



Analysis of Competencies for Dry Needling by Physical Therapists

Final Report

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Executive Summary

Dry needling is a skilled technique performed by a physical therapist using filiform needles to penetrate the skin and/or underlying tissues to affect change in body structures and functions for the evaluation and management of neuromusculoskeletal conditions, pain, movement impairments, and disability.

Since 2010, jurisdictions have sought information from the Federation of State Boards of Physical Therapy (FSBPT) regarding the ability of physical therapists (PTs) to perform dry needling; however, no publically available studies have explicitly examined what PTs must know and be able to do to perform dry needling safely and effectively. To provide its members with objective, professionally-developed guidance, FSBPT sponsored a practice analysis of the competencies required of physical therapists to perform dry needling. Competencies are measurable or observable knowledge, skills, and/or abilities an individual must possess to perform a job competently.

The practice analysis drew from multiple sources of information (i.e., extant literature on dry needling; licensed physical therapists; dry needling experts) to provide an authentic and accurate assessment of the knowledge, skills, and abilities needed to perform dry needling safely and effectively. The process for developing the dry needling competencies included three main steps.

1. **Background Review** – Information gleaned from a review of the literature on dry needling was used to develop a preliminary set of dry needling “tasks” that describe job-related actions and a separate set of dry needling knowledge requirements that describe factual or procedural information directly involved in the performance the intervention.
2. **Practitioner Survey** – A survey of more than 350 licensed PTs, including individuals working in hospitals, private practice, clinics, academia, and the military, was administered to identify entry-level knowledge, skills, and abilities that are important for competency in dry needling.
3. **Task Force Meeting** – Seven dry needling experts, supported by observers from the American Physical Therapy Association (APTA) and FSBPT’s Board of Directors, met to consolidate the information collected in the previous two steps and construct a final set of competencies.

Steps 1 and 2 were conducted concurrently between February and May, 2015. The Task Force meeting was held at FSBPT’s headquarters on May 29-31, 2015.

The Task Force’s primary objective was to identify knowledge, skills, and abilities that are specifically needed for competency dry needling. To accomplish this objective, they performed five activities.

1. **Define Dry Needling** – constructed a definition of dry needling that clearly communicates the purpose and defining features of the intervention
2. **Define the Standard for Competence (Safe and Effective Practice)** – clarified the standard of competence for dry needling representing the minimum level of proficiency needed to perform the technique competently
3. **Review and Refine Dry Needling Tasks** – identified job tasks that PTs perform when applying dry needling as part of a physical therapy treatment plan

4. **Review and Refine Dry Needling Knowledge Requirements** – identified the knowledge required to carry out the tasks identified in the previous activity
5. **Identify Dry Needling Skills and Abilities** – determined which skills and abilities are needed for safe and effective dry needling

The task force members were also charged with evaluating to what extent entry-level knowledge (i.e., knowledge required for licensure in physical therapy) is needed for safely and effectively using dry needling. To that end, the results of the 2011 Analysis of Practice for the Physical Therapy Profession (Bradley, Waters, Caramagno, & Koch, 2011) were incorporated into the analysis as a starting point. First, the Task Force identified which entry-level physical therapy job tasks and knowledge are relevant to competency in dry needling. Then, they identified additional tasks and knowledge that are needed specifically for performing the dry needling technique.

Major results from the dry needling practice analysis are presented below.

- Of the 214 entry-level and 27 dry needling-specific job tasks analyzed, 123 were identified as directly relevant to the competent performance of dry needling.
- Of the 116 entry-level and 22 dry needling-specific knowledge requirements, 117 were identified as important for competency in dry needling.
- 86% of the knowledge requirements needed to be competent in dry needling is acquired during the course of PT clinical education, including knowledge related to evaluation, assessment, diagnosis and plan of care development, documentation, safety, and professional responsibilities.
- 16 (14%) of the knowledge requirements related to competency in dry needling must be acquired through post-graduate education or specialized training in dry needling.
- In terms of skill and ability requirements, psychomotor skills needed to handle needles and palpate tissues require specialized training. This skill was the only skill or ability noted as not being required to be an entry-level physical therapist.
- Because dry needling requires a strong clinical education in assessment, diagnosis, clinical reasoning and decision making, and constant assessment and reassessment, it is not an entry-level technique and PTAs should not perform this intervention.

The job tasks specifically involved in the use of dry needling are presented on the following pages along with the 16 knowledge requirements that are acquired through advanced or specialized training are displayed.

Table i. Dry Needling-specific Tasks

ID#	Tasks
PATIENT/CLIENT ASSESSMENT	
Information Gathering & Synthesis	
	Interview patients/clients, caregivers, and family to obtain patient/client history and current information (e.g., medical, surgical, medications, social, cultural, economic) to...
1.	...identify prior experience with and tolerance for dry needling (e.g., needle phobia, response to treatment, ability to comply with treatment requirements)
2.	...identify contraindications and precautions related to dry needling (e.g., age, allergies/sensitivities, diseases/conditions, implants, areas of acute inflammation, acute systemic infections, medications)
3.	Sequence dry needling with other procedural interventions and techniques (e.g., therapeutic exercises, neuromuscular reeducation, manual therapy, physical modalities) to augment therapeutic effects and minimize risk due to adverse outcomes and/or contraindications.
INTERVENTIONS	
Manual Therapy Techniques	
	Position the patient/client to...
4.	...expose the area(s) to be needed
5.	...reduce the risk of harm to the patient/client and/or therapist
6.	Educate the patient/client on the impact of movement during treatment
7.	Perform palpation techniques to identify the area(s) to be needed
8.	Apply needle handling techniques that ensure compliance with relevant and current professional standards (e.g., wash hands, wear gloves, minimize needle contamination)
9.	Apply draping materials (e.g., linens, towels) to minimize unnecessary exposure and respect patient privacy
10.	Perform dry needling techniques consistent with treatment plan (e.g., place, manipulate, and remove needles)
11.	Manage needle removal complications (e.g., stuck needle, bent needle)
12.	Monitor patient/client's emotional and physiological response to dry needling
13.	Facilitate hemostasis as necessary
14.	Dispose of medical waste (e.g., needles, gloves, swabs) in accordance with regulatory standards and local jurisdictional policies and procedures (e.g., sharps container)
15.	Discuss post-treatment expectations with the patient/client or family/caregiver
ID#	Tasks
Education	
16.	Educate patient/client or family/caregiver about dry needling (e.g., purpose, technique, methods of action, benefits, tools and equipment)
17.	Educate patient/client or family/caregiver about potential adverse effects associated with dry needling (e.g., fainting, bruising, soreness, fatigue)
18.	Educate patient/client or family/caregiver about precautions and contraindications for dry needling (e.g., age, allergies/sensitivities, diseases/conditions, implants, areas of acute inflammation, acute systemic infections, medications)
Patient/client & Staff Safety	
Emergency Procedures	
19.	Implement emergency response procedures to treat patient/client injuries sustained during dry needling (e.g., perforation of hollow organs, heavy bleeding, broken needles)
20.	Implement emergency response procedures to treat practitioner injuries sustained during dry needling (e.g., needle stick)

Table i. (Continued)

ID#	Tasks
Environmental Safety	
21.	Prepare and maintain a safe and comfortable environment for performing dry needling (e.g., unobstructed walkways, areas for patient/client privacy)
22.	Stock dry needling supplies and equipment in safe proximity during treatment
Infection Control	
23.	Implement infection control procedures to mitigate the effects of needle stick injuries
24.	Clean and disinfect blood and bodily fluids spills in accordance with regulatory standards and local jurisdictional policies and procedures
25.	Replace surfaces that cannot be cleaned
Professional Responsibilities	
26.	Determine own ability to perform dry needling safely and effectively

Table ii. Specialized Knowledge Required for Competency in Dry Needling

Anatomy and Physiology	
1.	Surface anatomy as it relates to underlying tissues, organs, and other structures, including variations in form, proportion, and anatomical landmarks
Emergency Preparedness and Response	
2.	Emergency preparedness and/or response procedures related to secondary physiological effects or complications associated with dry needling (e.g., shock, vasovagal)
3.	Emergency preparedness and/or response procedures related to secondary emotional effects or complications associated with dry needling (e.g., claustrophobia, anxiety, agitation)
4.	Standards for needle handling (e.g., hand hygiene, application of single-use needles)
Safety and Protection	
5.	Factors influencing safety and injury prevention
6.	Personal protection procedures and techniques as related to dry needling (e.g., positioning self to access treatment area, use of personal protective equipment)
7.	Theoretical basis for dry needling (e.g., applications for rehabilitation, health promotion, fitness and wellness, performance)
8.	Theoretical basis for combining dry needling with other interventions
9.	Secondary effects or complications associated with dry needling on other systems (e.g., gastrointestinal, cardiovascular/pulmonary, musculoskeletal)
10.	Theoretical basis of pain sciences, including anatomy, physiology, pathophysiology, and relation to body structures and function
11.	Contraindications and precautions related to dry needling (e.g., age, allergies, diseases/conditions)
12.	Palpation techniques as related to dry needling
13.	Needle insertion techniques
14.	Needle manipulation techniques
15.	Physiological responses to dry needling
16.	Solid filament needles (e.g., physical characteristics)

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Introduction and Overview

Dry Needling in the Physical Therapy Scope of Practice

Dry needling is a procedural intervention used by physical therapists (PT) to treat pain, functional impairments, and disabilities. The technique involves the insertion of solid filament needles into the skin and underlying tissue to disrupt pain sensory pathways and relax contracted fibers (Dommerholt, & Fernández-de-las-Peñas, 2013). Clinical research suggests that dry needling helps reduce local and peripheral pain and sensitization, thereby hastening the restoration of muscle function and range of motion (Lewit, 1979; Dommerholt, 2011; Clewley, Flynn, & Koppenhaver, 2014). Dry needling (alone or with other physical therapy interventions) has been shown to be an effective treatment for neuromusculoskeletal diseases or conditions, including arthritis, tendonitis, carpal tunnel, and chronic pain (Dommerholt, 2004; Kalichman, & Vulfsons, 2010).

The theoretical genesis of dry needling is attributed to the pioneering work of Janet Travell, M.D. and David Simons, M.D. (Simons, Travell, & Simons, 1999) who used .22-gauge hypodermic needles to treat myofascial pain with trigger point therapy (i.e., needling of taut bands of muscle fibers). Over the past several decades, practitioners have adopted variations on the original approach including superficial and deep needling techniques (Gunn, 1997; Baldry, 2002; Ma, 2011). Modern dry needling has largely abandoned hypodermic needles in favor of round tip, solid filament needles ranging from .22 to .30 millimeters in diameter as the beveled tip of hypodermic needles causes greater tissue damage. In addition, modern dry needling is used to treat a variety of conditions and dysfunction of neuromusculoskeletal structures (Ma, 2011; Dommerholt & Fernández-de-las-Peñas, 2013; Dunning, et al, 2014).

The use of needles to treat health conditions is not unique to physical therapy. Needles of similar design are used by practitioners of Acupuncture and Oriental Medicine. However, the use of needles, per se, does not imply that one needling approach is equivalent to another or that one medical profession is infringing on the scope of practice of another. It is not the specific individual procedures or tools that define a profession, but the totality of the scope of practice (National Council of State Boards of Nursing, 2012).

Dry needling in the context of physical therapy is based on a distinct philosophical and theoretical framework supported by modern scientific study of the musculoskeletal and nervous systems (American Physical Therapy Association, 2012; Cummings, 2013; Dunning, et al, 2014). At every stage of the physical therapy visit, from patient selection to the actual needling of the affected areas, the PT is guided by his/her education, clinical training and experience, professional responsibilities and competence, and legally defined scope of practice, as well as the patient's reaction to needling. For example, the type and number of needles used, as well as their location, depth, and manipulation, are heavily influenced by the PT's knowledge of anatomy, histology, physiology, biomechanics, kinesiology, neuroscience, pharmacology, and pathology, as well as the overall plan of care.

In the United States, physical therapy practice is governed by occupational and regulatory standards for ensuring public protection and professional integrity. Statutes (i.e., practice acts) define the scope of practice for a particular jurisdiction and licensure laws ensure practitioners meet and maintain prescribed standards for the competent performance of their jobs. However, practice acts are often ambiguous regarding the procedures and techniques PTs are allowed to perform because methodologies and evidence-based treatments continually evolve with

advances in education, research, and technology. As a result, interpretation of the law falls to state boards/agencies which develop rules and regulations to define, in practical terms, whether or not a specific procedure, technique, or modality is within the scope of practice. Because each state creates its own licensure laws, the scopes of practice vary—an allowed technique in one state may be restricted in another. Currently, dry needling is specifically allowed in 33 states and strictly prohibited in eight; the remaining states are either undeclared or have conflicting rulings.

Scope and Purpose of the Project

Since 2010, many jurisdictions have sought information from the Federation of State Boards of Physical Therapy (FSBPT) regarding the ability of PTs to perform dry needling. Much of the empirical research on dry needling has focused on the clinical aspects of the technique, such as methods of action and treatment effects (Dommerholt & Fernández-de-las-Peñas, 2013; Dommerholt, 2011; Dunning, et al, 2014). However, no publically available studies have explicitly examined what PTs must know and be able to do to perform dry needling safely and effectively, or what factors (personal capacities or environmental conditions) contribute to competent performance. To provide its members with objective, professionally-developed guidance, FSBPT sponsored a study of the competencies required for safe and effective dry needling.¹

The primary objectives of this research were to:

1. Define Dry Needling Competencies for Physical Therapists

- a. What must physical therapists know and be able to do to perform dry needling safely and effectively?
- b. When, where, and how do physical therapists acquire the knowledge, skills, and abilities needed to perform dry needling?

2. Evaluate Factors that Impact Safe and Effective Practice

- a. What characteristics of the individual contribute to safe and effective dry needling?
- b. What institutional and environmental factors influence the safe and effective practice dry needling?

Research Design

The systematic process for developing competencies in a licensure context is often referred to as “practice analysis”. The process begins with an analysis of the work itself to identify the tasks individuals perform on the job. This is followed by an investigation of the knowledge, skills, and abilities needed to perform those tasks. Finally, additional information is collected to determine the requirements for evaluating the quality of performance on a task (e.g., effective versus not effective). The result of this process is a list of the knowledge, skills, and ability requirements for competent performance.

¹ Competencies are defined as measurable or observable knowledge, skills, or abilities an individual must possess to perform a job effectively. They possess both descriptive and evaluative information (i.e., what characteristics an individual must possess and to what extent or level of quality). Because they describe behavioral characteristics of the individual in terms of the job being performed, competencies can provide a strong foundation for a variety of professional and regulatory functions, including the establishment of education and training requirements, performance assessment and management, professional guidelines, and practice regulations. They are also useful for communicating with and educating the public on the dry needling technique and how it fits with the physical therapy scope of practice.

Practice analysis relies on the input and judgment of subject matter experts (SMEs) to provide an authentic and accurate assessment of the job tasks and competencies. Their primary role is to bring their education, training, and on-the-job experience to bear in identifying knowledge, skills, and abilities that are relevant and important for competent practice. In this way, SME participation adds credibility and validity to the outcomes of the research.

FSBPT contracted with the Human Resources Research Organization (HumRRO) to conduct the study in accordance with current best-practices in practice analysis procedures. HumRRO is a non-profit, social and behavioral science research and consulting firm dedicated to the measurement and improvement of human and organizational performance. As an independent contractor, HumRRO was instrumental in carrying out an objective, unbiased analysis. In addition, HumRRO provided an external perspective of the nature of physical therapy work, particularly the human and environmental factors related to competent job performance.

Competency Development Process

The process for developing the dry needling competencies included three main steps. First, HumRRO staff conducted a background review of the literature on dry needling and constructed draft versions of the competencies. Concurrently with the background review, FSBPT surveyed a broad sample of licensed PTs to identify knowledge, skills, and abilities that are important for dry needling. Finally, HumRRO and FSBPT convened a task force meeting with experts in dry needling to consolidate the information collected in the previous two steps and construct a final list of competencies. Each step is described in more detail in the following sections.

Background Information Review

The purpose of the background review was to obtain current theoretical, procedural, and descriptive information on dry needling and translate it into a preliminary set of competencies. The review began with an internet search to identify source material containing information related to: dry needling knowledge and skills, tasks and/or duties, contraindications, adverse effects, safety, needle techniques, patient education and communication, and emergency preparedness and response. This search returned 30 sources encompassing websites, resource papers, text publications, peer-reviewed research journals, instructional curricula, and testing materials. FSBPT identified an additional seven electronic documents covering FSBPT periodicals and testing materials related to the National Physical Therapy Licensure Exam (NPTE). The complete list of source materials is provided in Appendix A.

During the review, text fragments (e.g., sentences, phrases, paragraphs) that provided potentially useful information were extracted and stored in an electronic database. A total of 937 fragments were collected ranging in size from 19 to 2,329 characters (including spaces). The average size of an extracted fragment was 229 characters. Examples include:

- "...inquiries specifically about reactions to needles..."
- "Sustained contractures of taut bands cause local ischemia and hypoxia in the core of trigger points."
- "The muscle and treatment area needled should be compressed immediately following needle with-drawal for hemostasis for up to 30 seconds or until any bleeding has stopped. A cotton swab may be used and should be discarded as appropriate."
- "The clinician should be cognizant of anatomical structures within the treatment area that are vulnerable to [dry needling], e.g. neurovascular structures and the lung, and ensure

that the needling technique avoids penetration of vulnerable anatomical structures. Also, voluntary and involuntary patient movement may compromise safe [dry needling], which is why the needling hand should always rest on the patient's body.”

The extracted information was analyzed, sorted, and coded into groupings reflecting common (or recurrent) topics or themes. For example, the following sentences provided information related to knowledge of body systems affected by dry needling.

- “Dry needling is a neurophysiological evidence-based treatment technique that requires effective manual assessment of the neuromuscular system”
- “Anatomical knowledge of the vascular system is important as there is a potential to puncture blood vessels during needling”
- “Identify specific bony landmarks of the pelvis and differentiate individual pelvic muscles for needling”
- “Anatomical knowledge of internal organs is important as there is potential for internal organ penetration such as the kidney with needling of [trigger points] in the psoas major and quadratus lumborum muscles or organs within the peritoneal cavity with needling of TrPs in the abdominal muscles”

In some instances, a single fragment provided information across multiple topics and was coded accordingly. After sorting and grouping the information, common topics with each grouping were identified and used to construct draft lists of dry needling tasks and knowledge requirements.

Tasks are defined as discrete job-related actions taken to achieve some goal or purpose, and the tools, conditions, and reasons for doing so. Twenty-seven tasks were derived from the background review materials. Below is an example of a task statement.

Interview patients/clients, caregivers, and family to obtain patient/client history and current information (e.g., medical, surgical, medications, social, cultural, economic) to identify prior experience with and tolerance for dry needling (e.g., needle phobia, response to treatment, ability to comply with treatment requirements).

Knowledge requirements describe organized bodies of factual or procedural information that are directly involved in the performance of a job or job task. Twenty-seven knowledge requirements were derived from the background review. An example of a knowledge requirement statement is presented below.

Knowledge of contraindications and precautions related to dry needling (e.g., age, allergies, diseases/conditions, implants, pregnancy, areas of acute inflammation, acute systemic infections, medications).

The draft lists of tasks and knowledge requirements were reviewed with FSBPT to (a) identify content gaps, (b) make adjustments to the phrasing or content, and (c) organize the information in a meaningful way for review by the Task Force. The complete list of draft statements is presented in Appendix B.

Practitioner Survey

The purpose of the practitioner survey was to identify entry-level physical therapy tasks and knowledge (required at the time of licensure) that are also required for dry needling. A large sample

of licensed PTs (n=353) was recruited to complete the survey. This sample included individuals working in hospitals, private practice, clinics, academia, and the military. Respondents were presented with two lists: 214 entry-level tasks (a.k.a., work activities) and 116 entry-level knowledge statements. Both lists were drawn verbatim from the results of the 2011 Analysis of Practice for the Physical Therapy Profession (Bradley, Waters, Caramagno, & Koch, 2011).² The practitioner survey was conducted concurrently with the review of background materials. Therefore, draft competencies from the review were not included in the practitioner survey. Respondents were instructed to rate whether each task (or knowledge) was relevant or not relevant to competency in performing dry needling. Tables indicating the percent of respondents selecting each task or knowledge as relevant were prepared for presentation to the Task Force.

Respondents were also asked to identify qualities or capabilities that PTs need to be effective in the practice of dry needling that were not already covered by the lists of tasks and knowledge statements. HumRRO content analyzed their responses and identified commonly cited characteristics. Broadly, the responses could be categorized into three areas of dry needling-specific information: skills and abilities, tasks, and knowledge. For example, some of the respondents suggested adding tasks related to needle selection and placement, identification of contraindications, and palpation. A small portion of respondents observed that PTs need knowledge of surface and cross-sectional anatomy, adverse effects related to needling, and clean needle techniques. The information identified by the survey respondents was incorporated into the draft list of tasks and competencies developed during the background review.

Task Force Meeting

The purpose of the Task Force meeting was to review the draft competencies and survey results and consolidate the information into a final set of dry needling competencies. FSBPT extended invitations to a group of dry needling experts who were employed in a variety of sectors (e.g., private, academia) and were geographically dispersed. Because more individuals were interested than there were positions to fill, FSBPT requested from each individual a short summary of his/her training and professional experience with dry needling as well as his/her availability to attend the Task Force meeting on the selected dates (see below). Based on the narratives, FSBPT looked for individuals who possessed regulatory experience with FSBPT or FSBPT's licensing boards and/or have been involved in the legislative process with regard to dry needling.

Seven individuals were selected to participate on the Task Force based on their depth and breadth of experience and education in dry needling. Their years of professional experience performing dry needling ranged from five to fourteen. All participants were licensed PTs with a minimum of fourteen total years of experience in physical therapy and a maximum of 31. Five participants possessed Doctorate level degrees (i.e., DPT); one had a Master's level degree (i.e., MPT/MSPT), and one had a Bachelor's degree. All were certified to practice dry needling, and five were currently in an educational or training role (e.g., faculty, instructor) providing dry needling instruction in addition to their clinical employment as therapists. One was a full-time faculty member.³

The Task Force meeting was held at FSBPT's headquarters on May 29-31, 2015. HumRRO staff facilitated the meeting with technical support from FSBPT as well as observers from the American Physical Therapy Association (APTA) and FSBPT's Board of Directors. The agenda covered the following activities:

² Available at: https://www.fsbpt.org/download/pa2011_ptfinalreport20111109.pdf

³ At this time there are no required certifications, or certifications that are acknowledged by a regulatory board. All Task Force members have extensive training in dry needling and practice it regularly.

1. Define Dry Needling
2. Define the Standard for Competence (Safe and Effective Practice)
3. Review and Refine Dry Needling Tasks
4. Review and Refine Dry Needling Knowledge Requirements
5. Identify Dry Needling Skills and Abilities

Define Dry Needling

The first activity was aimed at constructing a definition of dry needling that clearly communicates the purpose and defining features of the intervention without inadvertently narrowing the scope. A draft definition was presented to the Task Force for review and is presented below.⁴

*Draft definition: Dry needling is a skilled intervention using a thin, filiform needle, without injectate, to penetrate the skin in order to stimulate and effect change in underlying tissues.*⁵

The Task Force noted several issues with the draft definition they believed would confuse certain audiences and narrow its applicability across individual practitioners and practice settings. These included the following.

- Dry needling is not limited to physical stimulation of acutely affected tissue.
- There is a neural component that includes the peripheral and central nervous system.
- Dry needling can be used to stimulate as well as inhibit the neuromusculoskeletal system.
- Dry needling is a method for evaluating, treating, and managing functional impairment and pain.
- Dysfunction and disability are also treated with dry needling.
- The term filiform should be kept; however, some needles are thicker than others so “thin” might be misleading.
- Needles may penetrate more than just the dermal layer (i.e., skin).

Chuck Brown, attending as an observer for the FSBPT Board of Directors, offered the definition adopted by Arizona Physical Therapy Board which was developed to address many of the same issues. The Task Force elected to use this definition as a starting point and made a few additional revisions, such as adding “disability” to the list of things dry needling can be used to treat. The final definition is presented below.

Dry needling is a skilled technique performed by a physical therapist using filiform needles to penetrate the skin and/or underlying tissues to affect change in body structures and functions for the evaluation and management of neuromusculoskeletal conditions, pain, movement impairments, and disability.

Define the Standard for Competence (Safe and Effective Practice)

⁴ This version was developed by FSBPT staff with contributions from two practicing physical therapists that have expertise in dry needling. The draft version was primarily developed as a starting point to facilitate discussion.

⁵ Draft definition; do not cite.

The second activity was conducted to clarify the standard of competence for dry needling. This standard represents the minimum level of proficiency needed to perform the technique competently. Although there are many ways to define competence (e.g., efficiency, cost, speed, quality, satisfaction), the criteria “safe and effective” were selected because (a) they are meaningful to the practice of dry needling (and physical therapy in general), and (b) this approach is consistent with the 2011 practice analysis (Bradley, Waters, Caramagno, & Koch, 2011).

To begin, the Task Force participated in a brainstorming task to identify (at a broad level) what PTs do when applying dry needling, what they must know to do so safely and effectively, and what psychological or physical characteristics they must possess (e.g., skills, abilities).

Examples of their responses include:

- DO: assess and evaluate; determine need for intervention, educate patients, establish goals, handle needles safely, manage waste disposal
- KNOW: anatomy; palpation techniques; dosing; informed consent; adverse effects; reimbursement
- POSSESS: psychomotor skills; social skills; ability to communicate; ethics; self-awareness; empathy/compassion; cultural competence

This activity helped orient the Task Force to the practice analysis approach and establish a common frame of reference regarding the meaning of safe and effective practice.

The Task Force noted that safety and effectiveness are related but distinct concepts so both criteria are warranted. They unanimously agreed that the concept of safety applies to both patient and practitioner and includes prevention as well as emergency response. Prevention covers direct actions such as safe needle handling and infection control, as well as more indirect actions like attending to and correctly interpreting patient data. In relation to the minimum standard for competence, they defined safe practice as the prevention and mitigation of harm to the patient or therapist, directly or indirectly, through careful patient selection, evaluation, and treatment.

The concept of effectiveness was more difficult to define because dry needling can be used to achieve a variety of therapeutic responses and outcomes (e.g., reduced pain and/or sensitization, increased mobility). Each patient’s needs are dependent on his/her symptoms or conditions and whether dry needling is appropriate. Measuring the effectiveness of the treatment requires careful pre- and post-treatment assessment to establish a baseline health status, select the patient for dry needling, and detect change. Accordingly, the Task Force opted to define the standard for effectiveness in relation to the entire physical therapy session (or visit). In other words, dry needling is effective when the PT continually assesses and evaluates the patient and adjusts the treatment according to the patient’s specific needs or presentation.

Review and Refine Dry Needling Tasks

The objective of the third activity was to identify job tasks that PTs perform when applying dry needling as part of a physical therapy treatment plan. Job tasks are not included as part of the competencies but the identification of tasks is essential for linking the competencies to the actions that PTs perform on the job. In other words, in order to identify the competencies required for a job, one must first understand the job itself. The job task analysis served this purpose.

The analysis was carried out in two parts. First, the Task Force reviewed a list of entry-level physical therapy tasks. These tasks were identified during the 2011 practice analysis (Bradley, Waters,

Caramagno, & Koch, 2011) and, as such, reflect the actions expected of all licensed, entry-level PTs. Because the same list was used in the practitioner survey, the Task Force reviewed the survey results (i.e., percent of respondents endorsing each task as relevant). Through discussion and consensus-building, the Task Force made a final determination of the relevance of each task. For this activity, relevance was based on the standard for competence defined in the previous section (i.e., a task is relevant if it is necessary for safe and effective practice).

Next, the Task Force reviewed the list of draft task statements developed during the background review. These tasks describe the procedural actions involved in performing the dry needling intervention and are at a somewhat finer grain of analysis than the entry-level tasks. As a result, the Task Force spent more time editing these tasks to improve their clarity and accuracy.

During the review, the Task Force noted that dry needling is always performed as part of a comprehensive treatment plan and almost never the only physical therapy intervention included in the plan. As a result, the Task Force initially identified all of the entry-level interventions as relevant to dry needling. However, this decision created redundancy with the list of entry-level physical therapy tasks and obscured the purpose and usefulness of the dry needling task list.⁶ Because dry needling is frequently combined with other interventions, the Task Force observed that an important part of a PT's role is determining the proper sequence of events to reduce or eliminate the risk of relative contraindications. Therefore, instead of including every physical therapy intervention/treatment on the task list, the Task Force created a new statement that specifically addressed the action of sequencing dry needling with other interventions.

Sequence dry needling with other procedural interventions and techniques (e.g., therapeutic exercises, neuromuscular reeducation, manual therapy, physical modalities) to augment therapeutic effects and minimize risk due to adverse outcomes and/or contraindications.

The statements describing the other interventions were excluded from the final dry needling task list.

Review and Refine Dry Needling Knowledge Requirements

The objective of the fourth activity was to identify the knowledge required to carry out the tasks identified in the previous activity. The Task Force began by reviewing the 116 entry-level knowledge requirements identified in the 2011 practice analysis as well as the practitioner survey results. They identified 13 statements as clearly unrelated to the safe and effective practice of dry needling and excluded them from further consideration. These statements covered knowledge of biofeedback, electromagnetic radiation, data collection techniques, and measurement science, to name a few. Next, the Task Force reviewed the 27 dry needling-specific knowledge requirements developed during the background review. This list was heavily refined to ensure the knowledge requirements were clear and accurate. During the review, the Task Force eliminated eight and created two new knowledge requirements.

Once the Task Force was comfortable with the content of the lists, they performed a rating task to evaluate the importance of the knowledge requirements. The importance rating reflects the extent to which the knowledge described by a particular statement is needed for safe and

⁶ From a methodological standpoint, task lists should include only actions/activities necessary to perform the work. The inclusion of other interventions on the dry needling task list suggests they are essential to the proper implementation of technique.

effective dry needling. If lack of the knowledge would lead to very serious negative consequences, the importance rating should be higher. If none or few consequences would result from a lack of the knowledge, the importance rating should be lower. The importance rating scale is shown below.

How important is the knowledge for the safe and effective performance of dry needling by a licensed physical therapist?

1. Minimally important
2. Somewhat important
3. Important
4. Very important
5. Extremely important

The Task Force members' rated each of the remaining 103 knowledge requirements. HumRRO compiled and analyzed the ratings to identify knowledge requirements for which there were large discrepancies in judgment (e.g., split-decisions, no clear majority) were marked for review. All of these discrepancies were resolved through a process of discussion to reinforce the purpose and goals of the activity and reach agreement regarding the knowledge that is required for competent dry needling.

Identify Dry Needling Skills and Abilities

The process for determining which skills and abilities are needed for safe and effective dry needling differed from that used for the tasks and knowledge requirements. To date, no publicly available description of skills and abilities needed for dry needling exists. However, the U.S. Department of Labor developed a comprehensive database called the Occupational Information Network (O*NET) which contains information on skills and abilities that are related to job performance in different industries, including physical therapy (Tsacoumis & Van Iddekinge, 2006). The data analysis conducted by the Department identified 21 skills and 22 abilities that apply to the physical therapy occupation. Accordingly, to identify attributes specifically related to dry needling, HumRRO integrated the O*NET information with expert judgments made by the Task Force.

First, the Task Force brainstormed a set of attributes needed for performing dry needling safely and effectively and identified five general activities.

1. Communicating with patients
2. Adapting behavior or treatment to accommodate patient's needs/preferences
3. Handling and controlling needles and palpating tissues
4. Reflecting on and evaluating own competence to perform dry needling (e.g., only treating areas for which the PT has specific training)
5. Abiding by professional and ethical standards (e.g., adhering to OSHA regulations)

They noted that PTs acquire the skills and abilities to perform these activities competently during their general physical therapy education, residency, and/or clinical internships, with one exception; the psychomotor skills needed to physically perform dry needling (e.g., needle insertion) are not learned in physical therapy school and must be developed as part of specialized training on the technique.

Next, HumRRO mapped the activities identified by the Task Force to the skills and abilities listed in the O*NET database. Two HumRRO analysts reviewed the definition of each O*NET

skill or ability as well as any behavioral examples provided and used this information to “link” the two sets of information. For instance, writing skill is defined in the O*NET database as “Communicating effectively in writing as appropriate for the needs of the audience” (e.g., taking a phone message, writing a memo to staff outlining new directives) and corresponds with the Task Force-identified activity focused on patient communication.

Outcomes

Dry Needling Job Tasks

Of the 214 job tasks required of entry-level, licensed PTs, 97 were judged to be relevant to dry needling. These tasks describe activities related to information gathering and systems review (n = 17), testing and measurement (n = 33), evaluation and diagnosis (n = 11), prognosis and plan of care (n = 5), non-procedural interventions (n = 16), and patient/client and staff safety (n = 15). Of the 27 tasks derived from the background review, 26 were identified as specifically relevant to dry needling (see Table 1). Nearly half (n = 12) of these tasks describe procedural actions such as positioning the patient, palpating the area(s) to be needled, needle handling, monitoring the patient, and disposing of medical waste. The remaining 14 tasks describe activities related to information gathering, prognosis and plan of care, non-procedural interventions, and patient/client and staff safety. The final list of 123 dry needling tasks is displayed in Appendix D. Tasks that were deemed not relevant to dry needling are presented in Appendix E.

Table 1. Dry Needling-Specific Tasks

ID#	Tasks
PATIENT/CLIENT ASSESSMENT	
Information Gathering & Synthesis	
	Interview patients/clients, caregivers, and family to obtain patient/client history and current information (e.g., medical, surgical, medications, social, cultural, economic) to...
1.	...identify prior experience with and tolerance for dry needling (e.g., needle phobia, response to treatment, ability to comply with treatment requirements)
2.	...identify contraindications and precautions related to dry needling (e.g., age, allergies/sensitivities, diseases/conditions, implants, areas of acute inflammation, acute systemic infections, medications)
3.	Sequence dry needling with other procedural interventions and techniques (e.g., therapeutic exercises, neuromuscular reeducation, manual therapy, physical modalities) to augment therapeutic effects and minimize risk due to adverse outcomes and/or contraindications.
INTERVENTIONS	
Manual Therapy Techniques	
	Position the patient/client to...
4.	...expose the area(s) to be needled
5.	...reduce the risk of harm to the patient/client and/or therapist
6.	Educate the patient/client on the impact of movement during treatment
7.	Perform palpation techniques to identify the area(s) to be needled
8.	Apply needle handling techniques that ensure compliance with relevant and current professional standards (e.g., wash hands, wear gloves, minimize needle contamination)
9.	Apply draping materials (e.g., linens, towels) to minimize unnecessary exposure and respect patient privacy
10.	Perform dry needling techniques consistent with treatment plan (e.g., place, manipulate, and remove needles)
11.	Manage needle removal complications (e.g., stuck needle, bent needle)
12.	Monitor patient/client’s emotional and physiological response to dry needling

Table 1 (Continued)

ID#	Tasks
13.	Facilitate hemostasis as necessary
14.	Dispose of medical waste (e.g., needles, gloves, swabs) in accordance with regulatory standards and local jurisdictional policies and procedures (e.g., sharps container)
15.	Discuss post-treatment expectations with the patient/client or family/caregiver
Education	
16.	Educate patient/client or family/caregiver about dry needling (e.g., purpose, technique, methods of action, benefits, tools and equipment)
17.	Educate patient/client or family/caregiver about potential adverse effects associated with dry needling (e.g., fainting, bruising, soreness, fatigue)
18.	Educate patient/client or family/caregiver about precautions and contraindications for dry needling (e.g., age, allergies/sensitivities, diseases/conditions, implants, areas of acute inflammation, acute systemic infections, medications)
Patient/client & Staff Safety	
Emergency Procedures	
19.	Implement emergency response procedures to treat patient/client injuries sustained during dry needling (e.g., perforation of hollow organs, heavy bleeding, broken needles)
20.	Implement emergency response procedures to treat practitioner injuries sustained during dry needling (e.g., needle stick)
Environmental Safety	
21.	Prepare and maintain a safe and comfortable environment for performing dry needling (e.g., unobstructed walkways, areas for patient/client privacy)
22.	Stock dry needling supplies and equipment in safe proximity during treatment
Infection Control	
23.	Implement infection control procedures to mitigate the effects of needle stick injuries
24.	Clean and disinfect blood and bodily fluids spills in accordance with regulatory standards and local jurisdictional policies and procedures
25.	Replace surfaces that cannot be cleaned
Professional Responsibilities	
26.	Determine own ability to perform dry needling safely and effectively

Dry Needling Competencies

Physical Therapy Knowledge Needed for Dry Needling

Determination of the knowledge needed for competency in dry needling was based on the average of Task Force members' importance ratings for each knowledge requirements. Mean importance ratings ranged from 1.57 to 4.71. Requirements with a mean rating of less than 2.00 ("Somewhat Important") were marked for potential elimination and discussed with the Task Force (n = 9). Of these, one statement (i.e., *knowledge of pneumatic compression modalities*) was retained as important because PTs must understand potential interactions between the interventions. Knowledge requirements falling near the threshold were discussed and reassessed. Of the 116 entry-level knowledge requirements, 95 were identified as important for dry needling. All 22 of the dry needling-specific knowledge requirements were identified as important for dry needling. The final list of 117 dry needling knowledge requirements is presented in Appendix F.

Knowledge requirements rated less than 2.00 were deemed not important to dry needling (n = 8). These included knowledge of other equipment and devices (e.g., prosthetics), other therapeutic modalities (e.g., mechanical), ultrasound imaging, and gastrointestinal interventions. Knowledge not related to competency in dry needling is presented in Appendix G.

Although much of the knowledge needed for dry needling is acquired during the course of a PT's clinical education (e.g., coursework; clinical residencies, fellowships, specialization), dry needling is not an entry-level technique. Therefore, some knowledge must be developed through specialized training.⁷ Sixteen knowledge requirements were identified as requiring advanced/specialized training for dry needling (see Table 2). All but one (i.e., *Factors influencing safety and injury prevention*) cover dry needling-specific knowledge such as surface anatomy, emergency preparedness and response procedures and standards (as related to dry needling), theoretical basis for dry needling, aspects of the technique itself, and secondary effects or contraindications related to the use of needles.

Table 2. Specialized Knowledge Required for Competency in Dry Needling

DRY NEEDLING-SPECIFIC KNOWLEDGE	
<i>Anatomy and Physiology</i>	
1.	Surface anatomy as it relates to underlying tissues, organs, and other structures, including variations in form, proportion, and anatomical landmarks
<i>Emergency Preparedness and Response</i>	
2.	Emergency preparedness and/or response procedures related to secondary physiological effects or complications associated with dry needling (e.g., shock, vasovagal)
3.	Emergency preparedness and/or response procedures related to secondary emotional effects or complications associated with dry needling (e.g., claustrophobia, anxiety, agitation)
4.	Standards for needle handling (e.g., hand hygiene, application of single-use needles)
<i>Safety and Protection</i>	
5.	Factors influencing safety and injury prevention
6.	Personal protection procedures and techniques as related to dry needling (e.g., positioning self to access treatment area, use of personal protective equipment)
7.	Theoretical basis for dry needling (e.g., applications for rehabilitation, health promotion, fitness and wellness, performance)
8.	Theoretical basis for combining dry needling with other interventions
9.	Secondary effects or complications associated with dry needling on other systems (e.g., gastrointestinal, cardiovascular/pulmonary, musculoskeletal)
10.	Theoretical basis of pain sciences, including anatomy, physiology, pathophysiology, and relation to body structures and function
11.	Contraindications and precautions related to dry needling (e.g., age, allergies, diseases/conditions)
12.	Palpation techniques as related to dry needling
13.	Needle insertion techniques
14.	Needle manipulation techniques
15.	Physiological responses to dry needling
16.	Solid filament needles (e.g., physical characteristics)

⁷ The Task Force defined specialized training as a full course on a particular topic or set of topics—short (e.g., half-day) workshops do not fulfill this requirement—and recommended that opportunities to practice actual needling should be incorporated into and provided immediately after the training to reinforce learning.

Physical Therapy Skills and Abilities Needed for Dry Needling

As mentioned, the determination of skills and abilities needed for competent dry needling was made by coupling Task Force members' judgment with information from the O*NET database. HumRRO linked the five Task Force-identified activities to 16 O*NET skills and abilities. The list covers attributes that are needed to perform dry needling safely and effectively, including communication (e.g., reading, writing, speaking), active listening and clinical thinking, social skills, psychomotor abilities, and judgment and decision-making. The Task Force observed that the majority of these skills and abilities are acquired through entry-level training and education. However, because dry needling is not included in most entry-level physical therapy programs (Adrian, 2013), the psychomotor skills needed to handle needles and palpate tissues require specialized training.⁸ The final list of skills and abilities is presented in Appendix H.

Role of the Physical Therapist Assistant in Dry Needling

Physical therapist assistants (PTAs) are health care workers who are directed and supervised by PTs. In this role, they are involved in direct patient care, including (but not limited to) observation and records management, therapeutic exercise, gait and balance training, massage, and patient education. However, PTAs do not evaluate, diagnose, assess/reassess, or prepare treatment plans for patients. They also do not make recommendations for various types of treatments modalities and equipment.

Task differences between PTs and PTAs are partly related to the scope of educational curricula provided by accredited physical therapist assistant degree programs. Whereas assistants receive instruction in many of the same domains as PTs (e.g., anatomy and physiology, biomechanics, kinesiology, neuroscience, clinical pathology, behavioral sciences, communication, ethics/values), the depth and breadth of education and training is not equivalent. Physical therapist assistants spend roughly 16 weeks in clinical education, whereas PTs spend more than 27. In addition, physical therapist assistants receive no didactic or clinical training in evaluation and differential diagnosis. Because this report focused on the competencies required of the PT to perform dry needling, it is not appropriate to assume the same competencies would qualify a PTA to perform the treatment. PTAs would typically need additional training to be competent in performing dry needling.

Conclusions

The practice analysis of dry needling revealed several important characteristics about PTs' capabilities for performing the intervention as part of their scope of practice. First, of the 116 entry-level and 22 dry needling-specific knowledge requirements, 117 were identified as important for competency in dry needling. More than four-fifths (86%) of what PTs need to know to be competent in dry needling is acquired during the course of their clinical education, including knowledge related to evaluation, assessment, diagnosis and plan of care

⁸ Although additional training is needed for the development of psychomotor skills (as well as the 16 knowledge requirements noted previously), there does not appear to be widespread agreement regarding the minimum number of practice hours necessary (Kalichman & Vulfsons, 2010). Indeed, the acquisition of knowledge and skills is dependent on more than just the number of hours of deliberate practice (Hambrick, Oswald, Altman, Meinz, Gobet, & Campitelli, 2014). The Task Force argued that variation across individuals in terms of their aptitude, education, experience, and clinical specialization results in different rates of development. Additionally, any practice hour metric should be theoretically or practically linked to the professional standard for safe and effective practice (AERA, APA, NCME, 2014).

development, documentation, safety, and professional responsibilities. Advanced or specialized training (e.g., dry needling course, residency program) is required for 16 of the knowledge areas needed for dry needling and these are almost solely related to the needling technique (e.g., selection, placement, and manipulation of needles; identification of contraindications). In addition, the psychomotor skills needed to handle needles and palpate tissues require specialized training. Because this report focused on the competencies required of the PT to perform dry needling, it is not appropriate to assume the same competencies would qualify a PTA to perform the treatment. PTAs would typically need additional training to be competent in performing dry needling.

References

- AERA, APA, & NCME (1999). Standards for educational and psychological testing. Washington, D.C.: Author.
- Baldry, P. (2002). Superficial versus deep dry needling. *Acupuncture in Medicine*, 20(2-3), 78-81.
- Bradley, K. M., Caramagno, J. P., Waters, S. D., & Koch, A. (2011). Analysis of practice for the physical therapy profession: Entry-level physical therapists (FR-11-70). Alexandria, VA: Human Resources Research Organization.
- Clewley, D., Flynn, T.W., & Koppenhaver, S. (2014). Trigger point dry needling as an adjunct treatment for a patient with adhesive capsulitis of the shoulder. *Journal of Orthopaedic & Sports Physical Therapy*, 44(2), 92-100.
- Cummings, M. (2013). Dry needling from a Western medical acupuncture perspective. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 173-207). London, England: Churchill Livingstone Elsevier.
- Dommerholt, J., & Fernández-de-las-Peñas, C. (2013). Proposed mechanisms and effects of trigger point dry needling. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 21-27). London, England: Churchill Livingstone Elsevier.
- Dommerholt, J. (2011). Dry needling: Peripheral and central considerations. *Journal of Manual and Manipulative Therapy*, 19(4), 223-237.
- Dommerholt, J. (2004). Dry needling in orthopedic physical therapy practice. *Orthopedic Practice*, 16(3), 15-20.
- Dunning, J., Butts, R., Mourad, F., Young, I., Flannagan, S., & Perreault, T. (2014). Dry needling: a literature review with implications for clinical practice guidelines. *Physical Therapy Reviews*, 19(4), 252-265.
- Gunn, C.C. *The Gunn approach to the treatment of chronic pain: Intramuscular stimulation for myofascial pain of radiculopathic origin*. 2nd ed. New York: Churchill Livingstone; 1997.
- Hambrick, D.Z., Oswald, F. L., Altmann, E.M., Meinz, E.J., Gobet, F., & Campitelli, G. (2014). Deliberate practice: Is that all it takes to become an expert? *Intelligence*, 45, 34-45.
- Kalichman, L., & Vulfsons, S. (2010). Dry needling in the management of musculoskeletal pain. *Journal of the American Board of Family Medicine*, 23(5), 640-646.
- Ma, Y.T. *Biomedical acupuncture for sports and trauma rehabilitation: dry needling techniques*. St Louis, MO: Churchill Livingstone; 2011.
- National Council of State Boards of Nursing. (2012). *Changes in healthcare professions' scope of practice: Legislative considerations*. Chicago, IL: Author.
- Simons, D.G., Travell J.G., Simons, L.S. *Travell and Simons' myofascial pain and dysfunction: the trigger point manual*. Volume 1. Upper half of body. 2nd ed. Baltimore, MD: Williams & Wilkins; 1999.

Appendix A

Background Review Source Materials

1. Adrian, L. (2013). *FSBPT Dry Needling Resource Paper*, 4th Edition (Intramuscular Manual Therapy). Alexandria, VA: Federation of State Boards of Physical Therapy. Retrieved February 18, 2015, from https://www.fsbpt.org/download/DryNeedlingResourcePaper_4thEdition.pdf
2. American Physical Therapy Association. (2012). *Physical therapists & the performance of dry needling: An educational resource paper*. Alexandria, VA: Author.
3. Australian Society of Acupuncture Physiotherapists Inc. (2007). *Guidelines for safe acupuncture and dry needling practice*. Retrieved from: www.dryneedling.com.au/wp-content/.../asap-safety-guidelines-2007.pdf
4. Bachmann, S., Colla, F., Gröbli, C., Mungo, G., Gröbli, L., Reilich, P., & Weissmann, R. (2014). *Swiss guidelines for safe dry needling: Version 1.7*. Retrieved from: http://www.dryneedling.ch/fileadmin/documents/Swiss_Guidelines_for_safe_1.7_Dry_Needling_01.pdf
5. Bradley, K. M., Caramagno, J. P., Waters, S. D., & Koch, A. (2011). *Analysis of practice for the physical therapy profession: Entry-level physical therapists (FR-11-70)*. Alexandria, VA: Human Resources Research Organization.
6. Brady, S., McEvoy, J., Dommerholt, J., & Doody, C. (2014). Adverse events following trigger point dry needling: A prospective survey of chartered physiotherapists. *Journal of Manual Manipulative Therapy*, 22(3), 134-140.
7. Bron, C., Franssen, J.L.M., & Beersma, B.T.M. (2013). Deep dry needling of the shoulder muscles. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 93-105). London, England: Churchill Livingstone Elsevier.
8. Cagnie, B., Castelein, B., Pollie, F., Steelant, L., Verhoeyen, H., & Cools, A. (2015). Evidence for the Use of Ischemic Compression and Dry Needling in the Management of Trigger Points of the Upper Trapezius in Patients with Neck Pain: A systematic review. *American Journal of Physical Medicine & Rehabilitation*, *Published ahead of print*.
9. Clewley, D., Flynn, T.W., & Koppenhaver, S. (2014). Trigger point dry needling as an adjunct treatment for a patient with adhesive capsulitis of the shoulder. *Journal of Orthopaedic & Sports Physical Therapy*, 44(2), 92-100.
10. Cummings, M. (2013). Dry needling from a Western medical acupuncture perspective. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 173-207). London, England: Churchill Livingstone Elsevier.
11. College of Physical Therapists of Alberta. *Dry needling competency profile for physical therapists*. Calgary, AL: Author. Retrieved from http://www.physiotherapyalberta.ca/files/competency_profile_dry_needling.pdf

12. College of Physical Therapists of British Columbia. (2013). *CPTBC practice standard No. 10 acupuncture and dry needling for physical therapists*. Vancouver, BC: Author. Retrieved from <http://cptbc.org/resources/practice-standards/>
13. Dommerholt, J., & Fernández-de-las-Peñas, C. (2013). Proposed mechanisms and effects of trigger point dry needling. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 21-27). London, England: Churchill Livingstone Elsevier.
14. Dommerholt, J. (2011). Dry needling: Peripheral and central considerations. *Journal of Manual and Manipulative Therapy*, 19(4), 223-237.
15. Dommerholt, J. (2004). Dry needling in orthopedic physical therapy practice. *Orthopedic Practice*, 16(3), 15-20.
16. Dunning, J., Butts, R., Mourad, F., Young, I., Flannagan, S., & Perreault, T. (2014). Dry needling: a literature review with implications for clinical practice guidelines. *Physical Therapy Reviews*, 19(4), 252-265.
17. Fernández-de-las-Peñas, C., Iglesias, J.G., Gröbli, C., & Weissmann, R. (2013). Deep dry needling of the arm and hand muscles. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 107-118). London, England: Churchill Livingstone Elsevier.
18. Fernández-de-las-Peñas, C., Isabel-de-la-Llave-Rincón, A., Ortega-Santiago, R., & Torres-Chica, B. (2013). Deep dry needling of the head and neck muscles. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 73-92). London, England: Churchill Livingstone Elsevier.
19. Gunn, C.C. *The Gunn approach to the treatment of chronic pain: Intramuscular stimulation for myofascial pain of radiculopathic origin*. 2nd ed. New York: Churchill Livingstone; 1997.
20. Gunter, J. (2004). Chronic pelvic pain: The myofascial component. *The Female Patient*, 29, 9-16.
21. Health Quality Council of Alberta. (2014). *The safe practice of dry needling in Alberta: Summary report*. Calgary, AL: Author. Retrieved from https://d10k7k7mywg42z.cloudfront.net/assets/5445339bd4c96163370154ed/FINAL___Dry_Needling_Report_10202014.pdf
22. Hsieh, Y.L., Kao, M.J., Kuan, T.S., Chen, S.M., Chen, J.T., & Hong, C.Z. (2007). Dry needling to a key myofascial trigger point may reduce the irritability of satellite MTrPs. *American Journal of Physical Medicine & Rehabilitation*, 86, 397-403.
23. Kalichman, L., & Vulfsons, S. (2010). Dry needling in the management of musculoskeletal pain. *Journal of the American Board of Family Medicine*, 23(5), 640-646.
24. Kelley, L., Finnegan, M., & Dommerholt, J. (2013). Deep dry needling of the trunk muscles. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 119-132). London, England: Churchill Livingstone Elsevier.

25. Llamas-Ramos, R., Pecos-Martín, D., Gallego-Izquierdo, T., Llamas-Ramos, I., Plaza-Manzano, G., Ortega-Santiago, R., Cleland, J., & Fernández-de-las-Peñas, C. (2014). Comparison of the short-term outcomes between trigger point dry needling and trigger point manual therapy for the management of chronic mechanical neck pain: A randomized clinical trial. *Journal of Orthopaedic & Sports Physical Therapy*, 44(11), 852-861.
26. Ma, Y.T. *Biomedical acupuncture for sports and trauma rehabilitation: dry needling techniques*. St Louis, MO: Churchill Livingstone; 2011.
27. Mayoral-del-Moral, O., & Torres-Lacomba, M. (2013). Deep dry needling of the leg and foot muscles. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 151-165). London, England: Churchill Livingstone Elsevier.
28. McEvoy, J. (2013). Trigger point dry needling: Safety guidelines. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 39-58). London, England: Churchill Livingstone Elsevier.
29. Mejuto-Vázquez, M.J., Salom-Moreno, J., Ortega-Santiago, R., Truyols-Dominguez, S., & Fernández-de-las-Peñas, C. (2014). Short-term changes in neck pain, widespread pressure pain sensitivity, and cervical range of motion after the application of trigger point dry needling in patients with acute mechanical neck pain: A randomized clinical trial. *Journal of Orthopaedic & Sports Physical Therapy*, 44(4), 252-261.
30. Scandalici, D., & Dommerholt, J. (2013). Deep dry needling of the hip, pelvis and thigh muscles. In J. Dommerholt & C. Fernández-de-las-Peñas (Eds.), *Trigger point dry needling: An evidenced and clinical-based approach*. (pp. 133-150). London, England: Churchill Livingstone Elsevier.
31. Shah, J.P., Danoff, J.V., Desai, M.J., Parikh, S., Nadamura, L.Y., Phillips, T.M., & Gerber, L.H. (2008). Biochemicals associated with pain and inflammation are elevated in sites near to and remote from active myofascial trigger points. *Archives of Physical Medicine & Rehabilitation*, 89, 16-23.
32. Simons, D.G., Travell J.G., Simons, L.S. *Travell and Simons' myofascial pain and dysfunction: the trigger point manual. Volume 1. Upper half of body. 2nd ed.* Baltimore, MD: Williams & Wilkins; 1999.
33. Tsai, C.T., Hsieh, L.F., Kuan, T.S., Kao, M.J., Chou, L.W., & Hong, C.Z. (2009). Remote effects of dry needling on the irritability of the myofascial trigger point in the upper trapezius muscle. *American Journal of Physical Medicine & Rehabilitation*, 89, 133-140.
34. Travell J.G., Simons, D.G. *Volume 2. Travell and Simons' myofascial pain and dysfunction: the trigger point manual. The lower extremities*. Philadelphia, PA: Lippincott, Williams & Wilkins; 1993.
35. Weiss, J.M. (2000). Chronic pelvic pain and myofascial trigger points. *The Pain Clinic*, 2(6), 13-18.
36. www.kineticcore.com
37. www.myopainseminars.org

Appendix B

Draft Dry Needling-Specific Tasks and Knowledge Requirements

Table B1. Draft List of Dry Needling Tasks

PATIENT/CLIENT ASSESSMENT

Information Gathering & Synthesis

Interview patients/clients, caregivers, and family to obtain patient/client history and current information (e.g., medical, surgical, medications, social, cultural, economic) to...

1. ...identify prior experience with and tolerance for dry needling (e.g., needle phobia, response to treatment, ability to comply with treatment requirements)
2. ...identify contraindications and precautions related to dry needling (e.g., age, allergies, diseases/conditions, implants, pregnancy, areas of acute inflammation, acute systemic infections, medications)

INTERVENTIONS

Manual Therapy Techniques

Position the patient/client using supportive devices and equipment (e.g., pillows, rolls, cushions) to...

3. ...ensure the patient/client is comfortable and relaxed
4. ...enable ease of access to the tissue(s) being needled
5. ...reduce the risk of harm to the patient/client and/or therapist
6. Instruct the patient/client to limit movement during treatment
7. Perform palpation techniques to identify the area(s) to be needled
8. Apply sterile needle handling techniques (e.g., wash hands, wear gloves, avoid contact with needle shaft, use sterile plunger, minimize needle contact with skin)
9. Disinfect needle site using detergent, water, alcohol, or iodine solution
10. Perform dry needling techniques on muscles, tendons, ligaments, and other connective tissue to reduce pain and improve functional ability
11. Monitor patient/client's psychological and physiological response to dry needling
12. Apply pressure to the needle area to facilitate hemostasis
13. Dispose of medical waste (e.g., needles, gloves, swabs) in accordance with regulatory standards and local jurisdictional policies and procedures (e.g., sharps container)
14. Discuss post-treatment care with the patient/client or family/caregiver

NON-PROCEDURAL INTERVENTIONS

Education

15. Educate patient/client or family/caregiver about dry needling (e.g., purpose, technique, methods of action, tools and equipment)
16. Educate patient/client or family/caregiver about adverse effects associated with dry needling (e.g., fainting, bruising, soreness, fatigue)
17. Educate patient/client or family/caregiver about precautions and contraindications for dry needling (e.g., age, allergies, diseases/conditions, implants, pregnancy, areas of acute inflammation, acute systemic infections, medications)

Emergency Procedures

18. Implement emergency response procedures to treat injuries sustained during dry needling (e.g., perforation of hollow organs, heavy bleeding)
19. Remove broken, bent, or stuck needles using clean, sanitized equipment (e.g., tweezers, pliers)

Environmental Safety

20. Prepare and maintain a safe and comfortable environment for performing dry needling (e.g., unobstructed walkways, areas for patient/client privacy)
21. Clean and disinfect surfaces and textiles using detergent, water, and bleach
22. Stock dry needling tools and equipment in close proximity to treatment area
23. Stock infection control tools and equipment in close proximity to treatment area

Infection Control

24. Implement infection control procedures to mitigate the effects of needle stick injuries
25. Clean and disinfect blood and bodily fluids spills using detergent, water, and chlorine-generating

disinfectant

26. Replace surfaces that cannot be cleaned

Professional Responsibilities

27. Determine own ability to perform dry needling safely and effectively

Table B2. Draft List of Dry Needling Knowledge Requirements

Anatomy and Physiology

1. Anatomical features of the external body, including form, proportion, and projection of surface landmarks and their correspondence with underlying tissues, organs, and other structures

Emergency Preparedness and Response

Emergency preparedness and response procedures related to secondary effects or complications from:

2. ...perforation of underlying organs (e.g., pneumothorax)
3. ...perforation of blood vessels and arteries (e.g., bleeding, bruising)
4. ...trauma to the skin (e.g., cellulitis)
5. ...trauma to nerves (e.g., neuropraxia, axonotmesis, neurotmesis)
6. ...skeletal punctures (e.g., broken/bent needle)
7. Emergency preparedness and response procedures related to secondary psychological effects or complications (e.g., shock, claustrophobia, depression, drowsiness)

Safety and Protection

8. Clean needle techniques (e.g., needle site disinfection, hand hygiene, application of single-use needles, needle reinsertion guidelines, grasping and positioning needles, needle re-sheathing)
9. Draping techniques
10. Equipment sterilization procedures
11. Environment sterilization procedures
12. Personal protection procedures and techniques (e.g., positioning to access treatment area, use of personal protective equipment)
13. Patient positioning techniques (e.g., side-lying, prone, supine) and their effect on anatomy and physiology
14. Local laws and regulations regarding the disposal of needles and medical waste
15. Federal laws and regulations regarding infection prevention (e.g., Occupational Safety and Health Administration Standards)

Theory and Technique

16. Theoretical basis for dry needling interventions, including applications for rehabilitation, health promotion, and performance according to current best evidence
17. Theoretical basis for combining dry needling with other manual techniques and modalities
18. Theoretical basis for pain, including pathways, physiology, pathophysiology, and relation to movement impairment
19. Contraindications and precautions related to dry needling (e.g., age, allergies, diseases/conditions, implants, pregnancy, areas of acute inflammation, acute systemic infections, medications)
20. Tissue palpation techniques, including pressure, duration, and hand placement
21. Needle insertion techniques, including depth, direction, velocity, manipulation, and duration
22. Targeted physiological responses to dry needling
23. Targeted psychological responses to dry needling

Equipment and Devices

24. Solid filament needles, including type, dimensions, and applications
25. Hollow filament, beveled needles, including type, dimensions, and applications
26. Diagnostic equipment and devices (e.g., magnetic resonance imaging devices, ultrasound elastographic devices, and intramuscular electromyographic devices)
27. Supportive devices and equipment (e.g., pillows, cushions, wedges)

Appendix C Task Force Members

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Appendix D

Physical Therapy Tasks Required for the Competent Performance of Dry Needling

ID#	Tasks
PATIENT/CLIENT ASSESSMENT	
Information Gathering & Synthesis	
	Interview patients/clients, caregivers, and family to obtain patient/client history and current information (e.g., medical, surgical, medications, social, cultural, economic) to...
1.	...establish prior and current level of function
2.	...establish general health status (e.g., fatigue, fever, malaise, unexplained weight change)
3.	...identify risk factors and needs for preventative measures
4.	...identify patient/client's, family/caregiver's goals
5.	...determine if patient/client is appropriate for PT
6.	...identify prior experience with and tolerance for dry needling (e.g., needle phobia, response to treatment, ability to comply with treatment requirements)
7.	...identify contraindications and precautions related to dry needling (e.g., age, allergies/sensitivities, diseases/conditions, implants, areas of acute inflammation, acute systemic infections, medications)
8.	Review medical records (e.g., lab values, diagnostic tests, specialty reports, narrative, consults)
9.	Gather information/discuss client/patient's current health status with interprofessional/interdisciplinary team members (e.g., teacher, physician, rehabilitation member)
Systems Review	
	Perform screen of the...
10.	...patient/client's current affect, cognition, communication, and learning style (e.g., ability to make needs known, consciousness, orientation, expected emotional/behavioral responses, learning preferences)
11.	...patient/client's quality of speech, hearing, vision (e.g., dysarthria, pitch/tone, use corrective lenses, use of hearing aids)
12.	...vestibular system (e.g., dizziness, vertigo)
13.	...gastrointestinal system (e.g., difficulty swallowing, heartburn, indigestion, change in appetite/diet)
14.	...genitourinary system (e.g., frequency, volume, urgency, incontinent episodes)
15.	...genital reproductive system (e.g., sexual and/or menstrual dysfunction)
16.	...cardiovascular/pulmonary system (e.g., blood pressure, heart rate)
17.	...integumentary system (e.g., presence of scar formation, skin integrity, edema)
18.	...musculoskeletal system (e.g., gross symmetry, strength, weight, height, range of motion)
19.	...neuromuscular system (e.g., gross coordinated movements, motor function, locomotion)
Tests & Measures	
Cardiovascular and Pulmonary	
	Select and perform tests and measures of...
20.	...cardiovascular function (e.g., blood pressure, heart rate, heart sounds)
21.	...pulmonary function (e.g., respiratory rate, oxygen saturation, breathing patterns, breath sounds, chest excursion)
22.	...peripheral circulation (e.g., peripheral pulses, capillary refill, blood pressure in upper versus lower extremities)
23.	...physiological responses to position change (e.g., orthostatic hypotension, skin color, blood pressure, heart rate)
Anthropomorphic	
24.	Quantify edema (e.g., palpation, volume test, circumference)
Arousal, Attention, & Cognition	
	Select and perform tests and measures of...

ID#	Tasks
25.	...attention and cognition (e.g., ability to process commands)
26.	...patient's/client's ability to communicate (e.g., expressive and receptive skills, following instructions)
27.	...arousal and orientation to time, person, place, and situation
28.	...recall (including memory and retention)
<i>Nerve Integrity</i>	
	Select and perform tests and measures of...
29.	...neural provocation (e.g., tapping, tension/stretch)
30.	...cranial nerve integrity (e.g., facial asymmetry, oculomotor function, hearing)
31.	...peripheral nerve integrity (e.g. sensation, strength)
32.	...spinal nerve integrity (e.g., dermatome, myotome)
<i>Ergonomics and Body Mechanics</i>	
	Select and perform tests and measures of...
33.	...postural alignment and position (static and dynamic)
<i>Functional Mobility, Balance, & Vestibular</i>	
	Select and perform tests and measures of...
34.	...balance (dynamic and static) with or without the use of specialized equipment
35.	...gait and locomotion (e.g., ambulation, wheelchair mobility) with or without the use of specialized equipment
36.	...mobility during functional activities and transitional movements (e.g., transfers, bed mobility)
<i>Integumentary Integrity</i>	
37.	Assess skin characteristics (e.g., blistering, continuity of skin color, dermatitis, hair growth, mobility, nail growth, sensation, temperature, texture, and turgor)
38.	Assess scar tissue characteristics (e.g., banding, pliability, sensation, and texture)
<i>Joint Integrity & Range of Motion</i>	
	Select and perform tests and measures of...
39.	...spinal and peripheral joint stability (e.g., ligamentous integrity, joint structure)
40.	...spinal and peripheral joint mobility (e.g., glide, end feel)
41.	...range of motion (e.g., functional and physiological)
42.	...active and passive joint range of motion (e.g., goniometry)
43.	...flexibility (e.g., muscle length, soft tissue extensibility)
<i>Muscle Performance & Motor Function</i>	
	Select and perform tests and measures of...
44.	...muscle strength, power, and endurance (e.g., manual muscle test, isokinetic testing, dynamic testing)
45.	...muscle tone (e.g., hypertonicity, hypotonicity, dystonia)
46.	...patient's need for assistance (e.g. during transfers, in the application of devices)
<i>Reflex Integrity</i>	
	Select and perform tests and measures of...
47.	...deep tendon/muscle stretch reflexes (e.g., quadriceps, biceps)
48.	...superficial reflexes and reactions (e.g., cremasteric reflex, abdominal reflexes)
49.	...upper motor neuron integrity (e.g., Babinski reflex, Hoffman sign)
<i>Pain & Sensory Integrity</i>	
	Select and perform tests and measures of...
50.	...pain (e.g., location, intensity, characteristics, frequency)
51.	...deep sensation (e.g., proprioception, kinesthesia, pressure)
52.	...superficial sensation (e.g., touch, temperature discrimination)
Evaluation & Diagnosis	

ID#	Tasks
	Interpret each of the following types of data to determine the need for intervention or the response to intervention:
53.	Cardiovascular/pulmonary system
54.	Lymphatic system
55.	Neuromuscular system
56.	Vestibular system
57.	Musculoskeletal system
58.	Integumentary system
59.	Anthropomorphic
60.	Genitourinary
61.	Pain
62.	Imaging, lab values, medications
63.	Develop physical therapy diagnosis by integrating system and non-system data

Development of Prognosis, Plan of Care, & Goals

64. Establish PT prognosis based on information gathered during the examination process
65. Develop plan of care based on data gathered during the examination process, incorporating information from the patient/client, caregiver, payers, family members, and other professionals
66. Revise treatment intervention plan based on treatment outcomes, change in patient/client's health status, and ongoing evaluation
67. Develop goals based on information gathered during the examination process, incorporating information from the patient/client, caregiver, payers, family members, and other professionals
68. Select interventions based on information gathered during the examination process, incorporating information from the patient/client, caregiver, payers, family members, and other professionals
69. Sequence dry needling with other procedural interventions and techniques (e.g., therapeutic exercises, neuromuscular reeducation, manual therapy, physical modalities) to augment therapeutic effects and minimize risk due to adverse outcomes and/or contraindications.

INTERVENTIONS

Manual Therapy Techniques

- Position the patient/client to...
70. ...expose the area(s) to be needed
 71. ...reduce the risk of harm to the patient/client and/or therapist
 72. Educate the patient/client on the impact of movement during treatment
 73. Perform palpation techniques to identify the area(s) to be needed
 74. Apply needle handling techniques that ensure compliance with relevant and current professional standards (e.g., wash hands, wear gloves, minimize needle contamination)
 75. Apply draping materials (e.g., linens, towels) to minimize unnecessary exposure and respect patient privacy
 76. Perform dry needling techniques consistent with treatment plan (e.g., place, manipulate, and remove needles)
 77. Manage needle removal complications (e.g., stuck needle, bent needle)
 78. Monitor patient/client's emotional and physiological response to dry needling
 79. Facilitate hemostasis as necessary
 80. Dispose of medical waste (e.g., needles, gloves, swabs) in accordance with regulatory standards and local jurisdictional policies and procedures (e.g., sharps container)
 81. Discuss post-treatment expectations with the patient/client or family/caregiver

Non-procedural Interventions

Communication

82. Discuss physical therapy evaluation, interventions, goals, prognosis, discharge planning, and plan of care with interprofessional/interdisciplinary team members (e.g., teacher, physician, rehabilitation member)

ID#	Tasks
83.	Discuss physical therapy evaluation, interventions, goals, prognosis, discharge planning, and plan of care with patient/client and caregivers
84.	Provide written and oral information to the patient/client and/or caregiver
Documentation	
85.	Document examination results
86.	Document evaluation to include diagnosis, goals, and prognosis
87.	Document intervention(s) and patient/client response(s) to intervention
88.	Document patient/client and caregiver education
89.	Document outcomes (e.g., discharge summary, reassessments)
90.	Document communication related to the patient/client's care (e.g. with the doctor, teacher, case manager)
91.	Assign billing codes for physical therapy diagnosis and treatment provided
92.	Document disclosure and consent (e.g., disclosure of medical information, consent for treatment)
93.	Document letter of medical necessity (e.g., wheelchair, assistive equipment, continued therapy)
Education	
94.	Educate patient/client about current condition and health status (e.g., treatment outcomes, plan of care, risk and benefit factors)
95.	Educate caregivers about patient/client's current condition and health status (e.g., treatment outcomes, plan of care, risk and benefit factors)
96.	Educate healthcare team about role of the physical therapist in patient/client management
97.	Educate patient/client and caregiver on lifestyle and behavioral changes to promote wellness (e.g., nutrition interventions, physical activity, tobacco cessation)
98.	Educate patient/client or family/caregiver about dry needling (e.g., purpose, technique, methods of action, benefits, tools and equipment)
99.	Educate patient/client or family/caregiver about potential adverse effects associated with dry needling (e.g., fainting, bruising, soreness, fatigue)
100.	Educate patient/client or family/caregiver about precautions and contraindications for dry needling (e.g., age, allergies/sensitivities, diseases/conditions, implants, areas of acute inflammation, acute systemic infections, medications)
Patient/client & Staff Safety	
Emergency Procedures	
101.	Implement emergency life support procedures
102.	Perform first aid
103.	Implement emergency response procedures to treat patient/client injuries sustained during dry needling (e.g., perforation of hollow organs, heavy bleeding, broken needles)
104.	Implement emergency response procedures to treat practitioner injuries sustained during dry needling (e.g., needle stick)
Environmental Safety	
105.	Perform regular equipment inspections (e.g., modalities, assistive devices)
106.	Prepare and maintain a safe and comfortable environment for performing dry needling (e.g., unobstructed walkways, areas for patient/client privacy)
107.	Perform regular equipment inspections (e.g., modalities, needle expiration, sharps containers)
108.	Stock dry needling supplies and equipment in safe proximity during treatment
Infection Control	
109.	Perform activities using appropriate infection control practices (e.g., universal precautions, hand hygiene, isolation, airborne precautions)
110.	Create and maintain an aseptic environment for patient/client interaction
111.	Implement infection control procedures to mitigate the effects of needle stick injuries
112.	Clean and disinfect blood and bodily fluids spills in accordance with regulatory standards and local jurisdictional policies and procedures
113.	Replace surfaces that cannot be cleaned

ID#	Tasks
Research & Evidence-Based Practice	
114.	Integrate current best evidence, clinical experience, and patient values in clinical practice (e.g., clinical prediction rules, patient preference)
Professional Responsibilities	
115.	Discuss ongoing patient care with the interprofessional/interdisciplinary team members
116.	Refer patient/client to specialists or other healthcare providers when necessary
117.	Disclose financial interest in recommended products or services to patient/client
118.	Provide notice and information about alternative care when the physical therapist terminates provider relationship with the patient/client
119.	Document transfer of patient/client care to another physical therapist (therapist of record)
120.	Determine own need for professional development (i.e., continued competence)
121.	Participate in learning and/or development activities to maintain the currency of knowledge, skills, and abilities
122.	Practice within the jurisdiction regulations and professional standards.
123.	Determine own ability to perform dry needling safely and effectively

Appendix E

Tasks NOT Related to Competency in Dry Needling

ID#	Tasks
PATIENT/CLIENT ASSESSMENT	
Tests & Measures	
<i>Cardiovascular and Pulmonary</i>	
	Select and perform tests and measures of...
1.	...perfusion and gas exchange (e.g., airway protection, pulse oximetry)
2.	...critical limb ischemia (e.g., skin perfusion pressure, pulse volume recordings)
3.	...aerobic capacity under maximal and submaximal conditions (e.g., gait speed, treadmill testing, cadence, numbers of stairs climbed, metabolic equivalents)
<i>Anthropomorphic</i>	
	Select and perform tests and measures of...
4.	...body composition (e.g., percent body fat, lean muscle mass, BMI, hip-to-waist ratio)
5.	...body dimensions (e.g., height, weight, girth, limb length, head circumference/shape)
<i>Muscle Performance</i>	
	Select and perform tests and measures of...
6.	...electrophysiological function using surface electrodes (e.g., surface EMG)
7.	...electrophysiological function using needle insertion (e.g., nerve conduction)
8.	...muscle integrity (e.g., ultrasound imaging)
<i>Environmental & Community Integration/Reintegration (Home, Work, Job, School, Play, & Leisure)</i>	
9.	Assess activities of daily living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, self-care)
10.	Assess instrumental activities of daily living (IADL) (e.g., household chores, hobbies, money management)
11.	Assess ability to perform skills needed for integration or reintegration into the community, work, or school
12.	Assess barriers (e.g., social, economic, physical, environmental, work conditions and activities) to community, work, or school integration/reintegration
13.	Assess ability to participate in activities with or without the use of devices or equipment
<i>Ergonomics and Body Mechanics</i>	
14.	Select and perform tests of safety in work environments
	Select and perform tests and measures of...
15.	...specific work conditions or activities
16.	...tools, devices, equipment, and workstations related to work actions, tasks, or activities
17.	...ergonomics and body mechanics during self-care, home, management, work, community, or leisure actions, tasks, or activities (e.g., how patient moves, whether patient aggravates the injury)
<i>Functional Mobility, Balance, & Vestibular</i>	
	Select and perform tests and measures of...
18.	...vestibular function (e.g., peripheral dysfunction, central dysfunction)
<i>Integumentary Integrity</i>	
19.	Assess activities, positioning, and postures that may produce or relieve trauma to the skin
20.	Assess devices and equipment that may produce or relieve trauma to the skin

ID#	Tasks
21.	Assess wound characteristics (e.g., tissue involvement, depth, tunneling, burn degree)
Muscle Performance & Motor Function	
22.	Select and perform tests and measures of...
23.	...dexterity, coordination, and agility (e.g., rapid alternating movement, finger to nose)
24.	...ability to initiate, modify and control movement patterns and postures (e.g., catching a ball, gait)
25.	...ability to change movement performance with practice (e.g., motor learning)
Neuromotor Development & Sensory Integration	
26.	Select and perform tests and measures of...
27.	...acquisition and evolution of motor skills
28.	...sensorimotor integration
29.	...developmental reflexes and reactions (e.g., asymmetrical tonic neck reflex, righting reactions)
Evaluation & Diagnosis	
	Interpret each of the following types of data to determine the need for intervention or the response to intervention:
30.	assistive and adaptive device
31.	environmental, home, and work/job/school/play barriers
32.	ergonomics and body mechanics
33.	gait, locomotion, and balance
34.	orthotic, protective, and supportive device
35.	prosthetic requirements
36.	ADLs and home management
37.	Evaluate patient/client's ability to assume or resume work/job/school/play, community, and leisure activities
Development of Prognosis, Plan of Care, & Goals	
INTERVENTIONS	
Procedural Interventions	
Therapeutic Exercise/Therapeutic Activities	
38.	Train in aerobic capacity/endurance conditioning
39.	Train in strength, power, and endurance exercises
40.	Train in balance, coordination, and agility activities
41.	Train in body mechanics and postural stabilization techniques
42.	Perform flexibility techniques
43.	Train in flexibility techniques
44.	Train in neuromotor techniques (e.g., movement pattern training, neuromuscular education or reeducation)
45.	Perform desensitization techniques (e.g., brushing, tapping, uses of textures)
46.	Train in desensitization techniques (e.g., brushing, tapping, uses of textures)
47.	Perform mechanical repositioning for vestibular dysfunction
48.	Train in habituation/adaptation exercises for vestibular dysfunction (e.g., vestibuloocular reflex, position changes)
49.	Train in relaxation techniques
50.	Train in genitourinary management (e.g., pelvic floor exercises, bladder strategies)
51.	Train in gastrointestinal management (e.g., bowel strategies, positioning to avoid reflux)

ID#	Tasks
<i>Pulmonary Interventions</i>	
52.	Administer prescribed oxygen during interventions
53.	Perform manual/mechanical airway clearance techniques (e.g., assistive cough, percussion, vibration, shaking)
54.	Train in manual/mechanical airway clearance techniques (e.g., assistive devices, assistive cough, incentive spirometer, flutter valve, percussion/postural drainage)
55.	Perform techniques to maximize ventilation and perfusion (e.g., assistive cough, positioning)
56.	Train in breathing strategies (e.g., active cycle breathing, autogenic drainage, paced breathing, pursed lip breathing) and techniques to maximize ventilation and perfusion (e.g., assistive cough, positioning, pursed-lip breathing)
<i>Functional Training</i>	
57.	Recommend barrier accommodations or modifications (e.g., ramps, grab bars, raised toilet, environmental control units)
58.	Train in the use of barrier accommodations or modifications (e.g., ramps, grab bars, raised toilet, environmental control units)
59.	Train in Activities of Daily Living (ADL) (e.g., bed mobility, transfers, household mobility, dressing, self-care)
60.	Instruct in community and leisure integration or reintegration (e.g., work/school/play)
61.	Train in Instrumental Activities of Daily Living (IADL) (e.g., household chores, hobbies, money management)
62.	Train in mobility techniques (e.g., crawling, walking, running)
63.	Train in fall prevention and fall recovery strategies
64.	Train in behavior modification and cognitive strategies
<i>Manual Therapy Techniques</i>	
65.	Perform manual lymphatic drainage
66.	Perform spinal and peripheral manual traction
67.	Perform soft tissue mobilization (e.g., connective tissue massage, therapeutic massage)
68.	Perform peripheral mobilization /manipulation (thrust/non-thrust)
69.	Perform spinal mobilization (non-thrust)
70.	Perform cervical spinal manipulation (thrust)
71.	Perform thoracic and lumbar spinal manipulation (thrust)
<i>Devices & Equipment</i>	
	Apply, adjust, and/or fabricate...
72.	...adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)
73.	...protective devices (e.g., braces, cushions, helmets, protective taping)
74.	...supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars, serial casts)
75.	...orthotic devices (e.g., braces, casts, shoe inserts, splints)
	Apply and/or adjust...
76.	...assistive devices (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)
77.	...prosthetic devices (e.g., lower extremity and upper-extremity)
78.	...mechanical neuromuscular reeducation devices (e.g., weighted vests, therapeutic suits, body weight supported treadmill, proprioceptive taping)
	Train in use of...
79.	...adaptive devices (e.g., utensils, seating and positioning devices, steering wheel devices)
80.	...assistive devices (e.g., canes, crutches, walkers, wheelchairs, tilt tables, standing frames)
81.	...orthotic devices (e.g., braces, casts, shoe inserts, splints)

ID#	Tasks
82.	...prosthetic devices (e.g., lower extremity and upper-extremity)
83.	...protective devices (e.g., braces, cushions, helmets, protective taping)
84.	...supportive devices (e.g., compression garments, corsets, elastic wraps, neck collars, serial casts)
85.	...mechanical neuromuscular re-education devices (e.g., weighted vests, therapeutic suits, body weight supported treadmill, proprioceptive taping)
<i>Integumentary Repair</i>	
86.	Perform debridement (e.g., nonselective, enzymatic or autolytic, or sharp)
87.	Apply topical agents (e.g., cleansers, creams, moisturizers, ointments, sealants) and dressings (e.g., hydrogels, negative pressure wound therapy, wound coverings)
88.	Recommend topical agents (e.g., pharmacological to physician, over-the-counter to patient) and dressings (e.g., hydrogels, negative pressure wound therapy, wound coverings)
<i>Therapeutic Modalities</i>	
89.	Perform biofeedback therapy (e.g., relaxation techniques, muscle reeducation, EMG)
90.	Perform iontophoresis
91.	Perform phonophoresis
92.	Perform electrical stimulation therapy (e.g., electrical muscle stimulation (EMS), TENS, functional electrical stimulation (FES))
93.	Perform cryotherapy procedures (e.g., cold pack, ice massage, vapocoolant spray)
94.	Train in cryotherapy procedures
95.	Perform hydrotherapy procedures using contrast baths/pools
96.	Train in hydrotherapy procedures using contrast baths/pools
97.	Perform ultrasound procedures
98.	Perform hot pack thermotherapy procedures
99.	Train in hot pack thermotherapy procedures
100.	Perform paraffin bath thermotherapy procedures
<i>Mechanical Modalities</i>	
101.	Apply intermittent pneumatic compression
102.	Apply continuous passive motion (CPM) devices
103.	Train in continuous passive motion (CPM) devices
104.	Apply mechanical spinal traction
105.	Train in mechanical spinal traction
<i>Documentation</i>	
106.	Document intervention/plan of care for specialized services and settings (e.g., individual education plan, individual family service plan, vocational transition plan)
<i>Education</i>	
107.	Educate community groups on lifestyle and behavioral changes to promote wellness (e.g., nutrition interventions, physical activity, tobacco cessation)
108.	Participate in the development of curriculum for the clinical education of students
<i>Patient/client & Staff Safety</i>	
<i>Emergency Procedures</i>	
109.	Implement disaster response procedures
<i>Environmental Safety</i>	
110.	Perform risk assessment of the physical environment (e.g., barrier-free environment, outlets, windows, floors, lighting)

ID#	Tasks
<i>Infection Control</i>	
<i>Research & Evidence-Based Practice</i>	
111.	Search the literature for current best evidence
112.	Evaluate the quality of published data
113.	Participate in research activities
114.	Compare intervention outcomes with published data
<i>Professional Responsibilities</i>	
115.	Supervise physical therapist assistant(s) and support personnel (licensed/unlicensed)
116.	Assign tasks to other personnel (licensed/unlicensed) to assist with patient/client care
117.	Report health care providers that are suspected to not perform their professional responsibilities with reasonable skill and safety to the appropriate authorities
118.	Report suspected cases of abuse involving children or vulnerable adults to the appropriate authority
119.	Report suspected illegal or unethical acts performed by health care professionals to the relevant authority
120.	Advocate for public access to physical therapy and other healthcare services
121.	Read and evaluate the quality of professional journals, magazines, and publications to maintain currency of knowledge
122.	Participate in professional organizations
123.	Perform community based screenings (e.g., posture, musculoskeletal, flexibility, sports-specific)

Appendix F

Knowledge Requirements Related to Competency in Dry Needling

ID#	Knowledge
CARDIOVASCULAR/PULMONARY & LYMPHATIC SYSTEMS	
<i>Physical Therapy Examination</i>	
1.	Cardiovascular/pulmonary systems tests/measures, including outcome measures, and their applications according to current best evidence
2.	Anatomy and physiology of the cardiovascular/pulmonary systems as related to tests/measures
3.	Movement analysis as related to the cardiovascular/pulmonary systems (e.g., rib cage excursion)
<i>Foundations for Evaluation, Differential Diagnosis, & Prognosis</i>	
4.	Cardiovascular/pulmonary systems diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
5.	Nonpharmacological medical management of the cardiovascular/pulmonary systems (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
6.	Pharmacological management of the cardiovascular/pulmonary systems
7.	Differential diagnoses related to diseases/conditions of the cardiovascular/pulmonary systems
8.	Lymphatic system diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
9.	Nonpharmacological medical management of the lymphatic system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
10.	Differential diagnoses related to diseases/conditions of the lymphatic system
<i>Interventions</i>	
11.	Anatomy and physiology of the cardiovascular/pulmonary systems as related to physical therapy interventions, daily activities, and environmental factors
12.	Secondary effects or complications from physical therapy and medical interventions on the cardiovascular/pulmonary systems
13.	Secondary effects or complications on the cardiovascular/pulmonary systems from physical therapy and medical interventions used on other systems
14.	Anatomy and physiology of the lymphatic system as related to physical therapy interventions, daily activities, and environmental factors
15.	Secondary effects or complications from physical therapy and medical interventions on the lymphatic system
16.	Secondary effects or complications on the lymphatic system from physical therapy and medical interventions used on other systems
MUSCULOSKELETAL SYSTEM	
<i>Physical Therapy Examination</i>	
17.	Musculoskeletal system tests/measures, including outcome measures, and their applications according to current best evidence
18.	Anatomy and physiology of the musculoskeletal system as related to tests/measures
19.	Movement analysis as related to the musculoskeletal system
20.	Joint biomechanics and their applications
<i>Foundations for Evaluation, Differential Diagnosis, & Prognosis</i>	
21.	Muscular and skeletal diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
22.	Nonpharmacological medical management of the musculoskeletal system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
23.	Pharmacological management of the musculoskeletal system
24.	Differential diagnoses related to diseases/conditions of the muscular and skeletal systems
25.	Connective tissue diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis

ID#	Knowledge
26.	Differential diagnoses related to diseases/conditions of the connective tissue
27.	Musculoskeletal system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
28.	Anatomy and physiology of the musculoskeletal system as related to physical therapy interventions, daily activities, and environmental factors
29.	Secondary effects or complications from physical therapy and medical interventions on the musculoskeletal system
30.	Secondary effects or complications on the musculoskeletal system from physical therapy and medical interventions used on other systems

NEUROMUSCULAR & NERVOUS SYSTEMS

Physical Therapy Examination

31.	Neuromuscular/nervous systems tests/measures, including outcome measures, and their applications according to current best evidence
32.	Anatomy and physiology of the neuromuscular/nervous systems as related to tests/measures
33.	Movement analysis as related to the neuromuscular/nervous systems

Foundations for Evaluation, Differential Diagnosis, & Prognosis

34.	Neuromuscular/nervous system (CNS, PNS, ANS) diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
35.	Nonpharmacological medical management of the neuromuscular/nervous systems (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
36.	Pharmacological management of the neuromuscular/nervous systems
37.	Differential diagnoses related to diseases/conditions of the neuromuscular/nervous system (CNS, PNS, ANS)

Interventions

38.	Neuromuscular/nervous systems physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
39.	Anatomy and physiology of the neuromuscular/nervous systems as related to physical therapy interventions, daily activities, and environmental factors
40.	Secondary effects or complications from physical therapy and medical interventions on the neuromuscular/nervous systems
41.	Secondary effects or complications on the neuromuscular/nervous systems from physical therapy and medical interventions used on other systems
42.	Motor control as related to neuromuscular/nervous systems physical therapy interventions
43.	Motor learning as related to neuromuscular/nervous systems physical therapy interventions

INTEGUMENTARY SYSTEM

Physical Therapy Examination

44.	Integumentary system tests/measures, including outcome measures, and their applications according to current best evidence
45.	Anatomy and physiology of the integumentary system as related to tests/measures
46.	Movement analysis as related to the integumentary system (e.g., friction, shear, pressure, and scar mobility)

Foundations for Evaluation, Differential Diagnosis, & Prognosis

47.	Integumentary system diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
48.	Nonpharmacological medical management of the integumentary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
49.	Pharmacological management of the integumentary system
50.	Differential diagnoses related to diseases/conditions of the integumentary system

ID# Knowledge

Interventions

51. Anatomy and physiology of the integumentary system as related to physical therapy interventions, daily activities, and environmental factors
 52. Secondary effects or complications from physical therapy and medical interventions on the integumentary system
 53. Secondary effects or complications on the integumentary system from physical therapy and medical interventions used on other systems
-

METABOLIC & ENDOCRINE SYSTEMS
Foundations for Evaluation, Differential Diagnosis, & Prognosis

54. Metabolic and endocrine systems diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
 55. Nonpharmacological medical management of the metabolic and endocrine systems (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
 56. Pharmacological management of the metabolic and endocrine systems
 57. Differential diagnoses related to diseases/conditions of the metabolic and endocrine systems
-

Interventions

58. Anatomy and physiology of the metabolic and endocrine systems as related to physical therapy interventions, daily activities, and environmental factors
 59. Secondary effects or complications from physical therapy and medical interventions on the metabolic and endocrine systems
 60. Secondary effects or complications on the metabolic and endocrine systems from physical therapy and medical interventions used on other systems
-

GASTROINTESTINAL SYSTEM
Foundations for Evaluation, Differential Diagnosis, & Prognosis

61. Gastrointestinal system diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
 62. Nonpharmacological medical management of the gastrointestinal system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
 63. Differential diagnoses related to diseases/conditions of the gastrointestinal system
-

Interventions

64. Anatomy and physiology of the gastrointestinal system as related to physical therapy interventions, daily activities, and environmental factors
 65. Secondary effects or complications from physical therapy and medical interventions on the gastrointestinal system
 66. Secondary effects or complications on the gastrointestinal system from physical therapy and medical interventions used on other systems
-

GENITOURINARY SYSTEM
Physical Therapy Examination

67. Genitourinary system tests/measures, including outcome measures, and their applications according to current best evidence
 68. Anatomy and physiology of the genitourinary system as related to tests/measures
 69. Physiological response of the genitourinary system to various types of tests/measures
-

Foundations for Evaluation, Differential Diagnosis, & Prognosis

70. Genitourinary system diseases/conditions and their pathophysiology to establish and carry out a plan of care, including prognosis
 71. Nonpharmacological medical management of the genitourinary system (e.g., diagnostic imaging, laboratory test values, other medical tests, surgical procedures)
-

ID#	Knowledge
72.	Pharmacological management of the genitourinary system
73.	Differential diagnoses related to diseases/conditions of the genitourinary system

Interventions

74.	Genitourinary system physical therapy interventions and their applications for rehabilitation and health promotion according to current best evidence (e.g., bladder programs, biofeedback, pelvic floor retraining)
75.	Anatomy and physiology of the genitourinary system as related to physical therapy interventions, daily activities, and environmental factors
76.	Secondary effects or complications from physical therapy and medical interventions on the genitourinary system
77.	Secondary effects or complications on the genitourinary system from physical therapy and medical interventions used on other systems

SYSTEM INTERACTIONS

Foundations for Evaluation, Differential Diagnosis, & Prognosis

78.	Diseases/conditions where the primary impact is on more than one system to establish and carry out a plan of care, including prognosis
79.	Nonpharmacological medical management of multiple systems (e.g., diagnostic imaging and other medical tests, surgical procedures)
80.	Pharmacological management of multiple systems, including polypharmacy
81.	Differential diagnoses related to diseases/conditions where the primary impact is on more than one system
82.	Impact of comorbidities/coexisting conditions on patient/client management (e.g., diabetes and hypertension, obesity and arthritis, hip fracture and dementia)
83.	Psychological and psychiatric conditions that impact patient/client management (e.g., depression, schizophrenia)

THERAPEUTIC MODALITIES

84.	Thermal modalities
85.	Electrotherapy modalities, excluding iontophoresis
86.	Pneumatic compression modalities

SAFETY & PROTECTION

87.	Factors influencing safety and injury prevention
88.	Patient positioning techniques (e.g., side-lying, prone, supine) and their effect on anatomy and physiology
89.	Draping techniques
90.	Infection control procedures (e.g., standard/universal precautions, isolation techniques, sterile technique)
91.	Environment cleaning and sanitization procedures
92.	Equipment cleaning and sanitization procedures (not including needles)
93.	Local laws and regulations regarding the disposal of needles and medical waste
94.	Regulations and standards regarding infection prevention (e.g., Occupational Safety and Health Administration Standards)
95.	Medical waste disposal equipment
96.	Signs/symptoms of physical, sexual, and psychological abuse and neglect

PROFESSIONAL RESPONSIBILITIES

97.	Standards of documentation
98.	Patient/client rights (e.g., ADA, IDEA, HIPAA)
99.	Human resource legal issues (e.g., OSHA, sexual harassment)

ID#	Knowledge
100.	Roles and responsibilities of physical therapist assistants in relation to physical therapists and other health-care professionals
101.	Roles and responsibilities of other health-care professionals and support staff
DRY NEEDLING-SPECIFIC KNOWLEDGE	
<i>Anatomy and Physiology</i>	
102.	Surface anatomy as it relates to underlying tissues, organs, and other structures, including variations in form, proportion, and anatomical landmarks
<i>Emergency Preparedness and Response</i>	
103.	Emergency preparedness (e.g., CPR, first aid, disaster response)
104.	Emergency preparedness and/or response procedures related to secondary physiological effects or complications associated with dry needling (e.g., shock, vasovagal)
105.	Emergency preparedness and/or response procedures related to secondary emotional effects or complications associated with dry needling (e.g., claustrophobia, anxiety, agitation)
106.	Standards for needle handling (e.g., hand hygiene, application of single-use needles)
<i>Safety & Protection</i>	
107.	Personal protection procedures and techniques as related to dry needling (e.g., positioning self to access treatment area, use of personal protective equipment)
108.	Theoretical basis for dry needling (e.g., applications for rehabilitation, health promotion, fitness and wellness, performance)
109.	Theoretical basis for combining dry needling with other interventions
110.	Secondary effects or complications associated with dry needling on other systems (e.g., gastrointestinal, cardiovascular/pulmonary, musculoskeletal)
111.	Theoretical basis of pain sciences, including anatomy, physiology, pathophysiology, and relation to body structures and function
112.	Contraindications and precautions related to dry needling (e.g., age, allergies, diseases/conditions)
113.	Palpation techniques as related to dry needling
114.	Needle insertion techniques
115.	Needle manipulation techniques
116.	Physiological responses to dry needling
117.	Solid filament needles (e.g., physical characteristics)

Appendix G

Knowledge Requirements NOT Related to Competency in Dry Needling

ID#	Knowledge Requirement
CARDIOVASCULAR/PULMONARY & LYMPHATIC SYSTEMS	
Interventions	
1.	Cardiovascular/pulmonary systems physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
2.	Lymphatic system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
MUSCULOSKELETAL SYSTEM	
Interventions	
3.	Physical therapy ultrasound imaging of the musculoskeletal system
INTEGUMENTARY SYSTEM	
Interventions	
4.	Integumentary system physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
METABOLIC & ENDOCRINE SYSTEMS	
Physical Therapy Examination	
5.	Metabolic and endocrine systems physical therapy interventions and their applications for rehabilitation, health promotion, and performance according to current best evidence
GASTROINTESTINAL SYSTEM	
Interventions	
6.	Pharmacological management of the gastrointestinal system
7.	Gastrointestinal system physical therapy interventions and their applications for rehabilitation and health promotion according to current best evidence (e.g., positioning for reflux prevention, bowel programs)
EQUIPMENT & DEVICES	
Interventions	
8.	Assistive and adaptive devices
9.	Prosthetic devices
10.	Protective, supportive, and orthotic devices
THERAPEUTIC MODALITIES	
Foundations for Evaluation, Differential Diagnosis, & Prognosis	
11.	Iontophoresis
12.	Phonophoresis
13.	Ultrasound modalities, excluding phonophoresis
14.	Mechanical modalities (e.g., mechanical motion devices, traction devices)
15.	Biofeedback
16.	Electromagnetic radiation (e.g., diathermy)
SAFETY & PROTECTION	
Foundations for Evaluation, Differential Diagnosis, & Prognosis	
17.	Function, implications, and precautions related to intravenous lines, tubes, catheters, and monitoring devices

ID#	Knowledge Requirement
RESEARCH & EVIDENCE-BASED PRACTICE	
18.	Research design and interpretation (e.g., qualitative, quantitative, hierarchy of evidence)
19.	Data collection techniques (e.g., surveys, direct observation)
20.	Measurement science (e.g., reliability, validity)
21.	Statistics (e.g., t-test, chi-square, correlation coefficient, ANOVA, likelihood ratio)
Dry Needling-specific Knowledge	
	Emergency preparedness and response procedures related to secondary effects or complications from:
	...perforation of underlying organs (e.g., pneumothorax)
22.	...perforation of blood vessels and arteries (e.g., bleeding, bruising)
23.	...trauma to the skin (e.g., cellulitis)
24.	...trauma to nerves (e.g., neuropraxia, axonotmesis, neurotmesis)
25.	...skeletal punctures (e.g., broken/bent needle)
26.	Emergency preparedness and response procedures related to secondary psychological effects or complications (e.g., shock, claustrophobia, depression, drowsiness)
27.	Clean needle techniques (e.g., needle site disinfection, hand hygiene, application of single-use needles, needle reinsertion guidelines, grasping and positioning needles, needle re-sheathing)
28.	Equipment sterilization procedures
29.	Environment sterilization procedures
30.	Personal protection procedures and techniques (e.g., positioning to access treatment area, use of personal protective equipment)
31.	Federal laws and regulations regarding infection prevention (e.g., Occupational Safety and Health Administration Standards)
32.	Theoretical basis for dry needling interventions, including applications for rehabilitation, health promotion, and performance according to current best evidence
33.	Theoretical basis for combining dry needling with other manual techniques and modalities
34.	Theoretical basis for pain, including pathways, physiology, pathophysiology, and relation to movement impairment
35.	Contraindications and precautions related to dry needling (e.g., age, allergies, diseases/conditions, implants, pregnancy, areas of acute inflammation, acute systemic infections, medications)
36.	Tissue palpation techniques, including pressure, duration, and hand placement
37.	Needle insertion techniques, including depth, direction, velocity, manipulation, and duration
38.	Targeted physiological responses to dry needling
39.	Targeted psychological responses to dry needling
40.	Solid filament needles, including type, dimensions, and applications
41.	Hollow filament, beveled needles, including type, dimensions, and applications
42.	Diagnostic equipment and devices (e.g., magnetic resonance imaging devices, ultrasound elastographic devices, and intramuscular electromyographic devices)
43.	Supportive devices and equipment (e.g., pillows, cushions, wedges)

Appendix H

Skills and Abilities Needed for the Competent Performance of Dry Needling

Skill/Ability	O*NET Definition
Communicating with patients	
1. Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
2. Reading Comprehension	Understanding written sentences and paragraphs in work related documents.
3. Writing	Communicating effectively in writing as appropriate for the needs of the audience.
4. Speaking	Talking to others to convey information effectively.
5. Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
6. Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
Adapting behavior or treatment to accommodate patient's needs/preferences	
7. Coordination	Adjusting actions in relation to others' actions.
8. Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
Reflecting on and evaluating own competence to perform dry needling	
9. Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
Abiding by professional and ethical standards	
10. Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.
Handling and controlling needles and palpating tissues	
1. Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.
2. Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
3. Gross Body Coordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.
4. Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.
5. Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
6. Speed of Limb Movement	The ability to quickly move the arms and legs.
7. Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.

FSBPT Addendum to Report

Selection of HumRRO

HumRRO was selected from an RFP process from among five qualified vendors. All of the proposals were deemed acceptable but HumRRO's proposal had the best understanding of the needs of the licensing jurisdictions.

The Human Resources Research Organization (HumRRO) is a non-profit, applied research and consulting company with a rich, 64-year history of providing services related to the development, validation, and implementation of assessments for credentialing and employment selection purposes. HumRRO employs 80 professional staff members, many of whom have advanced training in measurement fields, including Industrial-Organizational (I-O) Psychology, Education, Psychometrics, and Statistics. HumRRO's staff includes nationally recognized experts in the field of I-O Psychology who have an established history of collaborating with private- and public-sector organizations to develop scientifically robust, legally-defensible high-stakes assessment processes and programs.

HumRRO has conducted hundreds of job analyses to develop test blueprints, performance assessments, job descriptions, and training curricula for professions, specialty areas within and across professions, and entire workforces within an organization. Although there are some fairly uniform best practices, HumRRO designs each method according to the purpose for which it is performed and the available data sources.

To maintain the highest quality, HumRRO uses a multi-level quality assurance process to ensure rigorous standards of technical performance. The first level involves the project staff. Everyone who is involved in a project has the responsibility of maintaining product quality. At the next level, project directors communicate a standard of quality to the project team and conduct quality checks at critical times in the development of each deliverable. This process includes checks for both technical quality and clarity. Our Quality Management Liaison, a senior researcher, consults with all project directors at project outset and periodically thereafter to identify and monitor opportunities to ensure high quality. Finally, before a product is delivered, it receives additional review by other team members for quality, appearance, and suitability to the prospective user, with final approval coming from the project director. As an additional quality measure, the Research Division Directors conduct periodic quality checks both during development and at project completion. These checks involve reviews of technical accuracy, substance, completeness, coherence, clarity, and usefulness.