most appropriate for this distal process?

- a. Diffuse symmetric sensorimotor axonopathy/myelinopathy.
- b. Diabetic motor/sensory polyneuropathic process.
- c. Demyelinating sensorimotor neuropathy.
- d. Symmetric sensorimotor axonopathy.

### Case 2

A 49-year-old righthanded roofer reports an onset of pain in the left wrist with ill-defined numbness and tingling in the digits of the left hand about four months ago following several days of working longer than normal hours. He does not recall any specific injury, does not have neck pain, and is generally healthy except for mild hypertension and being pre-diabetic. He wakes at night, notes increased numbness with holding a telephone with the left hand, and shakes his hand frequently during the day. He has been referred to rule out carpal tunnel syndrome. The EMG/NCS data are in the following table.

Sensory Nerves									
Site	Peak (ms)	Norm Peak (ms)	P-T Amp (μV)	Norm Amp (μV)	Segment Name	Delta-P (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
<b>Left Median Antidromic (D3)</b>									
Palm	1.7	<1.8	22.0	>10.0	Palm-D3	1.7	7	41.2	>37.0
Wrist	4.4	<4.2	18.0	>10.0	Wrist-Palm	2.7	7	25.9	>37.0
Elbow	8.9		14	>10.0	Elbow-Wrist	4.5	21	46.7	>37.0
<b>Right Median Antidromic (D3)</b>									
Palm	1.6	<1.8	25.0	>10.0	Palm-D3	4.2	7	43.8	>37.0
Wrist	3.2	<4.2	22.0	>10.0	Wrist-Palm	1.6	7	46.7	>37.0
Elbow	7.4		17.0	>10.0	Elbow-Wrist	4.2	21	50.0	>37.0
<b>Left Ulnar Antidromic (D5)</b>									
Wrist	3.2	<3.8	25.0	>10.0	Wrist-D5	3.4	14	43.8	>37.0
<b>Right Ulnar Antidromic (D5)</b>									
Elbow	9.5		4.0	>10.0	Elbow-Wrist	5.5	22	40.0	>37.0
Motor Nerves									
Site	Onset (ms)	Norm Onset (ms)	O-P Amp (mV)	Norm Amp (mV)	Segment Name	Delta-O (ms)	Dist (cm)	Vel (m/s)	Norm Vel (m/s)
<b>Left Median (APB)</b>									
Wrist	4.6	<4.2	6.1	>5.0	Wrist-APB		14		
Elbow	8.9		11.0 (initial positive wave)	>5.0	Elbow-Wrist	4.3	24	55.8	>50.0



Right Median (APB)									
Wrist	3.8	<4.2	10.7	>5.0	Wrist-APB		14		
Elbow	8.0		10.2	>5.0	Elbow-Wrist	4.2	24	57.1	>50.0
Left Ulnar (APB)									
Wrist	3.2	<3.5	9.4	>5.0					
B-Elbow	7.2		9.0	>5.0	B-Elbow-Wrist	4.0	22	55.0	>50.0
A-Elbow	9.2		8.7	>5.0	A-B Elbow	2.0	12	60.0	>50.0
Right Ulnar (APB)									
Wrist	3.1	<3.5	9.0	>5.0					
B-Elbow	7.3		8.5	>5.0	B-Elbow-Wrist	4.2	22	52.4	>50.0
A-Elbow	9.5		8.2	>5.0	A-B Elbow	2.2	12	54.5	>50.0

EMG results: Bilateral cervical paraspinals, deltoid, triceps, brachialis, pronator teres, flexor carpi ulnaris, extensor digitorum, first dorsal interosseous and right opponens pollicis demonstrate no membrane instability; motor units of normal shape, amplitude, and duration; and normal recruitment with a full interference pattern. Left opponens pollicis demonstrates increased insertional activity with 1+ fibrillations and positive sharp waves; motor units of normal shape, amplitude, and duration; and normal recruitment with a full interference pattern. All motor latencies are measured at 8 cm, palmar sensory latencies were recorded at 8 cm, and wrist to digit latencies were recorded at a 14 cm distance.

### Case 2 Question

What is your assessment given the clinical exam, history, and EMG/NCV findings? Focal demyelination and axonopathy of the left Median nerve at or near the wrist.

- Focal demyelination and axonopathy of the left Median nerve at or near the wrist with a Martin-Gruber anastomosis.
- Ulnar to median crossover in the forearm.
- Ulnar nerve entrapment at the wrist.

Key: Case 1-a, Case 2-b

### 11.3 Other Documentation Instructions

**Patient Reports:** Applicants are required to submit three actual patient reports the applicant has completed independently within the last three years (since July 1, 2016) to include the formal report and accompanying data tables, NCS waveforms, and abnormal EMG waveforms (if any). Applicants are responsible for ensuring the authenticity of the testing conducted and confidentiality of the data and reports submitted. The report must not be one provided to the applicant by another practitioner and must not be one that another applicant could submit. The specialty council may request a copy of the referral to the applicant from another provider that resulted in the electrophysiologic testing or the billing information to verify the report's authenticity.

See sample patient reports in section 11.5 of this guide. One report is required for each of the following types of pathology:

- A patient with a spinal nerve root lesion.
- A patient demonstrating a focal demyelination and/or axonopathy of a peripheral nerve (e.g., median nerve at the wrist, tibial nerve at the ankle).
- A patient demonstrating a diffuse, symmetric demyelination and/or axonopathy (e.g., diabetic polyneuropathy, Hereditary Motor Sensory Neuropathy).

For information on scoring, see Section 11.4, Patient Report Evaluation.

The report submitted for review must be identical to the report provided to the referring practitioner (or included in the patient's medical record if there is no referring practitioner), unedited except to remove information that would permit identification of the patient and the applicant. Critical aspects (sections 1 and 3, "history and systems review" and "evaluation/diagnosis") are based on APTA's Guide to Physical Therapist Practice, and competency areas will be weighted similarly to the percentages noted within the exam content outline section of this candidate guide and chapter 4 of the Description of Specialty Practice: Clinical Electrophysiological Physical Therapy.

If a submitted report does not pass, the applicant may submit another report from the examination of another patient with similar pathology. If the second report does not meet the minimum criteria, the application will not be approved. If an application is not approved due to one or more reports not meeting the minimum criteria or if the applicant does not pass the examination, any reports that were acceptable with the initial application do not need to be submitted with a reapplication.

#### **HIPAA Criteria**

All submitted documents must meet the criteria of the Health Insurance Portability and Accountability Act of 1996, which requires the protection of health information. HIPAA defines 18 specific items that must be removed to release patient information without patient authorization or approval from the Research Privacy Board.

#### **These 18 items are:**

1. Names.
2. All geographic subdivisions smaller than a state, including street address, city, county, precinct, ZIP Code, and their equivalent geographical codes, except for the initial three digits of a ZIP Code if, according to the current publicly available data from the Bureau of the Census.
  - a. The geographic unit formed by combining all ZIP Codes with the same three initial digits contains more than 20,000 people.
  - b. The initial three digits of a ZIP Code for all such geographic units containing 20,000 or fewer people are changed to 000.

3. All elements of dates (except year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death; and all ages over 89 and all elements of dates (including year) indicative of such age, except that such ages and elements may be aggregated into a single category of age 90 or older.
4. Telephone numbers.
5. Facsimile numbers.
6. Electronic mail addresses.
7. Social security numbers.
8. Medical record numbers.
9. Health plan beneficiary numbers.
10. Account numbers.
11. Certificate/license numbers.
12. Vehicle identifiers and serial numbers, including license plate numbers.
13. Device identifiers and serial numbers.
14. Web URLs.
15. IP address numbers.
16. Biometric identifiers, including fingerprints and voiceprints.
17. Full-face photographic images and any comparable images.
18. Any other unique identifying number, characteristic, or code, unless otherwise permitted by the Privacy Rule for reidentification.

## **11.4 Patient Report Evaluation**

The report must include abnormalities identified during electrophysiologic testing (i.e., “normal studies” are not acceptable). Each patient report must earn a passing score of 80% overall in addition to 80% for both Sections 1 and 3 (described below). For example, if the report earns 85 points overall but receives fewer than 8 points for section 1 or fewer than 16 points for section 3, the report does not pass. The rubrics used for scoring the patient reports were developed using documents published by the American Association of Neuromuscular & Electrodiagnostic Medicine (available at [aanem.org/Practice/Guidelines](http://aanem.org/Practice/Guidelines)), widely used textbooks (e.g., “Electrodiagnosis in Diseases of Nerve and Muscle: Principles and Practice,” 2013; and “Electrodiagnostic Medicine,” 2002), and the expert opinion/consensus of board-certified specialists in clinical electrophysiologic physical therapy. The rubric includes the following three sections:

### **Section 1. History, Physical Examination, and Systems Review (10 points).**

Conducts appropriate history, physical examination, and systems review, and identifies the reason for testing.

### **Section 2. Electrophysiologic Testing (70 points).**

- Conducts appropriate nerve conduction and needle electromyographic testing with summary findings.
- Demonstrates appropriate testing rigor and methods.
- Conducts appropriate motor and sensory testing for involved and comparative nerves.
- Includes data tables, normal values, and waveforms.

### **Section 3. Impression (20 points.)**

Formulates appropriate electrophysiologic impression.

## 11.5 Sample Electrophysiologic Patient Report

### NCS/EMG REPORT

Date: August 2017

Reason for Electrophysiologic Referral: Bilateral upper extremity pain and numbness, rule-out carpal tunnel syndrome.

History: 59-year-old female righthanded nurse complaining of numbness and tingling in both hands extending proximally to the elbow bilaterally for more than two years. Symptoms are worse when sleeping or driving the car.

Patient is 5 feet 6 inches tall and weighs 150 pounds. She does not smoke and consumes minimal alcohol. There is no reported heart disease, hypertension, or diabetes. She takes medicine for hypothyroidism.

Systems Review: Manual muscle test: trace weakness in right thumb abduction. Sensation is equal right to left. Tinel sign: (+) both wrists. DTR's +2 and symmetric.

Summary: The median nerve motor latency is 12 ms on the right and 7.4 ms on the left. The median nerve sensory latency is 7.4 ms on the right and 6.0 ms on the left.

Impression: The electrical studies are consistent with bilateral carpal tunnel syndrome worse on the right. Findings are not suggestive of right cervical radiculopathy. NCS Tables (Skin Temperature 30.5°C)

#### Motor

Nerve Site	Latency (ms)	Amplitude (mV)	Distance (mm)	Conduction Velocity (m/s)
R Median				
Wrist	12.0	4.7	80	
Elbow	16.1	4.2	210	51
L Median				
Wrist	7.4	8.1	80	
Elbow	11.6	8.2	220	52
R Ulnar				
Wrist	3.4	10.4	80	
Below Elbow	6.0	9.7	160	62
Above Elbow	7.7	9.2	100	59

#### Sensory

Nerve Site	Latency (ms)	Amplitude (mV)	Distance (mm)	Conduction Velocity (m/s)
R Median	7.4	7	140	19
Wrist	6.0	10	140	23
Elbow	3.5	42	140	38

## EMG Table

Muscle	Side	Insert	PSW	Fibs	Poly	Amp	Dur	Recruit
Biceps Br	R	Norm	None	None	<15%	Norm	Norm	Full
Triceps Br	R	Norm	None	None	<15%	Norm	Norm	Full
FCR	R	Norm	None	None	<15%	Norm	Norm	Full
APB	R	Norm	None	None	<15%	Norm	Norm	Full

Score: Overall = 71

Critical Level 1 (History and Systems Review) = 57%

Critical Level 2 (Examination/Tests and Measurements) = 83%

Critical Level 3 (Evaluation/Diagnosis) = 35%

Comments: Failed Peripheral Nerve Entrapment Case Report

### Points deducted for the following:

- History and Systems Review: Incompletely written neuromuscular screening exam, which is missing a number of details, including but not limited to: (1) extent of manual muscle testing performed (only mentioned thumb abduction, was the entire upper quarter screened bilaterally?); (2) what type of sensation was assessed (e.g., light touch, pin-prick), and where was sensation assessed (e.g., hands only, upper extremities?); (3) No mention of other elements normally found in a neuromuscular screen, such as pathological reflexes assessed or range of motion. It is hoped that the neuromuscular screening exam provides the foundational basis for designing and implementing the electrophysiologic examination and that enough detail is provided to understand and replicate (if so desired) what was done.

Note: From a terminology standpoint, DTR may be an outdated term. Since the sensory receptor evoked in this reflex is the muscle spindle, it is suggested that the term “muscle stretch reflex” be employed (This is only a suggestion, since it is recognized that DTR remains in current use today and no points were deducted).

- Examinations, tests, and measurements: Left median sensory nerve study not conducted. Lacks normal ipsi- and contra-lateral motor and sensory comparative studies. EMG table with limited sampling. Lack of peak or onset latency designation, no recording site designations, lack of normal values, skin temperature not maintained at >32°C or adjustments made for lower temperature, no late responses, and only four limb muscles tested.
- Evaluation/diagnosis: Weak summary presentation, impression discussed in medical diagnostic terms, no signature. Results should be described in pathophysiologic terms, not a clinical syndrome. In this case, an appropriate impression would state that there was a demyelination of the sensory and motor fibers in the right median nerve at or near the wrist, and of the motor fibers of the left median nerve at or near the wrist.
- Based on the above: Failed to meet both Critical Levels 1 and 3 and failed to meet the overall passing score.

## NCS/EMG REPORT

**Date:** October 2017

**Reason for Electrophysiologic Referral:** Left lower extremity paresthesia and pain, rule out lumbosacral radiculopathy.

**History:** 19-year-old righthanded male student. He runs 40-50 miles per week. In the past few days he has had difficulty finishing races. For three weeks he describes decreased sensation in the lateral aspect of his left leg. He occasionally limps, favoring the left leg.

5-foot 6-inch, 145-pound individual does not smoke or consume alcohol. There is no report of heart disease, hypertension, stroke, thyroid or kidney problems, hepatitis, blood problems, or diabetes. He is not on medication. No complaints of bowel or bladder problems.

**Systems Review:** Manual muscle test: 4/5 left dorsiflexion, toe extension, toe flexion, and great toe extension; others 5/5. Sensation to light touch: decreased left dorsum of the foot. Tinel's: (-) both fibular heads. Monosynaptic reflexes lower extremities: +2 and symmetrical knee and ankles. Straight leg raise: (+) left.

**Summary:** The left deep fibular nerve motor conduction velocity is normal across the fibular head segment. The left sural nerve sensory distal latency, amplitude, and conduction velocity are within normal ranges. Both H Reflex latencies and amplitudes are similar side-to-side and within predicted ranges for age and leg length.

Evidence of acute muscle cell membrane instability (increased insertional activity, positive sharp waves and fibrillation potentials present at rest) is seen on needle EMG exam in the left lower level lumbosacral paraspinals, tensor fascia lata, tibialis anterior, extensor hallucis longus muscles. Interference patterns are reduced in these muscles.

**Impression:** Findings are consistent with an acute left L5 mixed spinal nerve root axonopathy.

Signature:

J. Therapist, PT

Date: \_\_\_\_\_

## Motor/F-wave

Nerve Site	Latency (ms)	Amplitude (mV)	Distance (mm)	Conduction Velocity (m/s)
L Deep Fibular/EDB				
Ankle	3.3	8.0	80	
Below Fib Head	11.6	6.3	305	48
Above Fib Head	9.7	5.3	100	53
F wave	45.4			
L Tibial/AH				
Ankle	5.7	6.8	100	
Popliteal Fossa	14.2	6.4	400	47
F-wave	47.3			

## Sensory

Nerve Site	Latency (ms)	Amplitude (mV)	Distance (mm)	Conduction Velocity (m/s)
L Sural/Ankle				
Lower leg	4.4	8.0	140	32
L Medial Plantar/Ankle				
Sole	3.9	7.8	140	36

## H Reflex

Nerve	Latency (ms)	Amplitude (mV)
L Tibal/Gast	29.6	5.0
R Tibal/Gast	28.8	3.9

## EMG Table

Muscle	Side	Insert	PSW	Fibs	Poly	Amp	Dur	Pattern
R Fem	L	Norm	None	None	<15%	Norm	Norm	Full
V Lat	L	Norm	None	None	<15%	Norm	Norm	Full
TFL	L	Incr.	+2	+2	<15%	Norm	Norm	Partial
LH Biceps F	L	Norm	None	None	<15%	Norm	Norm	Full
Tib Ant	L	Incr.	+2	+2	<15%	Norm	Norm	Partial
EHL	L	Incr.	+2	+2	<15%	Norm	Norm	Partial
Gast M	L	Norm	None	None	<15%	Norm	Norm	Full
Soleus	L	Norm	None	None	<15%	Norm	Norm	Full
Mid-Lumbar Paraspinals	L	Norm	None	None	<15%	Norm	Norm	Not tested
Lower Lumbar Paraspinals	L	Incr.	+2	+2	<15%	Norm	Norm	Not tested

Score Overall = 87

Critical Level 1 (History and Systems Review) = 86%

Critical Level 2 (Examination/Tests and Measurements) = 87%

Critical Level 3 (Evaluation/Diagnosis) = 87%

Comments: Passing Radiculopathy Case Report

## Points deducted for the following:

- History and Systems Review: Abbreviated neuromuscular screening exam was missing some clarifying data including but not limited to:
  - With the MMT, what does "others" mean? (e.g., other extremity, lower quarter screen).
  - Type of sensation assessed (e.g., light touch, pin-prick), and was it assessed anywhere other than the foot?
  - No mention of other elements normally found in a neuromuscular screen, such as pathological reflexes assessed, range of motion, or gait (could the patient toe-walk or heel-walk?).

Note: while listing a “Straight-leg raise (+) left” is commonly done, it is not particularly clear if the positive refers to pain, radicular symptoms, or at what range of motion the positive findings were elicited. Any additional clarification would make this finding stronger.

- Examinations, tests, and measurements: Lack of skin temperature recording, no peak or onset latency designation, no basis for normal values given, only one motor and one sensory peripheral nerve tested.
- Evaluation/diagnosis: Partial explanation of findings.
- Based on the above: Passing electrophysiologic case report representing a radiculopathy.

### NCS/EMG

Date: July 2015

Reason for electrophysiologic referral: Bilateral lower extremity pain, rule out polyneuropathy.

History: 69-year-old righthanded man with pain in both feet and lower legs, especially at bedtime. He also complains of frequent cramping in the calf muscles.

The patient is 6 feet 1 inch and weighs 245 pounds. He is diabetic and takes metformin, but he does not check his blood sugar levels regularly. He does not know his most recent HbA1c value. He has a long history of low back pain, which limits his walking distances. He drinks alcohol and smokes.

Systems Review: Manual muscle test: 4/5 bilateral toe extension and toe flexion; others 5/5. Sensation to light touch: decreased both feet and ankles. Monosynaptic reflexes lower extremities: absent bilateral knee and ankles. Straight leg raise: (+) right.

Summary: Both deep fibular and the right tibial nerve motor distal latencies are prolonged and conduction velocities are slow. F-waves are prolonged. Both sural and the right superficial fibular nerve sensory-evoked responses are absent. Both H-Reflex responses are absent. The right median nerve motor and sensory distal latencies, amplitudes, and conduction velocities are within normal ranges.

Needle EMG examination show evidence of acute muscle cell membrane instability (positive sharp waves and fibrillation potentials at rest) in the distal muscles checked in both lower extremities. All of the lower extremity muscles checked had many polyphasic motor units present, some distal muscles with larger-than-normal amplitudes and durations, suggesting evidence of chronic denervation. Both lumbosacral paraspinal muscle examinations are normal, suggesting a distal process.

Impression: Findings are consistent with a mixed-type sensory-motor demyelination and axonopathy polyneuropathic process affecting the distal lower extremities symmetrically.

Signature:

J. Therapist, PT

Date: \_\_\_\_\_



## Sensory

Nerve Site	Latency (ms)	Amplitude (mV)	Distance (mm)	Conduction Velocity (m/s)
L Sural/Ankle				
Lower leg	NO (<4.0)	NO (>8)	140	NO (>35)
R Sural/ankle				
Lower leg	NO (<4.0)	NO (>8)	140	NO (>35)
R Super Fib/dorsum foot				
Lateral leg	NO (<4.0)	NO (<8)	140	NO (>35)
R Median/Dig II				
Wrist	3.4 (<3.5)	12 (>10)	140	41.2 (>40)

## H Reflex

Nerve	Latency (ms)	Amplitude (mV)
L Tibal/Gast	NO	NO
R Tibal/Gast	NO	NO

NO=Not Obtainable

## EMG Table

Muscle	Side	Insert	PSW	Fibs	Poly	Amp	Dur	Pattern
R Fem	L	Norm	None	None	>50%	Norm	Norm	Full
V Lat	L	Norm	None	None	>50%	Norm	Norm	Full
LH Biceps F	L	Norm	None	None	>50%	Norm	Norm	Full
Tib Ant	L	Norm	+2	+2	>50%	Norm	Norm	Partial
EHL	L	Norm	+2	+2	>50%	>5 mV	>16 ms	Partial
Gast M	L	Norm	+2	+2	>50%	>5 mV	Norm	Partial
Soleus	L	Norm	+2	+2	>50%	>5 mV	Norm	Partial
Upper lumbar paraspinals	L	Norm	None	None	<15%	None	Norm	Not tested
Mid-lumbar paraspinals	L	Norm	None	None	<15%	Norm	Norm	Not tested
Lower lumbar paraspinals	L	Norm	None	None	<15%	Norm	Norm	Not tested
R Fem	R	Norm	None	None	>50%	Norm	Norm	Full
V Lat	R	Norm	None	None	>50%	Norm	Norm	Full
LH Biceps F	R	Norm	None	None	>50%	Norm	Norm	Full
Tib Ant	R	Norm	+2	+2	>50%	Norm	Norm	Partial
EHL	R	Norm	+2	+2	>50%	>5 mV	>16 ms	Partial
Gast M	R	Norm	+2	+2	>50%	Norm	Norm	Partial
Soleus	R	Norm	+2	+2	>50%	>5 mV	Norm	Partial
Upper lumbar paraspinals	R	Norm	None	None	<15%	Norm	Norm	Not tested
Mid-lumbar Paraspinals	R	Norm	None	None	<15%	Norm	Norm	Not tested
Lower lumbar Paraspinals	R	Norm	None	None	<15%	Norm	Norm	Not tested

Score Overall = 91

Critical Level 1 (History and Systems Review) = 90%

Critical Level 2 (Examination/Tests and Measurements) = 90%

Critical Level 3 (Evaluation/Diagnosis) = 100%

Comments: Passing Peripheral Neuropathy Case Report

**Points deducted for the following:**

- History and Systems Review: Abbreviated neuromuscular screening exam was missing some clarifying data including but not limited to:
  - With the MMT, what does “others” mean? (e.g., other extremity, lower quarter screen).
  - While type of sensation was listed (sensation to light touch)? No reference made to areas other than “feet and ankles” where assessed.
  - No mention of other elements normally found in a neuromuscular screen, such as pathological reflexes assessed, range of motion or gait (could the patient toe-walk or heel-walk?).
- Note: while listing a Straight-leg raise (+) right is commonly done, it is not particularly clear if the positive refers to pain, radicular symptoms, or at what range of motion the positive findings were elicited. Any additional clarification would make this finding stronger.
- Examination, tests, and measurements: Lack of upper extremity needle study.
- Evaluation/diagnosis: Appropriate.
- Based on the above: Passing electrophysiologic case report representing a peripheral neuropathy.

## **Clinical Education Experience Documentation**

<Letterhead>

<Date>

### **American Board of Physical Therapy Specialties**

Clinical Electrophysiology Council  
3030 Potomac Ave., Suite 100  
Alexandria, VA 22305

The purpose of this letter is to describe the clinical experiences of <applicant name> in the area of electrodiagnostic testing. I worked directly with <applicant name> during the period <date> to <date>.

Initially, I demonstrated testing techniques, then closely supervised <applicant name> in both nerve conduction assessment and needle electromyography, then was readily available for consultation and assistance as needed. The patients had a variety of pathologies, including focal peripheral mononeuropathies, spinal nerve root lesions, polyneuropathies, plexopathies, neuromuscular junction disorders, and myopathies.

<Applicant name> has developed more than sufficient skill to independently practice clinical electrophysiology (electrodiagnostic testing). If you require further information, please feel free to contact me.

Sincerely,

<Mentor name, PT, Board-Certified in Clinical Electrophysiologic Physical Therapy or MD>

## RESOURCE GUIDE INFORMATION

Resource guides are compiled by APTA sections and board-certified specialists to reflect current literature in the specialty area. They are provided for your information only. Neither ABPTS nor the specialty councils have reviewed or endorsed the content of these lists. In addition, reviewing these resources does not guarantee that a candidate will receive a passing score on the specialist certification examination.

### **Clinical Electrophysiologic Physical Therapy Resource Information**

Academy of Clinical Electrophysiology and Wound Management — APTA  
Nichole Walleen  
2920 East Ave. South, Suite 200  
LaCrosse, WI 54601  
Phone: 608-351-2730  
Email: [info@acewm.org](mailto:info@acewm.org)

# APTA Specialist Certification

Governed by **ABPTS**

## Geriatric Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

# Geriatric Candidate Guide

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The questions on the exam will be distributed approximately according to the following percentages of content areas. This is an approximation only and may not represent the exact distribution of questions on the examination. All questions on the exam relate to competencies as outlined in the Description of Specialty Practice: Geriatric Physical Therapy.

Content Area	% of Exam
Questions	
I. Knowledge Areas:	15%
a. Questions from the foundation, clinical, and behavior sciences	
II. Practice Expectations:	85%
a. Professional Roles and Responsibilities (15%)	
b. Patient and Client Management	
1. Examination (25%)	
2. Evaluation/Diagnosis/Prognosis (15%)	
3. Intervention (25%)	
4. Outcomes (5%)	
<b>TOTAL:</b>	<b>100%</b>

### Sample Questions

Candidates for the specialist certification examination in geriatric physical therapy are encouraged to review the following sample questions to familiarize themselves with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

1. The decrease in VO<sub>2</sub>max with normal aging is most related to which of the following?
  - a. Decrease in maximum cardiac output.
  - b. Decrease in maximum heart rate.
  - c. Decrease in diastolic blood pressure.
  - d. Decrease in maximum stroke volume.
2. A 75-year-old woman who sustained an acute fracture of the pelvis three weeks ago is referred to physical therapy for gait training with orders for weight bearing as tolerated. Recent cardiac evaluation has shown nonspecific ST-segment ischemia and an ejection fraction of 60%. Given the patient's cardiac status, which of the following is the most appropriate therapy plan?
  - a. Delay gait training.
  - b. Require decreased frequency of sessions from normal.
  - c. Require decreased intensity per session from normal.
  - d. Place no restrictions on the therapy.

3. Starting in the third or fourth decade, normal aging without disease is associated with what percent loss in strength?
  - a. 0.5% per year.
  - b. 1.0% per year.
  - c. 0.5% per decade.
  - d. 1.0 % per decade.
4. A 69-year-old woman with Parkinson disease of seven years' duration has been treated successfully since onset with levodopa/carbidopa (Sinemet), but her rigidity and tremor have been worsening for the last six months. She also reports difficulty with shortness of breath and falling. The most likely cause of this patient's dyspnea on exertion is:
  - a. Anxiety reactions.
  - b. Deconditioning.
  - c. Drug toxicity.
  - d. Normal age-related changes in the lung.
5. Referring to Question 4 above, which of the following gait deviations is most likely to be observed in this patient?
  - a. Antalgic limp bilaterally.
  - b. Bilaterally symmetrically shortened steps.
  - c. Genu recurvatum in single limb support.
  - d. Eymmetric circumduction in the swing phase.
6. Referring to Question 4 above, which of the following is the most appropriate intervention?
  - a. Communicate with a physician regarding medication effects.
  - b. Establish a free-weight exercise program.
  - c. Fabricate night splints to counteract the increasing rigidity.
  - d. Refer to a cardiologist because of shortness of breath.
7. In a study to determine the efficacy of physical therapist intervention for patients with post-polio syndrome, four groups were formed: (1) patients with post-polio syndrome who do not undergo physical therapist intervention, (2) patients with post- polio syndrome who undergo physical therapist intervention, (3) a group of healthy adults (without post-polio), and (4) a group of healthy age-matched controls. Which statistic would best determine the efficacy of the program?
  - a. Paired t-test.
  - b. Chi square analysis.
  - c. 1x4 ANOVA.
  - d. Series of unpaired t-tests.

8. An 85-year-old male is two weeks status post femoral neck fracture following a slip and fall on an icy sidewalk. He underwent a posterior lateral left total hip replacement. His past medical history includes congestive heart failure and coronary artery disease, which are currently controlled with medication. Prior to surgery, the patient walked one mile daily and swam laps three times per week. The discharge summary on post-op day six indicates the patient ambulated 25 feet with a walker and supervision. The physical therapist sees the patient in his home on post-op days 9, 11, and 13. On days 11 and 13 the patient complains of light-headedness and dizziness when sitting up from supine. In this situation, this response most likely indicates:
- A normal response postsurgery.
  - Vestibular dysfunction.
  - A problem with medication dosage.
  - An abnormal hematocrit or hemoglobin value.
9. A 68-year-old man is referred to an outpatient clinic after being diagnosed by his physician as having osteoarthritis of the knee. His major complaint is pain with weight bearing, which began two weeks ago after a tennis tournament. He walks into the clinic with an antalgic gait pattern. The most useful information to guide the exercise program for this patient would be:
- Radiograph results.
  - Sedimentation rate.
  - Current medications.
  - Joint signs and symptoms.
10. A 74-year-old woman has an edematous left lower extremity. The swelling does not improve with ice, elevation, or muscle pumping. There is no redness, tenderness, or calf pain. Her medical history includes: coronary artery bypass surgery two years ago, hypertension, type 2 diabetes, and a left total knee replacement six weeks ago. Which of the following is the most likely cause of the edema?
- Congestive heart disease.
  - Deep vein thrombosis.
  - Lymphatic congestion.
  - Peripheral neuropathy.
11. An 80-year-old man with Parkinson disease has been taking levodopa for the past seven years. He has mild cognitive impairment and increased difficulty moving from sit to stand. When observing trunk mobility, the key component to assess as he moves from sit to stand is:
- Anterior pelvic tilt.
  - Posterior pelvic tilt.
  - Trunk rotation.
  - Trunk flexion.

Key: 1-b, 2-d, 3-b, 4-b, 5-b, 6-a, 7-c, 8-c, 9-d, 10-c, 11-a.



## RESOURCE GUIDE INFORMATION

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### **Geriatrics Physical Therapy Resource Information**

Academy of Geriatric Physical Therapy — APTA  
Karen Curran  
3510 East Washington Ave.  
Madison, WI 53704  
Phone: 866-586-8247  
Email: [karen.curran@geriatricspt.org](mailto:karen.curran@geriatricspt.org)  
Website: [geriatricspt.org](http://geriatricspt.org)

**Last Updated:** 05/06/2021  
**Contact:** [spec-cert@apta.org](mailto:spec-cert@apta.org)

# APTA Specialist Certification

Governed by **ABPTS**

## Neurologic Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

## NEUROLOGIC PHYSICAL THERAPY EXAMINATION OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The following is an outline summarizing the approximate examination percentages for each content domain. The outline also contains information on the examination content based on patient and client conditions. Examination questions can represent both a practice expectation and a knowledge area associated with that expectation. Please note that this is an approximation only and may not represent the exact distribution of questions on the examination. All questions on the exam relate to competencies outlined in the “Description of Specialty Practice: Neurologic Physical Therapy.”

Content Area	% of Exam
<b>III. Knowledge Areas:</b>	<b>20%</b>
c. Foundation Sciences	
d. Behavioral Sciences	
e. Clinical Sciences	
f. Clinical Reasoning and Critical Inquiry	
<b>IV. Professional Roles, Responsibilities, and Values:</b>	<b>15%</b>
a. Communication	
b. Education	
c. Consultation	
d. Evidence-based Practice	
e. Prevention, Wellness, and Health Promotion	
f. Social Responsibility	
g. Leadership	
h. Professional Development	
<b>V. Patient and Client Management Model:</b>	<b>65%</b>
a. Patient and Client Examination	30%
1. History and Systems Review	
2. Examination Procedures (Tests and Measures)	
3. Evaluation/Diagnosis/Prognosis	
b. Intervention	30%
1. Clinical Decision-Making Regarding Plan of Care	
2. Coordination, Communication, and Documentation	
3. Patient and Client-Related Instruction	
4. Procedural Interventions	
c. Outcomes	5%
<b>TOTAL:</b>	<b>100%</b>

## **Medical Conditions**

The medical conditions that may be represented on the examination include (but are not limited to) the following:

1. Primary prevention of diseases, injuries, or functional decline of the neuromuscular system across the lifespan.
2. Promotion of health and wellness in populations with lifelong disability from neurologic conditions.
3. Prevention and management of body function and structure, activity limitations, and participation restrictions in individuals with conditions of the neuromuscular system, including:
  - Cerebral vascular accident.
  - Traumatic brain injury.
  - CNS tumors.
  - Spinal cord injury.
  - Cerebral palsy.
  - Multiple sclerosis.
  - Basal ganglia disorders (e.g., Parkinson disease, Huntington disease, dystonias).
  - Cerebellar disorders.
  - Dementia/Alzheimer's disease.
  - Vestibular disorders.
  - Falls and balance disorders.
  - Peripheral neuropathy.
  - Acute poliomyelitis and postpoliomyelitis syndrome.
  - Amyotrophic lateral sclerosis.
  - Guillain-Barré syndrome and polyneuropathies.
  - Muscle disease.
  - Amputations in individuals with neurologic disorders.
  - Psychiatric disorders and aphysiologic disorders, such as functional neurologic disorder.
  - General medical disorders affecting the neuromuscular system.
  - Cardiovascular and pulmonary disorders in individuals with neurologic conditions.
  - Musculoskeletal disorders in individuals with neurologic conditions.
  - Integumentary dysfunction in individuals with neurologic conditions.
  - Critical Illness polyneuropathy/myopathy.

## Sample Questions

Candidates for the specialist certification examination in neurologic physical therapy are encouraged to review the following sample questions to familiarize themselves with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

Use the following information to answer questions 1, 2, 3, and 4.

A 67-year-old woman who underwent removal of a pituitary tumor eight months ago is referred to outpatient physical therapy by her primary care physician. The patient reports that her function related to completing activities of daily living has further deteriorated ever since she had surgery to repair a hernia two weeks ago.

1. On evaluation, the physical therapist is most likely to find:
  - e. Impairments in vision.
  - f. Involuntary movements.
  - g. Motor planning deficits.
  - h. Neglect syndrome.
2. With which functional activities is this patient most likely to have greatest difficulty?
  - a. Balancing her checkbook.
  - b. Performing sit-to-stand transfers.
  - c. Preparing a sandwich in her kitchen.
  - d. Telephoning a family member.
3. Which of the following outcome tools is most appropriate to address this patient's decline in function and activities of daily living?
  - a. Fugl-Meyer Test.
  - b. Action Research Arm Test.
  - c. Functional Reach Test.
  - d. Motor Activity Log.
4. During gait, the patient has significant forward trunk inclination. Which of the following sets of activities is most appropriate to incorporate into a home exercise program?
  - a. Lying prone over a ball, lifting of opposite and lower extremities.
  - b. Standing with a ball between her back and a wall, active knee bends to 30 degrees.
  - c. Sitting on a ball, rolling back into a bridge position with a ball under her scapulae, returning to sit.
  - d. Ambulation on treadmill in gym in front of a mirror.

Use the following information to answer questions 5, 6, and 7.

A physical therapist student is in the final affiliation on an acute rehabilitation unit. Previous clinical affiliations have included part-time experience in an acute-care hospital, full-time experience in an outpatient orthopedic setting, and full-time experience in a hand treatment center.

5. Which of the following traits is most critical to emphasize during this affiliation?
  - a. Ability to adapt treatment to changing patient condition.
  - b. Capacity to collaborate with other health providers.
  - c. Efficiency of physical therapy evaluation.
  - d. Competence in hypothesis-oriented practice.
6. The student tends to spend more time with young patients and seems reluctant to initiate treatment activities with older patients. When asked about this tendency, the student states, "I just don't feel comfortable around old people. I won't be working with them after I graduate, anyway." Which of the following responses is most appropriate?
  - a. "I don't care who you are going to work with after graduation. For now, you are in this clinic and have to treat all patients I assign to you."
  - b. "I don't really like old people either, but I work with them because it is my responsibility. You should too."
  - c. "Maybe there is a reason you feel the way you do. Can you think of anything?"
  - d. "Old people deserve your respect too. You have to change your attitude toward them."
7. The academic coordinator of clinical education at the student's school has developed a new student evaluation form to assess safety, professional behavior, and clinical reasoning, and has asked that it be completed at four weeks and at eight weeks in the affiliation. Comparing the scores of this new evaluation form at the two different timepoints will assess which of the following types of validity?
  - a. Concurrent.
  - b. Construct.
  - c. Content.
  - d. Predictive.
8. Which of the following presentations is consistent with central cord syndrome:
  - a. Intact sensation.
  - b. More difficulty climbing stairs than tying shoes.
  - c. More difficulty dressing than walking.
  - d. Propel a wheelchair with one arm and leg.
9. Which of the following sets of findings is most likely in a patient with anterior horn cell disease?
  - a. Muscle atrophy, fasciculations, normal motor and sensory nerve conduction velocities, and giant motor unit potentials on electromyography.
  - b. Muscle atrophy, giant polyphasic MUPs on EMG, and stocking glove sensory loss.
  - c. Muscle atrophy, slowed motor and sensory nerve conduction velocities, and giant polyphasic MUPs on EMG.
  - d. Slowed motor nerve conduction velocity and MUPs with small amplitude on EMG.

10. The use of electromyographic biofeedback training to bring the normally unconscious control of specific muscles under conscious control is analogous to which stage of motor learning?
- a. Associative.
  - b. Autonomous.
  - c. Cognitive.
  - d. Transitive.

Key: 1-a, 2-a, 3-d, 4-d, 5-b, 6-c, 7-d, 8-c, 9-a, 10-c

## RESOURCE GUIDE INFORMATION

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### **Neurologic Physical Therapy Resource Information**

APTA — Academy of Neurologic Physical Therapy Inc.  
5841 Cedar Lake Rd., Ste 204  
Minneapolis, MN  
Phone: 952-646-2038  
Email: [neuro@apta.org](mailto:neuro@apta.org)  
Website: [neuropt.org/](http://neuropt.org/)



# APTA Specialist Certification

Governed by **ABPTS**

## Oncologic Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

## Initial Certification Deadlines for Oncology

July 1: Application deadline

Aug. 31: Reapplication deadline

Nov. 30: Exam fee deadline

### Certification Requirements

All applicants must submit one case report demonstrating specialty practice in oncology. This case report must be based on a patient or client seen within the last three years.

Applicants must also meet requirements for Option A or Option B.

#### Option A

Applicants must submit evidence of 2,000 hours of direct patient care as a licensed U.S. physical therapist (temporary license excluded) in the specialty area within the last 10 years, 25% (500 hours) of which must have occurred within the last three years. Direct patient care must include activities in each of the elements of patient and client management applicable to the specialty area and included in the Description of Specialty Practice. These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

#### Option B

Applicants must submit evidence of successful completion of an APTA-accredited postprofessional oncologic clinical residency completed within the last 10 years that has a curriculum plan reflective of the Description of Specialty Practice for Oncologic Physical Therapy. Experience from residencies in which the curriculum plan reflects only a portion of the DSP will not be considered.

Applicants who are currently enrolled in an ABPTRFE-accredited clinical residency or enrolled in a residency program that has been granted candidacy status may apply for the specialist certification examination in the appropriate specialty area prior to completion of the residency. These applicants are conditionally approved to sit for the examination, as long as they meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency to APTA's Specialist Certification Program no later than one month before the examination window opens. To verify your residency program's accreditation status, visit [abptrfe.com](http://abptrfe.com).

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The examination will comprise approximately 200 questions. Questions may include graphics. Examination questions can represent both a practice expectation and a knowledge area associated with that expectation. The following is a summary, including the percent of exam questions for each of the major components of the Description of Specialty Practice: Oncologic Physical Therapy.

<b>Content Area</b>	<b>% of Exam</b>
<b>Knowledge Areas</b>	<b>15%</b>
Foundation Sciences	5%
Clinical Sciences	5%
Behavioral Sciences	5%
<b>Professional Roles, Responsibilities and Values</b>	<b>16%</b>
Professional Behavior	2%
Professional Development	2%
Communication	2%
Social Responsibility	2%
Leadership	2%
Education	1%
Advocacy	1%
Administration	1%
Consultation	1%
Evidence-based Practice	2%
<b>Patient and Client Management Expectations</b>	<b>69%</b>
Examination/Reexamination	23%
Evaluation/Diagnosis/Prognosis	14%
Intervention/Instruction	27%
Outcomes	5%
<b>TOTAL:</b>	<b>100%</b>

### Medical Conditions

Conditions on the following list could be represented on the specialty exam. The list is meant to be a guide and is not comprehensive. Further, it is expected that consideration is given not only to the medical diagnosis of cancer, but also to the side effects and late effects of the treatments rendered to manage the disease, including but not limited to chemotherapy, radiation therapy, and surgery.

#### Types of Cancer:

- Breast.
- Prostate.
- Lung.
- Colorectal
- Ovarian.
- Melanoma.
- Cervical.
- Uterine
- Bladder
- Testicular
- Pancreatic.
- Leukemia.
- Lymphoma.
- Multiple myeloma.

- Osteosarcoma.
- Soft-tissue sarcoma.
- Central nervous system.
- Brain.
- Kidney.
- Stomach.
- Head and neck.
- Thyroid.
- Paraneoplastic syndromes.

**Musculoskeletal:**

- Bone metastasis.
- Hormonal deprivation-induced osteoporosis.
- Pelvic pain, hypertonus, vaginal fibrosis.
- Weakness.
- Postural deviations from radiation-related tissue contracture.
- Loss of ROM.
- Cording/axillary web syndrome.
- Steroid myopathy.
- Difficulty swallowing.
- Myalgia.
- Arthralgia/joint pain.
- Myopathy.
- Osseous fragility.

**Neurological:**

- Loss of sensation.
- Nerve palsies (such as facial, spinal accessory, long thoracic).
- Brachial plexopathies (radiation induced vs. metastatic).
- Lumbosacral plexopathies.
- Peripheral neuropathies.
- Balance dysfunction.
- Chemotherapeutic neurotoxicities.
- Falls.
- Gait abnormalities.
- Spinal cord compression.
- Brain and CNS metastasis.

**Integumentary:**

- Radiation fibrosis.
- Desquamation.
- Phlebototoxicity.
- Radiotherapy toxicities.
- Skin extrusion.
- Infection.
- Cardiovascular and Pulmonary:
- Deconditioning.
- Cancer-related fatigue.
- Lymphedema.

- Shortness of breath/dyspnea.
- Chemotherapeutic cardiotoxicities.
- Interstitial pulmonary fibrosis
- Cachexia.
- Vena cava syndrome.
- Pulmonary metastasis.

**Immunosuppressive:**

- Graft vs. Host disease.
- Scleroderma.
- Thrombocytopenia.
- Neutropenia.
- Anemia.
- Oncological Emergencies.
- End of Life.

**Sample Questions**

Candidates for the specialist certification examination in oncology are encouraged to review the following sample questions to familiarize themselves with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

**Case Scenario 1**

The patient is a 45-year-old man in the acute care stem cell transplant unit. He is two weeks post-SCT for failed therapy for multiple myeloma. He has been functionally ambulating in his room, but recently the nursing staff witnessed him being unsteady on his feet and wobbling. Dorsiflexion appears to be limited into both ankles. His chemotherapy regimen included vincristine, doxorubicin, and dexamethasone, followed by high-dose melphalan.

1. Based on clinical presentation and past medical history, what is the most likely underlying cause of his presentation?
  - i. Chemotherapy-induced peripheral neuropathy.
  - j. Steroid-induced myopathy.
  - k. Metastatic lesion of the central nervous system.
  - l. Graft vs, Host disease.
2. What tests and measures should the specialist use to objectively assess the severity of the deficits noted?
  - a. Tinetti Balance Score.
  - b. Total Neuropathy Score.
  - c. Berg Balance Test.
  - d. Timed Up and Go test.
3. Upon evaluation of the medical chart, the specialist finds the patient's platelet levels to be low (<10,000). The medical team is strongly recommending physical therapist treatment today. The appropriate treatment plan would include:
  - a. Resistive exercise.
  - b. No activity restrictions.
  - c. Bedside activities.
  - d. No ambulation.

## Case Scenario 2

The patient is a 60-year-old woman postsurgical resection of a spinal ependymoma. Since the surgery, she has experienced a decline in mobility status and now requires moderate assistance for transfers. Her past medical history includes a basal cell carcinoma 20 years ago, resolved, and stage 0 melanoma treated with wide local incision seven years ago. PT assessment of the neuromuscular and musculoskeletal system prior to her surgical procedure revealed:

- Sensation: Lower limb dysesthesias were described as mild, itchy sensations. These occurred prior to the onset of back pain; intensity 2/10. Back pain is rated at 6/10 after gardening, requiring an over-the-counter analgesic. Sometimes without specific activity it can increase to 3-4/10.
- Proprioception: Patient had 3/5 correct answers on the left great toe compared with 5/5 on the right.
- Motor: Functional stability has been impaired, given her report that she has difficulty rising from the floor. MMT revealed slightly more left lower extremity weakness compared with the right lower extremity. Most significant proximal weakness.
- Gait: Decreased step length on the left. Selected comfortable speed during a 6-minute walk test was 2.4 mph. Mild increase in discomfort after testing was noted. No assistive device was used.
- Balance: Left unipedal stance time 15 seconds; right unipedal stance time 30 seconds.

Present exercise routine includes walking twice weekly in her community followed by general LE stretches and knee-to-chest stretches, and hook lying trunk rotation to reduce back pain.

4. What is the most appropriate care setting for her to receive rehabilitation postoperatively?
  - a. Acute inpatient rehabilitation.
  - b. Outpatient ambulatory rehabilitation.
  - c. Skilled nursing facility.
  - d. Long-term acute care facility.
5. What postsurgical rehabilitation interventions would be most appropriate and indicated for this patient in an outpatient setting?
  - a. Extension-based core stabilization with modified hamstring stretches to avoid flexion and vertebral compression.
  - b. Progressive closed-chain exercises with proprioceptive challenges, and gait training.
  - c. Transfer training using a thoracic-lumbar spinal orthosis to protect the spinal cord.
  - d. Only partial-weight-bearing gait activities for four weeks postoperatively.

Key: 1-a, 2-b, 3-c, 4-b, 5-b.

## PREPARING A CASE REPORT

### Instructions

The purpose of the clinical case report is to document competency in patient and client management in the specialty area. Patient and client management in a clinical case reveals clinical reasoning skills that are essential to demonstrating competency in the oncologic physical therapy specialty area.

Guidelines for case selection: Patient and client management has five elements — examination, evaluation, diagnosis, prognosis, and intervention — which lead to optimal outcomes of care. Please select a typical case in your practice where you can provide evidence that demonstrates your competency in all five elements. The case should provide a clear picture of how the oncologic specialist provided care that is beyond that of an entry-level practitioner. ABPTS may audit your submitted case report to verify its authenticity.

**Material and information to include (see attached sample case report and rubric for specific criteria required):**

- Following an abstract, begin the document with your background and introduction to include the rationale for selecting the case.
- Include relevant clinical information in narrative form, which may be supplemented using tables or graphs.
- Present the information descriptively with identifying information removed.
- Provide a written description of clinical reasoning based on a synthesis of information and what is known in the literature, i.e., discuss why certain tests and measures or interventions were selected based on the literature and appropriateness for the patient.
- Provide at least 10 relevant citations that are not more than 10 years old from the literature to support clinical decision making.
- The case reviewer will consider the relevance of these references when evaluating the case report.

The case should indicate contemporary, specialist practice as depicted in the Description of Specialty Practice for Oncologic Physical Therapy. An individual evaluating competency should be able to rate performance from reading the case using the scoring rubric described below.

Scoring Rubric: After reviewing the case report, the rater will decide if it has met competency as specified by the scoring rubric (see below). Submitted cases must meet competency for approval at this step of initial certification. Competency is defined as obtaining a score of “Pass” for the screening criteria.

### Process for Submission of a Clinical Case Report:

1. Submit the case along with your application to sit for the oncologic specialty examination.
2. The case will be evaluated within three months of submission.
3. A case that does not meet the screening criteria will be returned with an explanation.
4. A case not rated as competent will be returned with the rater’s comments.
5. If the case is rated as not meeting the screening criteria or competent, you can replace it with another case, but only once.
6. Each case will be reviewed by two trained raters in the specialty area. Disagreements between two raters will be referred to a third, trained rater.
7. If your case is not rated as competent, you may submit a written request to the American Board of Physical Therapy Specialties for reconsideration per existing ABPTS policy and procedures for reconsideration requests.

## Compliance with HIPAA Privacy Rule

To be in compliance with the HIPAA Privacy Rule, the case report and any documentation you submit must conform to either Option 1 or Option 2 below:

**Option 1.** Deidentify the patient information in the case report and documentation per the HIPAA Privacy Rule, which defines 18 specific items that must be removed to release patient information without patient authorization or approval from the Research Privacy Board.

These 18 items are:

1. Names.
2. All geographic subdivisions smaller than a state, including street address, city, county, precinct, ZIP Code, and their equivalent geographical codes, except for the initial three digits of a ZIP Code if, according to the current publicly available data from the Bureau of the Census:
  - a. The geographic unit formed by combining all ZIP Codes with the same three initial digits contains more than 20,000 people.
  - b. The initial three digits of a ZIP Code for all such units containing 20,000 or fewer people are changed to 000.
3. All elements of dates (except year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death; and all ages over 89 and all elements of dates (including year) indicative of such age, except that such ages and elements may be aggregated into a single category of age 90 or older.
4. Telephone numbers.
5. Facsimile numbers.
6. Electronic mail addresses.
7. Social security numbers.
8. Medical record numbers.
9. Health plan beneficiary numbers.
10. Account numbers.
11. Certificate/license numbers.
12. Vehicle identifiers and serial numbers, including license plate numbers.
13. Device identifiers and serial numbers.
14. Web URLs.
15. IP address numbers.
16. Biometric identifiers, including fingerprints and voiceprints.
17. Full-face photographic images and any comparable images.
18. Any other unique identifying number, characteristic, or code, unless otherwise permitted by the Privacy Rule for reidentification.



**Option 2.** Obtain written authorization from the patient.

A template of a form to be used for this purpose is located in Section 12.2 of the application. This written authorization does not need to be obtained if patient information in the case report and documentation is deidentified per the instructions in Option 1 above.

Case Report Checklist and Required Criteria: Please see scoring rubric for specific details of required criteria.

**CARE Checklist**

1. Title. The area of focus and “: a case report” should appear at the end of the title.
2. Key Words. Two to five key words that identify topics in this case report.
3. Abstract.
  - a. Introduction/Background and Purpose: what is unique and why is it important?
  - b. Case Description: The patient’s main concerns and important clinical findings, the main diagnoses and interventions.
  - c. Outcomes: Brief description of the outcomes.
  - d. Conclusion: What are the “take-away” lessons?
4. Introduction: Briefly summarize why this case is unique to the oncologic specialty; include medical literature references.
5. Patient information.
  - a. Deidentified demographic and other patient information.
  - b. Main concerns and symptoms of the patient.
  - c. Medical, family, and psychosocial history including genetic information.
  - d. Relevant past interventions and their outcomes.
6. Clinical Findings. Relevant physical examinations (PE) and other clinical findings.
7. Timeline. Relevant data from this episode of care organized as a timeline (figure or table).
8. Diagnostic Assessment.
  - a. Diagnostic methods (PE, laboratory testing, imaging, surveys).
  - b. Diagnostic challenges.
  - c. Diagnostic reasoning including differential diagnosis.
  - d. Prognostic characteristics when applicable.
9. Therapeutic Intervention.
  - a. Types of intervention (pharmacologic, surgical, preventative, physical therapy).
  - b. Administration of intervention (dosage, intensity, duration).
  - c. Changes in the interventions with explanations.
10. Follow-up and Outcomes.
  - a. Clinician and patient-assessed outcomes when appropriate.
  - b. Important follow-up diagnostic and other test results.
  - c. Intervention adherence and tolerability (how was this assessed)?

11. Adverse and unanticipated events.
  - a. Strengths and limitations in your approach to this case.
  - b. Discussion of the relevant medical literature.
  - c. The rationale for your conclusions.
  - d. The primary “take-away” lessons from this case report.
12. Patient Perspective. Share the patient’s perspective on their case.
13. Informed consent. The patient should give informed consent.

### **Additional Information for Case Report**

#### **Preparation References**

All documented citations should be less than 10 years since publication unless the article is considered a seminal study. References are to be provided throughout **all** sections of the case report. The applicant should provide reference citations using American Medical Association formatting supporting all clinical decision making and intervention techniques. Course manuals are not accepted as supporting references.

#### **Areas of Reflection**

The applicant is to provide reflection within each section of the case report document. These reflections should highlight the specialist’s clinical thought processes and rationale. This is the opportunity for the applicant to clearly demonstrate their ability to understand and practice as a clinical specialist. This may include discussion on decisions that were made correctly or decisions that would be made differently in the future. The applicant may also highlight items that would receive additional focus next time or methods on which they would change their practice with future patients.

#### **Scoring**

Case reports that are poorly assembled, rely on insufficient or outdated literature, or do not adequately demonstrate the clinical decision-making process throughout the document in the reflections will not receive a passing score. Applicants will be provided one opportunity for revision if a non-passing score is received.

Refer to the case report scoring rubric for specific points of content that should be included in the case report to achieve a passing score. The applicant must include all points within each section of the case report (as clearly outlined on the scoring rubric) to receive a passing score.

#### **Mistakes to Avoid**

These are the most common mistakes applicants make in the case report. Take care to avoid them, as they result in a nonpassing score.

- Failure to provide the required reflection within each section of the case document.
- Failure to address each point on the scoring rubric.
- Incomplete post case report reflection or failure to include this section.
- Failure to cite supporting literature through the case report to support clinical decisions and treatment interventions.

## Case Report Scoring Rubric

Case Report Criteria	Pass	
<b>Title</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A descriptive and succinct <b>title</b> that describes the phenomenon of greatest interest (symptom, diagnostic test, diagnosis, intervention, outcome). Ends with "A Case Report." Clearly and concisely describe the case topic.		
<b>Abstract</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Briefly summarize the relevant information in 250 words or fewer without citations. Information should include the following elements: (1) Introduction/Background; (2) Case Description/Key points from the case such as interventions of the physical therapy episode of care; (3) Outcomes; and (4) Discussion: Main lessons to be learned from this case report.		
<b>Key words</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Provides two to five <b>key words</b> that will identify important topics covered by this case report.		
<b>Introduction</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Briefly summarizes why this case report is important and provides the conceptual foundation for the report. Provides an adequate background to support the subsequent content. Uses American Medical Association formatting to cite one of the CARE articles (e.g., Gagnier JJ, Kienle G, Altman DG, et al. The <a href="#">CARE Guidelines</a> : Consensus-Based Clinical Case Reporting Guideline Development. Glob Adv Health Med. 2013 Sep;2(5):38-43)		
<b>Timeline of Episode of Care</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Provides a <b>timeline</b> as a chronological summary of an episode of care as a figure or table. Begins with antecedents and past medical history through the interventions and outcomes of the physical therapy episode of care. Should be a graphic representing the case report as a visual summary (see examples of timelines that follow the <a href="#">CARE Guidelines</a> ).		
<b>Purpose Statement</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> <li>The applicant presented a <b>rationale</b> for the case, e.g., diagnosis within those seen most often by an oncology practitioner or whose treatment is different from that for a general patient, co-morbidities, presence of "red flags".</li> <li>The applicant provided insight regarding his/her <b>perspective of specialist practice</b>.</li> <li>Represents oncologic specialty practice.</li> <li>Provides rationale for the case, clearly outlining the indicators that make it reflective of oncologic specialty practice.</li> </ul>		

<b>Narrative of the Case e Case</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> <li>• <b>Presents the patient concerns</b> (chief complaints) and <b>relevant demographic information</b>.</li> <li>• <b>Describes the clinically</b> relevant past medical history, pertinent comorbidities, and important physical examination findings.</li> </ul> <p><b>Describes the decision-making and rationale for the following:</b></p> <ul style="list-style-type: none"> <li>• <b>Examination: Systems review/tests and measures (diagnostic assessments);</b> discusses diagnostic testing and results.</li> <li>• <b>Evaluation/diagnosis:</b> Demonstrates the synthesis of all the examination findings from the history, systems review, and tests and measures, and applies a differential diagnosis process to establish the diagnosis, prognosis, and plan of care as supported by current practice and literature.</li> <li>• <b>Prognosis/plan of care:</b> <ul style="list-style-type: none"> <li>○ The <b>prognosis</b> includes a predicted optimal level of improvement in function and the amount of time needed to reach that level.</li> <li>○ The specialist reflects on: <ul style="list-style-type: none"> <li>• Favorable and unfavorable prognostic indicators.</li> <li>• Patient's perceptions (i.e., cognitive/affective status).</li> <li>• Possible contributing factors.</li> </ul> </li> <li>○ The <b>plan of care</b> demonstrates the use of interventions to produce changes in the condition that are consistent with the diagnosis and prognosis.</li> </ul> </li> <li>• <b>Interventions:</b> Describes the types of interventions (pharmacologic, surgical, preventive, lifestyle) and how the interventions were administered (dosage, strength, duration and frequency). Tables or figures may be used.</li> <li>• <b>Follow-up and outcomes:</b> Describes the clinical course of the episode of care during follow-up visits including: <ul style="list-style-type: none"> <li>○ Intervention modification, interruption, or discontinuation.</li> <li>○ Intervention adherence and how this was assessed.</li> <li>○ Adverse effects or unanticipated events.</li> </ul> </li> </ul>		
<b>Discussion</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Describes case management, including strengths and limitations, with scientific references.		
<b>Conclusion/Post Case Reflections</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Offers the most important findings from the case and suggestions for future directions.		
<b>References</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Includes appropriately chosen references from peer-reviewed scientific literature. All citations are less than 10 years since publication unless the article is considered a seminal study. References are to be provided throughout <b>all</b> sections of the case reflection using American Medical Association formatting, supporting all clinical decision-making and intervention techniques. Course manuals are not accepted as supporting references.		

<b>Acknowledgements</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mentions funding support or conflicts of interest, if applicable.		
<b>Informed Consent</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(Option 1 provides the opportunity for deidentified information without consent). Informed consent was provided to the patient, and the author has provided this information if requested. Rarely, additional approval may be needed.		
<b>Format</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Represents specialist practice and is professional in appearance, using correct grammar, spelling and punctuation.		

## Formatting the Case Report

The following questions can be used to help form your case report. Please also using the scoring rubric to ensure all points are included in your case report. Note: The points below are to provide a guide for developing the case report; additional information is likely indicated and should be included.

### Introduction/Background:

- What is the foundation for the topic discussed in this case? Include condition description, incidence/prevalence, current recommendations for medical management, available literature on the topic.
- Case Rationale/Purpose:
- Is this case representative of oncologic specialty practice?
- What element of the specialist's physical examination findings would indicate the need for caution in the intervention?
- Does the specialist provide insight regarding their perspective of specialist practice?

### Examination:

The history, systems review (risk factor assessment), and tests and measures demonstrate appropriate rationale supported by current practice and literature allowing for measurement of outcomes, diagnostic classification, and/or, as appropriate, a referral to or collaboration with another practitioner(s).

The specialist's clinical reasoning reflects an organizational approach that considers development of hypotheses in the categories of activity limitation and participation restriction, patient's perspective on their experience, patho-biological mechanisms, impairments, and source of the symptoms, contributing factors, precautions and contraindications.

### Test and Measures:

- What element of the specialist's physical examination findings would indicate the need for caution in the intervention?
- What did the specialist consider in determining whether or not to refer the patient to another health provider?
- Evaluation/Diagnosis:
- What is the specialist's assessment of the patient's understanding of their problem?
- What is the specialist's assessment of the patient's feelings about their problem, its effect on their life and how it has been managed to date?

- How did the specialist determine the patient's goals were appropriate?
- What effect does the specialist anticipate the patient's understanding and feelings regarding their problem may have on the prognosis, plan of care and intervention?
- Have impairments that may require management or reassessment (e.g., posture, movement patterns, motor control, soft tissue/muscle/join/neural mobility sensitivity, etc.) been identified?
- Has supporting and negative evidence from the examination for diagnosis, been adequately presented and considered? Comment on reliability/, validity, specificity, sensitivity, and/or likelihood ratios of test and measures.)
- Would there be a perceived need to refer the patient to another health provider?

#### **Prognosis/Plan of Care:**

- Do the physical signs fit with the symptoms? If so, how do they fit?
- If not, how would this influence the prognosis, plan of care, and intervention?
- Do the examination findings indicate the need for caution in the prognosis, plan of care, and intervention for the patient? If so, how and what changes are indicated?
- What is the management of the patient for day one (e.g., advice, exercise, passive mobilization, referral for further investigation)? Why was this chosen over the other options? After subsequent visits, how has the specialist or patient understanding of the patient's problem and management changed since the first session?
- If passive treatment was used, what are the principal treatment techniques (rationale provided)?
- What physical examination findings support your choice for management? (Comment on reliability, validity, specificity, sensitivity, and/or likelihood ratios of test and measures.)
- What is the specialist's expectation of the patient's response over the next 24 hours?

#### **Intervention:**

- How would the specialist progress this patient?
- What kind of outcomes are expected for this patient?
- How would the specialist justify referring the patient to another health provider?
- After subsequent visits, how has the specialist or patient understanding of the patient's problem and management changed since first session?
- How are the patients' needs being met?
- What interventions were introduced to improve the overall health status of the patient?
- If the outcome will be less than a 100% resolution of the problem(s), at what point would the specialist cease management, and why?

#### **Post-Case Reflections and Discussion:**

- On reflection, what clues can the specialist recognize that were missed, misinterpreted, underweighted, or over weighted?
- What would the specialist do differently next time?
- Discuss how similar cases were managed based on the learning experience from this case.

#### **Conclusion:**

- What is the takeaway message from this case?
- What are future recommendations?

## Sample Case Report

### Relapsed Diffuse B Cell Lymphoma Receiving Chimeric Antigen Receptor T — Cell Therapy: A Case Reflection

#### Abstract:

Chimeric antigen receptor (CAR) T-cell infusion is a new therapy used to treat relapsed, refractory diffuse large B cell lymphoma (DLBCL). There is no literature to support the efficacy of physical therapist interventions while undergoing this treatment. This case reflection describes the examination, evaluation, and treatment of a female patient with relapsed, refractory germinal cell DLBCL who was admitted to a large, academic medical center for a CAR T-cell infusion. She had lymphedema in one leg and edema in the other leg, along with large, inflamed, malignant lesions with drainage and eschar, causing pain and difficulty with physical activity. She also presented with dyspnea upon exertion and impaired balance that limited her functional mobility. Interventions included compression, wound dressings to mitigate symptoms, aerobic conditioning, and dynamic and static balance training. Not only did she have baseline deficits, she also was at a high risk for CAR T-cell-related encephalopathy syndrome and cytokine release syndrome. Her performance status fluctuated as she developed these mild toxicities, and interventions and goals were tailored to meet her changing status. With consistent therapeutic intervention, in tandem with medical management, the swelling, inflammation, and discomfort decreased, allowing for more comfortable mobility and exercise. Her dyspnea resolved and her functional mobility improved, allowing continued independence and a safe discharge to home. This case demonstrates the successful management of a very complex case of a patient receiving a novel treatment for progressive disease. As the body of literature specific to this patient population and treatment modality is developed, the evidence from other oncology populations can be applied to the management of these patients.

#### Key Words:

CAR T-Cell infusion, diffuse large B cell lymphoma, physical therapy, exercise.

Chief complaint at time of referral included shortness of breath with deep breathing subsequent to recent surgeries and hospitalizations. No complaints of somatic pain except for occasional 3/10 on a scale of 0-10 during deep breathing.

#### Introduction1:

The medical and surgical management of oncology patients is rapidly changing as new treatments are developed to improve survival and quality of life. CAR T-cell infusion is a fairly novel treatment for relapsed, refractory DLBCL.<sup>2</sup> Literature documents the efficacy of and toxicities due to CAR T-cell therapy, but nothing related to the role physical therapy, exercise, or physical activity during or after this treatment.

This patient was selected to document a possible approach to managing this unique patient population. The following case reflection demonstrates the advanced clinical thought and knowledge required to manage the patient's existing and diverse impairments based on the applicable literature, as well as maintain a fluid and ever-changing treatment plan due to potential changes in symptoms or physical functioning during active treatment. The specialist must manage all of this while maintaining a knowledge of the patient's disease process, prognosis, personal goals, and priorities.



### Patient History:

The patient was a 65-year-old Caucasian woman, diagnosed with germinal cell DLBCL in May 2017 when scans revealed bulky abdominal and pelvic adenopathy with resulting moderate hydronephrosis due to compression on her ureters. She was initially treated with six cycles of R-CHOP (rituximab, cyclophosphamide, doxorubicin hydrochloride, vincristine sulfate, and prednisone) with an almost complete response. Three months later, she was found to have recurrent DLBCL with a five-centimeter abdominal mass, as well as adenopathy in the left iliac chain, left psoas/retroperitoneum, and bilateral inguinal, as well as anterior abdominal wall subcutaneous nodules. During the admission when she was found to have recurrent disease, she developed delirium, respiratory failure requiring intubation, acute kidney injury, and atrial fibrillation leading to a stay in the intensive care unit. After she recovered from her acute medical complications, she completed two cycles of RICE (rituximab, ifosfamide, carboplatin, and etoposide) and demonstrated complete metabolic response. Planning was initiated for a stem cell transplant; however, during this time, she developed skin nodules that via biopsy were proven to be relapsed disease. She was then recommended to undergo CAR T-cell infusion. Relevant medications upon admission included acetaminophen and hydrocodone, oxycodone, albuterol, sertraline, and silver sulfadiazine 1% topical cream.

### Current Condition/Chief Complaint:

She was admitted to a large academic medical center for conditioning chemotherapy and CAR T-cell infusion. At this time, she was referred for physical therapy evaluation and treatment, which was standard at the institution providing her care. Along with the above listed history, her past medical history included tobacco use, total abdominal hysterectomy, low back pain and herniated disc, hypertension, hypothyroidism, left lower extremity lymphedema due to lymphoma, and depression. She lived alone with seven cats, in a single-story home with two steps to enter. Her son and daughter-in-law live close and are involved in her care but are also caring for the patient's father. Prior to admission, she reported independence with all mobility and activities of daily living, with the occasional use of a rolling walker. She had received home physical therapy after the above-mentioned ICU stay, and she verbalized that she understands the necessity of therapeutic intervention during this hospital stay, after she experienced a difficult and prolonged functional recovery one time before. She reported following with an outpatient lymphedema therapist who had instructed her in wrapping with short stretch bandaging. She did report that her daily activities and mobility had become progressively more difficult as her wounds and swelling had gotten worse. Her chief complaint was limited mobility due to swelling and pain from wounds. Her goal was to remain living alone with complete independence from her family.

### Review of Systems/Examination:

Examination was performed over the course of two sessions, due to the patient's limited tolerance for activity. Upon observation, she was independently walking throughout the room and completing her activities of daily living.

Baseline vital signs: HR 93 bpm, SpO2 95%, BP 88/52 mmHg. Her strength and range of motion were grossly within functional limits with mild limitations in her lower extremities due to discomfort and swelling. She denied neuropathy during this assessment, although it was documented that she reported altered sensation in her toes just two months prior. She scored 7/12 on the Short Performance Physical Battery, and a 23/24 on The Boston University Activity Measure for Post-Acute Care Short Form. She ambulated 73 meters during the Six-Minute Walk Test, and post vitals were: HR 96, SpO2 96%, BP 96/49. She had dyspnea upon exertion, and reported this test was quite challenging and painful. Her gait pattern revealed slow speed, short step length bilaterally, and wide base of support.

Lymphedema (diagnosis per documented past medical history and patient report) was noted in her left leg, and the patient had unsuccessfully attempted to use short stretch bandages to wrap her ankle and foot, reporting that was all she could comfortably reach at this time. She reported that her left leg lymphedema had



been well controlled to almost equal the normal size of her right leg, but since admission, both of her legs had become swollen. 2+ pitting edema was noted in her right leg. The swelling extended into her perineal area and lower abdomen. She had multiple large, circular, open and draining lesions on her low abdomen, perineal area, and anterior left leg with eschar noted on the largest wounds.

The peri-wound areas were inflamed, red, and tender to the touch with multiple smaller nodules under the skin. At the time of evaluation, the wounds were dressed with the silver sulfadiazine 1% topical cream, an occlusive foam dressing, and tape used to adhere this dressing to her skin.

### Reflection and rationale for selection of objective measures:

#### Six-Minute Walk Test

The Six-Minute Walk Test is a self-paced walk test measuring total distance walked in six minutes, used as a clinical measure of walking performance and function. There is limited literature describing the psychometrics in a similar patient population but has been studied in older adults and other cancer diagnoses. In older adults, it demonstrated concurrent validity with the Short Performance Physical Battery and the five-time sit-to-stand test.<sup>3,4</sup> In colorectal cancer, it demonstrated moderate concurrent validity with the physical function subscale of the 36-Item Short Form Health Survey<sup>3,5</sup>. In a mixed sample of cancer patients, it showed good reliability and correlated to exercise capacity and workload.<sup>6</sup> It is easy to administer in the acute care setting, and in this case was used to quantify the patient's functional mobility and capacity. It was also used to monitor improvements or decline in function throughout length of stay.

#### Short Performance Physical Battery

The SPPB is a collection of assessments to evaluate lower extremity function as it relates to daily activities. It includes walking speed, a balance task, and the five-time sit-to-stand test. It is easy to administer in the acute care setting and allows for simple tracking of changes in function, which is important for patients undergoing aggressive treatment for cancer. Again, there is limited documentation of the psychometrics of the SPPB in this patient population. In community dwelling-older adults, it was shown to have excellent test-retest reliability and adequate internal consistency, and is predictive of all-cause morbidity and mobility disability.<sup>7-9</sup> In community-dwelling older adults, the minimally detectable change was found to be about 2<sup>7</sup>, minimally clinically important difference is 1,<sup>10</sup> and the cut-off score for mobility disability is 10<sup>9</sup>. In cancer patients, it was shown to be predictive of survival, treatment-related complications, and functional decline.<sup>11</sup> In this case, it was used to quantify lower extremity function as it relates to daily activities and to tease out specific impairments. It was also used with the intent that it would be administered throughout the length of stay to monitor improvements or decline in function.

#### The Activity Measure for Post-Acute Care Short Form for Basic Mobility

The AMPAC Short Form is a quick and easy measure of functional mobility that can be completed by direct observation or clinical judgment. It has good interrater reliability and validity for assessing patients' activity limitations in acute care.<sup>12,14</sup> It can be used across a wide range of diagnoses, and can assist with discharge planning and determining the utility for therapist services in the acute care setting.<sup>12,14</sup> This outcome measure is used for all patients in this institution. There is a ceiling effect, however, as is obvious with this patient. The AMPAC score showed the patient remained almost completely independent; however, other functional outcome measures demonstrated profound deficits.

#### Reflection on Patient Examination

At this point, although not exhaustive, my examination revealed the complexity of this patient, the extent and variety of her deficits, and the necessity to prioritize interventions given the practice setting and upcoming treatments. The patient's immediate complaints and goals were taken into consideration for prioritization.

Continuous reassessments would need to be performed throughout her stay, to reprioritize interventions and goals if necessary.

Due to the appearance and state of her wounds, I engaged a certified physical therapist wound care specialist, worked with the wound care nursing team, and encouraged input from the medical team to understand the potential for healing and/or palliation. A thorough chart review was completed, including review of lab values, possible etiology for edema and worsened lymphedema, and precautions and contraindications to compression therapy.<sup>15</sup>

### **Evaluation/Diagnosis:**

The Six-Minute Walk Test revealed severe limitation in walking distance and endurance, with subjective complaints of pain and discomfort. The Short Performance Physical Battery showed mobility disability with specific difficulty in the balance portion, but the AMPAC Short Form revealed minimal difficulty with the most basic of mobility skills.

The patient presents with dyspnea upon exertion and impaired functional mobility secondary to a multitude of factors including history of aggressive cancer therapy,<sup>16</sup> history of a recent, prolonged hospital admission including an ICU stay requiring intubation,<sup>17</sup> and, most recently, worsening lower extremity edema and wounds that limit her ability to move freely without discomfort. As an added complication to her existing impairments, she was at especially high risk for worsening mobility impairments due to potential side effects of the CAR T-cell infusion that was to be given during her admission. She would require frequent reassessment of all aspects of function throughout her stay.

The patient had a fair understanding of her disease as well as the etiology of her wounds but did remain hopeful that the CAR T-cell therapy will “work.” She came in with the experience of rehabilitation after a prolonged ICU stay, so she maintained the understanding of the importance of continued mobilization and therapy intervention throughout her stay and cancer therapy. She was also fiercely independent, as the interactions between her and her son revealed, so she remained motivated to maintain this independence. Her biggest complaint was pain in her legs and wounds with movement, and frustration that she was unable to move at her baseline level.

Given all of the above, the focus of treatment was on mitigating the symptoms of her wounds and lymphedema/edema to allow for focus on improving aerobic capacity and functional mobility (Practice Pattern 6B). She was also at a high risk for worsening mobility impairments due to potential side effects of CAR T-cell infusions.<sup>18</sup> As described below, her diagnosis and progressive disease maintained a factor in treatment planning throughout her course of care.

### **Plan of Care and Intervention:**

CAR T-cell infusion is a relatively new cancer therapy being used to specifically target tumor cells in patients with refractory DLBCL. Despite the progressive nature of the disease at this point, the results of numerous clinical trials report an overall response rate of 50%-90%, along with durable remissions.<sup>18</sup> There are certainly variables to the success of any cancer treatment; however, this particular patient was previously functional and independent. Conversely, she has had a long and complicated course of treatment prior to this admission and had not returned to her premorbid level of functioning. It was reasonable to expect, based on the literature, examination and evaluation of the patient, and clinician experience, that despite the possibility for CAR T-cell-related toxicities, she would discharge home, independently mobilizing and caring for herself, with improved symptom management of her wounds and lymphedema. Discharge recommendations were made for continued outpatient management of her lymphedema. She had a fair understanding of her disease, as well as an understanding of the importance of adhering to treatment plans and exercise given her previous ICU stay and subsequent prolonged recovery.

Short term goals for the acute care setting (length of stay planned for two to three weeks) included a safe transition back to her home environment at a functional level high enough to perform her daily activities and mobility independently. We first focused on controlling her lymphedema/edema and pain from wounds, and then progressed to addressing exercise endurance and functional mobility. The following outline was used to guide physical therapist intervention.

1. Impairment: Edema/lymphedema:
  - Intervention: Compression, elevation, and exercise along with diuresis prescribed by medical team.
  - Goal: Reduction of edema/lymphedema to the point that it did not limit her ability to exercise.
2. Impairment: Painful wounds:
  - Intervention: Continued use of silver sulfadiazine 1% topical cream, a moisture-wicking dressing, and no tape. Pain medication prescribed by medical team.
  - Goal: Reduce inflammation and pain, and prevent infection, to facilitate improved ability to exercise and perform functional mobility.
3. Impairment: Dyspnea and limited endurance:
  - Intervention: Aerobic capacity and endurance conditioning, breathing techniques.
  - Goal: Return to independent ADLs and community ambulation with no shortness of breath.
4. Impairment: Balance:
  - Intervention: Hip strengthening, task-specific training, dynamic activities, and multitasking during ambulation.
  - Goal: Return to independent ADLs and community ambulation with normalized gait pattern and speed.

## Reflection on Intervention Selections

### Exercise and Compression for Lymphedema/Edema Reduction

There is limited literature regarding treatment for lower extremity lymphedema, especially in this diagnosis. Rationale for this treatment approach was based on the breast cancer literature that compression is effective in reducing limb volume.<sup>19,20</sup> Similarly, the rationale for adding exercise is also based on the breast cancer literature indicating that exercise is an effective and safe addition to other decongestive therapy.<sup>21</sup>

### Wound Care

Given that this patient's wounds were malignant and would not heal without resolving the underlying cause, the treatment was focused on symptom management and prevention of infection. Although the silver sulfadiazine topical was previously prescribed to the patient by a physician, it acts as a broad antimicrobial and could potentially assist with preventing infection.<sup>22</sup> A moisture-wicking dressing with no tape was used on the basis that the combination of certain types of wound exudate, with perspiration and repetitive tape use, increase the risk for moisture-related skin damage in the peri-wound.<sup>23</sup>

### Aerobic Conditioning for Dyspnea and Reduced Endurance

The benefits of aerobic exercise are well documented in mixed cancer populations,<sup>24,25</sup> including the lymphoma population specifically<sup>26,27</sup> and for those with advanced disease.<sup>28,29</sup>

### Multimodal Approach for Balance Impairments

Given that this patient's balance impairment was likely due to a combination of factors that included impaired hip strength, impaired muscular endurance, peripheral neuropathy, edema/lymphedema, and cognitive changes due to chemotherapy, the intervention provided was task-specific. This included body stability along with dual tasking (cognitive and dynamic upper extremity movement) while ambulating.<sup>30</sup>

The first few visits were focused on the management of her edema, wound care, and patient education for independent management of compression and wound care. Graded compression was provided via appropriately sized Tubigrip, to allow for compliance and ease, based on the practice setting and patient reports of difficulty with short stretch bandaging. The patient became independent and diligent quickly in both wound dressings and compression. This led to decreased swelling of her legs, and decreased inflammation and discomfort in wounds, so treatment shifted to aerobic conditioning and balance training. Aerobic conditioning was progressed in the next few sessions by ambulation distance and speed. Balance training was progressed by increasing time spent in body stability positions and increasing the difficulty of dynamic and cognitive tasks during ambulation.

Once the patient received the CAR T-cell infusion, she did develop mild grade 1-2 CAR T-cell-related Encephalopathy syndrome and cytokine release syndrome. While the bulk of the therapeutic interventions remained the same, her cognition slowed, her appetite diminished, her tolerance to activity decreased, and her hemodynamics were tenuous. Vital signs were monitored closely. Her tolerance and attention decreased so sessions were kept short. Her response to activity was measured by a numerical 0-10 perception of exertion, and education was provided to guide her and her son (who was staying with her at the hospital) to grade her activity between therapy sessions. The majority of the literature supports the Borg perceived level of exertion, but in cognitively intact adults and children.<sup>31</sup> This simplified scale was used due to the mild cognitive slowing noted in this patient with the development of toxicities. She demonstrated decreased initiation of independent activity and exercise and was spending more time in bed. Scores on the outcome measures given at evaluation significantly decreased, so the frequency of her physical therapy sessions was increased. Close communication was kept with the medical team to assist with evaluation and management of toxicities. Despite the potential throughout her stay that she may not meet her goals or her disease would worsen, I provided close follow-up knowing that physical therapy goals could be updated or changed based on her response to treatment and goals of care.

### Post Case Reflection:

This patient presentation proved to be very complex. She presented with sequela from previous aggressive cancer treatments, along with current impairments due to disease process, and possible impending complications due the planned CAR T-cell infusion. All of this had to be considered when managing her case. Her presentation changed from visit to visit as she reacted to the conditioning chemo and CAR T-cell infusion.

The patient population receiving the CAR T-cell infusion is a heterogeneous group, and each patient presents differently based on extent of disease, prior treatments, demographics, and other factors. A small body of literature supports the positive outcomes of physical therapy and exercise interventions for patients with lymphoma. Due to the novelty of the CAR T-cell infusion, there is minimal literature surrounding the safety or efficacy of physical therapist interventions during this treatment.

However, as shown above, the principles of the existing literature can be applied to manage the impairments of each unique patient with an effective multi-modal approach. As CAR T-cell therapy is used more regularly at our institution, we are attempting to document patient trends and observations to better guide our interventions, and this patient contributes to that body of knowledge.

Many lessons from this patient can be extrapolated to apply to future cases. For this patient, I managed her wounds and edema/lymphedema symptoms based on her subjective report and visualization. In hindsight, I would have liked to take measurements of both legs to objectively measure efficacy of intervention. Due to the extensive nature of her wounds, I should have taken pictures to include in my documentation, to better document changes along the course of the intervention. Although the SPPB was a quick and easy measure of this patient's function, after discussion with my colleagues, it was deemed that since the 6MWT was performed as a measure of function, it would be beneficial to include a more specific measure of balance given the potential for encephalopathy toxicity leading to balance deficits. Due to the limited literature in this patient population, I consulted the only EDGE task force document for balance, which was done in the breast cancer population.<sup>32</sup> The Fullerton Advanced Balance Scale was recommended, and I plan to trial the use of this outcome measure, as appropriate, with future patients receiving CAR T-cell therapy.

Although this patient recovered well from the mild toxicities caused by the CAR T-cell infusion and was able to be discharged home at an independent level with improved functional mobility and capacity, her wounds began to worsen and multiply just prior to her discharge. Without a biopsy (usually performed at outpatient follow-up visit after discharge), there wouldn't be a way to prove her response to the treatment, but this could have been treated as a missed cue to begin to focus on supportive intervention and compensatory techniques to allow her to have a positive quality of life. Unfortunately, she was readmitted not long after discharge and was subsequently discharged home with hospice after her disease was proven to be refractory to treatment.

The oncology patient population is incredibly complex. Most patients require management of many different impairments, and providers must maintain a knowledge of the disease process, contraindications, and precautions. It involves synthesizing the applicable literature, performing a thorough but meaningful examination, creating an effective and sustainable treatment plan, and continuously reevaluating response to treatment and patient goals. The above case reflection demonstrates this advanced clinical thought and documents the successful management of a patient undergoing a novel treatment for progressive cancer.

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## GLOSSARY

**Description of Specialty Practice.** This document is based on a practice analysis, which is a systematic study of professional practice behaviors and content knowledge of specialty practice. The purpose of the practice analysis is to collect data that will describe what specialist practitioners do and what skills and knowledge bases enable them to perform specialty practice. These data are used to describe specialty practice. The DSP defines the content area for the clinical specialist certification examination in the specialty area.

**Guide to Physical Therapist Practice.** This reference describes physical therapist practice in general, using the disablement model as the basis; describes the various roles of physical therapists and the setting in which they practice; standardizes physical therapy terminology; delineates tests and measures and the interventions that are used in physical therapist practice; and provides preferred practice patterns to assist in (a) improving quality of care, (b) enhancing positive outcomes of physical therapy services, (c) enhancing patient and client satisfaction, (d) promoting appropriate utilization of health care services, (e) increasing efficiency and reducing unwarranted variation in the provision of services, and (f) diminishing economic burden of disablement through prevention and the promotion of health, wellness, and fitness initiatives.

Part 1 of the Guide, “A Description of Patient and Client Management” describes the process of patient and client management including the following five elements:

1. **Examination.** A comprehensive screening and specific testing process leading to diagnostic classification or, as appropriate, to referral to another practitioner. The examination has three components: the patient/client history, the systems review, and tests and measures.
2. **Evaluation.** A dynamic process in which the physical therapist makes clinical judgment based on data gathered during the examination.
3. **Diagnosis.** Diagnosis is both a process and a label. The diagnostic process includes integrating and evaluating the data that are obtained during the examination to describe the patient or client condition in terms that will guide the prognosis, the plan of care, and intervention strategies. Physical therapists use diagnostic labels that identify the impact of a condition on function at the level of the system (especially the movement system) and at the level of the whole person.
4. **Prognosis.** The determination of the predicted optimal level of improvement in function and the amount of time needed to reach that level.
5. **Intervention.** The purposeful interaction of the physical therapist with the patient or client and, when appropriate, with other individuals involved in patient/client care, using various physical therapy procedures and techniques to produce changes in the condition.

## RESOURCE GUIDE INFORMATION

Resource guides are compiled by APTA academies and board- certified specialists to reflect current literature in the specialty area. They are provided for your information only. Neither ABPTS nor the specialty councils have reviewed or endorsed the content of these lists. In addition, reviewing these resources does not guarantee that a candidate will receive a passing score on the specialist certification examination.

### **Oncology Physical Therapy Resource Information**

Academy of Oncologic Physical Therapy — APTA  
Suzie Callan  
140B Purcellville Gateway Drive, Suite 120  
Purcellville, VA 20132  
Phone: 202-660-4460  
Email: [oncology@apta.org](mailto:oncology@apta.org)



# APTA Specialist Certification

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## Orthopaedic Candidate Guide Addendum



**ABPTS**  
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Specialties

# Orthopaedic Candidate Guide

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The orthopedic examination is based on the Description of Specialty Practice in Orthopaedic Physical Therapy. The areas tested are (1) the practice expectations and professional roles, responsibilities, and values; and (2) the knowledge areas. The examination questions are linked to those two major areas. For example, to perform a patient evaluation you must have knowledge of the human anatomy and physiology of the musculoskeletal system. To select a procedural intervention, you must have knowledge of movement science.

### Practice Dimensions and Professional Responsibilities

The practice dimensions and professional responsibilities identify what orthopaedic clinical specialists do in their day-to-day professional roles. The responsibilities are linked to knowledge areas and procedures in the examination questions.

#### Practice Dimensions

1. Examination
  - Obtain history.
  - Perform systems review.
  - Conduct test and measures.
  - Reexamination.
2. Evaluation
  - Interpret data from history.
  - Develop working diagnosis (hypothesis).
  - Determine appropriateness of physical therapy.
  - Plan tests and measures.
  - Respond to emerging data.
  - Select additional tests and measures.
3. Diagnosis
  - Establish diagnosis.
  - Determine most appropriate intervention approach.
4. Prognosis
  - Establish prognosis.
  - Establish plan of care.
5. Intervention
  - Implement plan of care.
  - Coordination of care and patient management.
  - Communication.
  - Patient and client-related instruction.
6. Outcomes
  - Remediation.
  - Optimization of patient satisfaction
  - Promotion of primary and secondary prevention.

#### Professional Responsibilities

1. Consultation and Education
  - Contribute special knowledge or expert opinion in client-based, community, or academic settings.
2. Critical Inquiry
  - Maintain “state of the art knowledge.”
  - Apply principles of evidence-based practice.
  - Contribute to body of knowledge in orthopaedics

### Matrix 1 — Knowledge Areas and Procedures

The orthopaedic physical therapy clinical specialist examination is based on the major competency areas listed below. The approximate percentage of the exam devoted to each of these areas is outlined below. These percentages were based on a survey of APTA's orthopaedic physical therapy specialists and on the opinions of a group of subject matter experts. Each question in the item bank is categorized according to these competency areas, and when the test is constructed the question distribution on the exam approximately reflects these percentages.

\*Note: The examination is not testing performance of an actual examination. Rather, it is testing the critical thinking processes related to examination.

Areas	% of Exam Questions
Human Anatomy and Physiology	10
Movement Science	10
Pathology/Pathophysiology/Pain Science	10
Medical/Surgical Interventions	10
Orthopaedic Physical Therapy and Practice	10
Critical Inquiry for Evidence-Based Practice Other Professional Roles/Responsibilities/ Values	10
Examination/Evaluation/Diagnosis	20
Prognosis/Interventions/Outcomes	20
<b>TOTAL</b>	<b>100</b>

### Matrix 2 - Body Regions

The following chart reflects current orthopaedic clinical specialist practice based on survey responses. The orthopaedic physical therapy specialist examination will reflect these approximate percentages.

Body Regions	% of Exam Questions
Head/Maxillofacial/Craniomandibular	3
Cervical Spine	13
Thoracic Spine/Ribs	6
Lumbar Spine	20
Pelvis/Sacroiliac/Coccyx/Abdomen	7
Shoulder/Shoulder Girdle	15
Arm/Elbow	4
Wrist/Hand	4
Hip	7
Thigh/Knee	12
Leg/Ankle/Foot	9
<b>TOTAL</b>	<b>100</b>

## Sample Questions

Candidates for the specialist certification examination in orthopaedic physical therapy are encouraged to review the following sample questions to familiarize themselves with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

1. A 29-year-old male patient reports pain above and below the lateral aspect of his left elbow, present with gripping or when lifting a full cup of coffee. There is tenderness to palpation just proximal to the radial head. Elbow and radio-ulnar range of motion is full and pain free. Resisted tests at both these joints are strong and pain free. Wrist flexion ROM is full with mild pain noted on the extensor surface of the elbow at end range. Wrist flexion resisted tests are strong and pain free. Wrist extension ROM is full and pain free. Resisted wrist extension shows slight weakness and pain over the lateral elbow. Passive ulnar deviation and flexion of the wrist are full and pain free, but when repeated with elbow extension there is mild pain over the proximal lateral elbow. Cervical spine and upper limb tension testing is unremarkable.

Which of the following is the most likely diagnosis?

- e. Olecranon bursitis.
- f. Cubital tunnel syndrome.
- g. Lateral epicondylitis.
- h. Radial nerve entrapment.

Use the following information to answer questions 2 and 3.

A 35-year-old male patient reports a deep, aching pain above the right heel. The patient cannot recall any overuse or trauma. He states that he had been able to regularly walk three miles five times a week with friends, but the heel pain has prevented him from participating in this activity over the past six weeks. Standing or walking for more than 30 minutes aggravates the pain. The patient reports a weight gain of 10 pounds over the past two months and a long history of recurrent low back pain.

2. What aspect of this subjective evaluation would be considered a participation restriction?
  - a. His inability to walk or hike with his friends.
  - b. The recent weight gain of 10 pounds.
  - c. The long history of recurring low back pain.
  - d. His complaint of deep, aching pain in the heel.
3. Further examination reveals that trunk flexion in standing produces posterior thigh and calf pain on the right. However, repeated trunk flexion in sitting is pain-free. Repeated trunk extension in standing produces mild central lumbar pain. Sitting thoracolumbar slump testing with right knee extension and ankle dorsiflexion overpressure reproduced the patient's heel pain. In correlating the history and physical examination findings, which of the following is the most likely diagnosis?
  - a. Entrapment of the peroneal nerve at the ankle.
  - b. L5 to S1 disc derangement syndrome.
  - c. Lumbar spinal stenosis.
  - d. Limited mobility of the neural tissue.

Use the following information to answer questions 4 and 5.

A 53-year-old woman reports a six-month gradual onset of right lateral shoulder pain which has become severe over the past month. Patient reports current pain as a 2 on a scale of 0-10. The pain prevents her from combing her hair with her right hand or fastening her bra behind her back. Lying on the right shoulder is painful. Examination reveals a moderately increased thoracic kyphosis. The cervical exam is unremarkable. Active and passive shoulder abduction is 85 degrees, external rotation is 30 degrees, flexion is 100 degrees, and internal rotation is 40 degrees, with pain at the end-range of all motion over the area of the deltoid insertion. All resisted motions are strong and painless.

4. What is the most likely working hypothesis for this case?
  - a. Cervical radiculopathy.
  - b. Rotator cuff tear.
  - c. Chronic recurrent bursitis.
  - d. Glenohumeral adhesive capsulitis.
5. Which of the following should be included in the initial treatment approach?
  - a. Stretching.
  - b. Electrical stimulation for pain.
  - c. Grade I mobilizations.
  - d. Submaximal isometrics.
6. A patient bends forward from the standing position, exhibiting a rib hump on the right. Which of the following best represents the position of the thoracic spine while in this position?
  - a. Sidebent right and rotated right.
  - b. Sidebent right and rotated left.
  - c. Sidebent left and rotated right.
  - d. Rotated right with no sidebending.

Use the following information to answer questions 7, 8, 9, 10, and 11.

A 36-year-old male patient reports posterolateral ankle/heel pain that is worse in the morning and most severe with the first few steps out of bed. The pain has been increasing over the last three months. The pain decreases during the morning after walking but recurs after about 20 minutes of jogging.

Physical examination findings are as follows:

<b>Static Posture:</b>	<b>2 degrees of calcaneal inversion when measured in subtalar joint neutral.</b>
Gait Observation:	Excessive midtarsal pronation at terminal stance and pre-swing.
Passive Mobility:	2 degrees of total calcaneal eversion from neutral. 5 degrees of total calcaneal inversion from neutral; 0 degrees of talocrural dorsiflexion. 45 degrees of talocrural plantarflexion. 65 degrees of first metatarsophalangeal extension. 45 degrees of first MTP flexion straight- leg raise combined with ankle. Plantarflexion and inversion reproduces the patient's pain.
Resistive Tests:	3+/5 gastrocnemius soleus 3/5 peroneous longus reproduces pain.
Other muscles:	5/5-pain free.
Palpation:	Exquisite tenderness over plantar surface of cuboid.

7. This patient's abnormal pronation is likely a compensation for which objective finding?
  - a. First MTP extension.
  - b. Motor control of the gastrocnemius soleus.
  - c. Motor control of the tibialis anterior.
  - d. Talocrural dorsiflexion.
8. Mobilization of which articulation would most improve this patient's ability to absorb shock during the initial contact to the loading response phase of gait?
  - a. Inferior tibiofibular.
  - b. First MTP.
  - c. Talocalcaneal.
  - d. Fifth MTP.
9. Which nerve is most directly involved with this patient's pain complaint?
  - a. Fibular.
  - b. Saphenous.
  - c. Sural.
  - d. Tibial.

10. Which strengthening exercise would most directly treat this patient's weakness?
- a. Single-leg heel raise with the body weight raised up over the fifth metatarsal.
  - b. Single-leg heel raise with the body weight raised up over the first metatarsal
  - c. Resisted plantarflexion and inversion using resistance bands.
  - d. Resisted dorsiflexion and inversion using resistance bands.
11. Following repair of a flexor tendon (superficialis) laceration in Zone II of the hand, the physician asks the physical therapist to institute an early mobilization program. The patient is now 10 days postsurgery and comes to the therapist in a bulky dressing. Which of the following actions is the most appropriate?
- a. Place the patient in a dorsal splint immobilizer; begin AROM and passive mobilization at 21 days post-op.
  - b. Instruct the patient in active flexion and extension exercises and otherwise immobilize in a dorsal splint holding the MP in flexion and the PIP and DIP in extension.
  - c. Fabricate a dorsal splint that holds the MP in flexion and the PIP and DIP in flexion with rubber bands and teach the patient active extension of the PIP and DIP (against the rubber bands).
  - d. Instruct the patient in retrograde massage (four times per day) for edema control and otherwise keep immobilized until three weeks postsurgery.
12. A 15-year-old boy is referred to a physical therapist by an athletic trainer. He reports a one-month history of a vague ache in his hip, thigh, and knee. He is active and plays sports, but he does not recall a specific episode of injury. On examination, the therapist notes a slight limp, mild weakness of the hip abductors, and considerably limited internal rotation of the hip. Given his symptoms, which of the following conditions should the therapist most likely suspect?
- a. Femoral neck stress fracture.
  - b. Legg-Calve-Perthes disease.
  - c. Meralgia paresthetica.
  - d. Slipped capital femoral epiphysis.

Key: 1-c, 2-a, 3-d, 4-d, 5-a, 6-c, 7-d, 8-c, 9-a, 10-b, 11-c, 12-d.

## RESOURCE GUIDE INFORMATION

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### **Orthopaedic Physical Therapy Resource Information**

Academy of Orthopaedic Physical Therapy — APTA  
Terri A. DeFlorian  
2920 East Ave. South, Suite 200  
La Crosse, WI 54601-8282  
Phone: 800-444-3982 ext. 2040  
Fax: 608-788-3965  
Email: [tdeflorian@orthopt.org](mailto:tdeflorian@orthopt.org)  
Website: [www.orthopt.org](http://www.orthopt.org)



# APTA Specialist Certification

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## Pediatric Candidate Guide Addendum



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# Pediatric Candidate Guide

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The questions on the exam will be approximately distributed according to the following percentages of content areas. This is an approximation only and may not represent the exact distribution of questions on the examination. All questions on the exam relate to competencies as outlined in the Description of Specialty Practice: Pediatric Physical Therapy.

Content Area	% of Exam
<b>Questions</b>	
<b>I. Knowledge Areas</b>	<b>16%</b>
a. Foundation Sciences (4%)	
b. Clinical Sciences (4%)	
c. Behavioral Sciences (3%)	
d. Critical Inquiry Principles and Methods (3%)	
e. Medical and Surgical Considerations (2%)	
<b>II. Professional Roles and Responsibilities</b>	<b>16%</b>
a. Professional Behaviors/Core Values (2%)	
b. Leadership (2%)	
c. Education (3%)	
d. Administration (2%)	
e. Consultation (3%)	
f. Evidence-Based Practice/Critical Inquiry (4%)	
<b>III. Patient and Client Management</b>	<b>68%</b>
a. Examination (20%)	
b. Evaluation/Diagnosis/Prognosis (22%)	
c. Intervention (20%)	
d. Outcomes (6%)	
<b>TOTAL:</b>	<b>100%</b>

## **Medical Conditions**

The medical conditions that may be represented on the examination include (but are not limited to) the following:

1. Physical fitness during typical childhood and adolescence.
2. Fitness and health in populations with lifelong disability.
3. Prevention and management of body structure and function impairments, activity limitations, and participation restriction in infants, children, adolescents, and adults whose impairments and limitations arose in childhood due to:
  - A. Conditions of the musculoskeletal system, including:
    - Juvenile idiopathic arthritis and other arthritic diseases.
    - Spinal conditions.
    - Arthrogryposis.
    - Osteogenesis imperfecta.
    - Musculoskeletal injury and pain due to sports injuries in children (e.g., Osgood Schlatter, overuse injuries, joint injuries, growth plate injuries, limb injuries).
    - Torticollis/plagiocephaly.
    - Fractures.
    - Spinal malalignments including scoliosis/kyphosis/lordosis.
    - Congenital/traumatic limb deficiencies.
    - Hypotonia/hypermobility leading to joint injury.
    - Osteopenia.
    - Other orthopedic conditions (e.g., Legg-Calve-Perthes, slipped capital femoral epiphysis, tibia varum, skeletal dysplasia, osteosarcoma-limb salvage).
  - B. Conditions of the neuromuscular system, including:
    - Cerebral palsy (e.g., hypotonic, hemiplegic, quadriplegic, tetraplegic, diplegic).
    - Spinal cord injury.
    - Myelodysplasia (spina bifida).
    - Acquired brain injuries, including brain tumors.
    - Developmental coordination disorders.
    - Developmental disabilities.
    - Intracranial hemorrhage.
    - Inflammatory and infectious disorders of the CNS central nervous system.
    - Autism spectrum disorders.
    - Peripheral nervous system injuries (e.g., brachial plexus injuries).
    - Cerebral vascular accident.
    - Anoxic events.
    - Sensory processing disorders.
    - Other neurological conditions.

- C. Conditions of the cardiovascular and pulmonary system, including:
- Neonatal cardiovascular and pulmonary conditions (e.g., bronchopulmonary dysplasia).
  - Sequelae of long-term ventilator use.
  - Cystic fibrosis.
  - Asthma.
  - Congenital heart defects (e.g., atrial septal defect, Tetralogy of Fallot, heart transplant).
  - Other cardiac and pulmonary conditions.
- D. Conditions of the integumentary system, including:
- Burns.
  - Wounds.
  - Prevention of tissue breakdown.
- E. Conditions involving multiple systems, including:
- Complications of prematurity (e.g., osteopenia, respiratory distress syndrome, intraventricular hemorrhage, bronchopulmonary dysplasia, high-risk infant).
  - Complete Trisomy 21 syndrome (Down syndrome).
  - Developmental delay/disabilities.
  - Drug/alcohol/human immunodeficiency virus or other teratogen exposure.
  - Genetic syndromes (e.g., Prader Willi, hemophilia).
  - Hematological conditions.
  - Idiopathic toe walking.
  - Malignant neoplastic disease and oncological disorders (i.e., cancers).
  - Malnutrition/failure to thrive.
  - Metabolic disorders (e.g., diabetes, mitochondrial disorders).
  - Muscular dystrophy and neuromuscular conditions (e.g., Duchenne, Becker, spinal muscular atrophy).
  - Myelodysplasia (e.g., spina bifida, Arnold-Chiari, hydrocephalus).
  - Obesity.
  - Pain syndromes.
  - Rett syndrome.
  - Torticollis/plagiocephaly.

### **Sample Questions**

Candidates for the specialist certification examination in pediatric physical therapy are encouraged to review the following sample questions to familiarize themselves with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

An 8-year-old male with a diagnosis of spastic diplegic cerebral palsy, Gross Motor Function Classification System Level III, underwent a single-event multilevel surgery during his summer vacation from school. Prior to surgery, he was able to ambulate over all surface types, both indoors and outdoors, using bilateral Lofstrand forearm crutches for distances over 500 feet, and played in an adaptive soccer league. He has been attending outpatient physical therapy for four weeks. During today's session, he ambulated 100 feet using Lofstrand crutches during his Two-Minute Walk Test over tile and carpet, with one standing rest

break. He has limited static standing balance without the crutches and falls with small perturbations. He is preparing to return to school when the school year starts in two weeks. He will be entering third grade and will receive special education services only for math.

1. The patient's school physical therapist requests consultation from the outpatient physical therapist to prepare for the child's return to school. Which of the following suggestions would be most appropriate for the outpatient physical therapist to provide to the school physical therapist?
  - a. A change of placement to a classroom for children with orthopedic impairments is needed.
  - b. An environmental assessment should be performed pertaining to the child's mobility at school.
  - c. The child should be enrolled in an adapted physical education class.
  - d. The child temporarily needs a one-to-one aid to ensure safety during ambulation.
2. The patient is now 30 years old and presents to outpatient physical therapy to address increased fatigue and lower extremity pain with ambulation. He continues to ambulate using Lofstrand crutches for both indoor and outdoor community ambulation over all surfaces. He reports recent onset of nighttime muscle spasms that regularly wake him up several times. He is not currently using his orthotics because he finds them uncomfortable to wear for more than 30 minutes. He states he is no longer able to ambulate from the parking lot into his place of work without multiple stops for rest. He currently takes Keppra and oral Baclofen and has been on stable doses of these medications for the past five years. Which of the following referrals would be the best first course of action?
  - a. Referral to a physiatrist for tone management.
  - b. Referral to a vocational rehabilitation specialist for mobility issues in the workplace.
  - c. Referral to an orthotist for adjustment of orthotics.
  - d. Referral to his primary care physician for fatigue management.
3. The outpatient physical therapist provides patient education pertaining to problems that are frequently reported by adults with cerebral palsy. Which of the following responses represents the problems most frequently reported by adults with cerebral palsy?
  - a. Increased contractures, difficulty sleeping, and constipation.
  - b. Increased contractures, weight gain, and lack of independence in instrumental activities of daily living.
  - c. Musculoskeletal pain, fatigue, and loss of ambulatory function.
  - d. Musculoskeletal pain, increased scoliosis, and weight gain.
4. In addition to his reported concerns, during the examination the patient asks if a regular, structured exercise program would be beneficial for him. Which of the following responses and rationales would be most appropriate?
  - a. No. Adding an exercise program will increase his spasticity.
  - b. No. Due to his risk for osteoporosis, an exercise program would not be safe.
  - c. Yes. A regular exercise program will help to decrease fatigue levels.
  - d. Yes. Strength training will directly improve his gait skills

Key: 1-b, 2-a, 3-c, 4-c.

## RESOURCE GUIDE INFORMATION

Resource guides are compiled by APTA sections and board- certified specialists to reflect current literature in the specialty area. They are provided for your information only. Neither the ABPTS nor the specialty councils has reviewed or endorsed the content of these lists. In addition, reviewing these resources does not guarantee that a candidate will receive a passing score on the specialist certification examination.

### **Pediatric Physical Therapy Resource Information**

APTA Academy of Pediatric Physical Therapy  
Cindy Sliwa, Executive Director  
1020 N Fairfax Street, Suite 401-B  
Alexandria, VA 22314-1484  
Phone: 800/970-5051  
Email: [pediatrics@apta.org](mailto:pediatrics@apta.org)  
Website: [www.pediatricapta.org](http://www.pediatricapta.org)

**Last Updated:** 05/06/2021  
**Contact:** [spec-cert@apta.org](mailto:spec-cert@apta.org)

# APTA Specialist Certification

Governed by **ABPTS**

## Sports Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

## Initial Certification Deadlines for Sports

October 31: Application deadline

October 31: Reapplication deadline

November 30: Exam fee deadline

## Certification Requirements:

### Option A

Applicants must submit evidence of 2,000 hours of direct patient care as a licensed United States physical therapist (temporary license excluded) in the specialty area within the last 10 years, 25% (500) of which must have occurred within the last three years. Direct patient care must include activities in each of the elements of patient and client management applicable to the specialty area of sports physical therapy and included in the Description of Specialty Practice: Sports Physical Therapy. These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

**CPR Certification.** Applicants must be currently certified in cardiopulmonary resuscitation by completing the American Heart Association's BLS Healthcare Provider course or the American Red Cross CPR for the Professional Rescuer course.

**Acute Management of Injury and Illness Certification (formerly known as Emergency Care Certification).** ABPTS and the Sports Specialty Council recognize the need of sports physical therapists to demonstrate continuous competency in all content areas identified in the Sports Description of Specialty Practice. One of the hallmark areas identified in the DSP that delineates a sports physical therapist is acute management of injury and illness. Thus, all physical therapists who wish to become board-certified clinical specialists in sports physical therapy must possess certification and evidence of knowledge through continuing education credits in acute management of injury and illness for conditions encountered in sports medicine. Acceptable evidence for initial certification is one or more of the following: (1) completion of an acute management of injury and illness continuing education course from a continuing education provider, (2) initial certification as a certified athletic trainer by the National Athletic Trainers' Association Board of Credentialing within the past five years, (3) current certification as an emergency medical responder by an agency such as Evidence in Motion or Osteo-Medsport LLC, or (4) completion of the Tactical Combat Casualty Care course through the national Association of Emergency Medical Technicians.

Alternatively, candidates may provide evidence of acute management of illness and injury through a combination of emergency medical response training and sports-related training requirements outlined [here](#).

Approved continuing education courses can be offered by any entity that is serving as a continuing education provider and awarding continuing education contact hours and/or units within the physical therapy jurisdiction. University, college, or other coursework by a certified educational agency also qualifies as long as the mandatory content areas are satisfied.

Approved acute management of injury and illness certification courses by continuing education providers must meet all of the following requirements: The course (1) must be in a face-to-face or mixed-delivery format (no fully online courses accepted), (2) must be no fewer than 14 total hours in duration and must include at least seven



hours of face-to-face instruction with inclusion of hands-on activities, (3) must include both didactic and clinical instruction, (4) must include didactic and clinical testing, and (5) must include the following content areas:

- Emergency management systems.
- Legal issues.
- Disease transmission.
- Primary and secondary assessment.
- Airway emergencies and oxygen.
- Epipen administration.
- Chain of survival and cardiac emergencies:
  - Cardiopulmonary resuscitation.
  - Automated external defibrillation.
- Injury incidence etiology, and management:
  - Bleeding and wound management.
  - Head injuries, including concussion management.
  - Spine injuries, including equipment removal and spine boarding.
  - Facial injuries, including nasal and ocular.
  - Chest, thorax, and abdominal injuries.
  - Injuries to the extremities, including fracture and dislocation management.

For all preapproved acute management of injury and illness course options visit [this list of courses](#) that satisfy the requirement. If you are planning to take one of these courses to meet the emergency care minimum eligibility requirements but have not completed the course at the time of the Oct. 31, 2021, application deadline, please indicate the course date(s), location(s), title, and sponsor(s) of the course you anticipate taking.

Applicants who wish to have the specialty council evaluate whether an acute management of injury and illness course that has not been preapproved meets the minimum eligibility requirements must submit information about the course (syllabus, description, textbook, etc.) to the Sports Physical Therapy Specialty Council for review prior to the Oct. 31, 2021, application deadline. This request and materials to be reviewed may be emailed to [spec-cert@apta.org](mailto:spec-cert@apta.org), with the subject line "Attn: Specialty Council for Sports Physical Therapy."

### Coverage Hour Requirement

Of the required 2,000 direct patient care hours, 100 must be documented as athletic venue coverage. Athletic venue coverage may include activities supporting or observing medical care provided in preparation for, during, or following practices, training, or competitions. At least one item in each of the three columns below must be satisfied for hours to count toward athletic venue coverage.

Type of Duty	Time	Event
Supporting medical care	Preparation prior to	Practices
Observing medical care	During	Training
	Following	Competitions

In response to the COVID-19 pandemic, ABPTS and the Sports Specialty Council have waived the mandatory requirement for 2022 exam applicants that 50% of the venue coverage hours must be performed in association with a contact sport. Applicants for this cycle may document the required 100 hours in any combination of contact, limited contact, or noncontact sports to fulfill the venue coverage requirement.

[See additional details and sport classification by contact level.](#)

## **What Activities Constitute Venue Coverage**

Following is guidance for applicants for specialty certification or recertification in sports physical therapy in calculating venue coverage hours. Because each situation is different, there is no specific list of activities that may always be included or excluded as venue coverage. However, a guiding principle to consider for defining venue coverage is: the activities in which a therapist participates immediately preceding, during, or immediately following an official competition or practice athletic event, or tactical athlete and/or military competitions or physical training. This work can be fee based or pro bono. Time spent providing support of medical or athletic training personnel in any of the stated circumstances may qualify. Hours may be performed in support of primary services provided by a physician, doctor of osteopathy, certified athletic trainer, or a physical therapist who is a board certified sports clinical specialist.

Physical therapists should check with their state practice act and the regulations of the respective sporting organization to ensure acceptable involvement by the PT.

Examples of approved venue coverage activities include:

- Time spent providing injury management and consultation for athletes in venues where athletes practice and compete (e.g., interscholastic, club, intramural, collegiate, Olympic Games, and professional).
- Time spent as part of a preparticipation physical medical team for athletes.
- Time spent providing medical support for running and cycling events (e.g., holiday 5K, organized marathons, triathlons, bike races).
- Time spent providing care and injury management for tactical athletes or military personnel in combatives training, group physical training evolutions, obstacle course, etc.

## **Option B**

Applicants must submit evidence of successful completion of an APTA-accredited postprofessional sports clinical residency completed within the last 10 years that has a curriculum plan reflective of the Description of Specialty Practice: Sports Physical Therapy. Experience from residencies in which the curriculum plan reflects only a portion of the DSP will not be considered.

Applicants who are currently enrolled in an ABPTRFE- accredited sports clinical residency or enrolled in a residency program that has been granted candidacy status, may apply for the sports specialist certification examination prior to completion of the residency. These applicants are conditionally approved to sit for the examination, as long as they meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency to APTA's Specialist Certification Program no later than one month before the examination window opens. [Verify your residency program's accreditation status.](#)

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The examination will comprise approximately 200 questions. Questions may include graphics. Examination questions can represent both a practice expectation and a knowledge area associated with that expectation. The following is a summary, including the percent of exam questions for each of the major components of the Description of Specialty Practice: Sports Physical Therapy.

Content Area	(% of exam questions)
Rehabilitation/Return to Sports	
Examination, Evaluation, and Diagnosis	20%
Prognosis, Interventions, and Outcomes	20%
Acute Injury/Illness Management	15%
Medical/Surgical Considerations	15%
Injury Prevention	15%
Sports Performance Enhancement	10%
Professional Roles and Responsibilities	5%
<b>TOTAL:</b>	<b>100%</b>

### Sample Questions

Candidates for the specialist certification examination in sports physical therapy are encouraged to review the following sample questions to familiarize themselves with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

#### Case 1

A sports clinical specialist is providing sideline coverage for a collegiate soccer game. During the first half of the game, a 22-year-old male soccer player goes up for a head ball and is struck in the face by the elbow of another player. He falls to the ground covering his face and nose with his hands. The referee immediately calls the sports clinical specialist on the field. When the physical therapist gets to the athlete he is conscious, lying on his side, and bleeding from his nose.

1. Which of the following tests is most likely to rule out an injury to the cervical spine?
  - a. Reflex testing of the upper extremities.
  - b. Cranial nerve testing.
  - c. Motor and sensory testing of the upper and lower extremities.
  - d. Torg ratio testing.
2. Which of the following is the most appropriate action by the sports clinical specialist?
  - a. Do not allow the athlete to return to play, and activate EMS immediately.
  - b. Allow the athlete to return to play immediately, but closely observe his behavior.
  - c. Allow the athlete to return to play in the second half of the game.
  - d. Do not allow the athlete to return to play, and monitor mental status and vitals every five minutes.

One week later, the athlete asks for permission to return to play. He says that he had nausea, headaches, and difficulty concentrating and reading in class for three days after the incident, but these symptoms have resolved.

3. Which of the following criteria is the sports clinical specialist most likely to use to determine whether this athlete be allowed to return to play?
  - a. Normal findings on neuropsychological testing at one week after the incident.
  - b. No symptoms on provocative testing one week after his symptoms resolved.
  - c. No headache or posttraumatic amnesia one week after the incident.
  - d. Normal findings on brain imaging studies one week after his symptoms resolved.
4. What imaging modality is most appropriate for use with an athlete with acute concussive symptoms?
  - a. CT scan.
  - b. MRI.
  - c. Head and cervical spine radiographs.
  - d. PET scan.
5. Which of the following impact mechanisms has the least likelihood of causing a head injury to a soccer player?
  - a. Collision between two players heading the ball.
  - b. Collision between the goalkeeper and the goal post.
  - c. A player heading the ball using proper technique.
  - d. A ball kicked against the head of a player.
6. Which of the following mouthpieces is likely to be most effective in decreasing the severity of head injury?
  - a. Stock mouthpiece covering the incisors and canine teeth.
  - b. Custom air extraction mouthpiece covering the incisor teeth to the molars.
  - c. Boil-and-bite mouthpiece covering incisor teeth to the premolars.
  - d. Stock mouthpiece covering all of the mandibular teeth.

A neuropsychological test is described to identify impaired cognitive function in athletes with brain injury. The test accuracy data are as follows:

Sensitivity	36%
Specificity	92%
Likelihood ratio (-)	.07%
Likelihood ratio (+)	4.5%

7. Which of the following test results is the most clinically useful?
  - a. A positive result, ruling in the condition.
  - b. A negative result, ruling out the condition.
  - c. Both a negative and a positive result are clinically useful.
  - d. Neither a negative nor a positive result is clinically useful.

**Case 2**

8. For an athlete who is planning to have one to two days of rest between intense middle-distance track training sessions, what recommendation should be provided regarding nutrient timing following the workout to ensure glycogen replenishment?
- a. Carbohydrate intake of 1.2-1.4 g/kg of body weight immediately following the training session.
  - b. Mixed carbohydrate (1.2-1.4 g/kg of body weight) and protein intake (1.0-1.5 g/kg of body weight) within 30-60 minutes of completing the training session.
  - c. Mixed carbohydrate (1.2-1.4 g/kg of body weight) and protein intake (1.5-2.0 g/kg of body weight) within two to four hours of completing the training session.
  - d. Carbohydrate intake of 1.2-1.4 g/kg of body weight within 24 hours after the training session.

**Case 3**

9. For an athlete who is planning to have one to two days of rest between intense middle-distance track training sessions, what recommendation should be provided regarding nutrient timing following the workout to ensure glycogen replenishment?
- a. Carbohydrate intake of 1.2-1.4 g/kg of bodyweight, immediately following the training session.
  - b. Mixed carbohydrate (1.2-1.4 g/kg of bodyweight) and protein intake (1.0-1.5 g/kg of bodyweight) within 30-60 minutes of completing the training session.
  - c. Mixed carbohydrate (1.2-1.4 g/kg of bodyweight) and protein intake (1.5-2.0 g/kg of bodyweight) within 2-4 hours of completing the training session.
  - d. Carbohydrate intake of 1.2-1.4 g/kg of bodyweight, within 24 hours after the training session.

Key: Case Scenario 1: 1-c; 2-d; 3-b; 4-a; 5-c; 6-b; 7a

Case Scenario 2: 1-d

Case Scenario 3: 1-b

## RESOURCE GUIDE INFORMATION

Resource guides are compiled by APTA sections and board- certified specialists to reflect current literature in the specialty area. They are provided for your information only. Neither the ABPTS nor the specialty councils has reviewed or endorsed the content of these lists. In addition, reviewing these resources does not guarantee that a candidate will receive a passing score on the specialist certification examination.

### **Sports Physical Therapy Resource Information American Academy of Sports Physical Therapy**

Mark DeCarlo, Executive Director  
Board-Certified Sports Clinical Specialist  
P.O. Box 431  
Zionsville, IN 46077-0431  
Phone: 317-973-2163  
Email: [mdecarlo@aspt.org](mailto:mdecarlo@aspt.org)  
Website: <https://www.aspt.org/>

# APTA Specialist Certification

Governed by **ABPTS**

## Women's Health Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

# Women's Health Candidate Guide

## Initial Certification Deadlines for Women's Health

July 1: Application deadline

August 31: Reapplication deadline

November 30: Exam fee deadline

## Certification Requirements

All applicants must submit one case reflection demonstrating specialty practice in women's health. This case report must be based on a patient or client seen within the last three years.

Applicants must also meet requirements for Option A or Option B.

### Option A

Applicants must submit evidence of 2,000 hours of direct patient care as a licensed U.S. physical therapist (temporary license excluded) in the specialty area within the last 10 years, 25% (500 hours) of which must have occurred within the last three years. Direct patient care must include activities in each of the elements of patient and client management applicable to the specialty area and included in the Description of Specialty Practice. These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

### Option B

Applicants must submit evidence of successful completion of an APTA-accredited postprofessional women's health clinical residency completed within the last 10 years with a curriculum plan reflective of the Description of Specialty Practice: Women's Health Physical Therapy. Experience from residencies in which the curriculum plan reflects only a portion of the DSP will not be considered.

Applicants who are currently enrolled in an ABPTRFE- accredited clinical residency, or enrolled in a residency program that has been granted candidacy status, may apply for the specialist certification examination in the appropriate specialty area prior to completion of the residency. These applicants are conditionally approved to sit for the examination, as long as they meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency to APTA's Specialist Certification Program no later than one month before the examination window opens. To verify your residency program's accreditation status, please visit [www.abptrfe.com](http://www.abptrfe.com).

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The examination will comprise approximately 200 questions. Questions may include graphics. Examination questions can represent both a practice expectation and a knowledge area associated with that expectation. The following is a summary, including the percent of exam questions for each of the major components of the Description of Specialty Practice: Women's Health Physical Therapy.



Content Area	% of exam
<b>I. Knowledge Areas</b>	<b>20%</b>
Foundation Sciences (7%)	
Clinical Sciences (7%)	
Behavioral Sciences (6%)	
<b>II. Patient/Client Management</b>	<b>55%</b>
Screening (4%)	
Examination (7%)	
Evaluation (10%)	
Diagnosis (8%)	
Prognosis (6%)	
Coordination/Communication/Documentation (2%)	
Procedural Interventions (12%)	
Outcomes (6%)	
<b>III. Professional Practice Expectations</b>	<b>25%</b>
Communication (3%)	
Individual and Cultural Differences (2%)	
Professional Behavior/Professional Development (2%)	
Clinical Inquiry and Clinical Decision Making/Evidence-Based Practice (8%)	
Education (2%)	
Leadership (2%)	
Social Responsibility and Advocacy (2%)	
Administration (2%)	
Consultation (2%)	
<b>TOTAL:</b>	<b>100%</b>

### Sample Questions

Candidates for the specialist certification examination in women's health are encouraged to review the following sample questions to familiarize themselves with the examination format. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

#### Case Scenario 1

A 54-year-old woman is referred to outpatient physical therapy after reporting moderate urine loss associated with eight years of physical exertion and a "falling out feeling" in her perineal area. She reports one to four episodes of leakage per day, which requires two absorbent pads daily. Urinary leakage is commonly associated with coughing, sneezing, laughing, position changes such as sit to stand, and lifting objects. She feels when she has the urge to go to the bathroom she had better get there quickly for fear she will wet herself. Although she is generally able to get to the bathroom on time, she feels she is "going all of the time" and knows where every bathroom in the city is located. Following her annual gynecological visit, the patient is now referred for pelvic floor physical therapy to address her symptoms.

1. Which of the following tests is the most reliable method to assess the ability of the pelvic floor musculature to generate power?
  - a. Diagnostic ultrasound.
  - b. Intravaginal palpation.
  - c. sEMG biofeedback.
  - d. Visual inspection.

*References:*

Koenig I, Luginbuehl H, Radlinger L. Reliability of pelvic floor muscle electromyography tested on healthy women and women with pelvic floor muscle dysfunction. *Ann Phys Rehabil Med*. 2017;60(6):382-386. doi:10.1016/j.rehab.2017.04.002

Tosun G, Peker N, Tosun ÖÇ, et al. Pelvic floor muscle function and symptoms of dysfunctions in midwives and nurses of reproductive age with and without pelvic floor dysfunction. *Taiwan J Obstet Gynecol*. 2019;58(4):505-513. doi:10.1016/j.tjog.2019.05.014

Answer: b

2. Examination of the patient's pelvic floor reveals significant weakness; the patient is able to perform a full contraction of the pelvic floor musculature, including a posterior lift, but she is unable to maintain this contraction for more than five seconds. She also presents with a Grade II anterior prolapse while performing a Valsalva maneuver. Intravaginal sensation is intact. Anal wink and clitoral sacral reflexes are intact. Based on the best available outcome evidence for this population, which of the following is the most appropriate intervention for this patient?
  - a. Pelvic floor muscle exercises with use of electrical stimulation.
  - b. Pelvic floor muscle exercises with use of sEMG biofeedback.
  - c. Pelvic floor muscle exercises with use ultrasonography.
  - d. D. Pelvic floor muscle exercises with use of vaginal cones.

*References:*

Koenig I, Luginbuehl H, Radlinger L. Reliability of pelvic floor muscle electromyography tested on healthy women and women with pelvic floor muscle dysfunction. *Ann Phys Rehabil Med*. 2017;60(6):382-386. doi:10.1016/j.rehab.2017.04.002

Knorst MR, Cavazzotto K, Henrique M, Resende TL. Physical therapy intervention in women with urinary incontinence associated with pelvic organ prolapse. *Rev Bras Fisioter*. 2012;16(2):102-107.

Answer: b

3. Prior to physical therapy, this patient underwent urodynamic testing and demonstrated detrusor instability. If the patient fails to achieve her goals through physical therapist intervention, she will be referred for surgical consult. Which of the following surgical procedures is most appropriate for this patient?
  - a. Peri-urethral collagen injections.
  - b. Pubovaginal sling.
  - c. Retropubic suspension.
  - d. Sacral nerve stimulation.

*References:*

Downey A, Inman RD. Recent advances in surgical management of urinary incontinence. F1000Res. 2019;8:F1000 Faculty Rev-1294. Published 2019 Jul 31. doi:10.12688/f1000research.16356.1.

Hersh L, Salzman B. Clinical management of urinary incontinence in women [published correction appears in Am Fam Physician. 2013 Oct 1;88(7):427]. Am Fam Physician. 2013;87(9):634-640.

Answer: b

**Case Scenario 2**

The patient is a 39-year-old woman who arrives with complaints of right-side low back pain that began two months ago and is getting progressively worse. She is a medical resident in her final year of her residency program. Her pain worsens with prolonged standing or walking and is especially painful during work hours. She also complains of pain and numbness that extend down into her right posterior thigh. She awakens some nights while turning in bed and experiences interrupted sleep that affects her ability to concentrate during the day. She had been taking fitness classes three times a week at a local health club but has had to discontinue due to this discomfort. She is six months pregnant and would like to work until her delivery if possible. She was referred to physical therapy by her obstetrician. This is her second pregnancy. She has a 2-year-old son. She reports she had mild low back pain during her first pregnancy that did not limit her function. She had prolonged labor and delivery ultimately resulting in a cesarean section delivery following three hours of pushing. She has had no other complications during this pregnancy except for some mild vaginal bleeding during the first trimester, which has since ceased.

4. The screening examination reveals the ability to heel-and-toe walk. She demonstrates full lumbar range of motion with pain at the end of range of lumbar flexion and extension. Straight-leg raise test is limited to 80 degrees bilaterally with a firm muscular end-feel. Manual muscle tests reveal 5/5 strength in all musculature of the lower extremities. Sensation was impaired to light touch over the dorsal surface of the right foot, including the first web space. Muscle stretch reflexes were 2+ at the knees and ankles bilaterally. From the information provided in the scenario above, the patient's neurological symptoms are most likely associated with which of the following?
- a. Femoral nerve compression.
  - b. Obturator nerve compression.
  - c. Sciatic nerve compression.
  - d. Tibial nerve compression.

*References:*

Craig A. Entrapment neuropathies of the lower extremity. PM R. 2013;5(5 Suppl):S31-S40. doi:10.1016/j.pmrj.2013.03.029.

Madani S, Doughty C. Lower extremity entrapment neuropathies. Best Pract Res Clin Rheumatol. 2020;34(3):101565. doi:10.1016/j.berh.2020.101565.

Answer: c

5. Physical therapists specializing in women's health should have knowledge of medical conditions affecting the pregnant patient's ability to participate in an exercise program. Women showing signs and symptoms of various conditions should be referred to appropriate health care providers for necessary medical evaluation and intervention.

As this patient progresses, she expresses a desire to return to participation in regular fitness classes. She is now 33 weeks pregnant and has been diagnosed with placenta previa. Which of the following is the most appropriate action by the women's health clinical specialist?

- a. Continue exercise; avoid positions with hips above head.
- b. Continue exercise; monitor vitals closely.
- c. Discontinue exercise until after delivery.
- d. Discontinue resistive exercise.

*References:*

Hinman SK, Smith KB, Quillen DM, Smith MS. Exercise in Pregnancy: A Clinical Review. Sports Health. 2015;7(6):527-531. doi:10.1177/1941738115599358.

Answer: c

6. The patient asks the women's health clinical specialist about the difference in outcomes when performing stabilization activities alone or in combination with the use of a lumbar corset. Which of the following levels of evidence should the women's health clinical specialist offer as the greatest strength regarding the value of the use of a lumbar corset on outcome?
- a. Case studies.
  - b. Clinical experience.
  - c. Observational studies.
  - d. Randomized clinical trials.

*References :*

Elliott JH, Turner T, Clavisi O, et al. Living systematic reviews: an emerging opportunity to narrow the evidence-practice gap. PLoS Med. 2014;11(2):e1001603. Published 2014 Feb 18. doi:10.1371/journal.pmed.1001603.

Murad MH, Asi N, Alsawas M, Alahdab F. New evidence pyramid. Evid Based Med. 2016;21(4):125-127. doi:10.1136/ebmed-2016-110401.

Answer: d

### Case Scenario 3

A 42-year-old African American woman was diagnosed six months ago with Stage IIIA invasive ductal breast cancer of the left breast. Due to extensive family history of breast cancer and evidence of ipsilateral axillary lymph node involvement following a sentinel lymph node biopsy, the patient elected to have a bilateral radical mastectomy with oophorectomy and a Level III axillary lymph node dissection on the left four months ago. The pathology report revealed that the tumor was positive for the estrogen and progesterone receptors but was negative for the HER-2/neu proto-oncogene receptor. She tested positive for mutation in the BRCA-1 gene. She just completed her first course of chemotherapy (eight treatments), which had been delivered every two weeks for four months. She is scheduled to start tamoxifen treatment in a few weeks. She did not receive radiation treatment.

She is referred to outpatient physical therapy due to recent onset of significant swelling in the left upper extremity and complaints of left shoulder pain, left upper extremity heaviness, and discomfort when wearing her rings or her watch on her left side.

Prior to her diagnosis of breast cancer, her medical history was unremarkable except for the delivery of two children, now ages four and seven, and her strong family history of breast cancer. She is currently self-employed as an interior designer and lives with her husband and their children. She has recently attempted to return to work but has been limited by fatigue, pain, and limited function in her left upper extremity. She is right-handed but uses her left upper extremity extensively when sewing, carrying fabric, hanging draperies, measuring windows, etc.

7. During the course of treatment, the patient reports a new onset of low back pain. She denies any particular incident or injury. She describes the pain as coming on mostly at night. It wakes her from a deep sleep, and she is unable to find a position of comfort to relieve it. She describes it as a dull ache. Physical examination reveals a normal lordotic curve, full pain-free lumbar range of motion, mild hamstring restriction, 2+ muscle stretch reflexes at the knee and ankle, 5/5 strength, and intact sensation in the lower extremities. She denies tenderness to palpation in the lumbar musculature but does have mild tenderness over the spinous processes at L3 and L4. What should the physical therapist's next step be?
- Add hamstring stretching exercises to the current intervention plan.
  - Instruct the patient in modification of sleeping position.
  - Instruct the patient in use of heat and ice for pain relief.
  - Refer the patient to a physician for further evaluation.

*References:*

Casazza BA. Diagnosis and treatment of acute low back pain. *Am Fam Physician*. 2012;85(4):343-350.

Downie A, Williams CM, Henschke N, et al. Red flags to screen for malignancy and fracture in patients with low back pain: systematic review [published correction appears in *BMJ*. 2014;348:g7]. *BMJ*. 2013;347:f7095. doi:10.1136/bmj.f7095

Answer: d

8. This patient has completed a six-week program of physical therapy and has achieved all of the functional goals established. Prior to discharge, the physical therapist would like to provide the patient with education regarding general wellness and health promotion. Of the following, which is the most important consideration for this patient?
- General flexibility exercises.
  - Lifestyle modifications to manage fatigue.
  - Maintenance of healthy weight.
  - Risk factors for cardiac disease.

*References:*

Sturgeon KM, Deng L, Bluethmann SM, et al. A population-based study of cardiovascular disease mortality risk in US cancer patients. *Eur Heart J*. 2019;40(48):3889-3897. doi:10.1093/eurheartj/ehz766.

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Answer: d

## **PREPARING A CASE REPORT**

The purpose of the clinical case reflection is to document patient and client management competency in the specialty area. Patient management in a clinical case reveals clinical reasoning skills that are essential to demonstrating competency in the women's health physical therapy specialty area (as per the Description of Specialty Practice, male pelvic health cases also will be accepted).

Guidelines for case selection: Patient and client management has five elements – examination, evaluation, diagnosis, prognosis, and intervention – that lead to optimal outcomes of care. Please select a typical case in your practice to provide evidence that demonstrates your competency in all five elements. The case should provide a clear picture of how the applicant provided care beyond that of an entry level practitioner. ABPTS may audit your submitted case reflection to verify its authenticity.

Materials and information to include (see attached sample case report and rubric for specific criteria required):

- The document you submit should be able to be read in no more than 15 minutes.
- Follow the online format to enter the information for your case study, answering the required questions in the designated boxes.
- Each case must include relevant information that supports the appropriate evaluation plan of care development and treatment interventions for the case.
- Provide relevant citations from the literature to support your clinical decision making. The case reviewer will consider the relevance of these references when evaluating the case reflection. The references should have been published within the last 10 years unless it is a seminal study.

The case should indicate contemporary, specialist practice as depicted in the Description of Specialty Practice for Women's Health Physical Therapy. An individual evaluating competency should be able to rate performance from reading the case using the scoring rubric described below.

### **Process for submission of a clinical case report:**

1. A case must be submitted along with the application to sit for the Women's Health Specialty Examination.
2. The candidate must sign a notarized attestation indicating that the report reflects what actually was done for the patient and does not represent an embellishment of the case. (Note: This can be done through notarization of the exam application itself. A separate notarization of the case reflection is not required.)
3. A case will be evaluated within three months of submission.
4. A case that does not meet the screening criteria will be returned with an explanation.
5. A case not rated as competent will be returned with the rater's comments.
6. If this case is rated as not meeting the screening criteria or not competent, it can be resubmitted after corrections are made or replaced with another case, but only once.
7. Each case will be reviewed by a trained rater in the specialty area. Any case that is not rated as competent by the initial reviewer will be reviewed by a second reviewer. Any discrepancy between the raters will be referred to a third, trained rater.
8. A candidate whose case is not rated as competent may submit a written request to the American Board of Physical Therapy Specialties for reconsideration per existing ABPTS policy and procedures for reconsideration requests.

### **Compliance with HIPAA Privacy Rule:**

Please note that to be in compliance with the HIPAA Privacy Rule, the case report and any documentation you submit must conform to either Option 1 or Option 2 below:

Option 1. In the case report and documentation, deidentify the patient information per the HIPAA Privacy Rule, which defines 18 specific items that must be removed to release patient information without patient authorization or approval from the Research Privacy Board.

These 18 items are:

1. Names.
2. All geographic subdivisions smaller than a state, including street address, city, county, precinct, ZIP Code, and their equivalent geographical codes, except for the initial three digits of a ZIP Code if, according to the current publicly available data from the Bureau of the Census:
  - The geographic unit formed by combining all ZIP Codes with the same three initial digits contains more than 20,000 people.
  - The initial three digits of a ZIP Code for all such units containing 20,000 or fewer people are changed to 000.
3. All elements of dates (except year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death; and all ages over 89 and all elements of dates (including year) indicative of such age, except that such ages and elements may be aggregated into a single category of age 90 or older.
4. Telephone numbers.
5. Facsimile numbers.
6. Electronic mail addresses.
7. Social security numbers.
8. Medical record numbers.
9. Health plan beneficiary numbers.
10. Account numbers.
11. Certificate/license numbers.
12. Vehicle identifiers and serial numbers, including license plate numbers.
13. Device identifiers and serial numbers.
14. Web URLs.
15. IP address numbers.
16. Biometric identifiers, including fingerprints and voiceprints.
17. Full-face photographic images and any comparable images.
18. Any other unique identifying number, characteristic, or code, unless otherwise permitted by the Privacy Rule for reidentification.

### **Option 2. Obtain written authorization from the patient.**

A template of a form to be used for this purpose is attached. This written authorization does not need to be obtained if patient information in the case report and documentation is deidentified per the instructions in Option 1 above.

## Authorization to Disclose Protected Health Information Template.

### Authorization to Disclose Protected Health Information

Patient name: \_\_\_\_\_

Description of information to be used or disclosed: \_\_\_\_\_

\_\_\_\_\_

Purpose or purposes of disclosure: \_\_\_\_\_

\_\_\_\_\_

Persons authorized to use or disclose information: \_\_\_\_\_

\_\_\_\_\_

Persons to whom information may be disclosed: \_\_\_\_\_

\_\_\_\_\_

Expiration date or expiration event: \_\_\_\_\_

### Right to Terminate or Revoke Authorization

This authorization may be revoked or terminated by submitting a written revocation to (name) at (clinic name).

### Potential for Redisclosure

Information disclosed pursuant to this authorization is subject to redisclosure by the recipient and may no longer be protected.

Printed name of patient: \_\_\_\_\_

### Your Rights

You have the right to receive a copy of this authorization and to be told the purpose and to whom the protected health information is being disclosed.

### Refusing Authorization

If you refuse to sign this authorization, you may not be denied appropriate treatment by this facility.



## **Case Reflection Checklist**

### **Purpose**

The purpose of the patient case reflection is to demonstrate the advanced clinical reasoning and decision-making process reflective of that of a women's health clinical specialist. Clinical specialists are set apart from non-board-certified therapists with entry-level proficiency by their ability to synthesize information from various sources, including, but not limited to, the patient and client examination, differential diagnosis, and intervention, and the incorporation of literature into clinical practice.

Clinical specialists can incorporate what is learned from each patient case, positive or negative, into future patient management. The case reflection should demonstrate these learning experiences by providing rationale for decision making throughout the plan of care. Relevant citations of the literature should be included in the case reflection.

Case reflections will be accepted on both male and female cases representing women's health clinical practice.

The case must present specialty practice and demonstrate professionalism using correct grammar, spelling, and punctuation.

All documented citations should be less than 10 years since publication unless the article is considered a seminal study. References are to be provided as designated in the online format. The applicant should provide reference citations that support their clinical decision making and intervention techniques for this case. Reference citations can be used in reflection of how the clinical specialists may manage future cases differently. Course manuals are not accepted as supporting references.

### **Areas of Reflection**

The applicant is to answer the specified questions for each area in the online entry system. These reflections should highlight the specialist's clinical thought processes and rationale. This is the applicant's opportunity to clearly demonstrate their ability to understand and practice as a clinical specialist. This may include discussion on decisions that were made correctly or decisions that would be made differently in the future. The applicant may also highlight items that would be focused on in more detail next time or methods to change their practice with future patients.

### **Formatting the Case Reflection**

The following questions will be used to help form your case reflection. Please ensure that all points are included in your case reflection as designated in each section of the online entry system.

## Scoring Rubric

### Case Rationale

- Provide a rationale for the case that clearly outlines the indicators that make it reflective of women's health specialty practice.
- Include insight regarding your perspective of specialist practice.

### Initial Data Gathering/Interview

List pertinent information from your patient's history and answer five of the following eight questions. Include two references that support your reflections. List the question number you are answering next to your answer.

1. How does the patient's medical diagnosis affect your interview?
2. How might your personal biases/assumptions affect your interview?
3. Assessing the information you gathered, what do you see as a pattern or connection between the symptoms?
4. What is the value of the data you gathered?
5. What are some of the hypotheses you can draw from the data?
6. What is your assessment of the patient's and/or caregiver's knowledge and understanding of their diagnosis and need for physical therapy?
7. Have you verified the patient's goals and investigated other resources that can assist in helping the patient reach their goals?
8. Based on the information gathered, can you assess a need for a referral to another health care professional?

### Initial Hypothesis

Describe your initial hypothesis based on the information you have gathered, and explain how you arrived at this hypothesis. In addition, answer six of the following eight questions. List the question number you are answering next to your answer.

- What is your hypothesis based on (biases, experiences)?
- How did you arrive at the hypothesis? How can you explain your rationale?
- What about this patient and the information you have gathered might support your hypothesis?
- What do you anticipate could be an outcome for this patient (prognosis)?
- Based on your hypothesis, how might your strategy for the examination be influenced?
- What is your approach/planned sequence/strategy for the examination?
- How might the environmental factors affect your examination?
- How might other diagnostic information affect your examination?

## **Examination**

Describe the tests and measures and clinical findings selected for your examination. In addition, answer five of the following six questions. Include two references that support your reflection. List the question number you are answering next to your answer.

- Appraise the tests and measures used and their psychometric properties selected in the examination. How and why did you select them?
- Reflecting on these tests, how might they support or negate your hypothesis?
- Can the identified tests and measures help you determine a change in status? Are they able to detect a minimum clinically important difference?
- How did you organize the examination? What might you do differently?
- Discuss other systems not tested that may be affecting the patient's problem.
- Compare your examination findings for this patient with another patient with a similar medical diagnosis.

## **Evaluation**

Describe the physical therapy diagnosis you have determined for this patient. In addition, answer six of the following eight questions. Include at least two references for the evidence supporting your diagnosis. List the question number you are answering next to your answer.

- How did the patient's subjective history and objective measurements lead you to determine the diagnosis for this patient? Did your findings support or negate your initial hypothesis?
- How do these relate to the patient's goals and identified issues?
- What is your rationale for the prognosis, and what are the positive and negative prognostic indicators?
- How will you go about developing a therapeutic relationship?
- How might any cultural factors influence your care of the patient?
- What are your considerations for behavior, motivation, and readiness?
- How can you determine capacity for progress toward goals?

## **Plan of Care**

Answer four of the following five questions. List the question number you are answering next to your answer.

- How have you incorporated the patient's and family's goals?
- How do the goals reflect your examination and evaluation (ICF framework)?
- How did you determine the PT prescription or plan of care (frequency, intensity, anticipated length of service)?
- How do key elements of the PT plan of care relate to primary diagnosis?

## **Interventions**

Discuss your overall PT approach or treatment strategy and your rationale for it. How does your approach relate to theory and the current evidence? In addition, answer five of the seven following questions. Include 2 references to support your treatment strategy. List the question number you are answering next to your answer.

- Discuss your overall PT approach or strategies (e.g., motor learning, strengthening):
  - How will you modify principles for this patient?
  - Are there specific aspects about this particular patient to keep in mind?
  - How does your approach relate to theory and current evidence?
  - As you designed your intervention plan, how did you select specific strategies?
- What is your rationale for those intervention strategies?
- How do the interventions relate to the primary problem areas identified using the ICF?
- How might you need to modify your interventions for this particular patient and caregiver and what are your criteria for doing so?
- How will you ensure safety?
- Patient and/or caregiver education:
  - What are your overall strategies for teaching?
  - Describe learning styles and barriers and any possible accommodations for the patient and caregiver.
  - How can you ensure understanding and buy-in?
  - What communication strategies (verbal and nonverbal) will be most successful?

## **Reexamination**

Answer seven of the following nine questions. List the question number you are answering next to your answer.

- Evaluate the effectiveness of your interventions. Do you need to modify anything?
- What have you learned about the patient and/or caregiver that you did not know before?
- Using the ICF, how does this patient's progress toward goals compare with that of other patients with a similar diagnosis?
- What communication and coordination of care have you engaged in with other health care professionals?
- Over the course of the treatment, how has your therapeutic relationship changed with the patient? Have you changed the way you interact with the patient?
- How might any new factors affect the patient outcome?
- How do the characteristics of the patient's progress affect your goals, prognosis, and anticipated outcome?
- How can you determine the patient's views (satisfaction/frustration) about their progress toward goals? How might that affect your plan of care?
- How has physical therapy affected the patient's life?

## Outcomes

Discuss whether physical therapy was effective and the outcome measures you used to assess the outcome. In addition, answer six of the following eight questions. Include 2 references regarding your outcome measure(s). List the question number you are answering next to your answer.

- Was there a minimum clinically important difference in your outcome measure(s)? Why or why not?
- What criteria did you or will you use to determine whether the patient has met their goals?
- How do you determine if the patient is ready to return to home/community /work /school/sports?
- What barriers (physical, personal, environmental), if any, are there to discharge?
- What are the anticipated life-span needs, and what are they based on?
- What might the role of physical therapy be in the future?
- What are the patient's and/or caregiver's views of future physical therapy needs?
- How can you and the patient and/or caregiver partner together for a lifetime plan for wellness?

## Case Reflection Scoring

The applicant must include all points within each section of the case reflection (as clearly outlined in the online entry system) to receive a passing score.

Case reflections that do not answer the outlined questions for each section in the online entry system, that rely on outdated literature (less than 10 years since publication unless a seminal study), or that do not adequately demonstrate the clinical decision making process throughout the document in the reflections will not receive a passing score.

Applicants will be provided one opportunity for revision if they do not receive a passing score. The applicant will receive information on which section of the case reflection did not pass.

## Mistakes to Avoid

These are the most common mistakes applicants make in the case reflection. Take care to avoid these mistakes, which result in a non-passing score.

- Failure to provide the required reflection within each section of the case document.
- Failure to address each required point as outlined in the online entry system.
- Failure to cite eligible supporting literature to support clinical decisions and treatment interventions.

## References

APTA. Guide to Physical Therapist Practice 3rd Ed. Arlington, VA; APTA. 2003.

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## RESOURCE GUIDE INFORMATION

Resource guides are compiled by APTA sections and board- certified specialists to reflect current literature in the specialty area. They are provided for your information only. Neither ABPTS nor the specialty councils have reviewed or endorsed the content of these lists. In addition, reviewing these resources does not guarantee that a candidate will receive a passing score on the specialist certification examination.

### **Women's Health Physical Therapy Resource Information**

Academy of Pelvic Health Physical Therapy — APTA  
4201 Wilson Boulevard, Suite 300  
Arlington, VA 22203  
Phone: 844-576-4055  
Email: [hello@aptapelvichealth.org](mailto:hello@aptapelvichealth.org)

**Last Updated:** 05/06/2021  
**Contact:** [spec-cert@apta.org](mailto:spec-cert@apta.org)



# APTA Specialist Certification

Governed by **ABPTS**

## Wound Management Candidate Guide Addendum



**ABPTS**  
American Board  
of Physical Therapy  
Specialties

# Wound Management Candidate Guide

**APTA**  
**Specialist**  
**Certification**  
Governed by **ABPTS**

## Initial Certification Deadlines for Wound Management

July 1: Application deadline  
Aug. 31: Reapplication deadline  
Nov. 30: Exam fee deadline

## Certification Requirements

All applicants must submit one case report demonstrating specialty practice in wound management. This case report must be based on a patient or client seen within the last three years.

Applicants must also meet requirements for Option A or Option B.

### Option A

Applicants must submit evidence of 2,000 hours of direct patient care as a licensed United States physical therapist (temporary license excluded) in the specialty area within the last 10 years, 25% (500 hours) of which must have occurred within the last three years. Direct patient care must include activities in each of the elements of patient and client management applicable to the specialty area and included in the Description of Specialty Practice. These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

### Option B

Applicants must submit evidence of successful completion of an APTA-accredited postprofessional wound management clinical residency completed within the last 10 years that has a curriculum plan reflective of the DSP. Experience from residencies in which the curriculum plan reflects only a portion of the DSP will not be considered.

Applicants who are currently enrolled in an ABPTRFE-accredited clinical residency or enrolled in a residency program that has been granted candidacy status may apply for the specialist certification examination in the appropriate specialty area prior to completion of the residency. These applicants are conditionally approved to sit for the examination, as long as they meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency to APTA's Specialist Certification Program no later than one month before the examination window opens. To verify your residency program's accreditation status, visit [abptrfe.com](http://abptrfe.com).

## EXAM CONTENT OUTLINE AND SAMPLE QUESTIONS

### Exam Content Outline

The examination will comprise approximately 200 questions. Questions may include graphics. Examination questions can represent both a practice expectation and a knowledge area associated with that expectation. The following is a summary, including the percent of exam questions for each of the major components of the DSP.

<b>Content Area</b>	<b>% of Exam</b>
<b>I. Knowledge Area</b>	<b>32%</b>
a. Foundation Sciences: Biological and Physical (10%)	
b. Behavioral Sciences (5%)	
c. Wound Management Clinical Sciences (12%)	
d. Clinical Inquiry for Evidence Based Practice (5%)	
<b>II. Professional Roles and Responsibilities</b>	<b>5%</b>
<b>III. Patient and Client Management Expectation</b>	<b>63%</b>
a. Examination (12%)	
b. Evaluation (13%)	
c. Diagnosis (12%)	
d. Prognosis (6%)	
e. Interventions (14%)	
f. Outcomes (6%)	
<b>Total:</b>	<b>100%</b>

### **Medical Conditions**

The following list represents medical conditions with integumentary manifestations that may be represented on the specialty exam, and is not meant to be all-inclusive. For each condition, the aspects to consider are the following: pathophysiology of the disorder and how it contributes to integumentary disorders, the effects of medications used to treat the disease, the clinical presentation, the evidence-based plan of care, and the expected outcome of treatment.

#### **Systemic Conditions:**

- Diabetes.
- Vascular disease:
  - Arterial.
  - Venous.
  - Lymphatic.
- Cardiopulmonary disease:
  - Congestive heart failure.
  - Coronary artery bypass graft.
  - Cardiomyopathy.
  - Chronic obstructive pulmonary disease.
  - Cystic fibrosis.
  - Heart/lung transplant.
- Neurologic disorder:
  - Polyneuropathy.
  - Cerebrovascular accident.
  - Peripheral nerve damage.
  - Herpes zoster.
  - Demyelinating disorders.
  - Parkinson disease.

- Organ failure.
- Drug induced hypersensitivity syndrome.
- Cancer:
  - Kaposi sarcoma.
  - Melanoma.
  - Basal cell carcinoma.
  - Squamous cell carcinoma.
  - Post-radiation for any cancer.
  - Lymphoma.
  - Marjolin ulcer.
  - Abscess.

**Nutrition deficits:**

- Malnutrition.
- Obesity.

**Trauma/surgery:**

- Spinal cord injury.
- Amputation.
- Burns/frostbite.
- Contusion/abrasion.
- Dehiscence.
- Flaps/skin grafts.
- Venomous bites.

**Skin disorders:**

- Dermatitis.
- Allergic reactions.
- Abnormal scarring.

**Ulceration:**

- Pressure.
- Neuropathic.
- Vascular:
  - Arterial.
  - Venous.
- Calciphylaxis.
- Factitious disorder.
- Sickle cell disease.
- End of life/Kennedy ulcer.

**Infection:**

- Cellulitis.
- Necrotizing fasciitis.
- Osteomyelitis.
- Dermatitis.
- Abscess.
- Fungal/onychomycosis.

**Autoimmune disorders:**

- Systemic lupus erythematosus.
- Rheumatoid arthritis.
- Scleroderma.
- Pemphigus.
- Bullous pemphigoid.
- Pyoderma gangrenosum.
- Vasculitis.
- Vasculopathy.

## Sample Questions

The following case scenarios are to illustrate the linking of practice skills and expectations to knowledge areas. Each scenario has sample questions followed by explanations. These scenarios and questions are intended to provide guidance regarding the integration of knowledge, clinical experience, and scientific evidence expected of the integumentary and wound management clinical specialist. The terminology used in the scenarios includes the patient management model in the Guide to Physical Therapist Practice. Please note that the questions listed below reflect the format but not necessarily the complexity of the actual examination questions.

### Case 1

A 59-year-old African American male is referred for “physical therapy to irrigate abdominal wound.” His wound history began with a ventral hernia repair surgery 10 days ago. He had been discharged home but 48 hours later was readmitted through the emergency department for incision dehiscence with signs of infection. His hospital chart indicates he is febrile with maximum temperature of 39°C and that his mobility is limited to bathroom only, requiring assistance of nursing. His examination is notable for slow response time in answering questions, open areas at both ends of his surgical incision where it appears that skin staples are missing, and foul smelling drainage from the distal open wound that is thick, copious, and maroon colored. The proximal opening is 1.5 cm x 1.0 cm, and the lower opening is 2.0 cm x 1.5 cm. The patient’s skin has normal, moderately dark pigmentation with slightly darker, purplish hue along the abdominal incision that extends 3-5 cm laterally in both directions. This darker pigmented skin is dry and flaking.

Previous medical history includes type 2 diabetes mellitus, hypertension, chronic kidney disease, and multiple episodes of skin abscesses. His social history report includes that he has been receiving disability benefits and has depleted his savings due to health care costs. He lives in a two-story house with his wife and has three adult children living nearby. He resides in a city with a local university that offers training in all of the health professions.

1. What measurements of the wound are required by Medicare standards?
  - m. Length and width according to clock notation corresponding to horizontal and vertical measurements.
  - n. Maximum diameter, diameter perpendicular to it, and maximum depth of each opening.
  - o. Maximum diameter of each opening.
  - p. Volume of each opening at the ends of the incision.

The correct response is b. Medicare requires that the surface area be measured as the maximum distance across multiplied by the diameter perpendicular to the maximum distance across, as well as the maximum depth.

2. The physical therapist wound management clinical specialist would most effectively perform debridement of this wound by:
  - a. Removing all remaining staples and performing pulsed lavage.
  - b. Placing the patient in a Hubbard tank with whirlpool jets for 20 minutes with slow-release chlorine disinfectant.
  - c. Performing pulsed lavage with suction using a long, narrow flexible tip into each wound opening.
  - d. Pulsed lavage with suction using a soft splash-shield tip covering each opening.

The correct response is c. Opening otherwise intact skin to reach an area requiring debridement requires the services of a physician and may be unnecessary if pulsed lavage with suction with a long flexible tip is used. Whirlpool treatment will not irrigate the tracts, and a pulsed lavage splash-shield tip is less likely to remove bacteria and necrotic tissue than a tip placed into the tract areas beneath the closed incision.

## Case 2

A 73-year-old Caucasian male presents with a nonhealing wound of more than 6 months duration on the right heel. The wound has recently started draining, making it difficult for him to work and wear his usual athletic shoes. He ambulates with a walker at limited household distances with abnormal gait patterns due to right ankle impairments. He reports poor endurance due to cardiovascular disease.

He is married and lives with his wife in a one-story home with three steps to enter. Because of his wife's impairments due to arthritis, the patient usually does the grocery shopping and most of the cooking. They have three adult children who are supportive but live several hours' drive away.

Patient goals: to return to independent activities at the community level, to drive, and to resume his part-time job setting up eyeglasses displays in supermarkets.

### Previous Medical History:

- Cardiovascular disease; s/p CABG 10 years ago with a pacemaker and internal defibrillator.
- Hypertension.
- Type 2 diabetes for eight years.
- Peripheral vascular disease, s/p left femoral to popliteal artery bypass graft, six years ago with a closed, remodeling wound on the left lateral foot.
- S/p ankle fracture on the right due to a fall 18 months ago requiring ORIF; the nonhealing lateral ankle surgical site required bypass surgery and plastic reconstruction of the right ankle (rotation flap with the right plantar heel pad) to cover the dehiscent incision and ankle hardware.
- History of smoking (40 packs per year), quit 10 years ago.

- Current level of function: Modified independent with activities of daily living; ambulates with walker <100 ft with frequent rests due to shortness of breath; currently does not drive.

**Medications:**

- Plavix (inhibits platelet aggregation).
- Altace (ACE inhibitor).
- Aspirin.
- Folic acid.
- Lasix (diuretic).
- Lipitor.
- Glyburide (control blood sugars).
- Recently completed course of antibiotics.

**Physical examination:**

- Communication, cognition, visual perception: Patient is alert and oriented x four, verbalizes compliance with home instructions, unable to visualize the plantar surface of foot or see wounds on toes well enough to adequately apply dressings.
- Endurance/cardiopulmonary: Endurance is fair, requires rest stops every 50-60 feet. Vital signs: BP 142/90, PR 73.
- Function: Modified independent with all transfers. Unable to return to work because of wound issues (drainage, dressings not acceptable at work) and inability to wear appropriate shoes for work.
- Movement analysis: Has bilateral flat foot contact during weight acceptance phase of gait, minimal toe push-off bilaterally, short stride length, exaggerated lateral trunk sway to compensate for lack of ankle/knee flexion. Currently wearing athletic shoes without any additional inserts for pressure redistribution of the heel.
- ROM: Ankle plantar flexion: left 0-50 deg; right 15-30 deg. Great toe extension bilaterally: 10 deg.
- Strength: 4 to 4+/5 gross; bilateral ankles 3-/5.
- Skin assessment: diffuse erythema, scaling skin, and clear serous drainage oozing from the skin on both feet, toes to ankles, right > left, with a mild odor.
- 3+ pitting edema of right lower extremity, 2+ of the left.
- Pain: no complaints.
- Sensation: Has loss of sensation in both feet with no response to the 5.07 monofilament but does respond to the 6.15 monofilament.
- Wound assessment:
  - Right fourth toe: 7.0 mm x 5.0 mm, 100% granulation, min+ serous drainage, mod+ edema and erythema to MP joint.
  - Right plantar heel: 3.0 cm x 1.5 cm, 100% dry black eschar over calcaneus.
  - Right medial heel: 1.2 cm area of thick soft callus with 5 mm fissure.
  - Left plantar first metatarsal head: 1.5 cm x 1.0 cm, 100% dry brown eschar.

**Tests and Measures**

- Pulses: left dorsalis pedis 2+, posterior tibial 1+ with positive Doppler signal; right dorsalis pedis 2+, posterior tibial absent with no Doppler signal.
- Capillary refill: right great toe 6 sec; left great toe 5 sec.
- Ankle-brachial index: right 0.6; left 0.72.
- Transcutaneous PO<sub>2</sub>: 36mmHg.

- Fasting blood sugars: usually range from 130-160, lately have been 250-280 with no change in medication; last Hb1Ac was 7.9.
- Cultures: not available.
- Peak plantar pressures: not available.

The patient was referred to a dermatologist for treatment of the cellulitis; local wound management consisted of sharp debridement, topical antimicrobial dressings, and pressure redistribution with a wound-healing shoe. Gait training with the walker was included in the first treatment to ensure safety with the shoes. Stretching and strengthening exercises were included in the plan of care with emphasis on implementing a home exercise program that the patient would be able to continue after wound healing was achieved. He was referred to a diabetic educator for additional nutritional education (due to the elevated HbA1c). After the wound was closed the patient received custom-molded diabetic shoes with inserts to redistribute the pressure and prevent wound recurrence.

3. The disorder that develops when there is abnormal increased resistance to the action of insulin followed by reduction in the pancreatic production of insulin is termed:
- a. Gestational diabetes.
  - b. Pancreatic cancer.
  - c. Type 1 diabetes.
  - d. Type 2 diabetes.

The correct response is d. The integumentary and wound management clinical specialist understands the differences between Type 1, Type 2, and gestational diabetes; the laboratory tests used to diagnose and monitor management of diabetes; the signs and symptoms of hyperglycemia and hypoglycemia; and immediate action necessary if a patient is in a diabetic crisis.

4. Which of the following factors contributes the greatest to changes in gait speed for patients with diabetes?
- a. Body mass index.
  - b. Decrease in lower extremity strength.
  - c. Loss of sensation.
  - d. Mood.

The correct response is b. Changes in the lower extremity, especially the foot range of motion and strength, affect changes in the gait of a patient with diabetes, resulting in foot deformities, altered gait patterns, decreased gait speed, and decreased balance. The soft tissue changes are caused by the effects of glycosylation end products, and the weakened foot intrinsic muscles cause altered force angles on the tendons, resulting in foot deformities and high peak pressures. The mechanisms for injury as a result of these soft tissue changes and bony deformities are basic to understanding the rationale for treatment of diabetic foot wounds.

5. Loss of protective sensation is defined as:
- a. Inability to detect vibration on the dorsal foot.
  - b. Inability to feel a 2.0 mm pebble in the shoe during gait.
  - c. Lack of response to the 5.07 monofilament that provides 10g of pressure with testing.
  - d. Loss of light touch on the plantar foot with impaired proprioception in the great toe and ankle.

The correct response is c. Diminished responses to monofilament testing on the plantar surface of the foot can be used to monitor loss of sensation in patients with diabetes and is a standard part of any assessment of the diabetic foot. Additional changes are diminished response to vibration on the great



toe and diminished Achilles reflex. These changes are useful in predicting which patients at risk for developing diabetic foot wounds and in determining the type of footwear necessary to prevent wound formation. For this patient, the lack of response to the 5.07 monofilament in conjunction with the changes in the soft tissue of the heel after plastic reconstruction are significant indicators that he should have been wearing protective footwear rather than athletic shoes.

6. You are treating a patient with a rocker bottom foot deformity who regularly wears an athletic shoe during exercise. He complains of midfoot pain and you note that his midfoot is slightly red and warm to the touch compared with the opposite foot. What is your best intervention?
- a. Continue the same exercise program with fewer repetitions and substitute bicycle exercise for the treadmill.
  - b. Recommend the patient wear a soft post op shoe and limit walking until the pain diminishes.
  - c. Refer the patient to an ankle/foot specialist for acute Charcot foot.
  - d. Treat with ice and ultrasound.

The correct response is c. The Charcot foot is a neuropathic arthropathy associated with diabetes. The evolution of the foot changes result in weakened bone structures, dropped midfoot with associated peak pressures and risk for ulceration, and frequent micro-trauma or bone fractures (termed acute Charcot foot). In addition to recognizing the deformity and educating patients on the daily care to prevent complications, the clinician needs to recognize signs of acute trauma and understand the standard practice of off-loading with total contact cast or orthotic devices to prevent further trauma.

7. The skin changes (including erythema, drainage, odor, and edema) are indications that the patient has:
- a. Cellulitis.
  - b. Congestive heart failure.
  - c. Osteomyelitis.
  - d. Renal failure.

The correct response is a. Recognizing the signs of infection associated with any wound is an important component of a comprehensive integumentary assessment or screening. Patients with diabetes often have the complications of CHF and renal failure. This patient does indeed have some signs of CHF, and he is being treated for this with medications. The signs are indicative of infection, and the odor is suspicious for pseudomonas, which in his case required oral medications for successful treatment. The integumentary and wound management specialist needs to recognize signs of a variety of infectious pathologies in order to make the appropriate referral to a medical specialist, and to help determine the need for topical antimicrobial dressings and/or systemic antibiotics.

## **PREPARING A CASE REPORT**

**Purpose:** The clinical case report documents competency in patient and client management, revealing clinical reasoning skills that are essential to demonstrating competency in the wound management specialty area.

**Guidelines for case selection:** Patient and client management has five elements that lead to optimal outcomes of care: examination, evaluation, diagnosis, prognosis, and intervention. Please select a typical case in your practice through which you can provide evidence that demonstrates your competency in all five elements. The case should provide a clear picture of how the wound management specialist provided care that is beyond that of an entry-level practitioner. ABPTS may audit your submitted case report to verify its authenticity.

**Material/information to include** (see attached sample case report and rubric for specific criteria required):

- Following an abstract, the document should begin with your background and introduction, to include the rationale for selecting the case.
- Each case must include relevant clinical information in narrative form, which may be supplemented using tables or graphs.
- The information presented should be descriptive with patient-identifying information removed.
- A written description of clinical reasoning should be based on the synthesis of information and what is discussed in the literature, i.e., why certain tests and measures or interventions were selected and the appropriateness for the patient being presented.
- References are to include at least 10 relevant citations not more than 10 years old from the literature to support clinical decision making.
- The case reviewer will consider the relevance of these references when evaluating the case report.

The case should indicate contemporary, specialist practice as depicted in the Description of Specialty Practice for Wound Management Physical Therapy. An individual evaluating competency should be able to rate performance from reading the case using the scoring rubric described below.

**Scoring Rubric:** After review of the case report, the rater will decide if it has met competency as specified by the scoring rubric (see below). Submitted cases must meet competency for approval at this step of initial certification. Competency is defined as obtaining a score of “Pass” for the screening criteria.

### **Process for Submission of a Clinical Case Report:**

1. A case must be submitted along with the application to sit for the wound management physical therapy specialty examination.
2. A case will be evaluated within three months of submission.
3. A case that does not meet the screening criteria will be returned with an explanation.
4. A case that is not rated as competent by the reviewer/rater will be returned with comments.
5. If the first case is rated as not meeting the screening criteria or competent, it can be replaced with another case, but only once.
6. Each case will be reviewed by two trained raters in the specialty area. Disagreements between two raters will be referred to a third, trained rater.
7. A candidate whose case is not rated as competent may submit a written request to the American Board of Physical Therapy Specialties for reconsideration per existing ABPTS policy and procedures for reconsideration requests.

### **Compliance with HIPAA Privacy Rule:**

Please note that to be in compliance with the HIPAA Privacy Rule, the case report and any documentation you submit must conform to either Option 1 or Option 2 below:

Option 1. Deidentify the patient information in the case report and documentation per the HIPAA Privacy Rule, which defines 18 specific items that must be removed to release patient information without patient authorization or approval from the Research Privacy Board.

These 18 items are:

1. Names.
2. All geographic subdivisions smaller than a state, including street address, city, county, precinct, ZIP Code, and their equivalent geographical codes, except for the initial three digits of a ZIP Code if, according to the current publicly available data from the Bureau of the Census:
  - The geographic unit formed by combining all ZIP Codes with the same three initial digits contains more than 20,000 people.
  - The initial three digits of a ZIP Code for all such units containing 20,000 or fewer people are changed to 000.
3. All elements of dates (except year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death; and all ages over 89 and all elements of dates (including year) indicative of such age, except that such ages and elements may be aggregated into a single category of age 90 or older.
4. Telephone numbers.
5. Facsimile numbers.
6. Electronic mail addresses.
7. Social security numbers.
8. Medical record numbers.
9. Health plan beneficiary numbers.
10. Account numbers.
11. Certificate/license numbers.
12. Vehicle identifiers and serial numbers, including license plate numbers.
13. Device identifiers and serial numbers.
14. Web universal resource locators (URLs).
15. Internet protocol (IP) address numbers.
16. Biometric identifiers, including fingerprints and voiceprints.
17. Full-face photographic images and any comparable images.
18. Any other unique identifying number, characteristic, or code, unless otherwise permitted by the Privacy Rule for re-identification.

### **Option 2. Obtain written authorization from the patient.**

A template of a form to be used for this purpose is located in Section 12.2 of the application. This written authorization does not need to be obtained if patient information in the case report and documentation is deidentified per the instructions in Option 1 above.

**Case Report Checklist and Required Criteria:** Please see scoring rubric for specific details of required criteria.

**CARE Checklist**

1. Title. The area of focus and “: a case report” should appear at the end of the title.
2. Key Words. Two to five key words that identify topics in this case report.
3. Abstract.
  - Introduction/Background and Purpose: what is unique and why is it important?
  - Case Description: The patient’s main concerns and important clinical findings, the main diagnoses, and interventions.
  - Outcomes: Brief description of the outcomes.
  - Conclusion: What are the “take-away” lessons?
4. Introduction: Briefly summarize why this case is unique to the wound management specialty; include medical literature references.
5. Patient information.
  - Deidentified demographic and other patient information.
  - Main concerns and symptoms of the patient.
  - Medical, family, and psychosocial history including genetic information.
  - Relevant past interventions and their outcomes.
6. Clinical Findings. Relevant physical examinations (PE) and other clinical findings.
7. Timeline. Relevant data from this episode of care organized as a timeline (figure or table).
8. Diagnostic Assessment.
  - Diagnostic methods (PE, laboratory testing, imaging, surveys).
  - Diagnostic challenges.
  - Diagnostic reasoning including differential diagnosis.
  - Prognostic characteristics when applicable.
9. Therapeutic Intervention.
  - Types of intervention (pharmacologic, surgical, preventive, physical therapy).
  - Administration of intervention (dosage, intensity, duration).
  - Changes in the interventions with explanations.
10. Follow-up and Outcomes.
  - Clinician and patient-assessed outcomes when appropriate.
  - Important follow-up diagnostic and other test results.
  - Intervention adherence and tolerability (how was this assessed)?
11. Adverse and unanticipated events.
  - Strengths and limitations in your approach to this case.
  - Discussion of the relevant medical literature.
  - The rationale for your conclusions.
  - The primary “take-away” lessons from this case report.
12. Patient Perspective. Share the patient’s perspective on their case.
13. Informed consent if applicable. (Not required if all patient identification is removed from the case as discussed above.)

## **Additional Information for Case Report**

### **Preparation References**

All documented citations should be less than 10 years since publication unless the article is considered a seminal study. References are to be provided throughout all sections of the case report. The applicant should provide reference citations using American Medical Association formatting supporting all clinical decision making and intervention techniques. Course manuals are not accepted as supporting references.

### **Areas of Reflection**

The applicant is to provide reflection within each section of the case report document. These reflections should highlight the specialist's clinical thought processes and rationale. This is the opportunity for the applicant to clearly demonstrate their ability to understand and practice as a clinical specialist. This may include discussion on decisions that were made correctly or decisions that would be made differently in the future. The applicant may also highlight items that would receive both additional focus and methods on which they would change their practice with future patients.

### **Scoring**

Case reports that are poorly assembled, rely on insufficient or outdated literature, or do not adequately demonstrate the clinical decision-making process throughout the document in the reflections will not receive a passing score. Applicants will be provided one opportunity for revision if a nonpassing score is received.

Refer to the case report scoring rubric for specific points of content that should be included in the case report to achieve a passing score. The applicant must include all points within each section of the case report (as clearly outlined on the scoring rubric) to receive a passing score.

### **Mistakes to Avoid**

These are the most common mistakes applicants make in the case report. Take care to avoid them, as they result in a nonpassing score.

- Failure to provide the required reflection within each section of the case document.
- Failure to address each point on the scoring rubric.
- Incomplete post case report reflection or failure to include this section.
- Failure to cite supporting literature through the case report to support clinical decisions and treatment interventions.

## Case Report Scoring Rubric

Case Report Criteria	Pass	
<b>Title</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
A descriptive and succinct title that describes the phenomenon of greatest interest (symptom, diagnostic test, diagnosis, intervention, outcome). Ends with a case report that clearly and concisely describes the case topic.		
<b>Abstract</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Briefly summarizes the relevant information in 250 words or fewer without citations. Information includes the following elements: (1) introduction/background, (2) case description/key points from the case; (3) outcomes; and (4) discussion of main lessons to be learned from this case report.		
<b>Key words</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Provides two to five key words that identifies important topics covered by this case report.		
<b>Introduction</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Briefly summarizes why this case report is important and provides the conceptual foundation for the report. Provides an adequate background to support the subsequent content. Uses AMA formatting to cite one of the CARE articles.		
<b>Timeline of Episode of Care</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Provides a timeline as a chronological summary of an episode of care as a figure or table. Begins with antecedents and past medical history and progresses through the outcomes. Is a graphic representation of the case report as a visual summary (see examples of timelines that follow the <a href="#">CARE Guidelines</a> ).		
<b>Purpose Statement</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> <li>• Presents a rationale for the case, e.g., diagnosis within those seen most often by a wound management specialist or whose treatment is different from that for a general patient, including comorbidities and the presence of “red flags.”</li> <li>• Provides insight regarding the perspective of specialist practice.</li> <li>• Represents wound management specialty practice.</li> <li>• Provides rationale for the case, clearly outlining the indicators that make it reflective of wound management specialty practice.</li> </ul>		

<b>Narrative of the Case</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> <li>• Presents the patient concerns (chief complaints) and relevant demographic patient information.</li> <li>• Describes the clinically relevant past medical history, pertinent comorbidities, and important physical examination findings.</li> </ul> <p><i>Describes the decision-making and rationale for the following:</i></p> <ul style="list-style-type: none"> <li>• Examinations: Systems review/test and measures (diagnostic assessments); discusses diagnostic testing and results.</li> <li>• Evaluation/diagnosis: Demonstrates the synthesis of all the examination findings from the history, systems review, and tests and measures, and applies a differential diagnosis process to establish the diagnosis, prognosis, and plan of care as supported by current practice and literature.</li> <li>• Plan of care: Demonstrates the use of interventions to effect changes in the condition that are consistent with the diagnosis and with evidence-based care.</li> <li>• Prognosis:             <ul style="list-style-type: none"> <li>○ Includes a predicted optimal level of improvement in function and the amount of time needed to reach that level.</li> <li>○ Reflects on the following:                 <ul style="list-style-type: none"> <li>• Favorable and unfavorable prognostic indicators.</li> <li>• Patient's perceptions (i.e., cognitive/affective status).</li> <li>• Possible contributing factors.</li> </ul> </li> </ul> </li> <li>• Interventions describe the types of intervention (pharmacologic, surgical, preventive, lifestyle) and how the interventions were administered (dosage, strength, duration, and frequency). Tables or figures may be used.</li> <li>• Follow-up and outcomes describe the clinical course of the episode of care during follow-up visits including the following:             <ul style="list-style-type: none"> <li>○ Intervention modification, interruption or discontinuation.</li> <li>○ Intervention adherence and how this was assessed.</li> </ul> </li> <li>• Adverse effects or unanticipated events.</li> </ul>		
<b>Discussion</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Describes case management, including strengths and limitations with scientific references.		
<b>Conclusion/Post Case Reflections</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Offers the most important findings from the case and suggestions for future directions.		
<b>References</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Includes appropriately chosen references from peer-reviewed scientific literature. All citations are less than 10 years since publication unless the article is considered a seminal study. References are provided throughout <b>all</b> sections of the case reflection using the AMA formatting, supporting all clinical decision-making and intervention techniques. Course manuals are not accepted as supporting references.		
<b>Acknowledgements</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mentions funding support or conflicts of interest, if applicable.		

<b>Informed Consent</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
(Option 1 provides the opportunity for deidentified information without consent.) Informed consent was provided by the patient, and the author has provided this information if requested. Rarely, additional approval may be needed.		
<b>Format</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Represents specialist practice and is professional in appearance, using correct grammar, spelling, and punctuation.		

## Formatting the Case Report

The following questions can be used to help form your case report. Please also use the scoring rubric to ensure all points are included in your case report. Note: The points below are to provide a guide for developing the case report; additional information is likely indicated and should be included.

### Introduction/Background:

- What is the foundation for the topic discussed in this case? Include condition description, incidence/prevalence, current recommendations for medical management, available literature on the topic.
- Case Rationale/Purpose:
- Is this case representative of wound management specialty practice?
- What element of the specialist's physical examination findings would indicate the need for caution in the intervention?
- Does the specialist provide insight regarding their perspective of specialist practice?

### Examination:

The history, systems review (risk factor assessment), and tests and measures demonstrate appropriate rationale supported by current practice and literature allowing for measurement of outcomes, diagnostic classification, and/or, as appropriate, a referral to or collaboration with another practitioner(s).

The specialist's clinical reasoning reflects an organizational approach that considers development of hypotheses in the categories of activity limitation and participation restriction, patient perspective on their experience, pathobiological mechanisms, impairments, source of the symptoms, contributing factors, precautions, and contraindications.

### Tests and Measures:

- What did the specialist consider in determining whether or not to refer the client to another health provider?
- Evaluation/Diagnosis:
- What is the specialist's assessment of the patient's understanding of the integumentary disorder being treated?
- What is the specialist's assessment of the patient's feelings about the problem, its effect on quality of life, and how it has been managed to date?
- How did the specialist determine that the patient's goals were appropriate?



- What effect does the specialist anticipate the patient's understanding and feelings regarding the problem may have on the prognosis, plan of care, and intervention?
- Have impairments that may require management or reassessment (e.g., posture, movement patterns/motor control, soft tissue/muscle/joint/neural mobility, or sensation) been identified?
- Has supporting and negating evidence from the examination for diagnosis been adequately presented and considered? Comment on reliability, validity, specificity, sensitivity, and/or likelihood ratios of test and measures.
- Would there be a perceived need to refer the client to another health provider?

#### Prognosis/Plan of Care:

- Do the physical signs fit with the symptoms? If so, how do they fit?
- If not, how would this influence the prognosis, plan of care, and intervention?
- Do the examination findings indicate the need for caution in the prognosis, plan of care, and intervention for the patient? If so, how and what changes are indicated?
- What is the management of the patient for day one (e.g., advice, wound care, exercise, gait training, assistive devices, referral for further investigation)? Why was this chosen over the other options? After subsequent visits, how has the specialist or patient understanding of the patient's problem and management changed since the first session?
- If exercise, gait training, and assistive devices were used, what are the principle treatment techniques (rationale provided)?
- What physical examination findings support your choice for management? Comment on reliability, validity, specificity, sensitivity, and/or likelihood ratios of test and measures.
- What is the specialist's expectation of the patient's response over the next 24 hours?

#### Intervention:

- How would the specialist progress this patient?
- What kind of outcomes are expected for this patient?
- How would the specialist justify referring the patient to another health provider?
- After subsequent visits, how has the specialist or patient understanding of the patient's problem and management changed since first session?
- How are the patient needs being met?
- What interventions were introduced to improve the overall health status of the patient?
- If the outcome will be less than a 100% resolution of the problem(s), at what point would the specialist cease management, and why?
- Post-Case Reflections/Discussion:
- On reflection, what clues can the specialist recognize that were missed, misinterpreted, underweighted, or overweighted?
- What would the specialist do differently next time?
- Discuss how similar cases were managed based on the learning experience from this case.

#### Conclusion:

- What is the takeaway message from this case?
- What are future recommendations?

## Sample Case Report

Polyarteritis nodosa with lower extremity wounds: a case report

Key Words: polyarteritis nodosa, wound care, noncontact low-frequency ultrasound, lower extremity edema, compression therapy, moist wound healing

### Abstract

Polyarteritis nodosa (PAN) is an autoimmune vasculitic disorder in which inflammation of the small and medium arteries can result in occlusion that creates ischemia of the tissue fed by those vessels; in this case, the skin of the lower extremities. As a result, the individual can develop painful, partial- or full-thickness wounds. This case reflects on a patient with cutaneous PAN who had been evaluated and diagnosed at Mayo Clinic and was referred to physical therapy at an academic hospital outpatient department for continuation of wound care, primarily noncontact low frequency ultrasound (NCLFUS), which had been initiated at that institution. She presented with bilateral lower extremity wounds that appeared to be full thickness, with 1+ edema and minimal to moderate serosanguineous drainage that had not been addressed. She was taking five to six pain killers (Vicodin) per day, and was unable to work because of the 6-8/10 pain and the daily care that her wounds required. Functionally she remained independent in all ADLs, including gait without an assistive device. Her goals were to avoid surgery to close the wounds, to reduce the frequency of pain killers, and to return to work about four weeks after she was initially treated at the outpatient department.

Interventions initiated at the time of evaluation included a continuation of NCLFUS, toe-to-knee multilayer compression to reduce the lower extremity edema, and advanced nonadherent dressings to reduce pain levels with removal and to promote autolytic debridement and re-epithelialization. The patient responded very positively to the plan of care, and within 4 days was able to discontinue pain medication at night and showed signs of re-epithelialization throughout the wound beds, indicating that some of the wounds were partial thickness. She progressed to full closure without having skin grafts and was able to meet all of her goals.

Although there is ample literature to support the use of compression as part of the plan of care for any lower extremity wound with edema, there was no literature specific to the use of compression with patients who have lower extremity wounds with PAN. This case illustrates the use of advanced dressings, NCLFUS, and multilayer compression to address the extensive, painful wounds in this patient with cutaneous PAN.

### Introduction

Polyarteritis nodosa is a necrotizing vasculitis of the medium and small arteries, which causes occlusion and micro-aneurysms of the vessels with subsequent loss of tissue due to the lack of oxygen and nutrients to the cells. This can result in gangrene if it occurs in the distal digits. PAN usually occurs in adults aged 40s-60s with a male predominance.<sup>1</sup> The disease may be idiopathic or triggered by other agents such as the hepatitis B virus. Although it is a systemic disease, the variants can include only one organ, and if the organ is the skin, it is referred to as cutaneous PAN.<sup>2</sup> PAN is not a curable disorder, but it is managed with corticosteroids, methotrexate, anti-tumor necrosis factor- $\alpha$  agents, and, in refractory cases, methylprednisolone and rituximab.<sup>3</sup>

Early signs and symptoms used to diagnose PAN include the following: weight loss of  $\geq 4$ kg after disease onset, livedo reticularis, myalgia, joint pain, weakness, mono- or polyneuropathy; diastolic blood pressure  $> 90$  mm Hg, elevated blood urea nitrogen or creatinine, arteriogram showing aneurysm or occlusion of visceral vessels, or biopsy of small and medium vessels containing neutrophils, granulocytes, or mononuclear leukocytes in the artery wall.<sup>1</sup> Signs specific to cutaneous PAN include livedoid lesions, necrotic wounds, or painful nodules without any evidence of visceral involvement.<sup>3</sup>

Standard care has been reported throughout the literature for the four most commonly treated types of wounds: arterial, venous, neuropathic, and pressure.<sup>4-7</sup> However, patients with atypical wounds (such as those with cutaneous PAN) for which there are no reported standards of care are frequently referred to wound specialists. This requires that the specialist use the clinical presentation, signs, and symptoms to determine the best plan of care for each patient, based on the effects that available interventions may have on the tissue at the cellular level. Wounds due to cutaneous PAN can be challenging due to the high pain levels associated with the disorder, the medications required to treat PAN, and the associated integumentary impairments that can occur with the wounds, especially in the lower extremity.

The patient case selected illustrates the complications of the disorder; the presentation of lower extremity wounds associated with cutaneous PAN; and the advanced thought, knowledge, and skills that are required to treat the integumentary impairments while considering the overall health, function, and goals of the patient. Rationale for each of the interventions is presented, as well as the progression and adaptation of treatment as the patient progressed toward full closure of the wounds and the return to prior functional level. The medical management of the disease in both the acute and chronic stages is also discussed, based on the current guidelines in the literature, as well as the future ramifications of the treatment.

### **Patient History**

The patient was a 34-year-old female who was referred to the hospital outpatient physical therapy wound care clinic with a history of nonhealing bilateral lower extremity wounds that had been present for more than one year. The referral was from her primary care physician upon the recommendation of the staff at the Mayo Clinic, Rochester, Minnesota, where the patient had been for evaluation of her disease and the initiation of treatment. The initial diagnosis given for the wounds was vasculitis. The wounds had started as small necrotic nodules on both lower extremities and had progressed to what initially appeared to be extensive full-thickness, painful lesions. Current medical treatment consisted of 40 mg Prednisone daily, plus Cytoxin, roboximab, methotrexate, and up to eight Vicodin per day for pain. Wound care consisted of daily showering with application of silver sulfadiazine 1% and gauze rolls.

### **Current Condition/Chief Complaint**

The patient was living in a one-story house with two friends and was functioning independently without any assistive device. She was on leave of absence from her position as an agent for the music industry, primarily because of the pain and daily care associated with her wounds. Her chief complaints were intermittent 6/10 pain in both lower extremities that limited her sleep at night. The pain was exacerbated to 8-9/10 with dressing changes, which the patient had been doing at home since her discharge from the Mayo Clinic. The aggravating factors to the pain were touch and exposure to air. Pain was eased with medications and rest.

The past medical history was unremarkable except for a history of spondyloarthropathy for which she had been receiving no treatment prior to this vasculitic episode. A discussion of her diet indicated that she had adequate protein intake to support wound healing. She reported no history of alcohol, tobacco, or drug use, which could have interfered with healing.

The patient's goals were to achieve wound closure without having split thickness skin grafts, which had been suggested to her as a possible treatment strategy, and to return to work 4 weeks after the date of the initial evaluation.

## Review of Systems/Examination

The patient was independent in all activities with a normal gait pattern and timely transfers. Cardiovascular screening was normal with 3+ dorsal pedis and posterior tibialis pulses bilaterally. Sensation was intact throughout the lower extremity; motor status and range of motion were within normal limits except for slight decrease in ankle range of motion due to pain with skin stretching at the end range of dorsiflexion.

Her wound measurements and description were as follows:

Left inferior calf: 10 cm x 8 cm x 0.2 cm deep, with 80% granulation tissue and 20% slough.

Left superior calf: 5 cm x 1.7 cm x 0.2 cm deep, with 50% red non-granular tissue and 50% callus.

Right posterior to lateral calf: 15 cm x 10 cm x 0.2 cm deep, with 75% granulation and 25% slough.

The wounds were moist with a minimal amount of thin pink serosanguineous drainage, primarily from the two larger wounds. There was no odor present, and the edges were uneven and slightly rolled with no epithelial migration observed at the edges. The surrounding skin was dry with some surrounding livedoid reticularis and erythema noted only at the wound edges. The skin temperature was normal and equivalent on both lower legs. There was 1+ edema present bilaterally; the tissue was pliable with no induration noted.

## Evaluation

Based upon the appearance of the wounds, they were all in the inflammatory phase of healing (presence of slough and fibrinous tissue in the wound bed and callused or rolled edges), with some signs of progressing to the proliferation phase (presence of granulation tissue in some areas).<sup>7</sup> There were no signs of infection in the wound or surrounding tissue<sup>9,10</sup>; however, because of the chronicity of the wounds, the medications the patient was taking, and the frequent dressing changes being performed that exposed the wounds to external contaminants, the risk of infection was considered in development of the treatment plan.

The lower extremity edema appeared to be a consequence of the chronic inflammatory state of the extensive wounds and the lack of physical activity the patient was performing due to the pain and dressings. It has also been reported that corticosteroids can contribute to the development of peripheral edema<sup>11</sup>. There were no other signs nor symptoms of chronic venous insufficiency or lymphedema which would cause the edema. Because of its detrimental effect on wound healing,<sup>12</sup> however, the edema was also factored into the treatment plan.

The patient had a good understanding of her impairments, although her knowledge of the exact diagnosis and its complications was vague. The initial diagnosis of vasculitis was further delineated by reports from Mayo Clinic four days after initiation of treatment, with a diagnosis of polyarteritis nodosa, a subset of the vasculitic disorders<sup>13</sup>. Although this did not change the care plan (both medical and wound) or the expected outcome, it did give the patient peace of mind in having an exact diagnosis, and she subsequently was very proactive in researching information about the pathophysiology and treatment of the disease. As treatment progressed, the patient was increasingly engaged in her treatment and progress, with complete adherence to the plan of care.

Short-term goals were to debride all necrotic tissue, have no signs of clinical infections, increase granulation tissue to 95% with clear indications that the wounds were in the proliferative phase of healing, and decrease the cumulative wound size by 20%. The long term goals were complete closure by secondary intention with no skin grafts required, no lower extremity edema, no pain medication required, patient able to perform all household duties, and patient able to return to work full-time. The patient agreed with all the goals and had significant input as to the time she wanted to have the goals met.

## Plan of Care/Interventions

The plan of care was designed to address the chronic inflammatory state of the wounds, manage the lower extremity edema, mitigate the pain, and use advanced dressings that would promote moist wound healing as well as decrease the pain at each treatment session. Because there are no specific guidelines for treatment of cutaneous PAN wounds on the lower extremities, the interventions were based more on the expected effect they would have on the tissue at the cellular level in order to promote healing.

Impairment 1: Non-healing wounds with chronic inflammation.

Interventions: NCLFUS; sharp and autolytic debridement of the non-viable tissue; advanced dressings consisting of non-adherent primary dressing (X-Cell, Medline, Mundelein, IL), petrolatum gauze, and silicone backed secondary dressing.

Short-term goal: wounds >95% granulated with decrease in size by >20% in 4 weeks; epithelial migration noted at the edges.

Impairment 2: Lower extremity edema.

Intervention: Bilateral lower extremity compression therapy using multilayer system.

Short term goal: No lower extremity edema; scant drainage on the dressings upon removal.

Impairment 3: 6-10/10 pain levels.

Intervention: Noncontact, low frequency ultrasound to reduce inflammation; non-adherent dressings; reduce dressing change frequency to 2-3 times per week by using advanced dressings.

Short-term goal: Reduce pain medication to two to three times per day; patient able to sleep through the night with no pain meds; reduce pain levels at treatment sessions to <4/10.

Initially, NCLFUS was given 10 minutes to each lower extremity wound; as the wounds progressed and decreased in size, the time was reduced accordingly. Dressings remained the same throughout the treatments. The compression system initially consisted of a soft cotton layer, short stretch gauze, and self-adhering Coban. The long stretch component was omitted out of concern for increasing pain levels with full 40 mm Hg pressure over the wounds. As pain diminished, the long-stretch component was added, and at the time of discharge the patient had transitioned to a 20-30 mm Hg compression stocking to prevent recurrence of the edema. Frequency of treatment was initially three times per week and reduced to two times per week when drainage was scant and wounds were re-epithelializing.

Reflection on the intervention selection:

Non-contact low frequency ultrasound

Compression therapy for lower extremity wounds

Advanced dressings

Initial interventions included non-contact low frequency ultrasound, compression therapy for lower extremity wounds, and advanced dressings. Each of these interventions is discussed below.

**Non-contact low frequency ultrasound:**

NCLFUS has been shown to promote wound healing by producing the following non-thermal effects at the cellular and tissue level, through cavitation and microstreaming: mobilizing interstitial fluid, stimulating the release of growth factors from platelets and macrophages, increasing the migration of fibroblasts and endothelial cells to the wound site, increasing vasodilation, and as a result of the cellular changes, decreasing the inflammation at the tissue level<sup>14</sup>. These changes can be facilitated throughout all phases of wound healing<sup>15</sup>. The reduction in inflammatory cytokines can also result in pain reduction during the early phases of healing. In addition, NCLFUS has been shown to reduce the number of bacteria in the wound bed as a result of its cleansing mechanism.<sup>16,17</sup> In several reported studies on non-healing lower extremity wounds, NCLFUS has been shown to facilitate wound healing.<sup>14,16,18,19</sup>

**Compression therapy for lower extremity wounds:**

The use of compression to treat lower extremity wounds caused by chronic venous insufficiency or lymphedema is considered standard care<sup>20</sup>; however, the use of compression on lower extremity wounds caused by other etiologies is not discussed in the literature. When edema is present in these cases, it is imperative that the therapist use critical assessment of patient to determine if compression would be beneficial, and subsequently perform a complete vascular screening to determine what type of compression and how much pressure is appropriate. In this case, the vascular status was normal so that full compression (40 mm Hg at the ankle, 18 mm Hg at the calf)<sup>21</sup> was safe, and indeed, the patient responded well to this intervention. When the wounds were re-epithelialized, she converted to Grade 1 compression stockings to help prevent recurrence during the remodeling phase.

**Advanced dressings:**

Moist wound therapy involves a primary dressing that would absorb excessive exudate for wet wounds or provide adequate moisture for dry wounds, while protecting the periwound skin from maceration and minimizing the patient discomfort or pain at each treatment session. The primary dressing selected was a specialty dressing composed of three layers of hydrofiber partially saturated with saline in a sheet form that is easily applied to shallow flat wounds. The dressing is extended over the edges of the wound in such a way that that it is in complete contact with the wound bed and 1-2 cm of the periwound skin. The dressing will absorb minimal amounts of exudate from areas that are draining and will provide moisture to those areas that are dry; it is sometimes referred to as the “dressing with a brain.” One of advantages of this dressing is that it does not adhere to the wound bed and thus is not painful upon removal. The direct contact at the edges creates an environment that facilitates epithelial migration across the wound bed, a necessary component of wound closure. In addition, because it is flat and conforms to the contour of the patient leg, it does not create areas of increased pressure under compression bandages. The patient responded well to the dressing, was adherent in leaving all the components in place and protected from water during the course of treatment.

**Prognosis/Progress**

Although there have been studies to predict healing times for diabetic foot ulcers and venous wounds, there are no prognosticators for wounds of other etiologies. The fact that the wounds had epithelial “islands” throughout indicated that the wounds were only partial thickness, and the epithelial migration that could occur from these islands, in addition to the edges, indicated a shorter closure time and thus less risk of having to undergo skin grafting.



In large part because the patient was in agreement with the care plan and was adherent to all of its components, she made excellent progress, as illustrated by the following time line:

Day 1 — Evaluation.

Day 2 — Patient reported decrease in pain levels to 1-2/10 with dressing removal; edema decreased with no significant drainage from wounds.

Day 5 — Patient reports being able to discontinue pain medication at night and reported no break-through pain during treatment. Numerous epithelial buds present throughout all wound beds with <10% slough present.

Day 21 — Wounds were approximately 30% epithelialized with the following measurements:

- Left inferior 6 cm x 4 cm.
- Left superior closed and remodeling.
- Right posterior 9 cm x 7 cm.

Patient had decreased her pain medication to one to two Vicodin per day, primarily for joint pain associated with PAN, not for wound pain.

Patient returned to work within four weeks of initiating treatment.

Week 7 — Treatment decreased to one time per week due to rapid progress, limited visits approved by insurance, and patient's work schedule.

Week 18 — The right posterior and left superior wounds were closed, and the left inferior wound had a small residual open area 1.2 cm x 0.3 cm, 100% granulated and covered with the basement membrane needed to support re-epithelialization.

Week 30 — Patient discharged with full closure of all wounds and in remodeling phase of healing. Wounds were 100% re-epithelialized with no drainage noted, which are the signs required for a wound to be considered closed.

The patient was instructed in skin care to prevent breakdown of fragile remodeling skin and encouraged to continue to wear the compression stockings for four to six months. Because corticosteroids are a part of long-term management of PAN, skin complications that may result were also discussed with her. The dosage had been decreased from 40 mg to 35 mg per day during the course of therapy; however, that is still significant in causing thin skin that bruises and tears easily. Guidelines are that the immune-suppressants be tapered over a period of 6 months and adjusted for each patient to maintain remission.<sup>22</sup> She was also encouraged to call for a follow up appointment if any drainage or skin breakdown was noted; however, no calls were received.

## Post Case Discussion

Cutaneous PAN is only one of numerous immune-mediated causes of dermal wounds that require advanced, often tedious, wound care as a result of the complications that occur, including pain, slower healing times due to the medications required to treat the underlying pathology, risk of infection, related comorbidities (malignancy, connective tissue disorders, hepatitis), and risk of exacerbations that may interfere with therapy.

Developing a care plan that follows the principles of standard wound care (debride the necrotic tissue, manage infection/inflammation, moist wound healing, facilitate re-epithelialization) is challenging and requires an understanding of the pathophysiology, the cellular changes that need to occur in order for healing to progress, the role of patient adherence, and the necessity for interdisciplinary care and communication in order for the

patient to obtain optimal healing and functional outcomes. While the wounds were difficult to treat, the patient adherence and communication with her physicians were both exemplary.

This patient was treated soon after noncontact low-frequency ultrasound (NCLFUS) was available in the clinic where I worked, and the combination of (NCLFUS) non-adherent dressings, and compression became the standard care for numerous other patients who were treated for vasculitic disorders. The patient population is small, meaning that conducting random control trials to support the interventions would require cooperation and participation of multiple centers. I am grateful that at the time she was coming into the clinic, the patient gave me permission to use her case in any way to help others. And her positive response to treatment made a difference in patients treated after her.

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<sup>4</sup>British Columbia Province Nursing Skin and Wound Committee. Guideline: Assessment and treatment of lower leg ulcers (Arterial, Venous, Mixed). Published Aug 2014.

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<sup>6</sup>International Best Practice Guidelines: Wound Management in Diabetic Foot Ulcers. Wounds International, 2013.

<sup>7</sup>National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Emily Haesler (Ed.). Cambridge Media: Osborne Park, Western Australia; 2014.

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<sup>9</sup>Sibbald RG, Woo K, Ayello E. Increased bacterial burden and infection: NERDS and STONES. *Wounds UK.* 2007;3(2):25-46.

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<sup>11</sup>Cho S, Atwood E. Peripheral edema. *Am J Med.* 2002;113:580-586.

<sup>12</sup>Stout N, Partsch H, Szolnoky G, et al. Chronic edema of the lower extremities: International consensus recommendations for compression therapy clinical research trials. *Int Angiol.* 2012;31(4):316-29.

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<sup>14</sup>Kravos SJ, Coronado R. Diagnostic and therapeutic ultrasound on venous and arterial ulcers: a focused review. *Adv Skin Wound Care*. 31(2):55-65.

<sup>15</sup>Gibbs K, Hamm R. Ultrasound. In Hamm R (Ed). *Text and Atlas of Wound Diagnosis and Treatment*, 2<sup>nd</sup> edition. New York, NY: McGraw Hill Education. 2019;459-473.

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<sup>17</sup>Serena T, Lee SK, Lam K, et al. The impact of noncontact, nonthermal, low-frequency ultrasound on bacterial counts in experimental and chronic wounds. *Ostomy Wound Manage*. 2009;55(1):22-30.

<sup>18</sup>Gibbons GW, Orgill DP, Serena TE, et al. A prospective, randomized, controlled trial comparing the effects of noncontact, low-frequency ultrasound to standard care in venous leg ulcers. *Ostomy Wound Manage*. 2015;61(1):16-29.

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<sup>20</sup>O'Donnell TF, Passman MA, Marston WA, et al. Management of venous leg ulcers: Clinical practice guidelines of the Society for Vascular Surgery® and the American Venous Forum. *J Vasc Surg*. 2014; 60:3S-59S.

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<sup>22</sup>Ntatsake E, Carruthers D, Chakravarty K, et al. BSR and BHPR guideline for the management of adults with ANCA-associated vasculitis. *Rheumatology*. 2014;53(12):2306-2309.

## GLOSSARY

**Description of Specialty Practice.** This document is based on a practice analysis, which is a systematic study of professional practice behaviors and content knowledge of specialty practice. The purpose of the practice analysis is to collect data that will describe what specialist practitioners do and what skills and knowledge bases enable them to perform specialty practice. These data are used to describe specialty practice. The DSP defines the content area for the clinical specialist certification examination in the specialty area.

**Guide to Physical Therapist Practice.** This reference describes physical therapist practice in general, using the disablement model as the basis; describes the various roles of physical therapists and the setting in which they practice; standardizes physical therapy terminology; delineates tests and measures and the interventions that are used in physical therapist practice; and provides preferred practice patterns to assist in (a) improving quality of care, (b) enhancing positive outcomes of physical therapy services, (c) enhancing patient/client satisfaction, (d) promoting appropriate utilization of health care services, (e) increasing efficiency and reducing unwarranted variation in the provision of services, and (f) diminishing economic burden of disablement through prevention and the promotion of health, wellness, and fitness initiatives.

Part 1 of the Guide, “A Description of Patient/Client Management” describes the process of patient and client management including the following five elements:

1. **Examination.** A comprehensive screening and specific testing process leading to diagnostic classification or, as appropriate, to referral to another practitioner. The examination has three components: the patient/client history, the systems review, and tests and measures.
2. **Evaluation.** A dynamic process in which the physical therapist makes clinical judgment based on data gathered during the examination.
3. **Diagnosis.** Diagnosis is both a process and a label. The diagnostic process includes integrating and evaluating the data that are obtained during the examination to describe the patient/client condition in terms that will guide the prognosis, the plan of care, and intervention strategies. Physical therapists use diagnostic labels that identify the impact of a condition on function at the level of the system (especially the movement system) and at the level of the whole person. Diagnostic labels regarding the specific integumentary impairment are consistent with those classifications developed by multidisciplinary organizations specific to the etiology (e.g. the National Pressure Injury Advisory Panel staging for pressure injuries).
4. **Prognosis.** The determination of the predicted optimal level of improvement in function and the amount of time needed to reach that level.
5. **Intervention.** The purposeful interaction of the physical therapist with the patient/client and, when appropriate, with other individuals involved in patient/client care, using various physical therapy procedures and techniques to produce changes in the condition.

## **RESOURCE GUIDE INFORMATION**

Resource guides are compiled by APTA academies and board-certified specialists to reflect current literature in the specialty area. They are provided for your information only. Neither ABPTS nor the specialty councils has reviewed or endorsed the content of these lists. In addition, reviewing these resources does not guarantee that a candidate will receive a passing score on the specialist certification examination.

### **Wound Management Physical Therapy Resource Information**

Academy of Clinical Electrophysiology and Wound Management Physical Therapy — APTA  
2920 East Ave., South Suite 200  
La Crosse, WI 54601  
Phone: 608-351-2730  
Email: [info@acewm.org](mailto:info@acewm.org)