2022 No. 095

Analysis of Practice for the Physical Therapy Profession: Entry-Level Physical Therapist Assistants

Final Report

Prepared for:	Federation of State Boards of Physical Therapy 124 West Street South Alexandria, VA 22314	**Prepared under:**	NA
Authors:	Jessica L. Harris Joseph P. Caramagno Arielle P. Rogers	**Date:**	September 23, 2022

Headquarters: 66 Canal Center Plaza, Suite 700, Alexandria, VA 22314 | Phone: 703.549.3611 | humrro.org

Analysis of Practice for the Physical Therapy Profession: Entry-Level Physical Therapist Assistants

Table of Contents

Table of Contents (Continued)

List of Tables

Analysis of Practice for the Physical Therapy Profession: Entry-Level Physical Therapist Assistants

Acknowledgements

Many people were instrumental in conceptualizing and completing the work described in this report. Two supporting expert groups organized by FSBPT provided critical analysis of the profession to support the development of the practice analysis survey and interpretation of the results. The Exam Committee Chairs and Practice Analysis Task Force members volunteered their time and expertise to support the validity of the process and final products. The project team would also like to thank the many physical therapists and physical therapist assistants who completed the practice analysis survey in support of this important effort.

Dr. Lorin Mueller, FSBPT's Managing Director of Assessment, oversaw the work and provided invaluable guidance, strategic direction, and assistance throughout the process. Colleen Lettvin, PT, FSBPT's NPTE Content Manager, contributed vast knowledge of the physical therapy profession and the licensure exam development process. Her insights regarding the challenges inherent in developing a valid licensure examination were tremendous contributions for ensuring discussions with the supporting expert groups were productive and thoughtful.

From HumRRO, we wish to thank Dr. Deirdre Knapp for providing recommendations and guidance on the planning and implementation of the multi-year practice analysis.

Analysis of Practice for the Physical Therapy Profession: Entry-Level Physical Therapist Assistants

Executive Summary

This report describes the process, methodology, and results of the analysis of practice of physical therapy conducted from 2018 to 2022 by the Federation of State Boards of Physical Therapy (FSBPT) in partnership with the Human Resources Research Organization (HumRRO). The primary goal of this study was to examine and track the current state of physical therapy practice in the U.S. and update the test specifications for the National Physical Therapy Exam (NPTE) maintained by FSBPT. The approach involved gathering and integrating data about the profession to ensure the content of the exam (a) is relevant to the current professional practice and (b) reflects the opinions and expertise of a diverse group of stakeholders. This report focuses on the Physical Therapist Assistant (PTA) analysis of practice.[1]

The practice analysis involved the construction and administration of an occupational survey to a large, representative sample of PTAs representing every U.S. jurisdiction. The purpose of the survey was to collect information on the work activities (WAs) and knowledge and skill requirements (KSRs) that define the practice of entry-level physical therapy. Survey respondents evaluated the criticality of the WAs and KSRs for safe and effective entry-level physical therapy practice using Likert-type rating scales. The survey was administered annually between 2018 and 2022 and over 10,000 PTAs completed the survey during that timeframe.

The study was conducted with the help of multiple expert groups identified by FSBPT. During the interim years of the study (2018-2021), FSBPT's Exam Chairs provided guidance and consultation to the project staff during annual reviews. Their guidance helped ensure the WA and KSR statements included on the survey were clear, comprehensive, and appropriate for the target respondent population. In 2022, the 14-member PTA Task Force reviewed the results from each year of the study and provided consultation on updates to the test specifications for the NPTE exam blueprint.

Of the 201 WAs included on the survey, the Task Force identified 84% as critical for entry-level PTA practice. Of the 138 KSR statements on the survey, the Task Force identified 79% as critical for entry-level PTA practice. The WAs and KSRs omitted from the test specifications were generally consistent with statements omitted in the 2016 practice analysis. Based on their judgment of critical WAs and KSRs, the PTA Task Force's recommended updates resulted in blueprint specifications that are very similar to the specifications established during the 2016 practice analysis. At the principal content domain level, the proportions changed by no more than two percentage points. The largest change recommended by the PTA Task Force was to decrease the coverage of the Therapeutic Modalities from 6.5% to 4.5%.

[1] We describe the Physical Therapist (PT) analysis of practice in a separate report (Harris, J. L., Caramagno, J. P., & Rogers, A. P. (2022). *Analysis of Practice for the Physical Therapy Profession: Entry-Level Physical Therapists* (No. 094). Alexandria, VA: Human Resources Research Organization.).

Introduction and Overview

This report documents the process, methodology, and outcomes of the analysis of practice of physical therapy conducted from 2018 to 2022 by the Federation of State Boards of Physical Therapy (FSBPT). The primary aim of this study was to examine the current state of physical therapy practice in the U.S. and update the test materials for the National Physical Therapy Exam (NPTE) maintained by FSBPT. The study was carried out in partnership with the Human Resources Research Organization (HumRRO). HumRRO is a non-profit research and consulting firm dedicated to supporting quality testing and training programs that improve human, occupational, and organizational effectiveness.

The systematic process for determining the content of a licensure examination is commonly referred to as a *practice analysis.* Other names for this process include occupational analysis, job analysis, and role delineation study. This process begins with the identification of work requirements for entry-level practitioners and ends with the development of a formal set of test specifications, also known as a *test blueprint* or *test content outline*, that identifies the knowledge topics that will be included on the licensure examination.

Since the 1990s, FSBPT has completed practice analyses approximately every five years. These periodic analyses help ensure that changes in entry-level requirements are incorporated into the licensure examinations (e.g., fewer test questions are included that assess skill areas of decreasing importance and greater numbers of test questions address skill areas of increasing importance). Beginning in 2018, FSBPT modified its practice analysis methodology to increase the sensitivity of the analyses to changes in the practice of physical therapy. As described in the sections that follow, the notable adjustment to the approach was the administration of occupational surveys on an annual basis rather than a five-year basis.

This report describes the steps completed to conduct an analysis of entry-level practice for physical therapist assistants (PTA) and update the test blueprint for the NPTE-PTA. Although, the focus of this report is on the PTA analysis of practice, some description of activities relevant to the physical therapist (PT) practice analysis is included because the methodology was identical and conducted concurrently. Complete results of the analysis of practice for PTs are provided in a separate report.

Supporting Expert Groups

The physical therapy practice analysis was conducted with the help of multiple expert groups identified by FSBPT to play key roles in the process. These groups are described below.

PTA Task Force

A 14-member PTA Task Force was charged with reviewing the practice analysis results and adjusting the test specifications for the NPTE blueprint. The task force consisted of licensed physical therapist assistants and physical therapists who work closely with physical therapist assistants. As a group, the task force members had diverse professional backgrounds. For example, their primary practice settings included patients' homes, academic institutions, outpatient facilities, hospitals, long-term care facilities, and inpatient rehabilitation facilities. Their areas of expertise included orthopedics, musculoskeletal, geriatrics, pediatrics, neurologic, acute care, integumentary, wound care, cardiovascular and pulmonary, and sports physical therapy. The individual members of this group are listed in Appendix A.

Exam Committee Chairs

The NPTE exam committee chairs were tasked with reviewing the practice analysis survey results following each of the yearly administrations and making recommendations to update the survey for the following year. The exam committee chairs are practitioners who are responsible for overseeing the item construction and exam review processes for the NPTE-PTA and have a deep understanding of the test development process and exam content.

Analysis of Practice

The methodological approach to update the NPTE test blueprint in 2022 was similar to approaches taken in prior years (Caramagno, Cogswell, & Waugh, 2016; Bradley, Caramagno, Waters, & Koch, 2011a; Bradley, Caramagno, Waters, & Koch, 2011b; Knapp, Russell, Bynum, & Waters, 2007a; Knapp, Russell, Bynum, & Waters, 2007b). For example, the practice analysis study involved occupational surveys and focus groups designed to (a) collect data from multiple subject matter experts and (b) use the survey results to inform decisions about the content and structure of the NPTE blueprints. However, unlike previous practice analysis studies that involved occupational surveys conducted only during the practice analysis study windows (i.e., approximately every five years), the current study involved a multi-year research cycle consisting of annual occupational surveys.

Table 1 illustrates the practice analysis methodology employed to update the NPTE content outlines and blueprint weighting schemes in 2022. Administration of the occupational surveys began in 2018 and continued each year through 2022. During the interim years (2018-2021), FSBPT, HumRRO, and the Exam Committee Chairs reviewed the survey results to identify trends and make decisions about item development activities (e.g., areas to begin or stop writing items). These parties also identified revisions to the surveys to improve the type and quality of data (e.g., adding demographic questions, revising or adding work activity statements). In 2022, the project team consolidated the data across years and conducted a 2-day, in-person workshop in June with the PTA Task Force to (a) review the analysis results, (b) determine which work activities (WAs) and knowledge and skill requirements (KSRs) should be included in the NPTE content outlines, and (c) update the NPTE blueprint weights.

Table 1. Practice Analysis Methodology (2018-2022)

Year	Planning	Surveying	Reporting	Updating
	Design Data Collection Strategy	Update and Administer PT & PTA Surveys	Conduct Analyses and Summarize Results	Update the PT and PTA Test Content Outlines
2018	✓	✓	✓	
2019		✓	✓	
2020		✓	✓	
2021		✓	✓	
2022		✓	✓	✓

For each interim year of the practice analysis, HumRRO provided a results summary memo describing the survey process and outcomes, including documentation of changes made to the survey sections. We refer interested readers to the summary memos for details about the interim year results.[2] The remainder of this report focuses on the activities conducted in 2022 to update the NPTE content outlines and blueprint weighting schemes.

Updating the Content Outlines

Occupational Survey Development

Structure and Format

The purpose of the occupational survey was to collect information from current job incumbents about the job tasks/duties performed by entry-level practitioners and the knowledge and skills that are necessary for competent entry-level practice—including any areas of practice that are emerging, changing, or becoming obsolete. HumRRO hosted the survey on its cloud-based platform—a secure, customizable environment for electronic survey administration.

The survey consisted of two main sections. The first section was a background questionnaire that included a set of questions about the demographic characteristics of the sample (e.g., education, employment, practice setting, patient population, gender, licensure year). The second section consisted of two components—a WA survey and a KSR survey. The WA survey included a list of statements describing tasks sometimes performed by entry-level practitioners and the KSR survey included statements describing knowledge or skills sometimes needed by entry-level practitioners on the job.

All respondents received the background questionnaire and were required to complete it before advancing to the second section. Assignments to the WA survey or the KSR survey were contingent upon the respondents' years of professional experience, using the year they passed the NPTE as a proxy. All individuals who passed the NPTE two years prior to the data collection period were assigned to the WA survey and individuals who passed the NPTE 5 or more years of earlier were eligible to respond to the KSR survey. Individuals between 3 and five years of experience were not invited to respond to the survey.

The content of the occupational survey administered in 2022 was based on the surveys used in the interim years of the study which, in turn, were based on surveys and research conducted in prior practice analysis studies. However, a few changes were made prior to the 2022 administration period to collect data on several areas of practice that are of interest to FSBPT. These changes are documented below.

- Added to the WA survey:
  - "Perform and/or train patient/client/caregiver in blood-flow restriction training"
  - "Perform and/or train patient/client/caregiver in cupping"
- Added to the KSR survey:
  - "Applications, indications, contraindications, and precautions of blood-flow restriction training"
  - "Applications, indications, contraindications, and precautions of cupping"

[2] See Caramagno (2018); Rogers and Caramagno (2019); Rogers and Caramagno (2020); and Harris, Rogers, and Caramagno (2021) for each of the full yearly memos.

The inclusion of these statements increased the length of the WA survey to 201 statements and the KSR survey to 138 statements. As in prior practice analysis studies, the project team separated each survey component into two forms composed of roughly equivalent numbers of statements (see Table 2). Each survey respondent was assigned to only one of these forms to encourage completion of the survey in a reasonable amount of time.

Table 2. Distribution of PTA Work Activity and Knowledge and Skill Requirements Statements across Survey Forms (2022 Versions)

	Number of Statements	
	Form A	Form B
Work Activity Survey		
Information Gathering & Synthesis	10	
Systems Review	11	
Tests & Measures	58	
Procedural Interventions		77
Non-procedural Interventions		19
Patient/client & Staff Safety	20	6
Total	**99**	**102**
KSR Survey		
Cardiovascular/Pulmonary System	10	
Lymphatic System	9	
Musculoskeletal System	1	11
Neuromuscular & Nervous System	1	11
Integumentary System	10	
Metabolic & Endocrine Systems	1	6
Gastrointestinal System	1	9
Genitourinary System	1	8
System Interactions	6	
Equipment, Devices, & Technologies		3
Therapeutic Modalities	13	
Safety & Protection		5
Professional Responsibilities		13
Teaching & Learning Theories		3
Research & Evidence-Based Practice	4	
Skills	12	
Total	**69**	**69**

Rating Scales

Respondents who completed the WA survey provided ratings of the importance of each work activity for safe and effective practice. The WA survey rating scale is shown below.

How important is it for *you* to perform this work activity to provide safe and effective care?

0. Not a part of my current role
1. Not important
2. Minimally important
3. Moderately important
4. Very important
5. Extremely important

Respondents who completed the KSR survey provided ratings of the importance of each knowledge or skill for safe and effective entry-level practice. The KSR survey rating scale is shown below.

How important is this knowledge or skill for *an entry-level* physical therapist assistant to provide safe and effective care?

1. Not important
2. Minimally important
3. Moderately important
4. Very important
5. Extremely important

Survey Sampling and Administration

For each year of the study, FSBPT identified potential survey respondents from a list of licensure candidates who had passed the NPTE (and presumably later became licensed). This master list, maintained by FSBPT, contains names, email addresses, license type (PT or PTA) and number, NPTE passing date, and jurisdiction from which candidates applied. For the WA survey, all candidates who passed the NPTE two years prior to the survey were invited to respond. For the KSR survey, all candidates who passed the NPTE 5 or more years prior were assigned to one of five yearly response cohorts, stratified by year of initial licensure and initial licensing jurisdiction. This process ensures every licensed PT or PTA is invited to participate in the practice analysis over the five-year data collection period.

HumRRO prepared and managed the communication campaigns to distribute survey invitations to participants. Approximately two weeks before the launch of the surveys, FSBPT sent all participants a pre-invitation notification describing the purpose of the practice analysis. The pre-invitation notification was intended to alert the participants to the forthcoming survey invitation and prevent them from overlooking or deleting it. HumRRO conducted soft launches with small groups of participants (approximately 100) to test the communication campaign and survey functionality. After confirming the success of the soft launch, HumRRO sent invitations to the

remaining participants and the surveys remained open for approximately 2 months with reminders sent at 2-week intervals.

Data Cleaning and Screening

HumRRO took several steps to ensure the information analyzed and presented to the PTA Task Force was representative of valid responses from the target population. This included filtering the raw response data based on ineligible employment statuses and excluding cases that exhibited missing and/or out-of-range responses. See Appendix C for a summary of the data quality screens. Results for all survey years are provided for comparison.

Response Rates and Final Analysis Sample

Table 3 summarizes the overall response rates from the practice analysis survey administrations by year. The "Usable" count displays the number of valid responses used in the analyses after screening out respondents flagged by the data quality screens. We note that response rates in 2022 were lower than previous years. This might be a function of the timing of the survey launch date (i.e., March 2022) which was a month earlier compared to previous years. However, we cannot rule out other possible factors including the impact of the coronavirus pandemic on the healthcare industry overall or latent characteristics of the randomly selected samples. Nevertheless, the total numbers of respondents for each form of the surveys were sufficient for the analyses.

Table 3. Survey Distribution and Response Rates

	Invited (*n*)	Responded (*n*)			Usable	
		Form A	Form B	Total	*n*	%
WA Survey						
2018	7,047	328	327	655	557	7.9
2019	7,178	680	620	1,300	1,049	14.6
2020	6,823	395	446	841	667	9.8
2021	6,850	352	310	662	464	6.8
2022	6,036	154	160	314	221	3.7
Total	**33,934**	**1,909**	**1,863**	**3,772**	**2,958**	**8.7**
KSR Survey*						
2018	10,187	747	772	1,519	1,272	12.5
2019	11,512	845	836	1,681	1,358	11.8
2020	12,870	716	723	1,439	1,148	8.9
2021	14,279	672	706	1,378	984	6.9
2022	15,662	396	412	808	610	3.9
Total	**64,510**	**3,376**	**3,449**	**6,825**	**5,372**	**8.3**

Note. *Each year, a small portion of PT KSR survey respondents were reassigned to the PTA KSR survey based on their responses to a background question focused on their experience supervising PTAs. That is, if the respondents indicated they routinely supervised PTAs and understood the knowledge and skills needed of safe and effective practice, they were reassigned to evaluate the PTA KSRs.

Data Analysis

Analysis of the WA and KSR survey data involved computing descriptive statistics to examine the distribution and magnitude of respondents' ratings as well as the change in importance ratings over time. Table 4 provides a summary and description of each metric we computed.

Table 4. Descriptive Statistics Summary

Statistic	Description
n	Sample size for the total number of survey respondents that provided any response
M	Average Importance. Ranges from 1.00 to 5.00.
SD	Standard Deviation of the *M.* Ranges from 0.00 to infinity. A low standard deviation (i.e., close to 0) indicates the values tend to be close to the mean, while a high standard deviation indicates the values are spread out over a wider range.
$\%_{Prf}$	Percent Perform (WA survey ONLY). The percentage of respondents that indicated the WA is a part of their current job.
$\%_{Imp}$	Percent Importance. The percentage of respondents that indicated the KSR or WA is important for safe and effective practice.
Slope	Slope of the linear regression line representing the change in average importance from 2018 to 2022.

Background Questionnaire Results

Overall, respondents self-identified as female (70-71%), white (76%), educated at the associate degree level in Physical Therapy[3] (53-76%), and were employed full-time (73-74%). Roughly similar proportions of respondents across the PTA WA and KSR survey samples reported their employment status as part-time (18% for both samples). However, entry-level practitioners who completed the WA survey were more likely to report holding two or three different PTA positions in the preceding 12 months before they completed the survey (35% versus 26%). In addition, one-third of the PTA WA survey respondents reported spending more than half of their time working in private outpatient facilities compared to one-fifth of PTA KSR survey respondents.

These demographic and background characteristics are consistent across the survey samples and administration years. However, because there is no complete description of the entire population of physical therapists and physical therapist assistants, we cannot make conclusive arguments about the true representativeness of the sample.

Work Activity Survey Results

The sample sizes of respondents who provided valid responses for the 201 WAs ranged from 102 to 1,556. WAs with smaller sample sizes were those that were introduced to the survey in 2021 or 2022. The average sample size was 1,335. Mean importance ratings ranged from 2.33 to 4.77 (average $M = 3.75$; average $SD = 1.08$). The percentage of respondents who indicated they perform the WAs ranged from 32% to 100% with an average of 86%. The percentage of

[3] Roughly 23% of the respondents to the PTA KSR survey reported their highest education level as Doctor of Physical Therapy (DPT). This proportion represents respondents who are PTs that supervise PTAs and were redirected to the PTA survey.

respondents who rated the WAs as important (i.e., a rating of 2 or higher) ranged from 17% to 100%, with an average of 80%.

Of the 201 WAs included in the analysis, most (*n* = 189, 94%) were performed by at least half of the respondents and all were rated as important for entry-level practitioners to provide safe and effective care (i.e., importance rating of 2 or higher). These results are not surprising given the rigor and maturity of the practice analysis methodology. Most of the WAs did not exhibit noteworthy trends over the past five years (i.e., the magnitudes of the slope values were small), although some slopes were statistically significant simply due to large sample sizes. Across all WAs, the slopes ranged from -0.18 to 0.10 with an average slope of -0.006 indicating that, for every year of the practice analysis, the mean importance ratings decreased by less than one-fifth of a scale point. However, two WAs (i.e., *Perform and/or train patient/client/caregiver in diathermy; Perform and/or train patient/client/caregiver in dry heat thermotherapy*) exhibited statistically significant changes in mean ratings over time—decreasing by roughly three-quarters of a scale point over five years.

To aid in the interpretation of the results, we established an empirical decision rule pertaining to the rating scales mentioned above. The empirical decision rule is a numeric value representing a *Criticality Threshold* for making decisions about which WA statements warrant further examination by the PTA Task Force. Conceptually, the value—mean importance rating of 2.50—represents the midpoint between scale point 2 (Minimally Important) and scale point 3 (Moderately Important). Using this criticality threshold as our guide, we identified 5 WAs that had mean importance ratings at or below 2.50 and an additional 27 WAs that had mean importance ratings between 2.50 and 3.00. These WAs are displayed in Table 5. Full results are presented in Appendix E.

Table 5. PTA Work Activities Near the Criticality Threshold

PTA WAs	*n*	*M*	*SD*	$\%_{Prf}$	$\%_{Imp}$
Perform and/or train patient/client/caregiver in desensitization techniques (e.g., brushing, tapping, use of textures)	1,411	2.98	1.21	70.0	60.2
Perform and/or train patient/client/caregiver in habituation/adaptation exercises for vestibular dysfunction	1,555	2.96	1.22	71.3	63.2
Perform and/or train patient/client/caregiver in paraffin bath thermotherapy	1,401	2.95	1.40	56.6	41.7
Perform and/or train patient/client/caregiver in intermittent pneumatic compression	1,400	2.95	1.33	52.7	39.4
Apply taping for lymphatic drainage	1,476	2.93	1.29	57.3	46.8
Perform and/or train patient/client/caregiver in mechanical repositioning for vestibular dysfunction	1,555	2.90	1.22	68.4	59.8
Design and/or direct research activities	1,180	2.87	1.24	68.8	53.5
Perform and/or train patient/client/caregiver in blood-flow restriction training	102	2.85	1.40	96.5	36.3
Perform and/or train patient/client/caregiver in hydrotherapy using contrast baths/pools	1,407	2.85	1.47	52.0	35.9
Perform and/or train patient/client/caregiver in iontophoresis	1,407	2.84	1.39	64.3	48.6
Perform and/or train patient/client/caregiver in manual/mechanical airway clearance techniques (e.g., assistive devices, assistive cough, incentive spirometer, flutter valve, percussion, vibration)	1,555	2.82	1.34	62.7	51.5

Table 5. (Continued)

PTA WAs	*n*	*M*	*SD*	%Prf	%Imp
Participate in research activities	1,179	2.78	1.23	69.6	54.1
Perform and/or train patient/client/caregiver in application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings)	1,411	2.76	1.28	51.2	37.7
Perform and/or train patient/client/caregiver in genitourinary management (e.g., pelvic floor exercises, bladder strategies)	1,555	2.74	1.24	65.9	54.5
Perform and/or train patient/client/caregiver in diathermy	1,401	2.71	1.40	49.0	31.7
Perform tests and measures of body dimensions (e.g., height, weight, girth, limb length)	1,324	2.71	1.17	86.3	73.2
Perform and/or train patient/client/caregiver in phonophoresis	1,401	2.67	1.41	47.4	30.0
Perform spinal mobilization/manipulation (thrust)	1,488	2.66	1.33	46.3	33.5
Perform and/or train patient/client/caregiver in dry heat thermotherapy (e.g., Fluidotherapy)	1,401	2.65	1.39	45.4	28.9
Perform and/or train patient/client/caregiver in postural drainage	729	2.64	1.29	77.8	42.0
Perform manual lymphatic drainage	1,490	2.63	1.23	53.2	41.3
Perform and/or train patient/client/caregiver in phototherapy (laser light)	1,407	2.63	1.40	46.4	29.0
Perform tests and measures of body composition (e.g., percent body fat, lean muscle mass)	1,324	2.61	1.17	82.8	67.4
Recognize changes in status of the reproductive system (e.g., sexual and/or menstrual dysfunction, menopause status)	1,350	2.59	1.23	78.5	63.0
Perform and/or train patient/client/caregiver in nonselective debridement (e.g., removal of nonselective areas of devitalized tissue)	1,413	2.58	1.32	36.0	21.2
Perform and/or train patient/client/caregiver in gastrointestinal management (e.g., positioning to avoid reflux, bowel strategies)	1,555	2.57	1.23	61.6	48.4
Perform and/or train patient/client/caregiver in selective enzymatic or autolytic debridement (e.g., removal of specific areas of devitalized tissue)	1,411	2.52	1.31	35.0	20.2
Perform and/or train patient/client/caregiver in negative pressure wound therapy (e.g., vacuum-assisted wound closure)	1,411	2.50	1.32	34.6	19.8
Perform sharp debridement (e.g., removal of specific areas of devitalized tissue)	1,411	2.41	1.31	32.7	17.6
Perform and/or train patient/client/caregiver in monochromatic infrared agent procedures (e.g., light emitting diodes [LEDs])	1,401	2.36	1.32	38.7	20.6
Perform and/or train patient/client/caregiver in hyperbaric therapy	1,411	2.33	1.25	32.2	16.8
Perform and/or train patient/client/caregiver in shockwave therapy	1,401	2.33	1.35	36.5	18.4

Knowledge and Skill Requirements Survey Results

Across the 138 KSRs included in the analyses, sample sizes ranged from 269 to 2,719. KSRs with smaller sample sizes were those that were introduced to the survey in 2021 or 2022. The average sample size was 2,386. Mean importance ratings ranged from 2.63 to 4.81 (average *M* = 3.85; average *SD* = 0.90). The percentage of respondents who rated the KSRs as important (i.e., a rating of 2 or higher) ranged from 78% to 100%, with an average of 97%. All 138 KSRs included in the analysis were rated important by more than half of the respondent samples.

None of the KSRs exhibited noteworthy trends over the past five years (i.e., all slopes were small in magnitude), although, similar to the WA survey results, some slopes were statistically significant simply due to large sample sizes. The average slope was -0.009 and, across all KSRs, the slopes ranged from -0.13 to 0.09.

We used the same empirical decision rule for the KSRs as we did for the WAs to establish a criticality threshold to aid in the interpretation. Using this criticality threshold as our guide, we identified 15 KSRs that had mean importance ratings between 2.50 and 3.00. These KSRs are displayed in Table 6. Full results are presented in Appendix F.

Table 6. PTA Knowledge and Skills Requirements Near the Criticality Threshold

PTA KSRs	*n*	*M*	*SD*	$\%_{Imp}$
Applications, indications, contraindications, and precautions of laser light therapy	2,317	2.98	1.28	85.8
Genitourinary system diseases/conditions and their pathophysiology to carry out the established plan of care	2,388	2.96	1.04	93.1
Applications, indications, contraindications, and precautions of phonophoresis	2,317	2.95	1.32	84.3
Anatomy and physiology of the gastrointestinal system as related to tests/measures	2,427	2.95	1.01	94.1
Applications, indications, contraindications, and precautions of blood-flow restriction training	269	2.95	1.26	85.5
The impact of pharmacology used to treat the gastrointestinal system on physical therapy management	2,427	2.91	1.01	92.8
Anatomy and physiology of the genitourinary system as related to tests/measures	2,388	2.89	1.04	92.0
Non-pharmacological medical management of the gastrointestinal system (e.g., surgical procedures, diagnostic imaging, laboratory test values, other medical tests)	2,427	2.87	0.99	93.2
Gastrointestinal system tests/measures, including outcome measures, and their applications according to current best evidence (e.g., bowel dysfunction impact questionnaires, Murphy test, Rovsing test, McBurney point sign)	2,427	2.86	1.01	92.0
Genitourinary system tests/measures, including outcome measures, and their applications according to current best evidence	2,388	2.85	1.03	91.5
Applications, indications, contraindications, and precautions of diathermy	2,317	2.83	1.38	78.4

Table 6. (Continued)

PTA KSRs	*n*	*M*	*SD*	%Imp
The impact of pharmacology used to treat the genitourinary system on physical therapy management	2,388	2.81	1.02	91.2
Non-pharmacological medical management of the genitourinary system (e.g., surgical procedures, diagnostic imaging, laboratory test values, other medical tests)	2,388	2.78	0.99	91.4
Applications, indications, contraindications, and precautions of cupping	269	2.68	1.21	81.8
Applications, indications, contraindications, and precautions of LED light therapy	664	2.63	1.25	78.6

Interrater Consistency and Agreement

Two types of intraclass correlation coefficients (ICCs; McGraw & Wong, 1996; Shrout & Fleiss, 1979) were computed to estimate the degree of consistency and agreement among the survey respondents. In this context, *consistency* refers to the similarity of the pattern of ratings among the respondents (e.g., Task X is more important than Task Y and less important than Task Z). *Agreement* indicates the extent to which the respondents' ratings are exactly the same (e.g., Rater A and Rater B rated Task X as Extremely Important). Thus, agreement estimates are more stringent, requiring exact agreement across respondents.

Consistency and agreement ICCs estimated for a single rater (1-Rater) and for the average number of raters (Observed) are reported in Table 7. The single rater estimates can be interpreted as the level of consistency (or agreement) to be expected between the ratings provided by any single rater with any other randomly selected single rater. The Observed estimates indicate the degree of consistency (or agreement) to be expected between the average among the sample of survey participants and the average that would be obtained if another random sample were to be drawn from the population. In other words, if the study were repeated with another set of similarly sized samples, there is a strong expectation that the same results would be obtained. Because all the Observed estimates are equal to or greater than 0.94 (after rounding to two decimal places), it can be concluded the data are highly consistent across raters.

Table 7. Estimates of Inter-rater Reliability and Agreement

Rating Scale/Exam Category	Number of Items	Type of ICC			
		Consistency		Agreement	
		1-Rater	Observed	1-Rater	Observed
WA Importance					
Form A	99	0.27	0.97	0.21	0.96
Form B	102	0.26	0.97	0.16	0.96
KSR Importance					
Form A	69	0.33	0.97	0.25	0.96
Form B	69	0.37	0.98	0.25	0.96

Note. Consistency and agreement ICCs estimated for a single rater (1-Rater) and for the total number of raters (Observed).

Task Force Review and Establishment of Test Blueprints

In June 2022, FSBPT and HumRRO facilitated a 2-day, in-person workshop with the PTA Task Force to review the survey results and update the content outline for the licensure exam. Because the surveys included an "oversampling" of WAs and KSRs that might be required of entry-level PTAs, a principal goal of the workshop was to identify which (if any) WAs and KSRs should be omitted from the content outline. The review process is described in more detail below.

First, the PTA Task Force reviewed the background questionnaire results to gain a general understanding of the demographic make-up of the samples. The meeting facilitators asked the task force members to consider the following questions as they reviewed the results.

- Are the results consistent with your observations and experience?
- Are there any unexpected results that might skew the WA or KSR ratings data?
- Are the samples (generally) representative of the overall population of PTAs?

Overall, the PTA Task Force believed the characteristics reported by survey respondents accurately reflected the distribution of those characteristics in the practitioner population. The task force members also provided a few suggested revisions to the background questions and response options to improve clarity and accuracy.

Next, the PTA Task Force reviewed the WA and KSR survey results. For both results sets, the meeting facilitators instructed the task force members to consider which statements should be omitted from the NPTE content outline and what impact the omission might have for WAs and KSRs that are conceptually related. That is, if the PTA Task Force elected to omit a WA, the meeting facilitators asked them to consider whether any related WAs or KSRs should also be omitted. The meeting facilitators provided the following criteria for determining whether a WA or KSRs qualified for omission.

- Mean importance below the Criticality Threshold and NOT trending up
- Mean importance at or slightly above Criticality Threshold and trending down
- NOT entry-level
- Specialized practice

Given the maturity of the content outline and the stability of the survey results over the past 5 years, the PTA Task Force spent most of the time reviewing the WAs and KSRs that exhibited mean importance ratings near the criticality threshold. However, the meeting facilitators encouraged task force members to voice their concerns or questions about any of the WAs or KSRs.

The PTA Task Force identified 169 WAs (84%) as critical for entry-level PTA practice. Of these, nine WAs were considered "borderline" (i.e., mean importance ratings between 2.50 and 3.00). The PTA Task Force elected to retain these WAs because (a) they are required for safe and effective entry-level practice, (b) failure to perform them correctly could lead to an increased risk for patient harm, and/or (c) the survey results provide sufficient evidence of their importance. The task force members identified 32 WAs as not critical or not relevant to entry-level PTA practice. These WAs are displayed in Table 8.

Table 8. PTA Work Activities Selected for Omission from the NPTE Content Outline

PTA WAs	Rationale for Omission
Perform tests and measures of body composition (e.g., percent body fat, lean muscle mass)	Activity can be performed in settings other than rehabilitation.
Perform tests and measures of superficial reflexes and reactions (e.g., cremasteric reflex, abdominal reflexes)	Not entry-level.
Perform and/or train patient/client/caregiver in mechanical repositioning for vestibular dysfunction	Survey data are not compelling enough to include Not entry-level. Specialty training required.
Perform manual lymphatic drainage	Survey data are not compelling enough to include. Not entry-level. Specialty training required.
Perform instrument-assisted soft tissue mobilization	Not entry-level. Specialty training required.
Perform peripheral mobilization/manipulation (thrust)	Survey data are not compelling enough to include. Not entry-level and not allowed in some states.
Perform spinal mobilization/manipulation (thrust)	Survey data are not compelling enough to include. Not entry-level and not allowed in some states.
Apply taping for neuromuscular reeducation	Not entry-level. Specialty training required.
Apply taping for lymphatic drainage	Survey data are not compelling enough to include. Not entry-level.
Apply taping for pain management	Not entry-level. Specialty training required.
Apply and/or adjust mechanical neuromuscular reeducation devices/technologies (e.g., weighted vests, therapeutic suits, body weight supported treadmill)	Survey data are not compelling enough to include. Not entry-level. Dependent on the availability of the necessary equipment.
Train patient/client/caregiver in the use of mechanical neuromuscular re-education devices/technologies (e.g., weighted vests, therapeutic suits, body weight supported treadmill)	Survey data are not compelling enough to include. Not entry-level. Dependent on the availability of the necessary equipment.
Perform and/or train patient/client/caregiver in nonselective debridement (e.g., removal of nonselective areas of devitalized tissue)	Survey data are not compelling enough to include. Not commonly performed. Not entry-level.
Perform and/or train patient/client/caregiver in selective enzymatic or autolytic debridement (e.g., removal of specific areas of devitalized tissue)	Survey data are not compelling enough to include. Not commonly performed. Not entry-level.
Perform and/or train patient/client/caregiver in application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings)	Survey data are not compelling enough to include. Not commonly performed. Not entry-level.
Perform and/or train patient/client/caregiver in hyperbaric therapy	Survey data are not compelling enough to include. Low mean importance rating. Not commonly performed.
Perform and/or train patient/client/caregiver in negative pressure wound therapy (e.g., vacuum-assisted wound closure)	Survey data are not compelling enough to include. Not commonly performed. Not entry-level.

Table 8. (Continued)

PTA WAs	Rationale for Exclusion
Perform sharp debridement (e.g., removal of specific areas of devitalized tissue)	Survey data are not compelling enough to include. Low mean importance rating. Not entry-level and not allowed in some states.
Perform and/or train patient/client/caregiver in iontophoresis	Survey data are not compelling enough to include. Equipment not widely available. Does not represent current practice.
Perform and/or train patient/client/caregiver in phonophoresis	Survey data are not compelling enough to include. Not commonly performed. Equipment not widely available. Does not represent current practice.
Perform and/or train patient/client/caregiver in hydrotherapy using contrast baths/pools	Survey data are not compelling enough to include.
Perform and/or train patient/client/caregiver in phototherapy (laser light)	Survey data are not compelling enough to include. Not commonly used in current practice. Equipment not widely available.
Perform and/or train patient/client/caregiver in monochromatic infrared agent procedures (e.g., light emitting diodes [LEDs])	Survey data are not compelling enough to include. Low mean importance rating. Not commonly performed. Equipment not widely available.
Perform and/or train patient/client/caregiver in diathermy	Survey data are not compelling enough to include. Not commonly performed. Equipment not widely available
Perform and/or train patient/client/caregiver in dry heat thermotherapy (e.g., Fluidotherapy)	Survey data are not compelling enough to include. Not commonly performed.
Perform and/or train patient/client/caregiver in shockwave therapy	Survey data are not compelling enough to include. Not commonly performed.
Perform and/or train patient/client/caregiver in blood-flow restriction training	Insufficient data to support inclusion on NPTE. Not entry level. Continue to track.
Perform and/or train patient/client/caregiver in cupping	Insufficient data to support inclusion on NPTE. Not entry level. Continue to track.
Perform and/or train patient/client/caregiver in intermittent pneumatic compression	Not entry-level. Specialty training required.
Design and/or direct research activities	Survey data are not compelling enough to include.
Participate in research activities	Not necessary for safe and effective entry-level practice.
Participate in professional organizations	Not necessary for safe and effective entry-level practice.

The PTA Task Force identified 109 KSRs (79%) as critical for entry-level PTA practice. Of these, six KSRs were considered “borderline” (i.e., mean importance ratings between 2.50 and 3.00). The PTA Task Force elected to retain these KSRs because their importance ratings exceeded the criticality threshold by at least a quarter of a scale point (i.e., *M*s ranged from 2.80 to 3.00 after rounding). The task force members identified 30 KSRs as (a) not critical or not relevant to entry-level PTA practice or (b) attributes that cannot be effectively measured by a written exam. These KSRs are displayed in Table 9. The final lists of WAs and KSRs included in the NPTE content outline can be found in Appendix G and H, respectively.

Table 9. PTA Knowledge and Skill Requirements Selected for Omission from the NPTE Content Outline

PTA KSRs	Rationale for Exclusion
Non-pharmacological medical management of the lymphatic system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	Not entry-level. Requires specialized education. Knowledge of specific lymphatic non-physical therapy tests not likely to change plan of care
Gastrointestinal system tests/measures, including outcome measures, and their applications according to current best evidence (e.g., bowel dysfunction impact questionnaires, Murphy test, Rovsing test, McBurney point sign)	Not entry-level. Requires specialized education.
Anatomy and physiology of the gastrointestinal system as related to tests/measures	Not entry-level. Requires specialized education.
Movement analysis as related to the gastrointestinal system (e.g., effects of muscular tension or trigger points, positioning for bowel movement)	Not entry-level. Requires specialized education.
The impact of pharmacology used to treat the gastrointestinal system on physical therapy management	Not entry-level. Requires specialized education.
Genitourinary system tests/measures, including outcome measures, and their applications according to current best evidence	Not entry-level. Requires specialized education.
Anatomy and physiology of the genitourinary system as related to tests/measures	Not entry-level. Requires specialized education.
The impact of pharmacology used to treat the genitourinary system on physical therapy management	Not entry-level. Requires specialized education.
Applications, indications, contraindications, and precautions of laser light therapy	Not entry-level. Related work activities omitted.
Applications, indications, contraindications, and precautions of LED light therapy	Not entry-level. Related work activities omitted.
Applications, indications, contraindications, and precautions of phonophoresis	Not entry-level. Related work activities omitted.
Applications, indications, contraindications, and precautions of diathermy	Not entry-level. Related work activities omitted.
Applications, indications, contraindications, and precautions of blood-flow restriction training	Insufficient data to support inclusion on NPTE. Continue to track.
Applications, indications, contraindications, and precautions of cupping	Insufficient data to support inclusion on NPTE. Continue to track.
The provision and utilization of telehealth (i.e., the use of telecommunication technologies to provide health care information and services)	Insufficient data to support inclusion on NPTE. Not allowed in all states and can be site-specific. Continue to track.
Teaching and learning theories and techniques	The knowledge is encompassed by multiple knowledge areas that are included throughout the content outline and it does not require a stand-alone statement.

Table 9. (Continued)

PTA KSRs	Rationale for Exclusion
Health behavior change models (e.g., social cognitive theory, health belief model)	The knowledge is encompassed by multiple knowledge areas that are included throughout the content outline and it does not require a stand-alone statement.
Communication methods and techniques (e.g., motivational interviewing, health information brochures/handouts, feedback techniques)	The knowledge is encompassed by multiple knowledge areas that are included throughout the content outline and it does not require a stand-alone statement.
Active listening - Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times	Important for entry-level practice but not easily assessed via multiple-choice question format.
Speaking - Talking to others to convey information effectively	Important for entry-level practice but not easily assessed via multiple-choice question format.
Reading comprehension - Understanding written sentences and paragraphs in work related documents	Important for entry-level practice but not easily assessed via multiple-choice question format.
Critical thinking - Using logic and clinical reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems	Important for entry-level practice but not easily assessed via multiple-choice question format.
Social perceptiveness - Being aware of others' reactions and understanding why they react as they do	Important for entry-level practice but not easily assessed via multiple-choice question format.
Time management - Managing one's own time and the time of others	Important for entry-level practice but not easily assessed via multiple-choice question format.
Coordination - Adjusting actions in relation to others' actions	Important for entry-level practice but not easily assessed via multiple-choice question format.
Writing - Communicating effectively in writing as appropriate for the needs of the audience	Important for entry-level practice but not easily assessed via multiple-choice question format.
Active learning - Understanding the implications of new information for both current and future problem solving and decision-making	Important for entry-level practice but not easily assessed via multiple-choice question format.
Persuasion - Persuading others to change their minds or behavior	Important for entry-level practice but not easily assessed via multiple-choice question format.
Negotiation - Bringing others together and trying to reconcile differences	Important for entry-level practice but not easily assessed via multiple-choice question format.
Service orientation - Actively looking for ways to help people	Important for entry-level practice but not easily assessed via multiple-choice question format.

Final Test Blueprint Categories and Weights

The final activity of the workshop was to establish new content weights for the NPTE blueprint. The task force members independently assigned a percentage value for each principal content domain on the blueprint. Content domains include the eight body systems, System Interactions, Equipment, Devices, & Technologies, Therapeutic Modalities, Safety & Protection, Professional Responsibilities, and Research & Evidence-Based Practice. When making their judgments, the task force members considered the following pieces of information:

- Demographic questionnaire results
- The type, number, and variety of WAs retained by the Task Force
- The depth and breadth of knowledge associated with the KSRs retained by the Task Force
- The number of KSRs within each content domain
- Their own experience and knowledge of the profession
- The percentages and numbers of items assigned in the previous content outline

Next, the Task Force followed a similar process to assign percentages to the secondary domains within each body system (i.e., Physical Therapy Data Collection; Diseases/Conditions that Impact Effective Treatment; and Interventions).

For both levels of analysis, the task force members entered their percentage values into a cloud-based spreadsheet that computed the approximate numbers of items for each principal and secondary domain. The meeting facilitators projected the spreadsheet on a screen and engaged the PTA Task Force in a discussion of the results. During the discussion, the facilitators encouraged the task force members to provide rationales for their assigned percentages. The focus of this step was primarily to allow the task force members to share ideas and perspective, uncover biases or differences in judgment, and (generally) strive to reach consensus, although it was not a mandate.

Once the discussion was complete, the task force members performed a second round of judgments to evaluate their initial percentages—considering insights gained during the group discussion—and adjust them up or down, as warranted. The averages of the second round of percentages provided by the PTA Task Force represent the recommended new NPTE blueprint weights (see Table 10). These weights will be reviewed by FSBPT and its Board of Directors and considered for adoption. Table 10 includes weights adopted in prior practice analysis cycles for comparison.

Table 10. Comparison of New and Historical PT Test Blueprint Weights

Content Domain	2013-2017	2018-2023	2024-2027
	%*	%	%
CARDIOVASCULAR/PULMONARY SYSTEM	**16.6**	**15.8**	**16.7**
Physical Therapy Data Collection	28.0	28.8	28.1
Diseases/Conditions that Impact Effective Treatment	32.0	28.5	33.6
Interventions	40.0	42.7	38.3
LYMPHATIC SYSTEM**	**--**	**2.7**	**1.8**
Physical Therapy Data Collection	--	35.4	23.2
Diseases/Conditions that Impact Effective Treatment	--	29.3	36.3
Interventions	--	35.4	40.5
MUSCULOSKELETAL SYSTEM	**26.0**	**25.8**	**25.5**
Physical Therapy Data Collection	33.0	32.6	29.4
Diseases/Conditions that Impact Effective Treatment	28.0	27.0	33.3
Interventions	38.0	40.4	37.4
NEUROMUSCULAR & NERVOUS SYSTEM	**22.0**	**20.8**	**22.2**
Physical Therapy Data Collection	27.0	28.8	28.6
Diseases/Conditions that Impact Effective Treatment	30.0	28.5	33.4
Interventions	42.0	42.7	38.0
INTEGUMENTARY SYSTEM	**4.6**	**4.9**	**3.8**
Physical Therapy Data Collection	29.0	31.7	28.7
Diseases/Conditions that Impact Effective Treatment	29.0	27.2	36.1
Interventions	43.0	41.1	35.1
METABOLIC & ENDOCRINE SYSTEMS	**3.5**	**4.0**	**3.7**
Diseases/Conditions that Impact Effective Treatment	67.0	53.8	52.3
Interventions	33.0	46.2	47.7
GASTROINTESTINAL SYSTEM	**1.3**	**1.5**	**1.1**
Physical Therapy Data Collection	0.0	0.0	0.0
Diseases/Conditions that Impact Effective Treatment	50.0	50.0	48.9
Interventions	50.0	50.0	51.2
GENITOURINARY SYSTEM	**1.3**	**1.5**	**1.1**
Physical Therapy Data Collection	0.0	0.0	0.0
Diseases/Conditions that Impact Effective Treatment	50.0	50.0	49.6
Interventions	50.0	50.0	50.4
SYSTEM INTERACTIONS	**3.3**	**3.9**	**4.6**
EQUIPMENT, DEVICES, & TECHNOLOGIES	**6.7**	**5.6**	**6.4**
THERAPEUTIC MODALITIES	**8.0**	**6.5**	**4.5**
SAFETY & PROTECTION	**2.7**	**3.4**	**4.9**
PROFESSIONAL RESPONSIBILITIES	**2.0**	**2.4**	**2.2**
RESEARCH & EVIDENCE-BASED PRACTICE	**1.3**	**1.4**	**1.4**

Note. * All domain level percentage values are based on the total test form length of 150 items. **Prior to 2017, Lymphatic System was combined with Cardiovascular/Pulmonary System. The exact number of items that measured knowledge of the Lymphatic System is not known. Percentage values might not sum to 100 due to rounding.

Summary and Final Remarks

The analysis of practice described in this report represents a rigorous, systematic assessment of the entry-level requirements for PTAs. The resulting NPTE content outline and test blueprint weights reflect careful adjustments based on the input of thousands of practitioners working in the field and the expert judgments of the PTA practice analysis task force members. Based on the analysis of 5 years of data, the general organizing framework of the content outline will be carried forward and the coverage of most content areas will change by one percentage point or less. The largest change will be a two percent decrease in coverage of therapeutic modalities.

Although at face value these adjustments might seem small, they reflect shifts in the distribution of the exam content based on meaningful changes in the practice of physical therapy. These changes represent the profession's adaptation to a continuously evolving environmental, social, political, and regulatory landscape—one that entry-level practitioners must navigate as they strive to provide safe and effective care for their patient populations. In the years to come, FSBPT will continue evaluating the work activities, knowledge, and skills required of entry-level practitioners to maintain the content outlines and NPTE item banks and identify emerging areas of practice that should be included in future practice analysis studies.

References

Bradley, K.M., Caramagno, J.P., Waters, S., & Koch, A. (2011a). *Analysis of practice for the physical therapy profession: Entry-level physical therapists* (FR11-70). Alexandria, VA: Human Resources Research Organization.

Bradley, K.M., Caramagno, J.P., Waters, S., & Koch, A. (2011b). *Analysis of practice for the physical therapy profession: Entry-level physical therapist assistants* (FR11-71). Alexandria, VA: Human Resources Research Organization.

Caramagno, J.P. (2018). *Analysis of Practice for the physical therapy profession: Report memo 2018* (No. 051). Alexandria, VA: Human Resources Research Organization.

Caramagno, J.P., Cogswell, S., & Waugh, G. (2016). *Analysis of practice for the physical therapy profession: Entry-level physical therapists* (FR16-83). Alexandria, VA: Human Resources Research Organization.

Harris, J.L., Rogers, A.P., Caramagno, J.P. (2021). *Analysis of practice for the physical therapy profession: Entry-level physical therapists* (No. 100). Alexandria, VA: Human Resources Research Organization.

Knapp, D.J., Russell, T.L., Byrum, C., & Waters, S. (2007a). *Practice analysis update for physical therapist assistant licensure examinations offered by the Federation of State Boards of Physical Therapy* (FR-07-09). Alexandria, VA: Human Resources Research Organization.

Knapp, D.J., Russell, T.L., Byrum, C., & Waters, S. (2007b). *Practice analysis update for physical therapist licensure examinations offered by the Federation of State Boards of Physical Therapy* (FR-07-08). Alexandria, VA: Human Resources Research Organization.

McGraw, K.O., & Wong, S.P. (1996). Forming inferences about some intraclass correlation coefficients. *Psychological Methods, 1*, 30-46.

Rogers, A.P., & Caramagno, J.P. (2019). *Analysis of Practice for the Physical Therapy Profession: Report Memo 2019* (No. 090). Alexandria, VA: Human Resources Research Organization.

Rogers, A.P., & Caramagno, J.P. (2020). *Analysis of Practice for the Physical Therapy Profession: Report Memo 2020* (No. 092). Alexandria, VA: Human Resources Research Organization.

Shrout, P.E., & Fleiss, J.L. (1979). Intraclass correlations: uses in assessing rater reliability. *Psychological Bulletin, 86*, 420-428.

Appendix A. Practice Analysis Task Force Members

- Ashley Court, PT
- Brianna Cowley, PT
- Mary Crumley, PT
- John De Lara, PT
- Amanda Lopez, PTA
- Elizabeth Muldrow, PT
- Federico Pizeno, PTA
- Ken Queliza, PT
- Lee Ann Roberts Sweeney, PTA
- Dakshesh Sanghavi, PT
- Matthew Sweet, PTA
- Virginia Tagle, PTA
- Liyongo Tolin, PT
- Melissa Williams, PTA

Appendix B. Survey Invitation Letter

Example Survey Invitation Letter for PTA KSR Survey in 2022
Subject Line:

Help Determine Physical Therapist Assistant Competency Standards

Email body:

The Federation of State Boards of Physical Therapy (FSBPT) invites you to complete a survey of physical therapy practice. The survey results will provide the basis for developing the test content outlines for the National Physical Therapy Examination (NPTE). Your input will help define the knowledge and skills required by entry-level PTAs to provide safe and effective care. To thank you for completing this survey, the Federation of State Boards of Physical Therapy will enter you into a drawing for 1 of 10 Amazon gift cards valued at $100.

Please complete the survey by midnight (12:00 AM EST) April 29, 2022. The information you provide is confidential and your individual responses will not be made public.

To access the survey, click the link below, or copy and paste the link into the navigation bar of your web browser.

[Inserted customized URL for each recipient]

Subject Description:

The Federation of State Boards of Physical Therapy (FSBPT) invites you to complete a survey of physical therapy practice.

Sample Information:

You are receiving this email because you completed the NPTE to practice as a physical therapist or physical therapist assistant.

Appendix C. Data Screening Summary

Data Screen	2018	2019	2020	2021	2022	Total
WA Survey						
Flat Responding	34	65	46	59	26	230
Hasty Responding	2	4	7	11	4	28
Missing >90% of responses	55	147	107	114	60	483
Employment Status						
Retired	0	0	1	1	0	2
Unemployed and *not* looking for work as a PT or PTA	13	57	26	37	12	145
Total	*98*	*251*	*174*	*198*	*93*	*814*
KSR Survey						
Flat Responding	62	126	100	83	47	418
Hasty Responding	5	6	10	7	3	31
Missing >90% of responses	116	106	108	213	95	638
Employment Status						
Retired	8	13	14	17	9	61
Unemployed and *not* looking for work as a PT or PTA	73	152	90	119	61	495
Total	*247*	*323*	*291*	*394*	*198*	*1,453*

Note. Respondent cases could be flagged for multiple reasons depending on individual responses and/or response patterns. The values in the Total rows indicate the total numbers of respondent cases screened out of the analysis in each year and do not reflect a sum of the values in the preceding rows.

Appendix D. Demographic Questionnaire Results (2018 to 2022)

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
Q1 What is your gender?				
I prefer not to respond	109	38	2.0	1.3
Female	3,830	2,074	71.3	70.1
Male	1,264	739	23.5	25.0
[other]	2	2	< 1	< 1
Q2 Are you Hispanic or Latino?				
I prefer not to respond	177	70	3.3	2.4
Yes	324	284	6.0	9.6
No	4,746	2,529	88.3	85.5
Q3 What is your race? Select all that apply				
I prefer not to respond	311	130	5.8	4.4
American Indian or Alaska Native	46	38	< 1	1.3
Asian	572	307	10.6	10.4
Black or African American	203	132	3.8	4.5
Native Hawaiian or Other Pacific Islander	34	22	< 1	< 1
White	4,073	2,251	75.8	76.1
[other]	131	110	2.4	3.7
Q4 What is the highest academic degree related to physical therapy that you have earned?				
Certificate	4	1	< 1	< 1
Associate's	2,859	2,255	53.2	76.2
Bachelor's	761	563	14.2	19.0
Master's	409	60	7.6	2.0
Doctor of Physical Therapy (DPT)	1,215	23	22.6	< 1
Doctoral degree (PhD, EdD, clinical doctorate, or other)	29	1	< 1	< 1
[other]	35	13	< 1	< 1
Q5 Where did you complete your entry-level physical therapy education?				
United States	4,804	2,733	89.4	92.4
Canada	6	1	< 1	< 1
Egypt	11	7	< 1	< 1
India	118	62	2.2	2.1
Philippines	295	78	5.5	2.6
South Korea	1	5	< 1	< 1
United Kingdom	6	0	< 1	< 1
[other]	64	30	1.2	1.0

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
Q6 In what year were you FIRST licensed as a physical therapist assistant in the United States, the District of Columbia, U.S. Virgin Islands, or Puerto Rico?				
Not selected	12	3	< 1	< 1
1955-1959	0	0	< 1	< 1
1960-1969	0	1	< 1	< 1
1970-1979	4	1	< 1	< 1
1980-1989	14	2	< 1	< 1
1990-1999	629	8	11.7	< 1
2000-2009	1,843	10	34.3	< 1
2010-2019	2,869	2,719	53.4	91.9
2020-2022	1	214	< 1	7.2
Q7 In which one of the following United States physical therapy jurisdictions do you currently have your PRIMARY clinical work setting?				
Not selected	25	11	< 1	< 1
Alabama	75	42	1.4	1.4
Alaska	14	10	< 1	< 1
Arizona	107	66	2.0	2.2
Arkansas	75	33	1.4	1.1
California	340	205	6.3	6.9
Colorado	84	45	1.6	1.5
Connecticut	41	29	< 1	< 1
District of Columbia (Washington)	4	5	< 1	< 1
Delaware	15	16	< 1	< 1
Florida	284	188	5.3	6.4
Georgia	162	55	3.0	1.9
Guam	2	1	< 1	< 1
Hawaii	14	16	< 1	< 1
Idaho	32	37	< 1	1.3
Illinois	198	138	3.7	4.7
Indiana	209	71	3.9	2.4
Iowa	56	52	1.0	1.8
Kansas	41	28	< 1	< 1
Kentucky	109	55	2.0	1.9
Louisiana	66	35	1.2	1.2
Maine	31	10	< 1	< 1
Maryland	116	72	2.2	2.4
Massachusetts	104	59	1.9	2.0
Michigan	187	103	3.5	3.5
Minnesota	68	58	1.3	2.0
Mississippi	59	37	1.1	1.3
Missouri	101	67	1.9	2.3
Montana	20	15	< 1	< 1
Nebraska	46	34	< 1	1.1

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
Nevada	40	35	< 1	1.2
New Hampshire	64	13	1.2	< 1
New Jersey	203	34	3.8	1.1
New Mexico	37	30	< 1	1.0
New York	291	213	5.4	7.2
North Carolina	124	52	2.3	1.8
North Dakota	10	4	< 1	< 1
Northern Mariana Islands	0	0	< 1	< 1
Ohio	171	130	3.2	4.4
Oklahoma	52	32	< 1	1.1
Oregon	72	38	1.3	1.3
Pennsylvania	229	140	4.3	4.7
Puerto Rico	2	0	< 1	< 1
Rhode Island	20	9	< 1	< 1
South Carolina	143	48	2.7	1.6
South Dakota	15	5	< 1	< 1
Tennessee	114	80	2.1	2.7
Texas	544	205	10.1	6.9
U.S. Virgin Islands	1	0	< 1	< 1
Utah	63	32	1.2	1.1
Vermont	13	3	< 1	< 1
Virginia	158	82	2.9	2.8
Washington	119	58	2.2	2.0
West Virginia	35	19	< 1	< 1
Wisconsin	88	59	1.6	2.0
Wyoming	9	11	< 1	< 1
Q8 In which of the following United States physical therapy jurisdictions are you currently licensed? Select all that apply.				
Alabama	87	46	1.6	1.6
Alaska	20	12	< 1	< 1
Arizona	132	71	2.5	2.4
Arkansas	85	34	1.6	1.1
California	377	207	7.0	7.0
Colorado	108	58	2.0	2.0
Connecticut	58	34	1.1	1.1
District of Columbia (Washington)	11	6	< 1	< 1
Delaware	23	24	< 1	< 1
Florida	329	198	6.1	6.7
Georgia	184	65	3.4	2.2
Guam	3	0	< 1	< 1
Hawaii	21	17	< 1	< 1
Idaho	40	41	< 1	1.4
Illinois	242	146	4.5	4.9

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
Indiana	226	81	4.2	2.7
Iowa	67	61	1.2	2.1
Kansas	56	39	1.0	1.3
Kentucky	119	60	2.2	2.0
Louisiana	70	33	1.3	1.1
Maine	41	14	< 1	< 1
Maryland	136	79	2.5	2.7
Massachusetts	129	70	2.4	2.4
Michigan	203	107	3.8	3.6
Minnesota	82	61	1.5	2.1
Mississippi	60	38	1.1	1.3
Missouri	120	77	2.2	2.6
Montana	26	18	< 1	< 1
Nebraska	49	42	< 1	1.4
Nevada	48	34	< 1	1.1
New Hampshire	77	13	1.4	< 1
New Jersey	219	38	4.1	1.3
New Mexico	46	31	< 1	1.0
New York	371	226	6.9	7.6
North Carolina	145	51	2.7	1.7
North Dakota	9	8	< 1	< 1
Northern Mariana Islands	0	0	< 1	< 1
Ohio	189	146	3.5	4.9
Oklahoma	59	35	1.1	1.2
Oregon	96	38	1.8	1.3
Pennsylvania	251	148	4.7	5.0
Puerto Rico	1	0	< 1	< 1
Rhode Island	30	15	< 1	< 1
South Carolina	153	47	2.8	1.6
South Dakota	18	9	< 1	< 1
Tennessee	137	78	2.6	2.6
Texas	565	231	10.5	7.8
U.S. Virgin Islands	1	0	< 1	< 1
Utah	70	33	1.3	1.1
Vermont	25	4	< 1	< 1
Virginia	173	89	3.2	3.0
Washington	147	64	2.7	2.2
West Virginia	49	23	< 1	< 1
Wisconsin	97	62	1.8	2.1
Wyoming	18	12	< 1	< 1

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
Q9 Which best describes the location of your PRIMARY clinical work setting?				
Urban/Metropolitan	1,658	962	30.9	32.5
Suburban	2,369	1,244	44.1	42.1
Rural	1,284	688	23.9	23.3
Q10 What is your employment status as a physical therapist assistant?				
Actively employed as a physical therapist assistant full-time	3,920	2,181	73.0	73.7
Actively employed as a physical therapist assistant part-time	965	526	18.0	17.8
Self-employed as a physical therapist assistant full-time	159	39	3.0	1.3
Self-employed as a physical therapist assistant part-time	120	41	2.2	1.4
Unemployed, seeking employment as a physical therapist assistant	0	0	< 1	< 1
Q11 Have you ever had an extended period of time (more than three months) away from actively working as a physical therapist assistant? Includes work in clinical, administration, consultation, education, or research activities. *				
No, I have never had an extended break from my work	1,151	509	72.2	74.3
Yes, lasting 3 to 6 months	224	113	14.1	16.5
Yes, lasting 7 to 12 months	103	37	6.5	5.4
Yes, lasting 13 to 18 months	44	16	2.8	2.3
Yes, lasting 19 to 36 months	28	6	1.8	< 1
Yes, lasting 3 to 5 years	26	1	1.6	< 1
Yes, lasting 6 to 10 years	12	2	< 1	< 1
Yes, lasting greater than 10 years	3	0	< 1	< 1
Q12 How many physical therapist positions/jobs have you held in the past 12 months?				
1	3,799	1,786	70.7	60.4
2 to 3	1,413	1,044	26.3	35.3
4 to 5	90	76	1.7	2.6
6 to 7	15	7	< 1	< 1
More than 7	5	4	< 1	< 1
Q13 What percentage of your time over the past 12 months was spent working in:				
Academic institution (post-secondary)				
0	5,168	2,905	96.2	98.2
1 to 50	149	50	2.8	1.7
51 to 100	55	3	1.0	< 1
School system (preschool/primary/secondary)				
0	5,196	2,876	96.7	97.2
1 to 50	68	46	1.3	1.6
51 to 100	108	36	2.0	1.2

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
Acute care hospital				
0	4,412	2,495	82.1	84.3
1 to 50	539	312	10.0	10.5
51 to 100	421	151	7.8	5.1
Health and wellness facility				
0	5,280	2,895	98.3	97.9
1 to 50	79	53	1.5	1.8
51 to 100	13	10	< 1	< 1
Outpatient facility (health system or hospital-based)				
0	4,215	2,347	78.5	79.3
1 to 50	336	240	6.3	8.1
51 to 100	821	371	15.3	12.5
Outpatient facility (private)				
0	4,059	1,703	75.6	57.6
1 to 50	302	267	5.6	9.0
51 to 100	1,011	988	18.8	33.4
Industrial Rehabilitation				
0	5,328	2,933	99.2	99.2
1 to 50	23	22	< 1	< 1
51 to 100	21	3	< 1	< 1
Inpatient Rehab Facility (IRF)				
0	4,902	2,656	91.3	89.8
1 to 50	269	218	5.0	7.4
51 to 100	201	84	3.7	2.8
US Military/Veterans Administration/Indian Health Services				
0	5,288	2,936	98.4	99.3
1 to 50	18	9	< 1	< 1
51 to 100	66	13	1.2	< 1
Patient's home/home care				
0	4,062	2,472	75.6	83.6
1 to 50	486	312	9.0	10.5
51 to 100	824	174	15.3	5.9
Research center				
0	5,365	2,954	99.9	99.9
1 to 50	7	4	< 1	< 1
51 to 100	0	0	< 1	< 1
Skilled Nursing Facility (SNF)				
0	3,628	1,828	67.5	61.8
1 to 50	551	439	10.3	14.8
51 to 100	1,193	691	22.2	23.4

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
Assisted Living Facility (ALF)				
0	5,122	2,799	95.3	94.6
1 to 50	201	135	3.7	4.6
51 to 100	49	24	< 1	< 1
Long-term Acute Care (LTAC)				
0	5,247	2,870	97.7	97.0
1 to 50	92	77	1.7	2.6
51 to 100	33	11	< 1	< 1
Other				
0	5,258	2,918	97.9	98.6
1 to 50	64	20	1.2	< 1
51 to 100	50	20	< 1	< 1
Q14 Other than direct patient care, what are your PRINCIPAL areas of responsibility at your primary work setting? Select all that apply.				
None	1,925	1,330	35.8	45.0
Administration/Management	686	276	12.8	9.3
Supervision	775	198	14.4	6.7
Consultation	318	108	5.9	3.7
Research	97	79	1.8	2.7
Sales/Marketing	270	143	5.0	4.8
Academic education	208	126	3.9	4.3
Clinical education	1,041	539	19.4	18.2
[other]	292	140	5.4	4.7
Q15 Approximately what percentage of your time over the past 12 months was spent in direct patient care?				
0%	57	23	1.1	< 1
1 to 25%	128	29	2.4	< 1
26 to 50%	166	50	3.1	1.7
51 to 75%	620	302	11.5	10.2
76 to 100%	4,343	2,522	80.8	85.3
Q16 Approximately what percentage of time over the past 12 months did you provide physical therapy services via telehealth or virtual/digital sessions? Includes direct patient care, consultation, patient advocacy, and indirect care. *				
0%	1,201	519	75.3	75.8
1% to 25%	334	118	21.0	17.2
26% to 50%	32	25	2.0	3.6
51% to 75%	11	10	< 1	1.5
76% to 100%	12	12	< 1	1.8
Q17 What is the approximate percentage of your patient population by age?				
18 years old and younger				
0	3,042	1,365	56.6	46.1
1 to 50	2,095	1,494	39.0	50.5
51 to 100	235	99	4.4	3.3

	n		%	
	PTA KSR	PTA WA	PTA KSR	PTA WA
19 to 64 years old				
0	723	334	13.5	11.3
1 to 50	3,787	2,036	70.5	68.8
51 to 100	862	588	16.0	19.9
65 years old and older				
0	352	171	6.6	5.8
1 to 50	1,969	1,283	36.7	43.4
51 to 100	3,097	1,529	57.7	51.7
Does not apply	46	25	< 1	< 1
Q18 Are you a current member of American Physical Therapy Association (APTA)?				
Yes	855	619	15.9	20.9
No	4,295	2,114	80.0	71.5
I don't know	161	199	3.0	6.7
Q19 Have you completed or are you currently completing an Advanced Proficiency Pathway through the American Physical Therapy Association? **				
Yes	78	15	2.8	1.1
No	2,635	1,328	96.1	98.2
Q20 Which of these statements is true regarding your experience supervising PTAs over the past 12 months?				
I routinely supervise PTAs and have a good understanding of the knowledge and skills they need to provide safe and effective care	1,756	0	32.7	--
I do NOT routinely supervise PTAs and/or I do NOT have a good understanding of the knowledge and skills they need to provide safe and effective care	0	0	--	--

Note. Percentages are based on the observed values divided by the total number of usable cases. Missing data are not reported, so within a question, the results may not sum to 100%. Question 20 was not administered to PTA respondents. The 1,756 respondents shown for Q20 within the PTA KSR sample are PT KSR survey respondents who were reassigned based on their response to Q20. * Item was added to the background questionnaire in 2021. Reported percentages are based on the sample of respondents that provided data in 2021 and 2022 (KSR Survey = 1,594, WA Survey = 685). ** Item was added to the background questionnaire in 2020. The percentages reported in this table are based on the total usable response sets for 2020, 2021, and 2022 (KSR Survey = 2,742; WA Survey = 1,352).

Appendix E. Work Activity Survey Results

	n	M	SD	%Perf	%Imp	Slope
Patient/Client Assessment						
Information Gathering & Synthesis						
Interview patients/clients, caregivers, and family to obtain patient/client history and current information (e.g., medical, surgical, medications, social, cultural, language preference, economic) to…						
…review prior and current level of function/activity	1,402	4.57	0.74	98.4	98.0	**0.02**
…establish general health status	1,402	4.35	0.84	97.9	97.4	0.00
…identify red flags (e.g., fever, malaise, unexplained weight change) and contraindications	1,402	4.56	0.77	98.9	98.6	-0.02
…identify patient/client's, family/caregiver's goals, values, and preferences	1,402	4.31	0.84	98.5	98.1	0.00
…determine impact of medications on plan of care (e.g., medication reconciliation, timing of intervention delivery, adherence)	1,402	3.88	1.08	95.6	93.7	-0.01
Administer standardized questionnaires (e.g., pain inventory, fall risk assessment)	1,402	3.77	1.04	95.8	93.9	**0.07**
Review medical records (e.g., lab values, diagnostic tests, imaging, specialty reports, narrative, consults, physical therapy documentation) prior to carrying out the PT plan of care	1,402	4.13	0.98	97.7	96.9	0.01
Gather information/discuss patient/client's current health status with interprofessional/interdisciplinary team members	1,402	4.09	0.94	98.0	97.0	-0.01
Identify signs/symptoms of change in patient/client's health status that require intervention by physical therapist	1,402	4.55	0.69	99.5	99.5	0.01
Identify signs/symptoms of change in patient/client's health status that require intervention by interprofessional/interdisciplinary team members	1,402	4.41	0.81	98.8	98.4	0.00
Systems Review						
Check patient/client's current affect, cognition, communication, and learning preferences (e.g., ability to convey needs, consciousness, orientation, expected emotional/behavioral responses)	1,402	4.21	0.91	98.4	97.9	0.00
Recognize changes in status of the…						
…patient/client's quality of speech, hearing, and vision (e.g., dysarthria, pitch/tone, use of corrective lenses, use of hearing aids)	1,350	3.86	1.08	94.9	92.8	0.02
…vestibular system (e.g., dizziness, vertigo)	1,350	4.04	0.97	96.0	95.3	-0.02
…gastrointestinal system (e.g., difficulty swallowing, nausea, change in appetite/diet, change in bowel function)	1,350	3.44	1.14	90.7	87.1	0.01
…genitourinary system (e.g., changes in bladder function, catheter complications)	1,350	3.42	1.18	88.0	83.8	0.02

	n	M	SD	%Perf	%Imp	Slope
…reproductive system (e.g., sexual and/or menstrual dysfunction, menopause status)	1,350	2.59	1.23	78.5	63.0	0.07
…cardiovascular/pulmonary system (e.g., blood pressure, heart rate, respiration rate)	1,350	4.35	0.87	98.9	98.4	-0.04
…lymphatic system (e.g., primary or secondary …lymphedema)	1,350	3.75	1.07	92.4	89.9	-0.07
…integumentary system (e.g., presence of scar formation, skin integrity, discoloration)	1,350	3.98	0.99	98.0	97.2	0.02
…musculoskeletal system (e.g., gross symmetry, strength, range of motion)	1,350	4.65	0.62	99.9	99.9	0.02
…neuromuscular system (e.g., gross coordination, motor function, balance, locomotion, gross sensory function)	1,350	4.66	0.61	99.9	99.9	-0.01
Tests & Measures						
Cardiovascular/Pulmonary						
Perform tests and measures of…						
…cardiovascular function (e.g., blood pressure, heart rate, heart sounds)	1,324	4.22	0.99	97.6	96.4	-0.04
…pulmonary function (e.g., respiratory rate, breathing patterns, breath sounds, chest excursion)	1,324	3.98	1.07	94.1	92.4	-0.03
…perfusion and gas exchange (e.g., oxygen saturation)	1,324	4.04	1.09	92.3	89.7	-0.01
…peripheral circulation (e.g., capillary refill, blood pressure in upper versus lower extremities)	1,324	3.46	1.19	88.0	83.1	0.02
…critical limb ischemia (e.g., peripheral pulses, skin perfusion pressure)	1,324	3.38	1.23	86.1	79.5	0.02
…physiological responses to position change (e.g., orthostatic hypotension, skin color, blood pressure, heart rate)	1,324	4.19	0.93	96.4	95.6	0.01
…aerobic capacity under maximal and submaximal conditions (e.g., endurance, exercise tolerance, metabolic equivalents, perceived exertion)	1,324	3.95	1.05	94.4	92.0	0.03
Anthropometric						
Perform tests and measures of…						
…body composition (e.g., percent body fat, lean muscle mass)	1,324	2.61	1.17	82.8	67.4	0.02
…body dimensions (e.g., height, weight, girth, limb length, head circumference/shape)	1,324	2.71	1.17	86.3	73.2	0.01
Quantify and qualify edema (e.g., pitting, volume, circumference)	1,324	3.46	1.12	92.9	89.2	0.00

	n	M	SD	%Perf	%Imp	Slope
Arousal, Attention, & Cognition						
Perform tests and measures of…						
…arousal and orientation (e.g., level of consciousness, time, person, place, situation)	1,276	3.84	1.15	91.4	87.1	-0.01
…attention and cognition (e.g., ability to process commands, delirium, confusion)	1,276	3.92	1.06	93.7	91.5	-0.02
…communication (e.g., expressive and receptive skills, following instructions)	1,276	3.94	1.03	95.4	93.9	0.02
…recall (including memory and retention)	1,276	3.59	1.09	92.5	89.3	0.01
Nerve Integrity						
Perform tests and measures of…						
…cranial nerve integrity (e.g., facial asymmetry, oculomotor function, hearing)	1,276	3.29	1.17	84.4	78.6	-0.01
…spinal nerve integrity (e.g., dermatome, myotome)	1,276	3.54	1.13	89.7	85.3	-0.01
…peripheral nerve integrity (e.g., sensation, strength)	1,276	3.85	1.01	93.7	91.9	0.00
…neural provocation (e.g., tapping, tension, stretch)	1,276	3.51	1.11	91.2	87.6	-0.04
Environmental & Community Integration/Reintegration (Home, Work, Job, School, Play, & Leisure)						
Collect data on patient/client's ability to perform activities of daily living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, self-care, toileting, sexual relations)	1,248	4.41	0.87	97.9	97.0	0.03
Collect data on patient/client's ability to perform instrumental activities of daily living (IADL) (e.g., household chores, hobbies)	1,248	4.15	0.97	97.2	96.2	**0.08**
Collect data on patient/client's ability to perform skills needed for integration or reintegration into the community, work, or school	1,248	4.16	0.95	97.5	96.4	**0.04**
Collect data on barriers (e.g., social, economic, physical, psychological, environmental, work conditions and activities) to home, community, work, or school integration/reintegration	1,248	3.95	1.05	96.1	93.9	0.01
Collect data on safety in home, community, work, or school environments	1,248	4.11	1.00	96.1	94.6	0.02
Collect data on patient/client's ability to participate in activities with or without the use of devices, equipment, or technologies	1,248	4.26	0.88	98.1	97.6	0.02
Ergonomics and Body Mechanics						
Perform tests and measures of…						
…ergonomics and body mechanics during functional activities	1,232	4.37	0.83	99.1	98.8	0.01
…postural alignment and position (static and dynamic)	1,232	4.43	0.76	99.6	99.4	0.01

	n	M	SD	%Perf	%Imp	Slope
Functional Mobility, Balance, & Vestibular						
Perform tests and measures of…						
…balance (dynamic and static) with or without the use of specialized equipment	1,232	4.63	0.59	99.4	99.4	0.00
…gait and locomotion (e.g., ambulation, wheelchair mobility) with or without the use of specialized equipment	1,232	4.68	0.58	99.4	99.3	-0.01
…mobility during functional activities and transitional movements (e.g., transfers, bed mobility)	1,232	4.62	0.66	99.0	98.7	**-0.03**
…vestibular function (e.g., peripheral dysfunction, central dysfunction, BPPV)	1,232	3.80	1.08	91.9	89.1	0.00
Integumentary Integrity						
Observe skin characteristics (e.g., continuity of skin color, sensation, temperature, texture, turgor)	1,224	3.78	1.06	96.7	94.4	0.02
Collect data on wound characteristics (e.g., tissue involvement, depth, tunneling, burn classification, ulcer/injury classification)	1,224	3.26	1.27	80.6	70.8	**0.04**
Observe scar tissue characteristics (e.g., banding, pliability, sensation, and texture)	1,224	3.33	1.19	89.4	82.6	**0.06**
Collect data on patient/client's activities, positioning, and postures that produce or relieve trauma to the skin	1,224	3.87	1.13	90.8	86.4	0.03
Identify devices and equipment that produce or relieve trauma to the patient/client's skin	1,224	3.79	1.16	89.2	84.5	0.02
Joint Integrity & Range of Motion						
Perform tests and measures of…						
…spinal joint stability (e.g., ligamentous integrity, joint structure)	1,211	3.80	1.10	88.2	84.1	**0.04**
…peripheral joint stability (e.g., ligamentous integrity, joint structure)	1,211	3.91	1.05	91.9	89.3	-0.01
…spinal joint mobility (e.g., glide, end feel)	1,211	3.70	1.15	87.6	82.6	0.04
…peripheral joint mobility (e.g., glide, end feel)	1,211	3.91	1.07	93.1	90.1	-0.02
…range of motion (e.g., passive, active, functional)	1,211	4.54	0.72	99.2	98.9	-0.01
…flexibility (e.g., muscle length, soft tissue extensibility)	1,211	4.37	0.82	98.4	97.9	0.01
Motor Function						
Perform tests and measures of…						
…muscle tone (e.g., hypertonicity, hypotonicity, dystonia)	1,202	3.97	1.00	95.3	93.6	0.02
…dexterity, coordination, and agility (e.g., rapid alternating movement, finger to nose)	1,202	3.68	1.10	93.3	90.3	0.03
…ability to initiate, modify and control movement patterns and postures (e.g., catching a ball, gait)	1,202	4.24	0.87	98.1	97.3	0.02
…ability to change movement performance with practice (e.g., motor learning)	1,202	4.17	0.89	97.6	96.8	0.01

	n	M	SD	%Perf	%Imp	Slope
…movement quality (e.g., purpose, precision, efficiency, biomechanics, kinematics)	1,202	4.17	0.90	98.2	97.3	0.03
Muscle Performance						
Perform tests and measures of						
…muscle strength, power, and endurance without specialized equipment (e.g., manual muscle test, functional strength testing)	1,202	4.38	0.81	98.1	97.6	**0.03**
…muscle strength, power, and endurance with specialized equipment (e.g., isokinetic testing, dynamometry)	1,202	3.84	1.22	88.4	81.9	0.03
Neuromotor Development & Sensory Integration						
Perform tests and measures of…						
…acquisition and evolution of motor skills throughout the lifespan	1,202	3.55	1.17	87.5	81.0	0.03
…sensorimotor integration	1,201	3.56	1.09	89.4	85.1	0.01
…developmental reflexes and reactions (e.g., asymmetrical tonic neck reflex, righting reactions)	1,202	3.43	1.21	82.4	74.9	-0.02
Reflex Integrity						
Perform tests and measures of…						
…deep tendon/muscle stretch reflexes (e.g., quadriceps, biceps)	1,189	3.48	1.18	88.8	82.9	-0.02
…upper motor neuron integrity (e.g., Babinski reflex, Hoffman sign)	1,188	3.20	1.23	81.2	71.4	-0.02
…superficial reflexes and reactions (e.g., cremasteric reflex, abdominal reflexes)	1,188	3.03	1.25	79.5	67.5	-0.05
Pain & Sensory Integrity						
Perform tests and measures of…						
…pain (e.g., location, intensity, frequency, central, peripheral, psychogenic)	1,188	4.31	0.89	97.4	96.0	-0.04
…deep sensation (e.g., proprioception, kinesthesia, pressure)	1,188	3.70	1.13	91.2	86.2	0.01
…superficial sensation (e.g., touch, temperature discrimination)	1,188	3.65	1.13	92.2	87.6	0.03
Plan of Care & Goals						
Modify and/or progress within the plan of care based on patient/client's resources (e.g., financial, transportation, time, insurance benefits, available technologies)	1,180	4.32	0.95	95.1	93.0	**0.04**

	n	M	SD	%Perf	%Imp	Slope
Interventions						
Procedural Interventions						
Therapeutic Exercise/Therapeutic Activities						
Perform and/or train patient/client/caregiver in…						
…aerobic capacity/endurance conditioning	1,556	4.11	0.99	98.5	97.0	**0.05**
…balance, coordination, and agility activities	1,556	4.66	0.60	99.7	99.7	0.02
…body mechanics and postural stabilization techniques	1,556	4.60	0.69	99.8	99.7	0.01
…flexibility techniques	1,556	3.89	1.04	99.4	97.6	**0.06**
…neuromotor techniques (e.g., movement pattern training, neuromuscular education or re-education)	1,556	4.16	0.93	99.6	98.7	**0.06**
…relaxation techniques	1,556	3.40	1.16	98.7	94.0	0.07
…strength, power, and endurance exercises	1,556	4.34	0.84	99.8	99.2	**0.04**
…genitourinary management (e.g., pelvic floor exercises, bladder strategies)	1,555	2.74	1.24	65.9	54.5	0.10
…gastrointestinal management (e.g., bowel strategies, positioning to avoid reflux)	1,555	2.57	1.23	61.6	48.4	0.07
…manual/mechanical airway clearance techniques (e.g., assistive devices, assistive cough, incentive spirometer, flutter valve, percussion, vibration)	1,555	2.82	1.34	62.7	51.5	0.05
…techniques to maximize ventilation and perfusion (e.g., positioning, active cycle breathing, autogenic drainage, paced breathing, pursed lip breathing)	1,555	3.19	1.25	76.3	68.6	0.08
…mechanical repositioning for vestibular dysfunction	1,555	2.90	1.22	68.4	59.8	0.04
…habituation/adaptation exercises for vestibular dysfunction	1,555	2.96	1.22	71.3	63.2	0.03
…postural drainage	729	2.64	1.29	77.8	42.0	0.09
Functional Training						
Perform and/or train patient/client in…						
…the use of environmental modifications (e.g., ramps, grab bars, raised toilet, environmental control units)	1,524	3.99	1.22	91.2	86.8	-0.02
…activities of daily living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, self-care, toileting, sexual relations)	1,524	4.29	1.05	96.7	94.4	-0.02
…community and leisure integration or reintegration (e.g., work/school/play)	1,524	3.75	1.16	93.0	88.8	0.01
…instrumental activities of daily living (IADL) (e.g., household chores, hobbies)	1,524	3.94	1.07	95.5	93.5	-0.01
…mobility techniques	1,524	4.31	0.86	99.0	98.6	0.01
…gross motor developmental progression	1,235	3.73	1.15	92.7	87.5	0.00
…fall prevention and fall recovery strategies	1,524	4.47	0.84	98.8	98.2	-0.02

	n	M	SD	%Perf	%Imp	Slope
…behavior modification and strategies that enhance functioning (e.g., energy conservation, pacing, pre-activity planning, reminder schedules)	1,524	3.85	1.12	94.9	91.9	-0.01
Manual Therapy Techniques						
Perform manual lymphatic drainage	1,490	2.63	1.23	53.2	41.3	0.00
Perform spinal manual traction	1,489	3.17	1.25	71.7	63.6	0.05
Perform peripheral manual traction	1,489	3.08	1.26	71.7	62.3	0.01
Perform and/or train patient/client/caregiver in soft tissue mobilization (e.g., connective tissue massage, therapeutic massage, foam rolling)	1,488	3.60	1.25	90.7	84.9	0.04
Perform instrument-assisted soft tissue mobilization	1,488	3.45	1.29	79.9	72.2	0.03
Perform peripheral joint range of motion	1,488	4.12	1.05	93.4	91.2	-0.01
Perform peripheral mobilization/manipulation (thrust)	1,488	3.00	1.36	52.0	41.5	0.02
Perform peripheral mobilization (non-thrust)	1,488	3.48	1.32	76.7	68.7	0.06
Perform spinal mobilization/manipulation (thrust)	1,488	2.66	1.33	46.3	33.5	0.07
Perform spinal mobilization (non-thrust)	1,488	3.27	1.36	66.8	57.1	0.02
Apply taping for…						
…neuromuscular reeducation	1,476	4.01	1.16	87.0	82.9	**-0.08**
…lymphatic drainage	1,476	2.93	1.29	57.3	46.8	-0.02
…pain management	1,476	4.03	1.12	87.6	84.1	-0.07
Equipment & Devices						
Apply and/or adjust…						
…adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)	1,454	3.61	1.33	77.8	70.4	-0.01
…protective devices (e.g., braces, cushions, helmets, protective taping)	1,454	3.67	1.19	88.8	84.3	0.00
…supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars, serial casts, short-stretch bandages)	1,454	3.54	1.24	88.8	83.2	-0.04
…orthotic devices (e.g., braces, shoe inserts, splints)	1,453	3.82	1.13	94.3	91.6	-0.04
Apply and/or adjust…						
…assistive devices/technologies (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)	1,454	4.49	0.85	99.2	98.4	**-0.04**
…prosthetic devices/technologies (e.g., lower-extremity and upper-extremity prostheses, microprocessor-controlled prosthetic devices)	1,454	3.59	1.25	79.9	74.4	-0.02
…mechanical neuromuscular re-education devices/technologies (e.g., weighted vests, therapeutic suits, body weight supported treadmill)	1,454	3.14	1.42	64.1	51.8	0.05
…prescribed oxygen during interventions	1,454	3.91	1.26	75.3	69.3	-0.06

	n	M	SD	%Perf	%Imp	Slope
Train patient/client/caregiver in the use of…						
…adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)	1,427	3.58	1.34	74.6	66.1	-0.04
…assistive devices/technologies (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)	1,426	4.50	0.86	98.5	97.6	**-0.03**
…orthotic devices (e.g., braces, shoe inserts, splints)	1,426	4.00	1.10	94.0	91.7	-0.04
…prosthetic devices/technologies (e.g., lower-extremity and upper-extremity prostheses, microprocessor-controlled prosthetic devices)	1,426	3.66	1.30	78.1	70.4	0.00
…protective devices (e.g., braces, cushions, helmets, protective taping)	1,426	3.65	1.28	85.5	78.5	0.01
…supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars, serial casts, short-stretch bandages)	1,426	3.64	1.24	86.4	80.7	-0.05
…mechanical neuromuscular re-education devices/technologies (e.g., weighted vests, therapeutic suits, body weight supported treadmill)	1,426	3.26	1.44	63.8	51.5	-0.01
Integumentary Repair & Protection Techniques						
Perform and/or train patient/client/caregiver in…						
…nonselective debridement (e.g., removal of nonselective areas of devitalized tissue)	1,413	2.58	1.32	36.0	21.2	-0.03
…selective enzymatic or autolytic debridement (e.g., removal of specific areas of devitalized tissue)	1,411	2.52	1.31	35.0	20.2	-0.05
…application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings)	1,411	2.76	1.28	51.2	37.7	-0.01
…desensitization techniques (e.g., brushing, tapping, use of textures)	1,411	2.98	1.21	70.0	60.2	-0.04
…hyperbaric therapy	1,411	2.33	1.25	32.2	16.8	-0.06
…negative pressure wound therapy (e.g., vacuum-assisted wound closure)	1,411	2.50	1.32	34.6	19.8	-0.01
Perform sharp debridement (e.g., removal of specific areas of devitalized tissue)	1,411	2.41	1.31	32.7	17.6	-0.07
Therapeutic Modalities						
Perform and/or train patient/client/caregiver in…						
…biofeedback therapy (e.g., relaxation techniques, muscle reeducation, EMG)	1,407	3.41	1.26	79.8	71.9	-0.01
…iontophoresis	1,407	2.84	1.39	64.3	48.6	-0.05
…phonophoresis	1,401	2.67	1.41	47.4	30.0	-0.14
…electrotherapy modalities, excluding iontophoresis (e.g., neuromuscular electrical stimulation (NMES), transcutaneous electrical nerve stimulation (TENS), functional electrical	1,407	3.95	1.18	91.1	87.0	-0.05

	n	M	SD	%Perf	%Imp	Slope
stimulation (FES), interferential therapy, high-voltage pulsed current)						
…cryotherapy (e.g., cold pack, ice massage, vapocoolant spray)	1,407	3.90	1.18	94.5	91.0	**-0.05**
…hydrotherapy using contrast baths/pools	1,407	2.85	1.47	52.0	35.9	-0.04
…hydrotherapy (e.g., aquatic exercise, underwater treadmill)	1,407	3.26	1.44	52.5	40.1	0.02
…phototherapy (laser light)	1,407	2.63	1.40	46.4	29.0	-0.07
…monochromatic infrared agent procedures (e.g., light emitting diodes [LEDs])	1,401	2.36	1.32	38.7	20.6	-0.11
…ultrasound procedures	1,401	3.37	1.35	83.0	73.3	**-0.12**
…diathermy	1,401	2.71	1.40	49.0	31.7	**-0.18**
…dry heat thermotherapy (e.g., Fluidotherapy)	1,401	2.65	1.39	45.4	28.9	**-0.15**
…hot pack thermotherapy	1,401	3.83	1.23	90.3	85.2	-0.08
…paraffin bath thermotherapy	1,401	2.95	1.40	56.6	41.7	-0.08
…shockwave therapy	1,401	2.33	1.35	36.5	18.4	-0.08
…blood-flow restriction training	102	2.85	1.40	96.5	36.3	NA
…cupping	102	3.02	1.47	96.9	42.2	NA
Mechanical Modalities						
Apply and/or train patient/client/caregiver in…						
…intermittent pneumatic compression	1,400	2.95	1.33	52.7	39.4	-0.04
…assisted movement devices (e.g., dynamic splint, continuous passive motion devices)	1,400	3.13	1.32	63.9	53.1	0.01
…mechanical spinal traction	1,400	3.37	1.33	65.1	54.6	0.00
Non-procedural Interventions						
Communication						
Discuss physical therapy evaluation findings, interventions, goals, prognosis, discharge planning, and plan of care with…						
…the supervising physical therapist	1,397	4.77	0.61	97.7	96.9	0.00
…interprofessional/interdisciplinary team members	1,397	4.50	0.82	96.5	95.1	**-0.02**
…patient/client/caregiver	1,397	4.70	0.65	99.4	99.0	-0.02
Provide written, oral, and electronic information to the patient/client and/or caregiver	1,397	4.58	0.77	98.6	97.7	-0.02
Document						
Document…						
…data collection results	1,394	4.48	0.87	96.9	95.6	**0.03**
…intervention(s) and patient/client response(s) to intervention	1,394	4.72	0.61	99.6	99.3	0.03
…patient/client/caregiver education	1,394	4.67	0.65	99.7	99.4	0.01
…communication with the interdisciplinary/ interprofessional team related to the patient/client's care	1,394	4.48	0.83	97.8	96.8	0.01
…rationale for billing and reimbursement	1,394	4.41	0.92	94.6	92.8	0.03

	n	M	SD	%Perf	%Imp	Slope
…disclosure and consent (e.g., disclosure of medical information, consent for treatment)	1,394	4.34	0.98	93.2	90.8	0.03
Assign billing codes for physical therapy evaluation and treatment provided	1,394	4.35	1.02	87.0	83.4	0.04
Education						
Educate patient/client and/or caregiver about…						
…the patient/client's current condition and health status (e.g., nature of the condition, potential benefits of physical therapy interventions, potential treatment outcomes)	1,387	4.69	0.63	99.4	99.3	-0.01
…the role of the physical therapist and/or physical therapist assistant in patient/client management	1,387	4.57	0.75	99.8	99.7	0.00
…lifestyle and behavioral changes to promote wellness (e.g., nutrition, physical activity, tobacco cessation)	1,387	4.38	0.88	98.7	98.1	0.02
…the role of physical therapy in transitional planning (e.g., hospice, palliative care, setting changes)	1,387	4.03	1.17	88.9	84.3	**0.04**
Education the healthcare team about…						
…the role of the physical therapist and/or physical therapist assistant in patient/client management	1,387	4.27	0.99	95.6	93.7	0.01
…safe patient handling (e.g., injury prevention, ergonomics, use of equipment)	1,387	4.57	0.78	97.9	97.3	-0.03
Educate community groups on lifestyle and behavioral changes to promote wellness (e.g., nutrition, physical activity, tobacco cessation)	1,383	3.76	1.16	77.8	72.5	-0.02
Participate in the clinical education of students	1,383	3.77	1.17	76.5	70.4	-0.02
Patient/client & Staff Safety						
Emergency Procedures						
Implement emergency procedures (e.g., CPR, AED, calling a code)	1,383	4.09	1.14	88.0	83.9	-0.02
Perform first aid	1,383	3.93	1.21	87.8	82.6	-0.01
Implement disaster response procedures	1,383	3.74	1.22	81.6	75.8	0.00
Environmental Safety						
Perform risk assessment of the physical environment (e.g., barrier-free environment, outlets, windows, floors, lighting)	1,383	3.94	1.16	82.7	78.2	0.04
Prepare and maintain a safe working environment for performing interventions (e.g., unobstructed walkways, equipment availability)	1,383	4.37	0.93	94.9	92.8	0.00
Perform regular equipment inspections and/or maintenance (e.g., modalities, assistive devices)	1,383	4.11	1.06	87.7	84.5	-0.02

	n	M	SD	%Perf	%Imp	Slope
Infection Control						
Perform and/or train patient/client and/or caregiver on appropriate infection control practices (e.g., universal precautions, hand hygiene, isolation, airborne precautions, equipment cleaning)	1,180	4.01	1.14	91.6	87.5	0.00
Research & Evidence-Based Practice						
Search the literature for current best evidence	1,180	3.74	1.06	93.5	90.6	0.02
Evaluate the quality of published data	1,180	3.50	1.17	88.8	82.5	0.01
Integrate current best evidence, clinical experience, and patient values in clinical practice (e.g., clinical prediction rules, patient preference)	1,180	3.94	1.02	93.9	91.3	0.04
Design and/or direct research activities	1,180	2.87	1.24	68.8	53.5	-0.01
Participate in research activities	1,179	2.78	1.23	69.6	54.1	-0.01
Compare intervention outcomes with normative data	1,179	3.07	1.22	74.3	61.5	0.00
Professional Responsibilities						
Supervise support personnel (e.g., physical therapy aide/technician)	1,179	3.62	1.21	78.2%	70.0%	0.04
Assign tasks to other personnel (e.g., physical therapy aide/technician) to assist with patient/client care	1,179	3.51	1.21	81.1%	73.0%	0.04
Disclose financial interest in recommended products or services to the patient/client	1,174	3.07	1.29	70.4%	56.3%	0.04
Communicate with the physical therapist when the expectations of the PTA are beyond their knowledge, skills, and abilities	1,174	4.60	0.72	99.1%	98.9%	0.01
Report healthcare providers that are suspected to not perform their professional responsibilities with reasonable skill and safety to the appropriate authorities	1,174	4.41	0.92	94.9%	92.5%	0.01
Report suspected cases of abuse to the appropriate authority	1,174	4.65	0.72	96.9%	95.7%	0.00
Report suspected illegal or unethical acts performed by healthcare providers to the relevant authority	1,174	4.61	0.76	96.3%	94.9%	0.00
Advocate for public access to physical therapy and other healthcare services	1,168	4.02	1.08	89.8%	86.0%	0.05
Determine own need for professional development	1,168	4.35	0.85	98.9%	98.1%	0.03
Participate in learning and/or development activities (e.g., journal clubs, self-directed reading, continuing competence activities) to maintain the currency of knowledge, skills, and abilities	1,168	4.27	0.94	98.4%	96.9%	0.00
Practice within the federal and jurisdiction regulations and professional standards	1,168	4.72	0.63	99.3%	99.1%	0.01
Participate in professional organizations	1,168	3.48	1.21	95.4%	89.6%	-0.02
Participate in performance improvement and quality reporting activities (e.g., Physician Quality Reporting System, standardized outcomes measurement, application of health informatics)	1,168	3.74	1.14	88.9%	84.7%	-0.01

Appendix F. Knowledge and Skill Requirements Results

	n	M	SD	%Imp	Slope
CARDIOVASCULAR/PULMONARY SYSTEM					
Physical Therapy Data Collection					
Cardiovascular/pulmonary system tests/measures, including outcome measures, and their applications according to current best evidence	2,653	3.95	0.98	99.0	0.02
Anatomy and physiology of the cardiovascular/pulmonary system as related to tests/measures	2,653	3.94	0.97	99.4	0.02
Movement analysis as related to the cardiovascular/pulmonary system (e.g., rib cage excursion, breathing pattern)	2,653	3.83	0.97	99.5	0.03
Diseases/Conditions that Impact Effective Treatment					
Cardiovascular/pulmonary system diseases/conditions and their pathophysiology to establish and carry out plan of care	2,653	4.03	0.91	99.5	0.00
Non-pharmacological medical management of the cardiovascular/pulmonary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,653	3.33	1.00	97.7	0.02
The impact of pharmacology used to treat the cardiovascular/pulmonary system on physical therapy management	2,653	3.41	1.00	97.9	0.08
Interventions					
Cardiovascular/pulmonary system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence	2,653	4.15	0.89	99.5	0.00
Anatomy and physiology of the cardiovascular/pulmonary system as related to physical therapy interventions, daily activities, and environmental factors	2,653	4.19	0.87	99.8	-0.02
Adverse effects or complications on the cardiovascular/pulmonary system from physical therapy interventions	2,653	4.44	0.76	99.8	-0.03
Adverse effects or complications on the cardiovascular/pulmonary system from physical therapy interventions used on other systems	2,458	4.36	0.79	99.7	-0.01
LYMPHATIC SYSTEM					
Physical Therapy Data Collection					
Lymphatic system tests/measures, including outcome measures, and their applications according to current best evidence	2,543	3.10	0.99	96.1	0.02
Anatomy and physiology of the lymphatic system as related to tests/measures	2,543	3.18	1.00	97.2	0.03
Movement analysis as related to the lymphatic system (e.g., compensatory movement, extremity range of motion)	2,543	3.47	1.02	97.5	0.03

	n	M	SD	%Imp	Slope
Diseases/Conditions that Impact Effective Treatment					
Lymphatic system diseases/conditions and their pathophysiology to establish and carry out plan of care	2,543	3.42	1.00	97.7	0.03
Non-pharmacological medical management of the lymphatic system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,542	3.01	0.97	95.7	0.03
Interventions					
Lymphatic system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence	2,543	3.45	1.02	97.6	0.01
Anatomy and physiology of the lymphatic system as related to interventions, daily activities, and environmental factors	2,543	3.51	1.03	97.8	0.01
Adverse effects or complications on the lymphatic system from physical therapy interventions	2,543	3.80	1.05	98.2	-0.01
Adverse effects or complications on the lymphatic system from physical therapy interventions used on other systems	2,460	3.72	1.06	98.2	0.01
MUSCULOSKELETAL SYSTEM					
Physical Therapy Data Collection					
Musculoskeletal system tests/measures, including outcome measures, and their applications according to current best evidence	2,719	4.43	0.78	99.8	-0.03
Anatomy and physiology of the musculoskeletal system as related to tests/measures	2,719	4.53	0.69	99.9	-0.04
Movement analysis as related to the musculoskeletal system	2,719	4.47	0.70	100.0	-0.02
Joint biomechanics and their applications	2,719	4.39	0.76	99.8	-0.02
Diseases/Conditions that Impact Effective Treatment					
Musculoskeletal system diseases/conditions and their pathophysiology to establish and carry out plan of care	2,617	4.32	0.74	100.0	-0.03
Connective tissue diseases/conditions and their pathophysiology to establish and carry out plan of care	2,617	4.15	0.81	99.9	-0.03
Non-pharmacological medical management of the musculoskeletal system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,617	3.57	0.92	99.1	0.00
The impact of pharmacology used to treat the musculoskeletal system on physical therapy management	2,617	3.47	0.93	98.9	0.03
Interventions					
Musculoskeletal system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence	2,719	4.61	0.61	100.0	-0.03
Anatomy and physiology of the musculoskeletal system as related to physical therapy interventions, daily activities, and environmental factors	2,719	4.62	0.61	99.9	-0.04

	n	M	SD	%Imp	Slope
Adverse effects or complications on the musculoskeletal system from physical therapy interventions	2,719	4.63	0.61	100.0	-0.03
Adverse effects or complications on the musculoskeletal system from physical therapy interventions used on other systems	2,458	4.47	0.73	99.8	-0.02
NEUROMUSCULAR & NERVOUS SYSTEM					
Physical Therapy Data Collection					
Neuromuscular and nervous systems tests/measures, including outcome measures, and their applications according to current best evidence	2,616	4.05	0.87	99.7	-0.02
Anatomy and physiology of the neuromuscular and nervous systems as related to tests/measures	2,616	4.15	0.84	99.8	-0.02
Movement analysis as related to the neuromuscular and nervous systems	2,615	4.26	0.80	99.9	-0.01
Diseases/Conditions that Impact Effective Treatment					
Nervous system (CNS, PNS, ANS) diseases/conditions and their pathophysiology to establish and carry out plan of care	2,616	4.07	0.88	99.7	-0.04
Non-pharmacological medical management of the neuromuscular and nervous systems (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,615	3.56	0.94	98.9	-0.01
The impact of pharmacology used to treat the neuromuscular and nervous systems on physical therapy management	2,615	3.52	0.97	98.7	0.04
Interventions					
Neuromuscular and nervous systems physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence	2,510	4.38	0.74	99.9	-0.04
Anatomy and physiology of the neuromuscular and nervous systems as related to physical therapy interventions, daily activities, and environmental factors	2,510	4.37	0.74	99.9	-0.03
Adverse effects or complications on the neuromuscular and nervous systems from physical therapy interventions	2,510	4.40	0.74	99.9	-0.04
Adverse effects or complications on the neuromuscular and nervous systems from physical therapy interventions used on other systems	2,458	4.47	0.73	99.8	-0.02
Motor control as related to neuromuscular and nervous systems physical therapy interventions	2,510	4.34	0.74	99.9	-0.03
Motor learning as related to the neuromuscular and nervous systems physical therapy interventions	2,510	4.31	0.77	99.9	-0.03

	n	M	SD	%Imp	Slope
INTEGUMENTARY SYSTEM					
Physical Therapy Data Collection					
Integumentary system tests/measures, including outcome measures, and their applications according to current best evidence	2,388	3.42	0.99	98.1	0.03
Anatomy and physiology of the integumentary system as related to tests/measures	2,388	3.51	0.99	98.5	0.02
Movement analysis as related to the integumentary system (e.g., friction, shear, pressure, and scar mobility)	2,388	3.93	0.92	99.4	0.02
Diseases/Conditions that Impact Effective Treatment					
Integumentary system diseases/conditions and their pathophysiology to establish and carry out plan of care	2,388	3.73	0.94	99.2	0.01
Non-pharmacological medical management of the integumentary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,388	3.25	0.98	97.4	0.03
The impact of pharmacology used to treat the integumentary system on physical therapy management	2,388	3.23	1.01	96.8	0.09
Interventions					
Integumentary system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence	2,387	3.75	0.96	99.1	0.01
Anatomy and physiology of the integumentary system as related to physical therapy interventions, daily activities, and environmental factors	2,387	3.82	0.95	99.3	-0.01
Adverse effects or complications on the integumentary system from physical therapy and medical/surgical interventions	2,387	3.97	0.95	99.3	-0.01
Adverse effects or complications on the integumentary system from physical therapy interventions used on other systems	2,458	4.07	0.91	99.5	0.00
METABOLIC & ENDOCRINE SYSTEMS					
Diseases/Conditions that Impact Effective Treatment					
Metabolic and endocrine system diseases/conditions and their pathophysiology to establish and carry out plan of care	2,467	3.45	0.95	98.4	-0.02
Non-pharmacological medical management of the metabolic and endocrine systems (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,467	3.23	0.95	97.4	-0.01
The impact of pharmacology used to treat the metabolic and endocrine systems on physical therapy management	2,467	3.21	0.98	97.2	0.04

	n	M	SD	%Imp	Slope
Interventions					
Metabolic and endocrine systems physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence	2,467	3.53	0.99	98.4	-0.03
Anatomy and physiology of the metabolic and endocrine systems as related to physical therapy interventions, daily activities, and environmental factors	2,467	3.57	1.00	98.5	-0.03
Adverse effects or complications on the metabolic and endocrine systems from physical therapy interventions	2,467	3.73	1.00	98.7	**-0.04**
Adverse effects or complications on the metabolic and endocrine systems from physical therapy interventions used on other systems	2,458	3.78	1.01	98.8	0.01
GASTROINTESTINAL SYSTEM					
Physical Therapy Data Collection					
Gastrointestinal system tests/measures, including outcome measures, and their applications according to current best evidence (e.g., bowel dysfunction impact questionnaires, Murphy test, Rovsing test, McBurney point sign)	2,427	2.86	1.01	92.0	0.02
Anatomy and physiology of the gastrointestinal system as related to tests/measures	2,427	2.95	1.01	94.1	0.01
Movement analysis as related to the gastrointestinal system (e.g., effects of muscular tension or trigger points, positioning for bowel movement)	2,427	3.07	1.05	94.3	0.00
Diseases/Conditions that Impact Effective Treatment					
Gastrointestinal system diseases/conditions and their pathophysiology to establish and carry out plan of care, including prognosis	2,427	3.09	1.03	94.6	-0.02
Non-pharmacological medical management of the gastrointestinal system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,427	2.87	0.99	93.2	0.01
The impact of pharmacology used to treat the gastrointestinal system on physical therapy management	2,427	2.91	1.01	92.8	0.06
Interventions					
Gastrointestinal system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence (e.g., positioning for reflux prevention, bowel programs)	2,427	3.16	1.06	95.0	0.00
Anatomy and physiology of the gastrointestinal system as related to physical therapy interventions, daily activities, and environmental factors	2,427	3.24	1.06	95.8	0.00
Adverse effects or complications on the gastrointestinal system from physical therapy interventions	2,427	3.39	1.08	96.5	-0.01

	n	M	SD	%Imp	Slope
Adverse effects or complications on the gastrointestinal system from physical therapy interventions used on other systems	2,458	3.64	1.06	98.3	0.02
GENITOURINARY SYSTEM					
Physical Therapy Data Collection					
Genitourinary system tests/measures, including outcome measures, and their applications according to current best evidence	2,388	2.85	1.03	91.5	0.00
Anatomy and physiology of the genitourinary system as related to tests/measures	2,388	2.89	1.04	92.0	0.00
Diseases/Conditions that Impact Effective Treatment					
Genitourinary system diseases/conditions and their pathophysiology to establish and carry out plan of care	2,388	2.96	1.04	93.1	0.01
Non-pharmacological medical management of the genitourinary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)	2,388	2.78	0.99	91.4	0.02
The impact of pharmacology used to treat the genitourinary system on physical therapy management	2,388	2.81	1.02	91.2	0.07
Interventions					
Genitourinary system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence (e.g., bladder programs, biofeedback, pelvic floor retraining)	2,388	3.11	1.07	94.5	0.00
Anatomy and physiology of the genitourinary system as related to physical therapy interventions, daily activities, and environmental factors	2,388	3.14	1.08	94.3	0.00
Adverse effects or complications on the genitourinary system from physical therapy interventions	2,388	3.25	1.12	94.9	0.00
Adverse effects or complications on the genitourinary system from physical therapy interventions used on other systems	2,458	3.56	1.12	97.1	0.02
SYSTEM INTERACTIONS					
Diseases/Conditions that Impact Effective Treatment					
Diseases/conditions where the primary impact is on more than one system (e.g., cancer, multi-trauma, sarcoidosis, autoimmune disorders, pregnancy) to establish and carry out plan of care	2,340	4.19	0.82	99.7	0.00
The impact of co-morbidities/co-existing conditions on patient/client management (e.g., diabetes and hypertension; obesity and arthritis; dementia and hip fracture)	2,340	4.44	0.69	100.0	-0.02
Psychological and psychiatric conditions that impact patient/client management (e.g., grief, depression, schizophrenia)	2,340	4.06	0.86	99.8	0.00
Dimensions of pain (acute or persistent) that impact patient/client management (e.g., psychological, social, physiological, neurological, mechanical)	2,340	4.26	0.78	99.9	0.00

	n	M	SD	%Imp	Slope
Non-pharmacological medical management of multiple systems (e.g., diagnostic imaging and other medical tests, surgical procedures)	2,340	3.69	0.95	98.8	0.02
The impact of pharmacology used to treat multiple systems, including polypharmacy, on physical therapy management	2,340	3.62	0.99	98.5	0.08
EQUIPMENT, DEVICES, & TECHNOLOGIES					
Applications and adjustments, indications, contraindications, and precautions of:					
assistive and adaptive devices/technologies (e.g., walkers, wheelchairs, adaptive seating systems and positioning devices, mechanical lifts)	2,370	4.71	0.55	100.0	**-0.03**
prosthetic devices/technologies (e.g., lower-extremity and upper-extremity prostheses, microprocessor-controlled prosthetic devices)	2,370	4.26	0.88	99.7	0.00
protective, supportive, and orthotic devices/technologies (e.g., braces, helmets, taping, compression garments, serial casts, shoe inserts, splints)	2,370	4.30	0.84	99.8	-0.01
THERAPEUTIC MODALITIES					
Applications, indications, contraindications, and precautions of:					
thermal modalities	2,317	4.16	1.01	98.7	-0.02
iontophoresis	2,317	3.26	1.26	91.2	-0.04
electrotherapy modalities, excluding iontophoresis (e.g., neuromuscular electrical stimulation (NMES), transcutaneous electrical nerve stimulation (TENS), functional electrical stimulation (FES), interferential therapy, high-voltage pulsed current)	2,317	4.17	0.99	98.7	-0.01
laser light therapy	2,317	2.98	1.28	85.8	-0.06
LED light therapy	664	2.63	1.25	78.6	-0.13
phonophoresis	2,317	2.95	1.32	84.3	-0.04
ultrasound modalities, excluding phonophoresis	2,317	3.78	1.21	94.9	-0.05
mechanical modalities (e.g., mechanical motion devices, traction devices)	2,317	3.80	1.12	97.0	-0.01
biofeedback	2,317	3.41	1.16	94.6	-0.03
diathermy	2,317	2.83	1.38	78.4	-0.01
intermittent compression	2,317	3.34	1.17	93.6	0.00
blood-flow restriction training	269	2.95	1.26	85.5	NA
cupping	269	2.68	1.21	81.8	NA
SAFETY & PROTECTION					
Factors influencing safety and injury prevention (e.g., safe patient handling, fall prevention, equipment maintenance, environmental safety)	2,370	4.78	0.50	100.0	-0.04
The function and implications and related precautions of intravenous lines, tubes, catheters, monitoring devices, and mechanical ventilators/oxygen delivery devices	2,370	4.35	0.86	99.5	-0.03
Emergency preparedness (e.g., CPR, first aid, disaster response)	2,370	4.54	0.73	100.0	-0.04

	n	M	SD	%Imp	Slope
Infection control procedures (e.g., standard/universal precautions, isolation techniques, sterile technique)	2,370	4.69	0.60	100.0	-0.04
Signs/symptoms of physical, sexual, and psychological abuse and neglect	2,370	4.44	0.79	99.9	-0.03
PROFESSIONAL RESPONSIBILITIES					
Standards of documentation	2,361	4.68	0.58	100.0	**-0.04**
Standards of professional ethics	2,361	4.79	0.49	100.0	**-0.04**
Standards of billing, coding, and reimbursement	2,361	4.26	0.90	99.5	**-0.07**
Patient/client rights (e.g., ADA, IDEA, HIPAA, patient bill of rights)	2,361	4.68	0.60	99.9	**-0.04**
Obligations for reporting illegal, unethical, or unprofessional behaviors (e.g., fraud, abuse, neglect)	2,361	4.70	0.59	100.0	**-0.04**
State and federal laws, rules, regulations, and industry standards set by state and accrediting bodies (e.g., state licensing entities, Joint Commission, CARF, CMS)	2,361	4.56	0.71	99.8	**-0.04**
Risk management and quality assurance (e.g., policies and procedures, incident reports, peer chart review)	2,361	4.24	0.89	99.5	-0.03
Human resource legal issues (e.g., OSHA, sexual harassment)	2,361	4.19	0.92	99.5	-0.02
The roles and responsibilities of the PT, PTA, other healthcare professionals, and support staff	2,361	4.69	0.58	100.0	-0.03
Cultural factors and/or characteristics that affect patient/client management (e.g., language differences, disability, ethnicity, customs, demographics, religion)	2,355	4.14	0.87	99.5	-0.02
Socioeconomic factors that affect patient/client management	2,355	4.02	0.88	99.4	-0.03
Applications and utilization of health information technology (e.g., electronic medical records)	2,355	4.02	0.91	99.4	0.00
The provision and utilization of telehealth (i.e., the use of telecommunication technologies to provide health care information and services)	692	3.27	1.07	95.8	-0.07
TEACHING & LEARNING THEORIES					
Teaching and learning theories and techniques	2,355	3.89	0.95	99.2	0.00
Health behavior change models (e.g., social cognitive theory, health belief model)	2,355	3.73	0.99	98.5	0.00
Communication methods and techniques (e.g., motivational interviewing, health information brochures/handouts, feedback techniques)	2,355	3.88	0.99	98.9	-0.03
RESEARCH & EVIDENCE-BASED PRACTICE					
Techniques for accessing evidence (e.g., peer-reviewed publications, scientific proceedings, guidelines, clinical prediction rules)	2,312	3.58	1.04	98.0	0.01
Research methodology and interpretation (e.g., qualitative, quantitative, levels of evidence)	2,312	3.38	1.05	96.8	0.01
Measurement science (e.g., reliability, validity)	2,312	3.55	1.04	97.5	0.03
Data collection techniques (e.g., surveys, direct observation)	2,312	3.41	1.08	96.4	0.01

	n	M	SD	%Imp	Slope
SKILLS					
Active listening - Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times	2,306	4.81	0.47	100.0	-0.01
Speaking - Talking to others to convey information effectively	2,306	4.78	0.48	100.0	-0.02
Reading comprehension - Understanding written sentences and paragraphs in work related documents	2,306	4.69	0.57	100.0	-0.01
Critical thinking - Using logic and clinical reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems	2,306	4.78	0.48	100.0	-0.02
Social perceptiveness - Being aware of others' reactions and understanding why they react as they do	2,306	4.71	0.55	99.9	-0.03
Time management - Managing one's own time and the time of others	2,306	4.72	0.55	99.9	**-0.03**
Coordination - Adjusting actions in relation to others' actions	2,302	4.55	0.64	99.9	-0.02
Writing - Communicating effectively in writing as appropriate for the needs of the audience	2,302	4.55	0.65	100.0	-0.03
Active learning - Understanding the implications of new information for both current and future problem solving and decision-making	2,302	4.60	0.62	100.0	-0.02
Persuasion - Persuading others to change their minds or behavior	2,302	3.92	0.98	98.8	-0.02
Negotiation - Bringing others together and trying to reconcile differences	2,302	4.04	0.93	99.3	-0.03
Service orientation - Actively looking for ways to help people	2,302	4.43	0.77	99.8	-0.03

Appendix G. Final List of Critical Work Activities

PATIENT/CLIENT ASSESSMENT
Information Gathering & Synthesis
Interview patients/clients, caregivers, and family to obtain patient/client history and current information (e.g., medical, surgical, medications, social, cultural, language preference, economic) to…
…review prior and current level of function/activity
…establish general health status
…identify red flags (e.g., fever, malaise, unexplained weight change) and contraindications
…identify patient/client's, family/caregiver's goals, values, and preferences
…determine impact of medications on plan of care (e.g., medication reconciliation, timing of intervention delivery, adherence)
Administer standardized questionnaires (e.g., pain inventory, fall risk assessment)
Review medical records (e.g., lab values, diagnostic tests, imaging, specialty reports, narrative, consults) prior to carrying out the PT plan of care
Gather information/discuss patient/client's current health status with interprofessional/interdisciplinary team members
Identify signs/symptoms of change in patient/client's health status that require intervention by physical therapist
Identify signs/symptoms of change in patient/client's health status that require intervention by interprofessional/interdisciplinary team members
Systems Review
Check patient/client's current affect, cognition, communication, and learning preferences (e.g., ability to convey needs, consciousness, orientation, expected emotional/behavioral responses)
Recognize changes in status of the…
…patient/client's quality of speech, hearing, and vision (e.g., dysarthria, pitch/tone, use of corrective lenses, use of hearing aids)
…vestibular system (e.g., dizziness, vertigo)
…gastrointestinal system (e.g., difficulty swallowing, nausea, change in appetite/diet, change in bowel function)
…genitourinary system (e.g., changes in bladder function, catheter complications)
…reproductive system (e.g., sexual and/or menstrual dysfunction, menopause status)
…cardiovascular/pulmonary system (e.g., blood pressure, heart rate, respiration rate)
…lymphatic system (e.g., primary or secondary lymphedema)
…integumentary system (e.g., presence of scar formation, skin integrity, discoloration)
…musculoskeletal system (e.g., gross symmetry, strength, range of motion)
…neuromuscular system (e.g., gross coordination, motor function, balance, locomotion, gross sensory function)

PATIENT/CLIENT ASSESSMENT
Tests & Measures
Cardiovascular/Pulmonary
Perform tests and measures of…
…cardiovascular function (e.g., blood pressure, heart rate, heart sounds)
…pulmonary function (e.g., respiratory rate, breathing patterns, breath sounds, chest excursion)
…perfusion and gas exchange (e.g., oxygen saturation)
…peripheral circulation (e.g., capillary refill, blood pressure in upper versus lower extremities)
…critical limb ischemia (e.g., peripheral pulses, skin perfusion pressure)
…physiological responses to position change (e.g., orthostatic hypotension, skin color, blood pressure, heart rate)
…aerobic capacity under maximal and submaximal conditions (e.g., endurance, exercise tolerance, metabolic equivalents, perceived exertion)
Anthropometric
Perform tests and measures of…
…body dimensions (e.g., height, weight, girth, limb length, head circumference/shape)
Quantify and qualify edema (e.g., pitting, volume, circumference)
Arousal, Attention, & Cognition
Perform tests and measures of…
…arousal and orientation (e.g., level of consciousness, time, person, place, situation)
…attention and cognition (e.g., ability to process commands, delirium, confusion)
…communication (e.g., expressive and receptive skills, following instructions)
…recall (including memory and retention)
Nerve Integrity
Select and perform tests and measures of…
…cranial nerve integrity (e.g., facial asymmetry, oculomotor function, hearing)
…spinal nerve integrity (e.g., dermatome, myotome)
…peripheral nerve integrity (e.g., sensation, strength)
…neural provocation (e.g., tapping, tension, stretch)
Environmental & Community Integration/Reintegration (Home, Work, Job, School, Play, & Leisure)
Collect data on patient/client's ability to perform activities of daily living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, self-care, toileting, sexual relations)
Collect data on patient/client's ability to perform instrumental activities of daily living (IADL) (e.g., household chores, hobbies)
Collect data on patient/client's ability to perform skills needed for integration or reintegration into the community, work, or school
Collect data on barriers (e.g., social, economic, physical, psychological, environmental, work conditions and activities) to home, community, work, or school integration/reintegration

PATIENT/CLIENT ASSESSMENT
Collect data on safety in home, community, work, or school environments
Collect data on patient/client's ability to participate in activities with or without the use of devices, equipment, or technologies
Ergonomics and Body Mechanics
Perform tests and measures of…
…ergonomics and body mechanics during functional activities
…postural alignment and position (static and dynamic)
Functional Mobility, Balance, & Vestibular
Perform tests and measures of…
…balance (dynamic and static) with or without the use of specialized equipment
…gait and locomotion (e.g., ambulation, wheelchair mobility) with or without the use of specialized equipment
…mobility during functional activities and transitional movements (e.g., transfers, bed mobility)
…vestibular function (e.g., peripheral dysfunction, central dysfunction, BPPV)
Integumentary Integrity
Observe skin characteristics (e.g., continuity of skin color, sensation, temperature, texture, turgor)
Collect data on wound characteristics (e.g., tissue involvement, depth, tunneling, burn classification, ulcer/injury classification)
Observe scar tissue characteristics (e.g., banding, pliability, sensation, and texture)
Collect data on patient/client's activities, positioning, and postures that may produce or relieve trauma to the skin
Identify devices and equipment that produce or relieve trauma to the patient/client's skin
Joint Integrity & Range of Motion
Perform tests and measures of…
…spinal joint stability (e.g., ligamentous integrity, joint structure)
…peripheral joint stability (e.g., ligamentous integrity, joint structure)
…spinal joint mobility (e.g., glide, end feel)
…peripheral joint mobility (e.g., glide, end feel)
…range of motion (e.g., passive, active, functional)
…flexibility (e.g., muscle length, soft tissue extensibility)
Motor Function
Perform tests and measures of…
…muscle tone (e.g., hypertonicity, hypotonicity, dystonia)
…dexterity, coordination, and agility (e.g., rapid alternating movement, finger to nose)
…ability to initiate, modify and control movement patterns and postures (e.g., catching a ball, gait)
…ability to change movement performance with practice (e.g., motor learning)
…movement quality (e.g., purpose, precision, efficiency, biomechanics, kinematics)

PATIENT/CLIENT ASSESSMENT
Muscle Performance
Perform tests and measures of…
…muscle strength, power, and endurance without specialized equipment (e.g., manual muscle test, functional strength testing)
…muscle strength, power, and endurance with specialized equipment (e.g., isokinetic testing, dynamometry)
Neuromotor Development & Sensory Integration
Perform tests and measures of…
…acquisition and evolution of motor skills throughout the lifespan
…sensorimotor integration
…developmental reflexes and reactions (e.g., asymmetrical tonic neck reflex, righting reactions)
Reflex Integrity
Perform tests and measures of…
…deep tendon/muscle stretch reflexes (e.g., quadriceps, biceps)
…upper motor neuron integrity (e.g., Babinski reflex, Hoffman sign)
Pain & Sensory Integrity
Perform tests and measures of…
…pain (e.g., location, intensity, frequency, central, peripheral, psychogenic)
…deep sensation (e.g., proprioception, kinesthesia, pressure)
…superficial sensation (e.g., touch, temperature discrimination)
Plan of Care & Goals
Modify and/or progress within the plan of care based on patient/client's resources (e.g., financial, transportation, time, insurance benefits, available technologies)
INTERVENTIONS
Procedural Interventions
Therapeutic Exercise/Therapeutic Activities
Perform and/or train patient/client/caregiver in…
…aerobic capacity/endurance conditioning
…balance, coordination, and agility activities
…body mechanics and postural stabilization techniques
…flexibility techniques
…neuromotor techniques (e.g., movement pattern training, neuromuscular education or re-education)
…relaxation techniques
…strength, power, and endurance exercises
…genitourinary management (e.g., pelvic floor exercises, bladder strategies)

PATIENT/CLIENT ASSESSMENT
…gastrointestinal management (e.g., bowel strategies, positioning to avoid reflux)
…manual/mechanical airway clearance techniques (e.g., assistive devices, assistive cough, incentive spirometer, flutter valve, percussion, vibration)
…techniques to maximize ventilation and perfusion (e.g., positioning, active cycle breathing, autogenic drainage, paced breathing, pursed lip breathing)
…habituation/adaptation exercises for vestibular dysfunction
…postural drainage
Functional Training
Perform and/or train patient/client in…
…the use of environmental modifications (e.g., ramps, grab bars, raised toilet, environmental control units)
…activities of daily living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, self-care, toileting, sexual relations)
…community and leisure integration or reintegration (e.g., work/school/play)
…instrumental activities of daily living (IADL) (e.g., household chores, hobbies)
…mobility techniques
…gross motor developmental progression
…fall prevention and fall recovery strategies
…behavior modification and strategies that enhance functioning (e.g., energy conservation, pacing, pre-activity planning, reminder schedules)
Manual Therapy Techniques
Perform spinal manual traction
Perform peripheral manual traction
Perform and/or train patient/client/caregiver in soft tissue mobilization (e.g., connective tissue massage, therapeutic massage, foam rolling)
Perform peripheral joint range of motion
Perform peripheral mobilization (non-thrust)
Perform spinal mobilization (non-thrust)
Equipment & Devices
Apply and/or adjust…
…adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)
…protective devices (e.g., braces, cushions, helmets, protective taping)
…supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars, serial casts, short-stretch bandages)
…orthotic devices (e.g., braces, shoe inserts, splints)

PATIENT/CLIENT ASSESSMENT
Apply and/or adjust…
…assistive devices/technologies (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)
…prosthetic devices/technologies (e.g., lower-extremity and upper-extremity prostheses, microprocessor-controlled prosthetic devices)
…prescribed oxygen during interventions
Train patient/client/caregiver in the use of…
…adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)
…assistive devices/technologies (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)
…orthotic devices (e.g., braces, shoe inserts, splints)
…prosthetic devices/technologies (e.g., lower-extremity and upper-extremity prostheses, microprocessor-controlled prosthetic devices)
…protective devices (e.g., braces, cushions, helmets, protective taping)
…supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars, serial casts, short-stretch bandages)
Integumentary Repair & Protection Techniques
Perform and/or train patient/client/caregiver in…
…desensitization techniques (e.g., brushing, tapping, use of textures)
Therapeutic Modalities
Perform and/or train patient/client/caregiver in…
…biofeedback therapy (e.g., relaxation techniques, muscle reeducation, EMG)
…electrotherapy modalities, excluding iontophoresis (e.g., neuromuscular electrical stimulation (NMES), transcutaneous electrical nerve stimulation (TENS), functional electrical stimulation (FES), interferential therapy, high-voltage pulsed current)
…cryotherapy (e.g., cold pack, ice massage, vapocoolant spray)
…hydrotherapy (e.g., aquatic exercise, underwater treadmill)
…ultrasound procedures
…hot pack thermotherapy
…paraffin bath thermotherapy
Mechanical Modalities
Apply and/or train patient/client/caregiver in…
…assisted movement devices (e.g., dynamic splint, continuous passive motion devices)
…mechanical spinal traction

PATIENT/CLIENT ASSESSMENT
Non-procedural Interventions
Communication
Discuss physical therapy evaluation findings, interventions, goals, prognosis, discharge planning, and plan of care with…
…the supervising physical therapist
…interprofessional/interdisciplinary team members
…patient/client/caregiver
Provide written, oral, and electronic information to the patient/client and/or caregiver
Documentation
Document…
…data collection results
…intervention(s) and patient/client response(s) to intervention
…patient/client/caregiver education
…communication with the interdisciplinary/interprofessional team related to the patient/client's care
…rationale for billing and reimbursement
…disclosure and consent (e.g., disclosure of medical information, consent for treatment)
Assign billing codes for physical therapy evaluation and treatment provided
Education
Educate patient/client and/or caregiver about…
…the patient/client's current condition and health status (e.g., nature of the condition, prognosis, potential benefits of physical therapy interventions, potential treatment outcomes)
…the role of the physical therapist and/or physical therapist assistant in patient/client management
…lifestyle and behavioral changes to promote wellness (e.g., nutrition, physical activity, tobacco cessation)
…the role of physical therapy in transitional planning (e.g., hospice, palliative care, setting changes)
Educate the healthcare team about…
…the role of the physical therapist and/or physical therapist assistant in patient/client management
…safe patient handling (e.g., injury prevention, ergonomics, use of equipment)
Educate community groups on lifestyle and behavioral changes to promote wellness (e.g., nutrition, physical activity, tobacco cessation)
Participate in the clinical education of students
Patient/client & Staff Safety
Emergency Procedures
Implement emergency procedures (e.g., CPR, AED, calling a code)
Perform first aid
Implement disaster response procedures

PATIENT/CLIENT ASSESSMENT
Environmental Safety
Perform risk assessment of the physical environment (e.g., barrier-free environment, outlets, windows, floors, lighting)
Prepare and maintain a safe working environment for performing interventions (e.g., unobstructed walkways, equipment availability)
Perform regular equipment inspections and/or maintenance (e.g., modalities, assistive devices)
Infection Control
Perform and/or train patient/client and/or caregiver on appropriate infection control practices (e.g., universal precautions, hand hygiene, isolation, airborne precautions, equipment cleaning)
Research & Evidence-Based Practice
Search the literature for current best evidence
Evaluate the quality of published data
Integrate current best evidence, clinical experience, and patient values in clinical practice (e.g., clinical prediction rules, patient preference)
Compare intervention outcomes with normative data
Professional Responsibilities
Supervise support personnel (e.g., physical therapy aide/technician)
Assign tasks to other personnel (e.g., physical therapy aide/technician) to assist with patient/client care
Disclose financial interest in recommended products or services to the patient/client
Communicate with the physical therapist when the expectations of the PTA are beyond their knowledge, skills, and abilities
Report healthcare providers that are suspected to not perform their professional responsibilities with reasonable skill and safety to the appropriate authorities
Report suspected cases of abuse to the appropriate authority
Report suspected illegal or unethical acts performed by healthcare providers to the relevant authority
Advocate for public access to physical therapy and other healthcare services
Determine own need for professional development
Participate in learning and/or development activities (e.g., journal clubs, self-directed reading, continuing competence activities) to maintain the currency of knowledge, skills, and abilities
Practice within the federal and jurisdiction regulations and professional standards
Participate in performance improvement and quality reporting activities (e.g., Physician Quality Reporting System, standardized outcomes measurement, application of health informatics)

Appendix H. Final List of Critical Knowledge and Skill Requirements

CARDIOVASCULAR/PULMONARY SYSTEM
Physical Therapy Data Collection
Cardiovascular/pulmonary system tests/measures, including outcome measures, and their applications according to current best evidence
Anatomy and physiology of the cardiovascular/pulmonary system as related to tests/measures
Movement analysis as related to the cardiovascular/pulmonary system (e.g., rib cage excursion, breathing pattern)
Diseases/Conditions that Impact Effective Treatment
Cardiovascular/pulmonary system diseases/conditions and their pathophysiology to carry out the established plan of care
Non-pharmacological medical management of the cardiovascular/pulmonary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
The impact of pharmacology used to treat the cardiovascular/pulmonary system on physical therapy management
Interventions
Cardiovascular/pulmonary system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
Anatomy and physiology of the cardiovascular/pulmonary system as related to physical therapy interventions, daily activities, and environmental factors
Adverse effects or complications on the cardiovascular/pulmonary system from physical therapy interventions
Adverse effects or complications on the cardiovascular/pulmonary system from physical therapy interventions used on other systems
LYMPHATIC SYSTEM
Physical Therapy Data Collection
Lymphatic system tests/measures, including outcome measures, and their applications according to current best evidence
Anatomy and physiology of the lymphatic system as related to tests/measures
Movement analysis as related to the lymphatic system (e.g., compensatory movement, extremity range of motion)
Diseases/Conditions that Impact Effective Treatment
Lymphatic system diseases/conditions and their pathophysiology to carry out the established plan of care
Interventions
Lymphatic system interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
Anatomy and physiology of the lymphatic system as related to interventions, daily activities, and environmental factors
Adverse effects or complications on the lymphatic system from physical therapy interventions
Adverse effects or complications on the lymphatic system from physical therapy interventions used on other systems

MUSCULOSKELETAL SYSTEM
Physical Therapy Data Collection
Musculoskeletal system tests/measures, including outcome measures, and their applications according to current best evidence
Anatomy and physiology of the musculoskeletal system as related to tests/measures
Movement analysis as related to the musculoskeletal system
Joint biomechanics and their applications
Diseases/Conditions that Impact Effective Treatment
Musculoskeletal system diseases/conditions and their pathophysiology to carry out the established plan of care
Connective tissue diseases/conditions and their pathophysiology to carry out the established plan of care
Non-pharmacological medical management of the musculoskeletal system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
The impact of pharmacology used to treat the musculoskeletal system on physical therapy management
Interventions
Musculoskeletal system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
Anatomy and physiology of the musculoskeletal system as related to physical therapy interventions, daily activities, and environmental factors
Adverse effects or complications on the musculoskeletal system from physical therapy interventions
Adverse effects or complications on the musculoskeletal system from physical therapy interventions used on other systems
NEUROMUSCULAR & NERVOUS SYSTEMS
Physical Therapy Data Collection
Neuromuscular and nervous systems tests/measures, including outcome measures, and their applications according to current best evidence
Anatomy and physiology of the neuromuscular and nervous systems as related to tests/measures
Movement analysis as related to the neuromuscular and nervous systems
Diseases/Conditions that Impact Effective Treatment
Neuromuscular & nervous system (CNS, PNS, ANS) diseases/conditions and their pathophysiology to carry out the established plan of care
Non-pharmacological medical management of the neuromuscular and nervous systems (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
The impact of pharmacology used to treat the neuromuscular and nervous systems on physical therapy management
Interventions
Neuromuscular and nervous systems physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
Anatomy and physiology of the neuromuscular and nervous systems as related to physical therapy interventions, daily activities, and environmental factors
Adverse effects or complications on the neuromuscular and nervous systems from physical therapy interventions

Adverse effects or complications on the neuromuscular and nervous systems from physical therapy interventions used on other systems
Motor control as related to neuromuscular and nervous systems physical therapy interventions
Motor learning as related to the neuromuscular and nervous systems physical therapy interventions
INTEGUMENTARY SYSTEM
Physical Therapy Data Collection
Integumentary system tests/measures, including outcome measures, and their applications according to current best evidence
Anatomy and physiology of the integumentary system as related to tests/measures
Movement analysis as related to the integumentary system (e.g., friction, shear, pressure, and scar mobility)
Diseases/Conditions that Impact Effective Treatment
Integumentary system diseases/conditions and their pathophysiology to carry out the established plan of care
Non-pharmacological medical management of the integumentary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
The impact of pharmacology used to treat the integumentary system on physical therapy management
Interventions
Integumentary system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
Anatomy and physiology of the integumentary system as related to physical therapy interventions, daily activities, and environmental factors
Adverse effects or complications on the integumentary system from physical therapy and medical/surgical interventions
Adverse effects or complications on the integumentary system from physical therapy interventions used on other systems
METABOLIC & ENDOCRINE SYSTEMS
Diseases/Conditions that Impact Effective Treatment
Metabolic and endocrine system diseases/conditions and their pathophysiology to carry out the established plan of care
Non-pharmacological medical management of the metabolic and endocrine systems (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
The impact of pharmacology used to treat the metabolic and endocrine systems on physical therapy management
Interventions
Metabolic and endocrine systems physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
Anatomy and physiology of the metabolic and endocrine systems as related to physical therapy interventions, daily activities, and environmental factors
Adverse effects or complications on the metabolic and endocrine systems from physical therapy interventions
Adverse effects or complications on the metabolic and endocrine systems from physical therapy interventions used on other systems

GASTROINTESTINAL SYSTEM
Diseases/Conditions that Impact Effective Treatment
Gastrointestinal system diseases/conditions and their pathophysiology to carry out the established plan of care
Non-pharmacological medical management of the gastrointestinal system (e.g., surgical procedures, diagnostic imaging, laboratory test values, other medical tests)
Interventions
Gastrointestinal system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence (e.g., positioning for reflux prevention, bowel programs)
Anatomy and physiology of the gastrointestinal system as related to physical therapy interventions, daily activities, and environmental factors
Adverse effects or complications on the gastrointestinal system from physical therapy interventions
Adverse effects or complications on the gastrointestinal system from physical therapy interventions used on other systems
GENITOURINARY SYSTEM
Diseases/Conditions that Impact Effective Treatment
Genitourinary system diseases/conditions and their pathophysiology to carry out the established plan of care
Non-pharmacological medical management of the genitourinary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures,)
Interventions
Genitourinary system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence (e.g., bladder programs, biofeedback, pelvic floor retraining)
Anatomy and physiology of the genitourinary system as related to physical therapy interventions, daily activities, and environmental factors
Adverse effects or complications on the genitourinary system from physical therapy interventions
Adverse effects or complications on the genitourinary system from physical therapy interventions used on other systems
SYSTEMS INTERACTIONS
Diseases/Conditions that Impact Effective Treatment
Diseases/conditions where the primary impact is on more than one system (e.g., cancer, multi-trauma, sarcoidosis, autoimmune disorders, pregnancy) to carry out the established plan of care
The impact of co-morbidities/co-existing conditions on patient/client management (e.g., diabetes and hypertension; obesity and arthritis; dementia and hip fracture)
Psychological and psychiatric conditions that impact patient/client management (e.g., grief, depression, schizophrenia)
Dimensions of pain (acute or persistent) that impact patient/client management (e.g., psychological, social, physiological, neurological, mechanical)
Non-pharmacological medical management of multiple systems (e.g., diagnostic imaging and other medical tests, surgical procedures)
The impact of pharmacology used to treat multiple systems, including polypharmacy, on physical therapy management

EQUIPMENT, DEVICES, & TECHNOLOGIES
Applications and adjustments, indications, contraindications, and precautions of:
assistive and adaptive devices/technologies (e.g., walkers, wheelchairs, adaptive seating systems and positioning devices, mechanical lifts)
prosthetic devices/technologies (e.g., lower-extremity and upper-extremity prostheses, microprocessor-controlled prosthetic devices)
protective, supportive, and orthotic devices/technologies (e.g., braces, helmets, taping, compression garments, serial casts, shoe inserts, splints)
THERAPEUTIC MODALITIES
Applications, indications, contraindications, and precautions of:
thermal modalities
iontophoresis
electrotherapy modalities, excluding iontophoresis (e.g., neuromuscular electrical stimulation (NMES), transcutaneous electrical nerve stimulation (TENS), functional electrical stimulation (FES), interferential therapy, high-voltage pulsed current)
ultrasound modalities, excluding phonophoresis
mechanical modalities (e.g., mechanical motion devices, traction devices)
biofeedback
Intermittent pneumatic compression
SAFETY & PROTECTION
Factors influencing safety and injury prevention (e.g., safe patient handling, fall prevention, equipment maintenance, environmental safety)
The function and implications and related precautions of intravenous lines, tubes, catheters, monitoring devices, and mechanical ventilators/oxygen delivery devices
Emergency preparedness (e.g., CPR, first aid, disaster response)
Infection control procedures (e.g., standard/universal precautions, isolation techniques, sterile technique)
Signs/symptoms of physical, sexual, and psychological abuse and neglect
PROFESSIONAL RESPONSIBILITIES
Standards of documentation
Standards of professional ethics
Standards of billing, coding, and reimbursement
Patient/client rights (e.g., ADA, IDEA, HIPAA, patient bill of rights)
Obligations for reporting illegal, unethical, or unprofessional behaviors (e.g., fraud, abuse, neglect)
State and federal laws, rules, regulations, and industry standards set by state and accrediting bodies (e.g., state licensing entities, Joint Commission, CARF, CMS)
Risk management and quality assurance (e.g., policies and procedures, incident reports, peer chart review)
Human resource legal issues (e.g., OSHA, sexual harassment)
The roles and responsibilities of the PT, PTA, other healthcare professionals, and support staff

Cultural factors and/or characteristics that affect patient/client management (e.g., language differences, disability, ethnicity, customs, demographics, religion)
Socioeconomic factors that affect patient/client management
Applications and utilization of health information technology (e.g., electronic medical records)
RESEARCH & EVIDENCE-BASED PRATICE
Techniques for accessing evidence (e.g., peer-reviewed publications, scientific proceedings, guidelines, clinical prediction rules)
Research methodology and interpretation (e.g., qualitative, quantitative, levels of evidence)
Measurement science (e.g., reliability, validity)
Data collection techniques (e.g., surveys, direct observation)