



**PROJECT REPORT**

# **Competence in Physical Therapy**

## **A Framework for Understanding Effects of Disuse on Physical Therapy Performance**

Prepared for:

**The Federation of State Boards of Physical Therapy (FSBPT)**  
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**May 2021**

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# Competence in Physical Therapy

## A Framework for Understanding Effects of Disuse on Physical Therapy Performance

### EXECUTIVE SUMMARY

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The Federation of State Boards of Physical Therapy (FSBPT) commissioned the project described in this report. The purpose of the project was to develop an empirically based framework for understanding effects of disuse, defined as a period of professional inactivity, on minimal competence in the professions of physical therapist (PT) and physical therapist assistant (PTA). The project addressed two specific objectives:

1. Development of a general framework for classifying the components of competence in the PT and PTA professions;
2. Drawing on the best available scientific evidence, identification of factors that may influence effects of disuse on these components.

Subject-matter experts (SMEs) classified PT and PTA critical work activities (CWAs) in terms of type of task/activity and type of ability required, and then rated the CWAs on expected rate of loss due to disuse and expected amount of retraining required to recover minimal competence. The results provide a scientific basis for policy recommendations concerning retraining after a period of disuse.

#### ***List of acronyms:***

CVR	content validity ratio
CWA	critical work activity
FSBPT	Federation of State Boards of Physical Therapy
ICC	intraclass correlation
PT	physical therapist
PTA	physical therapist assistant
SME	subject-matter expert

## BACKGROUND

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The overarching goal of professional training is to provide individuals with the knowledge/skill necessary for effectiveness within a given profession (Ford, 2021; Kraiger & Ford, 2020). In turn, the goal of licensure is to ensure that a person who seeks to enter the profession possesses this knowledge/skill to some predetermined level in order to protect the public the licensee serves. Typically, licensing exams are designed to measure *minimal competence*, which at the most general level may be defined as the level of knowledge/skill deemed necessary for safe and effective practice (Mills et al., 1991).

Yet, once a person enters a profession, their level of knowledge/skill may fall below the level of minimal competence. One major reason why this may occur is *disuse*: decline in trained knowledge/skill after a period of professional inactivity (Arthur et al., 1998; Arthur & Day, 2020). Throughout this report, we use the term *knowledge/skill* to refer to representations, strategies, heuristics, schemas, and procedures that are (a) acquired through training and other learning experiences; (b) stored in the individual's long-term memory; and (c) job-relevant, meaning that they are applicable to tasks within the profession (see Ackerman, 1996; Hambrick, 2005).

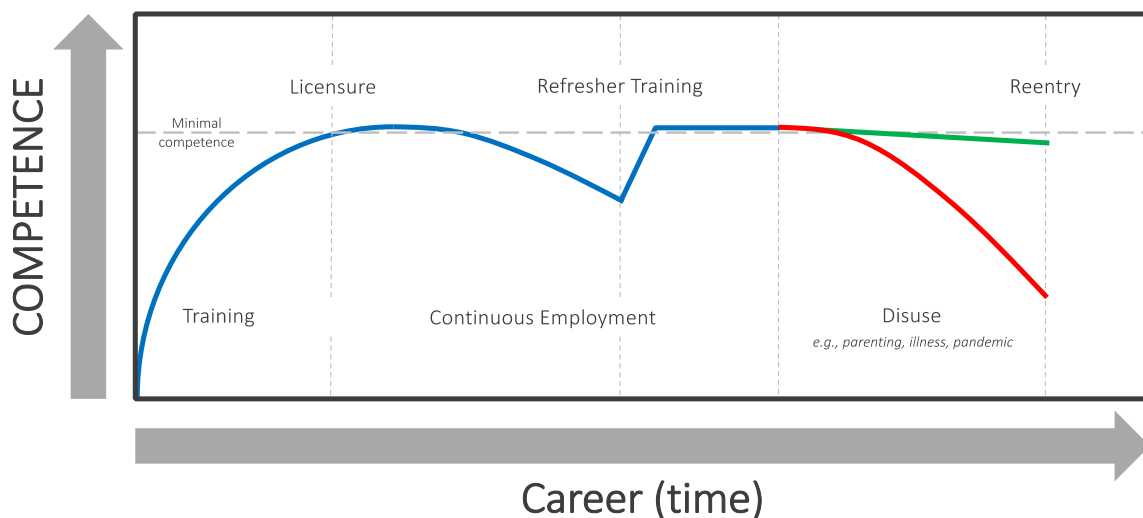
Disuse in the workplace may occur for any number of reasons, ranging from illness to childcare leave to a pandemic. In some cases, the period of disuse will be so brief (e.g., a 2-week vacation) that decline in knowledge/skill will be negligible, or quickly remediable through re-training. In such cases, re-training may not be necessary. However, the period of disuse may be months or even years. For example, it is not uncommon for a person to seek reentry into a profession after working in another profession for several years (Bravo et al., 2017). In these cases, the decline in knowledge/skill may be significant enough that the person no longer possesses minimal competence (Arthur et al., 1998).

At a cognitive level, effects of disuse on professional competence reflect *forgetting*: an inability to retrieve from long-term memory previously learned information (e.g., the steps of a procedure) when called upon to do so (see Fawcett & Hulbert, 2020; Radvansky, 2015). In some cases, analogous to permanently deleting a file from a computer, forgetting occurs because of loss of information from the memory system (i.e., degradation of the neural trace). In other cases, analogous to a file getting lost in a cluttered hard drive, forgetting is

due to an inability to retrieve the information. In both cases, a retraining intervention is required to remedy the disuse effect; that is, the employee must be re-exposed to the content.

A hypothetical career timeline is illustrated in Figure 1. After completing the accredited educational program, the applicant completes a licensing exam (e.g., the National Physical Therapy Exam); based on their score, which exceeds a cutoff, they are deemed minimally competent and are licensed for practice. After a period of continuous employment, the employee receives refresher training. Then there is a period of disuse, after which the employee seeks reentry into the workplace.

Two points are critical to note in considering effects of disuse on professional competence. The first is that some components (or facets) of competence in a given profession may be more susceptible to effects of disuse than others. For some components, it may be possible to recover minimal competence even after very long periods of disuse, whereas for other components, extensive retraining may be required (Arthur et al., 1998). The green and red lines in Figure 1 illustrate this point. The green line represents *less vulnerable* components, whereas the red line represents *more vulnerable* components.



**Figure 1.** Career timeline illustrating concept of professional disuse.

The second point is that some people may be more susceptible than others to detrimental effects of disuse, based on any number of individual-difference

characteristics (Day et al., 2013). An example is years of experience in the profession. A practitioner with 10 years of experience, who has acquired high levels of job-relevant skills, may decline less over a 6-month period of disuse than a practitioner with only, say, 2 years of experience.

Ideally, recommendations and policies concerning effects of disuse on retraining should take into account both of the preceding points. Requiring equal amounts of retraining regardless of the type of skill and of certain characteristics of trainees may waste time and training resources.

## CURRENT PROJECT

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The purpose of this project was to develop an empirically based framework for considering the effects of disuse on minimal competence in the PT and PTA professions. The framework incorporates two major dimensions: CWA type and type of ability required.

Three CWA types for PT and PTA were distinguished: *cognitive, sensory/perceptual, and motoric/physical*.

1. Cognitive: components of competence that reflect cognitive functions, such as attention, memory, and decision-making (Eysenck & Keane, 2015).
2. Sensory/perceptual: components of competence that reflect the function of sense organs (eyes, ears, etc.) and higher-level processes involved in interpreting input from these organs (Goldstein & Brockmole, 2017).
3. Motoric/physical: components of competence that reflect physical characteristics (e.g., strength, endurance; Mansfield & Neumann, 2018).

Two ability types were distinguished, based on the distinction between *fluid* versus *crystallized* abilities (Cattell, 1943; McGrew, 2009):

1. Fluid factors reflect the efficiency and effectiveness of functioning *at the time of assessment*.
2. Crystallized factors reflect knowledge, skills, and other characteristics *acquired in the past*.

The distinction between CWA type and ability type can be illustrated in terms of two cognitive ability tests. In a fluid ability test, the test-taker must solve a

novel problem where prior experience should be of little benefit (e.g., what is the next number in the sequence 7, 10, 8, 11, 9, 12, ?). By contrast, in a crystallized ability test, he or she answers a question based on knowledge acquired in the past (e.g., what is the meaning of the word *ascertain*?). Figure 2 illustrates the framework, with descriptions of each possible classification.

	<b>Cognitive</b>	<b>Sensory/Perceptual</b>	<b>Motoric/Physical</b>
<b>Fluid</b>	Present level of cognitive function (e.g., attention) <i>Code = FL-C = 1</i>	Present level sensory-perceptual function (e.g., visual acuity) <i>Code = FL-S/P = 2</i>	Present level of motoric-physical function (e.g., strength) <i>Code = FL-M/P = 3</i>
<b>Crystallized</b>	Cognitive knowledge and skill acquired in past (e.g., strategies) <i>Code = CR-C = 4</i>	Sensory-perceptual skill acquired in past (e.g., pattern recognition) <i>Code = CR-S/P = 5</i>	Motor and physical skills acquired in past (e.g., procedures) <i>Code = CR-M/P = 6</i>

**Figure 2.** Framework for classifying physical therapist and physical therapist assistant critical work activities, with codes used by subject-matter experts and nominal values assigned to codes (1-6).

Two sets of CWAs were considered. The first were for PT, and the second were for PTA. The CWAs were obtained from the list of critical PT and PTA work activities from the Analysis of Practice completed by Caramagno et al. (2016) and the FSBPT Supervised Clinical Practice Performance Evaluation Tool <https://www.fsbpt.net/SCPPET>. The CWAs fell into conceptually distinct areas, as shown in Table 1 on the next page.

**Table 1.** Areas of competence for physical therapist and physical therapy assistant critical work activities.

Area	Number of CWAs	
	PT	PTA
Professional & ethical behavior	24	23
Legal	4	4
Documentation	6	7
Billing	6	5
Data collection	–	5
Assessment & screening	17	–
Tests & measures	18	13
Evaluation	13	–
Plan of care	10	1
Intervention	29	16
Support personnel	3	2
Community education/activities	3	2
Communication	5	5
Emergency procedures	3	3
Data, evidence, & research	5	4
<b>Total</b>	<b>146</b>	<b>90</b>

The specific aim of the project was to have SMEs classify the activities in terms of ability demands, as well as expected degree of loss due to disuse and expected amount of retraining to recover minimal competence.

## METHOD

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### Task Force Participants

#### *Subject-matter experts*

Six practitioners with high levels of training, experience, and accomplishment in physical therapy were recruited to serve as SMEs for this project. Their years of practice range from 20 to more than 40 with broad-based knowledge of current professional issues at the state and national levels. Areas of specialization include clinical care, both hospital-based and in private practice; education, training, and professional development; regulation and accreditation; department administration and practice management, including information management



systems. All have been members of FSBPT and other professional PT organizations with service on professional committees.

### ***Consulting expert***

The consulting expert on this project, and author of this report (David Z. Hambrick), is a cognitive psychologist whose main area of research is the development of expertise and skill in complex domains. He is known for his work in developing a multifactorial approach to understanding the development of expertise. He is Professor in the Department of Psychology at Michigan State University, and director of the [MSU Expertise Lab](#).

### ***Task force leader***

The task force leader is a highly experienced physical therapist and Director of Professional Standards for the FSBPT. Her responsibilities at the Federation include interacting with the jurisdictions to provide consultation, technical assistance, and training on a variety of regulatory issues as well as functioning as a staff liaison to support the efforts of member committees and task forces.

### **Procedure**

The task force leader e-mailed the SMEs two spreadsheets; one contained a list of CWAs for PTs and the other a list of CWAs for PTAs. The SMEs' objective was to classify each CWA according to the framework illustrated in Figure 2. The PT list included 146 CWAs, grouped into 14 areas. The PTA list included 90 CWAs, grouped into 13 areas. The lists are provided in Appendixes A and B.

For each CWA, the SMEs assigned a code corresponding to the type of CWA × type of ability that they believed the CWA represented (see Figure 2). Additionally, for each CWA, the SMEs answered two multiple-choice questions (see next page), and numerical values were assigned to each response. Question 1 asked about expected amount of time to lose minimal competence, from q1q`rapidly (less than 6 months) to slowly (25+ months). Question 2 asked about expected amount of time to recover minimal competence, from a short (2 weeks) to an extensive (6-12 months) amount of time. The full survey can be found in Appendix C.

1. How rapidly does the component deteriorate to the point where minimal competence is lost over a period of disuse (a period of time when a physical therapist discontinues professional practice)?

<b>Response</b>	<b>Value</b>
A. Rapid rate of loss (less than 6 months)	A = 4
B. Moderate rate of loss (6-12 months)	B = 3
C. Slow rate of loss (12-24 months)	C = 2
D. Almost no loss over time (25+ months)	D = 1

2. How quickly can minimal competence in the component be regained after a period of disuse (assume a disuse period of 1 year)?

<b>Response</b>	<b>Value</b>
A. Minimal competence can be quickly regained after a short amount of time (around 2 weeks)	A = 1
B. Minimal competence can be regained after a minimal amount of time (2-3 months)	B = 2
C. Minimal competence can be regained after a moderate amount of time (3-6 months)	C = 3
D. Minimal competence can be regained after an extensive amount of time (6-12 months)	D = 4

For ease of interpretation, responses to Question 1 were coded in descending order (A = 4, B = 3, C = 2, D = 1), while responses to Question 2 were coded in an ascending order. This way, for both questions, lower values indicate a better expected outcome (slower rate of decline, shorter time to recover minimal competence) and higher values a worse expected outcome (faster rate of decline, longer time to recover minimal competence).

### **Data Preparation**

The SMEs sent their CWA ratings and responses (in spreadsheets) to the task force leader, who created a data file and sent it to the expert consultant. In turn, the expert consultant converted the SMEs' CWA ratings to nominal values (see Figure 2) and their responses to the multiple-choice questions to ordinal values (see conversions above), and computed level of agreement for each CWA. Finally, the task force leader convened another meeting of the group to resolve disagreements.

Computing the *content validity ratio* (CVR) is one approach to determining how many raters are required for the type of study we conducted (Lawshe, 1975). The CVR is a linear transformation of the percentage of raters in agreement, as follows:

$$\text{CVR} = n_e - \frac{N}{2} / \frac{N}{2}$$

where  $n_e$  = the number of raters in agreement and  $N$  = the number of raters. A CVR value greater than 0 indicates greater than 50% agreement; a value of 0 indicates 50% agreement; and a negative value indicates less than 50% agreement. Published tables containing  $\text{CVR}_{\text{critical}}$  values, reflecting the likelihood that the SMEs' ratings exceed chance expectation ( $p < .05$ , one-tail test), can then be consulted to determine the number of raters required (see Ayre & Scally, 2014; Wilson et al., 2012). Given 6 raters, recommended level of agreement ranges from 5/6 to 6/6. The 5/6 criterion was used in this project.

Additionally, for each CWA, the average of the SMEs' loss ratings and the average of their recovery ratings were computed. Henceforth, these averages are referred to as *loss* and *recovery*, respectively.

## RESULTS

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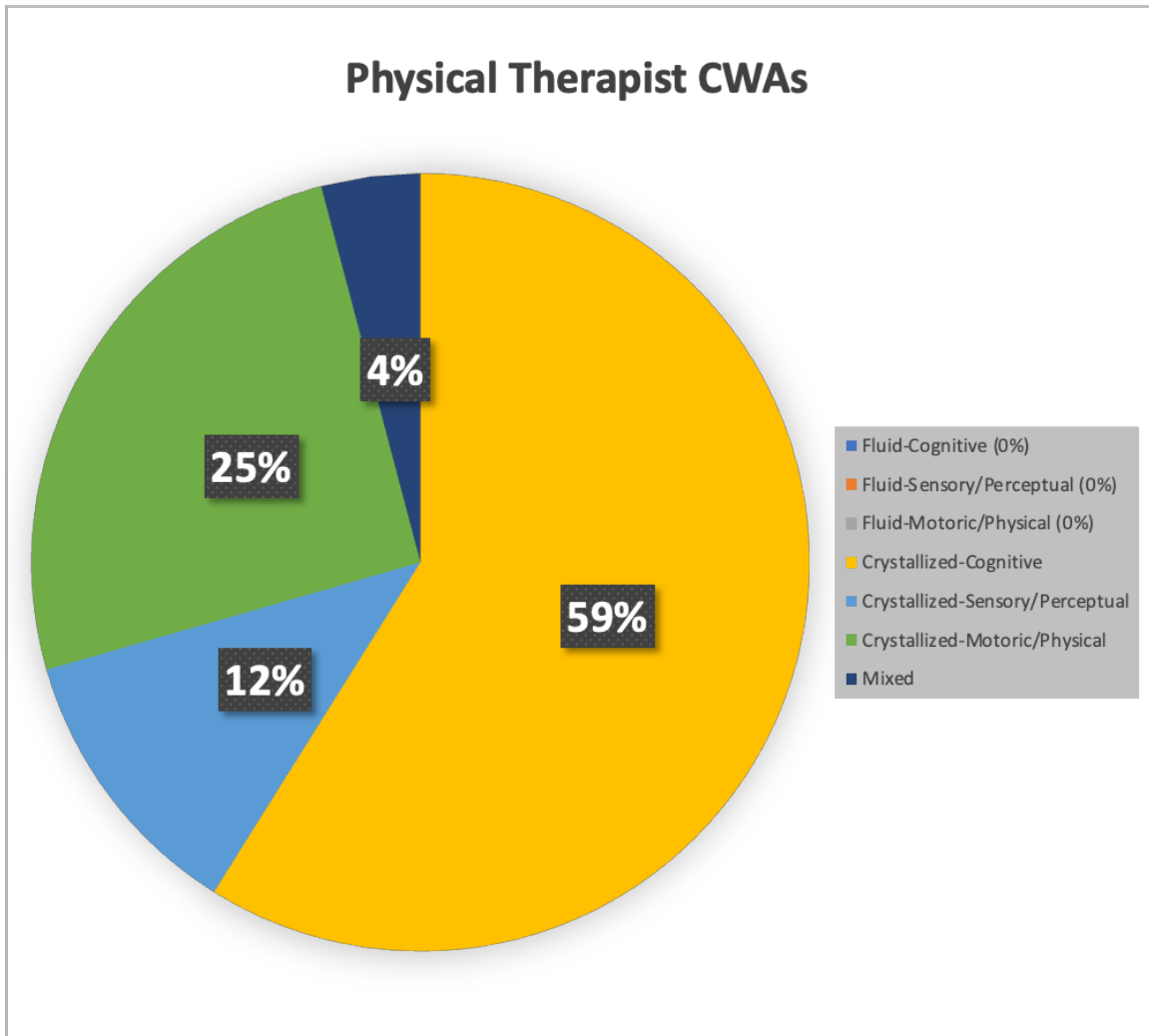
The results are presented in three major sections. The first section presents a breakdown of the classifications of the CWAs. The second section presents descriptive statistics for the loss and recovery ratings by CWA type. The third section presents correlations between these variables. See Appendixes A and B for the final CWA classifications for PT and PTA, respectively, along with the CVRs for the initial ratings and average SME ratings.

### I. Classifications of CWAs

On the initial ratings, 82 CWAs in the PT list and 50 CWAs in the PTA fell short of the 5/6 criterion for agreement. In subsequent meetings, through discussion facilitated by the expert consultant and task force leader, the SMEs achieved the 5/6 criterion for all but a small number of CWAs (6 for PT, 1 for PTA), which were classified as "mixed" CWAs.

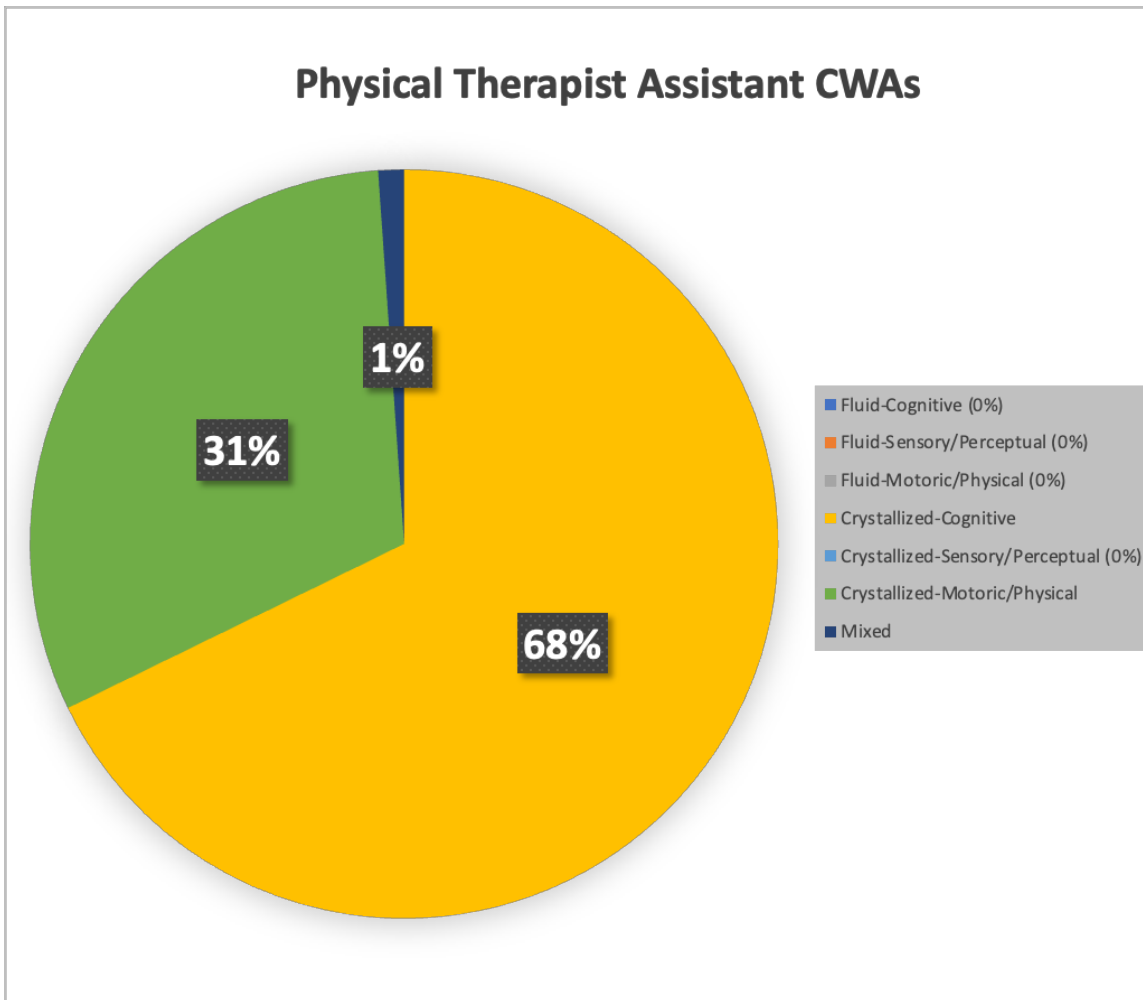
As shown in Figure 3, crystallized-cognitive was the most common rating for the PT list (59%), followed by crystallized-motoric/physical (25%) and crystallized-

sensory/perceptual (12%); 4% were classified as mixed. See Appendix A for a complete list of PT CWAs, with classifications, average SME ratings, and CVRs.



**Figure 3.** Critical work activity × ability type classifications (physical therapist).

As shown in Figure 4 (next page), for the PTA list crystallized-cognitive (68%) was the most common rating, followed by crystallized-motoric/physical (31%); a single CWA (1%) was mixed. See Appendix B for complete list of PTA CWAs, with classifications, average SME ratings, and initial CVRs.



**Figure 4.** Critical work activity type × ability type classifications (physical therapist assistant).

In sum, the SMEs judged that nearly all of the CWAs are crystallized rather than fluid, meaning that they require knowledge/skill acquired through past training rather than novel solutions where past training is of little, or no, benefit.

#### **Classifications by Area**

For both PT (Table 2) and PTA (Table 3), the most common rating for the majority of the areas was crystallized-cognitive, consistent with the overall results. For PT, exceptions were Assessment & Screening (crystallized-sensory/perceptual, 65%), Tests & Measures (crystallized-motoric/physical, 44%), Intervention (crystallized-motoric/physical, 90%), and Emergency Procedures (crystallized-motoric/physical, 67%). For PTA, exceptions were Tests & Measures (crystallized-motoric/physical, 92%), Intervention (crystallized-motoric/physical, 88%), and Emergency Procedures (crystallized-motoric/physical, 67%).

**Table 2.** Classification breakdown by critical work activity area for physical therapist.

Area	Classification (%)						
	FL-C	FL-S/P	FL-M/P	CR-C	CR-S/P	CR-M/P	Mixed
Professional & ethical behavior				96			4
Legal				100			
Documentation				100			
Billing				100			
Assessment & screening				29	65		6
Tests & measures				6	33	44	17
Evaluation				100			
Plan of care				100			
Intervention				10		90	
Support personnel				100			
Community educ./activities				67		33	
Communication				80			20
Emergency procedures				33		67	
Data, evidence, & research				100			

*Note.* FL-C = fluid-cognitive; FL-S/P = fluid-sensory/perceptual; FL-M/P = fluid-motoric/physical; CR-C = crystallized-cognitive; CR-S/P = crystallized-sensory/perceptual; CR-M/P = crystallized-motoric/physical. Each percentage computed by dividing the number of CWAs by the number of CWAs for the area; the percentages for each row sum to 100%.

**Table 3.** Classification breakdown by critical work activity area for physical therapist assistant.

Area	Classification (%)						
	FL-C	FL-S/P	FL-M/P	CR-C	CR-S/P	CR-M/P	Mixed
Professional & ethical behavior				100			
Legal				100			
Documentation				100			
Billing				100			
Data collection				100			
Tests & measures				8		92	
Plan of care				100			
Intervention				6		88	6
Support personnel				100			
Community educ./activities				100			
Communication				100			
Emergency procedures				33		67	
Data, evidence, & research				100			

*Note.* FL-C = fluid-cognitive; FL-S/P = fluid-sensory/perceptual; FL-M/P = fluid-motoric/physical; CR-C = crystallized-cognitive; CR-S/P = crystallized-sensory/perceptual; CR-M/P = crystallized-motoric/physical. Each percentage computed by dividing the number of CWAs by the number of CWAs for the area; the percentages for each row sum to 100%.

## II. Ratings of Loss and Recovery of Minimal Competence

Table 4 presents the average loss and recovery ratings for PT and PTA, along with overall averages. As evaluated by computing intraclass correlations (ICCs), inter-rater agreement was reasonably high (“good” per Cicchetti, 1994) for both PT (loss ICC = .67; recovery ICC = .70) and PTA (loss ICC = .68; recovery ICC = .66). This finding indicates that the SMEs generally agreed about the rate at which different CWAs declined and the length of time to recover minimal competence.

**Table 4.** Average loss and recovery ratings for physical therapist and physical therapist assistant, by area.

Area	Physical Therapist		Physical Therapist Assist.	
	Loss avg.	Recov. avg.	Loss avg.	Recov. avg.
Professional & ethical behavior	1.8	1.4	1.8	1.4
Legal	2.4	1.6	2.5	1.7
Documentation	2.3	1.5	2.5	1.7
Billing	2.8	1.8	3.1	1.9
Data collection	–	–	2.1	1.5
Assessment & screening	2.3	1.9	–	–
Tests & measures	2.3	1.7	2.3	1.8
Evaluation	2.7	2.0	–	–
Plan of care	2.8	1.9	2.5	1.8
Intervention	2.6	2.1	2.3	1.8
Support personnel	1.8	1.4	1.7	1.3
Community education/activities	2.1	1.7	1.8	1.5
Communication	2.1	1.6	1.8	1.5
Emergency procedures	2.5	1.4	2.7	1.3
Data, evidence, & research	2.2	1.8	2.0	1.8
<b>Overall</b>	<b>2.4</b>	<b>1.8</b>	<b>2.2</b>	<b>1.6</b>
<b>Intraclass correlation</b>	<b>.67</b>	<b>.70</b>	<b>.68</b>	<b>.66</b>

### *Physical Therapist*

Across all CWAs, the average loss rating was 2.4 (corresponding roughly to minimal competence lost in 12-24 months of disuse), and the average recovery rating was 1.8 (corresponding roughly to minimal competence recovered in 2-3 months). There were, however, CWAs with sizeable deviations from these overall averages, both below and above. The sample size ( $N = 6$  SMEs) is not large enough to perform inferential statistics to determine whether these deviations



are statistically significant. Taking a practical significance perspective (Abelson, 1997), we present top/bottom 10 lists for each rating (see dataset here for complete ratings).

Table 5 presents the 10 CWAs rated as having the slowest (top list) and fastest (bottom list) loss of minimal competence due to disuse.

**Table 5.** *Ten CWAs with slowest/fastest loss of minimal competence due to disuse for physical therapist.*

<p style="text-align: center;"><b>Physical therapist: <u>Slowest</u> loss of minimal competence due to disuse</b></p> <ol style="list-style-type: none"><li>1. Displays a positive and professional attitude</li><li>2. Maintains professional demeanor and appearance</li><li>3. Adheres to the recognized standards of ethics of the physical therapy profession</li><li>4. Maintains professional boundaries between self and patients</li><li>5. Disclose financial interest in recommended products or services to patient/client</li><li>6. Understands role of the physical therapist in the United States Healthcare system</li><li>7. Practices in a manner that is safe for the patient</li><li>8. Demonstrates sensitivity to individual/cultural differences when engaged in physical therapy practice</li><li>9. Manages conflict with colleagues, staff and patients</li><li>10. Report suspected cases of abuse to the appropriate authority</li></ol> <p style="text-align: center;"><b>Physical therapist: <u>Fastest</u> loss of minimal competence due to disuse</b></p> <ol style="list-style-type: none"><li>1. Reviews and identifies the implications of current medications</li><li>2. Perform and/or train patient/client/caregiver in<ul style="list-style-type: none"><li>...nonselective debridement (e.g., removal of nonselective areas of devitalized tissue)</li><li>...selective enzymatic or autolytic debridement (e.g., removal of specific areas of devitalized tissue)</li><li>...sharp debridement (e.g., removal of specific areas of devitalized tissue)</li><li>...application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings)</li><li>...desensitization techniques (e.g., brushing, tapping, use of textures)</li></ul></li><li>3. Participate in performance improvement and quality reporting activities</li><li>4. Fabricate, apply, and/or adjust<ul style="list-style-type: none"><li>...adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)</li><li>...protective devices (e.g., braces, cushions, helmets, protective taping)</li><li>...supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars, serial casts, short-stretch bandages)</li><li>...orthotic devices (e.g., braces, shoe inserts, splints)</li></ul></li><li>5. Interventions: wound care</li><li>6. Perform thoracic and lumbar spinal manipulation (thrust)</li><li>7. Perform cervical spinal manipulation (thrust)</li><li>8. Perform spinal mobilization/manipulation (thrust)</li></ol>
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**Table 5 (Cont.)**

9. Perform peripheral mobilization/manipulation (thrust)
10. Modify plan of care based on patient/client's resources
10. Interview patients/clients, caregivers, and family to obtain patient/client history and current information
10. Establish PT prognosis based on information gathered during the examination process
10. Understands the payment systems relative to the clinical setting
10. Assign billing codes for physical therapy evaluation and treatment provided

*Note.* Multiple 10s are ties.

Table 6 presents the 10 CWAs rated as requiring the longest time to recover minimal competence (top list), and the 10 CWAs rated as requiring the shortest amount of time to recover minimal competence (bottom list).

**Table 6.** *Ten CWAs with shortest/longest time to recover minimal competence after disuse for physical therapist.*

**Physical therapist: Shortest time to recover minimal competence**

1. Practices in a manner that is safe for the patient
2. Practices in a manner that is safe for self
3. Adheres to the recognized standards of ethics of the physical therapy profession
4. Maintains professional boundaries between self and patients
5. Displays a positive and professional attitude
6. Maintains professional demeanor and appearance
7. Disclose financial interest in recommended products or services to patient/client
8. Report suspected cases of abuse to the appropriate authority
9. Report suspected illegal or unethical acts performed by health care professionals to relevant authority
10. Demonstrates sensitivity to individual/cultural differences when engaged in physical therapy practice
10. Report health care providers suspected of not performing responsibilities with reasonable skill and safety
10. Select and perform motor function 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)
10. Intervention: patient education
10. Participate in professional organizations

**Physical therapist: Longest time to recover minimal competence**

1. Perform thoracic and lumbar spinal manipulation (thrust)
2. Perform cervical spinal manipulation (thrust)
3. Perform spinal mobilization/manipulation (thrust)
4. Participate in the clinical education of students
5. Perform spinal mobilization/manipulation (non-thrust)

**Table 6 (Cont.)**

6. Perform peripheral mobilization/manipulation (thrust)
7. Interventions: manual therapy techniques
8. 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 reeducation)
  - ...relaxation techniques
  - ...strength, power, and endurance exercises
  - ...genitourinary management (e.g., pelvic floor exercises, bladder strategies)
  - ...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, postural drainage percussion, vibration, postural drainage)
  - ...techniques to maximize ventilation and perfusion (e.g., positioning, active cycle breathing, autogenic drainage, paced breathing, pursed lip breathing)
  - ...mechanical repositioning for vestibular dysfunction
  - ...habituation/adaptation exercises for vestibular dysfunction
9. Evaluation and assessment: performs and documents the clinical assessment of the patient
10. Perform peripheral mobilization/manipulation (non-thrust)
10. Perform manual lymphatic drainage
10. Establish PT prognosis based on information gathered during the examination process

*Note.* Multiple 10s are ties.

## ***Physical Therapist Assistant***

Across all PTA CWAs, the average loss rating was 2.2 (corresponding roughly to minimal competence lost in 12-24 months), and the average recovery rating was 1.6 (corresponding roughly to minimal competence recovered in 1-2 months). Tables 8 and 9 presents top/bottom ten lists.

**Table 8.** *Ten CWAs with slowest/fastest loss of minimal competence due to disuse for physical therapist assistant.*

<p style="text-align: center;"><b>Physical therapist assistant: <u>Slowest loss of minimal competence</u></b></p> <ol style="list-style-type: none"><li>1. Displays a positive and professional attitude</li><li>2. Maintains professional demeanor and appearance</li><li>3. Adheres to the recognized standards of ethics of the physical therapy profession</li><li>4. Disclose financial interest in recommended products or services to patient/client</li><li>5. Understands role of the physical therapist assistant in the United States Healthcare system</li><li>6. Maintains professional boundaries between self and patients</li><li>7. Establishes communication and interacts respectfully with colleagues, patients, and staff</li><li>8. Works in a manner that is safe for the patient</li><li>9. Demonstrates sensitivity to individual/cultural differences when in physical therapy work</li><li>10. Report suspected cases of abuse to the appropriate authority</li></ol> <p><b>Physical therapist assistant: <u>Fastest loss of minimal competence</u></b></p> <ol style="list-style-type: none"><li>1. Understands the payment systems relative to the clinical setting</li><li>2. Assigns Appropriate CPT Codes</li><li>3. Assign billing codes for physical therapy treatment provided</li><li>4. Demonstrates knowledge of third party payer policies and requirements</li><li>5. Implement disaster response procedures</li><li>6. Implement emergency procedures (e.g., CPR, AED, calling a code)</li><li>7. Participate in performance improvement and quality reporting activities</li><li>8. Perform and/or train patient/client/caregiver in...<ul style="list-style-type: none"><li>...nonselective debridement (e.g., removal of nonselective areas of devitalized tissue)</li><li>...application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings)</li><li>...desensitization techniques (e.g., brushing, tapping, use of textures)</li></ul></li><li>9. Apply and/or train patient/client/caregiver in...intermittent pneumatic compression, etc.</li><li>10. Perform spinal mobilization/manipulation (non-thrust)</li><li>10. Perform peripheral mobilization/manipulation (non-thrust)</li><li>10. Perform tests and measures of...<ul style="list-style-type: none"><li>...pain (e.g., location, intensity, frequency, central, peripheral, psychogenic)</li><li>...deep sensation (e.g., proprioception, kinesthesia, pressure)</li><li>...superficial sensation (e.g., touch, temperature discrimination)</li></ul></li><li>10. Perform tests and measures of...<ul style="list-style-type: none"><li>...acquisition and evolution of motor skills throughout the lifespan</li><li>...sensorimotor integration</li><li>...developmental reflexes and reactions (e.g., asymmetrical tonic neck reflex, righting reactions)</li></ul></li><li>10. Charges submitted for payment are supported by the documentation</li><li>10. Documentation provides sufficient information to allow for other therapist to assume care of patient</li><li>10. Document...<ul style="list-style-type: none"><li>...data collection results</li></ul></li></ol>
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**Table 8 (Cont.)**

- ...intervention(s) and patient/client response(s) to intervention
  - ...patient/client and 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)
10. Utilizes time and clinic resources in accordance with legal and ethical requirements of employer or HCO
10. Participate in the clinical education of students

Note. Multiple 10s are ties.

**Table 9. Ten CWAs with shortest/longest time to recover minimal competence after disuse for physical therapist assistant.**

**Physical therapist assistant: Shortest time to recover minimal competence**

1. Works in a manner that is safe for the patient
2. Works in a manner that is safe for self
3. Maintains professional boundaries between self and patients
4. Displays a positive and professional attitude
5. Maintains professional demeanor and appearance
6. Disclose financial interest in recommended products or services to patient/client
7. Report health care providers that are suspected to not perform their professional responsibilities
8. Report suspected cases of abuse to the appropriate authority
9. Report suspected illegal or unethical acts performed by health care professionals to relevant authority
10. Understands role of the physical therapist assistant in the United States Healthcare system
10. Adheres to the recognized standards of ethics of the physical therapy profession
10. Demonstrates sensitivity to individual and cultural differences when engaged in physical therapy work
10. Prepare and maintain a safe working environment for performing interventions
10. Administer standardized questionnaires (e.g., pain inventory, falls scale)
10. Assign tasks to other personnel (physical therapy aides) to assist with patient/client care

**Physical therapist assistant: Longest time to recover minimal competence**

1. Participate in the clinical education of students
2. Perform spinal mobilization/manipulation (non-thrust)
3. Perform peripheral mobilization/manipulation (non-thrust)
4. 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)
5. 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 reeducation)
  - ...relaxation techniques
  - ...strength, power, and endurance exercises
  - ...genitourinary management (e.g., pelvic floor exercises, bladder strategies)

**Table 9 (Cont.)**

- ...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, postural drainage percussion, vibration, postural drainage)
- ...techniques to maximize ventilation and perfusion (e.g., positioning, active cycle breathing, autogenic drainage, paced breathing, pursed lip breathing)
- ...mechanical repositioning for vestibular dysfunction
- ...habituation/adaptation exercises for vestibular dysfunction
- 6. Perform spinal and peripheral manual traction
- 7. Compare intervention outcomes with normative data
- 8. Integrate current best evidence, clinical experience, and patient values in clinical work
- 9. Perform and/or train patient/client/caregiver in...
  - ...nonselective debridement (e.g., removal of nonselective areas of devitalized tissue)
  - ...application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings)
  - ...desensitization techniques (e.g., brushing, tapping, use of textures)
- 10. 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)
- 10. 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)
- 10. 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., airway protection, 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)
- 10. Understands the payment systems relative to the clinical setting
- 10. Participate in performance improvement and quality reporting activities
- 10. Advocate for public access to physical therapy and other healthcare services
- 10. Participate in learning and/or development activities (e.g., journal clubs, self-directed reading, continuing competence activities) to maintain currency of knowledge, skills, and abilities

*Note.* Multiple 10s are ties.

### III. Correlations Between Loss and Recovery Ratings

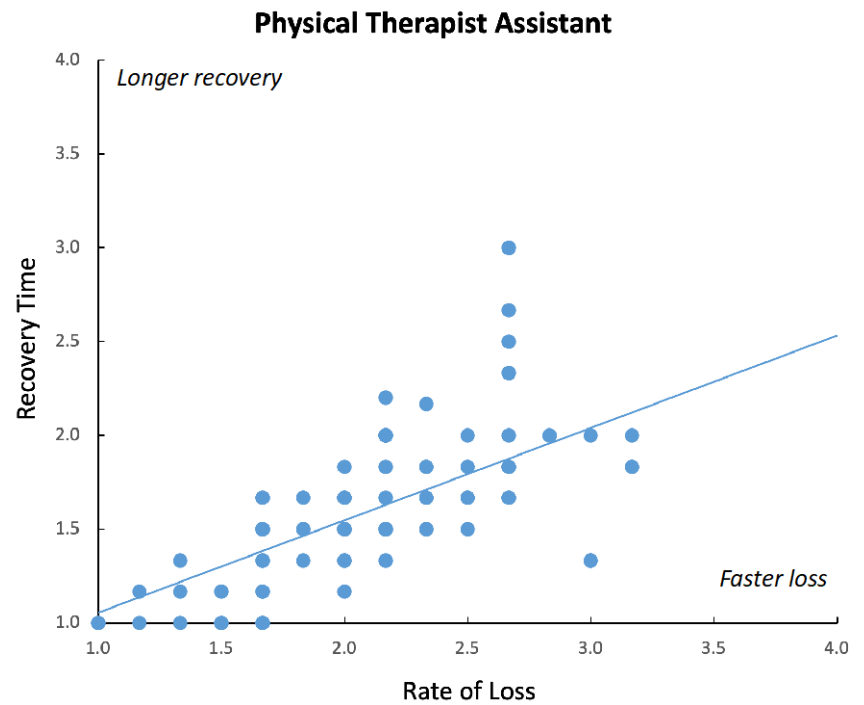
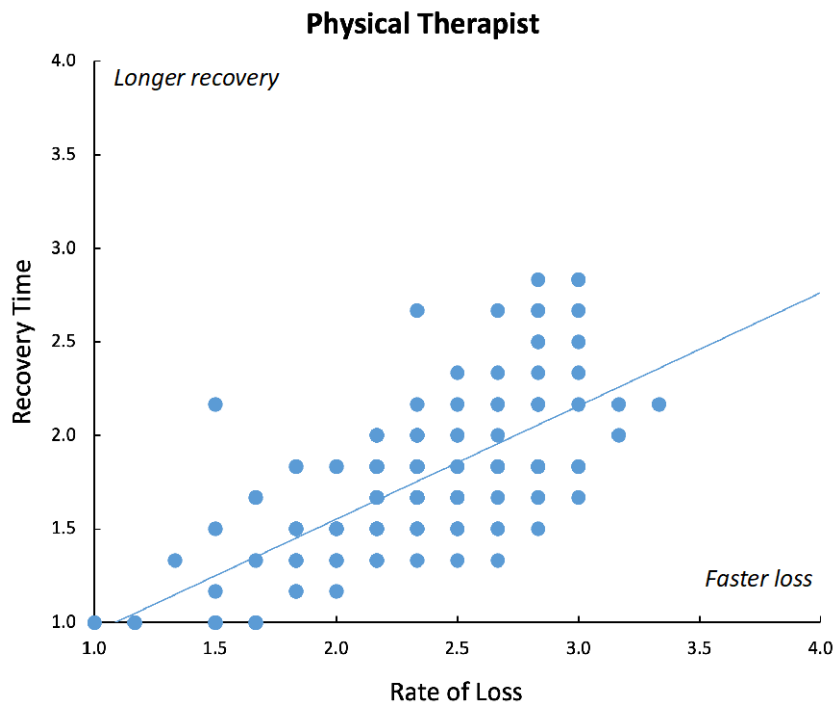
Across CWAs, the average loss and recovery ratings correlated highly for both PT ( $r = .69, df = 144, p < .001$ ) and PTA ( $r = .66, df = 88, p < .001$ ). As illustrated in Figure 5 (next page), this finding indicates that, for both PT (left panel) and PTA (right panel), CWAs that were judged to decline at a rapid rate were usually also judged to require a relatively long time to recover minimal competence. In other words, the faster the rate of loss, the longer the recovery time.

#### Overall Rating

Given the preceding finding, the two ratings (i.e., loss and recovery) were summed to create an *overall rating*, where a high value for a given CWA indicates relatively fast decline and a relatively long recovery time. Average overall ratings are presented in Table 10 by CWA area. For PT, the Intervention and Evaluation areas had the highest average (4.7), while Professional & Ethical Behavior and Support Personnel had the lowest average (3.2). For PTA, Billing had the highest average (4.9) and Support Personnel the lowest average (2.9).

**Table 10.** Average overall ratings (loss + recovery) for CWAs

Area	Avg. Overall Rating	
	PT	PTA
Professional & ethical behavior	3.2	3.2
Legal	4.0	4.1
Documentation	3.8	4.2
Billing	4.6	4.9
Data collection	–	3.6
Assessment & screening	4.2	–
Tests & measures	3.9	4.1
Evaluation	4.7	–
Plan of care	4.6	4.3
Intervention	4.7	4.1
Support personnel	3.2	2.9
Community education/activities	3.7	3.3
Communication	3.7	3.3
Emergency procedures	3.9	4.3
Data, evidence, & research	4.1	3.9



**Figure 5.** Across CWAs for physical therapist (PT) and physical therapist assistant (PTA), the correlation between rate of loss (higher values indicate faster loss of minimal competence) and recovery time (higher values indicate a longer time to recover minimal competence). Each variable is the average of the 6 SMEs' ratings; 146 CWAs for PT, 90 CWAs for PTA.



## DISCUSSION

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For any number of reasons (illness, childcare, medical, etc.), periods of disuse in work are inevitable. Nearly every career is interrupted for at least some period of time—and while interruptions may be as brief as a few days, they can be months or even longer. It is also not uncommon for a person to leave a profession and then seek to return to it years later. Thus, for professional fields such as PT and PTA, it is critical for there to be policies in place that reflect effects of disuse on occupational performance. In reality, however, if such policies exist at all they are based on intuition rather than scientific evidence.

The current project seeks to fill this need by providing PTs and healthcare organizations with a source of information that they may use to formulate scientifically grounded policies for making decisions concerning effects of disuse on PT and PTA performance. The primary aim is to create evidence-informed return to practice/work model/recommendations. To this end, a panel of SMEs classified CWAs for the PT and PTA professions in terms of the type of abilities they require for successful execution. Crystallized abilities reflect knowledge and skill acquired through training; fluid abilities require the practitioner to complete a task where prior training is of little, or no, benefit. The SMEs then rated the CWAs on expected rate of loss due to disuse, as well as expected time of recovery after disuse.

Six SMEs representing diverse experience in the field of physical therapy rated 146 PT and 90 PTA CWAs on these two dimensions. Results revealed that in both PT and PTA most CWAs were judged to require crystallized-cognitive abilities. The second most endorsed classification was crystallized-motoric/physical. Across CWAs, expected effects of disuse ranged from almost no loss to rapid loss. Similarly, expected time to recover minimal competence ranged from less than 2 weeks to a year. These findings are not surprising: PT and PTA are complex jobs with many different CWAs of different types.

Two practically useful discoveries emerged from the analyses. First, some CWAs deviated substantially from the averages for the disuse vulnerability and recovery time ratings. It appears that many of the CWAs rated low in disuse vulnerability and in expected recovery time are those that reflect personality/dispositional characteristics, as well as adherence to ethical professional standards. As an example, for both PT and PTA, the CWA “displays a

positive professional attitude” was rated as the least disuse vulnerable and fifth in expected recovery time. By contrast, CWAs highest in disuse vulnerability and expected recovery time are those that reflect implementation of procedures, such as performing various manual techniques such as spinal mobilization/manipulation. Second, for both PT and PTA, average ratings of loss and recovery correlated positively and strongly. An implication of this finding is that there is a relatively large number of CWAs where minimal competence is rapidly lost *and* slowly recovered. To put it another way, if minimal competence for a CWA is lost rapidly, it is quite likely that a relatively long period of retraining will be required.

These results provide physical therapy regulatory boards a scientific basis for decisions concerning the necessity of training following disuse, as well as the nature of that training. For example, based on the current findings, there would seem to be little justification for focusing retraining on adherence to ethical standards of professional practice; as judged by SMEs, CWAs that require ethical judgements are relatively impervious to disuse. On the other hand, the results suggest that retraining is indeed necessary for many procedural skills (e.g., thrust and non-thrust procedures; CPR).

### **Next Steps**

An immediate goal of this project is to disseminate this report to PT regulatory boards, encouraging them to provide feedback, and then formulate any next steps based on member need. Farther ahead, this project sets the stage for additional research that may be performed to examine effects of disuse on professional competence in the PT field. One possibility is to conduct a study in which a large sample of PTs perform the rating task that the SMEs performed in this project.

## REFERENCES

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Abelson, R. P. (1997). On the surprising longevity of flogged horses: Why there is a case for the significance test. *Psychological Science*, *8*, 12-15.

<https://doi.org/10.1111/j.1467-9280.1997.tb00536.x>

Ackerman, P. L. (1996). A theory of adult intellectual development: Process, personality, interests, and knowledge. *Intelligence*, *22*, 227-257.

[https://doi.org/10.1016/S0160-2896\(96\)90016-1](https://doi.org/10.1016/S0160-2896(96)90016-1)

Arthur, W., & Day, E. A. (2020). Skill decay: The science and practice of mitigating loss and enhancing retention. In Ward et al. (Eds), *The Oxford handbook of expertise* (pp. 1085-1108). Oxford University Press.

Arthur, W., Jr., Bennett, W., Jr., Stanush, P. L., & McNelly, T. L. (1998). Factors that influence skill decay and retention: A quantitative review and analysis. *Human Performance*, *11*, 57-101.

[https://doi.org/10.1207/s15327043hup1101\\_3](https://doi.org/10.1207/s15327043hup1101_3)

Ayre, C., & Scally, A. J. (2014). Critical values or Lawshe's content validity ratio: Revisiting the original methods of calculation. *Measurement and Evaluation in Counseling and Development*, *47*, 79-86.

Bravo, J., Seibert, S. E., Kraimer, M. L., Wayne, S. J., & Liden, R. C. (2017). Measuring career orientations in the era of the boundaryless career. *Journal of Career Assessment*, *25*, 502-525. <https://doi.org/10.1177/1069072715616107>

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.

Cattell, R. B. (1943). The measurement of adult intelligence. *Psychological Bulletin*, *40*, 153-193. <https://doi.org/10.1037/h0059973>

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, *6*, 284-290. [doi:10.1037/1040-3590.6.4.284](https://doi.org/10.1037/1040-3590.6.4.284).

Day, E. A., Arthur, W., Jr., Villado, A. J., Boatman, P. R., Kowollik, V., Bhupatkar, A., & Bennett, W., Jr. (2013). *Relating individual differences in ability personality and motivation to the retention and transfer of skill on a complex command-and-control simulation task*. In W. Arthur, Jr., E. A. Day, W. Bennett, Jr., & A. M.

Portrey (Eds.), *Applied psychology series. Individual and team skill decay: The science and implications for practice* (p. 282–301). Routledge/Taylor & Francis Group.

Eysenck, M., & Keane, M. T. (2015). *Cognitive psychology: A student's handbook* (7<sup>th</sup> ed.). Taylor & Francis.

*FSBPT Supervised Clinical Practice Performance Evaluation Tool.*

<https://www.fsbpt.net/SCPPET/Account/Login>

Fawcett, J. M., & Hulbert, J. C., 2020. The many faces of forgetting: Toward a constructive view of forgetting in everyday life. *Journal of Applied Research in Memory and Cognition*, 9, 1-18.

Ford, J. K. (2021). *Learning in organizations: An evidenced-based approach*. Taylor & Francis.

Goldstein, B. E., & Brockmole, J. (2017). *Sensation and perception* (10<sup>th</sup> Ed.). Cengage.

Hambrick, D. Z. (2005). *The role of domain knowledge in higher-level cognition*. In O. Wilhelm & R. W. Engle (Eds.), *Handbook of understanding and measuring intelligence* (p. 361–372). Sage Publications, Inc.  
<https://doi.org/10.4135/9781452233529.n20>

Kraiger, K., & Ford, J. K. (2020). The science of workplace instruction: Learning and development applied to work. *Annual Review of Organizational Psychology and Organizational Behavior*, 8, 45-72.

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28, 563-575.

Mansfield, P. J., & Neumann, D. A. (2018). *Essentials of kinesiology for the physical therapist assistant* (3<sup>rd</sup> Ed.). Elsevier Health Sciences.

McGrew, K. S. (2009). CHC theory and the human cognitive abilities project: Standing on the shoulders of the giants of psychometric intelligence research. *Intelligence*, 37, 1-10. <https://doi.org/10.1016/j.intell.2008.08.004>

Mills, C. N., Melican, G. J., & Ahluwalia, N. T. (1991). Defining minimal competence. *Educational Measurement: Issues and Practice*, 10, 7-10.  
<https://doi.org/10.1111/j.1745-3992.1991.tb00186>

Radvansky, G. A. (2015). *Human memory*. Psychology press.

Wilson, F. R., Pan, W., Schumsky, D. A. (2012). Recalculation of the critical values for Lawshe's content validity ratio. *Measurement and evaluation in counseling and development*, 45, 197-210.

## RECOMMENDED READINGS

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A comprehensive textbook on training in organizations by Professor Kevin Ford (Michigan State University).

Ford, J. K. (2021). *Learning in organizations: An evidenced-based approach*. Taylor & Francis.

A science-based guide to improving learning outcomes in everyday settings by science writer Peter Brown, and Professors Henry Roediger and Mark McDaniel (Washington University).

Brown, P. C., Roediger, H. L., & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Harvard University Press.

## LIST OF APPENDIXES

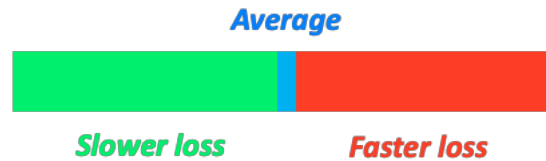
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| Appendix A | List of 146 Critical Work Activities for Physical Therapist          |
| Appendix B | List of 90 Critical Work Activities for Physical Therapist Assistant |
| Appendix C | Physical Therapy Competence Survey                                   |

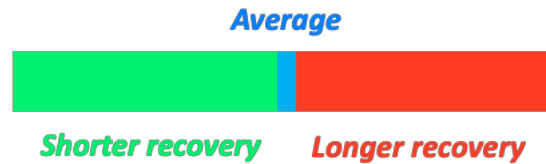
## Appendix A

### List of 146 Critical Work Activities for Physical Therapist

Loss, average of 6 SMEs' ratings on loss (the higher the value, the faster the rate of loss)



Rec., average of 6 SMEs' ratings on amount of time to recover minimal competence (the higher the value, the longer the recovery time)



Init. CVR, initial content validity ratio for initial SME ratings



#	Physical Therapist Critical Work Activity (CWA)	Final CWA Classification	Init. CVR	Loss Avg.	Rec. Avg.
<b>PROFESSIONAL &amp; ETHICAL BEHAVIOR</b>					
1	Practices in a manner that is safe for the patient	CR-C	0.67	1.5	1.0
2	Practices in a manner that is safe for self	CR-C	0.33	1.7	1.0
3	Adheres to the recognized standards of ethics of the physical therapy profession	CR-C	0.67	1.2	1.0
4	Maintains professional boundaries between self and patients	CR-C	0.67	1.2	1.0
5	Displays a positive and professional attitude	CR-C	0.00	1.0	1.0
6	Demonstrates sensitivity to individual and cultural differences when engaged in physical therapy practice	CR-C	0.00	1.5	1.2
7	Maintains professional demeanor and appearance	CR-C	0.33	1.0	1.0
8	Manages conflict with colleagues, staff and patients	CR-C	0.33	1.5	2.2
9	Refer patient/client to specialists or other healthcare providers when necessary	CR-C	0.67	2.0	1.8

10	Disclose financial interest in recommended products or services to patient/client	CR-C	0.33	1.2	1.0
11	Report health care providers that are suspected to not perform their professional responsibilities with reasonable skill and safety to the appropriate authorities	CR-C	0.33	1.8	1.2
12	Report suspected cases of abuse to the appropriate authority	CR-C	0.67	1.5	1.0
13	Report suspected illegal or unethical acts performed by health care professionals to the relevant authority	CR-C	1.00	1.7	1.0
14	Determine own need for professional development	CR-F (2) CR-C (4)	0.33	1.7	1.7
15	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	CR-C	0.00	2.2	1.8
16	Participate in the clinical education of students	CR-C	0.33	2.8	2.8
17	Advocate for public access to physical therapy and other healthcare services	CR-C	0.67	2.2	2.0
18	Participate in professional organizations	CR-C	0.67	2.2	1.3
19	Demonstrates knowledge of facility's policies and procedures	CR-C	0.33	2.7	1.3
20	Participate in performance improvement and quality reporting activities (e.g., Physician Quality Reporting System, standardized outcomes measurement, application of health informatics)	CR-C	0.67	3.2	2.2
21	Understands role of the physical therapist in the United States Healthcare system	CR-C	1.00	1.3	1.3

22	Perform risk assessment of the physical environment (e.g., barrier-free environment, outlets, windows, floors, lighting)	CR-C	0.67	2.2	1.7
23	Prepare and maintain a safe working environment for performing interventions (e.g., unobstructed walkways, equipment availability)	CR-C	0.67	1.7	1.3
24	Perform regular equipment inspections and/or maintenance (e.g., modalities, assistive devices)	CR-C	1.00	2.5	1.7
<b>LEGAL</b>					
25	Demonstrates knowledge of federal laws and rules applicable to physical therapy	CR-C	0.67	2.5	1.7
26	Demonstrates knowledge of state laws and rules applicable to physical therapy	CR-C	0.67	2.3	1.7
27	Practice within the federal and jurisdiction regulations and professional standards	CR-C	0.67	2.3	1.7
28	Utilizes time and clinic resources in accordance with legal and ethical requirements of the employer or health care organization	CR-C	0.33	2.5	1.5
<b>DOCUMENTATION</b>					
29	Document... ...examination results ...evaluation to include diagnosis, goals, and prognosis ...intervention(s) and patient/client response(s) to intervention ...patient/client and caregiver education ...outcomes (e.g., discharge summary, reassessments) ...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) ...letter of medical necessity (e.g., wheelchair, assistive equipment, disability parking placard) ...intervention/plan of care for specialized services and settings (e.g., individual education plan, individual family service plan, vocational transition plan)	CR-C	1.00	2.7	1.5

30	Maintains a record of all clinical care provided	CR-C	1.00	2.3	1.3
31	Documentation establishes a link between identified problems and intervention provided	CR-C	1.00	2.3	1.5
32	Document transfer of patient/client care to another physical therapist (therapist of record)	CR-C	1.00	2.0	1.3
33	Documentation provides sufficient information to allow for another therapist to assume care of the patient	CR-C	1.00	2.5	1.7
34	Documents communication with healthcare providers family and caregivers	CR-C	1.00	2.2	1.5
<b>BILLING</b>					
35	Demonstrates knowledge of third party payer policies and requirements	CR-C	0.33	2.8	1.8
36	Assign billing codes for physical therapy evaluation and treatment provided	CR-C	0.33	3.0	1.8
37	Charges Submitted for Payment are Supported by the Documentation	CR-C	1.00	2.3	1.7
38	Assigns Appropriate Diagnostic Code	CR-C	0.33	2.8	1.8
39	Assigns Appropriate CPT Codes	CR-C	0.33	2.8	1.8
40	Understands the payment systems relative to the clinical setting	CR-C	0.33	3.0	1.8
<b>ASSESSMENT &amp; SCREENING</b>					

41	Administer standardized questionnaires (e.g., pain inventory, falls scale)	CR-C	0.67	2.5	1.5
42	Perform screen of the... ...patient/client's current affect, cognition, communication, and learning preferences (e.g., ability to make needs known, consciousness, orientation, expected emotional/behavioral responses) ...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 and/or secondary edema) ...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)	C-S/P	0.00	1.8	1.8
43	Appropriately selects tests and measurements related to the chief complaint	CR-C	1.00	2.3	2.0
44	Reviews and interprets medical records	CR-C	1.00	2.2	2.0
45	Assess activities of daily living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, self-care, toileting, sexual relations)	CR-S/P	0.00	2.2	1.7
46	Assess instrumental activities of daily living (IADL) (e.g., household chores, hobbies)	CR-S/P	0.00	2.2	1.7
47	Assess ability to perform skills needed for integration or reintegration into the community, work, or school	CR-S/P	0.00	2.3	2.0
48	Assess barriers (e.g., social, economic, physical, psychological, environmental, work conditions and activities) to home, community, work, or school integration/reintegration	CR-S/P	0.00	2.3	2.0

49	Assess safety in home, community, work, or school environments	CR-S/P	0.00	2.3	1.8
50	Assess ability to participate in activities with or without the use of devices, equipment, or technologies	CR-S/P	0.00	2.3	1.8
51	Assess skin characteristics (e.g., continuity of skin color, sensation, temperature, texture, turgor)	CR-S/P	0.00	2.3	1.8
52	Assess wound characteristics (e.g., tissue involvement, depth, tunneling, burn degree, ulcer classification)	CR-S/P	0.00	2.5	2.2
53	Assess scar tissue characteristics (e.g., banding, pliability, sensation, and texture)	CR-S/P	0.00	2.5	1.8
54	Assess activities, positioning, and postures that may produce or relieve trauma to the skin	CR-S/P	0.00	2.3	1.7
55	Assess devices and equipment that may produce or relieve trauma to the skin	CR-S/P (4) CR-C (2)	0.33	2.3	1.8
56	Evaluation and assessment: performs and documents the clinical assessment of the patient	CR-C	0.67	2.7	2.7
57	Interpret each of the following types of data to determine the need for intervention or the response to intervention: <ul style="list-style-type: none"> <li>· cardiovascular/pulmonary system</li> <li>· lymphatic system</li> <li>· arousal, attention, cognition, and communication</li> <li>· neuromuscular system</li> <li>· functional mobility, balance, and vestibular</li> <li>· musculoskeletal system</li> <li>· integumentary system</li> <li>· anthropomorphic</li> <li>· gastrointestinal system</li> <li>· genitourinary system</li> <li>· need for or use of assistive and adaptive devices/technologies</li> <li>· need for or use of orthotic, protective, and supportive devices/technologies</li> <li>· need for or use of prosthetic devices/technologies</li> </ul>	CR-C	0.67	2.2	2.0

	<ul style="list-style-type: none"> <li>· barriers to home, community, work, or school integration/reintegration</li> <li>· ergonomics and body mechanics</li> <li>· pain and sensory integrity</li> <li>· ADLs/IADLs and home management</li> <li>· imaging, lab values, and medications</li> </ul>				
<b>TESTS &amp; MEASURES</b>					
58	Performs tests & measures: environmental & community integration/reintegration	CR-S/P	-0.33	2.2	2.0
59	Select and perform anthropometric 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)	CR-C (3) CR-M/P (3)	0.33	1.8	1.3
60	Performs tests & measures: assistive & adaptive devices	CR-M/P	0.00	2.2	1.8
61	Select and perform nerve integrity 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)	CR-M/P (4) CR-S/P (2)	0.00	2.2	1.5
62	Select and perform ergonomics and body mechanics tests and measures of... ...ergonomics and body mechanics during functional activities ...postural alignment and position (static and dynamic) ...specific work conditions or activities ...tools, devices, equipment, and workstations related to work actions, tasks, or activities	CR-S/P (3) CR-M/P (3)	-0.33	2.2	1.8
63	Select and perform functional mobility, balance, and vestibular 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)	CR-M/P	0.33	2.0	1.5
64	Performs tests & measures: integumentary integrity	CR-S/P	0.00	2.2	1.3

65	Performs Tests & Measures: Joint Integrity & Range of Motion	CR-M/P	0.33	2.0	1.3
66	Select and perform motor function 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)	CR-M/P	-0.33	2.0	1.2
67	Select and perform muscle performance 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)	CR-M/P	0.33	2.3	1.5
68	Select and perform cardiovascular/pulmonary 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., airway protection, 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)	CR-S/P	0.00	2.0	1.5
69	Select and perform joint integrity and range of motion tests and measures of... ...spinal and peripheral joint stability (e.g., ligamentous integrity, joint structure) ...spinal and peripheral joint mobility (e.g., glide, end feel) ...range of motion (e.g., passive, active, functional) ...flexibility (e.g., muscle length, soft tissue extensibility)	CR-M/P	0.33	2.3	1.8
70	Performs tests & measures: neuromotor development & sensory integration	CR-S/P	0.00	2.7	2.0
71	Select and perform neurodevelopment and sensory integration 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)	CR-S/P	0.00	2.3	1.8
72	Select and perform reflex integrity tests and measures of... ...deep tendon/muscle stretch reflexes (e.g., quadriceps, biceps) ...upper motor neuron integrity (e.g., Babinski reflex, Hoffman sign) ...superficial reflexes and reactions (e.g., cremasteric reflex, abdominal reflexes)	CR-M/P	0.00	2.3	1.5



73	Performs tests & measures: orthotic, protective, assistive, & prosthetic devices	CR-M/P	-0.33	2.5	2.3
74	Select and perform pain and sensory integrity 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) ...visceral organ sensitivity and integrity (e.g., palpation, auscultation)	CR-S/P	0.00	2.7	1.8
75	Performs tests & measures: functional scales	CR-C	0.33	2.8	1.7
<b>EVALUATION</b>					
76	Reviews and identifies the implications of current medications	CR-C	1.00	3.3	2.2
77	Establishes a diagnosis for each patient	CR-C	1.00	2.5	2.0
78	Develop physical therapy diagnosis by integrating system and non-system data	CR-C	1.00	2.7	2.2
79	Establish PT prognosis based on information gathered during the examination process	CR-C	1.00	3.0	2.5
80	Revise treatment intervention plan based on treatment outcomes, change in patient/client's health status, and ongoing evaluation	CR-C	1.00	2.8	2.2
81	Demonstrates sound clinical decision making	CR-C	1.00	2.8	2.3
82	Performs reevaluations at appropriate intervals	CR-C	1.00	2.3	1.7
83	Discharges or discontinues the patient from physical therapy services	CR-C	1.00	2.3	1.8

84	Evaluate the patient/client's ability to assume or resume home, community, work, school, and/or leisure activities	CR-C	1.00	2.8	2.2
85	Completes full and accurate patient interview/history	CR-C	1.00	2.8	1.7
86	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... ...establish prior and current level of function ...establish general health status ...identify red flags (e.g., fever, malaise, unexplained weight change) and contraindications ...identify risk factors and needs for preventative measures ...identify patient/client's, family/caregiver's goals, values, and preferences ...determine if patient/client is appropriate for PT ...determine insurance and financial resources and issues (e.g., co-pays, deductibles, insurance limitations) ...determine impact of medications on plan of care (e.g., medication reconciliation, timing of intervention delivery, adherence)	CR-C	1.00	3.0	1.7
87	Review medical records (e.g., lab values, diagnostic tests, imaging, specialty reports, narrative, consults)	CR-C	0.67	2.5	1.7
88	Identify signs/symptoms of change in patient/client's health status that require intervention by interprofessional/interdisciplinary team members	CR-C	1.00	2.5	1.7
<b>PLAN OF CARE</b>					
89	Develop plan of care based on data gathered during the examination process, incorporating information from the patient/client, caregiver, family members, and other professionals	CR-C	1.00	2.8	1.8
90	Plan of care: selects and documents interventions to address abnormalities of body structure and function and activity and participation limitations	CR-C	1.00	2.8	1.8
91	Plan of care: develops and documents goals based on abnormalities of body structure and function and activity and participation limitations identified	CR-C	1.00	2.8	1.8
92	Plan of care: determines amount, frequency and duration of intervention	CR-C	1.00	2.8	1.8

93	Develop objective and measurable goals based on information gathered during the examination process, in collaboration with the patient/client, caregiver, family members, and/or other professionals	CR-C	1.00	2.8	1.8
94	Select interventions based on information gathered during the examination process, incorporating information from the patient/client, caregiver, family members, and other professionals	CR-C	1.00	2.8	1.8
95	Modify plan of care based on patient/client's resources (e.g., financial, transportation, time, insurance benefits, available technologies)	CR-C	0.67	3.0	1.8
96	Recommend barrier accommodations or modifications (e.g., ramps, grab bars, raised toilet, environmental control units)	CR-C	1.00	2.7	1.8
97	Recommend topical agents (e.g., pharmacological to physician, over-the-counter to patient) and dressings (e.g., hydrogels, negative pressure wound therapy, wound coverings)	CR-C	1.00	2.5	2.0
98	Provide notice and information about alternative care when the physical therapist terminates provider relationship with the patient/client	CR-C	0.67	2.7	1.8
<b>INTERVENTION</b>					
99	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 reeducation) ...relaxation techniques ...strength, power, and endurance exercises ...genitourinary management (e.g., pelvic floor exercises, bladder strategies) ...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, postural drainage percussion, vibration, postural drainage) ...techniques to maximize ventilation and perfusion (e.g., positioning, active cycle breathing, autogenic drainage, paced breathing, pursed lip breathing) ...mechanical repositioning for vestibular dysfunction ...habituation/adaptation exercises for vestibular dysfunction	CR-M/P	0.33	2.3	2.7
100	Intervention: patient education	CR-C	1.00	1.8	1.2

101	Educate patient/client and/or caregiver about... ...patient/client's current condition and health status (e.g., nature of the condition, prognosis, potential benefits of physical therapy interventions, potential treatment outcomes) ...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)	CR-C	1.00	2.2	1.8
102	Interventions: therapeutic exercise	CR-M/P	0.33	2.2	1.8
103	Interventions: functional training	CR-M/P	0.33	2.3	2.2
104	Interventions: manual therapy techniques	CR-M/P	0.33	2.8	2.7
105	Perform manual lymphatic drainage	CR-M/P	0.33	2.8	2.5
106	Perform spinal and peripheral manual traction	CR-M/P	0.33	2.7	2.3
107	Perform and/or train patient/client/caregiver in soft tissue mobilization (e.g., connective tissue massage, therapeutic massage, foam rolling)	CR-M/P	0.00	2.3	1.7
108	Perform instrument-assisted soft tissue mobilization	CR-M/P	0.33	2.5	1.8
109	Perform peripheral joint range of motion	CR-M/P	0.33	2.0	1.5
110	Perform peripheral mobilization/manipulation (thrust)	CR-M/P	0.00	3.0	2.7
111	Perform peripheral mobilization/manipulation (non-thrust)	CR-M/P	0.00	2.8	2.5

112	Perform spinal mobilization/manipulation (thrust)	CR-M/P	0.00	3.0	2.8
113	Perform spinal mobilization/manipulation (non-thrust)	CR-M/P	0.00	2.8	2.7
114	Perform cervical spinal manipulation (thrust)	CR-M/P	0.00	3.0	2.8
115	Perform thoracic and lumbar spinal manipulation (thrust)	CR-M/P	0.00	3.0	2.8
116	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)	CR-C	0.33	2.2	1.3
117	Apply taping for... ...neuromuscular reeducation ...lymphatic drainage ...pain management	CR-M/P	0.33	2.7	1.7
118	Interventions: wound care	CR-M/P	0.00	3.0	2.2
119	Interventions: physical agents	CR-M/P	0.33	2.5	1.5
120	Interventions: cardiopulmonary	CR-M/P	0.00	2.8	2.2
121	Fabricate, 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)	CR-M/P	0.33	3.0	2.3
122	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)	CR-M/P	0.33	2.5	1.7

	<p>...instrumental activities of daily living (IADL) (e.g., household chores, hobbies)</p> <p>...mobility techniques</p> <p>...fall prevention and fall recovery strategies</p> <p>...behavior modification and strategies that enhance functioning (e.g., energy conservation, pacing, pre-activity planning, reminder schedules)</p>				
123	<p>Apply and/or adjust...</p> <p>...assistive devices/technologies (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)</p> <p>...prosthetic devices/technologies (e.g., lower extremity and upper-extremity, microprocessor-controlled prosthetic devices)</p> <p>...mechanical neuromuscular re-education devices/technologies (e.g., weighted vests, therapeutic suits, body weight supported treadmill, robotic exoskeletons)</p> <p>...prescribed oxygen during interventions</p>	CR-M/P	0.33	2.7	1.8
124	<p>Train patient/client/caregiver in the use of...</p> <p>...adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)</p> <p>...assistive devices/technologies (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)</p> <p>...orthotic devices (e.g., braces, shoe inserts, splints)</p> <p>...prosthetic devices/technologies (e.g., lower extremity and upper-extremity, microprocessor-controlled prosthetic devices)</p> <p>...protective devices (e.g., braces, cushions, helmets, protective taping)</p> <p>...supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars serial casts, short-stretch bandages)</p> <p>...mechanical neuromuscular re-education devices/technologies (e.g., weighted vests, therapeutic suits, body weight supported treadmill, robotic exoskeletons)</p>	CR-M/P	0.00	2.7	1.8
125	<p>Perform and/or train patient/client/caregiver in...</p> <p>...nonselective debridement (e.g., removal of nonselective areas of devitalized tissue)</p> <p>...selective enzymatic or autolytic debridement (e.g., removal of specific areas of devitalized tissue)</p> <p>...sharp debridement (e.g., removal of specific areas of devitalized tissue)</p> <p>...application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings)</p> <p>...desensitization techniques (e.g., brushing, tapping, use of textures)</p>	CR-M/P	0.33	3.2	2.0
126	<p>Perform and/or train patient/client/caregiver in...</p> <p>...biofeedback therapy (e.g., relaxation techniques, muscle reeducation, EMG)</p> <p>...iontophoresis</p> <p>...phonophoresis</p> <p>...electrical stimulation therapy (e.g., electrical muscle stimulation (EMS), TENS, functional electrical stimulation (FES), interferential therapy, hi-volt)</p> <p>...cryotherapy (e.g., cold pack, ice massage, vapocoolant spray)</p> <p>...hydrotherapy (e.g., aquatic exercise, underwater treadmill)</p> <p>...ultrasound procedures</p> <p>...hot pack thermotherapy</p>	CR-M/P	0.33	2.3	1.7

127	Apply and/or train patient/client/caregiver in... ...intermittent pneumatic compression ...assisted movement devices (e.g., continuous passive motion devices, dynamic splint) ...mechanical spinal traction	CR-M/P	0.33	2.7	1.5
<b>SUPPORT PERSONNEL</b>					
128	Utilizes support personnel with appropriate supervision	CR-C	0.00	1.8	1.3
129	Supervise physical therapist assistant(s) and support personnel (licensed/unlicensed)	CR-C	0.00	1.8	1.5
130	Assign tasks to other personnel (licensed/unlicensed) to assist with patient/client care	CR-C	0.67	1.8	1.3
<b>COMMUNITY EDUCATION/ACTIVITIES</b>					
131	Perform community based screenings (e.g., fall risk, posture, musculoskeletal, flexibility, sports specific)	CR-M/P	0.33	2.2	1.7
132	Educate community groups on lifestyle and behavioral changes to promote wellness (e.g., nutrition, physical activity, tobacco cessation)	CR-C	0.67	2.2	1.8
133	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)	CR-C	1.00	1.8	1.5
<b>COMMUNICATION</b>					
134	Discuss physical therapy evaluation findings, interventions, goals, prognosis, discharge planning, and plan of care with... ...physical therapists, physical therapist assistants, and/or support staff ...interprofessional/interdisciplinary team members ...patient/client and caregiver	CR-C	1.00	2.2	1.5
135	Provide written, oral, and electronic information to the patient/client and/or caregiver	CR-C	0.33	2.3	1.7

136	Gather information/discuss patient/client's current health status with interprofessional/interdisciplinary team members	CR-C	0.67	2.2	1.7
137	Establishes communication and interacts respectfully with colleagues, patients, and staff	FL-C (3) CR-C (3)	0.00	1.5	1.5
138	Discuss ongoing patient care with the interprofessional/interdisciplinary team members	CR-C	1.00	2.3	1.7
<b>EMERGENCY PROCEDURES</b>					
139	Implement emergency procedures (e.g., CPR, AED, calling a code)	CR-M/P	0.33	2.5	1.3
140	Perform first aid	CR-M/P	0.33	2.2	1.5
141	Implement disaster response procedures	CR-C	0.00	2.8	1.5
<b>DATA, EVIDENCE, &amp; RESEARCH</b>					
142	Search the literature for current best evidence	CR-C	0.67	1.8	1.5
143	Evaluate the quality of published data	CR-C	0.67	2.0	1.5
144	Integrate current best evidence, clinical experience, and patient values in clinical practice (e.g., clinical prediction rules, patient preference)	CR-C	0.67	2.3	2.0
145	Design, direct, and/or participate in research activities	CR-C	1.00	2.7	2.2
146	Compare intervention outcomes with normative data	CR-C	1.00	2.3	2.0

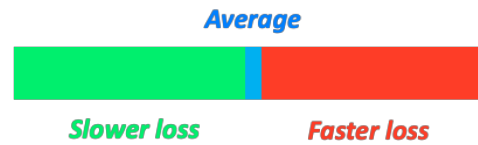




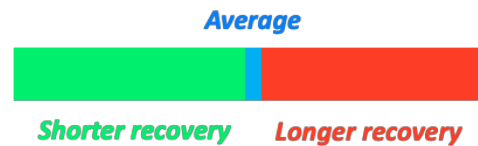
## Appendix B

### List of 90 Critical Work Activities for Physical Therapist Assistant

Loss, average of 6 SMEs' ratings on loss (the higher the value, the faster the rate of loss)



Rec., average of 6 SMEs' ratings on amount of time to recover minimal competence (the higher the value, the longer the recovery time)



Init. CVR, initial content validity ratio for initial SME ratings

#	Physical Therapist Assistant Critical Work Activity (CWA)	Final CWA Classification	Init. CVR	Loss Avg.	Rec. Avg.
<b>PROFESSIONAL &amp; ETHICAL BEHAVIOR</b>					
1	Understands role of the physical therapist assistant in the United States Healthcare system	CR-C	1.00	1.3	1.2
2	Works in a manner that is safe for the patient	CR-C	0.67	1.5	1.0
3	Works in a manner that is safe for self	CR-C	0.33	1.7	1.0
4	Adheres to the recognized standards of ethics of the physical therapy profession	CR-C	1.00	1.2	1.2
5	Maintains professional boundaries between self and patients	CR-C	0.33	1.3	1.0
6	Displays a positive and professional attitude	CR-C	0.00	1.0	1.0
7	Demonstrates sensitivity to individual and cultural differences when engaged in physical therapy work	CR-C	0.00	1.5	1.2
8	Maintains professional demeanor and appearance	CR-C	0.33	1.0	1.0
9	Manages conflict with colleagues, staff and patients	CR-C	0.33	1.7	1.7

10	Disclose financial interest in recommended products or services to patient/client	CR-C	1.00	1.2	1.0
11	Report health care providers that are suspected to not perform their professional responsibilities with reasonable skill and safety to the appropriate authorities	CR-C	1.00	1.7	1.0
12	Report suspected cases of abuse to the appropriate authority	CR-C	1.00	1.5	1.0
13	Report suspected illegal or unethical acts performed by health care professionals to the relevant authority	CR-C	1.00	1.7	1.0
14	Determine own need for professional development	CR-C	0.33	2.0	1.8
15	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	CR-C	0.00	2.2	2.0
16	Advocate for public access to physical therapy and other healthcare services	CR-C	0.67	2.2	2.0
17	Participate in professional organizations	CR-C	0.33	1.8	1.7
18	Participate in performance improvement and quality reporting activities (e.g., Physician Quality Reporting System, standardized outcomes measurement, application of health informatics)	CR-C	1.00	3.0	2.0
19	Perform risk assessment of the physical environment (e.g., barrier-free environment, outlets, windows, floors, lighting)	CR-C	0.00	2.3	1.8
20	Prepare and maintain a safe working environment for performing interventions (e.g., unobstructed walkways, equipment availability)	CR-C	0.67	1.7	1.2
21	Perform regular equipment inspections and/or maintenance (e.g., modalities, assistive devices)	CR-C	0.67	2.0	1.3

22	Participate in the clinical education of students	CR-C	0.67	2.7	3.0
23	Demonstrates knowledge of facility's policies and procedures	CR-C	0.67	2.3	1.5
<b>LEGAL</b>					
24	Demonstrates knowledge of federal laws and rules applicable to physical therapy	CR-C	0.67	2.5	1.7
25	Demonstrates knowledge of state laws and rules applicable to physical therapy	CR-C	0.67	2.3	1.7
26	Work within the federal and jurisdiction regulations and professional standards	CR-C	0.67	2.3	1.7
27	Utilizes time and clinic resources in accordance with legal and ethical requirements of the employer or health care organization	CR-C	0.33	2.7	1.7
<b>DOCUMENTATION</b>					
28	Document... ...data collection results ...intervention(s) and patient/client response(s) to intervention ...patient/client and 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)	CR-C	1.00	2.7	1.7
29	Maintains a record of all clinical care provided	CR-C	1.00	2.5	1.5
30	Documentation establishes a link between identified problems and intervention provided	CR-C	1.00	2.5	1.7

31	Documentation provides sufficient information to allow for another therapist to assume care of the patient	CR-C	1.00	2.7	1.8
32	Documents communication with healthcare providers family and caregivers	CR-C	1.00	2.3	1.7
33	Identify signs/symptoms of change in patient/client's health status that require intervention by physical therapist	CR-C	0.67	2.3	1.8
34	Identify signs/symptoms of change in patient/client's health status that require intervention by inter-professional/interdisciplinary team members	CR-C	0.67	2.3	1.8
<b>BILLING</b>					
35	Demonstrates knowledge of third party payer policies and requirements	CR-C	0.33	3.2	1.8
36	Assign billing codes for physical therapy treatment provided	CR-C	0.33	3.2	1.8
37	Charges Submitted for Payment are Supported by the Documentation	CR-C	0.67	2.7	1.8
38	Assigns Appropriate CPT Codes	CR-C	0.33	3.2	1.8
39	Understands the payment systems relative to the clinical setting	CR-C	0.33	3.2	2.0
<b>DATA COLLECTION</b>					
40	Check patient/client's current affect, cognition, communication, and learning preferences (e.g., ability to make needs known, consciousness, orientation, expected emotional/behavioral responses)	CR-C	1.00	1.8	1.5

41	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 and/or secondary edema) ...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)	CR-C	0.33	2.0	1.7
42	Administer standardized questionnaires (e.g., pain inventory, falls scale)	CR-C	1.00	2.0	1.2
43	Reviews 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	CR-C	1.00	2.3	1.5
44	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 ...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)	CR-C	1.00	2.3	1.7
<b>TESTS &amp; MEASURES</b>					
45	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)	CR-M/P	0.00	1.7	1.7
46	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)	CR-M/P	0.00	2.0	1.7

47	<p>Perform tests and measures of...</p> <ul style="list-style-type: none"> <li>...cardiovascular function (e.g., blood pressure, heart rate, heart sounds)</li> <li>...pulmonary function (e.g., respiratory rate, breathing patterns, breath sounds, chest excursion)</li> <li>...perfusion and gas exchange (e.g., airway protection, oxygen saturation)</li> <li>...peripheral circulation (e.g., capillary refill, blood pressure in upper versus lower extremities)</li> <li>...critical limb ischemia (e.g., peripheral pulses, skin perfusion pressure)</li> <li>...physiological responses to position change (e.g., orthostatic hypotension, skin color, blood pressure, heart rate)</li> <li>...aerobic capacity under maximal and submaximal conditions (e.g., endurance, exercise tolerance, metabolic equivalents, perceived exertion)</li> </ul>	CR-M/P	-0.33	2.2	2.0
48	<p>Perform tests and measures of...</p> <ul style="list-style-type: none"> <li>...cranial nerve integrity (e.g., facial asymmetry, oculomotor function, hearing)</li> <li>...spinal nerve integrity (e.g., dermatome, myotome)</li> <li>...peripheral nerve integrity (e.g., sensation, strength)</li> <li>...neural provocation (e.g., tapping, tension, stretch)</li> </ul>	CR-M/P	0.00	2.5	2.0
49	<p>Collect data on...</p> <ul style="list-style-type: none"> <li>...patient/client's ability to perform activities of daily living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, selfcare, toileting, sexual relations)</li> <li>...patient/client's ability to perform instrumental activities of daily living (IADL) (e.g., household chores, hobbies)</li> <li>...patient/client's ability to perform skills needed for integration or reintegration into the community work, or school</li> <li>...barriers (e.g., social, economic, physical, psychological, environmental, work conditions and activities) to home, community, work, or school integration/reintegration</li> <li>...safety in home, community, work, or school environments</li> <li>...patient/client's ability to participate in activities with or without the use of devices, equipment, or technologies</li> </ul>	CR-C	0.67	2.5	1.8
50	<p>Perform tests and measures of...</p> <ul style="list-style-type: none"> <li>...ergonomics and body mechanics during functional activities</li> <li>...postural alignment and position (static and dynamic)</li> </ul>	CR-M/P	0.00	2.2	1.8
51	<p>Perform tests &amp; measures of...</p> <ul style="list-style-type: none"> <li>...balance (dynamic and static) with or without the use of specialized equipment</li> <li>...gait and locomotion (e.g., ambulation, wheelchair mobility) with or without the use of specialized equipment</li> <li>...mobility during functional activities and transitional movements (e.g., transfers, bed mobility)</li> <li>...vestibular function (e.g., peripheral dysfunction, central dysfunction, BPPV)</li> </ul>	CR-M/P	0.33	2.0	1.5
52	<p>Perform tests and measures of...</p> <ul style="list-style-type: none"> <li>...muscle tone (e.g., hypertonicity, hypotonicity, dystonia)</li> <li>...dexterity, coordination, and agility (e.g., rapid alternating movement, finger to nose)</li> <li>...ability to initiate, modify and control movement patterns and postures (e.g., catching a ball, gait)</li> </ul>	CR-M/P	-0.33	2.2	1.5



	...ability to change movement performance with practice (e.g., motor learning) ...movement quality (e.g., purpose, precision, efficiency, biomechanics, kinematics)				
53	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)	CR-M/P	0.33	2.3	1.8
54	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)	CR-M/P	0.33	2.7	2.3
55	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)	CR-M/P	-0.33	2.7	2.0
56	Select and perform reflex integrity tests and measures of... ...deep tendon/muscle stretch reflexes (e.g., quadriceps, biceps) ...upper motor neuron integrity (e.g., Babinski reflex, Hoffman sign)	CR-M/P	0.33	2.3	1.7
57	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)	CR-M/P	0.33	2.7	1.8
<b>PLAN OF CARE</b>					
58	Modify and/or progress within the plan of care based on patient/client's resources (e.g., financial, transportation, time, insurance benefits, available technologies)	CR-C	0.67	2.5	1.8
<b>INTERVENTION</b>					
59	Perform and/or train patient/client/caregiver in... ...aerobic capacity/endurance conditioning ...balance, coordination, and agility activities ...body mechanics and postural stabilization techniques	CR-M/P	0.33	2.2	2.2

	...flexibility techniques ...neuromotor techniques (e.g., movement pattern training, neuromuscular education or reeducation) ...relaxation techniques ...strength, power, and endurance exercises ...genitourinary management (e.g., pelvic floor exercises, bladder strategies) ...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, postural drainage percussion, vibration, postural drainage) ...techniques to maximize ventilation and perfusion (e.g., positioning, active cycle breathing, autogenic drainage, paced breathing, pursed lip breathing) ...mechanical repositioning for vestibular dysfunction ...habituation/adaptation exercises for vestibular dysfunction					
60	Educate patient/client and/or caregiver about... ...patient/client's current condition and health status (e.g., nature of the condition, prognosis, potential benefits of physical therapy interventions, potential treatment outcomes) ...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)	CR-C	0.67	1.7	1.5	
61	Perform spinal and peripheral manual traction	CR-M/P	0.33	2.3	2.2	
62	Perform and/or train patient/client/caregiver in soft tissue mobilization (e.g., connective tissue massage, therapeutic massage, foam rolling)	CR-M/P	0.33	2.0	1.5	
63	Perform peripheral joint range of motion	CR-M/P	0.33	1.7	1.3	
64	Perform peripheral mobilization/manipulation (non-thrust)	CR-M/P	0.33	2.7	2.5	
65	Perform peripheral mobilization/manipulation (non-thrust)	CR-M/P	0.33	2.7	2.7	
66	Perform and/or train patient/client and/or caregiver on appropriate infection control works (e.g., universal precautions, hand hygiene, isolation, airborne precautions, equipment cleaning)	CR-M/P	0.00	1.8	1.3	
67	Apply taping for... ...to accomplish goals in neuromuscular reeducation ...pain management	CR-M/P	0.33	2.3	1.7	

68	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 ...fall prevention and fall recovery strategies ...behavior modification and strategies that enhance functioning (e.g., energy conservation, pacing, pre-activity planning, reminder schedules)	CR-M/P	0.33	2.2	1.5
69	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)	CR-M/P	0.33	2.5	1.7
70	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, microprocessor-controlled prosthetic devices) ...prescribed oxygen during interventions	CR-M/P	0.33	2.5	1.7
71	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, 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)	CR-M/P (4) CR-S/P (1) FL-P/M (1)	0.00	2.5	1.7
72	Perform and/or train patient/client/caregiver in... ...nonselective debridement (e.g., removal of nonselective areas of devitalized tissue) ...application of topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, wound coverings) ...desensitization techniques (e.g., brushing, tapping, use of textures)	CR-M/P	0.33	2.8	2.0
73	Perform and/or train patient/client/caregiver in... ...biofeedback therapy (e.g., relaxation techniques, muscle reeducation, EMG) ...iontophoresis ...phonophoresis ...electrical stimulation therapy (e.g., electrical muscle stimulation (EMS), TENS, functional electrical	CR-M/P	0.33	2.2	1.7

	stimulation (FES), interferential therapy, hi-volt) ...cryotherapy (e.g., cold pack, ice massage, vapocoolant spray) ...hydrotherapy (e.g., aquatic exercise, underwater treadmill) ...ultrasound procedures ...hot pack thermotherapy ...parafin bath thermotherapy				
74	Apply and/or train patient/client/caregiver in... ...intermittent pneumatic compression ...assisted movement devices (e.g., continuous passive motion devices, dynamic splint) ...mechanical spinal traction	CR-M/P	0.33	2.7	1.7
<b>SUPPORT PERSONNEL</b>					
75	Supervise support personnel (physical therapy aides)	CR-C	0.00	1.7	1.3
76	Assign tasks to other personnel (physical therapy aides) to assist with patient/client care	CR-C	0.67	1.7	1.2
<b>COMMUNITY EDUCATION/ACTIVITIES</b>					
77	Educate community groups	CR-C	0.67	1.8	1.5
78	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)	CR-C	0.67	1.7	1.5
<b>COMMUNICATION</b>					

79	Discuss physical therapy evaluation findings, interventions, goals, prognosis, discharge planning, and plan of care with... ...supervising physical therapist ...interprofessional/interdisciplinary team members ...patient/client and caregiver	CR-C	0.67	2.0	1.3
80	Communicate with the physical therapist when the expectations of the PTA are beyond their knowledge, skills, and abilities	CR-C	0.33	1.7	1.5
81	Gather information/discuss patient/client's current health status with interprofessional/interdisciplinary team members	CR-C	0.67	2.0	1.7
82	Establishes communication and interacts respectfully with colleagues, patients, and staff	CR-C	0.33	1.3	1.3
83	Provide written, oral, and electronic information to the patient/client and/or caregiver	CR-C	0.33	2.0	1.5
<b>EMERGENCY PROCEDURES</b>					
84	Implement emergency procedures (e.g., CPR, AED, calling a code)	CR-M/P	0.33	3.0	1.3
85	Perform first aid	CR-M/P	0.33	2.2	1.3
86	Implement disaster response procedures	CR-C	0.33	3.0	1.3
<b>DATA, EVIDENCE, AND RESEARCH</b>					
87	Search the literature for current best evidence	CR-C	0.67	1.8	1.7

88	Evaluate the quality of published data	CR-C	0.67	2.0	1.7
89	Integrate current best evidence, clinical experience, and patient values in clinical work (e.g., clinical prediction rules, patient preference)	CR-C	0.67	2.2	2.0
90	Compare intervention outcomes with normative data	CR-C	1.00	2.2	2.0

**Appendix C**  
Physical Therapy Critical Work Activities Survey

In this survey, you will be asked to rate critical work activities using a provided framework, and rate each component on its vulnerability to deterioration with disuse.

	Cognitive	Sensory/Perceptual	Motoric/Physical
<b>Process/ Fluid</b>	Components of PT competence that reflect present level of mental functioning (attention, memory, etc.), where past training is of minimal benefit  Code: FL-C	Components of PT competence that reflect present level of sensory/perceptual functioning, where past training is of minimal benefit  Code: FL-S/P	Components of PT competence that reflect present level of motor functioning (e.g., manual dexterity), where past training is of minimal benefit  Code: FL-M/P
<b>Product/ Crystallized</b>	Components of PT competence that reflect knowledge and skill, acquired through training  Code: CR-C	Components of PT competence that reflect sensory/perceptual skills, acquired through training  Code: CR-S/P	Components of PT competence that reflect motor-based skills, acquired through past training  Code: CR-M/P

**Codes:**

- FL-C            Fluid-cognitive
- FL-S/P        Fluid-sensory/perceptual
- FL-M/P        Fluid-motoric/physical
- CR-C           Crystallized-cognitive
- CR-S/P        Crystallized-sensory/perceptual
- CR-M/P        Crystallized-motoric/physical

*Please answer the following questions for each critical work activity.*

**(Q1)** How rapidly does the component deteriorate to the point where minimal competence is lost over a period of disuse (a period of time when a physical therapist discontinues professional practice)?

- (a) A rapid rate of loss (less than 6 months)
- (b) A moderate rate of loss (6-12 months)
- (c) A slow rate of loss (12-24 months)
- (d) Almost no loss

**(Q2)** How quickly can minimal competence in the component be regained after a period of disuse (assume a disuse period of 1 year)?

- (a) Minimal competence can be quickly regained after a short amount of time (around 2 weeks)
- (b) Minimal competence can be regained after a minimal amount of time (2-3 months)
- (c) Minimal competence can be regained after a moderate amount of time (3-6 months)
- (d) Minimal competence can be regained after an extensive amount of time (6-12 months)