ABPTS
American Board of Physical Therapy Specialties

2026 Fall/2027 Spring Candidate Guide

ABPTS

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ABPTS
American Board of Physical Therapy Specialties

1. General Definitions

1.1. American Physical Therapy Association

The American Physical Therapy Association is a national professional organization representing over 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.

APTA prohibits preferential treatment or adverse discrimination on the basis of race, creed, color, sex, gender, gender identify, 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.

1.2. 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; an individual with expertise in test development, evaluation, and education; and two non-physical therapist members representing the public.

1.3. Specialty Panels

Specialty panels have been appointed for each specialty 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 panel comprises four or five board-certified specialists in the practice area.

1.4. ABPTS Board-Certification Opportunities in Physical Therapy

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

1.5. PSI Services

PSI provides Assessment and Talent Management solutions to a range of private and public sector organizations. PSI has acquired leading technology, content, and consulting companies both in the US and internationally, as part of ambitious growth plans to offer clients the ultimate combination in emerging technologies, world-class content, and consulting expertise.

PSI Services works to integrate technologies and subject matter expertise to enhance client abilities to securely capture, store, retrieve, distribute, and use information. As a corporation they constantly improve abilities and methods of providing services. PSI Services provides test development, test administration, editorial production, and psychometric services to ABPTS and the specialty panels.

PSI works with over 2,000 experts in 160 countries and delivers over 15 million tests & assessments per year globally.

1.6. Restriction of the Term "Board-Certified Clinical Specialist"

APTA House of Delegates policy (HOD P07-23-07-09) 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

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

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

Applicants must submit a complete application and review fee for each specialist certification exam.

Only those candidates who did not pass their spring examination, deferred their spring examination, or had their spring examination administratively transferred are eligible to sit for the October fall administration.

2.2. Additional Application Requirements

Applicants must meet requirements for Option A or Option B.

Option A

Direct Patient Care Experience

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 (15% or 300 hours within the last three years for orthopaedics). Activities that constitute direct patient care hours may only include the time spent practicing within your specific specialty area, and with the permanent/unrestricted license to practice.

Applicants may not include experience in the specialty area that will occur after their application submission.

ABPTS requires that direct patient care hours be unique to each specialty area and may not be counted more than once.

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

Option B

Applicants must submit evidence of successful completion of an American Board of Physical Therapy Residency and Fellowship Education-accredited post-professional clinical residency in the specialty for which they are applying. Applicants must have completed this residency within the last 10 years. If an applicant is currently enrolled in an ABPTRFE-accredited clinical residency or enrolled in a residency program that has been granted candidacy status, they may apply for the specialist certification examination in the appropriate specialty area prior to completion of the residency. They will be conditionally approved to sit for the examination, provided all other eligibility requirements are met. Final approval will be pending until 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 a residency program's accreditation status, visit www.abptrfe.org.

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

2.3. Steps to Complete Certification

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

Step 1. Submit evidence that the minimum eligibility requirements have been fulfilled as defined by the specialty panel. This includes completion of all required application forms, fees, documentation of the required practice hours, and other requirements specified by the specialty panel.

Applicants must meet all requirements by the application deadline of the specialty for which they are applying.

2026 Fall/2027 Spring Application Deadlines:

July 1, 2026 (Early Bird application deadline): Cardiovascular & Pulmonary, Clinical Electrophysiology, Oncology, Pelvic & Women's Health, and Wound Management

July 31, 2026 (Early Bird application deadline): Geriatric, Neurologic, Orthopaedic, Pediatric, and Sports

Aug. 31, 2026 (Reapplication/Fall Exam Administration deadline)

Sept. 30, 2026 (Final application deadline): All specialties

Applications submitted after the deadline may not be reviewed.

The specialty panels will not consider experience toward the minimum eligibility requirements that was not acquired by the application submission date.

Step 2. Following completion of Step 1 and approval of the application, applicants 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 at the conclusion of the certification period. 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 continued competence of the physical therapist specialist. This model is known as "maintenance of specialist certification," or MOSC, and includes the following four requirements:

1. Licensure and direct patient care hours.
2. Engagement in professional development activities.
3. Case reflection submission.
4. Year 10 non-proctored knowledge review assessment.

Requirement 1: Licensure and Direct Patient Care Hours

In years three, six, and nine, the specialist must submit evidence of current and unrestricted 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 preceding three years. Direct patient care hours accrued in year 10 may be applied to the year three requirements for the first MOSC cycle of the next certification period.

Successful completion of an ABPTRFE-accredited residency or fellowship program will meet all requirements of the cycle during which it was completed. For a directory of ABPTRFE-accredited residencies and fellowships, please click here.

Requirement 2: Engagement in Professional Development Activities

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 activities that lead to a level of practice beyond prevailing standards.

A web-based system to track continued competency within a specialty area provides an account tracking mechanism for each specialist to record professional development activities during years three, six, and nine of their certification cycle. There is no 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. Activities from year 10 may be applied to the year three requirements for the first MOSC cycle of the next certification period.

Requirement 3: Case Reflection Submission

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

By year three, the specialist will complete a course through the APTA Learning Center on how to appropriately reflect on their practice. By year six, the specialist will complete one

reflective portfolio submission. The reflective portfolio submission will be used to demonstrate the specialist's use of clinical care and reasoning. The submission must have a reflective component and must have documentation that reflects clinical reasoning.

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

Requirement 4: Non-Proctored Knowledge Review Assessment

During year 10 of the certification period, the specialist will be required to take a non-proctored knowledge review assessment, comprising 100 multiple choice items. The assessment is specialty-specific, assesses an individual's cognitive expertise in the specialty area, and reflects contemporary specialist practice. Specialists are given up to 12 minutes to complete each item on the assessment and are also permitted to use external resources and reference materials.

The goal of the assessment, and maintenance program generally, is to facilitate continued competence, and is designed to educate and enrich the clinician's expertise in the specialty practice area.

Each specialty recertification exam blueprint will be consistent to include the following three general categories:

- Knowledge Areas.
- Professional Roles, Responsibilities and Values.
- Patient/Client Management.

Successful completion of MOSC cycle applications in years 3, 6, and 9 are prerequisites for sitting for the knowledge review assessment. Specialists who fail to receive a passing score after their first attempt will be permitted to sit for the assessment 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 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 panel members, ABPTS members, SACE and CCE 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 2027 specialist certification examinations must be submitted online to the APTA Specialist Certification Program by the following dates:

2026 Fall/Spring 2027 Application Deadlines:

July 1, 2026 (Early Bird application deadline): Cardiovascular & Pulmonary, Clinical Electrophysiology, Oncology, Pelvic & Women's Health, and Wound Management

July 31, 2026 (Early Bird application deadline): Geriatric, Neurologic, Orthopaedic, Pediatric, and Sports

Aug. 31, 2026 (Reapplication/Fall Exam Administration deadline)

Sept. 30, 2026 (Final application deadline): All specialties

Applications submitted after the deadline may not be reviewed.

The specialty panels will not consider experience toward the minimum eligibility requirements that was not acquired by the application submission date.

3.2. Procedures for Application Review

Applications will be reviewed in the order they are received, and the Specialist Certification Program staff will review all submitted documents and notify applicants by email regarding approval to sit for the exam within approximately eight weeks. If an applicant is advised to revise or provide new documentation, they will be instructed to resubmit materials to APTA certifications staff by a specified deadline.

If an application is not resubmitted by the specified deadline, the record will indicate the applicant has not met the minimum eligibility requirements and is not approved to sit for the 2027 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. Applicants will be notified within eight weeks of their accommodation submission of the decision regarding the request and the accommodations that will be provided. If accommodations are not requested in advance at the time of application submission, their availability cannot be guaranteed.

Applicants may also visit the testing accommodations webpage 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

Applicants 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 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 the applicant's responsibility to ensure that an application is completed according to instructions. In addition, it is imperative to confirm that the first name and last name on the application is exactly as it appears on the photo identification form that the applicant intends to present at the test center. Please note that the way the applicant's name appears on the application is also the way it will appear in the APTA membership database.

If paying 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:

American Physical Therapy Association
Specialist Certification Application
P.O. Box 70520
Philadelphia, PA 19176-0520

3.6. Application Review Fee

An option for an initial partial payment (50%) of the application fee is available (excluding reapplicants). The application extension and/or partial payment option is automatically extended to all applicants. Remaining application fee balances are due no later than October 31. The nonrefundable application review fee must be submitted with the online application to the APTA Specialist Certification Program by the following dates:

2027 Application Review Fees:

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: $550 ($650 after Early Bird application deadline)
Non-APTA Member: $895 ($995 after Early Bird application deadline)
Member/Non-APTA Member Reapplication Fee: $190 (in addition to any outstanding balance from previous years' application cycle)

Note: A 50% partial payment option for the initial application fee is available during the application process, with the remaining balance due by Sept. 30.

3.7. Time Limit for Active Application/Reapplication

Applicant files remain active for two consecutive exam administrations. However, eligibility for the second exam administration requires an online reapplication submission by Aug. 31, 2026, along with the required reapplication fee, as well as the current examination fee, by Nov. 30, 2026. This policy applies to those who chose to delay sitting for the exam, those who were not approved to sit for the exam, and those who did not pass the exam. Eligible reapplicants will receive reapplication information by email directly from the Specialist Certification Program. To reapply, applicants must submit an online reapplication, verification of current and unrestricted 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, an entirely new application must be submitted along with the full initial applicant review fee to apply for specialist certification.

3.8. Address Changes

The Specialist Certification Program maintains separate records from APTA's membership database, and all contact information is linked directly to the applicant's APTA profile. To update your APTA profile, please click here.

4. Scheduling the Exam

4.1. Examination Fee

Once an applicant has been notified that they are eligible to sit for the exam, they may submit their examination fee. The fee must be received by the Specialist Certification Program on or before Nov. 30, 2026.

Applicants may pay the examination fee by check (payable to APTA) or by credit card (MasterCard, VISA, DISCOVER, or AMEX). 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 an applicant's examination fee has been received, in mid-December an email with instructions on how to access the test-taker portal and book an examination date and time will be sent. Review the test-taker information to **ensure that your name (first name and last name) matches exactly your name on the identification you will use on the day of the examination.** If the first name and last name do not match the first name and last name on your identification, you must contact APTA immediately. Click here to see a list of the only acceptable differences. Name changes or corrections cannot be made within seven business days of your scheduled testing date. Applicants will be denied admission to the test if the name on the test day roster that the test center administrator uses to check you in does not match exactly name on the identification presented on the day of testing.

4.2. Test Dates

The 2026 Fall examination will be administered at PSI testing centers worldwide between the dates of October 15 – 31, 2026. The 2027 Spring examination will be administered at PSI testing centers worldwide between the dates of February 24 – March 17, 2027.

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.

Applicants are not eligible to schedule a session until they have paid the exam fee to APTA.

Appointments are assigned on a first-come, first-served basis; therefore, examinees should schedule an appointment as soon as possible after receiving their scheduling instructions. If an examinee delays scheduling, they may not be able to make an appointment at their preferred test site or on their preferred test date. Examinees 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 allow for adequate time to resolve the problem.

Fall 2026 test takers may book their appointment in early October 206. Spring 2027 test takers may book their appointment in mid-December 2026. They will receive an email from the specialist certification program staff with instructions. They may also schedule their appointment by logging into their ABPTS application portal; upon logging in, test takers will be able to select, "Manage Exam Appointments." By making this selection, they will be re-directed to the PSI booking platform where they may select the test center location, date and time that are available.

NOTE: 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 in a timely manner.

4.4. Refunds and Cancellations

The Applicant Review Fee is not refundable. Examinees must notify the specialist certification program staff through the online application system deferment process if they decide, for any reason, not to sit for the 2027 exam. Upon receipt of notification, the examination fee will be refunded minus a 20% administrative fee. Please allow six to eight weeks for processing.

4.5. Rescheduling an Exam

If an examinee is unable to keep a testing appointment and would like to rebook, they are able to do so through your test-taker portal or they may contact PSI directly, no less than 24 hours before their booked appointment. The rebooked test date must fall within the testing window. The fees from the previously booked test will be transferred to the rebooked exam. Exceptions to the 24-hour cancellation or rebooking policy include:

- Medical emergency.
- Weather-related emergency.
- Death of an immediate family member.
- Jury duty.
- Military deployment.

Request for an exception must be submitted to PSI in writing within 72 hours of the missed booked appointment and must include written verification of a medical emergency by a health care professional or other verifying document(s) as requested.

NOTE: A voicemail message is NOT an acceptable form of cancellation.

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 a team comprised of specialty panel members and subject matter experts. 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 panel 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 each specialty area assists in organizing exam preparation, a copy is made available electronically to each applicant upon submission of an application and payment of the application review fee. An advance copy of the DSP may be purchased through the APTA Store at 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 this Candidate Guide's addendums for 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

Applicants declare 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. Applicants 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, such as PTJ: Physical Therapy & Rehabilitation Journal, and other journals containing current physical therapy research. Applicants are also encouraged to review the DSP and content outline to determine what content will be covered on the exam to direct 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 within this Candidate Guide at the end of each specialty's addendum. Section profiles and contact information may also be found by clicking here. Neither ABPTS nor the specialty panels review or endorse the content of review materials and/or 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. Access instructions to the study group list of candidates who have indicated their interest will be provided by mid-November 2026.

5.6. Exam Development

The specialist certification examinations are developed by specialty panels of ABPTS. APTA has contracted with PSI Services to assist in the development, administration, scoring, and reporting of results for the certification examinations. Using the DSP as a basis, the specialty panels 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 across 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 panels 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 addendums. 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

Answers to each question should be considered carefully to 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 the examinees 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 being seated at a testing station and having logged in to the exam system, examinees have an opportunity to complete a brief tutorial before launching the exam. Individuals may

also go through this tutorial, including sample exam items, in advance of their exam by clicking here.

6. Sitting for the Exam

6.1. Computer Testing

The specialist certification examinations are administered by computer. The examination questions are presented on computer monitors, and test-takers provide their responses using a mouse and/or keyboard. Time remaining will be displayed on the screen and updated throughout your examination.

The standard (non-accommodation) examination is 7 hours in length. The examination is divided into the tutorial and four, 90-minute test blocks.

Test takers may take a 10-minute break after the first testing block. After the second testing block test takers may take a 30-minute break. After the third testing block, test takers may take another 10-minute break. There is a total of up to 50 minutes of break time. The test will stop during the breaks and will resume following each of the scheduled breaks.

NOTE: Following a scheduled break, test takers will not be permitted to return to a prior section of the examination.

6.2. Test Centers and Testing Conditions

PSI 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 test administration. The examinees schedule may differ from their schedule, and they may arrive and depart at different times. Test takers will be provided with ear plugs or noise cancelling devices at the test site if desired to help minimize noise and distractions. If at any time an examinee is uncomfortable in the test center because of temperature, noise, etc., they should raise their hand and advise the test center administrator.

The 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 test-takers.

6.3. Exam Time

Examinees should arrive 30 minutes before their scheduled testing appointment.

The official exam time begins the moment the examinee enters their test-taker 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. Please note that if a section is finished early, the extra time may not be used for a different section of the exam; however, this time will be available as additional break time.

If there is any unused time after completing the examination, examinees will be given the opportunity to complete an online survey about the test administration. The purpose of the survey is to evaluate the test booking and delivery procedures. Responses will be kept confidential, and the time taken to complete this survey will not detract from the allotted examination time.

6.4. Admission to the Test

Examinees should arrive at the test center at least 30 minutes before their scheduled testing time on their testing day. Test center administrators may refuse admission to anyone who arrives late. Anyone arriving at a test center location more than 30 minutes after their scheduled testing time will not be admitted. In that event, a fee of $110 must be paid to APTA to reinstate the eligibility record to reschedule an appointment within the testing window.

Upon arrival at the test center, examinees must present one of the following current, unexpired, government issued forms of identification:

- U.S. driver's license with photograph and signature.
- State ID card with photograph and signature.
- U.S passport.
- U.S. military ID card with photograph.
- Permanent resident card with photograph.
- Native American tribal ID Card with photograph.
- Foreign government-issued passport with photograph.
- Canadian provincial driver's license with photograph.
- Indian and Northern Affairs Canada (INAC) card with photograph.
- Transportation worker (TWIC) ID with photograph.

The name on the test center roster must match exactly with the name on the identification (first name and last name). Click here to see a list of the only acceptable differences. If the required identification is not presented, admission to the test center will be denied. In that

event, a fee must be paid to APTA to rebook the test (see section 4.5 for additional information).

As a security procedure, a test center log must be signed, and personal belongings must be stored in an assigned locker or PSI assigned security bag.

The PSI Test Center Administrator will request examinees to:

- Pull up long sleeves to reveal wrists and forearms.
- Pull out pockets to show they are empty.
- Remove any smart watches, cell phones, similar electronic devices, flash drives or any other digital memory devices and place them in an assigned locker or PSI assigned security bag.

A test center administrator will escort examinees to an 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 the assigned testing station, and only after beginning the examination by entering a Test-takers Information Number or Candidate ID number. The examination will begin with a brief tutorial prior to the first test block. If the laminated writing surfaces become filled and there is a for need additional space for making notes, notify a test center administrator and a replacement will be provided. Laminated writing surfaces must be returned to test center administrator at the end of the testing session.

While at the test site, examinees will be treated in a courteous and professional manner. While at the test site, examinees may not use words or take actions that are vulgar, obscene, libelous, or that would denigrate the test center administrators or other test-takers.

Examinees will refrain from conversing or any other form of communication among test takers upon entering the examination area.

Cell phones, pagers, and children are not allowed in the examination center. **NO personal items are to enter the test center.** Test takers are encouraged to leave all personal belongings, except their keys, in their car.

No smoking, eating, or drinking will be allowed at the test site.

Copying or communicating examination content is a violation of security policy. Either one may result in the disqualification of examination results and may lead to legal action.

6.5. Testing Regulations and Rules of Conduct

Test center administrators monitor all testing sessions. All the instructions of test center administrators must be followed throughout the examination. Test center administrators are not authorized to answer questions from test-takers regarding examination content, testing software, or scoring.

If test center administrators observe an examinee violating test administration rules or engaging in other forms of irregular behavior during an examination, they will not necessarily make mention of the observation at the time of the examination. Test center administrators are required to report such incidents to APTA, and each is fully investigated.

Personal belongings may not be brought into 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 any personal belongings are brought to the test center, they must be stored in a designated locker or PSI assigned storage bag. It should be kept in mind that the lockers and storage bags are small. Mechanical or electronic devices stored in lockers or storage bags must be turned completely off. If the electronic device makes noise during the test administration, dismissal from the examination may result and the examination fee will be forfeited.

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.

6.6. Irregular Behavior During the Examination Process

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

- Seeking and/or obtaining access to examination materials.

- Impersonating a test-taker 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.

If a test taker engages in irregular behavior or violates test administration rules, they may be subject to invalidation of their examination.

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

Every effort is made to administer an examination at the booked test time and location. On occasion, however, exam administrations may be delayed or canceled due to emergencies such as severe weather, a natural disaster that renders a PSI Testing Center inaccessible or unsafe, or extreme technical difficulties. If PSI closes a testing center where an examinee has booked a test appointment, PSI will contact the test taker by phone and email to advise of the need to rebook the appointment at no additional cost.

If a test taker experiences an emergency situation on the day of their test that they feel may jeopardize their ability to perform effectively on the examination, they may be eligible to postpone sitting for the examination until Fall 2027 or Spring 2028. However, if the test taker opts to still sit for the examination and is not successful, this is not a basis for appealing examination results, and their ability to sit again in Fall 2027 or Spring 2028 at no additional cost may be in jeopardy.

Once checked in and seated at a test station, if a test taker is delayed in beginning the examination by more than 30 minutes because of technical difficulties, PSI will notify APTA of the delay, and the examinee is encouraged to contact the Specialist Certification Program directly at 703-706-8520. For such cases, they may be eligible to choose to rebook the examination at no additional charge. Before deciding to rebook, be sure that there is another booking time available during the testing-block. The test administration will not be

considered "irregular" if the test taker chooses to remain and test despite the delay. Examinees will receive the maximum number of hours available to test takers to complete the exam even if the test is delayed.

Once checked in and seated at a test station, if an examinee has a concern or complaint about the test center environment, they should immediately report the problem to the test center administrator. If the test taker feels the problem was not resolved to satisfaction, they should contact the Specialist Certification Program at 703-706-8520, as soon as possible.

6.8. Exam Deferral

An examination may be deferred 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. An email will be sent by the application system confirming the deferment.

6.9. Equipment Malfunction

If any technical difficulties are experienced while taking the exam, notify the test center administrator immediately. Do not wait until the exam has been completed to bring equipment malfunctions to the attention of the test center administrator. If a problem is not resolved to the test takers satisfaction, contact the Specialist Certification Program at 703-706-8520 or spec-cert@apta.org, as soon as possible upon completion of the exam.

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

6.10. Incomplete Examinations

Once the examination has begun, it cannot be canceled or rescheduled unless a technical problem or inclement weather causes a site closure prevents it from begin completed. As noted in section 6.9, if any technical difficulties occur during the test, notify test center administrators immediately.

The testing software is designed to allow the test to restart at the point it was interrupted. In most cases, the test can be restarted at the point of interruption with no loss of testing time. If the exam is not finished for any reason, test takers are not permitted to resume the incomplete sections of the test. Examinees 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 2026 to make certification decisions, score reports will be prepared for online distribution no later than June 30, 2026. The score report specifies a test taker's examination score, the passing score on the examination, and feedback on performance in the major competency areas tested. Certification program staff will send an email notification announcing score reports are available and providing instructions on how to access and download the score report. Upon completion of the examination, several steps in the scoring process occur. Preliminary item analysis meetings take place after the examination window closes in March. Preliminary item analysis is a process of preliminarily 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 PSI 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 presented at the ABPTS Board's May meeting. PSI then scores the specialist certification examinations, and test takers are notified of their exam results once this information is received by the Specialist Certification Program.

7.2. Scaled Scores

While an exam 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. Test takers 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 varying practice settings, years of experience, theoretical perspectives, and geographic regions.

Upon receiving board certification, test takers will:

- Receive a certificate recognizing board certification as a specialist in an area of physical therapy.
- Be entitled to include the approved three-letter credential in their signature line.
- 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 their colleagues at APTA's Combined Sections Meeting.
- Be included in the online Find a Specialist directory of Board-Certified Clinical Specialists in Physical Therapy.

8. Confidentiality

8.1. Confidentiality of Applicant Identity

Names, application documents, and test scores are considered confidential. Only Specialist Certification Program staff, ABPTS members, members of the specialty panel, and designated staff at PSI Services and its subcontractors have access to this information. Applicant identities will be released for study group purposes only, and only with the applicant's consent. Copies of test scores will be released only by written request.

8.2. Confidentiality of Examination Content

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

9. Grounds for Disciplinary Action

If an applicant is 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, they 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 provide written notice of the evidence 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 panel has determined an applicant to be ineligible, the applicant may request the panel reconsider its denial of eligibility. The request for reconsideration must specify the grounds on which it is based. The applicant may submit new information in support of their request for reconsideration. The applicant may challenge the specialty panel's application of the eligibility requirements to their case, but not the requirements themselves. An appeal may not be sent to ABPTS unless a request for reconsideration has been submitted to the specialty panel first.

The request for reconsideration must be submitted 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 panel will notify the applicant in writing of its decision.

10.2. Appeal to ABPTS of Specialty Panel'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 panel has determined upon reconsideration that an applicant remains ineligible, they may appeal the decision to ABPTS. The applicant may challenge the panel's application of the eligibility requirements to their case, but not the requirements themselves. They must submit their appeal no later than two weeks from the date of the panel's decision on reconsideration. The appeal must be in writing, emailed, 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 date the request was received by email. 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 any requests for appeal of a specialty panel 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 by email to the Chair of the Specialty Panel and to the applicant with a delivery receipt request, no later than seven days from the date of its decision.

10.3. Procedures for Review of Certification Actions

If an examinee wishes to request that ABPTS reconsider its decision to deny certification, they 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.

An examinee must submit a request for reconsideration in writing, by email, and address the request to the Chair of ABPTS at the APTA Specialist Certification Program. To request reconsideration, a written request must be submitted no later than two weeks after the date of the letter notifying the test taker of exam results. For purposes of determining compliance with the foregoing deadline, a request for reconsideration will be deemed submitted on the date the request was received by email. 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 by email 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

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

If an examinee wishes to submit an appeal, they must request a complete copy of procedures from the Specialist Certification Program. If they are adversely affected by the ABPTS decision on reconsideration, an appeal may be made to the APTA Board of Directors within 14 days of receipt of the ABPTS notification of the Appeal Committee's decision. The appeal must be submitted in writing, by email, and addressed to the President of APTA at the APTA Governance Department. A copy of the written appeal must also be sent by email 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 by email of receipt of the appeal within seven days after ABPTS receives the written appeal request.

Last Updated: 4/7/2026
Contact: spec-cert@apta.org

ABPTS
American Board of Physical Therapy Specialties

Cardiovascular & Pulmonary Candidate Guide Addendum

Cardiovascular & Pulmonary Candidate Guide Addendum

ABPTS
American Board of Physical Therapy Specialties

Initial Certification Deadlines for Cardiovascular and Pulmonary

July 1: Application deadline (early bird)
Aug. 31: Reapplication deadline
Sep. 30: Application deadline (final)
Nov. 30: Exam fee deadline

Certification Requirements

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

2. **Patient care experience:** All Applicants must have patient care practice related to the cardiovascular and pulmonary specialty area. This requirement is met by direct patient care experience in certain practice settings (Option A) or by completing a cardiovascular and pulmonary residency (Option B).

Research and 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 (Option 1) or a case report (Option 2). See below for the criteria of each.

Patient Care Experience Options

All applicants must meet requirements for either 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 Panel 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, rehabilitation, and home health settings. Applicants may not include experience that will occur after the application deadline.

Option B: Post-Professional Residency

Applicants must submit evidence of successful completion of an ABPTRFE-accredited post-professional 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 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.

Research and Evidence-Based Practice Requirement Option 1: Data Analysis Project

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

Acceptable data analysis projects include:

- Treatment efficacy studies
- Quality assurance, improvement, or utilization projects
- Program analyses
- Structured surveys
- Formal systematic reviews, including scoping reviews
- Formal clinical research trials

Examples of projects that are not acceptable include:

- Literature reviews
- Case studies or case series submitted under the heading of a data analysis project (see Option 2: Case Report)
- Development of patient education materials

Appropriate institutional IRB approval is required for all research studies.

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

The data analysis project requirement will be evaluated according to the following questions and criteria, and successful applicants should be able to answer yes to all the questions below:

- 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, developing the study methodology, and data collection and analysis. Participation in data collection only does not fulfill this requirement.
- Has the project been completed and have the results been disseminated to advance the practice of cardiovascular and pulmonary physical therapy?
- Are references included that are related to and/or support the 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.

Submission of the data analysis project should include the following areas:

- Project Involvement:
    - What was your participation in the project?
    - Were you the primary investigator?

    - Were you involved in the study design?
    - 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?
    - What is the question you are attempting to answer?
    - Provide supporting literature/references related to your topic.
- Methods:
    - Explain in detail how your project was conducted.
- Results:
    - Complete and report proper analysis of data or information collected.
- Discussion:
    - Describe the significance of the outcomes of the intervention and 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 of Project:
    - 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 of Project:
    - 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 (i.e., 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?
- References

Review of a data analysis project submission:

1. A data analysis project that does not meet the screening criteria and/or is rated as not competent will be returned with an explanation. The same project may be resubmitted after corrections are made, but this can occur only once.
2. Each data analysis project will be read by two reviewers who have experience in the cardiovascular and pulmonary specialty area. A project that does not meet criteria by the initial two reviewers or has discrepancy in review results will be reviewed by a third reviewer.
3. An applicant 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.

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

The Cardiovascular and Pulmonary Specialty Panel recognizes that the data analysis project may take many forms and may have several 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 panel will accept the same project from different candidates; however, the Candidate Guide states that each 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: 1) that they are submitting an application with the same data analysis project as another candidate, and 2) providing the other candidate's name and/or application number.

DAPs will not be accepted if:

- It is not related to a cardiovascular or pulmonary condition or disease. For example, simply measuring hemodynamic changes is not sufficient.
- An entire article submitted for publication to a journal has been copied and pasted.

- It includes extraneous information that does not directly address or relate to your project.
- It is inaccurately portrayed as a research project. This can be determined by the lack of data collection or statistical analysis, lack of inclusion and exclusion criteria, etc.
- The submitted DAP is work *completed* prior to becoming a licensed PT.
- The DAP has not been completed, does not have any conclusions, or has not been disseminated.
- It is identical to a submission by another candidate. If two or more candidates worked on the same project, application should still be individualized. Even if you both played a similar role in the project, such as data collection and analysis, you will need to write the DAP in your words what your role was, and how you addressed your duties in the project.

Research and Evidence-Based Practice Requirement 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 case report should be 3500 words or less in total, excluding references and/or appendices.

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. See sample case report.

Instructions (see rubric below):

- 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, and no more than 30, 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.
- Rationales included should demonstrate specialist level clinical reasoning.

Case Report Scoring Rubric

Case Report Criteria	Pass	
Title	☐ Yes	☐ No
A descriptive and succinct **title** that describes the phenomenon of greatest interest (e.g., symptom, diagnostic test, diagnosis, intervention, outcome). Ends with ": a case report."		
Abstract	☐ Yes	☐ No
A brief summary of 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, (3) outcomes, and (4) discussion/conclusion, including the main lessons to be learned from this case report.		
Key words	☐ Yes	☐ No
Two to five key words that will identify important topics covered by this case report.		
Introduction	☐ Yes	☐ No
A brief summary of why this case report is important and the conceptual foundation for the report. There also should be an adequate background with literature/references to support the subsequent content.		
Timeline of Episode of Care	☐ Yes	☐ No
A chronological summary of the PT episode of care, including pertinent medical status changes that impact the patient's physical therapy. This must be represented as a figure or table. This **must** begin with relevant past medical history *and* finish with the final visit and the patient's discharge location. Remember to refrain from using dates or any personal health information, per the HIPAA guidelines.		
Case Rationale/Purpose	☐ Yes	☐ No

- States the purpose of the case report, in **500 words or fewer**.
- Provides **rationale** for the case that clearly outlines the indicators that make it reflective of cardiovascular and pulmonary specialty practice (e.g., diagnosis within those seen most often by a designated 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).
- Insight regarding applicant's **perspective of specialty practice**.

Narrative of Case: Part A	☐ Yes	☐ Yes

Describe details of the case in **750 words or fewer**, including:

- The **presenting concerns** (chief complaints) and **relevant demographic and social information**.
- **Clinical findings** describe the relevant past medical history, pertinent comorbidities, current medical presentation and important medical testing results.

Specialist must describe the decision making and rationale for the following:

- **Examination:** Discusses the physical therapy tests and measures that were used for this case along with the results. Provide the rationale for selecting the tests and measures used, and address reliability and validity as indicated. **Evaluation and diagnosis:** 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.

Narrative of Case: Part B	☐ Yes	☐ No

Describe the details of the case in **750 words or fewer**, including:

- **Prognosis/plan of care:**
  - The **prognosis** includes a predicted optimal level of improvement in function and the amount of time needed to reach that level.
  - The specialist reflects on:
    - Favorable and unfavorable prognostic indicators.
    - Patient's perceptions (i.e., cognitive and affective status).
    - Possible contributing factors.
  - The **plan of care** demonstrates the use of interventions to produce changes in the condition that are consistent with the diagnosis and prognosis.
- **Interventions:** Describes the types of interventions administered, patient response, and any changes made to PT interventions. Description includes:
  - Rationale of why each intervention was performed and what impairments and/or functional limitations are being addressed. If available, provide literature to support the interventions; tables or figures may be used.

○ Information on any intervention modifications, interruptions, or discontinuations that occurred. ● **Outcomes and follow-up:** ○ Includes the outcome measurement tools used. Compares the initial patient status with the final status at the end of the episode of care. States whether the patient demonstrated clinically significant improvement in function [consider use of MID and MCID (if available) to support improvement], and any adverse effects or unanticipated events. ○ Discusses any follow-up provided and/or needed.		
Discussion	☐ Yes	☐ No
Describes the case, including strengths and limitations, in **500 words or fewer**. Use references. Includes rationale and/or reasoning that describes the approach to patient care at a specialist level.		
Conclusion/Post Case Reflections	☐ Yes	☐ No
Documents the most important findings from the case and suggestions for future directions, in **500 words or fewer**.		
References	☐ Yes	☐ No
Provides appropriately chosen references from peer-reviewed scientific literature. All references cited should be no more than 10 years since publication unless the article is considered a seminal study. References are to be cited throughout the appropriate sections of the case report using American Medical Association formatting to support all clinical decision making and intervention techniques. Course manuals are not accepted as supporting references. Total references should be at least five but not to exceed 30.		
Acknowledgements	☐ Yes	☐ No
If applicable, a short acknowledgement section should mention funding support or conflicts of interest.		

Process for Submission of a Case Report

1. A case report that does not meet the screening criteria and/or is rated as not competent will be returned with an explanation. At the discretion of the reviewers, an applicant may resubmit their case after corrections are made or replaced with another case, but this can occur only once.
2. Each case report will be read by two reviewers who have experience in the cardiovascular and pulmonary specialty area, and will be evaluated using the scoring rubric above. 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.
3. 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.

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

Exam Content Outline and Sample Questions

Exam Content Outline

All questions on the exam relate to competencies outlined in the 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 with their frequency of occurrence.

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

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
- Chronic obstructive pulmonary disease
- 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
- Postoperative 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
- Other orthostatic intolerance
- Lymphedema
- Pericarditis
- S/p implantable loop recorder
- S/p extra-corporeal membrane oxygenation
- S/p intra-aortic balloon pump
- S/p aortic dissection repair
- S/p aortic aneurysm repair
- S/p ventricular assist device implantation
- 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

The following sample questions refer to case scenarios labeled "Case 1" through "Case 4."

Case 1

A patient presents to the emergency department for right-sided chest pain, worsening shortness of breath, and a three-day history of coughing and fever. The patient previously worked as a baker. Auscultation of the chest discloses 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. Radiography of the chest shows right lower lobe and potential right middle lobe consolidation.

Vital signs are as follows:

Heart rate	130 beats/min
Respiratory rate	32 cycles/min
Blood Pressure	165/80 mmHg
Temperature	39.4°C

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
$PaCO_2$	25 mmHg	38 mmHg
PO_2	40 mmHg	115 mmHg
HCO_3	18 mEq/L	23 mEq/L

Case 1 Questions

1. 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?
    a) The altered blood pressure is due to the HCO3 level
    b) The altered heart rate is due to the PaCO2 level
    c) The altered respiratory rate is due to the PaO2 level

d) 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 Manteaux 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 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 patient is admitted to the emergency department for chest discomfort and weight gain. Medical history includes heart failure (ejection fraction = 15%), hypertension, and hyperlipidemia]. Thoracic auscultation reveals decreased breath sounds throughout with crackles. Edema of the lower extremities is noted.

Cardiac enzyme studies show troponin T of 0.06ng/ml and CK-MB of 2%. 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.

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
		HCO2	32

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) Decrease afterload
    b) Decrease cardiac output
    c) Increase myocardial VO2 max
    d) Increase 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. Which of the following is the MOST appropriate outcome measure 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 is admitted to the emergency department with a one-week history of dyspnea on exertion and chest tightness. 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, and no S4 heart sound 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 beats per minute.

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

Case 4

A 45-year-old is referred to physical therapy for left calf pain that occurs with running at speeds of faster than 10 minutes per mile. The pain is relieved when they slow to a jog or stop. The physical therapist suspects that the pain is related to the peripheral arterial system. Ankle brachial indexes (ABIs) are performed correctly bilaterally at rest: left ABI is 1.1 and right ABI is 1.3.

Case 4 Question

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 a girth measurement assessment

Case questions answer key:
Case 1: 1-c, 2-a, 3-d Case 2: 1-c, 2-a, 3-c, 4-c Case 3: 1-d, 2-c Case 4: b

Sample Data Analysis Project

The following example is provided to illustrate the kind of information that satisfies the data analysis requirement. Note: The example has been shortened for space purposes. Greater detail and explanation are expected in a submitted project.

DAP Example:

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 Fried's Frailty Phenotype (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 FFP and cardiopulmonary exercise testing (CPET). Primary outcomes were peak workload and peak aerobic capacity (VO2).

Results: Among the participants, 57% had interstitial lung disease, 32% had chronic obstructive pulmonary disease, and 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 VO2 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 VO2 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.

Sample Case Study

Note: The following example has been shortened for space purposes. Greater detail and explanation are expected in submitted case studies. This case study example is derived in part from the following: Sharma S, Hashmi MF, Rawat D. Case Study: 33-Year-Old Female Presents with Chronic SOB and Cough. [Updated 2023 Feb 20]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK500024/.

Case Study Example:

History of Present Illness: A 33-year-old white female presents after admission to the general medical/surgical hospital ward with a chief complaint of shortness of breath on exertion. She reports that she was seen for similar symptoms previously at her primary care physician's office six months ago. At that time, she was diagnosed with acute bronchitis and treated with bronchodilators, oral antibiotics, and a short course of tapered oral steroids. This management did not improve her symptoms and she has gradually worsened over six months. She reports a 20-pound (9 kg) intentional weight loss over the past year. She denies any recent contact with individuals who have been sick. A brief review of systems is negative for fever, night sweats, palpitations, chest pain, nausea, vomiting, diarrhea, constipation, abdominal pain, neural sensation changes, muscular changes, or increased bruising or

bleeding. She admits to a persistent cough, shortness of breath, and shortness of breath on exertion.

Social History: Her tobacco use is 13 pack-years; however, she quit smoking shortly prior to the onset of symptoms, six months ago. She denies alcohol and illicit drug use. She is in a married, monogamous relationship and has three children aged 15 months to 5 years. She was independent with all mobility prior to admission, self-employed/owner of a cookie bakery. She has two pet parrots. She traveled to Mexico for a one-week vacation one year ago.

Allergies: No known medicine, food, or environmental allergies.

Past Medical History: Hypertension

Past Surgical History: Cholecystectomy

Medications: Lisinopril 10 mg by mouth every day

Vitals: Temperature, 97.8 F; heart rate 88 beats per minute; respiratory rate 22 breaths per minute; blood pressure 130/86 mm/Hg; Sp02 86% on arrival. Placed on 4 liters oxygen via nasal cannula. Spo2 now 97%

General: Body mass index is 32. She is well-appearing and conversing, however respiratory distress causes her to stop mid-sentence.

Respiratory: She has diffuse rales and mild wheezing; tachypneic.

Cardiovascular: She has a regular rate and rhythm with no murmurs, rubs, or gallops.

Gastrointestinal: Bowel sounds X4. No bruits or pulsatile mass.

Laboratory Studies: Initial work-up from the emergency department revealed pancytopenia with a platelet count of 124,000 per mm3; hemoglobin, 8.3 g per and mild transaminase elevation, AST 90 and ALT 112. Blood cultures drawn and currently negative for bacterial growth or Gram staining.

Chest X-ray Impression: Mild interstitial pneumonitis

Chest CT: diffuse centrilobular micronodular pattern without focal consolidation.

Medical Management: Broad-spectrum antibiotics for a bacterial infection, however not improving. On day 4 diagnostic bronchoscopy of the lungs with bronchoalveolar lavage performed to look for any atypical or rare infections and to rule out malignancy.

Bronchoalveolar lavage returned with a fluid that was cloudy and muddy in appearance. There was no bleeding. Cytology confirmed acute fungal infection known as *Histoplasma capsulatum*, in an otherwise immunocompetent patient.

New medications began on Day 4: Itraconazole (Sporanox®) and mythelprednisolone.

Physical Therapy Management:

PT Evaluation (Day 4): History per chart review. Dyspnea mildly improved. Currently on 4 liters oxygen via nasal cannula. Nursing has had patient up to chair and assisted to bathroom in room since admission. Allowed out of bed as tolerated.

Examination: Vitals at baseline (supine in bed): heart rate 78 beats per minute; respiratory rate 16 breaths per minute; Sp02 98% on 4 liters oxygen via nasal cannula, blood pressure 125/80 mm/Hg. **Cough**: weak, minimally productive with brown-tinged secretions. **Chest expansion**: significantly decreased on inhale and exhale. **Maximum Inspiratory Volume**: 750ml with spirometry. **AROM** within functional limits both upper extremities and lower extremities. **Gross motor strength**: 4+/5 all extremities and easily dyspneic with testing with Sp02 94% while testing. Pauses needed to recover which took 1 minute to return Sp02 to 98%. **Transfers**: Performed sit to supine and back as well as sit-to stand with close supervision; stand-pivot-sit to chair with contact guard. Required 2 minutes recovery after transferring due to +2 dyspnea on MRC Dyspnea Scale and Sp02 drop to 93%. **Gait**: Patient ambulated 180 feet without device with close supervision, slow cadence and mild instability. Quickly became dyspneic on exertion with ambulation and Sp02 dropped to 90% on 2L nasal cannula at 60ft. Patient instructed in pursed-lip breathing to recover and Sp02 returned to 96% within 30 seconds standing rest. **Outcome Measures**: 5x Sit to Stand performed in 28 seconds with reported dyspnea at 2 on mMRC scale; 6 Minute Walk Test (6MWT) performed on 4 liters oxygen via nasal canula: 180ft (61 meters) in 3 minutes 25 seconds before stopped test and reported dyspnea at 3 on mMRC scale; Sp02 97% at start of 6MWT, dropped to 93% by 150ft, stood and rested x 15 seconds to recover to 95% then stopped at 180ft with Sp02 at 94% and reported BORG 16 (from BORG 8 at start). Sp02 to 97% after sat x 30 seconds to recover post- test.

PT Diagnosis and Prognosis: Dyspnea on exertion, decreased chest expansion and inspiratory volume, decreased cardiovascular endurance, decreased aerobic capacity,

decreased functional strength, and mildly impaired balance. Prognosis is excellent as aside from acute parenchymal fungal infection and recent bout of bronchitis, patient has no prior medical issues other than hypertension. Patient has been healthy, active and independent, with strong family support, and she is motivated to participate in PT and return to her occupation.

PT Plan of Care: Patient was seen daily x 3 days until discharge for mobility, aerobic conditioning, cardiovascular endurance, patient education on breathing retraining, pulmonary hygiene as needed, and general conditioning.

Interventions: PT interventions focused on pursed-lip breathing with dyspneic episodes and paced activities, diaphragmatic breathing with functional mobility, use of incentive spirometer to obtain maximum inspiratory volumes (increased 250ml daily) as well as sustained inspiratory holds (2 second), splinted cough (due to mediastinitis-reported chest pain), active cycle of breathing technique, transfers and ambulation on oxygen (assess stairs as well), and lower extremity strengthening (with 2 pound weights) initially in sitting, progressing to standing.

Discharge: Final 6MWT conducted, patient ambulated 320ft in 5 minutes before stopped due to fatigue (BORG at 14 from 6 at start) and lowest Sp02 reached was 91%. After three PT sessions, patient was discharged from hospital (day 7) to home on room air with Sp02 maintaining at 95%. Independent mobility in transfers and ambulation (distance performed) with no instability or balance concerns and reported dyspnea at 1 on mMRC scale except stairs (mMRC at dyspnea of 2 in tolerating 4 stairs). Patient performed pursed-lip breathing when dyspneic without cue needed and to pace mobility with only an initial cue needed. Incentive spirometer maximum volume reached 1250ml consistently and performed inspiratory holds for 1 second. Cough frequency and production minimal by 6th day.

Summary Thoughts: Though the patient did not have pneumonia, notable restrictive lung symptoms from pneumonitis were evident with the clinical presentation of dyspnea, decreased aerobic capacity and cardiovascular endurance in this young and otherwise healthy individual. Focusing on pulmonary interventions, notable gains were made in chest expansion, diaphragmatic breathing, inspiratory volume, cough strength and airway clearance, which culminated in improved gas exchange, and ultimately enabled gains made in all mobility. PT often focuses on general mobility and less on other factors impacting a patient's recovery and potentially hindering their progress. As cardiovascular and pulmonary clinical specialists, by focusing on cardiopulmonary interventions to impact and drive patient progress, this progress made will likely drive functional mobility improvement as well.

References

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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 the ABPTS nor the specialty panels 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

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ABPTS
American Board of Physical Therapy Specialties

Clinical Electrophysiologic Candidate Guide Addendum

Clinical Electrophysiologic Candidate Guide Addendum

ABPTS
American Board of Physical Therapy Specialties

Initial Certification Deadlines for Clinical Electrophysiology

July 31: Application deadline
Aug. 31: Reapplication deadline
Sept. 30: Final application 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. Patient Reports

Three actual patient reports completed by the applicant with waveforms must be submitted and will be reviewed by a panel of board-certified clinical electrophysiologic physical therapists. The physical therapist examiner is to reflect upon the referring diagnosis or reason for referral, patient presentation, clinical examination findings, medical history and review of systems, pertinent literature, and the pattern, nature and quality of their electrophysiologic findings when evaluating their testing approach, quality of testing, and the study findings in support of the underlying impression(s) and clinical correlates. See Section 11.3 and 11.4 for details of this requirement and Section 11.5 for sample reports.

Candidates are permitted one resubmission should any one of their initial patient report submissions not receive a passing score. However, according to the ABPTS policy adopted in 2025, should an applicant not pass any of their initial patient report submissions then they would not be allowed a resubmission of their application during the same application.

2. Testing Logs

Option A applicants must submit a log of the most recently completed 500 electrodiagnostic examinations conducted within the last 10 years. Option B applicants must submit a log the most recently completed 300 electrodiagnostic examinations conducted within the last 10 years. These logs need to 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. All testing logs submitted must be for live patients; non-patient testing logs will not be accepted.

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 (provided via email upon submission of an application). These elements, as defined by the Guide to Physical Therapist Practice, are examination, evaluation, diagnosis, prognosis, and intervention.

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, 2013). 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

Option B

Applicants must submit evidence of successful completion of an ABPTRFE-accredited post professional clinical electrophysiologic clinical residency completed within the last 10 years that has a curriculum plan reflective of the Description of Specialty Practice: Clinical Electrophysiologic (provided via email upon submission of an application). 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, if 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.

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
Foundation Sciences	
Anatomy	7%
Neuroscience	7%
Physiology	7%
Clinical Science	9%
Critical Inquiry	9%
Professional Roles & Responsibilities	4%
Examination	
History, Systems Review & Reexamination	5%
Tests & Measures	15%
Evaluation	
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%
TOTAL:	**100%**

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.

1. 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?
    a) No motor unit potentials
    b) Normal motor unit potentials
    c) Polyphasic motor unit potentials
    d) Small amplitude highly polyphasic potentials

2. 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

Key:1-a, 2-a, 3-c

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)
Left Sural Antidromic (ankle) 31.2℃									
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
Right Sural Antidromic (ankle) 31℃									
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
Left Median Antidromic (D3) 33℃									
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		2.0	>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)
Left Tibial Nerve (AH) 31.3℃									
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
Right Tibial Nerve (AH) 31.2℃									
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
Left Median (APB) 32.9℃									
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) Primary symmetric sensorimotor axonopathy with mild demyelinating features.
b) Diabetic motor/sensory polyneuropathic process.
c) Primary demyelinating sensorimotor neuropathy with mild axonopathic features.
d) Primary asymmetric sensorimotor axonopathy.

Case 2

A 49-year-old right-hand-dominant 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 while 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)
Left Median Antidromic (D3) 32.2℃									
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
Right Median Antidromic (D3) 32.8℃									
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
Left Ulnar Antidromic (D5) 32.4℃									
Wrist	3.2	<3.8	25.0	>10.0	Wrist-D5	3.4	14	43.8	>37.0
Right Ulnar Antidromic (D5) 32.7℃									
Wrist	3.5		21.3	>10.0	Wrist-D5	3.5	14	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)

Left Median (APB) 32.3℃									
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) 32.6℃									
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) 32.4℃									
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) 32.5℃									
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?

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

Key: Case 1-a, Case 2-b

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, 2022) 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 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 (e.g., radiculopathic process)
- A patient demonstrating a focal demyelination and/or axonopathy of a peripheral nerve (e.g., focal mononeuropathic process such as a focal median neuropathy across the wrist or tibial neuropathy across the ankle)
- A patient demonstrating a diffuse, symmetric demyelination and/or axonopathy (e.g., polyneuropathic process)

For information on scoring, see Patient Report Evaluation below.

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. Please note that approved patient reports are

only acceptable for two consecutive exam cycles. If reapplying two years after the initial application, new patient reports must be submitted for all previously approved pathologies.

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.
    - 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 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.

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), 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.

Useful Tips for Section 1:

- Chief Complaint: explore the severity, nature and location of symptoms. When considering the presenting symptoms, explore other potential questions in your intake which considers other pertinent differential considerations. Consider the presenting symptoms and the reason for referral when asking probing questions.

- Medical History: explore key areas of the medical intake which include past medical and surgical history, medications, allergies, occupational and social considerations, systems review and other testing that lend insight into a thorough investigation.

- Critical Reflection: Draw back upon the medical history to draw upon additional questions that would enhance your understanding of presenting symptoms and

electrophysiologic findings. Was there any new information found that was not anticipated; if so, did you conduct an appropriate intake.

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.

Useful Tips for Section 2:

- Nerve conduction testing:
    - Ensure testing is conducted appropriate to the condition(s) being assessed along with differential considerations. For instance, if you are assessing for a focally mediated pathology, ask if the rigor of testing applied truly identified a specific site of focal slowing across that segment.
    - Were other potential differential considerations examined within the testing approach?
    - Were appropriate stimulation methodologies applied and quality data and waveform analysis conducted?
    - Did you control or evaluate potential sources of variation that may impact the signal of interest?
    - Did you include the waveforms? Do they demonstrate clear and quality signals?
- Needle electromyography:
    - Did you sample appropriate muscles, and did the sampling provide ample evidence to support the primary pathology? Of equal consideration, did your testing appropriately rule out other potential considerations to the differential diagnoses?
    - Were appropriate informed consent and review of risks conducted?
    - To assist in your submission and findings, did you include a snapshot of a waveform(s) that validates the EMG findings put fort?
- Summary of findings:
    - Did your summary of findings align with the NCS and EMG tabular data? Did you address potential pitfalls or variations in testing that may help explain a

specific variation to the study? If this were the case, did you apply testing methods to validate your eventual impression?

Section 3. Impression (20 points).

Formulates appropriate electrophysiologic impression.

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

- Mononeuropathic process.
- Radiculopathic process.
- Polyneuropathic process.
- Motor neuron disease.
- Myopathic process.
- Neuromuscular junction defect (e.g., pre vs post junctional disorder).

The clinical impression will be formulated to define the location, nature, scope and pattern of the electrophysiologic presentation. The examiner should consider if they have sufficient evidence to justify the underlying impression along with supporting information regarding the duration or stability of the electrophysiologic presentation. Clinical correlations should be addressed as well as differential considerations that may explain or impact the study findings.

Useful Tips for Section 3:

- Did you formulate an appropriate electrophysiological impression?
- Did your study impression align with the data furnished? For instance, for a radiculopathic process, did you consider whether your data was strong enough to support a definitive versus probable finding? If the latter, was this due to a lack of sampling or a lack of findings in the adequate number of muscles sampled?
- Did you consider alternative explanations that may explain the data? If this is the case, did your testing approach seek to resolve potential confounders, or was the data and testing rigorous enough where concurrent issues need to be considered within the study impression?
    - For diagnoses that you report as ruled out, was your testing approach adequate in support of this statement?
- Did you consider potential confounders to the impression, such as the quality of data put forth, attention to testing pitfalls that may limit confidence in your conclusion,

impact of time with reported findings, considerations with respect to medical history that may impact the overall impression, and so forth?
- Were clinical correlates addressed pertinent to the patient presentation?
- Did you consider your intake and medical history with respect to the impression put forth?

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 right-handed 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 30.5ºC)

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 right-handed 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, pinprick), 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 right-handed 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 shows 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 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: _____

NCS Tables: (Skin Temperature >32°C):

Motor/F wave

Nerve Site	Latency (ms) (Normal)	Amplitude (mV) (Normal)	Distance (mm)	Conduction Velocity m/s (Normal)
L Deep Fibular/EDB				
Ankle	6.3 (<5.0)	1.1 (>2)	80	
Below Fib Head	14.2	1.3	295	37.3 (>40)
Above Fib Head	16.5	1.1	100	43
F-wave	65.2 (<56)			
R Deep Fibular/EDB				
Ankle	6.0 (<5.0)	2.0 (>2)	80	
Below Fib Head	14.2	2.3	290	35.4 (>40)
Above Fib Head	16.7	2.3	100	40
F-wave	68.4 (<56)			
R Tibial/AH				
Ankle	5.9 (<5.0)	4.4 (>2)	80	

Pop Space	16.2	4.3	400	38.8 (>40)
F-wave	61.2 (<4.2)	8.4 (>4)	80	
R Median/APB				
Wrist	5.9 (<4.2)	8.4 (>4)	80	
Elbow	16.2	8.3	200	38.8 (>48)
F-wave	31.2 (<31)			

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

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" were 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 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 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

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Clinical Electrophysiologic Physical Therapy Resource Information

Academy of Clinical Electrophysiology and Wound Management — APTA
Christie Krueger
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Last Updated: 04/07/2026
Contact: spec-cert@apta.org

ABPTS
American Board of Physical Therapy Specialties

Geriatrics Candidate Guide Addendum

Geriatrics Candidate Guide Addendum

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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:** a. Questions from the foundation, clinical, and behavior sciences	15%
II. Practice Expectations: 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%)	85%
TOTAL:	**100%**

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. A 68-year-old patient receives physical therapy for bilateral knee pain. The patient reports being 50-pounds (22.7 kg) overweight and denies being physically active. The patient acknowledges that low activity is a concern but does not have an activity plan. Which question BEST aligns with this patient's stage of behavior change?
    a) Do you think you could exercise for 30 minutes each day?
    b) What do you see as the main barriers to being more active?

c) Can you understand the importance of losing weight?
d) How confident are you with increasing activity by 10%?

2. A 75-year-old patient is being seen in the acute care setting, status post fall and resultant right superior and inferior pubic rami fracture. The most recent cardiac evaluation has shown nonspecific ST-segment ischemia and an ejection fraction of 50%. The patient is referred to physical therapy. Which of these plans is the MOST appropriate for the physical therapist to implement?
    a) Hold consultation and attain clarification from the cardiologist
    b) See the patient monitoring closely and avoiding any signs of exertion or pain
    c) Proceed with the consultation while monitoring closely, avoiding high intensity
    d) Place no restrictions on the physical therapy consultation or plan of care

3. A 69-year-old patient is being seen in outpatient physical therapy after a mechanical fall and difficulty returning to standing. Patient has a 10-year history of Parkinson's disease and has taken levodopa/carbidopa (Sinemet) for eight-years. The patient reports that rigidity and tremors have worsened over the past six months. The patient has shortness of breath when walking and freezing episodes with surface changes. Which of the following options is the MOST likely cause of this patient's dyspnea with exertion?
    a) Anxiety response to the rigidity and tremors
    b) Deconditioning
    c) On-off phenomenon related to pharmacotherapy
    d) Normal age-related changes in the lung

4. A 79-year-old patient is being seen in outpatient physical therapy after a mechanical fall and difficulty returning to standing. Patient has a 10-year history of Parkinson disease, has fallen twice, and has freezing episodes with surface changes. Which of the following is MOST appropriate for the freezing episodes?
    a) Employ audiological cues to improve cadence
    b) Contact physician for an increased medication dosage
    c) Request a dietary consult due to protein interaction with medication
    d) Work on clock-turning strategies

5. A 74-year-old patient is being seen in an acute care hospital for an initial physical therapy consultation after experiencing dizziness a subsequent fall and confusion; the patient is diagnosed with a urinary tract infection. Past medical history includes diabetes mellitus 2, coronary artery disease, osteoarthritis, and peripheral arterial

insufficiency. The therapist assesses for orthostatic hypotension. The patient's blood pressure in supine is 142/120. After attaining standing, blood pressure is 124/112; patient is asymptomatic. What is the MOST appropriate interpretation of these findings?

a) Orthostatic hypotension is present
b) Orthostatic hypotension is not present
c) Unable to determine measurements not done correctly
d) Inconclusive, heart rate responses must also be present

6. In a study to determine the comparative efficacy of physical therapist interventions for patients with post-polio syndrome, four groups were formed. Patients with a history of post-polio were randomized to one of four groups:

   Group 1: Standard of care education
   Group 2: Self-directed home exercise
   Group 3: Low-intensity endurance training
   Group 4: Moderate-intensity functional training

   The study outcome, 2-Minute Walk Test, was measured at baseline and post intervention.

   Which of the following statistical tests will BEST determine the efficacy of this research design?

   a) Paired samples t-test
   b) Chi square analysis
   c) One-way analysis of variance
   d) Series of independent t-tests

7. An 85-year-old patient receives home health status post fall with left femoral neck fracture, repaired with left total hip arthroplasty. Past medical history includes heart failure with preserved ejection fraction. Prior to surgery, the patient walked one mile (1.61 km) daily. The hospital discharge summary on post-operative day three indicates the patient ambulated 25 feet (7.62 m) with a wheeled walker. Hemoglobin 12.1 g/dL and hematocrit 28%. Medications: carvedilol (Coreg), captopril (Capoten). Home health physical therapy occurred on post-operative days 6, 8, and 11. On days 8 and 11, the patient reported lightheadedness when sitting up from supine. Which of the following options represents the MOST likely cause of these new symptoms? Add vital signs, medications/changes in medication dosage and lab values

   a) Fear of falling

b) Vestibular dysfunction
c) A problem with medication dosage
d) Abnormal hematocrit or hemoglobin value

8. A 68-year-old is referred to outpatient physical therapy after being diagnosed with knee osteoarthritis. The patient's chief concern is pain with weight bearing that began two weeks ago after a pickle ball tournament. The patient has an antalgic gait. Which of the following options represents the MOST useful information to guide this patient's exercise regimen?
    a) Radiograph results
    b) Stationary bicycle test
    c) Current pain medications
    d) Joint signs and symptoms

9. A 74-year-old patient has an edematous left lower extremity that does not improve with ice, elevation, or muscle pumping. There is no redness, tenderness, or calf pain. Medical history includes coronary artery bypass surgery two-years ago, hypertension, type 2 diabetes mellitus, and left total knee arthroplasty six-weeks ago. Which of the following options is the MOST likely cause of the edema?
    a) Heart failure
    b) Deep vein thrombosis
    c) Lymphatic congestion
    d) Peripheral neuropathy

10. A 79-year-old patient is being seen by a physical therapist in the home health setting. To perform five sit-to-stands from a standard chair, the patient requires use of both arms. Which intervention is MOST appropriate for initiating functional lower extremity strengthening?
    a) Sit-to-stands from the standard chair using one arm to push up
    b) Straight leg raises, long arc quads, and seated heel rises
    c) Seated hip and knee flexion using resistance band in the patient's recliner chair
    d) Sit to stands from standard chair with a firm cushion to elevate seat height

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

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Geriatrics Physical Therapy Resource Information

APTA Geriatrics: An Academy of the American Physical Therapy Association
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Neurologic Candidate Guide Addendum

Neurologic Candidate Guide Addendum

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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."

Learning Domain	Content Weighting
Knowledge for Specialty Practice	15%
Clinical Reasoning	5%
Professionalism	5%
Communication	5%
Education	5%
Systems Based Practice	5%
Patient Management	60%
• Examination	
• Evaluation	
• Diagnosis	
• Prognosis	
• Intervention	
• Outcomes	
Total	**100%**

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:
    - Stroke
    - Falls and balance disorders (e.g., multi-factorial fallers, unspecified fallers, multi-system failure)
    - Vestibular disorders
    - Traumatic brain injury
    - Movement disorders (e.g., Parkinson's Disease, Huntington Diseases, dystonias)
    - Spinal cord injury
    - Multiple sclerosis
    - Non-traumatic brain injury (e.g., anoxia, aneurysms, AVMs, toxic/metabolic encephalopathies)
    - Dementia (e.g., Alzheimer's Disease, Lewy Body Disease, frontotemporal dementia, vascular dementia)
    - Cerebellar disorders
    - Functional movement disorders
    - Peripheral neuropathy
    - CNS neoplasms
    - Cerebral palsy
    - Guillain-Barré Syndrome and polyneuropathies
    - Amputations in individuals with neurologic disorders
    - Motor neuron diseases (e.g., amyotrophic lateral sclerosis, post-polio syndrome)
    - Metabolic diseases affecting the neuromuscular system
    - Infectious diseases (e.g., COVID, Lyme disease, HIV)
    - Muscle disease and disorders of the neuromuscular junction)

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.

1. The International Classification of Functioning, Disability, and Health is based on which model of health?

    a. Biomedical model
    b. Biopsychosocial model
    c. Transtheoretical model
    d. Health Promotion model

Correct answer is B.

Rationale:

The Biopsychosocial model emphasizes the connection between biological, psychological, and socio-environmental factors that all play a role in health. The ICF reflects this model as it considers biological, psychological, and social factors that may affect the patient's condition.

Reference:

American Physical Therapy Association. *Guide to Physical Therapist Practice 4.0.* Chapter 1: The Description of Physical Therapist Practice: Foundational Concepts. Figure 1.1 and "Enhancing Health and Quality of Life" section. Alexandria, VA: American Physical Therapy Association; 2023. https://guide.apta.org/

2. A 47-year-old patient is 1 day status post transsphenoidal resection of a pituitary tumor. Upon evaluation, the physical therapist is most likely to find which of the following problems?

    a. Vision deficits
    b. Involuntary movements
    c. Motor planning deficits
    d. Spatial neglect

Correct answer is A.

Rationale:

Visual disturbances, especially those that affect peripheral vision, are common with pituitary tumors (~67%) due to location of tumor and optic chiasm. Surgical debulking restores vision within 1-month, post-operatively. Waddle et al pages 2; 6.

References:

Araujo-Castro M, Berrocal VR, Pascual-Corrales E. Pituitary tumors: epidemiology and clinical presentation spectrum. *Hormones (Athens)*. 2020;19(2):145-155. doi:10.1007/s42000-019-00168-8

Waddle MR, Oudenhoven MD, Farin CV, et al. Impacts of Surgery on Symptom Burden and Quality of Life in Pituitary Tumor Patients in the Subacute Post-operative Period. *Front Oncol*. 2019;9:299. Published 2019 Apr 23. doi:10.3389/fonc.2019.00299

3. The Academic Coordinator of Clinical Education (ACCE) developed a new evaluation form for students to complete during their final clinical affiliation. Students are asked to complete the form in weeks four and eight. Which of the following types of validity would indicate the student's performance at the end of the affiliation?

    a. Concurrent
    b. Construct
    c. Content
    d. Predictive

Correct answer is D.

Rationale:

Predictive validity measures the extent to which a score on a scale or test predicts scores on some criterion measure. Predictive validity would allow the ACCE to predict performance following the clinical affiliation.

Reference:

Portney, LG. *Foundations of Clinical Research*. 4th ed. FA Davis Publishing; 2020:127-138

4. A physical therapist is evaluating a patient with suspected anterior horn cell disease. Which of the following sets of findings is most likely?

a. Muscle atrophy, fasciculations, normal motor and sensory nerve conduction velocities, and giant motor unit potentials (MUPs) on electromyography (EMG)
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

Correct answer is A.

Rationale:

Ramroop et al: "Chronic denervation is manifested via changes in the motor unit potential (MUP) of nerves. There is an increased duration and amplitude of MUPs as collateral sprouts from unaffected anterior horn cells reinnervate muscle fibers that have lost their innervation. These MUPs are polyphasic and will vary in configuration, having more than four phases in an MUP. Decreased recruitment of MUPs is seen with abnormally increased firing rates. This reflects the loss of MUPs and can be seen early in the disease".

References:

Ramroop H, Cruz R. Electrodiagnostic evaluation of motor neuron disease. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; January 2023. Updated November 5, 2022. Accessed March 18, 2026. https://www.ncbi.nlm.nih.gov/books/NBK563178/

Andrews JA, Shefner JM. Clinical neurophysiology of anterior horn cell disorders. In: Levin KH, Chauvel P, eds. *Handbook of Clinical Neurology*. Vol 161. Elsevier; 2019:317-326. doi:10.1016/B978-0-444-64142-7.00057-6

Use the following information for sample questions 5 and 6.

A 17-year-old female presents with a T5 ASIA Impairment Scale A (AIS A) spinal cord injury secondary to an ATV accident twelve weeks ago. She is currently in week two of outpatient rehabilitation. During a morning therapy session, the patient reports "feeling warm", blurred vision, and having a sudden onset of a headache.

5. What is the most likely cause of her reported symptoms?

    a. Urinary tract infection
    b. Autonomic dysreflexia
    c. Hypotension
    d. Deep vein thrombosis

Correct answer is B.

Rationale:

Autonomic Dysreflexia occurs in neurologic level of injury T6 and above and includes symptoms in the patient's presentation.

References:

Lazaro, RT, Reina-Guerra, SG, Quiben, M. *Umphred's Neurological Rehabilitation*. 7th ed. Mosby: 2019:413

Consortium for Spinal Cord Medicine. *Outcomes following traumatic spinal cord injury: clinical practice guidelines for health-care professionals*. Paralyzed Veterans of America; 1999. Published July 1999. Accessed February 10, 2022. https://pva-cdnendpoint.azureedge.net/prod/libraries/media/pva/library/publications/cpg_outcomes-following-traumatic-sci.pdf

6. Following a physical assessment and monitoring vital signs you have determined that your patient is having an episode of autonomic dysreflexia. Which of the following is the most likely root cause of autonomic dysreflexia in this patient's presentation?

    a. Ingrown fingernail
    b. Constrictive shirt collar
    c. Shoulder impingement
    d. Menstruation

Correct answer is D.

Rationale:

Injuries at T6 or above can experience autonomic dysreflexia (AD) because of pre-menstrual pain and cramps (also known as pre-menstrual syndrome PMS). AD can also feel the same as PMS symptoms or occur when patients use feminine hygiene products.

Reference:

Lazaro, RT, Reina-Guerra, SG, Quiben, M. *Umphred's Neurological Rehabilitation*. 7th ed. Mosby: 2019:413

Consortium for Spinal Cord Medicine. *Outcomes following traumatic spinal cord injury: clinical practice guidelines for health-care professionals*. Paralyzed Veterans of America; 1999. Published July 1999. Accessed February 10, 2022. https://pva-cdnendpoint.azureedge.net/prod/libraries/media/pva/library/publications/cpg_outcomes-following-traumatic-sci.pdf

Use the following information for sample questions 7 and 8.

A 76-year-old with a 10-year history of type 2 diabetes mellitus is referred to an outpatient physical therapist for evaluation of plantar ulcers and peripheral neuropathy.

7. Which of the following examination findings is the therapist most likely to see?

    a. Dry, shiny skin on the patient's feet and ankles
    b. Hammertoe deformity bilaterally
    c. Ingrown toenail with inflammation at the base of the great toe
    d. Moderate pitting edema in the patient's feet and ankles

Correct answer is A.

Rationale:

Diabetic peripheral neuropathy involves degeneration of primarily sensory fibers but also may involve autonomic and motor nerve fibers as the diabetes progresses. A represents decline in sudomotor and vasomotor function, reflective of autonomic fiber loss in peripheral nerves.

Reference:

Feldman EL, Callaghan BC, Pop-Busui R, et al. Diabetic neuropathy. *Nat Rev Dis Primers*. 2019;5(1):42. doi:10.1038/s41572-019-0097-9

Hicks CW, Selvin E. Epidemiology of peripheral neuropathy and lower extremity disease in diabetes. *Curr Diab Rep*. 2019;19(10):86. doi:10.1007/s11892-019-1212-8

8. A physical therapist performs sensory and motor testing of the patient's lower extremities. Which of the following findings is most likely to distinguish signs of diabetic peripheral neuropathy from common changes associated with the aging process in this patient?

    a. Diminished deep tendon reflexes at the ankles based on reflex hammer testing
    b. Diminished vibration sense at the great toes based on the patient's response to a 128-Hz tuning fork
    c. Impaired light touch in the feet and toes based on Semmes-Weinstein monofilament testing
    d. Impaired proprioception at the great toes based on the patient's response to passive movement

Correct answer is C.

Rationale:

Distinguishing signs of diabetic peripheral neuropathy from the normal aging process is important for diagnosis and management of elderly with DPN. Quantitative assessment of light touch is a primary component of clinical testing and diagnosis of DPN. This information along with nerve conduction results and any history of plantar ulcers is diagnostic. A thorough sensory testing battery should be performed. Although individuals with DPN often have diminished vibration and proprioception as well as pain and temperature sense distally in LEs, there is an age dependent decline in vibration perception even in nondiabetic elders.

References:

Olaiya MT, Hanson RL, Kavena KG, et al. Use of graded Semmes Weinstein monofilament testing for ascertaining peripheral neuropathy in people with and without diabetes. *Diabetes Res Clin Pract*. 2019;151:1-10. doi:10.1016/j.diabres.2019.03.029

Selvarajah D, Kar D, Khunti K, et al. Diabetic peripheral neuropathy: advances in diagnosis and strategies for screening and early intervention. *Lancet Diabetes Endocrinol*. 2019;7(12):938-948. doi:10.1016/S2213-8587(19)30081-6

Feldman EL, Callaghan BC, Pop-Busui R, et al. Diabetic neuropathy. *Nat Rev Dis Primers*. 2019;5(1):42. doi:10.1038/s41572-019-0097-9

9. A 54-year-old individual with multiple sclerosis reports persistent headaches, increased spasticity, and itching over the lower extremities. They use a baclofen pump and ambulate with a standard cane and bilateral ankle-foot orthoses (AFO) for distances within their neighborhood. They work full time and adhere to their home stretching program. Upon examination, the skin is intact. There is moderate scissoring during gait that is exaggerated from their baseline status. Which of the following is the most appropriate next step in management?

    a. Consultation with an orthotist for AFO assessment and probable brace revision
    b. Initiation of physical therapy services biweekly for tone management
    c. Referral to a neurologist for probable baclofen pump malfunction
    d. Referral to a urologist for probable urinary tract infection

Correct answer is C.

Rationale:

Symptoms of baclofen withdrawal are present upon clinical exam; patient needs to get pump checked immediately as it appears to be malfunctioning.

Reference:

Lazaro, RT, Reina-Guerra, SG, Quiben, M. *Umphred's Neurological Rehabilitation*. 7th ed. Mosby: 2019

Schiess MC, Eldabe S, Konrad P, et al. Intrathecal baclofen for severe spasticity: longitudinal data from the Product Surveillance Registry. *Neuromodulation*. 2020;23(7):996-1002. doi:10.1111/ner.13097

Use the following information for sample questions 10 and 11.

A 57-year-old individual is referred to physical therapy due to difficulty with mobility for the past five weeks. Current medications include Sinemet for rigidity and bradykinesia. During the initial evaluation, the patient appears anxious and reports difficulty sleeping. They also express doubt that physical therapy will help and says that their spouse made them come to the appointment.

10. Referral to which of the following specialists is the most appropriate management?

    a. Primary care physician for re-evaluation of current medications
    b. Neurologist for evaluation and treatment of corticobasal degeneration

c. Neuropsychologist for evaluation and treatment of dementia
d. Psychologist for evaluation and treatment of depression

Correct answer is D.

Rationale:

Depression is one of the most common non-motor symptoms in PD. Depressive symptoms are the single most important factor in patient quality of life ratings and rated more important than both disease severity and medication.

Reference:

Marsh L. Depression and Parkinson's disease: current knowledge. *Curr Neurol Neurosci Rep*. 2013;13(12):409. doi:10.1007/s11910-013-0409-5

Cong S, Xiang C, Zhang S, et al. Prevalence and clinical aspects of depression in Parkinson's disease: a systematic review and meta-analysis of 129 studies. *Neurosci Biobehav Rev*. 2022;141:104749. doi:10.1016/j.neubiorev.2022.104749

11. While discussing the physical therapy plan of care, which of the following strategies is most appropriate to encourage patient participation?

a. Address specific concerns about the financial cost of rehabilitation
b. Ask open-ended questions about personal goals for physical therapy and possible barriers to treatment
c. Provide current research evidence supporting the benefits of physical therapy in patients with Parkinson disease
d. Speak honestly about the negative effects of immobility on physical function

Correct answer is B.

Rationale:

The therapist should work with the patient on mutual inquiry to identify goals and/or potential barriers to treatment. Secondly, the therapist should negotiate common ground regarding optimal treatment plan and promote self efficacy in client's ability to successfully meet these goals.

Reference:

Falvo, DR. *Effective Patient Education: A Guide to Increased Compliance*. 3rd ed. Jones and Bartlett; 2004:173-189

Collado-Mateo D, Lavín-Pérez AM, Peñacoba C, et al. Key factors associated with adherence to physical exercise in patients with chronic diseases and older adults: an umbrella review. *Int J Environ Res Public Health*. 2021;18(4):2023. doi:10.3390/ijerph18042023

12. A physical therapist for a home health agency in a large metropolitan area is providing an in-service program on transfers to home health assistants (aged 22 to 45 years) as a part of their yearly education requirement. Which of the following teaching methods is most appropriate?

    a. Demonstration and practice with feedback
    b. Lecture and use of handouts
    c. Lecture and use of video
    d. Use of written handouts and video

Correct answer is A.

Rationale:

Optimal choice as it combines active learning with psychomotor practice of skills needed to be mastered. Also, includes visual, auditory, and kinesthetic learning styles in teaching methods.

References:

O'Brien BC, Battista A. Situated learning theory in health professions education research: a scoping review. *Adv Health Sci Educ Theory Pract*. 2020;25(2):483-509. doi:10.1007/s10459-019-09900-w

Shaughnessy AF, Erlich DR. The science of education: using learning theory to solve teaching problems in medical education. *Educ Prim Care*. 2022;33(4):194-198. doi:10.1080/14739879.2022.2053344

13. A 40-year-old who sustained a stroke five years ago is referred to an outpatient physical therapy clinic. Their current medications are atenolol and escitalopram. Their goal is to ambulate greater distances without feeling tired. They are currently able to

ambulate independently but report fatigue after walking two blocks or climbing a flight of stairs. Resting heart rate is 62 beats/min and resting blood pressure is 110/70 mmHg. The therapist plans an intensive aerobic exercise program. Which of the following methods is most effective to monitor this patient's exercise tolerance?

a. Blood pressure
b. Borg Rate of Perceived Exertion Scale
c. Fatigue Impact Scale
d. Heart rate

Correct answer is B.

Rationale:

Aerobic exercise in chronic stroke can improve both walking function as well as cardiovascular fitness. Therapists need to be comfortable prescribing these programs and how to monitor them. This patient is on beta blocker (Atenolol) which blunts HR and BP (answers D & A) so these are not as appropriate for monitoring exercise tolerance. The Fatigue Impact Scale does not measure exercise tolerance, making C an incorrect answer. Borg Rate of Perceived Exertion Scale (answer B) assesses the patients perceived exertion, making this the preferred answer.

References:

Franklin BA, Eijsvogels TMH, Pandey A, et al. Physical activity, cardiorespiratory fitness, and cardiovascular health: a clinical practice statement of the American Society for Preventive Cardiology Part II. *Am J Prev Cardiol*. 2022;12:100425. doi:10.1016/j.ajpc.2022.100425

Mitchell BL, Davison K, Parfitt G, Spedding S, Eston RG. Physiological and perceived exertion responses during exercise: effect of β-blockade. *Med Sci Sports Exerc*. 2019;51(4):782-791. doi:10.1249/MSS.0000000000001845

14. A physical therapist wishes to assess spasticity in a patient who is 2 years post incomplete spinal cord injury using the modified Tardieu scale.

    Measurements are as follows:

    R1 (ankle) = -20 (20 degrees plantarflexion)

    R2 (ankle) = +10 (10 degrees dorsiflexion)

Based upon this information, the most appropriate recommendation for focal medical intervention would be:

a. Achilles tendon release surgery
b. Oral spasticity medications (ie. Dantrolene sodium, baclofen)
c. Botox injection to gastroc/soleus
d. Phenol block to sciatic nerve

Correct answer is C.

Rationale:

Botox injection to Gastroc/Soleus would directly improve dorsiflexion (correct). Achilles tendon release would be invasive and negatively impact function, oral spasticity medications impact would not be a focal intervention compared to Botox. Phenol block has potential to affect more areas than just Gastroc/Soleus.

References:

Leung J, Stroud K. Long-term resolution of severe ankle contractures using botulinum toxin, serial casting, splinting, and motor retraining. *Physiother Can*. 2018;70(2):152-159. doi:10.3138/ptc.2016-76

Doan T, Kuo M, Chou L. Efficacy and optimal dose of botulinum toxin A in post-stroke lower extremity spasticity: a systematic review and meta-analysis. *Toxins (Basel)*. 2021;13(6):428. doi:10.3390/toxins13060428

15. A 66-year-old male was admitted to an acute care hospital and is in the Intensive Care Unit after sustaining an ischemic stroke in the Left Posterior Inferior Cerebellar Artery. On assessment, the patient requires minimal assistance with bed mobility, requires supervision for sit to stand transfers, and ambulates 20ft with minimal assistance using a rolling walker. The patient also presents with truncal ataxia while performing sit to stand transfer and leans to one side. What outcome measure will be the most suitable to set a baseline for this patient?

a. 5 Time Sit to Stand test
b. Rivermead Motor Assessment
c. Balance Evaluation Systems Test
d. Arm Motor Ability Test

Correct answer is A.

Rationale:

Option A is correct as the 5 Time Sit to Stand test is one of the core outcome measures to assess transfers in all adults with neurologic disorders (Moore et al., 2018, pg 207-208). The 5 Time Sit to Stand test is an outcome measure which is recommended to be used in the acute care ICU setting (Melo et al., 2019, pg 32).

References:

Chinsongkram B, Chaikeeree N, Saengsirisuwan V, et al. Reliability and validity of the Balance Evaluation Systems Test (BESTest) in people with subacute stroke. *Phys Ther*. 2014;94(11):1632-1643.

Fulk GD, Martin R, Page SJ. Clinically important difference of the Arm Motor Ability Test in stroke survivors. *Neurorehabil Neural Repair*. 2017;31(3):272-273.

Melo TAD, Duarte ACM, Bezerra TS, et al. The Five Times Sit-to-Stand Test: safety and reliability with older intensive care unit patients at discharge. *Rev Bras Ter Intensiva*. 2019;31(1):32-37.

Moore JL, Potter K, Blankshain K, et al. A core set of outcome measures for adults with neurologic conditions undergoing rehabilitation: a clinical practice guideline. *J Neurol Phys Ther*. 2018;42(3):174-220. doi:10.1097/NPT.0000000000000229

Rose DK, Pinto-Zipp G, Anderson H, et al. Recommendations for patients with stroke in acute care. NeuroPT. Published 2021. Accessed March 13, 2023. https://neuropt.org/docs/default-source/edge-updates-november-2021/stroke-edge-acute-care.pdf

Rose DK, Pinto-Zipp G, Anderson H, et al. StrokEDGE II outcome measures for inpatient and outpatient rehabilitation. NeuroPT. Published 2021. Accessed March 13, 2023. https://neuropt.org/docs/default-source/edge-updates-november-2021/stroke-edge-ii-ip_op.pdf

Please use the following information to answer sample questions 16 and 17.

A 56-year-old patient status post left MCA CVA with resultant right hemiparesis has been participating in inpatient physical therapy for 1 week.

Past Medical History includes:

- Myocardial infarction 3 years ago with current ejection fraction of 65%
- Mild COPD
- Type 2 diabetes mellitus

Current status is as follows:

- Ambulating with narrow based quad cane and moderate assistance
- 15/56 on the Berg Balance Scale
- Transfers via squat pivot with minimal assistance

The physical therapist (PT) would like to initiate a high intensity gait training (HIGT) program with this patient; however, the physiatrist is concerned about the safety of such a program because of this patient's cardiac history.

16. What would be the most appropriate course of action to advocate for this patient?

    a. Initiate a discussion with the physiatrist regarding the safety of HIGT in individuals post-stroke.
    b. Explain to the physiatrist that PTs are the experts in this situation and HIGT is current best practice.
    c. No education for or agreement from the physiatrist is needed because HIGT is current best practice.
    d. Email the physiatrist some articles about HIGT and re-introduce the discussion in another week.

Correct answer is A.

Rationale:

PTs, especially Clinical Specialists, have a responsibility as outlined in the Core Values of Physical Therapist and Physical Therapist Assistant to provide education and consult in multi-disciplinary team decision making situations to advocate for current best-practice for our patients. engaging in discussion is the most effective way to achieve this goal.

Reference:

Boyne P, Dunning K, Carl D, et al. High-intensity interval training and moderate-intensity continuous training in ambulatory chronic stroke: a feasibility study. *Phys Ther*. 2016;96(10):1533-1544. doi:10.2522/ptj.20150277

Holleran CL, Straube DD, Kinnaird CR, Leddy AL, Hornby TG. Feasibility and potential efficacy of high-intensity stepping training in variable contexts in subacute and chronic stroke. *Neurorehabil Neural Repair*. 2014;28(7):643-651. doi:10.1177/1545968314521001

American Physical Therapy Association. Core values for the physical therapist and physical therapist assistant. Updated December 14, 2021.

17. Based on their past medical history, what would be the most clinically relevant way to evaluate whether they were achieving the appropriate intensity?

    a. Use the equation: HRmax = 208 - [0.7 x age] to get 70% HR max
    b. Use the equation: 0.7 x (HR{max} - HR{rest}) + HR{rest} to get 70% HR reserve
    c. Educate the patient on the Rating of Perceived Exertion (RPE), aiming for >15/20
    d. Take BP at beginning and end of the session, aiming for 10mmHG change in SBP.

Correct answer is C.

Rationale:

RPE would be the most clinically appropriate way to evaluate intensity of the options provided.

Reference:

Hornby TG, Holleran CL, Hennessy PW, et al. Variable Intensive Early Walking Poststroke (VIEWS): a randomized controlled trial. *Neurorehabil Neural Repair*. 2016;30(5):440-450. doi:10.1177/1545968315604396

18. A 52-year-old patient is diagnosed with multiple sclerosis and presents to physical therapy to improve their functional mobility. Their expanded disability status scale (EDSS) score is 7.0. What is the most appropriate intervention to implement at this level of disease progression to address potential functional mobility deficits?

    a. Interval walking overground with 45 second intervals at 80% HRmax for 20 minutes
    b. Continuous gait training on treadmill for 15 minutes bouts at an RPE of 3/10
    c. Sit to stand training with a gradual reduction in support when possible
    d. Continuous power assist cycling for 30 minutes

Correct answer is C.

Rationale:

Sit to stand training with a gradual reduction in support when possible is most appropriate to address deficits in functional mobility for transfer training at EDSS 7.0. (Kalb, pg 1463)

Reference:

Kalb R, et al. Exercise and lifestyle physical activity recommendations for people with multiple sclerosis throughout the disease course. *Mult Scler*. 2020;26(12):1459-1469. doi:10.1177/1352458520915629

19. A 62-year-old person with multiple sclerosis is referred to physical therapy for body weight support treadmill training. The patient has received methylprednisolone two to three times per year over the past six years for management of multiple sclerosis exacerbations. Because of limited social and family support, the patient has been non-ambulatory for the past six months. Which of the following is the most appropriate test to recommend prior to beginning an ambulation program for this patient?

    a. Bone mass density scan
    b. Complete blood count with differential
    c. MRI of the spine
    d. Serum creatine kinase levels

Correct answer is A.

Rationale:

Patient has risk factors for osteoporosis. Bone mass density provides info on integrity of musculoskeletal system and potential risk for fractures during BSWTT.

Reference:

O'Sullivan SB, Schmitz TJ, Fulk GD. *Physical Rehabilitation*. 7th ed. F.A. Davis; 2019.

20. A 23-year-old patient is admitted to inpatient rehabilitation with a L1 motor and sensory complete SCI (ASIA A) secondary to a fall from a roof 3 weeks ago. The interdisciplinary team is meeting to decide the most appropriate bowel management

strategy. Based upon the patient's neurologic level of injury, what is the most likely reflex status and management strategy for bowel management?

a. Reflexive bowel and digital stimulation program
b. Non-reflexive bowel and rectal clear program (digital removal of stool)
c. Reflexive bowel and suppository
d. Non-reflexive bowel and digital stimulation

Correct answer is B.

Rationale:

L1 complete injury would result in lower motor neuron injury and flaccid/nonreflexive bowel. Most appropriate bowel management protocols would include rectal clears or suppository insertion. Digital stimulation would only be effective for reflexive bowel, and a BCR would not be present with a LMN injury.

Reference:

Consortium for Spinal Cord Medicine. *Outcomes following traumatic spinal cord injury: clinical practice guidelines for health-care professionals*. Paralyzed Veterans of America; 1999. Accessed February 10, 2022. https://pva-cdnendpoint.azureedge.net/prod/libraries/media/pva/library/publications/cpg_outcomes-following-traumatic-sci.pdf

Lazaro, RT, Reina-Guerra, SG, Quiben, M. *Umphred's Neurological Rehabilitation*. 7th ed. Mosby: 2019

Answer Key: 1-b, 2-a, 3-d, 4-a, 5-b, 6-d, 7-a, 8-c, 9-c, 10-d, 11-b, 12-a, 13-b, 14-c, 15-a, 16-a, 17-c, 18-c, 19-a, 20-b

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.

Neurologic Physical Therapy Resource Information

APTA — Academy of Neurologic Physical Therapy Inc.
Lynette Uetz
5841 Cedar Lake Rd., Ste 204
Minneapolis, MN
Phone: 952-646-2038
Email: luetz@neuropt.org
Website: neuropt.org/

Last Updated: 3/19/2026
Contact: spec-cert@apta.org

ABPTS
American Board of Physical Therapy Specialties

Oncologic Candidate Guide Addendum

Oncologic Candidate Guide Addendum

ABPTS
American Board of Physical Therapy Specialties

Initial Certification Deadlines for Oncology

July 1: Application deadline
Aug. 31: Reapplication deadline
Sept. 30: Final application 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 ABPTRFE-accredited post-professional 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.

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.

Content Area	% of Exam
I. Knowledge Areas	**15%**
A. Foundation Sciences	5%
B. Clinical Sciences	5%
C. Behavioral Sciences	5%
II. Professional Roles, Responsibilities and Values	**16%**
A. Professional Behavior	2%
B. Professional Development	2%
C. Communication	2%
D. Social Responsibility	2%
E. Leadership	2%
F. Education	1%
G. Advocacy	1%
H. Administration	1%
I. Consultation	1%
J. Evidence-based Practice	2%
III. Patient and Client Management Expectations	**69%**
A. Examination/Reexamination	23%
B. Reexamination	
C. Evaluation	14%
D. Diagnosis	
E. Prognosis	
F. Intervention/Instruction	27%
G. Outcomes	5%
TOTAL:	**100%**

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 systemic therapy (chemotherapy, targeted therapy and immunotherapy), radiation therapy, and surgery.

Types of Cancer:

- Bladder
- Brain
- Breast
- Central nervous system
- Cervical
- Colorectal
- Esophageal
- Head and neck
- Kidney
- Leukemia
- Lung
- Lymphoma
- Melanoma
- Multiple myeloma
- Osteosarcoma
- Ovarian
- Pancreatic
- Paraneoplastic syndromes
- Prostate
- Soft-tissue sarcoma
- Stomach
- Testicular
- Thyroid
- Uterine
- Vaginal
- Vulvar

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
- Osseus fragility
- Sarcopenia
- Radiation Induced Fibrosis

Neurological:

- Loss of sensation
- Nerve palsies (such as facial, spinal accessory, long thoracic)
- Brachial plexopathies (radiation induced vs. metastatic)
- Lumbosacral plexopathies (radiation induced vs. metastatic)
- Peripheral neuropathies
- Balance dysfunction

- Chemotherapeutic neurotoxicities
- Falls
- Gait abnormalities
- Spinal cord compression
- Brain and CNS metastasis

Integumentary:

- Radiation fibrosis
- Radiotherapy toxicities
- Desquamation
- Phlebotoxicity
- 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 versus 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.

Use the following information to answer questions 1-3.

A 56-year-old patient with metastatic squamous cell carcinoma of the salivary gland is referred to outpatient physical therapy for neck pain and fatigue. The patient is status post radical neck dissection (levels I-V) two months ago. The patient reports constant pain in the neck that is unrelieved by position and requires a nap after lunch each day.

1. Which of the following measures if the most appropriate to administer to assess for fatigue?
    a) Four-Item Fatigue Scale
    b) 10-point Numeric Rating Scale for Fatigue
    c) Multidimensional Assessment of Fatigue
    d) Visual Analog Scale for Fatigue

2. Following the upper quarter screen, the physical therapist notes lateral winging of the scapula. Which of the following structures is most likely affected?
    a) Brachial Plexus
    b) Dorsal Scapular Nerve
    c) Long Thoracic Nerve
    d) Spinal Accessory Nerve

3. Following the upper quarter screen, the physical therapist notes lateral winging of the scapula. Which of the following arm movements will likely confirm this diagnosis?
    a) Abduction
    b) Adduction
    c) Extension
    d) Flexion (long thoracic)

Use the following information to answer question 4.

A 48-year-old woman is evaluated by an out-patient physical therapist for a nine-month history of intermittent pain in her left shoulder and lateral arm. The pain began following her

mastectomy and axillary lymph node dissection. The pain increases with movement. A marked decrease in shoulder motion has occurred during the past four months. There is no history of trauma. Physical examination from a neutral position reveals external rotation is 15 degrees, abduction is 50 degrees, and internal rotation is 35 degrees. Resisted isometric strength testing reveals weakness of the left external and internal rotators.

4. Which of the following conditions most likely describes this patient's diagnosis?
    a) Fibrosis
    b) Frozen Shoulder
    c) Lymphedema
    d) Rotator Cuff Tear

Use the following information to answer question 5.

A 55-year-old man, diagnosed with prostate cancer, is referred to outpatient physical therapy for difficulty hiking and navigating the stairs in his home. His history is significant for a radical prostatectomy with pelvic lymph node resection, followed by radiation treatment. Patient is taking leuprolide (Lupron).

5. What is the most appropriate test and measure to assess strength?
    a) 5x sit-to-stand
    b) Manual Muscle Test
    c) Hand-held dynamometry
    d) Step Test

Use the following information to answer question 6.

A 42-year-old female with advanced stage 4 colon cancer is referred to physical therapy for assessment of rehabilitation needs during palliative care. She presents with significant edema in her bilateral lower extremities and lower trunk area which is affecting bed mobility.

6. Which of the following is the most likely cause of her edema?
    a) A radiation history for a metastatic lesion at T6 vertebra
    b) Extrinsic venous compression with possible vena cava obstruction
    c) May have worsening of pre-existing heart failure
    d) Receiving metformin and dexamethasone as part of her drug regimen

Key: 1-b, 2-d, 3-a, 4-b, 5-c, 6-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, no more than 30, 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

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 U.S. Census Bureau:
    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

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?
3. Introduction: Briefly summarize why this case is unique to the oncologic specialty; include medical literature references
4. 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

- Clinical Findings. Relevant physical examinations, or PE, and other clinical findings
- Timeline. Relevant data from this episode of care organized as a timeline (figure or table). Should clearly state **"the physical therapy episode of care and relevant past medical history"**
- Diagnostic Assessment

   a. Diagnostic methods (PE, laboratory testing, imaging, surveys)
   b. Diagnostic challenges
   c. Diagnostic reasoning including differential diagnosis
   d. Prognostic characteristics when applicable
8. 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
9. 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?)
9. 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
10. Patient Perspective. Share the patient's perspective on their case.

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 in 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 non-passing 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	
Title	☐ Yes	☐ No
A descriptive and succinct **title** 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.**		
Abstract	☐ Yes	☐ No
A brief summary of the relevant information in **250 words or fewer** without citations. Information should includ the following elements: (1) introduction/background, (2) case description/key points from the case, (3) outcomes and (4) discussion/conclusion: main lessons to be learned from this case report.		
Key words	☐ Yes	☐ No
Provides two to five **key words** that will identify important topics covered by this case report.		
Introduction	☐ Yes	☐ 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 CARE Guidelines: Consensus-Based Clinical Case Reporting Guideline Development. Glob Adv Health Med. 2013 Sep;2(5):38-43)		
Timeline of Episode of Care	☐ Yes	☐ 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 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 CARE Guidelines).		
Purpose Statement	☐ Yes	☐ No
• The applicant presented a **rationale** 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". • The applicant provided insight regarding his/her **perspective of specialist practice**. • Represents oncologic specialty practice. • Provides rationale for the case, clearly outlining the indicators that make it reflective of oncologic specialty practice.		
Narrative of the Case	☐ Yes	☐ No
• **Presents the patient concerns** (chief complaints) and **relevant demographic information**. • **Describes the clinically** relevant past medical history, pertinent comorbidities, and important physical examination findings. **Describes the decision-making and rationale for the following:** • **Examination: Systems review/tests and measures (diagnostic assessments)**; discusses diagnostic testing and results. • **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. • **Prognosis/plan of care**: ○ The prognosis includes a predicted optimal level of improvement in function and the amount of time needed to reach that level. ○ The specialist reflects on: • Favorable and unfavorable prognostic indicators • Patient's perceptions (i.e., cognitive/affective status)		

<table>
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Possible contributing factors

The plan of care demonstrates the use of interventions to produce changes in the condition that are consistent with the diagnosis and prognosis.

Interventions: 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.
Follow-up and outcomes: Describes the clinical course of the episode of care during follow-up visits including:

Intervention modification, interruption, or discontinuation
Intervention adherence and how this was assessed
Adverse effects or unanticipated events

</td></tr>
<tr><td>Discussion</td><td>☐ Yes</td><td>☐ No</td></tr>
<tr><td colspan="3">Describes case management, including strengths and limitations, with scientific references.</td></tr>
<tr><td>Conclusion/Post Case Reflections</td><td>☐ Yes</td><td>☐ No</td></tr>
<tr><td colspan="3">Offers the most important findings from the case and suggestions for future directions.</td></tr>
<tr><td>References</td><td>☐ Yes</td><td>☐ No</td></tr>
<tr><td colspan="3">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 all 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.</td></tr>
<tr><td>Acknowledgements</td><td>☐ Yes</td><td>☐ No</td></tr>
<tr><td colspan="3">Mentions funding support or conflicts of interest, if applicable.</td></tr>
<tr><td>Format</td><td>☐ Yes</td><td>☐ No</td></tr>
<tr><td colspan="3">Represents specialist practice and is professional in appearance, using correct grammar, spelling
and punctuation.</td></tr>
</table>

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's or patient's understanding of the patient's problem and management changed since the 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 the 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.

Introduction

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.[2] 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.[3,4] In colorectal cancer, it demonstrated moderate concurrent validity with the physical function subscale of the 36-Item Short Form Health Survey[3,5]. In a mixed sample of cancer patients, it showed good reliability and correlated to exercise capacity and workload.[6] 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.[7-9] In community-dwelling older adults, the minimally detectable change was found to be about 2[7], minimally clinically important difference is 1,[10] and the cut-off score for mobility disability is 10[9]. In cancer patients, it was shown to be predictive of survival, treatment-related complications, and functional decline.[11] 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.[12,14] 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.[12,14] 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.[15]

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,[16] history of a recent, prolonged hospital admission including an ICU stay requiring intubation,[17] 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.[18] 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.[18] 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.[19,20] 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.[21]

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.[22] 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.[23]

Aerobic Conditioning for Dyspnea and Reduced Endurance

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

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.[30]

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.[31] 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.[32] 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

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Oncology Physical Therapy Resource Information

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ABPTS
American Board of Physical Therapy Specialties

Orthopaedic Candidate Guide Addendum

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Minimum Eligibility Requirements

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. Activities that constitute direct patient care hours may only include the time spent practicing within your specific specialty area, and with the permanent/unrestricted license to practice.

Upon review of the current eligibility requirements, the Orthopaedic Specialty Panel has determined that modifications are necessary to align the assessment process of candidate eligibility with the full scope of physical therapist orthopaedic specialty practice as defined by the Orthopaedic Description of Specialty Practice.

The Orthopaedic Specialty Panel has instituted the following minimum eligibility requirements to sit for the initial orthopaedic specialist certification examination. Table 1 outlines the changes from current requirements, which are summarized here:

- 2,000 direct patient care hours subdivided into body region groupings.
- The requirement for evidence and approval of regional direct patient care hours modified.
- Direct contact hours may be replaced by observational or mentored hours under the direct supervision of a certified orthopaedic clinical specialist.

Table 1. Comparison of Current and New Initial Certification Requirements

Options		**Eligibility Requirements**	
		Current (pre-2027 exam administration)	**Approved as of 2027 exam administration**
Option A	Requirement 1: Direct patient hours.	2000 direct patient care hours; no regional breakdown required.	2,000 direct patient care hours, or evidence of observational or mentored patient care hours, subdivided into body region groupings.
	Requirement 2: Examination.	Successful completion of examination	Successful completion of examination.
Option B	Requirement 1: Orthopedic residency.	Completion of orthopedic residency fulfills requirements.	Completion of orthopedic residency fulfills requirements.
	Requirement 2: Examination.	Successful completion of examination.	Successful completion of examination.

Option A:

Applicants must meet the following requirements:

- **Requirement 1:** Professional standing and direct patient care hours to include patient experiences involving the regions and components identified in the DSP:
    - Submit evidence of current licensure as a PT.
    - Submit evidence of 2,000 hours of direct patient care in the specialty area within the last 10 years; 300 of which must have occurred within the last three years. (Refer to the document titled "What Activities Constitute Direct Patient Care.")

- These 2,000 hours of direct patient care hours in the specialty area will be further subdivided into regional requirements. Candidates shall submit evidence of patient contact as listed below in Table 2.
- Direct contact hours may be replaced by observational or mentored hours under the direct supervision of a certified orthopaedic clinical specialist.

- For the arm/elbow and wrist/hand regions, candidates may observe or be mentored by a certified hand therapist.
- This is a direct and equivalent substitution. One hour of observation or mentoring equals one hour of direct patient contact.
- All hours require verification by the supervising clinical specialist or hand therapist.

Table 2. Clinical Hours Needed per Region of the Body

Grouping	Region	Number of Direct Patient Care Hours	Ratio of Regions
Spine	• Head/Maxillofacial/Craniomandibular • Cervical • Thoracic Spine/Ribs • Lumbar • Pelvis/Sacroiliac/Coccyx/Abdomen	750 Hours	(Demonstrate minimum of 100 hours in 3 of the 5 regions)
Upper Quarter	• Shoulder • Arm/Elbow • Wrist/Hand	500 hours	(Demonstrate minimum of 100 hours in 2 of the 3 regions)

Lower Quarter	• Hip • Thigh/Knee • Leg/Ankle/Foot	500 hours	(Demonstrate minimum of 100 hours in 2 of the 3 regions)
Additional hours (applicant choice)		250 hours	
Total		2000 hours	

- **Requirement 2:** Cognitive expertise through a test of knowledge in the profession.
    - After verification of completion of Requirement 1 and fees paid, applicant is eligible to sit for the examination.

Option B

Applicants must submit evidence of successful completion of an ABPTRFE-accredited post-professional clinical residency in their respective specialty. Applicants who are currently enrolled in an ABPTRFE-accredited clinical residencies (or are enrolled in a residency program that has submitted an accreditation application to ABPTRFE no later than March 1) may apply for the specialist certification examination in the appropriate specialty area prior to completion of the clinical residency. These applicants will be conditionally approved to sit for the APTA Specialist Certification Program examination, as long as they meet all other eligibility requirements, pending submission of evidence of successful completion of the ABPTRFE-accredited clinical residency.

Exam Content Outline and Sample Questions

Exam Content Outline

The orthopaedic specialty 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	
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 • Determine most appropriate intervention approach
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.

Learning Domain	Content Weighting
Knowledge for Specialty Practice	30%
Clinical Reasoning	2%
Professionalism	2%
Communication	2%
Education	2%
Systems Based Practice	2%
Patient Management	60%
• Examination	
• Evaluation	
• Diagnosis	
• Prognosis	
• Intervention	
• Outcomes	
Total:	**100%**

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%
TOTAL	**100%**

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 patient reports pain above and below the lateral aspect of the left elbow, present with gripping or when lifting a full cup of coffee and there is tenderness to palpation just proximal to the radial head. Elbow and radio-ulnar range of motion is full and pain free and 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 and resisted tests are strong and pain free. Wrist extension ROM is full and pain free

and resisted testing 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?

a) Olecranon bursitis
b) Cubital tunnel syndrome
c) Lateral epicondylitis
d) Radial nerve entrapment

Use the following information to answer questions 2 and 3.

A patient reports a deep, aching pain above the right heel with insidious onset.. They report that they have been able to regularly walk three miles five times a week, but the heel pain has prevented them 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. Which of the following aspects of this subjective evaluation would be considered a participation restriction?
    a) Inability to walk or hike for recreation
    b) Recent weight gain of 10 pounds
    c) History of recurring low back pain
    d) Complaint of deep, aching pain in the heel
3. Further examination reveals trunk flexion in standing produces posterior thigh and calf pain on the right and 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 heel pain.
4. Which of the following is the MOST likely diagnosis?
    a) Entrapment of the superficial fibular 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 patient reports a six-month gradual onset of right lateral shoulder pain which has become severe over the past month, and the current pain is rated as a 2/10 on the Numeric Pain Rating Scale on a scale of 0-10. The pain prevents them from combing their hair with the right hand or reaching behind their back and lying on the right shoulder is painful.

Examination reveals a moderately increased thoracic kyphosis and 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.

5. Which of the following conditions is MOST likely present?
    a) Cervical radiculopathy
    b) Rotator cuff tear
    c) Chronic recurrent bursitis
    d) Glenohumeral adhesive capsulitis

6. Which of the following interventions is MOST appropriate to include in the initial treatment approach?
    a) Stretching of the latissimus dorsi
    b) Electrical stimulation for pain
    c) Grade I mobilizations of the glenohumeral joint
    d) Submaximal isometric ER and IR

7. Which of the following BEST represents the position of the thoracic spine in a patient who exhibits a right rib hump during forward bending?
    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, and 10.

A 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:

Static Posture:	2 degrees of calcaneal inversion when measured in subtalar joint neutral.
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 reproduce the patient's pain.
Resistive Tests:	3+/5 plantar flexion 3/5 plantar flexion and eversion reproduces pain.
Other muscles:	5/5-pain free.
Palpation:	Exquisite tenderness over plantar surface of cuboid.

8. The gait observation findings are MOST likely due to which of the following factors?
    a) First MTP extension
    b) Motor control of the gastrocnemius soleus
    c) Motor control of the tibialis anterior
    d) Talocrural dorsiflexion

9. Mobilization of which of the following articulations would MOST improve the ability to absorb shock during gait?
    a) Inferior tibiofibular
    b) First MTP
    c) Talocalcaneal
    d) Fifth MTP

10. Which of the following nerves is MOST likely involved?
    a) Fibular
    b) Saphenous
    c) Sural
    d) Tibial

11. Which of the following strengthening exercises is MOST appropriate?
    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

12. 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 post-surgery and presents 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 MCP 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 post-surgery

13. 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.

14. On examination, the therapist notes a slight limp, mild weakness of the hip abductors, and considerably limited internal rotation of the hip. Which of the following conditions is MOST likely present?
    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

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Pediatric Candidate Guide Addendum

Pediatric Candidate Guide Addendum

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

Medical Conditions

The medical conditions that may be represented in 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 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)
   - Sequalae 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.

A 15-year-old girl with myelomeningocele at L3-4 comes to an outpatient rehabilitation clinic for bi-annual evaluation. She ambulates limited distances in the household with bilateral forearm crutches and solid ankle foot orthoses. She reports mild right knee pain during ambulation. A manual wheelchair is used for limited distances in the community, and she enjoys lying on her stomach to read daily. Gait evaluation shows increased knee flexion throughout the gait cycle. She plans to transition to a high school campus in six months and attend regular classes. She reports that she is concerned about mobility within the new campus and the mild right knee pain she experiences during ambulation.

Which of the following is the most appropriate mobility device for this patient to use when she transitions to the high school campus?

A. Hemi-height manual wheelchair
B. Lightweight manual wheelchair
C. Manual wheelchair with power-assist wheels
D. Power wheelchair

Which of the following stretching and strengthening exercises are most appropriate to recommend at this time?

A. Abdominal stretching and erector spinae strengthening
B. Gastrocsoleus stretching and tibialis anterior strengthening
C. Gluteal stretching and iliopsoas strengthening
D. Hamstring stretching and quadriceps strengthening

Key: D, D

References

1. American Academy of Pediatrics, Power Mobility in Pediatrics Fact Sheet Series, 2024.

2. Palisano J, et. al. Campbell's Physical Therapy for Children, 6th edition, 2023. Elsevier.
3. Swaroop VT, Dias L. Orthopedic management of spina bifida. Part I: hip, knee, and rotational deformities. J Child Orthop. 2009;3(6):441–449.

Resource Guide Information

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Pediatric Physical Therapy Resource Information

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Pelvic & Women's Health Candidate Guide Addendum

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Initial Certification Deadlines for Pelvic & Women's Health

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

Certification Requirements

All applicants must submit one case reflection demonstrating specialty practice in pelvic and women's health. This case reflection must be based on a patient or client seen within the three years prior to application submission.

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

Option A

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

Option B

Applicants must submit evidence of successful completion of an ABPTRFE-accredited professional pelvic and women's health clinical residency completed within the last ten years with a curriculum plan reflective of the Description of Specialty Practice: Pelvic & Women's Health Physical Therapy. Experience from residences 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 before completing 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.

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 significant components of the Description of Specialty Practice: Pelvic & Women's Health Physical Therapy.

Content Area	% of exam
I. Knowledge Areas Foundation Sciences (7%) Clinical Sciences (7%) Behavioral Sciences (6%)	**20%**
II. Patient and Client Management Screening (4%) Examination (7%) Evaluation (10%) Diagnosis (8%) Prognosis (6%) Coordination/Communication/Documentation (2%) Procedural Interventions (12%) Outcomes (6%)	**55%**
III. Professional Practice Expectations 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%)	**25%**
TOTAL:	**100%**

Sample Questions

Candidates for the specialist certification examination in pelvic and 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 reports 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 per day, requiring two daily absorbent pads. Urinary leakage is commonly associated with coughing, sneezing, laughing, position changes such as sit to stand, and lifting objects. When she has the urge to go to the bathroom, she feels she better get there quickly for fear she will wet herself. She feels she is "going all of the time" and knows where every bathroom in the city is located.

Question 1 for Case Scenario 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

The correct answer is **b**.

References

Koenig I, Luginbuehl H, Radlinger L. Reliability of Pelvic Floor Muscle Electromyography Tested on Healthy Women and Women With Pelvic Floor Muscle Dysfunction. Annals of Physical and Rehabilitation Medicine, November 2017.

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. Taiwanese Journal of Obstetrics and Gynecology, July 2019.

Question 2 for Case Scenario 1

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 ultrasonagraphy
d) Pelvic floor muscle exercises with use of vaginal cones

The correct answer is **b.**

References

Koenig I, Luginbuehl H, Radlinger L. Reliability of Pelvic Floor Muscle Electromyography Tested on Healthy Women and Women With Pelvic Floor Muscle Dysfunction. Annals of Physical and Rehabilitation Medicine, November 2017.

Knorst MR, Cavazzotto K, Henrique M, Resende TL. Physical Therapy Intervention in Women With Urinary Incontinence Associated With Pelvic Organ Prolapse. Revista Brasileira de Fisioterapia, April 2012.

Question 3 for Case Scenario 1

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

The correct answer is **b.**

References

Downey A, Inman RD. Recent Advances in Surgical Management of Urinary Incontinence. F1000Research, July 2019.

Hersh L, Salzman B. Clinical Management Of Urinary Incontinence In Women [published correction appears in American Family Physician, October 2013]. American Family Physician, May 2013.

Case Scenario 2

The patient is a G2P1 32-year-old woman 26 weeks gestation who complains of right-side low back pain that began two months ago and is getting progressively worse. Her pain worsens with prolonged standing or walking and is especially painful during work hours. She also complains of pain and numbness that extends 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 reports she had mild low back pain during her first pregnancy that did not limit her function.

Question 1 for Case Scenario 2

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 65 degrees on the right. 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. 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

The correct answer is **c.**

References

Craig A. Entrapment Neuropathies of the Lower Extremity. PM&R, May 2013.

Madani S, Doughty C. Lower Extremity Entrapment Neuropathies. Best Practice & Research Clinical Rheumatology, June 2020.

Question 2 for Case Scenario 2

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 pelvic and women's health clinical specialist?

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

The correct answer is **c.**

Reference

Hinman SK, Smith KB, Quillen DM, Smith MS. Exercise in Pregnancy: A Clinical Review. Sports Health, November-December 2015.

Question 3 for Case Scenario 2

The patient asks the pelvic and 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 pelvic and 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

The correct answer is **d.**

References

Elliott JH, Turner T, Clavisi O, et al. Living Systematic Reviews: An Emerging Opportunity to Narrow the Evidence-Practice Gap. PLoS Medicine, February 2014.

Murad MH, Asi N, Alsawas M, Alahdab F. New Evidence Pyramid. BMJ Evidence-Based Medicine, August 2016.

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. 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 completed her first course of chemotherapy (eight treatments), is scheduled to start tamoxifen treatment, and did not receive radiation treatment.

She has a 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.

Question 1 for Case Scenario 3

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, waking her from a deep sleep, and she is unable to relieve it. 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?

a) Add hamstring stretching exercises to the current intervention plan
b) Instruct the patient in modification of sleeping position
c) Instruct the patient on the use of heat and ice for pain relief
d) Refer the patient to a physician for further evaluation

The correct answer is **d.**

References

DePalma MG. Red flags of low back pain. JAAPA. 2020;33(8):8-11. doi:10.1097/01.JAA.0000684112.91641.4c

Will JS, Bury DC, Miller JA. Mechanical Low Back Pain. Am Fam Physician. 2018;98(7):421-428.

Question 2 for Case Scenario 3

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 educate the patient on general wellness and health promotion. Of the following, which is the most important consideration for this patient?

a) General flexibility exercises
b) Lifestyle modifications to manage fatigue
c) Maintenance of healthy weight
d) Risk factors for cardiac disease

The correct answer is **d.**

References

Sturgeon KM, Deng L, Bluethmann SM, et al. A Population-Based Study of Cardiovascular Disease Mortality Risk in US Cancer Patients. European Heart Journal, December 2019.

Curigliano G, Lenihan D, Fradley M, et al. Management of Cardiac Disease in Cancer Patients Throughout Oncological Treatment: ESMO Consensus Recommendations. Annals of Oncology, February 2020.

Preparing a Case Reflection

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 essential to demonstrating competency in the pelvic and women's health across the lifespan and pelvic health physical therapy specialty area (as per the Description of Specialty Practice, men's, transgender, and pediatric 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:

- The case you submit should be able to be read in no more than 15 minutes.
- Enter the required information for your case in the online format, responding to each question in the designated fields with a professional tone similar to that of a published journal.
- Each case must include relevant information that supports the appropriate evaluation plan of care development and treatment interventions for the case.
- Provide relevant citations in AMA format 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 and Pelvic 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 Reflection

1. A case must be submitted along with the application to sit for the Pelvic and Women's Health 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 not rated as competent will be returned with the rater's comments.
5. If a case is rated as not meeting the screening criteria or not competent, it can be resubmitted one time after corrections are made or replaced with another case.
6. A trained rater will review each case in the specialty area. A second reviewer will review any case that is not rated as competent by the initial reviewer. Any discrepancy between the raters will be referred to a third, trained rater.

A candidate whose case is not rated as competent may submit a written request to the Pelvic and Women’s Health Specialty Panel for reconsideration per existing ABPTS policy and procedures for reconsideration requests.

Compliance With HIPAA Privacy Rule

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:
    - 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.

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 pelvic and 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 pelvic and women's health clinical practice.

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

Unless the article is considered a seminal study, all documented citations should be less than 10 years since publication. References are to be from peer reviewed sources and cited in AMA 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 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 pelvic and women's health and pelvic 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 four** of the following six reflective questions. Include two references within the past 10 years 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, please explain the pattern or connection between the symptoms?
4. What are some of the hypotheses you can draw from the data?
5. What is your assessment of the patient's and/or caregiver's knowledge, motivation, and understanding of their diagnosis and need for physical therapy?
6. What are the patient’s goals? Are there any other resources or potential referrals to another healthcare professional[s] that may help the patient in reaching their goals?

Initial Hypothesis

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

1. What is your hypothesis? Explain how you arrived at this hypothesis.
2. What is the anticipated prognosis for this patient?
3. What is your approach/planned sequence/strategy for the examination?
4. How might the treatment environment affect your examination?
5. How will the patient’s personal factors affect your examination?
6. How might other diagnostic information affect your examination?

Examination

Describe the tests and measures and clinical findings selected for your examination. In addition, **answer all four of the following reflective questions**. Include two references within the past 10 years that support your reflections. List the question number you are answering next to your answer.

1. Please list the tests and measures you selected, their psychometric properties, and the minimal clinically important difference.
2. Why did you choose these tests and measures?
3. How do these tests and measures support or negate your hypothesis?
4. Discuss other systems not tested that may be affecting the patient's problem.

Evaluation

Describe the physical therapy diagnosis you have determined for this patient. In addition, **answer four of the following five questions**. Include at least two references within the past 10 years for the evidence supporting your diagnosis. List the question number you are answering next to your answer.

1. How did the patient's subjective history and objective measurements lead you to determine the diagnosis for this patient?
2. Did the examination findings support or negate your initial hypothesis?
3. How did the PT diagnosis relate to the patient's goals and identified issues?
4. What is the prognosis for the patient and discuss your rationale based on the positive and negative prognostic indicators?
5. How did you go about developing a therapeutic relationship?

Plan of Care

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

1. How did you incorporate the patient's and family's goals?
2. How did the goals reflect your examination and evaluation using the International Classification of Functioning, Disability and Health framework?
3. How did you determine the PT prescription or plan of care (frequency, intensity, anticipated length of service)?
4. How did any cultural factors influence your care of the patient?

Interventions

Consider your overall PT approach and your rationale for it. **Answer all four of the following reflective questions**. Include 2 references within the past 10 years to support your treatment strategy. List the question number you are answering next to your answer.

1. Discuss the overall PT approach (e.g., neuromuscular re-education, therapeutic exercises, etc.). Explain how it relates to current theory and evidence. How did the interventions relate to the primary problem areas identified using the ICF framework?
2. How did you modify your interventions for this particular patient and caregiver, and what is your rationale?
3. How did you ensure safety?
4. What communication and teaching strategies did you use to provide patient and caregiver education?

Reexamination

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

1. Evaluate the effectiveness of your interventions. Did you need to modify anything?
2. Did you learn any new information from the patient that would influence the plan of care (e.g., goals, interventions, prognosis)?
3. What communication and coordination of care have you engaged in with other healthcare professionals?
4. Over the course of the treatment, how did your therapeutic relationship change with the patient? Have you changed the way you interact with the patient?
5. How did you determine the patient's views (satisfaction/frustration) about their progress toward goals? How did that affect your plan of care?

Outcomes

Discuss whether physical therapy was effective, and the outcome measures you used to assess the outcome. In addition, **answer four** of the following five reflective questions. Include two references within the past 10 years regarding your outcome measure(s). List the question number you are answering next to your answer.

1. Did the patient achieve a minimum clinically important difference in your outcome measure(s)? Why or why not?
2. What criteria did you or will you use to determine whether the patient has met their goals?

3. How do you determine if the patient is ready to return to home/community/work/school/sports?
4. What barriers (physical, personal, environmental), if any, are there to discharge?
5. What might the role of physical therapy be in the future?

Case Reflection Scoring

To receive a passing score, the applicant must submit a case reflection that answers four questions from every section with proper grammar/spelling/punctuation, a consistent voice, professional tone, and literature cited in AMA format.

Case reflections that do not thoroughly answer the outlined questions with professional tone for each section, 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 use proper grammar/spelling/punctuation, a consistent voice, and professional tone.
- Failure to adequately answer four questions in each section.
- Failure to cite eligible supporting literature within the past 10 years to support clinical decisions and treatment interventions.

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.

The Academy of Pelvic Health Physical Therapy, a component of the American Physical Therapy Association, offers a comprehensive Pelvic and Women's Health study guide and various continuing education courses covering pelvic and women's health, pelvic health, and abdominal health physical therapy topics. These resources may support your professional development and preparation as you advance in the specialty area. Explore Academy resources here.

Pelvic and Women's Health Physical Therapy Resource Information

Academy of Pelvic Health Physical Therapy — APTA
Aike Thiele
1390 Chain Bridge Rd.
McLean, VA 22101
Phone: 844-576-4055
Email: hello@aptapelvichealth.org

Last Updated: 3/6/2026
Contact: spec-cert@apta.org

ABPTS
American Board of Physical Therapy Specialties

Sports Candidate Guide Addendum

Sports Candidate Guide Addendum

ABPTS
American Board of Physical Therapy Specialties

Initial Certification Deadlines for Sports

July 31: Application deadline
Aug. 31: Reapplication deadline
Sept. 30: Final application deadline
Nov. 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 through the **American Heart Association** or the **American Red Cross**. All CPR certifications courses must be completed in-person, and virtual courses will not be accepted.

Acute Management of Injury and Illness Certification (formerly known as Emergency Care Certification). ABPTS and the Sports Specialty Panel 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 of application submission, (3) current certification as an emergency medical responder by an

approved provider, or (4) completion Tier 2 or Tier 3 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 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 panel 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 Panel for review prior to the application deadline. This request and materials to be reviewed may be emailed to spec-cert@apta.org, with the subject line "Attn: Specialty Panel 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

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 ABPTRFE-accredited post-professional 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.

Category	% of Exam	Approximate # Questions
Foundational Knowledge • Anatomy and Physiology, Normal Movement Science, Clinical Science • Medical and Surgical Conditions • Sports Science and Wellness • Scope of Practice, Principles of Teaching and Learning	20%	40
Professional Roles and Responsibilities • Consultation and Education • Critical Inquiry for Evidence-Based Practice • Administration	5%	10
Patient and Client Assessment • Clinical Examination and Evaluation • Diagnosis and Prognosis	30%	60
Patient and Client Clinical Intervention • Rehabilitation and Return to Activity • Injury Prevention and Epidemiology • Emergency Management and Athlete Safety • Sports Performance and Enhancement • Nutrition, Fluids, Supplements, Ergogenic Aids and Drugs • Non- Emergency Conditions	35%	70
Patient Outcomes	10%	20
Total	**100%**	**200**

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 Scenario 1

A 14-year-old female volleyball player presents to outpatient physical therapy with progressively worsening right knee pain. She is a right-side hitter and is left-handed. She reports her pain to be just below her knee cap. Her pain is provoked when she is at practice, especially when hitting, jumping, and running.

Question 1 for Case Scenario 1

To identify the probable diagnosis, which of the following would be the best choice for diagnostic imaging?

a) AP view of knee radiographs
b) CT scan of the knee
c) MRI of the knee
d) DEXA scan of the lower leg

The correct answer is **c**.

In an outpatient setting, clinical examination and evaluation are important components of the sports clinical specialist's care. The subjective information can provide insight into a possible diagnosis. In this case, the most probable diagnosis for this patient is patellar tendinosis. This is considered due to the pain just below the kneecap and provoked by jumping and running activities (Peers, 2005; Figueroa, 2016; Malliaras, 2015; Schwartz, 2015; Reinking, 2016). It is also common in teenagers, especially due to the typical growth spurt time frame. Diagnostic imaging can also be an important component in the diagnosis process. In the case of patellar tendinosis, MRI would be the gold standard to identify changes in the tendon as well as to rule out another sinister knee condition (Peers, 2005; Figueroa, 2016; Malliaras, 2015; Warden, 2007). AP view of the knee via radiographs would provide information on any suspected bone injuries, but in this case, there was no trauma and low risk of bone injury. CT scan and DEXA scan also would be investigating the bone for injury and would not provide information on the pathogenesis occurring at the patellar tendon.

Question 2 for Case Scenario 1

During the evaluation, the sports clinical specialist identifies the following objective measures:

- Painful palpation along the length of the patellar tendon, especially at the insertion of the patella
- Knee AROM: Left -2 degrees-135 degrees, Right -3 degrees-132 degrees
- Active Straight Leg Raise: Left 65 degrees, Right 55 degrees
- Thomas Test: Left WNL, Right +
- Ely's Test: Left -, Right +
- Ober's Test: Left +, Right +

What other test would the sports clinical specialist include in their objective measure to confirm the suspected diagnosis?

a) Single leg squat test
b) Navicular drop test
c) FABER test
d) FAIR test

The correct answer is **a**.

The sports clinical specialist needs to be able to identify the appropriate tests and measures to include in an evaluation to rule in a diagnosis. Some researchers have identified that decreased quadriceps strength, especially in the eccentric contraction, can be associated with patellar tendinosis (Peers, 2015; Reinking, 2016; Biernat, 2014; Kountouris, 2007; Rodrigues-Merchan, 2013; Rutland, 2010; Muaidi, 2020). With patellar tendinosis, it can be difficult to assess weakness with traditional manual muscle tests, so a functional measure may be considered. In this case, a single-leg squat test can provide functional information on the eccentric availability of the quadriceps, as well as the tolerance to the patient's symptoms with the functional movement (Figueroa, 2016; Malliaras, 2015; Schwartz, 2015). This test also can provide information on the motor control pattern utilized by the patient to accomplish the task. The sports clinical specialist should be looking for frontal plane deviations such as weight shift, knee valgus, increased hip internal rotation, and/or foot pronation (Brumitt, 2015).

Question 3 for Case Scenario 1

The athlete has been experiencing pain over the past six months and has completely rested for three weeks. Her MRI showed some moderate tendon thickening at the inferior pole of the patella. Her pain returned immediately after the rest period.

Considering the above objective measures from Question 2, what would be the typical prognosis regarding the expected minimum amount of time it would take for this athlete to return to volleyball?

a) Six weeks
b) 12 weeks
c) 18 weeks
d) 24 weeks

The correct answer is **b**.

The sports clinical specialist needs to be able to understand the athlete's tissue pathology, time for healing, workload, and nutritional components to estimate a prognosis (Figueroa, 2016; Malliaras, 2015; Schwartz, 2015; Reinking, 2016; Everhart, 2017). In this case, the patient has reported symptoms for over six months, which categorizes this patient at the chronic level. This can be confirmed with the MRI results. Due to the chronicity of this condition, the best outcome for this patient is likely to be in 12 weeks at a minimum but may be up to six months.

Question 4 for Case Scenario 1

Which of the following would be most likely included in the plan of care?

a) Hamstring stretching, quadriceps stretching, proximal hip strengthening, and eccentric exercises
b) Jump training, hamstring strengthening, quadriceps stretching, and modalities as needed
c) Quadriceps strengthening and stretching, IT band stretching, and iontophoresis to the anterior knee
d) Core strengthening, hamstring stretching, ice massage to the anterior knee, and proximal hip strengthening

The correct answer is **a**.

The sports clinical specialist needs to be able to identify the best available evidence and establish a plan of care where they select and prioritize specific interventions based on the impairments and activity limitations that the patient presents with. In this case, the patient had limited hamstring flexibility as evidenced by her active straight leg raise, limited quadriceps flexibility as evidenced by her positive Thomas Test, weak quadriceps, and proximal hip as evidenced by her poor single-leg squat test. Several authors have identified eccentric exercises, stretching of shortened muscles, and general strengthening of lower extremity muscles to be best practice for patients with patellar tendinosis (Peers, 2005;

Figueroa, 2016; Malliaras, 2015; Schwartz, 2015; Reinking, 2016; Biernat, 2014; Kountouris, 2007; Rodrigues-Merchan, 2013; Rutland, 2010; Muaidi, 2020; Everhart, 2017).

References

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Brumitt J, Jobst E. Physical Therapy Case Files, Sports. McGraw-Hill Education, 2015.

Everhart JS, Cole D, Sojka JH, et al. Treatment Options for Patellar Tendinopathy: A Systematic Review. Arthroscopy, April 2017.

Figueroa D, Figueroa F, Calvo R. Patellar Tendinopathy: Diagnosis and Treatment. Journal of the American Academy of Orthopaedic Surgeons, December 2016.

Kountouris A, Cook J. Rehabilitation of Achilles and Patellar Tendinopathies. Best Practice & Research Clinical Rheumatology, April 2007.

Malliaras P, Cook J, Purdam C, Rio E. Patellar Tendinopathy: Clinical Diagnosis, Load Management, and Advice for Challenging Case Presentations. Journal of Orthopaedic & Sports Physical Therapy, November 2015.

Muaidi QI. Rehabilitation of Patellar Tendinopathy. Journal of Musculoskeletal Neuronal Interactions, December 2020.

Peers KHE, Lysens RJJ. Patellar Tendinopathy in Athletes: Current Diagnostic and Therapeutic Recommendations. Sports Medicine, 2005.

Reinking MF. Current Concepts in the Treatment of Patellar Tendinopathy. International Journal of Sports Physical Therapy, December 2016.

Rodriguez-Merchan EC. The Treatment of Patellar Tendinopathy. Journal of Orthopaedics and Traumatology, June 2013.

Rutland M, O'Connell D, Brismée JM, et al. Evidence-supported Rehabilitation of Patellar Tendinopathy. North American Journal of Sports Physical Therapy, September 2010.

Schwartz A, Watson JN, Hutchinson MR. Patellar Tendinopathy. Sports Health, September-October 2015.

Warden SJ, Kiss ZS, Malara FA, et al. Comparative Accuracy of Magnetic Resonance Imaging and Ultrasonography in Confirming Clinically Diagnosed Patellar Tendinopathy. American Journal of Sports Medicine, March *2*007.

Case Scenario 2

A 28-year-old serviceperson on active military duty comes in for a visit via direct access one day after sustaining a left ankle injury. The patient enters the clinic without an assistive device. The patient reports playing touch football in low-cut athletic shoes during a squadron picnic. The patient injured the left ankle after jumping up to catch a football and landing incorrectly (ankle inversion mechanism). The patient reports feeling an immediate pop but was able to walk off the field. The patient reports that the left ankle edema began within one hour of injury, and he/she noticed bruising later that night. The physical therapist's objective findings include moderate left lateral ankle edema and ecchymosis, antalgic gain with a decreased left stance phase, decreased ankle range of motion (especially dorsiflexion and inversion), positive ankle anterior drawer and talar tilt test, and tenderness to light palpation along the left distal fibular bone (tip) and lateral ankle ligaments.

Question 1 for Case Scenario 2

When working within the military medical system, a physical therapist may order radiographs directly. Which objective finding would be the most helpful in deciding if radiographs are needed in this case?

a) Immediate pop with landing in an inverted ankle position
b) Significant edema and ecchymosis in the ankle
c) Antalgic gait noted in stance phase
d) Distal fibular tenderness

The correct answer is **d**.

Distal fibular tenderness is one sign listed among the Ottawa Ankle Rules for radiograph ordering (Gomes, 2020).

Question 2 for Case Scenario 2

Assuming a lateral ankle sprain, which objective finding would be the least helpful in determining the severity of the sprain?

a) Antalgic gait severity
b) Edema severity

c) Ecchymosis severity
d) Ligament laxity severity

The correct answer is **a**.

Severe antalgic gait may be present even in Grade I sprains (Wells, 2019).

Question 3 for Case Scenario 2

Radiographs revealed a non-displaced left fibular avulsion fracture. After the patient's primary care provider reviewed the images, a controlled ankle-motion boot was issued. What weightbearing status will the patient likely be placed on?

a) Non-weightbearing
b) 25% partial weightbearing
c) 50% partial weightbearing
d) Weightbearing as tolerated

The correct answer is **d**.

Fibular avulsion fractures are treated similarly to ankle sprains (Nishima, 2020).

Question 4 for Case Scenario 2

The patient reports a history of multiple left lateral ankle sprains over the years with seemingly full recovery. Which treatment has the least positive impact on having a good prognosis of avoiding future reinjury?

a) Neuromuscular reeducation exercises
b) Manual therapy
c) Progressive therapeutic strengthening exercises
d) Ankle bracing

The correct answer is **c**.

According to Doherty and colleagues (Doherty, 2017), manual therapy had the least evidence for reducing risk of future reinjury.

References

Doherty C, Bleakley C, Delahunt E, Holden S. Treatment and Prevention of Acute and Recurrent Ankle Sprain: an Overview of Systematic Reviews With Meta-Analysis. British Journal of Sports Medicine, January 2017.

Gomes YE, Chau M, Banwell HA, et al. Adequacy of Clinical Information in X-ray Referrals for Traumatic Ankle Injury With Reference to the Ottawa Ankle Rules — A Retrospective Clinical Audit. PeerJ, October 2020.

Nasima M, Idarraga AJ, Wu KJ, et al. Effect of Leg Length–Evening Device on Perceived Balance in Patients Wearing a Controlled Ankle Motion Boot. Foot & Ankle Orthopaedics, July 2020.

Wells B, Allen C, Deyle G, Croy T. Management of Acute Grade II Lateral Ankle Sprains With an Emphasis on Ligament Protection: A Descriptive Case Series. International Journal of Sports Physical Therapy, June 2019.

Case Scenario 3

A 32-year-old female triathlete presents with no significant complaints except minor low back pain at the end of her run. She notes considerable systemic fatigue throughout the day and medical workup reveals no cardiac history or implications. She is training for a sprint triathlon (0.5-mile swim, 25K cycle, 5K run), with the competition in eight weeks. Her career is a full-time elementary music teacher and mother of two children, ages 6 and 8. She has a referral for low back pain management, but she would like a consultation for injury prevention and optimization of her performance in her upcoming competition. She is training every day, either on one triathlon component or two, per the table below.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Run 10-15K	Bike 20-30K	Swim 1 mile before work Run 4-8K after work	Bike 20-30K	Swim 1 mile before work Bike 15-20K after work	Swim 1-1.5 mile before work	“Brick day” (run immediately following bike) Bike 20-30K Run 3-5K

Question 1 for Case Scenario 3

The female triathlete must balance exercise training and nutritional intake to ensure adequate energy availability by consuming approximately how many kcal/day with the associated macronutrient intake?

a) 1,200-1,500 kcal/day; 10%-35% carbohydrate, 45%-60% protein, 5%-10% fat
b) 1,500-1,800 kcal/day; 25%-35% carbohydrate, 15%-25% protein, 25%-30% fat
c) 1,600-3,500 kcal/day; 45%-60% carbohydrate, 10%-35% protein, 25%-30% fat
d) 3,500-5,000 kcal/day; 10%-35% carbohydrate, 45%-60% protein, 5%-10% fat

The correct answer is **c**.

Every athlete needs to eat sufficient calories to fuel daily and exercise needs. Recommended macronutrients for the female athlete includes 45%-60% of her intake as carbohydrates, up to 35% as protein with appropriate timing to optimize muscular metabolism, and 25%-30% fat intake (Thomas, 2016).

Question 2 for Case Scenario 3

Based on the athlete's training schedule, which is the best timing for her to intake carbohydrates and protein within 30 minutes following her workout?

a) Sunday's long run
b) Monday's and Wednesday's cycling session
c) Tuesday's and Thursday's swim session
d) Saturday's cycling session

The correct answer is **c**.

Due to the short inter-workout time frame and relatively long-duration training sessions, it is best to consume carbohydrates within 30 minutes after exercise to maximize recovery and readiness for the next training session (Thomas, 2016).

Question 3 for Case Scenario 3

During the medical interview she reports consuming approximately 1,000-1,500 calories per day in two main meals and an apple at lunchtime. She consumes approximately one gallon of water per day and sleeps about five to six hours each night with varying bedtimes secondary to workload and training schedule. She often drinks half caffeinated coffee while grading on the computer after her children go to bed at 8 p.m. She has difficulty going to sleep when retiring, so she watches television until she falls asleep. She often awakens at

night at least once to use the bathroom. She arises between 5 and 7 a.m. depending on her morning training schedule.

The physical therapist should give this female athlete the following initial recommendations regarding her sleep hygiene:

a) Increase sleep duration to eight hours per night and switch to an herbal tea while grading
b) Increase sleep duration to seven or eight hours per night and attempt to go to bed and arise at the same time each day
c) Maintain sleep duration and schedule but switch to fully decaffeinated coffee at night
d) Maintain sleep duration and schedule but limit screen time (computer and television) for at least 30 minutes before bed

The correct answer is **b**.

Techniques to improve sleep hygiene include sleeping at least seven to eight hours per night; maintaining a consistent sleep schedule, as in going to bed and arising from bed about the same time every day; limiting screen time at least 30 minutes before bed; and avoid caffeine at night (Vitale, 2019).

Question 4 for Case Scenario 3

The athlete rates her low back pain as minor, 2/10 pain (0-10 scale), noting it is intermittent following her long run and regularly associated with urinary leaking. The physical therapist decides on further screening. What is the best screening tool to provide in addition to the Oswestry Disability Index already completed?

a) Pelvic Girdle Questionnaire
b) Physical Activity Readiness Questionnaire (PAR-Q)
c) Relative Energy Deficiency in Sports Questionnaire (RED-S)
d) The Triad Questionnaire

The correct answer is **a**.

Urinary leaking may occur postpartum and be associated with lumber spine pain. Based on her history of bearing two children, level of fitness, and symptoms described above, prudent consideration would be to assess her pelvic floor condition (Simmonds, 2022).

References

Simonds AH, Abraham K, Spitznagle T. Clinical Practice Guidelines for Pelvic Girdle Pain in the Postpartum Population. Journal of Women's Health Physical Therapy. January-March 2022;46(1):E1-38.

Thomas DT, Erdman KA, Burke LM. Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and Athletic Performance. Journal of the Academy of Nutrition and Dietetics, March 2016.

Vitale KC, Owens R, Hopkins SR, Malhotra A. Sleep Hygiene for Optimizing Recovery in Athletes: Review and Recommendations. International Journal of Sports Medicine, August 2019.

Case Scenario 4

A 21-year-old collegiate soccer player sustained a grade II right hamstring strain involving primarily the biceps femoris one week ago. The injury occurred in the final 20 minutes of the match as he was sprinting to get to the ball. Examination findings, 10 days following the injury, include: mild tenderness along the mid-portion of the biceps femoris (five to eight inches from the proximal attachment); hamstring flexibility is lacking 10 degrees (at 75 degrees) compared with the uninvolved leg. Knee flexion strength using a handheld dynamometer measured in prone at 45 degrees; knee flexion is 45 pounds of pain-free force on the right knee versus 65 pounds on the left. He can jog comfortably at a pace of nine minutes per mile for 10-15 minutes. The athlete would like to be able to resume playing in 14 days.

Question 1 for Case Scenario 4

Which combination of interventions is most appropriate to expedite safe return to play?

a) Eccentric strengthening, laser therapy, and proprioceptive neuromuscular facilitation
b) Intramuscular stimulation, instrument assisted soft tissue mobilization, and isometric strengthening
c) Progressive running, stretching, strengthening, and stabilization exercises
d) Progressive sprinting program, neural tissue mobilization, and trigger point dry needling

The correct answer is **c**.

The only answer that provides evidence-based interventions to address all deficits in "c." Each of the other options includes an intervention that lacks research support or includes limited exercise (e.g., only isometric strengthening in "b") (Martin, 2022; Silvers-Granelli, 2021).

Question 2 for Case Scenario 4

Four weeks following injury, the athlete has symmetrical hamstring flexibility, can sprint, and can run 1 mile at his preinjury speed. His injured leg has isometric knee flexion strength at 98% of his uninjured leg. He has resumed unrestricted practice with his team, to include participation in intra-squad scrimmaging with a report of no symptoms following the scrimmage. What intervention should the athlete incorporate into his strength and conditioning program to reduce the likelihood of reinjury?

a) Double-leg bridges
b) Nordic hamstring exercise
c) Rear-leg elevated squats
d) Short-distance sprints (<30 yards)

The correct answer is **b**.

Of the available options at this stage of the athlete's recovery, the Nordic hamstring exercise is most appropriate. Double-leg bridges are too low-level, rear-leg elevated squats demand greater muscular involvement of non-hamstring musculature, and the athlete is already sprinting at his preinjury speed (Martin, 2022; Silvers-Granelli, 2021).

References

Martin RL, Cibulka MT, Bolgla LA, et al. Hamstring Strain Injury in Athletes. Journal of Orthopaedic and Sports Physical Therapy, March 2022.

Silvers-Granelli HJ, Cohen M, Espregueira-Mendes J, Mandelbaum B. Hamstring Muscle Injury In The Athlete: State of the Art. Journal of ISAKOS, May 2021.

Case Scenario 5

A 68-inch-tall, 16-year-old male cross-country runner presents with a sacral stress fracture. This is his second stress fracture; earlier he had a metatarsal stress fracture. At the time of his first stress fracture, he weighed 145 pounds; his current weight is 135 pounds. The physical therapist suspects relative energy deficiency in sports, or RED-S.

Question 1 for Case Scenario 5

Which of the following statements regarding this runner and RED-S is most likely true?

a) He has an eating disorder.
b) It is unlikely RED-S, as this condition affects female runners.
c) RED-S can affect multiple body systems.
d) His fractures are the result of overtraining.

The correct answer is **c**.

People tend to think that RED-S occurs only in women, but it can affect men as well. In addition, while overtraining and RED-S share symptoms and pathways, RED-S is not only the result of overtraining or of an eating disorder, but rather of insufficient nutrition to support activity levels (Vopat, 2021; Mountjoy, 2018; Stellingwerff, 2021; Nativ, 2021).

Question 2 for Case Scenario 5

Energy availability relative to fat-free mass, can be defined as:

a) The amount of energy available for exercise
b) Energy intake minus the energy used for exercise
c) The amount of energy resulting from absorption in the intestine
d) Total amount of energy intake in a day

The correct answer is **b**.

While this seems like a straightforward definition, grasping this concept is important for reading and understanding the literature in this area. Energy availability is relative to a person's body composition and as such will vary from one person to another. Therefore, no specific caloric intake is the right number for everyone (Vopat, 2021; Mountjoy, 2018).

Question 3 for Case Scenario 5

What is the recommended minimum energy availability for athletes per day in kcal/kg fat-free mass per day?

a) 15
b) 25
c) 30
d) 45

The correct answer is **d**.

Building off the last question, this provides the data to help athletes determine what the right energy availability is. It is not the same for everyone but a component of a formula that can assist providers in determining if an athlete has sufficient energy availability (Mountjoy, 2018; Melin, 2019).

References

Melin AK, Heikura IA, Tenforde A, Mountjoy M. Energy Availability in Athletics: Health, Performance, and Physique. International Journal of Sport Nutrition and Exercise Metabolism, March 2019.

Mountjoy M, Sundgot-Borgen J, Burke L, et al. International Olympic Committee (IOC) Consensus Statement on Relative Energy Deficiency in Sport (RED-S): 2018 Update. International Journal of Sport Nutrition and Exercise Metabolism, July 2018.

Nattiv A, De Souza MJ, Koltun KJ, et al. The Male Athlete Triad-A Consensus Statement From the Female and Male Athlete Triad Coalition Part 1: Definition and Scientific Basis. Clinical Journal of Sport Medicine, July 2021.

Stellingwerff T, Heikura IA, Meeusen R, et al. Overtraining Syndrome (OTS) and Relative Energy Deficiency in Sport (RED-S): Shared Pathways, Symptoms and Complexities. Sports Medicine, November 2021.

Vopat L, Mackay MJ, Vopat BG, Mulcahey MK. Relative Energy Deficiency in Sport: An Orthopaedic Perspective. Journal of the American Academy of Orthopaedic Surgeons, January 2021.

Case Scenario 6

A 25-year-old woman who underwent right anterior cruciate ligament reconstruction six weeks ago using a bone-patella tendon-bone, or BPTB, graft is referred to physical therapy. She injured her right knee three months ago while downhill skiing. Examination shows a quadriceps avoidance gait pattern during ambulation on the floor and stairs. Active range of motion in the right knee is 2 degrees, 0 degrees, and 130 degrees. In the left knee it is 8 degrees, 0 degrees, and 146 degrees. Muscle recruitment in the quadriceps is good on the right, with visible definition and no extension lag. The athlete participated in tennis, volleyball, softball, and cycling before undergoing this surgery.

Question 1 for Case Scenario 6

Prior to undergoing the ACL reconstruction, the patient asked the sports clinical specialist about the difference in outcomes of the surgery when using a hamstring autograft, a BPTB autograft, or a patellar tendon allograft. Which of the following levels of evidence should the sports clinical specialist have offered as the greatest strength regarding the influence of graft choice on outcome?

a) Clinical experience
b) Randomized clinical trials
c) Observational studies
d) Case studies

The correct answer is **b**.

Sports clinical specialists need to be able to sift through the volumes of information available to determine and develop rehabilitation programs that will maximize the patient's outcome. The physical therapist also must be able to help patients interpret the available information. Of the options listed above, the randomized clinical trial produces the strongest evidence for cause-and-effect relationships.

Reference

Lloyd DG. Rationale for Training Programs to Reduce Anterior Cruciate Ligament Injuries in Australian Football. Journal of Orthopaedic and Sports Physical Therapy, November 2001.

Case Scenario 7

A 15-year-old high school linebacker tore his ACL and had a positive Lachman's and Pivot Shift on the field. The following day an in office examination continues to reveal a positive Lachman. It is difficult to obtain a pivot shift as the athlete is now guarded due to pain. Medial and lateral joint line pain are distinct and present on palpation/examination. The team physician has ordered an MRI to evaluate the extent of the ACL injury and determine if there is also a meniscal injury.

Question 1 for Case Scenario 7

MRI results demonstrate a torn ACL but do not demonstrate any type of meniscal injury. The sensitivity, specificity, positive predictive value, and negative predictive value for detecting meniscal injuries using an MRI for pediatric and adolescent athletes with acute ACL injuries are as follows:

	Lateral Meniscal Tears	Medial Meniscal Tears
Sensitivity	51.0%	83.2%
Specificity	86.5%	80.6%
Positive predictive value	78.3%	62.3%
Negative predictive value	65.0%	92.5%

The athlete continues to demonstrate both medial and lateral joint line pain. Which is the most likely possibility when you compare the patient's symptoms with the MRI results?

a) Lateral meniscus results demonstrate a false negative.
b) Lateral meniscus results demonstrate a false positive.
c) Medial meniscus results demonstrate a false negative.
d) Medial meniscus results demonstrate a false positive.

The correct answer is **a**.

When MRI is used to diagnose a meniscus tear, LMTs account for the highest rate of false negatives among types of tears (Dawkins, 2022). Therefore, all athletes should be educated preoperatively of the possibility of finding an undiagnosed lateral meniscus tear during ACL reconstruction surgery.

Reference

Dawkins BJ, Kolin DA, Park J, et al. Sensitivity and Specificity of MRI in Diagnosing Concomitant Meniscal Injuries With Pediatric and Adolescent Acute ACL Tears. Orthopaedic Journal of Sports Medicine, March 2022.

Case Scenario 8

A 13-year-old hockey player sustains a potential cervical spine injury during a game. The EMTs arrive and request that the helmet be removed on-site instead of in the emergency room. The sports physical therapy clinical specialist is concerned about the potential movement of the spine during equipment removal and alignment during transport.

Question 1 for Case Scenario 8

Which is the best recommendation for this situation?

a) The sports team's medical staff removes the helmet on-site but leave the pads
b) The sports team's medical staff removes the helmet and the pads on-site

c) The PT goes with the athlete and removes the helmet and equipment in the emergency room
d) The sports team's medical staff takes off only the facemask an educate the emergency team that the spine should be imaged prior to removal

The correct answer is **b**.

Without prior planning of who would continue to provide sideline care if the PT left with the player (risking that another athlete could be injured without the PT available to provide care) and without training the emergency room team on proper equipment removal, it is safest for the team's trained medical staff to remove the equipment, even with the chance that some cervical motion will occur. Taking off both the helmet and pads will provide the most neutral spine position for transport (Mills, 2020).

Reference

Mills BM, Conrick KM, Anderson S, et al. Consensus Recommendations on the Prehospital Care of the Injured Athlete With a Suspected Catastrophic Cervical Spine Injury. Clinical Journal of Sport Medicine, July 2020.

Case Scenario 9

Upon review of the literature, the sports physical therapist finds a cross-sectional study that identifies the odds of a football player with an ACL tear of having a concomitant meniscus injury to be 1.33 (95% CI 1.22-1.46) as compared with a non-football player with an ACL tear.

Question 1 for Case Scenario 9

What is the most appropriate interpretation of this data?

a) Meniscus injury with an ACL tear is 1.33 times greater in football players.
b) Meniscus injury with an ACL tear is 1.33 times less likely in non-football players.
c) Meniscus injury incidence increases by 33% in football players with an ACL tear.
d) Meniscus injury occurs in 33% of football players.

The correct answer is **a**.

An odds ratio is significant and interpretable if the entire confidence interval is either completely above or below 1.0, with greater than 1.0 indicating a higher likelihood and lower than 1.0 indicating a lower likelihood. A number above 1.0 is that many more times likely to occur, and a number below 1.0 is that many times less likely (Bland, 2000; Hoppe, 2017; Szumilas, 2010; Tenny, 2021).

References

Bland JM, Altman DG. Statistical Notes. The Odds Ratio. BMJ, May 2000.

Hoppe FM, Hoppe DJ, Walter SD. Odds Ratios Deconstructed: A New Way to Understand and Explain Odds Ratios as Conditional Risk Ratios. Journal of Clinical Epidemiology, February 2017.

Szumilas M. Explaining Odds Ratios. Journal of the Canadian Academy of Child and Adolescent Psychology, August 2010.

Tenny S, Hoffman MR. Odds Ratio. In: StatPearls. StatPearls Publishing, 2021.

Case Scenario 10

A 22-year-old female BMX rider was involved in a collision on the track with another rider as they entered the final turn of her qualifying race. The team's sports physical therapist is the first to the scene, and emergency services have been called. Upon arrival at the track, the athlete is found in a side-lying position on the track having appeared to land on her handlebars.

Question 1 for Case Scenario 10

What is the next step in the initial assessment?

a) Clear potential cervical spine injuries
b) Confirm the scene is safe from other riders
c) Assess for consciousness using Maddock's signs
d) Contact the race coordinator to stop the race

The correct answer is **b**.

Scene safety is always a priority to ensure there are not additional injuries and the scene is safe to work in for responders (Klein, 2022; Jenkins, 2011).

References

Jenkins WA. Scene Safety Situational: Awareness Saves Lives. Journal of Emergency Medical Services, May 2011.

Klein TA, Tadi P. EMS Scene Safety [Updated]. In: StatPearls [Internet]. StatPearls Publishing, May 2022.

Question 2 for Case Scenario 10

The scene has been secured and is safe to enter the course. Upon initial assessment, the athlete is found to be conscious with helmet intact, and alert and oriented x 3. Her primary complaints are right shoulder pain, and right upper flank pain with guarding and chest tightness. She is observed to be in acute distress with labored breathing. The right shoulder appears to be dislocated, and the athlete reports limited ability and is apprehensive to move the shoulder.

Based on these initial findings, what should be the primary physical assessment or treatment?

a) Assess shoulder injury and relocate if dislocated
b) Clear potential cervical spine injuries
c) Check vitals and monitor serially
d) Conduct assessment of chest wall and abdomen

The correct answer is **c**.

It is important to monitor vitals beginning at arrival on the scene and throughout treatment (Potter, 2012; Hugeliu, 2021). The sports physical therapy clinical specialist provides the athlete's vitals to EMS on their arrival to help determine whether the injured athlete is in a stable condition or the condition is worsening.

References

Hugeliu K, Lindlberg J, Ekh L, Ortenwall P. Vital and Clinical Signs Gathered Within the First Minutes After a Motorcycle Accident on a Racetrack: An Observational Study. Sports Medicine – Open, August 2021.

Potter B, Sibold J. Vital Signs Trending and the Rule of 100s. Athletic Training and Sports Health Care, June 2012.

Question 3 for Case Scenario 10

On examination, the athlete's vitals are:

- HR: 115 and weak
- Respiratory rate: 18
- BP: 115/60
- Tracheal positioning: shifted to the left
- Tender on palpation of right ribs 5-7 and sternum

- Guarding and tender on palpation over right flank
- Right shoulder dislocation and possible AC fracture
- No central cervical spine tenderness

During the serial assessment of vitals, the athlete's status declines. This information is provided to the paramedics, and the decision is made to transport the athlete via ambulance to the hospital.

Based on the findings noted, what would be the most critical differential diagnosis to consider?

a) Shoulder dislocation
b) Lacerated liver with internal bleeding
c) Rib fracture and pneumothorax
d) Thoracic spine fracture

The correct answer is **b**.

A lacerated liver poses the most life-threatening risk due to internal bleeding. This requires immediate medical attention and should not be missed. Other items, including a pneumothorax, need urgent attention but can be managed more easily.

References

Balakrishanan A, Abbadi R, Oakland K, et al. Outcomes Following Liver Trauma in Equestrian Accidents. Journal of Trauma Management & Outcomes, August 2014.

Daisero DC. Closed Liver Injury. Clinical Sports Medicine, April 2013.

Juyia RF. Return to Play After Liver and Spleen Trauma. Sports Health, May 2014.

Meehan WP, Mannix R. A Substantial Portion of Life-Threatening Injuries are Sports Related. Pediatric Emergency Care, May 2013.

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 panels 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

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ABPTS
American Board of Physical Therapy Specialties

Wound Management Candidate Guide Addendum

Wound Management Candidate Guide Addendum

ABPTS
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Initial Certification Deadlines for Wound Management

July 1 Application deadline
Aug. 31: Reapplication deadline
Sept. 30: Final application 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 three years prior to application submission.

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 ABPTRFE-accredited post-professional wound management clinical residency completed within the last 10 years that has a curriculum plan reflective of the Description of Specialty Practice. 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, if 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.apta.org.

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 an exam content summary that includes the percent of exam questions for each of the major components of the DSP.

Content Area	% of Exam
I. Knowledge Areas 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%)	32%
II. Professional Roles and Responsibilities	5%
III. Patient and Client Management Expectation a. Examination (12%) b. Evaluation (13%) c. Diagnosis (12%) d. Prognosis (6%) e. Interventions (14%) f. Outcomes (6%)	63%
Total:	**100%**

Medical Conditions

The following list represents medical conditions with integumentary manifestations that may be represented on the specialty exam but 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, effects of medications used to treat the disease, clinical presentation, evidence-based plan of care, and expected outcome of treatment.

Systemic Conditions:

- Diabetes
- Vascular disease:
    - Arterial
    - Venous
    - Lymphatic
- Cardiopulmonary disease:
    - Congestive heart failure
    - Cardiomyopathy
    - Chronic obstructive pulmonary disease
    - COVID-19
    - Cystic fibrosis.
    - Post coronary artery bypass graf
    - Post heart/lung transplant
- Neurologic disorder:
    - Polyneuropathy
    - Cerebrovascular accident
    - Peripheral nerve damage
    - Herpes zoster
    - Demyelinating disorders
    - Parkinson disease
- Organ failure
- Drug induced hypersensitivity syndromes
- Cancer:
    - Basal cell carcinoma
    - Cutaneous lymphoma
    - Kaposi sarcoma
    - Lymphoma
    - Marjolin's ulcer
    - Melanoma
    - Post-radiation for any cancer
    - Squamous cell carcinoma

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
- Kennedy ulcer/Skin Changes at Life's End (SCALE)

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 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 physical therapist 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 actual examination questions.

Case Scenario 1

A 59-year-old patient is referred for "physical therapy to irrigate abdominal wound." The patient's wound history began with a ventral hernia repair surgery 10 days ago. They had been discharged home but 48 hours later they were readmitted through the emergency department for incision dehiscence with signs of infection. The patient's hospital chart indicates fever with maximum temperature of 39˚C/102.2°F and that mobility is limited to bathroom only, requiring minimal assistance of nursing. The examination is notable for slow response time in answering questions, open areas at both ends of the 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 superior opening is 1.5 cm x 1.0 cm and the inferior 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, hypertension, chronic kidney disease, and multiple episodes of skin abscesses. The patient's social history includes receipt of disability benefits and depleted savings due to health care costs. The patient lives in a two-story house with a spouse and three adult children living nearby. The patient 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?
    a) Length and width according to clock notation corresponding to horizontal and vertical measurements
    b) Maximum diameter, diameter perpendicular to it, and maximum depth of each opening
    c) Maximum diameter of each opening
    d) 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 does not reflect current best practice for wound management, 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 Scenario 2

A 73-year-old patient presents with a non-healing wound of more than six months duration on the right heel. The wound has recently started draining, making it difficult for the patient to work and wear their usual athletic shoes. The patient ambulates with a walker at limited household distances with an abnormal gait pattern due to right ankle impairments. They report poor endurance due to cardiovascular disease.

The patient lives with their spouse in a one-story home with three steps to enter. Because of the spouse'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 their 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 dehisced incision and ankle hardware
- History of smoking (40 pack-years), 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 (controls blood glucose levels)
- Recently completed course of antibiotics

Physical examination:

- Communication, cognition, visual perception: Patient is alert and oriented x 4, 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 ft. 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: 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 plantarflexion: left 0-50 deg; right 15-30 deg. Great toe extension bilaterally: 0-10 deg

- Strength: 4 to 4+/5 gross in all upper extremity and lower extremity muscle groups except 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 mild odor
- 3+ pitting edema of right lower extremity, 2+ of the left
- Pain: No complaints
- Sensation: Loss of sensation in bilateral feet with no response to the 5.07 monofilament but does respond to the 6.15 monofilament
- Wound assessment:
    - Right fourth toe: 0.7 cm x 0.5 cm, 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 0.5 cm 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 PO2: 36mmHg
- Fasting blood glucose: Usually range from 130-160, lately 250-280 with no change in medication; last Hb1Ac was 7.9
- Cultures: Not available
- Peak plantar pressures: Not available

1. 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 signs of infection associated with any wound is an important component of a comprehensive integumentary assessment or screening. Patients with diabetes often have complications of CHF and renal failure. This patient does have some signs of CHF for which he is being treated 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 wound management clinical specialist needs to recognize signs of a variety of infectious pathologies to make the appropriate referral to a medical specialist, and to help determine the need for topical antimicrobial dressings and/or systemic antibiotics.

The patient was referred to a dermatologist for treatment of the suspected cellulitis. The therapist's 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. The patient was also 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.

2. 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 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.

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

    The correct response is b. Changes in the lower extremity, especially 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. 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.

4. 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 are at risk for developing diabetic foot ulcers 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 soft tissue changes of the heel after plastic reconstruction are significant indicators that the patient should have been wearing protective footwear rather than athletic shoes.

5. A physical therapist is treating a patient with a rocker bottom foot deformity who regularly wears an athletic shoe during exercise. The patient complains of midfoot pain and the therapist notes that the midfoot is slightly red and warm to the touch compared with the opposite foot. What is the 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 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 results 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 daily care to prevent

complications, the therapist 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.

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/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 clinical specialist provided care that was 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 report should begin with your background and introduction, to include the rationale for selecting the case.
- The 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, and the case reviewer will consider the relevance of these references when evaluating the case report.

The case report should indicate contemporary, specialist practice as depicted in the DSP for wound management physical therapy. The case reviewer 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 case reviewer 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 report must be submitted along with the application to sit for the wound management clinical specialty examination.
2. The case report will be evaluated within three months of submission.
3. A case report that does not meet screening criteria will be returned with an explanation.
4. A case report that is not rated as competent by the case reviewer will be returned with comments.
5. If the initial case report is rated as not meeting the screening criteria or competent, it can be revised and resubmitted or replaced with another case. Only one revision will be allowed.
6. Each case report will be reviewed by two trained case reviewers in the specialty area. Disagreements between the two reviewers will be referred to the specialty council for a third review.
7. A candidate whose case report is not rated as competent may submit a written request to ABPTS for reconsideration per existing ABPTS policy and procedures for reconsideration requests.

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:
    - 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.

Case Report Checklist and Required Criteria

Please see scoring rubric for specific details of required criteria.

Case Report 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: Discussion of the uniqueness and importance of the case.
    - Case Description: The patient's main concerns and important clinical findings, the main diagnoses, and interventions.
    - Outcomes: Brief description of the outcomes.
    - Conclusion: Discussion of the main lessons to be learned from this case report.

- The abstract does not include citations.

4. Introduction: Briefly summarize *why* this case is unique to the wound management specialty; include medical literature references.
5. Timeline of Episode of Care: Using a table or figures, provide a timeline of the patient's care, beginning with medical history and progressing through outcomes.
6. Case Rationale/Purpose: Present a rationale for the case, including diagnosis, comorbidities, and red flags. Provide insight regarding the perspective of specialty practice, and the rationale for the case being representative of specialty practice.
7. Narrative of the Case (divided into parts A and B):
    - Includes the following:
        - Patient information.
        - Deidentified demographics.
        - Patient complaints, main concerns.
        - Subjective symptoms.
        - Medical, family, and psychosocial history.
        - Relevant past interventions and outcomes.
    - Describes the following aspects of examination and clinical findings:
        - Examination, systems review.
        - Tests and measures.
        - Diagnostic assessment (laboratory testing, images, questionnaires, etc.).
        - Diagnostic challenges.
        - Differential diagnosis including reasoning.
        - Prognosis.
    - Discusses the plan of care, including the following:
        - Interventions, both physical therapy and medical, including dosage, intensity, and duration.
        - Follow up and outcomes.
        - Intervention adherence.
        - Adverse and unanticipated events.
        - Changes in the plan of care as treatment progressed.
        - Patient perception of outcomes.
        - Final patient outcomes.
8. Discussion/Post-Case Reflection: Discusses the strengths and limitations in the case and plan of care, with references and discussion of the relevant medical literature.
    - Discusses the lessons learned from the case report.
9. Conclusion: Offers the most important findings from the case and suggestions for future patient care and/or research.

10. References: All documented citations should be less than 10 years since publication unless the article is considered a seminal study. References should be provided throughout all sections of the case report supporting all clinical decision making and intervention techniques. References and citations should be provided using American Medical Association formatting. Course manuals are not accepted as supporting references.
11. Acknowledgements: Mentions funding support or other conflicts of interest.

Format

Represents specialist practice and is professional in appearance, using correct grammar, spelling, and punctuation.

Additional information on Case Report (CARE) Guidelines.

Additional Information for Case Report

Areas of Reflection

The applicant is to provide reflection within each section of the case report. 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 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 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 non-passing score:

- Failure to provide required reflection within each section of the case report.
- 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 throughout the case report to support clinical decisions and treatment interventions.
- Use of poor grammar and sentence structure, misspelled words, and incorrect punctuation.

Case Report Scoring Rubric

Case Report Criteria	Pass	
Title	☐ Yes	☐ No
A descriptive and succinct **title** that describes the phenomenon of greatest interest (symptom, diagnostic test, diagnosis, intervention, outcome). Ends with ": a case report." **Clearly and concisely describes the case topic.**		
Abstract	☐ Yes	☐ No
A brief summary of 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, (3) outcomes, and (4) discussion/conclusion: main lessons to be learned from this case report.		
Key Words	☐ Yes	☐ No
Provides 2-5 key words that identify important topics covered by the case report.		
Introduction	☐ Yes	☐ 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 case report articles.		
Timeline of Episode of Care	☐ Yes	☐ 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.		
Purpose Statement	☐ Yes	☐ No

- Presents a rationale for the case, e.g., diagnosis within those seen most often by a wound management clinical specialist or whose treatment is different from that for a general patient, including comorbidities and the presence of "red flags."
- Provides insight regarding the perspective of specialist practice.
- Represents wound management specialty practice.
- Provides rationale for the case, clearly outlining the indicators that make it reflective of wound management specialty practice.

Narrative of the Case	☐ Yes	☐ No

- Presents patient concerns (chief complaints) and relevant demographic patient information.
- Describes clinically relevant past medical history, pertinent comorbidities, and important physical examination findings.

Describes decision-making and rationale for the following:

- Examinations: Systems review/test and measures (diagnostic assessments); discusses diagnostic testing and results.
- 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.
- 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.
- Prognosis:
  - Includes a predicted optimal level of improvement in function and the amount of time needed to reach that level.
  - Reflects on the following:
    - Favorable and unfavorable prognostic indicators.
    - Patient's perceptions (i.e., cognitive/affective status).
    - Possible contributing factors.
- Interventions: Describes the types of intervention (pharmacologic, surgical, preventive, lifestyle) and how the interventions were administered (dosage, strength, duration, frequency). Tables or figures may be used.
- Follow-Up and Outcomes: Describes the clinical course of the episode of care during follow-up visits including the following:
  - Intervention modification, interruption, or discontinuation.

○ Intervention adherence and how this was assessed. • Adverse effects or unanticipated events.		
Discussion	☐ Yes	☐ No
Describes case management, including strengths and limitations with scientific references.		
Conclusion/Post Case Reflections	☐ Yes	☐ No
Offers the most important findings from the case and suggestions for future directions.		
References	☐ Yes	☐ 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 **all** sections of the case reflection using AMA formatting and supporting all clinical decision-making and intervention techniques. Course manuals are not accepted as supporting references.		
Acknowledgements	☐ Yes	☐ No
Mentions funding support or conflicts of interest, if applicable.		
Format	☐ Yes	☐ 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 use the scoring rubric to ensure all points are included in your case report. The brief points below provide a general guide for developing the case report; however, this list is not all inclusive and applicants should review and follow the full case report instructions in preparing their case report.

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.
- What is the rationale or purpose for selecting this case?
    - 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 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/join/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/or 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/or 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 the 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

Abstract

Introduction/Background: 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.

Case Description: 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. The patient 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. Medications included five-six pain killers (Vicodin) per day and the patient was unable to work because of the 6-8/10 pain and the daily care that the wounds required. Functionally, the patient remained independent in all ADLs, including gait without an assistive device. Goals were to avoid surgery to close the wounds, reduce the frequency of pain killers, and return to work about four weeks after treatment was initiated 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 during dressing removal and to promote autolytic debridement and re-epithelialization.

Outcomes: The patient responded very positively to the plan of care, and within four 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. The wounds progressed to full closure without having skin grafts and all of the patient's goals were met.

Discussion: 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 successful use of advanced dressings, NCLFUS, and multilayer compression to address the extensive, painful wounds in this patient with cutaneous PAN.

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

Introduction

Polyarteritis nodosa, or PAN, 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 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.[1] 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.[2] PAN is not a curable disorder, but it is managed with corticosteroids, methotrexate, anti-tumor necrosis factor-α agents, and, in refractory cases, methylprednisolone and rituximab.[3]

Early signs and symptoms used to diagnose PAN include the following: weight loss ≥4kg 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.[1] Signs specific to cutaneous PAN include livedoid lesions, necrotic wounds, or painful nodules without any evidence of visceral involvement.[3]

Standard care has been reported throughout the literature for the four most commonly treated types of wounds: arterial, venous, neuropathic, and pressure.[4-7] 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 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.

Timeline of Episode of Care

In large part because the patient agreed with the care plan and adhered to all components, she made excellent progress, as illustrated by the following timeline:

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 reported 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 wound closed and remodeling. Right posterior 9 cm x 7 cm.

Patient had decreased 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 of 1.2 cm x 0.3 cm that was 100% granulated and covered with 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, 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 wearing 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 the patient. The dosage had been decreased from 40 mg to 35 mg per day during the course of therapy; however, that is still significant for causing thin skin that bruises and tears easily. Guidelines are that immuno-suppressants be tapered over a period of six months and adjusted for each patient to maintain remission.[8] The patient was also encouraged to call for a follow up appointment if any drainage or skin breakdown was noted; however, no calls were received.

Narrative of Case

Patient History

The patient was a 34-year-old individual referred to the hospital outpatient physical therapy wound care clinic with a history of nonhealing bilateral lower extremity wounds present for more than one year. The referral was from the primary care physician upon the recommendation of the staff at the Mayo Clinic, Rochester, Minnesota, where the patient had been for evaluation of the 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 Cytoxan, Rituximab, 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 assistive devices and was on leave of absence from a position as an agent for the music industry, primarily because of the pain and daily care associated with the wounds. The chief complaints were intermittent 6/10 pain in both lower extremities that limited sleep at night. The pain was exacerbated to 8-9/10 with dressing changes, which the patient had been doing at home since being discharged 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 there had been no treatment prior to this vasculitic episode. A discussion of diet indicated that there was adequate protein intake to support wound healing. The patient 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 as a possible treatment strategy, and to return to work four 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+ dorsalis 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 a slight decrease in left ankle range of motion due to pain with skin stretching at the end range of dorsiflexion.

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.

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).[7] There were no signs of infection in the wound or surrounding tissue[9,10]; 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 patient's lack of physical activity due to the pain and dressings. It has also been reported that corticosteroids can contribute to the development of peripheral edema.[11] 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,[12] edema was also factored into the treatment plan.

The patient had a good understanding of the impairments associated with the disorder, although knowledge of the exact diagnosis and its complications was vague. The initial diagnosis of vasculitis was further delineated by reports from the Mayo Clinic four days after initiation of treatment, with a diagnosis of polyarteritis nodosa, a subset of the vasculitic disorders.[13] 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 as a result subsequently was very proactive in researching information about the pathophysiology and treatment of the disease. As treatment progressed, the patient was increasingly engaged in 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 infection, 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, able to perform all household duties, and able to return to work full-time. The patient agreed with all the goals and had significant input as to the timeline for meeting them.

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, interventions were based more on the expected effect they would have on the tissue at the cellular level to promote healing.

Impairment 1: Non-healing wounds with chronic inflammation.

Interventions: NCLFUS; sharp and autolytic debridement of 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 dressings upon removal.
Impairment 3: 6-10/10 pain levels.

Interventions: NCLFUS to reduce inflammation; non-adherent dressings; and 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 administered for 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 elastic wrap. The long stretch component was omitted out of concern for increasing pain levels with full 40 mmHg 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 mmHg 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.

Discussion/Post-Case Reflections

Non-contact low frequency ultrasound:

NCLFUS has been shown to promote wound healing through cavitation and microstreaming by producing the following non-thermal effects at the cellular and tissue level: 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 inflammation at the tissue

level.[14] These changes can be facilitated throughout all phases of wound healing.[15] 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.[16,17] In several reported studies on non-healing lower extremity wounds, NCLFUS has been shown to facilitate wound healing.[14,16,18,19]

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[20]; however, the use of compression on lower extremity wounds caused by other etiologies is not as well documented. When edema is present in these cases, it is imperative that the therapist critically assess the 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 mmHg at the ankle, 18 mmHg at the calf) [21] 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 absorbs excessive exudate for wet wounds or provides 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 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 the 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's 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 kept the dressing and compression system 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 parts of the wounds were 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.

Conclusion

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 due to 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 necrotic tissue, manage infection/inflammation, moist wound healing, facilitate re-epithelialization) is challenging and requires an understanding of the pathophysiology, cellular changes that need to occur in order for healing to progress, 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, patient adherence and communication with her physicians were both exemplary.

This patient was treated soon after 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 while being treated at the clinic, the patient gave me permission to use the case in any way to help others. The positive response to treatment made a difference in patients treated subsequently.

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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/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, 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 judgments 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 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.

Wound Management Resource Information

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