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From: Karen Gordon <karen@ptot.texas.gov>
Sent: Thursday, December 10, 2015 11:32 AM
To: Opinion_Committee
Cc: Holsinger, Kara; John Maline;
Subject: RQ-0068-KP Response from TX Board of PT Examiners
Attachments: RQ-0068-KP_TBPTe_Response.pdf; RQ-0068-KP_TBPTe_Exhibits.pdf; RQ-0068-KP_TBPTe_Response_Exhibits_combined.pdf

Ms. Hoelscher,

Attached, please find the response to RQ-0068-KP from the Texas Board of Physical Therapy Examiners.

Included are 3 pdf files:

- Response
- Exhibits
- Response & Exhibits combined

If you have any questions, please feel free to contact me.

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OPINION COMMITTEE

December 10, 2015

Via E-Mail: Opinion.committee@texasattorneygeneral.gov

The Honorable Ken Paxton
Attorney General of Texas
Attn: Opinions Committee
P.O. Box 12548
Austin, Texas 78711-2548

FILE # RQ-00068-KP
I.D. # 47894

Re: Whether licensed physical therapists are authorized to practice trigger point dry needling (RQ-0068-KP).

Dear Attorney General Paxton:

The Texas Board of Physical Therapy Examiners ("PT Board") is submitting the following response to RQ-0068-KP as submitted by The Texas State Board of Acupuncture Examiners ("Acupuncture Board").

Background and Discussion

The practice of "dry needling," "trigger point dry needling," and/or "intramuscular manual therapy" (collectively referred to herein as "dry needling") is "a skilled intervention used by physical therapists . . . that uses a thin filiform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular, and connective tissues for the management of neuromusculoskeletal pain and movement impairments."¹ The American Academy of Medical Acupuncture further explains dry needling as "the use of solid needles (contrasted with the use of hollow hypodermic needles that are used for injections) to treat muscle pain by stimulating and breaking muscular knots and bands."² Physical therapists in over 30 states and the U.S. Military³ are currently authorized by statute, rule, regulation, regulatory board, or attorney general opinion to utilize dry needling as a treatment procedure.⁴

¹ See RQ-0068-KP (Exhibit C), American Physical Therapy Association (APTA), *Physical Therapists & the Performance of Dry Needling: An Educational Resource*.

² See RQ-0068-KP (Exhibit A).

³ 2nd Lt. Matthew Steele, 17th Medical Support Squadron, "Ross Clinic offers dry needling," (April 02, 2014), Goodfellow Air Force Base, <http://www.goodfellow.af.mil/News/ArticleDisplay/tabid/322/Article/584236/ross-clinic-offers-dry-needling.aspx>; Sgt. Brandon Anderson, 13th PAD, "Army physical therapy breaking new ground on treating Soldiers," (July 10, 2014), Fort Hood Sentinel, <http://www.forthoodsentinel.com/story.php?id=13790>; Air Force Surgeon General Public Affairs, "Active-duty Airmen to have direct access to physical therapy clinics," (May 05, 2015), U.S. Air Force, <http://www.af.mil/News/ArticleDisplay/tabid/223/Article/587589/active-duty-airmen-to-have-direct-access-to-physical-therapy-clinics.aspx> (Exhibit A)

⁴ See RQ-0068-KP (Exhibit C), APTA educational resource paper.

In November of 2013, the Texas PT Board received a letter written on behalf of the National Center for Acupuncture Safety and Integrity (NCASI) alleging that physical therapists' use of acupuncture needles in dry needling procedures and the determination by state regulatory boards that dry needling is within the physical therapist scope of practice are inconsistent with the requirements for the use of acupuncture needles under the Federal Food, Drug, and Cosmetic Act (FDC Act), 21 U.S.C. § 301 et seq., and U.S. Food and Drug Administration (FDA) implementing regulations.⁵ At its January 17, 2014 meeting, the PT Board reviewed the letter as well as a legal analysis from the Federation of State Boards of Physical Therapy (FSBPT) which concluded that the allegations in the NCASI letter were without merit because the FDA does not determine which practitioners are qualified to use acupuncture needles.⁶ The PT Board took no action at the meeting, but requested advice from the PT Board's assigned legal counsel, Ms. Kara Holsinger, AAG. She affirmed that physical therapists performing dry needling do not violate the Texas Physical Therapy Practice Act, and agreed with the FSBPT's analysis of the NCASI letter. The impact of FDA regulations on the use of acupuncture needles is discussed in further detail in the "Legal Arguments" section below.

A follow-up to the NCASI letter from the Texas Acupuncture Board dated July 31, 2014 and addressed to Mr. Roger Matson, Presiding Officer, Executive Council of Physical Therapy & Occupational Therapy Examiners (ECPTOTE) was received by this agency and forwarded to Mr. Gary Gray, PT, Chair of the PT Board. The letter expressed the Acupuncture Board's support of the conclusions of the NCASI, and that practitioners carrying out dry needling would need to be licensed by the Acupuncture Board. Mr. Gray responded to the Acupuncture Board's letter, in which he stated the PT Board's opinion that the practice of dry needling is within the scope of practice of a Physical Therapist in the State of Texas.

On October 31, 2014, Mr. Gray (not Mr. Roger Matson as indicated in RQ-0068-KP); Ms. Karen Gordon, PT, Board Coordinator; and Ms. Kara Holsinger, AAG, PT Board Legal Counsel, met with Mr. Allen Cline, Acupuncture Board Chairman; Ms. Mari Robinson, Executive Director of the Texas Medical Board (TMB); Mr. Scott Freshour, TMB General Counsel; and Mr. Robert Blech, TMB Assistant General Counsel. Ultimately, the meeting did not change either board's opinion on the practice of dry needling. At the meeting, the PT Board and Acupuncture Board agreed to exchange additional information and legal authorities in support of each Board's position on the practice of dry needling. Although the PT Board promptly supplied this information to the Acupuncture Board, the Acupuncture Board did not respond in kind. Instead, the Acupuncture Board requested an opinion on whether physical therapists are authorized to practice dry needling.

LEGAL ARGUMENTS

Dry Needling is Within the Physical Therapist Scope of Practice

⁵ See RQ-0068-KP (Exhibit D).

⁶ "Trigger Point Dry Needling and FDA Requirements," (December 20, 2013) Distributed by the Federation of State Boards of Physical Therapy to FSBPT Board members and administrators. (Exhibit B)

Attorney General Opinion No. JC-0379, considering whether "spinal manipulation" is within the practice of acupuncture, noted that the Attorney General's office "has generally deferred to the determinations made by boards regulating health professions as to what constitutes the scope of the practice they regulate."⁷ Courts reviewing an agency's construction of the statute it is charged with administering also give deference to that construction, "so long as the construction is reasonable and does not contradict the plain language of the statute."⁸ Likewise, where an issue requires analysis of rules adopted by an agency, courts defer to the agency's interpretation of its own rules unless the interpretation is plainly erroneous or inconsistent with the text of the rule or the underlying statute.⁹

After careful review of the enabling statute, educational requirements and training of physical therapists, legal opinions from other states,¹⁰ documented evidence, and in consultation with legal counsel, the PT Board has determined that dry needling is within the scope of physical therapy practice in Texas.

I. The Physical Therapy Practice Act and Board Rules

Sec. 453.005 (b) of the Texas Physical Therapy Practice Act states that the practice of physical therapy includes:

- (1) measurement or testing of the function of the musculoskeletal, neurological, pulmonary, or cardiovascular system;
- (2) rehabilitative treatment concerned with restoring function or preventing disability caused by illness, injury, or birth defect;
- (3) treatment, consultative, educational, or advisory services to reduce the incidence or severity of disability or pain to enable, train, or retrain a person to perform the independent skills and activities of daily living; and
- (4) delegation of selective forms of treatment to support personnel while a physical therapist retains the responsibility for caring for the patient and directing and supervising the support personnel.¹¹

By examining the APTA and AAMA definitions previously set forth in the *Background and Discussion* section in light of the above statute, it is evident that "dry needling" clearly falls

⁷ Texas Attorney General Opinion No. JC-0379 (Exhibit C). See also DM-443 (Exhibit F).

⁸ See *R.R. Comm'n of Texas v. Texas Citizens for a Safe Future & Clean Water*, 336 S.W.3d 619, 625 (Tex. 2011) (quoting *First Am. Title Ins. Co. v. Combs*, 258 S.W.3d 627, 631 (Tex. 2008)).

⁹ *Texas Bd. of Chiropractic Examiners v. Texas Med. Ass'n*, 375 S.W.3d 464, 475 (Tex. App.—Austin 2012, pet. denied).

¹⁰ Attorney General Opinions from Kentucky, Maryland, Mississippi, and Louisiana (Exhibit D)

¹¹ Tex. Occ. Code § 453.005(b).

within the practice of physical therapy as a treatment choice for pain of neuromusculoskeletal origin in order to reduce the severity of disability and to enable an individual to resume their independent skills and activities associated with daily living.

Furthermore, § 321.1(15) of the Physical Therapy Rules adopted by the PT Board defines physical therapy as:

The evaluation, examination, and utilization of exercises, rehabilitative procedures, massage, manipulations, and physical agents including, but not limited to, mechanical devices, heat, cold, air, light, water, electricity, and sound in the aid of diagnosis or treatment. . . . Physical therapy practice includes, but is not limited to the use of: Electromyographic (EMG) Tests, Nerve Conduction Velocity (NCV) Tests, Thermography, Transcutaneous Electrical Nerve Stimulation (TENS), bed traction, application of topical medication to open wounds, sharp debridement, provision of soft goods, inhibitive casting and splinting, Phonophoresis, Iontophoresis, and biofeedback services.¹²

Just as “dry needling” falls within the broad scope of practice defined by the PT Practice Act, it also falls within the PT Board’s definition, which includes procedures and physical agents that may be used “in the aid of diagnosis or treatment.”

The definition of physical therapy does not provide an exhaustive list of every specific intervention, test, tool, or modality that comprises the practice of physical therapy. To do so would be overly cumbersome and would prevent physical therapy practitioners from implementing new procedures and techniques in response to changes in education within the profession (both entry-level and as demonstrated by continuing competence) and as a result of research and advances in technology.

Just as the PT Practice Act’s definition of physical therapy is not exhaustive in its definition of physical therapy, the practice acts and rules of other Texas health-related professions do not provide all-inclusive laundry lists restricting the scope of licensees’ practice to an exclusive list of procedures and modalities. For example, the Acupuncture Practice Act, Chapter 205 of the Texas Occupations Code, defines “acupuncture” as:

(A) the nonsurgical, nonincisive insertion of an acupuncture needle and the application of moxibustion to specific areas of the human body as a primary mode of therapy to treat and mitigate a human condition, including evaluation and assessment of the condition; and

(B) the administration of thermal or electrical treatments or the recommendation of dietary guidelines, energy flow exercise, or dietary or

¹² 22 Tex. Admin. Code § 321.1(15).

herbal supplements in conjunction with the treatment described by Paragraph (A).¹³

Yet the Acupuncture Board's *Position Statement on CPT Code Billing by Licensed Texas Acupuncturists*, which was developed to "help acupuncturists better understand their scope of practice," among other things, include procedures and modalities not enumerated in the Acupuncture Practice Act or rules. Those procedures "include but are not limited to manual therapies, and use of physical agents such as cupping (negative pressure), scraping, mechanical devices, heat, cold, air, light, water, electricity, and sound in the aid of diagnosis or treatment."¹⁴ Also listed are acts with associated CPT codes for billing that the Acupuncture Board has determined are within the practice of acupuncture and permitted under §205.001(2)(B) of the Acupuncture Practice Act including therapeutic exercises and therapeutic activities, neuromuscular reeducation, gait training, and self-care management. Although most of these procedures and modalities are not enumerated in either the Acupuncture Practice Act or rules, the Acupuncture Board has determined that acupuncturists are within the scope of their practice when performing and billing for these interventions.

In the Acupuncture Board's request letter, Chairman Cline points out that the PT Practice Act and rules do not specifically address dry needling. In fact, neither do the Acupuncture Practice Act and rules. Both scopes of practice are defined at a high level of generality and do not attempt to include every modality or procedure that falls within each profession's scope of practice. And each Board's interpretation of its practice act and rules are entitled to deference.

II. Physical Therapists' Use of Needles

Physical therapists have a historical basis for needle insertion with the practice of Electromyographic (EMG) and Nerve Conduction Velocity (NCV) testing. In Opinion No. DM-443 (1996), the Attorney General determined that needle electromyography constitutes both the practice of physical therapy and the practice of medicine.¹⁵ As such, this opinion determined that physical therapists have statutory authority to use needles to penetrate the skin.

Furthermore, in Opinion No. DM-471 (1998), the Attorney General responded to the argument that FDA regulations governing so-called "acupuncture needles" mean that only acupuncturists may use such needles. The Attorney General wrote:

It has been argued that the use of acupuncture needles by chiropractors not licensed to practice acupuncture contravenes the federal Food and Drug Administration's ("FDA") classification of acupuncture needles. We disagree. The FDA defines an acupuncture needle as "a device intended to pierce the skin

¹³ Tex. Occ. Code § 205.001(2).

¹⁴ Texas State Board of Acupuncture Examiners *Position Statement on CPT Code Billing by Licensed Texas Acupuncturists*, (May 2013), <http://www.tmb.state.tx.us/id/ECEA703E-ED1F-11D6-149A-C0CEFFBCF9D7> (Exhibit E)

¹⁵ Texas Attorney General Opinion No. DM-443 (1996). (Exhibit F)

in the practice of acupuncture.” 21 C.F.R. § 880.5580. Acupuncture needles are classified by the FDA as “Class II” medical devices, which are devices for which general controls are insufficient to assure the safety and effectiveness of the device, and which are therefore subject to special controls. See 21 U.S.C. § 360c(a) (defining classes of devices); 21 C.F.R. § 860.3 (same). The FDA requires acupuncture needles to be labeled for single use only, conform to FDA requirements for prescription devices, and comply with biocompatibility and sterility requirements. 21 C.F.R. § 880.5580. FDA regulations restrict the use of prescription devices, including acupuncture needles, to practitioners licensed by state law to use or order the use of such devices. *Id.* § 801.109. The FDA does not, however, prescribe who may be licensed by a state to use the device. Any person authorized by state law to use acupuncture needles must do so in accordance with FDA regulations.¹⁶

The APTA and FSBPT also came to the conclusion that the determination of who is authorized to use acupuncture needles is a matter left to the states.¹⁷

III. PT Education and Training in Dry Needling

Dry needling also fits within the education and training of physical therapists in Texas. As an advanced skill, dry needling is not currently included in the entry-level curricula of all accredited physical therapy programs. Nevertheless, the PT curriculum provides a foundation upon which the advanced skill of dry needling is built. A recent report commissioned by the Federation of State Boards of Physical Therapy found that 86% of the knowledge required to be competent in dry needling is acquired during the primary course of a PT’s clinical education.¹⁸ This knowledge includes evaluation, assessment, diagnosis and plan of care development, documentation, safety, and professional responsibilities. The same report also found that only 14% of the knowledge requirements related to competency in dry needling must be acquired through post-graduate education or specialized training in dry needling.¹⁹

According to the document *Changes in Healthcare Professions’ Scope of Practice: Legislative Considerations*, prepared by a consortium of national health-related professional organizations, “[i]t is not realistic to require a skill or activity to be taught in an entry-level program before it becomes part of a profession’s scope of practice. If this were the standard, there would be few,

¹⁶ Texas Attorney General Opinion No. DM-471 (1998). (Exhibit G)

¹⁷ American Physical Therapy Association Memorandum, *RE: Letter from National Center for Acupuncture Safety and Integrity (NCASI)*, To: APTA Component Leaders, State Legislative Chairs, Component Executives, and Chapter Lobbyists (January 6, 2014) (Exhibit H). FSBPT response to NCASI letter (Exhibit B).

¹⁸ Joseph Caramagno, Leslie Adrian, Lorin Mueller, Justin Purl, *Analysis of Competencies for Dry Needling by Physical Therapists, Final Report* published by HumRRO (Human Resource Research Organization), (July 10, 2015), pg. iii (Exhibit I)

¹⁹ *Id.*

if any, increases in scope of practice.” The document is the result of a collaborative effort by representatives from six healthcare regulatory organizations including the Federation of State Medical Boards (FSMB) and the Federation of State Boards of Physical Therapy (FSBPT).²⁰

Physical therapists do not learn dry needling from licensed acupuncturists or schools of acupuncture. Rather, the theory of dry needling as practiced by physical therapists is taught in most of the accredited Texas physical therapy programs and in post-graduate courses. Dry needling didactic lecture and clinical laboratory practice have been incorporated into the curriculum of both the U.S. Army-Baylor University Doctoral Program in Physical Therapy, San Antonio and Texas Tech University Doctor of Physical Therapy Program, Lubbock. Currently, there are forty-one (41) post-graduate dry needling courses that have been approved by the PT Board as meeting the standards for continuing competence for physical therapists. To meet this standard, the courses must be presented by a licensed health care provider with appropriate credentials and/or specialized training in dry needling. The average length of these courses is three days with content including theory and evidence-based guidelines, surface anatomy, indications/contraindications of dry needling, dry needling techniques, and demonstration and skills lab.

Physical Therapists Who Perform Dry Needling Are Not Practicing Acupuncture

That dry needling is within the scope of practice of a Texas physical therapist is highlighted by the differences between “acupuncture” as practiced by licensed Texas acupuncturists and “dry needling” practiced by Texas physical therapists.

Chairman Cline stated in his Opinion Request letter that “[t]he practice of trigger point dry needling is substantially identical to the practice of acupuncture as both involve the insertion of acupuncture needles through the skin of the patient and the manipulation of those needles as a primary mode of therapy.” This statement, however, is incomplete and misleading. While dry needling and acupuncture use the same mechanical tool – a thin, solid filiform needle – the treatment technique, philosophy, theory, methodology, and objectives of dry needling vary from acupuncture in almost every material respect.

In the adopted position statement by the Acupuncture Board *Position Statement on CPT Code Billing by Licensed Texas Acupuncturists*, acupuncture is referred to as a “medical discipline that requires diagnosis, treatment and prognosis **based on the theories of Oriental medicine** to prevent and treat various diseases and promote wellness” (emphasis added). The Accreditation Manual of the Accreditation Commission for Acupuncture & Oriental Medicine (ACAOM), which

²⁰ *Changes in Healthcare Professions’ Scope of Practice: Legislative Considerations*, (2006), Association of Social Work Boards (ASWB), Federation of State Boards of Physical Therapy (FSBPT), Federation of State Medical Boards (FSMB), National Association of Boards of Pharmacy (NABP), National Board for Certification in Occupational Therapy (NBCOT), and National Council of State Boards of Nursing, pg. 9. (Exhibit J)

sets the standard for acupuncture education, lists the following basic theories as required program core content:

- Qi
- Tonification (supplementation) and sedation (draining) of qi, creation of harmony
- Dao
- Yin Yang
- Eight Parameters/Ba Gang
- Five Elements (phases, correspondences)/Wu Xing and their laws and cycles
- Twelve Officials/Shi Er Guan
- Viscera & Bowels/Zang Fu
- Theory of channel vessels (Meridians)/Jing Luo
- Internal and External causes of disease such as Six External Evils/Liu Xie, Seven Emotions/Qi Qing and Non-internal or External Reasons/bu nei wai yin
- Oriental medicine pathology (bing ji)
- Meaning (significance) of disease, symptoms, signs
- Fundamental Body Substances (e.g. shen, qi, blood, fluid, etc.)²¹

The use of dry needling as a treatment intervention by physical therapists is not based on ancient theories or tenets of traditional Chinese medicine; rather it is based on a comprehensive understanding of **western neuroanatomy and modern scientific study of the musculoskeletal and nervous systems with related patho-physiology, as well as the neurobiology and mechanisms of pain models**, which includes:

- Biochemical characteristic of the twitch response
- Scientific background of the myofascial pain syndrome
- Pathophysiology of the myofascial trigger point phenomenon
- Myofascial release principles²²

Evaluation of the patient/client prior to initiation of treatment is another area of variance between acupuncture and dry needling as performed by a physical therapist. Acupuncturists utilize the “methods of pulse reading, tongue observation, and palpation of channels, abdomen, and acu-points” to provide the practitioner “with a detailed understanding of how our bodies systems are working together and what needs to be done if they are not.”²³ In contrast, a physical therapy evaluation involves a hands-on, thorough examination of the neuromusculoskeletal system with assessment of joint integrity and mobility; neuro-motor

²¹ Accreditation Commission for Acupuncture & Oriental Medicine (ACAOM), “*Accreditation Manual: STRUCTURE, SCOPE, PROCESS, ELIGIBILITY REQUIREMENTS AND STANDARDS*” (July 2012) pg. 21. Available at http://www.acaom.org/documents/accreditation_manual_712.pdf

²² *Description of Dry Needling in Clinical Practice: An Educational Resource Paper*, American Physical Therapy Association (“APTA”), APTA Public Policy, Practice, and Professional Affairs Unit, February 2013, page 2. (Exhibit K).

²³ Turtle Dragon (Chairman Cline’s Practice) website, “*What is Acupuncture,*” available at <http://turtledragon.com/health-services/acupuncture/>

function; muscle performance (including strength, power, and endurance); range of motion (including muscle length); reflex and sensory integrity; and pain severity and quality.²⁴

Acupuncture is based on pre-determined meridians and acupuncture points with groupings such as transport points, Windows of the Sky, Internal and External Dragons, Seas and Oceans, Ashi, and thirteen ghost points.²⁵ Dry needling treatment intervention practiced by physical therapists is based on trigger points which are selectively identified by the physical therapist through palpation of taut bands and tender nodules within skeletal muscle, fascia, and connective tissue.²⁶

The objective of acupuncture is to restore a person's natural balance by restructuring the interconnecting patterns of structure and function and reorganizing the way the qi (vital energy and life force) moves through that pattern.²⁷ The objective of dry needling is to decrease pain by deactivating the trigger point, improve the ability of muscles to move through their entire range of motion, and to reduce impairments and restore function to body structures.²⁸

Even with the stark contrast between the philosophy, methodology, and objectives of the practice of acupuncture and the treatment intervention of dry needling, there is commonality in the use of the same mechanical tool; a thin, solid filiform needle. As demonstrated in the definition of “acupuncture” from the statutes, needle techniques are only a portion of the acupuncturist’s full scope of practice and are combined with the application of moxibustion, which physical therapists do not utilize.

Acupuncturists and physical therapists have unique scopes of practice notwithstanding the overlap of some of the same skills, treatment modalities and procedures, and use of mechanical tools. This overlap is demonstrated in other areas of acupuncture and physical therapy. For example, the administration of thermal or electrical treatments delineated in the statutory definition of “acupuncture” is also a component of the definition of physical therapy in 22 Tex. Admin. Code § 321.1(15) with heat, cold, and electricity among the procedures utilized in physical therapy treatment. In the Acupuncture Board’s previously cited position statement dated May 2013, the Acupuncture Board determined that “...mechanical devices, heat, cold, air, light, water, electricity, and sound in the aid of diagnosis or treatment” are within the scope of

²⁴ *Interventions: Manual Therapy Techniques*, Guide to Physical Therapist Practice 3.0. Alexandria, VA: American Physical Therapy Association; 2014. Available at: <http://guidetoptpractice.apta.org/content/1/SEC38.body>

²⁵ Accreditation Commission for Acupuncture & Oriental Medicine (ACAOM), “*Accreditation Manual: STRUCTURE, SCOPE, PROCESS, ELIGIBILITY REQUIREMENTS AND STANDARDS*” (July 2012) pg. 21. Available at http://www.acaom.org/documents/accreditation_manual_712.pdf

²⁶ Jan Dommerholt, PT, MPS, FAAPM Caret Bron, PT Jo Franssen, PT, *Myofascial Trigger Points: An Evidence-Informed Review*, The Journal of Manual & Manipulative Therapy, Volume 14, Number 4, (2006), pg. 203. (Exhibit L).

²⁷ Turtle Dragon website, “*What is Acupuncture*,” available at <http://turtledragon.com/health-services/acupuncture/>

²⁸ *Interventions: Manual Therapy Techniques*, Guide to Physical Therapist Practice 3.0. Alexandria, VA: American Physical Therapy Association; 2014. Available at: <http://guidetoptpractice.apta.org/content/1/SEC38.body>

acupuncture practice, which mirrors the language in the PT Board's definition of physical therapy in its rules, quoted above. Additional treatment procedures that the Acupuncture Board determined are within the practice of acupuncture include therapeutic exercises and therapeutic activities, neuromuscular reeducation, gait training, and self-care management. These procedures are also within the scope of physical therapy practice and are an integral part of rehabilitation as performed by physical therapists.

The overlap in acupuncture and physical therapy practice is not surprising. The authors of *Changes in Healthcare Professions' Scope of Practice: Legislative Consideration* note, for example:

Overlap among professions is necessary. No one profession actually owns a skill or activity in and of itself. One activity does not define a profession, but it is the entire scope of activities within the practice that makes any particular profession unique. Simply because a skill or activity is within one profession's skill set does not mean another profession cannot and should not include it in its own scope of practice.²⁹

Previous Attorney General opinions have also recognized and accepted that there may be overlap among professions. For example, in Opinion No. DM-423 (1996), it was determined that hyperbaric oxygen therapy regulated by the Board of Medical Examiners constitutes the practice of medicine, and by the Board of Podiatric Medical Examiners constitutes the practice of podiatry;³⁰ and in Opinion No. DM-443 (1996), the Attorney General determined that needle electromyography constitutes both the practice of medicine and the practice of physical therapy.³¹

In sum, physical therapists performing dry needling are not practicing acupuncture. Physical therapists DO NOT:

- claim to practice acupuncture or represent themselves as acupuncturists;
- base the treatment on traditional Chinese medicine theories;
- use diagnostic techniques like tongue and pulse assessments;
- use meridians systems, acupuncture points, and terminology;
- strive to balance Qi energy or life channels within the body; or
- use dry needling to address things such as fertility, smoking cessation, allergies, depression or other non-neuromusculoskeletal conditions which are commonly treated with acupuncture.

²⁹ *Changes in Healthcare Professions' Scope of Practice: Legislative Considerations*, (2006), pg. 8. (Exhibit J)

³⁰ Texas Attorney General Opinion No. DM-423 (1996), (Exhibit M)

³¹ Texas Attorney General Opinion No. DM-443 (1996), (Exhibit F)

Physical Therapists Performing Dry Needling Are Not Practicing Medicine

Physical therapists performing dry needling are not practicing medicine.³² As just discussed, the treatment technique of dry needling falls squarely in the scope of practice for Physical Therapists as set out in the PT Practice Act and the PT Board's Rules. And § 151.052 of the Medical Practice Act expressly provides the practice of physical therapy within the scope of the physical therapy Practice Act is not "practicing medicine":

(a) This subtitle does **not** apply to:

...

(7) a licensed physical therapist engaged strictly in the practice of physical therapy in accordance with the law relating to physical therapy practice.³³

Further, a physical therapist must receive a referral from a qualified healthcare practitioner, including a physician, before initiation of any treatment, including dry needling.³⁴ Therefore, a physical therapist performing dry needling upon a referral from a physician is working within the legal scope of the practice of physical therapy and is not unlawfully "practicing medicine."

In Summary: The Attorney General should defer to the PT Board's determination that dry needling is within the scope of physical therapy practice, and a physical therapist performing dry needling is not practicing acupuncture and is not practicing medicine.



Gary Gray, PT
Chairman, Texas Board of Physical Therapy Examiners

cc: Kara Holsinger, AAG
General Counsel

³² The last paragraph of RQ-0068-KP misquotes the Acupuncture statute, Tex. Occ. Code § 205.003(a), which states: "This chapter does **not** apply to a health care professional licensed under another statute of this state and acting within the scope of the license." (emphasis added). As discussed herein, PTs who practice dry needling are practicing under the scope of their license and are not practicing acupuncture.

³³ Tex. Occ. Code § 151.052(a)(7)(emphasis added). See also *Texas Bd. of Chiropractic Examiners v. Texas Med. Ass'n*, 375 S.W.3d 464, 466 (Tex. App.—Austin 2012, pet. denied) (discussing Tex. Occ. Code § 151.052).

³⁴ Tex. Occ. Code §§ 453.001(9), 453.301 (treatment under prior referral), 453.302 (treatment without referral), 453.351 (discipline of a license holder). (Exhibit N).

John Maline, Executive Director

Executive Council of Physical Therapy & Occupational Therapy Examiners

Roger Matson, Executive Council Presiding Officer

Executive Council of Physical Therapy & Occupational Therapy Examiners

Exhibit A


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Ross Clinic offers dry needling

By 2nd Lt. Matthew Steele, 17th Medical Support Squadron / Published April 02, 2014

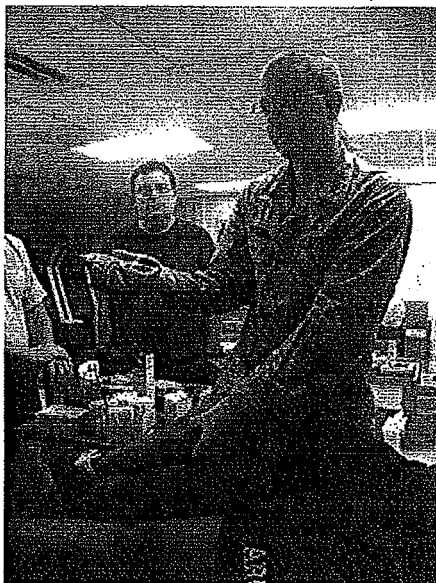


PHOTO DETAILS / [DOWNLOAD HI-RES](#) 1 of 3

GOODFELLOW AIR FORCE BASE, Texas -- Maj. Daniel Watson, 7th Medical Operations Squadron physical therapist, demonstrates dry needling at the Ross Clinic here March 21. Trigger Point Dry Needling differs from acupuncture in that the latter is based on Eastern medical diagnosis, requiring training in traditional Chinese medicine. (U.S. Air Force photo/ Tech. Sgt. Curtrell Gibson)

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GOODFELLOW AIR FORCE BASE, Texas -- Providers at the Physical Therapy, Family Practice and Student Clinic within the Ross Medical Clinic here, received training on physical therapy called Trigger Point Dry Needling March 21.

TDN is typically done in physical therapy clinics, but the Goodfellow clinic decided to train clinicians in multiple departments to expand the reach of this treatment option.

TDN is a new procedure intended to reduce pain by treating trigger points in chronically tight muscles.

Trigger points are hypersensitive spots found within a taut band of skeletal muscle or in the muscle's fascia, commonly referred to by patients as knots. Trigger points are typically associated with chronic pain, referred tenderness, limited range of motion and are painful upon compression.

The primary goal of TDN is to desensitize or release trigger points, restore normal muscle function, and to induce healing in the target tissue. This is achieved by introducing sterile needles, ranging in length from 30 to 100 millimeters, into varying depths of muscle with a goal of obtaining a local muscle twitch response. The response releases the shortened muscle, essentially resetting it to a normal state. Typically, positive results are apparent within two to four treatment sessions but can vary depending on the cause and duration of the symptoms, overall health of the patient.

Certification is attained through an intensive three-day, 24-hour course, including hands-on instruction and clinical practice. The provider must have extensive education and knowledge of the nervous, muscular and vascular systems as well as orthopedics in general to apply for training. TDN differs from acupuncture in that the latter is based on Eastern medical diagnosis, requiring training in traditional Chinese medicine. Ultimately, TDN works as an additional option to traditional physical therapy treatment centered on strength, flexibility and conditioning.

For more information on dry needling or any other services offered by physical therapy, please call the 17th Medical Group Physical Therapy Clinic at 325-654-3632. A referral from your primary care physician is required to be evaluated for TDN services. Currently, due to high demand, only Active Duty members are eligible for care at the physical therapy clinic.

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FIND NEW ROADS

Army physical therapy breaking new ground on treating Soldiers

By Sgt. Brandon Anderson, 13th PAD
JULY 10, 2014 | LEISURE

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Staff Sgt. Ryan Lahr, an occupational therapist assigned to Carl R. Darnall Army Medical Center, demonstrates a physical therapy conditioning technique that is often used by the clinic to help strengthen a patient's balance. Photo by Sgt. Brandon Anderson, 13th PAD

The Army uses a variety of treatments to help heal and restore injured Soldiers. Physical therapy is one of these evolving medical practices.

Lt. Col. Kevin Houck, the officer-in-charge of the physical therapy clinic at Fort Hood's Carl R. Darnall Army Medical Center, said the majority of Soldiers who come to the clinic are referrals from their primary care managers, but in some cases they are referred by other specialty clinics, such as the orthopedic surgery and pain management.

"A patient may come here before surgery or if the physician thinks they may need surgery so that we can help strengthen them up prior," Houck said. "We do this by incorporating a series of treatments that may include stretching, joint mobility and various exercises that are targeted to help treat the injury."



Lt. Col. Kevin Houck, the officer-in-charge of the physical therapy clinic, and Staff Sgt. Ryan Lahr, an occupational therapist assigned to Carl R. Darnall Army Medical Center, demonstrate a leg-strengthening exercise often used by the clinic to help strengthen a patient's legs. Photo by Sgt. Brandon Anderson, 13th PAD

Houck said when a person comes into the clinic for their initial appointment, the physical therapist evaluates them to see if there are underlying issues causing the problem.

"When a person first comes into our clinic, we try to evaluate what's causing the pain instead of just treating the pain," Houck said. "Sometimes what people assume is the problem is actually inter-connected to other underlying issues."

During this time the therapist will develop a treatment plan designed to help in the recovery process. The next step of treatment involves physical therapy assistants to monitor the patients to ensure the exercises are performed correctly and no further injury occurs.

Houck said that Army physical therapists have been around since World War I, and have often been innovators in providing new treatments and techniques that have since been adopted by civilian practitioners.

Houck said that most physical therapists were used to mitigate sick call numbers, but



Staff Sgt. Ryan Lahr, an occupational therapist assigned to

the Carl R. Darnall Army Medical Center, uses a shoulder strengthening device. Photo by Sgt. Brandon Anderson, 13th PAD

their role has changed drastically as time has evolved.

"The Army realized a large percentage of people going to sick call were there because of muscular skeletal issues, and saw the benefit of incorporating physical therapists into to the treatment plan," Houck said.

This realization has opened the doors for physical therapists to occupy many different roles in the Army, he added.

"Now you'll see physical therapists integrated into brigade combat teams, when before it was primarily a hospital function," Houck said.

As their roles have changed, so have their techniques and tools they use to treat issues. One such technique is dry needling, a treatment similar to acupuncture, but based on modern neuroanatomy science.

"At one time, we primarily used exercise to help rehabilitate Soldiers, but have since been using a multitude of different approaches to treat patients," Houck said. "We use dry needling, which is similar to acupuncture, but instead of focusing on traditional stress points, we apply the needles directly to the site of the injury, and the results have been very promising."

Houck said that he believes the role of physical therapy has a bright future in the Army and will continue to be a tool that is used to help restore and heal the force.

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Active-duty Airmen to have direct access to physical therapy clinics

By Air Force Surgeon General Public Affairs, / Published May 05, 2015

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FALLS CHURCH, Va. (AFNS) -- The Air Force Medical Operations Agency has recently directed all Air Force military treatment facilities (MTF) to establish direct access physical therapy clinics for active-duty members. The policy shift will now allow an active-duty member with an acute musculoskeletal injury to make an appointment directly with a physical therapist.

For three of the past five years, musculoskeletal injuries, such as knee sprains, have been the number one reason for an active-duty Airman to seek care at an MTF. In addition, musculoskeletal injuries are the largest reason for limited-duty profiles in the Air Force, causing more than 47 percent of the profiles in 2013. Typically, Airmen sought care within the family practice or flight and operational medicine clinics and may have received a referral to a physical therapy clinic.

"Air Force physical therapists are trained and credentialed to provide independent practice, to include medication prescription, order appropriate diagnostic imaging, place patients on profiles, and refer to other practitioners as appropriate," said Col. Joseph Rogers, a physical therapy consultant to the Air Force surgeon general.

Rogers also cited recent military research showed "patients who received early physical therapy had total lower healthcare costs, fewer medical appointments, and fewer invasive procedures than those with delayed physical therapy addressed more than 14 days after injury."

With early access to care, physical therapists can provide tailored treatments to each patient.

"Treatment may consist of manipulation, dry needling, exercise or modalities," said Lt. Col. Brian Young, the assistant professor at U.S. Army-Baylor University doctor of physical program and Air Force physical therapy clinical operations chairman. "In today's fiscally constrained environment and exponential increase in healthcare costs, early access to physical therapy is key for early return to duty and function after musculoskeletal injuries."

According to Rogers, with the recent policy release, each MTF will implement these changes over the next few months.

"We expect each physical therapy clinic to establish appointment availability for acute injuries by the end of the summer," he said.

Active-duty members should contact their local MTF for more information.

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Exhibit B



Trigger Point Dry Needling and FDA Requirements

December 20, 2013

Is the use of acupuncture needles by physical therapists for “trigger point dry needling” (TPDN) inconsistent with the United States Food and Drug Administration (FDA) requirements?

As you are aware, the Federation of State Boards of Physical Therapy (FSBPT) and the various state boards are in receipt of a November 13, 2013 letter from the National Center for Acupuncture Safety and Integrity (NCASI) alleging, among other things, that physical therapists’ (PT) use of acupuncture needles in “trigger point dry needling” procedures, and various state boards’ determination that TPDN is within the physical therapist scope of practice, are inconsistent with the requirements for acupuncture needles under the Federal Food, Drug, and Cosmetic (FDC) Act, 21 U.S.C. § 301 et seq., and U.S. Food and Drug Administration (FDA) implementing regulations. NCASI also sent a similar letter to FDA itself.

FSBPT requested a legal analysis, from a law firm that does significant work on FDA regulatory issues, as to whether NCASI’s allegation against physical therapists and the physical therapy licensing boards has merit.

Based on the legal analysis, we believe the allegation in the NCASI letter is without merit.

When the FDA down-classified acupuncture needles and promulgated 21 C.F.R. § 880.5580, the FDA stated that acupuncture needles are for use by qualified practitioners of acupuncture as determined by the states. We believe, in doing this, the FDA was clearly signaling that it would not involve itself in determining who is a qualified practitioner to use acupuncture needles, leaving it to the states to decide.

This approach is consistent with the principle behind a provision within the FDC Act, the “practice of medicine” provision at 21 U.S.C. § 396. Healthcare practitioners are included within this “practice of medicine” provision. The provision states that nothing in the FDC Act shall be construed to limit or interfere with the authority of a healthcare practitioner to prescribe or administer any legally marketed device for any condition or disease within a legitimate healthcare practitioner-patient relationship. The legislative history for this provision indicates that Congress intended to emphasize that FDA should not interfere in the practice of medicine.

We believe that state physical therapy boards are acting well within their state’s rights as well as their legislatively mandated responsibilities to determine the allowed scope of practice for their licensees.

If your jurisdiction is being challenged on dry needling as a part of the scope of practice of physical therapy and have not already done so, please don’t hesitate to contact Mark Lane or Leslie Adrian at 703-299-3100. We encourage each state physical therapy board to consult their board’s legal counsel as to any specific opinions under their state law.

Distribution: FSBPT Board members and administrators

Exhibit C



Office of the Attorney General - State of Texas
John Cornyn

May 23, 2001

Dr. Cynthia S. Vaughn, D.C.
President, Texas Board of
Chiropractic Examiners
333 Guadalupe, Suite 3-825
Austin, Texas 78701-3942

Opinion No. JC-0379

Re: Whether a licensed
acupuncturist may perform "spinal
manipulation" (RQ-0308-JC)

Dear Dr. Vaughn:

You have asked this office whether "spinal manipulation" is within the practice of acupuncture. As we understand it, your question relates specifically to a certain form of acupressure technique called Tui Na. The Texas State Board of Acupuncture Examiners ("BAE") and State Board of Medical Examiners ("BME"), which together regulate the practice of acupuncture in this state, *see* Tex. Occ. Code Ann. § 205.101 (Vernon 2001), assert that this technique is within the practice of acupuncture as a form of "energy flow exercise."⁽¹⁾

This office has generally deferred to the determinations made by boards regulating health professions as to what constitutes the scope of the practice they regulate. *See* Tex. Att'y Gen. Op. Nos. DM-423 (1996) at 3 (hyperbaric oxygen therapy regulated by Board of Medical Examiners to the extent it constitutes practice of medicine, and by Board of Podiatric Medical Examiners to the extent it constitutes practice of podiatry); DM-443 (1996) at 4 (needle electromyography constitutes both practice of medicine and practice of physical therapy). This deference is an application to the licensed health professions of the general rule that the "construction of a statute by an agency charged with its execution is entitled to serious consideration so long as the construction is reasonable and does not contradict the plain language of the statute." *Simplex Elec. Corp. v. Holcomb*, 949 S.W.2d 446, 447 (Tex. App.-Austin 1997, writ denied). In this instance, however, while we do not question the BAE's and BME's decision that Tui Na is a form of energy flow exercise, we note that the definition of acupuncture in the Occupations Code defines the practice to include only the "recommendation," rather than the "administration" of such exercises. Tex. Occ. Code Ann. § 205.001(2)(B) (Vernon 2001). Accordingly, the administration of such exercises is not within the statutory definition of acupuncture.

As we understand it, your concern stems from incidents in which licensed acupuncturists have engaged in activity which you regard as within the practice of chiropractic, but which the BAE has declared to be within the practice of acupuncture. Notably, in an instance you detail in the attachments to your request letter, an acupuncturist performed what you regard as a spinal

adjustment in a manner that may have been deleterious to the patient. In that case, the BAE found that the procedure involved was Tui Na, which "involves applying acupressure to acupoints, channels, and muscle groups. This procedure is considered to be within the scope of practice of acupuncture."⁽²⁾ You dispute this determination, and accordingly ask whether "spinal manipulation" is within the practice of acupuncture.

The practice of acupuncture is defined in section 205.001 of the Occupations Code:

"Acupuncture" means:

(A) the nonsurgical, nonincisive insertion of an acupuncture needle and the application of moxibustion to specific areas of the human body as a primary mode of therapy to treat and mitigate a human condition; and

(B) the administration of thermal or electrical treatments or the recommendation of dietary guidelines, *energy flow exercise*, or dietary or herbal supplements in conjunction with the treatment described by Paragraph (A).

Tex. Occ. Code Ann. § 205.001(2) (Vernon 2001) (emphasis added).

The practice of chiropractic, on the other hand is defined *inter alia* as:

(1) us[ing] objective or subjective means to analyze, examine, or evaluate the biomechanical condition of the spine and musculoskeletal system of the human body; [and]

(2) perform[ing] nonsurgical, nonincisive procedures, including adjustment and manipulation, to improve the subluxation complex or the biomechanics of the musculoskeletal system;

Id. § 201.002(b).

We note that neither of these statutes refers to "spinal manipulation," the term about which you inquire. The chiropractic statute does refer to "manipulation, to improve the subluxation complex or the biomechanics of the musculoskeletal system." *Id.* However, the statute defines none of these terms.

When a statute does not define a particular term, we are charged to give the term its ordinary meaning. *See* Tex. Gov't Code Ann. § 312.002 (Vernon 1998). "Manipulate" is defined by the Oxford English Dictionary as "[t]o handle, esp. with dexterity; to manage, work, or treat by manual (and, by extension, any mechanical) means." IX Oxford English Dictionary 319 (2d ed. 1989). "Manipulation" is defined in the same source as "[t]he handling of objects for a particular purpose; manual management; in *Surgery*, the manual examination of a part of the body." *Id.*

The BME argues:

There are several types of licensed practitioners in Texas whose work involves

manipulation in the spinal area. To adopt the definition of spinal manipulation as set out by Chiropractic Law could exclude anyone other than licensees of the Chiropractic Board from performing procedures involving the spinal area. This would have the effect of one regulatory board establishing and enforcing the scope of practice for licensees not under its authority.

BME Brief, *supra* note 1, at 4.

However, section 201.003 of the Occupations Code specifically exempts registered nurses, vocational nurses, persons providing spinal screening services, physical therapists, massage therapists, and massage therapy instructors from regulation under chapter 201, relating to chiropractors, and further states that the chapter "does not limit or affect the rights and powers of a physician licensed in this state to practice medicine." Tex. Occ. Code Ann. § 201.003(a), (b) (Vernon 2001). We note that licensed acupuncturists are not listed among those exempted.


The BME asserts that the specific kind of spinal manipulation at issue here is a recognized form of "energy flow exercise" within the meaning of section 205.001(2)(B) of the Occupations Code, a term which, they inform us "includes acupressure and Oriental bodywork." BME Brief, *supra* note 1, at 3. "Within acupuncture, there are different therapies involving touching the patient including massages, Tui Na, and Shiatsu. Acupressure does not involve severe thrusting as that described by the chiropractic definition of spinal manipulation. Instead, acupressure involves some gentle, subtle, gross and/or specific pressure to acupuncture points." *Id.*

This office has and professes no expertise with regard to matters such as these. *Cf.* Tex. Att'y Gen. Op. No. JC-0211 (2000) at 1 ("This office does not have the expertise to make the decision as to whether a particular act is being done to 'hair' or 'beard.'"). However, while the BAE and BME doubtless are better able to determine what constitutes an energy flow exercise or spinal manipulation than are we, the statutory definition of the practice of acupuncture, upon which we must rely, does not encompass the administration of such exercise, but only its recommendation.⁽³⁾ Indeed, the subsection contrasts such "recommendation" with "the administration of thermal or electrical treatments," by permitting an acupuncturist to administer thermal or electrical treatments and to recommend dietary guidelines, energy flow exercise, or dietary or herbal supplements. Tex. Occ. Code Ann. § 205.001(2)(B) (Vernon 2001). We cannot therefore concur with the view that the administration of such energy flow exercise is within the statutory definition of the practice of acupuncture.

S U M M A R Y

While the technique called Tui Na, which involves some manipulation of the spinal area, may be an energy flow exercise within the meaning of section 205.001 of the Texas Occupations Code, the administration of such exercise is not within the statutory definition of the practice of acupuncture.

Yours very truly,

 Cornyn signature

JOHN CORNYN
Attorney General of Texas

ANDY TAYLOR
First Assistant Attorney General

SUSAN D. GUSKY
Chair, Opinion Committee

James E. Tourtelott
Assistant Attorney General - Opinion Committee

Footnotes

1. See Letter from Michele L. Shackelford, General Counsel, Texas State Board of Medical Examiners, to Susan D. Gusky, Chair, Opinion Committee, Office of the Attorney General, at 5 (Jan. 19, 2001) (on file with Opinion Committee) [hereinafter BME Brief].
2. Letter from Dr. Cynthia S. Vaughn, D.C., to Honorable John Cornyn, Attorney General of Texas (Nov. 1, 2000) (on file with Opinion Committee) (*see* Attachment B - Letter from Becky Nichols, Chief of Investigations, Texas State Board of Acupuncture Examiners, to Kevin D. Kanz, D.C. (Aug. 12, 1999)).
3. While there is some evidence that the administration of "energy flow exercise" as within the practice of acupuncture may have been considered in a conference committee report, the actual text of the statutory definition as adopted reads "*recommendation* of . . . energy flow exercise." Act of May 13, 1999, 76th Leg., R.S., ch. 388, § 1, sec. 205.001, 1999 Tex. Gen. Laws 1431, 1611 (emphasis added). *See* Conference Comm. Rpt., Tex. S.B. 1062, 73d Leg., R.S. (1993) (Conference Committee Report, May 29, 1993, comparing Senate and House versions of the bill, notes that "house version strikes the term 'therapeutic' [exercise] and replaces it with the terms 'energy flow' [exercise] to describe the types of exercises *allowed in acupuncture treatments*." (emphasis added)).

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ATTORNEY GENERAL

OAG 13-010

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700 CAPITAL AVENUE
FRANKFORT, KENTUCKY 40601
(502) 696-5300
FAX: (502) 564-2894

September 3, 2013

Subject: Whether the practice of "dry needling" is within the scope of the practice of physical therapy

Requested by: Preston P. Nunnolley, M. D., President
Kentucky Board of Medical Licensure

Written by: James M. Herrick
Assistant Attorney General

Syllabus: "Dry needling" is within the scope of the practice of physical therapy as defined by KRS 327.010(1).

Statutes construed: KRS 327.010(1), KRS 311.672(5), KRS 311.677(1)

OAG's cited: OAG 10-005, OAG 01-8

Opinion of the Attorney General

On March 18, 2010, the Kentucky Board of Physical Therapy issued an Opinion and Declaratory Ruling on the practice of "dry needling," also known by names such as intramuscular manual therapy ("IMT"), trigger point dry needling, and intramuscular needling. This procedure involves the insertion of a solid filament needle through the skin for therapeutic purposes, as opposed to using a hollow needle to deliver medication. The Board of Physical Therapy opined that dry needling was within the scope of the practice of physical therapy as defined by KRS 327.010(1), concluding that "[t]here is nothing in KRS Chapter 327 to prohibit a licensed physical therapist from performing dry needling so long as the physical therapist is competent in performing this intervention."



The Kentucky Board of Medical Licensure, through its president, Preston P. Nunnelley, M. D., has requested that this office review the issue. He reports that the Acupuncture Advisory Committee, established pursuant to KRS 311.673(2), "has taken the position that 'dry needling' is a practice uniquely limited to the practice of acupuncture." Dr. Nunnelley therefore poses the question as follows: *"Under current statutory authority, is the practice of 'dry needling' specifically limited to the practice of acupuncture or may that procedure also be legally performed by licensed physical therapists?"*

The Board of Medical Licensure has asked the Board of Physical Therapy to withdraw its opinion, but the latter Board has declined to do so. In correspondence addressed to Dr. Nunnelley on December 14, 2011, Janice Kuperstein, PT, Ph.D., then the chair of the Board of Physical Therapy, explained her board's position as follows:

Although dry needling is not currently considered an entry-level skill for physical therapists, it is an advanced skill that can be obtained post-graduation based on the strong foundational core of physical therapist education. This education includes anatomy, histology, physiology, biomechanics, kinesiology, neuroscience, pharmacology, pathology, clinical sciences, clinical applications, screening, and other clinical interventions. Dry needling competency is built upon that knowledge, just as new techniques in any field would be built upon existing knowledge. Furthermore, dry needling has been part of the physical therapist scope in many other countries for some time and has been recognized as an emerging intervention for physical therapists in the U.S. since the 1990s.

....

The goal of dry needling by physical therapists is to treat impairments including, but not limited to: scarring, myofascial pain, motor recruitment and muscle firing problems, with goals including to relieve pain, increase extensibility of scar tissue, or improve neuromuscular firing patterns. The use of a needle is not restricted to any particular profession. The Board agrees that under KRS 311.676, a physical therapist may not refer to dry needling as "acupuncture." Similarly, a treatment performed by an acupuncturist may not be referred to as "physical therapy" under KRS 327.020.

We necessarily begin with the respective statutes defining the practices of physical therapy and acupuncture.

Since the central question pertains to the scope of the definition of physical therapy, we quote in full the rather lengthy definition from KRS 327.010(1):

"Physical therapy" means the use of selected knowledge and skills in planning, organizing, and directing programs for the care of individuals whose ability to function is impaired or threatened by disease or injury, encompassing preventive measures, screening, tests in aid of diagnosis by a licensed doctor of medicine, osteopathy, dentistry, chiropractic, or podiatry and evaluation and invasive or noninvasive procedures with emphasis on the skeletal system, neuromuscular and cardiopulmonary function, as it relates to physical therapy. Physical therapy includes screening or evaluations performed to determine the degree of impairment of relevant aspects, such as but not limited to nerve and muscle function including subcutaneous bioelectrical potentials, motor development, functional capacity, and respiratory or circulatory efficiency. Physical therapy also includes physical therapy treatment performed upon referral by a licensed doctor of medicine, osteopathy, dentistry, chiropractic, or podiatry, including but not limited to exercises for increasing or restoring strength, endurance, coordination and range of motion, stimuli to facilitate motor activity and learning, instruction in activities of daily living, and the use of assistive devices and the application of physical agents to relieve pain or alter physiological status. The use of roentgen rays and radium for diagnostic or therapeutic purposes, the use of electricity for surgical purposes, including cauterization and colonic irrigations are not authorized under the term "physical therapy" as used in this chapter.

The corresponding definition of the "practice of acupuncture," found in KRS 311.672(5), reads as follows:

"Practice of acupuncture" means the insertion of acupuncture needles, with or without accompanying electrical or thermal stimula-

tion, at certain acupuncture points or meridians on the surface of the human body for purposes of changing the flow of energy in the body and may include acupressure, cupping, moxibustion, or dermal friction. The practice of acupuncture shall not include laser acupuncture, osteopathic manipulative treatment, chiropractic adjustments, *physical therapy*, or surgery.

(Emphasis added.) Thus, physical therapy performed by a licensed physical therapist is not the practice of acupuncture.

KRS 311.676(2) requires a practitioner of acupuncture to display a certification issued by the Board of Medical Licensure. An applicant for certification must have completed coursework approved by, and passed an examination issued by, the Accreditation Commission for Acupuncture and Oriental Medicine. KRS 311.674(1). Furthermore, under KRS 311.676(3), "A person who is not certified under KRS 311.671 to 311.686 shall not use any terms, words, abbreviations, letters, or insignia that indicate or imply that he or she is engaged in the practice of acupuncture."¹ KRS 311.677(1), however, clarifies that:

The provisions of KRS 311.671 to 311.686 shall not apply to [p]ersons licensed, certified, or registered under any other provision of the Kentucky Revised Statutes and does [*sic*] not prohibit them from rendering services consistent with the laws regulating their professional practices and the ethics of their professions[.]

From KRS 311.677(1) and 311.672(5), taken together, it is clear that a physical therapist practicing "dry needling" would only be engaging in the improper practice of acupuncture if the procedure did not fall within the scope of the practice of physical therapy.

In such technical matters, we must give some recognition to an opinion based on the Board of Physical Therapy's expertise in the field. "Great deference is always given to an administrative agency in the interpretation of a statute which is within its specific province." OAG 10-005 (quoting *Com. ex rel. Beshear*

¹ We are not confronted with a question related to KRS 311.676(3), since it is not suggested that physical therapists use any terminology or insignia to indicate or imply that they are practicing acupuncture when they perform "dry needling."

v. Kentucky Utilities Co., 648 S.W.2d 535, 537 (Ky. App. 1982)). This principle is known as "the doctrine of operative construction. Deference to an agency's interpretation is particularly appropriate when the agency is one of special competence and experience, and the agency's interpretation is longstanding." OAG 01-8. Although we have no indication that the Board has made an interpretation on the issue of "dry needling" prior to 2010, we do recognize the "special competence and experience" of the Board in this area.

In its 2010 opinion, the Board of Physical Therapy observed that "[d]ry needling is a treatment used to improve neuromuscular function," which is a goal authorized by KRS 327.010(1) and distinguishable from "purposes of changing the flow of energy in the body" through the use of "acupuncture points or meridians" as stated in the definition of acupuncture in KRS 311.672(5). The Board cautioned, however, that "a physical therapist must practice only those procedures that the physical therapist is competent to perform. The Board can discipline a physical therapist for 'engaging or permitting the performance of substandard patient care by himself or by persons working under their supervision due to a deliberate or negligent act or failure to act, regardless of whether actual injury to the patient is established.' KRS 327.070(2)."

In comments sent to this office, the present Board Chair, Troy L. Grubb, PT, DPT, OCS, ATC, states:

Dry needling may be a tool or technique also used by acupuncturists, but its purpose and context is very different. For example, PTs do not use dry needling for smoking cessation, infertility treatment, allergies, depression, or weight control.

We are further advised that the American Academy of Orthopedic Manual Physical Therapists issued a position statement in 2009 to the effect that "dry needling is within the scope of physical therapist practice." The Academy stated as follows:

Dry needling is a neurophysiological evidence-based treatment technique that requires effective manual assessment of the neuromuscular system. Physical therapists are well trained to utilize dry needling in conjunction with manual physical therapy interven-

tions. Research supports that dry needling improves pain control, reduces muscle tension, normalizes biochemical and electrical dysfunction of motor endplates, and facilitates an accelerated return to active rehabilitation.²

Even if dry needling by physical therapists could not be distinguished from acupuncture, however, Chapter 311 would not prohibit its practice by physical therapists as long as it is within the scope of the practice for which they are licensed.

The Federation of State Boards of Physical Therapy reported in a resource paper issued March 8, 2010, that fifteen (15) state licensing boards, including Kentucky's, had interpreted their own statutes to allow dry needling therapy by physical therapists, while five state boards had found the opposite. The Federation stated that "[s]ome of the reasons for finding against including intramuscular manual therapy in the scope and practice of a PT include the procedure being invasive, the technique is within the scope of acupuncture, and the lack of inclusion in the US educational curricula." Rulings from other jurisdictions, naturally, are based upon the language of each state's statutes, which can vary considerably. One additional state, Hawaii, had a statute expressly prohibiting physical therapists from "penetration of the skin."³ A supplement to this report, containing information as recent as February 2012, indicates that "26 jurisdictions ... have definitively ruled dry needling is allowed by PTs" while "7 ... have ruled definitively that it is not."

We are aware that ours is not the first opinion of an Attorney General on this subject. In 2012, Mississippi's Attorney General concluded that a physical therapist performing the "dry needling" procedure "in accordance with the Physical Therapy Board's rules, regulations or interpretation of its enabling statutes relating to performing" the procedure did not violate Mississippi law governing the unlicensed practice of acupuncture. A key factor in Mississippi's analysis was the fact that the statutory definition of "physical therapy" included "[a]dministering treatment by ... mechanical devices," which could reasonably

² <http://aaompt.org/about/statements.cfm>

³ *Intramuscular Manual Therapy (Dry Needling) Resource Paper*, Federation of State Boards of Physical Therapy, March 8, 2010, p. 4.

be construed as including a needle. Furthermore, the Mississippi statute defining "acupuncture" included "the insertion and manipulation of needles to the body, and the use of Oriental medicine and other modalities and procedures at specific locations on the body, for the prevention or correction of any disease, illness, injury, pain or other condition." The Attorney General reasoned:

Although this definition could certainly include "dry needling" as that term is used in the practice of acupuncture, it is our opinion that this definition does not reserve to acupuncturists the exclusive right to use needles for therapeutic treatment.

State of Mississippi, Office of the Attorney General, Opinion No. 2012-00428, 2012 WL 6065221 (September 12, 2012).

Maryland's Attorney General has also addressed the question and similarly found that "dry needling" could be lawfully understood as within the scope of the use of "mechanical devices" by physical therapists under that state's statute. The Attorney General likewise found that the Maryland definition of "perform acupuncture," "to stimulate a certain point or point on or near the surface of the human body by the insertion of needles to prevent or modify the perception of pain or to normalize physiological functions, including pain control, for the treatment of ailments or conditions of the body," did not reserve the use of such needles exclusively to acupuncturists:

State law recognizes that the scope of practice of health care professions may overlap and confers extensive discretion on licensing boards to define the scope of a profession within statutory limits.

Therefore, the Attorney General concluded, the Maryland Physical Therapy Board could lawfully define the practice of physical therapy as including the use of acupuncture needles.⁴ 95 Md. Op. Atty. Gen. 138, 2010 WL 3547902 (August 17, 2010).

⁴ Because Maryland's statutes imposed stringent standards for the use of acupuncture needles by physicians, the Attorney General also concluded that to include dry needling within the scope of its profession the Physical Therapy Board must promulgate administrative regulations imposing standards of practice at least equal to those governing physicians performing acupuncture.

Our information received from the Kentucky Board of Physical Therapy indicates that the use of dry needles by physical therapists has "goals including to relieve pain, increase extensibility of scar tissue, or improve neuromuscular firing patterns." In determining whether dry needling may lawfully be used to accomplish these goals, we note that the definition of "physical therapy" in KRS 327.010(1), quoted above, includes "invasive or noninvasive procedures." Physical therapists may perform evaluations to determine "impairment of ... nerve and muscle function including subcutaneous bioelectrical potentials," and may use "stimuli to facilitate motor activity" as well as "assistive devices and the application of physical agents to relieve pain or alter physiological status." We find that "assistive devices" and "physical agents" (like "mechanical devices" in Mississippi and Maryland) are categories which may include needles. This is particularly evident in light of the fact that physical therapists in Kentucky are permitted to use "invasive" procedures.

Given these specific and non-exclusive categories of treatments which physical therapists are authorized to perform, we agree with the Board of Physical Therapy that the definition in KRS 327.010(1) is broad enough to include "dry needling" by a physical therapist with adequate training and skill to perform the procedure competently. As in Mississippi and Maryland, the definition of the "practice of acupuncture" in KRS 311.672(5) does not reserve the use of solid filament needles to that profession alone. Therefore, the mere use of "dry needling" by a licensed physical therapist would not constitute the practice of acupuncture.

The Acupuncture Advisory Board and the Kentucky State Acupuncture Association, in comments addressed to this office, have expressed concern that physical therapists performing the procedure will not be adequately trained or skilled in comparison to acupuncturists. We trust, however, that the public health will be adequately protected by the Board of Physical Therapy's position that a physical therapist performing "dry needling" must have sufficient training and competence in this procedure. Nevertheless, as the Board indicated, this procedure is "not currently considered an entry-level skill for physical therapists, [but] an advanced skill that can be obtained post-graduation." In the interest of further public protection, we would therefore encourage the Board to use its regulatory authority under KRS 327.040 to establish fixed education and safety standards for the practice of "dry needling" by physical therapists in Kentucky.

Jack Conway
Attorney General

A handwritten signature in black ink, appearing to read "James M. Herrick". The signature is fluid and cursive, with a large initial "J" and a long, sweeping underline.

James M. Herrick
Assistant Attorney General

DOUGLAS F. GANSLER
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(410) 576-7036
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STATE OF MARYLAND
OFFICE OF THE ATTORNEY GENERAL

August 17, 2010

(410) 576-6327
WRITER'S DIRECT DIAL No.

Tyme Gigliotti, L.Ac., Chair
Maryland Department of Health
and Mental Hygiene
201 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Gigliotti:

On behalf of the State Acupuncture Board, you have asked for our opinion concerning a procedure known as "dry needling" that is performed by some physical therapists. Dry needling involves the insertion of acupuncture needles into the skin at certain locations for a therapeutic effect – usually relief of pain. You have asked whether the insertion of acupuncture needles in a patient falls within the definition of the practice of physical therapy in Maryland and whether it is appropriate for the Board of Physical Therapy Examiners ("Physical Therapy Board") to include it within the scope of practice of physical therapy without legislation on the subject. You state that the Acupuncture Board believes that the authority to insert needles is reserved, under the Maryland Acupuncture Act, to licensed acupuncturists and certain health care professionals specifically exempted from its licensing requirements.

The authority to use acupuncture needles for therapeutic purposes is not necessarily reserved exclusively to licensed acupuncturists or those specifically exempted from the licensing requirement for acupuncturists. State law recognizes that the scope of practice of health care professions may overlap and confers extensive discretion on licensing boards to define the scope of a profession within statutory limits. In our opinion, the Physical Therapy Board may determine that dry needling is within the scope of practice of physical therapy if it conducts rulemaking under the State Administrative Procedure Act and adopts a regulation that relates dry needling to the statutory definition of practice of physical therapy. Any such process should consider standards for education and training that presumably would be at least as strict as those set by the Legislature for physicians who use acupuncture needles for similar therapeutic purposes.

95 Opinions of the Attorney General (2010)

I

Background

A. *Dry Needling*

“Dry needling” refers to the insertion of one or more solid needles into the skin for a therapeutic purpose without injecting or withdrawing any fluids. There apparently are several variants of the technique, including “trigger point dry needling” (also called intramuscular stimulation or intramuscular manual therapy by some), in which an acupuncture needle is inserted into the skin and muscle for the treatment of pain. J. Dommerholt, et al., *Trigger Point Dry Needling*, 14:4 Journal of Manual and Manipulative Therapy E70 (2006).

Dry needling is controversial. Few physical therapists have been trained in it or use the technique. *Id.* Physical therapy boards in at least half a dozen states and several countries have embraced it as within the scope of practice of physical therapy while others have declared it to be outside the scope of practice. *Id.*; see also Federation of State Boards of Physical Therapy, *Intramuscular Manual Therapy (Dry Needling) – Resource Paper* (March 8, 2010) at p. 6; Memorandum of Debi Mitchell, Practices Issues Coordinator, Physical Therapy Board of California (December 8, 2006) (stating that physical therapists in California are not authorized to perform dry needling).¹

B. *Dry Needling in Maryland*

In Maryland, the Physical Therapy Board and the Acupuncture Board have staked out contrary positions concerning regulation of dry needling.

Physical Therapy Board

In 1997, the Physical Therapy Board informally advised one of its licensees that it was of the opinion that “there is nothing in the Physical Therapy Statute ... to preclude a physical therapist from performing intramuscular stimulation (IMS) by dry needling if adequate training and competency can be demonstrated.... The Board feels that physical therapists, especially those with manual therapy skills, are qualified to perform dry needling.” Letter of Charles M. Dilla, P.T., Chairman of the Maryland Board of Physical Therapy Examiners, to Jan Dommerholt, MPS, P.T. (September 18, 1997). The Physical Therapy Board has not

¹ The Acupuncture Board and Maryland Acupuncture Society provided copies of minutes of meetings of other state physical therapy boards in which those boards expressed the view that dry needling is outside the scope of practice of physical therapy. See, e.g., Minutes of Delaware Examining Board of Physical Therapists and Athletic Trainers (October 27, 2009) at p. 6; Minutes of Idaho State Board of Physical Therapy (May 4, 2007) at p. 2; Minutes of New Jersey State Board of Physical Therapy Examiners (November 28, 2006) at p. 3.

adopted any regulations that address dry needling or that specify any particular training or education as a prerequisite to using the technique.

After the Acupuncture Board requested this opinion, the Physical Therapy Board provided us with various materials to support its position that dry needling, as well as certain other invasive procedures,² are within the scope of practice of physical therapy. The Physical Therapy Board defines dry needling as “a technique used to treat myofascial [muscle] pain that uses a dry needle, without medication, that is inserted into a trigger point with the goal of releasing/inactivating the trigger points and relieving pain.” Federation of State Boards of Physical Therapy, *Intramuscular Manual Therapy (Dry Needling) – Resource Paper* (March 8, 2010) at p. 3.³ The Physical Therapy Board contrasts dry needling, which it argues is based on modern western ideas concerning anatomy and neurology, to acupuncture, which it characterizes as a form of health care based on a theory derived from Chinese medicine. The Physical Therapy Board also asserts that use of the technique by physical therapists is limited by virtue of the Board’s regulation providing that a “physical therapist shall work within the physical therapist’s competency in physical therapy evaluation and treatment.” COMAR 10.38.03.02A(2)(f).

Acupuncture Board

The State Acupuncture Board has a different view. It reports that it recently received a complaint that an acupuncturist was performing a physical therapy technique – *i.e.*, dry needling. The Acupuncture Board determined that dry needling is within the scope of practice of acupuncture and closed its investigation. In the letter requesting this opinion, the Acupuncture Board stated that it believes not only that dry needling is within the scope of practice of acupuncture, but also that the authority to insert needles in skin is reserved to licensed acupuncturists and to those health care professionals exempted by the acupuncture statute from the licensing requirement – physicians, dentists, and veterinarians.⁴ Some of the materials submitted to us maintain that the theory underlying dry needling is identical to a particular branch of Chinese medicine called Ashi and that dry needling is therefore indistinguishable from acupuncture.

² Among the other invasive procedures described in those materials were electromyography, wound debridement, staple removal, and other procedures. This opinion addresses only dry needling.

³ We also received materials from the Maryland Chiropractic Association supporting the conclusion that dry needling is within the scope of practice of physical therapy. The State Board of Chiropractic and Massage Therapy Examiners may authorize individuals to practice chiropractic with a right to practice physical therapy, if the certain criteria are met. Annotated Code of Maryland, Health Occupations Article, §§3-101(g), 3-301, 3-302(d), 3-303, 3-304(e)(2).

⁴ We also received materials from the Maryland Acupuncture Society and nearly identical letters from approximately 30 licensed acupuncturists arguing that there is no substantive difference between acupuncture and dry needling.

We need not resolve the academic debate whether acupuncture is limited to the application of Chinese medical theories or whether the theory underlying dry needling can be traced to a branch of Chinese medicine. As indicated in the next section, the General Assembly has defined acupuncture, for purposes of Maryland law, both with and without reference to Chinese medicine. More importantly, the scope of practice of physical therapy and the scope of practice of acupuncture are not necessarily mutually exclusive.

C. Regulation of Use of Acupuncture Needles in Maryland

There appears to be no dispute that dry needling involves the same type of needles used by acupuncturists and that the technique bears at least a superficial similarity to acupuncture. The use of acupuncture needles for therapeutic purposes has been a key part of traditional Chinese medicine for millennia. 80 *Opinions of the Attorney General* 180 (1995). It was brought to the United States by Chinese immigrants during the 19th century, but was not practiced outside the Chinese community until the early 1970s. *Id.* At that time, the State began to regulate the use of acupuncture needles.

1. 1970s: Regulation of Acupuncture as Practice of Medicine

In late 1973 and again in early 1974, Attorney General Burch advised that the practice of acupuncture was the practice of medicine and therefore could be performed only by a licensed physician. 59 *Opinions of the Attorney General* 3 (1974); Advice Letter to Daniel T. Doherty, Chairman, Workmen's Compensation Commission (November 28, 1973). That opinion also stated that the Board of Medical Examiners could adopt a regulation allowing physicians to delegate limited, specific manual procedures to unlicensed assistants in connection with acupuncture. Shortly thereafter, the Legislature confirmed that advice in legislation. Chapter 530, Laws of Maryland 1974. That law did not define acupuncture, but simply included acupuncture within the scope of practice of medicine and authorized non-physicians to perform acupuncture only under the supervision of a licensed physician.

2. 1982: Definition of "Acupuncture" Performed by Physicians

In 1982, the General Assembly amended the licensing statute for physicians to provide for the registration of individuals whom the Board of Medical Examiners found to have adequate education, training, or experience in acupuncture. The statute authorized registered practitioners to perform acupuncture under the general supervision of physicians who had themselves completed special training in acupuncture. Chapter 644, Laws of Maryland 1982. That law also provided, for the first time, a definition of acupuncture. It defined "perform acupuncture" to mean:

to stimulate a certain point or points on or near the surface of the human body by the insertion of needles to prevent or modify the perception of pain or to normalize physiological functions, including pain control, for the treatment of ailments or conditions of the body.

Annotated Code of Maryland, Health Occupations Article (“HO”), §14-101(h) (1981 & 1982 Supp.). As is evident, this definition would include the current practice of dry needling. This definition does not refer to any particular philosophy that informs the use of the needles.

3. 1994: Maryland Acupuncture Act

In 1994, the General Assembly created the State Acupuncture Board and began to regulate acupuncturists as a separate health care profession. Chapter 620, Laws of Maryland 1994, *codified at* HO §1A-101 *et seq.* In the definition of “acupuncture” in the licensing statute, the General Assembly for the first time made reference to a particular philosophy guiding the use of the needles by that profession. In particular, it defined acupuncture as a form of health care based on “a theory of energetic physiology” involving the “use of oriental medical therapies.”⁵ Physicians, dentists, and veterinarians were specifically excluded from regulation under the State Acupuncture Law. HO §1A-102.⁶

The 1994 law retained the provision in the physician licensing statute that required registration of physicians who perform acupuncture. The definition of “perform acupuncture” in the Medical Practice Act has remained unchanged since 1982. In particular, that definition refers generally to the insertion of needles “to prevent or modify the

⁵ The Maryland Acupuncture Act defines acupuncture as “a form of health care, based on a theory of energetic physiology, that describes the interrelationship of the body organs or functions with an associated point or combination of points.” HO §1A-101(b). The statute defines the practice of acupuncture as:

(1) ... the use of *oriental medical therapies* for the purpose of normalizing energetic physiological functions including pain control, and for the promotion, maintenance, and restoration of health.

(2) “Practice acupuncture “ includes:

(i) Stimulation of points of the body by the insertion of acupuncture needles;

(ii) The application of moxibustion; and

(iii) Manual, mechanical, thermal, or electrical therapies only when performed *in accordance with the principles of oriental acupuncture medical theories*.

HO §1A-101(f) (emphasis added). In 80 *Opinions of the Attorney General* 180 (1995), Attorney General Curran relied in part on the references to “oriental medical therapies” in concluding that the Acupuncture Act authorized licensed acupuncturists to treat animals.

⁶ In addition, several other categories of individuals were excluded from the licensing requirements—*e.g.*, federal employees practicing acupuncture within the scope of their employment, students, visiting teachers. See HO §1A-301(b).

perception of pain or to normalize physiological functions” without reference to any particular theory of medicine. HO §14-101(i).⁷ In order to register to “perform acupuncture,” a physician must complete at least 200 hours of instruction in acupuncture and satisfy other conditions set by the Physicians’ Board. HO §14-504(c).

II

Scope of Practice of a Health Care Profession

Disputes over the boundaries of the scope of practice of licensed occupations are not uncommon. On occasion, this Office has been asked to provide guidance on how to navigate those boundaries. See 88 *Opinions of the Attorney General* 182 (2003) (professional engineers and private detectives); 80 *Opinions of the Attorney General* 180 (1995) (acupuncturists and veterinarians); 76 *Opinions of the Attorney General* 3 (1991) (physical therapists and chiropractors); 73 *Opinions of the Attorney General* 208 (1988) (clinical social workers and physicians); 71 *Opinions of the Attorney General* 149 (1986) (whether chiropractors may use certain laboratory diagnostic techniques).

It is frequently the case that the scopes of practice of two occupations overlap. “[T]here is nothing intrinsically amiss about legislative authorization for two separate health occupations to perform some of the same acts.” 76 *Opinions of the Attorney General* at 13; see also 80 *Opinions of the Attorney General* at 181 (“Depending on the statutory scheme, the same activities could fall within the scope of practice of two separate health occupations.”).

The scopes of practice of regulated health care professions are set forth in the definitional sections of the various titles of the Health Occupations Article of the Annotated Code of Maryland. The licensing statutes presume that there are areas of overlap among the scopes of practice of various health care professions. Thus, each licensing statute provides that it “does not limit the right of an individual to practice a health care occupation that the individual is authorized to practice under the [Health Occupations Article].” See, e.g., HO §1A-102(a) (Maryland Acupuncture Act); HO §13-102(1) (Maryland Physical Therapy Act); see also 76 *Opinions of the Attorney General* at 6. In providing for overlapping scopes of practice for various health care professions, the General Assembly has fostered consumer choice in the selection of treatment and practitioner. 80 *Opinions of the Attorney General* at 182 (concluding that both acupuncturists and veterinarians could perform acupuncture on animals within the scope of their respective practices).

Thus, as appropriately phrased in your letter, the critical question for resolving this dispute is whether dry needling falls within the scope of practice of physical therapy, regardless of whether it would also fall within the scope of practice of acupuncture.

⁷ Effective October 1, 2010, this definition will be recodified as HO §14-101(k).

In answering such a question we first look to whether the General Assembly has clearly resolved the issue. Has the General Assembly, in the Physical Therapy Act, clearly included dry needling within the scope of practice of physical therapy? If the statutory language does not clearly settle the issue, then we must assess whether the licensing board has sufficient authority to find that the technique is within the scope of practice of the profession it regulates. In other words, would the Physical Therapy Board be acting within its statutory authority if it adopted a regulation allowing its licensees to perform the dry needling? See 76 *Opinions of the Attorney General* at 8-11.

If a licensing board has authority to declare a particular technique to be within the scope of practice of its profession, it can exercise that authority only in certain ways. Such a determination would be without legal effect if the board does not follow the rulemaking or declaratory ruling procedures of the Administrative Procedure Act. 76 *Opinions of the Attorney General* at 6-7 (Physical Therapy Board's statement that certain procedures were within the scope of practice of physical therapy was without legal effect as the board did not follow APA procedures in reaching that conclusion).

III

Scope of Practice of Physical Therapy

A. Statute

The Maryland Physical Therapy Act sets forth the scope of practice of physical therapy as follows:

(1) "Practice physical therapy" means to practice the health specialty concerned with:

(i) The prevention of disability in patients or clients; and

(ii) The physical rehabilitation of patients or clients with a congenital or acquired disability.

(2) "Practice physical therapy" includes:

(i) Performing an evaluation of the physical therapy needs of patients or clients;

(ii) Performing and interpreting tests and measurements of neuromuscular and musculoskeletal functions to aid treatment;

(iii) Planning treatment programs that are based on test findings; and

(iv) Except as provided in paragraph (3) of this subsection, administering treatment with therapeutic exercise, therapeutic massage, mechanical devices, or therapeutic agents that use the physical, chemical, or other properties of air, water, electricity, sound, or radiant energy.

(3) “Practice physical therapy” does not include using:

- (i) X-rays;
- (ii) Radioactive substances;
- (iii) Electricity for cauterization or surgery.

HO §13-101(i). The Physical Therapy Board is authorized to adopt regulations to carry out its licensing statute. HO §13-206(a)(1). The Board thus has authority to adopt legislative rules – *i.e.*, regulations that have binding effect – on scope of practice matters. 76 *Opinions of the Attorney General* at 7; 75 *Opinions of the Attorney General* 37, 47-49 (1990).⁸ Such rules must, of course, be consistent with the statute. *Fogle v. H&G Restaurant, Inc.*, 337 Md. 441, 453, 654 A.2d 449 (1995).

As is evident, the Physical Therapy Act makes no specific mention of “dry needling,” “trigger points,” or any other use of needles. On the other hand, treatment by needles is not explicitly excluded from the statute either, as is the use of x-rays. The various methods of administering treatment that are explicitly authorized in the statute appear to be unrelated to dry needling, unless acupuncture needles would be considered “mechanical devices.” Thus, the statute itself does not clearly answer the question whether dry needling is within the scope of practice of physical therapy.

Whether dry needling is within the scope of physical therapy therefore depends on whether the Physical Therapy Board has authority to adopt a regulation that finds acupuncture needles to be a “mechanical device” for purposes of this statute.

B. *Whether the Term “Mechanical Device” Could Include Acupuncture Needles*

The reference to the use of “mechanical devices” by physical therapists has been a part of the law since the State first regulated physical therapists in 1947. *See* Chapter 906, Laws of Maryland 1947. Then, as now, the statute defined physical therapy to include treatment of injuries or disabilities by a variety of means, including exercise, massage, heat, cold, air, and light, among other things. There is no legislative history that sheds light on the range of implements covered by the phrase “mechanical devices.” And we have not found a judicial construction of the phrase. But it seems fair to conclude that, in using general terms like

⁸ The Act forbids the practice of physical therapy without a license from the Physical Therapy Board or other authorization by law. HO §§13-301(a), 13-401(a).

“exercise,” “heat,” “cold,” and “mechanical device,” the General Assembly did not intend to catalog each particular technique or limit the practice of physical therapy to the particular devices in existence in 1947. The general phrase “mechanical device” could encompass new devices that might be developed for physical therapists to administer treatment. In our view, the General Assembly intended to give the Physical Therapy Board substantial discretion to recognize new mechanical devices that might be employed in the practice of physical therapy.

The phrase “mechanical device” appears susceptible to a broad reading. A widely used dictionary defines “mechanical” as “of or relating to machines or tools” and “device” as “something constructed for a particular purpose.” Webster’s New College Dictionary (1995) at pp. 310, 679. In other words, in this context a mechanical device could be any tool designed for purposes related to physical therapy – *i.e.*, the prevention of disability or the physical rehabilitation of individuals with congenital or acquired disabilities.

Acupuncture needles have an ancient lineage in other parts of the world. But their use among the general population in Maryland for therapeutic purposes is relatively recent. As best we can tell from the materials available to us, the practice of dry needling as a form of therapy supposedly distinct from acupuncture did not appear until the 1970s. Hobbs, *Dry Needling and Acupuncture: Emerging Professional Issues*, Qi-Unity Report (September/October 2007). It apparently first came to the attention of the Physical Therapy Board in the mid-1990s. In our view, the Physical Therapy Board has discretion to determine by regulation whether acupuncture needles are a mechanical device for purposes of the Physical Therapy Act.

C. Process

The Physical Therapy Board’s informal statement that dry needling is consistent with the practice of physical therapy does not carry the force of law, as it is not a regulation adopted pursuant to the State Administrative Procedure Act, Annotated Code of Maryland, State Government Article, §10-101 *et seq.* It thus has no legal effect. *See 76 Opinions of the Attorney General* at 6-7 (Physical Therapy Board statement concerning scope of practice that was not incorporated in a regulation was without legal effect); *80 Opinions of the Attorney General* at 185-86 (Acupuncture Board’s statement concerning scope of practice was ineffective legally because it had not been adopted as a regulation). In order to adopt a policy concerning dry needling that has legal effect, the Physical Therapy Board must undertake a rulemaking process that gives fair consideration to the objections to the use of acupuncture needles by physical therapists – objections that apparently have led a number of state physical therapy boards to find dry needling to be outside the scope of practice of physical therapy. In a previous opinion, Attorney General Curran outlined the type of inquiry the Physical Therapy Board must undertake:

We suppose that, for example, the Physical Therapy Board would need to consider whether the procedure is akin to those for which physical therapists are trained; whether the procedure, if misapplied, entails an unusual risk of injury; and

whether special diagnostic safeguards beyond those used by physical therapists are needed. We do not pretend to know whether these are the only questions, or even exactly the right ones to ask. Our point is that experts in physical therapy, not lawyers, are the people to answer them, through a procedure that allows all pertinent material to be considered. The purpose of the rulemaking would be to enable the Physical Therapy Board to learn and evaluate the legislative facts necessary to a sound decision.

76 Opinions of the Attorney General at 14 (footnote omitted). Moreover, as part of its process the Physical Therapy Board cannot ignore that, beginning 35 years ago, the Legislature has closely regulated the use of acupuncture needles in several respects under the rubric of “acupuncture,” defined in at least two ways. If, after conducting a rulemaking process, the Physical Therapy Board finds that an acupuncture needle is a “mechanical device” and that dry needling is within the scope of practice of physical therapy, it should also define the standards for the use of dry needling, including standards for the education and training of physical therapists who engage in the practice.

In developing any such standards, the Physical Therapy Board should consider the standards the Legislature has established for physicians who “perform acupuncture.” The practice of dry needling, as described in the materials provided to us, appears to be indistinguishable from the definition of “perform acupuncture” in the Maryland Medical Practice Act. A physician who performed dry needling would be stimulating certain points near the surface of a person’s body “by the insertion of needles to prevent or modify the perception of pain or to normalize physiological functions, including pain control, for the treatment of ailments or conditions of the body.” Such a physician would, in the words of the Maryland Medical Practice Act, “perform acupuncture.” HO §14-101(i). Under the Medical Practice Act, a physician must obtain at least 200 hours of instruction and meet other conditions set by the State Board of Physicians in order to use acupuncture needles in that way. HO §14-504.

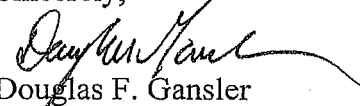
It seems very unlikely that the General Assembly would intend that physicians satisfy such education requirements and specially register with their own licensing board in order to insert “needles to prevent or modify the perception of pain or to normalize physiological functions,” but permit physical therapists to perform the same technique without any special educational requirements or oversight. Given that the Legislature has placed specific limitations on a physician’s use of acupuncture needles in the Medical Practice Act, any rulemaking process adopted by the Physical Therapy Board would presumably need to consider standards and restrictions at least as stringent as those imposed on physicians.


IV

Conclusion

The authority to use acupuncture needles for therapeutic purposes is not necessarily reserved exclusively to licensed acupuncturists or those specifically exempted from the licensing requirement for acupuncturists. State law recognizes that the scope of practice of health care professions may overlap and confers extensive discretion on licensing boards to define the scope of a profession within statutory limits. In our opinion, the Physical Therapy Board may determine that dry needling is within the scope of practice of physical therapy if it conducts rulemaking under the State Administrative Procedure Act and adopts a regulation that relates dry needling to the statutory definition of the practice of physical therapy. Any such process should consider standards for education and training that presumably would be at least as strict as those set by the Legislature for physicians who use acupuncture needles for similar therapeutic purposes.

Sincerely,


Douglas F. Gansler
Attorney General


Robert N. McDonald
Chief Counsel
Opinions and Advice

STATE OF MISSISSIPPI



JIM HOOD
ATTORNEY GENERAL

OPINIONS
DIVISION

September 10, 2012

Debbie Moore DC, LAc
Chair of Mississippi Council of Advisors in Acupuncture
P.O. Box 326
Picayune, MS 39466

and

Mississippi State Board of Medical Licensure
Attn: Mississippi Council of Advisors in Acupuncture
1867 Crane Ridge Drive, Ste. 200B
Jackson, MS 39216

Re: *Authority of State Board of Physical Therapy to Include Dry Needling within the Scope of Practice of Physical Therapy*

Dear Dr. Moore:

Attorney General Jim Hood has received your request for an official opinion and assigned it to me for research and response.

Issue Presented

Your letter generally asks for our opinion on a recent ruling of the Mississippi State Board of Physical Therapy ("Physical Therapy Board"). We understand this ruling to be a proposed rule that has been filed with the Secretary of State. The proposed rule defines intramuscular manual therapy ("IMT"), deems IMT to be within the practice of physical therapy and sets forth the parameters, educational requirements and other requirements for its use by physical therapists. Specifically, your letter asks the following (paraphrased) questions:

1. Is dry needling a form of acupuncture as defined in Mississippi Code Ann. Section 73-71-5?
2. If the answer to question number 1 is yes, are physical therapists performing dry needling in violation of Sections 73-71-15 and 73-71-37?

Debbie Moore DC, Lac
 September 10, 2012
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3. Does the Physical Therapy Board have the authority to include dry needling/acupuncture in its scope by rule or regulation or must this type of scope change go through the Mississippi Legislature?
4. Must physical therapists be fully qualified and licensed as acupuncturists by the Mississippi State Board of Medical Licensure before performing acupuncture or dry needling?

Brief Response

The questions posed in your letter could be understood to question whether a physical therapist not licensed as an acupuncturist could engage in the "practice of acupuncture" as defined by Mississippi statute. Our understanding, however, is that your questions center on the Physical Therapy Board's authority to adopt the proposed rule and the propriety of physical therapists acting pursuant to such rule. Accordingly, this opinion is limited to the authority of the Physical Therapy Board regarding IMT as defined in the proposed rule and the propriety of physical therapists performing IMT in accordance with the proposed rule and under the licensing requirements of the Physical Therapy Board. With these limitations in mind, this office's opinions on the above-stated questions are

1. It is this office's opinion that the Physical Therapy Board is authorized by state law to properly include IMT, commonly referred to as "dry needling," within the practice of physical therapy. It is our office's opinion that the inclusion of certain types of dry needling within the definition of acupuncture does not reserve the technique exclusively to acupuncturists nor does such inclusion operate to prohibit the Physical Therapy Board from adopting a proposed rule that allows IMT.
2. It is our office's opinion that a physical therapist performing IMT in accordance with the Physical Therapy Board's rules, regulations or interpretation of its enabling statutes relating to performing IMT is not in violation of Sections 73-71-15 and 73-71-37 which, respectively, define and impose penalties for the unlicensed practice of acupuncture.
3. It is our office's opinion that the Physical Therapy Board does have the authority to include IMT and dry needling in its scope by rule or regulation and that legislative approval or enactment is not required.
4. See answers to numbers 1 through 3 above. A physical therapist acting in compliance with the Physical Therapy Board's rules and regulations regarding the practice of physical therapy and IMT or dry needling is not required to be licensed as an acupuncturist by the State Board of Medical Licensure.

Debbie Moore DC, Lac
 September 10, 2012
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Legal Analysis and Discussion

Certain professions overlap such that certain activities performed under the licensing scheme of a particular licensure board can likewise be performed legally under the licensing scheme of another licensure board. See MS AG Op. Brister (June 12, 2019)(citing *State Bd. of Reg. for Professional Engineers v. Rogers*, 120 So. 2d 772 (Miss. 1960)). This issue of overlapping disciplines appears to be equally present in the healthcare professions. In particular, the issue of IMT or dry needling and whether it is a technique to be performed by physical therapists or acupuncturists has been the subject of debate and discussion throughout the United States. Our research indicates that as of 2010, fifteen (15) state licensing boards had concluded that IMT was within the practice of physical therapy. On the other side of the ledger, at least five (5) state licensing boards had concluded that IMT was not within the practice of physical therapy.

As noted, states have taken various approaches regarding whether IMT or dry needling should be within the scope of acupuncture, physical therapy or both. Georgia law takes the latter approach and demonstrates the overlapping of professions. Section 43-33-3 of the Georgia Code specifically defines "physical therapy" to include "dry needling" while Section 43-34-62 defines "practice of acupuncture" to include "dry needling" as a "technique of acupuncture." Given the various positions taken both legislatively and by licensing boards, a decision by the Physical Therapy Board either excluding or including IMT as a physical therapy technique would be factually supportable. However, the question here turns on statutory construction and whether the Physical Therapy Board is authorized to define IMT as a physical therapy technique and/or whether state statutes governing acupuncture operate to prevent such a determination.

It is the opinion of this office that the relevant statutes give the Physical Therapy Board authority to promulgate the proposed rule on IMT. Section 73-23-43 authorizes the Physical Therapy Board:

(e) To adopt, amend or repeal any rules or regulations necessary to carry out the purposes of this chapter and the duties and responsibilities of the board, in accordance with Section 25-43-1 et seq. Such rules, when lawfully adopted, shall have the effect of law;

(h) To regulate the practice of physical therapy by interpreting and enforcing this chapter;

This section further provides that in order to allow the Physical Therapy Board to safeguard public health, safety and welfare, "[t]he powers and duties enumerated . . . are to be liberally construed to accomplish this objective." The Physical Therapy Board clearly has the authority to interpret the law and carry out the law through regulations.

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It is the opinion of this office that this authority extends to defining through regulations the specific acts that fit within the statutory definition of the practice of physical therapy. See MS AG Op. Brister (June 29, 2012) (Opining that although the Board of Professional Engineers and Surveyors cannot expand the definition of the "practice of engineering," the Board does have the authority to identify which tasks fall within the statutory definition.) Section 75-23-33 defines "practice of physical therapy" to include:

Administering treatment by therapeutic exercise, neurodevelopmental procedures, therapeutic massage, mechanical devices and therapeutic agents which employ the physical, chemical and other properties of air, water, heat, cold, electricity, sound and radiant energy for the purpose of correcting or alleviating any physical condition or preventing the development of any physical or mental disability. The use of roentgen rays and radium for any purpose, and the use of electricity for surgical purposes including cauterization, are not part of physical therapy . . . (emphasis added).

The Maryland Attorney General was asked to address nearly the same issues regarding the use of "dry needling" by physical therapists. The Maryland statute, like Mississippi's statute, defined the practice of physical therapy to include "administering treatment with therapeutic exercise, therapeutic massage, mechanical devices, or therapeutic agents that use the physical, chemical, or other properties of air, water, electricity, sound, or radiant energy." MD AG Op. Kaufman, 2010 WL 3547902 (Aug. 17, 2010). In his opinion, the Maryland Attorney General concluded that "[t]he phrase 'mechanical device' appears susceptible to a broad reading" and further concluded that a needle could be a mechanical device used for "purposes related to physical therapy." *Id.* After discussing statutes similar to those in Mississippi regarding the authority of Maryland physical therapy board, the Maryland Attorney General opined as follows:

The reference to the use of "mechanical devices" by physical therapists has been a part of the law since the State first regulated physical therapists in 1947. See Chapter 906, Laws of Maryland 1947. Then, as now, the statute defined physical therapy to include treatment of injuries or disabilities by a variety of means, including exercise, massage, heat, cold, air, and light, among other things. There is no legislative history that sheds light on the range of implements covered by the phrase "mechanical devices." And we have not found a judicial construction of the phrase. But it seems fair to conclude that, in using general terms like "exercise," "heat," "cold," and "mechanical device," the General Assembly did not intend to catalog each particular technique or limit the practice of physical therapy to the particular devices in existence in 1947. The general phrase "mechanical device" could encompass new devices that might be developed for physical therapists to administer treatment. In our view, the General Assembly intended to give the Physical Therapy Board

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substantial discretion to recognize new mechanical devices that might be employed in the practice of physical therapy.

Id. at 6-7. It is the opinion of this office that the Mississippi Legislature's broad definition of physical therapy and the types of devices that may be used coupled with the Physical Therapy Board's statutory grant of interpretative and regulatory authority authorizes the Physical Therapy Board to include IMT as a technique within the field of physical therapy.

Your letter also directs our attention to various statutes governing acupuncture and various related definitions. In particular, you directed our attention to Section 73-71-5(m)(1) which defines "acupuncture" to include "the insertion and manipulation of needles to the body, and the use of Oriental medicine and other modalities and procedures at specific locations on the body, for the prevention or correction of any disease, illness, injury, pain or other condition." Although this definition could certainly include "dry needling" as that term is used in the practice of acupuncture, it is our opinion that this definition does not reserve to acupuncturists the exclusive right to use needles for therapeutic treatment. This is the same conclusion reached by the Maryland Attorney General. See MD AG Op. Kaufman, 2010 WL 3547902 (Aug. 17, 2010).

The possibility for such overlaps was provided for by statute. Section 73-71-17 of the acupuncture statute states "[t]his act shall not be construed to limit, interfere with, or prevent any other class of licensed health care professionals from practicing within the scope of their licenses as defined by each profession's state licensing statute." This statutory language was apparently included to cover a situation such as the instant one in which a health care professional from another discipline is authorized to perform techniques that resemble or overlap with the practice of acupuncture. Thus, it is our opinion that statutory authorization for the use of needles for therapeutic treatment by acupuncturists does not exclude therapeutic use of needles by physical therapist where, as here, the Physical Therapy Board has acted to recognize such use as a physical therapy technique. We believe that a contrary conclusion would lead to untoward and unintended consequences. In addition to use of needles, "[t]echniques of acupuncture" also include "applications of cold packs, dietary, nutritional and lifestyle counseling, manual therapy (Tui Na), massage, breathing and exercise techniques." If the definition of acupuncture could be used to exclude the use of needles from physical therapists, then similar logic might be used to exclude other professions from use of these various techniques that are also included in the definition of acupuncture.

Both the Mississippi Council of Advisors in Acupuncture and the Physical Therapy Board provided valuable information including studies and positions by various organizations and associations involving both professional disciplines. The literature demonstrates an ongoing debate with many factual issues raised by both sides. One such issue is whether acupuncture is based on Chinese or Oriental techniques as opposed to IMT which is based on Western medical concepts. Indeed, Section 73-71-5(m)(1) in defining acupuncture references Oriental medicine; and the Physical Therapy

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Board's proposed regulation describing IMT references Western medical concepts. We were also provided with information related to standards, training and continuing education requirements. However, under Mississippi law, the resolution of the issues presented turns not on these policy and factual determinations but instead on whether the Physical Therapy Board has the authority to include IMT within the definition of Physical Therapy. It is the opinion of this office that the Physical Therapy Board has this authority.

Your letter cites our opinion in MS AG Op. Vann Craig (March 27, 2009) as support for proposition that the Physical Therapy Board cannot include IMT within the practice of physical therapy. In that situation, the State Board of Pharmacy had proposed regulations which granted pharmacists authority to prescribe certain drugs. Under the Medical Practice Act and the Pharmacy Practice Act the authority to prescribe drugs was reserved exclusively to a defined class of professionals that did not include pharmacists. Thus, our office opined that the State Board of Pharmacy had acted contrary to the express wording of both the Medical Practice Act and the Mississippi Pharmacy Practice Act. Here, the Physical Therapy Board's actions have not violated either the physical therapy or the acupuncture statutes.

Conclusion

In conclusion, it is the opinion of this office that the Physical Therapy Board acted within the scope of its authority when promulgating the proposed rule including the use of needles for therapeutic treatment as a technique within the scope of the statutory definition of the practice of physical therapy. It is also the opinion of this office that the statutes regarding the definitions of acupuncture and the unlicensed practice of acupuncture can not be used to interfere with or limit physical therapists who are performing IMT or dry needling under the licensing authority of the Physical Therapy Board.

If this office can be of further assistance, feel free to contact us.

Sincerely,

Jim Hood, Attorney General



By: Ricky G. Luke
Assistant Attorney General



JAMES D. "BUDDY" CALDWELL
ATTORNEY GENERAL

State of Louisiana
DEPARTMENT OF JUSTICE
P.O. BOX 94005
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70804-9005

March 19, 2015
OPINION 14-0216

Patricia Oliver
Executive Director
Board of Chiropractic Examiners
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CHIROPRACTORS
PHYSICIANS AND SURGEONS

La. R.S. 37:1262
La. R.S. 37:1270
La. R.S. 37:1291
La. R.S. 37:1356

La. R.S. 37:2405
La. R.S. 37:2407
La. R.S. 37:2801
La. R.S. 37:2803

Charlotte Martin
Executive Director
Louisiana Physical Therapy Board
104 Fairlane Drive
Lafayette, LA 70507

Dry needling, as defined by Rule 123 is within the scope of practice of physical therapy as set forth in La. R.S. 37:2407. Dry needling, as defined and interpreted by the Louisiana Board of Chiropractic Examiners, is within the scope of chiropractic and may be used to treat the conditions set forth in La. R.S. 37:2801.

Dear Ms. Oliver and Ms. Martin:

Our office received an opinion request from the Louisiana Board of Chiropractic Examiners on issues related to dry needling. Shortly thereafter, we received an additional request from the Louisiana Physical Therapy Board relating to the same issues. Considering the relatedness of the two requests and in the interest of efficiency, we have combined your requests into one opinion.

On October 20, 2011, the Louisiana Physical Therapy Board promulgated Rule 311, which establishes standards of practice for dry needling by physical therapists.¹ The Physical Therapy Board also adopted the following definition for dry needling:

a physical intervention which utilizes filiform needles to stimulate trigger points in a patient's body for the treatment of neuromuscular pain and functional movement deficits. Dry Needling is based upon Western medical concepts and does not rely upon the meridians utilized in acupuncture and other Eastern practices. A physical therapy evaluation will indicate the location, intensity and persistence of neuromuscular pain or functional deficiencies in a physical therapy patient and the propriety for utilization of dry needling as a treatment intervention. Dry needling does not include the stimulation of auricular points.²

On April 20, 2014, the Board of Chiropractic Examiners promulgated Rule 321 which interprets the "practice of chiropractic," to include treatment by dry needling and states:

¹ LAC §46:LIV.311.

² LAC §46:LIV.123 (Emphasis added).

§321. Dry Needling

A. The purpose of this rule, as authorized by R.S. 37:2803, is to provide for the interpretation of R.S. 37:2801(3)(a) to include dry needling and to provide with respect to utilization of the techniques by chiropractic physicians. Dry needling is a physical rehabilitation measure which requires specialized education and training and which falls within the chiropractic scope of practice under the following terms. Prior to utilization of dry needling techniques chiropractic physicians shall successfully complete a board approved course of study consisting of no fewer than 50 hours of face-to-face instruction in intramuscular dry needling treatment and safety. The practice of dry needling techniques without compliance of this education requirement constitutes unprofessional conduct and subjects the licensee to appropriate discipline by the board.³

Dry needling involves the insertion of a solid filiform (as opposed to a hollow) needle through the skin for therapeutic purposes. Both boards have received correspondence from the Louisiana State Board of Medical Examiners (LSBME) stating the LSBME believes dry needling is outside the scope of practice of physical therapy and chiropractic. The LSBME contends that dry needling is included within the practice of medicine generally, and is specifically within the practice of acupuncture.⁴ Correspondence from the LSBME states that they consider dry needling to be the practice of acupuncture which may only be performed by a physician or an acupuncturist's assistant.⁵ The Board of Chiropractic Examiners has received similar communications from the LSBME. Considering the contentions made in the correspondence received from the LSBME, you have asked our office to address the following questions:

- 1) Is dry needling as defined by Rule 123 and regulated by Rule 311 within the scope and practice of physical therapy?
- 2) Is dry needling as defined and interpreted by the Board of Chiropractic Examiners within the scope and practice of chiropractic?

Physical Therapy

Physical therapists were originally licensed and regulated by the Louisiana State Board of Medical Examiners until 1987 when the Louisiana Physical Therapy Board was created within the Department of Health and Hospitals.⁶ The powers and duties of the Louisiana Physical Therapy Board are set forth in La. R.S. 37:2405. The Physical Therapy Board is responsible for the enforcement of the Louisiana Physical Therapy Act

³ LAC §46:XXVII.321.

⁴ June 18, 2013 Correspondence from the LSBME to the Louisiana Physical Therapy Board.

⁵ February 3, 2014 Correspondence from the LSBME to the Louisiana Physical Therapy Board.

⁶ La. R.S. 37:2403.

and has all the powers, duties, and authority specifically granted by, or necessary for the enforcement of, the Act, including adopting rules necessary for the efficient operation of the board in accordance with the provisions of the Louisiana Administrative Procedure Act. Louisiana Revised Statute 37:2405 (8) also grants the Physical Therapy Board the power to establish by rule the standards of practice for physical therapy.

The LSBME is a professional licensing and regulatory agency of the State of Louisiana authorized by the Louisiana Medical Practice Act.⁷ The LSBME functions within the Department of Health and Hospitals and its powers and duties are set forth in La. R.S. 37:1270.⁸ Pursuant to La. R.S. 37:1356 (1), the LSBME also regulates the practice of acupuncture.

Louisiana Revised Statute 37:1262 (3) defines the "practice of medicine" as follows:

the holding out of one's self to the public as being engaged in the business of, or the actual engagement in, the diagnosing, treating, curing, or relieving of any bodily or mental disease, condition, infirmity, deformity, defect, ailment, or injury in any human being, other than himself, whether by the use of any drug, instrument or force, whether physical or psychic, or of what other nature, or any other agency or means; or the examining, either gratuitously or for compensation, of any person or material from any person for such purpose whether such drug, instrument, force, or other agency or means is applied to or used by the patient or by another person; or the attending of a woman in childbirth without the aid of a licensed physician or midwife.

Louisiana Revised Statute 37:1356 (1) defines the practice of acupuncture as follows:

treatment by means of mechanical, thermal or electrical stimulation effected by the insertion of needles at a point or combination of points on the surface of the body predetermined on the basis of the theory of the physiological interrelationship of body organs with an associated point or combination of points, or the application of heat or electrical stimulation to such point or points, for the purpose of inducing anesthesia, relieving pain, or healing diseases, disorders and dysfunctions of the body, or achieving a therapeutic or prophylactic effect with respect thereto. The practice of acupuncture shall be construed to be the practice of medicine as defined by R.S. 37:1261.

⁷ La. R.S. 37:1261-1292.

⁸ La. R.S. 37:1273.

Whether the use of solid filiform needles, also known as “acupuncture needles,” and/or the practice of dry needling is exclusive to the practice of acupuncture has been addressed by attorneys general in several other states.⁹

The attorney general for the State of Maryland issued an opinion on whether dry needling fell within the definition of the practice of physical therapy and whether it was appropriate for the Board of Physical Therapy to include dry needling within the scope of practice of physical therapy without legislation on the subject.¹⁰ The Maryland Attorney General concluded:

The authority to use acupuncture needles for therapeutic purposes is not necessarily reserved exclusively to licensed acupuncturists or those specifically exempted from the licensing requirement for acupuncturists. State law recognizes that the scope of practice of health care professions may overlap and confers extensive discretion on licensing boards to define the scope of a profession within statutory limits. In our opinion, the Physical Therapy Board may determine that dry needling is within the scope of practice of physical therapy if it conducts rulemaking under the State Administrative Procedure Act and adopts a regulation that relates dry needling to the statutory definition of practice of physical therapy.¹¹

The attorney general for the State of Mississippi also addressed whether dry needling was the practice of acupuncture and whether the Mississippi Physical Therapy Board had the authority to include dry needling within its scope of practice by rule making rather than legislation.¹² The Mississippi opinion stated that the use of needles for therapeutic treatment by acupuncturists did not exclude therapeutic use of needles by physical therapists where the Physical Therapy Board has acted to recognize such use as a physical therapy technique. The opinion also found that the Physical Therapy Board acted within the scope of its authority when promulgating the rule that included the use of needles for therapeutic treatment as a technique within the scope of the statutory definition of the practice of physical therapy.

The attorney general for the State of Kentucky has also opined that dry needling is within the scope of the practice of physical therapy. The Kentucky opinion found that even if dry needling by physical therapists could not be distinguished from acupuncture, the law does not prohibit its practice by physical therapists as long as it is within the scope of the practice for which they are licensed. The opinion reasoned that the practice of acupuncture as defined under Kentucky law does not reserve the use of

⁹ Although several Attorney General opinions from other states address whether the scope of acupuncture is within the scope of chiropractic, as of the date of this opinion, we are unaware of any Attorney General opinions that address dry needling by chiropractors.

¹⁰ 95 Md. Op. Atty. Gen. 138.

¹¹ *Id.*

¹² Miss. Atty. Gen. Op. Nos. 2012-00428 and 2012-00478.

solid filiform needles to that profession alone, and the use of dry needling by a licensed physical therapist did not constitute the practice of acupuncture.¹³

Although these opinions are not binding on the State of Louisiana and are unique to the respective state laws that they interpret, we agree that the issue of whether dry needling may be performed by physical therapists and/or chiropractors should not be determined by whether the therapy could also fall under the definition of medicine or acupuncture. The proper analysis is whether dry needling is within the scope of practice of physical therapy as set forth in La. R.S. 37:2407 and within the scope of practice of chiropractic as set forth in La. R.S. 37:2801.

The treatment of dry needling as defined by the Board of Physical Therapy is distinguishable from acupuncture. Although both use solid filiform needles, physical therapists may only use dry needling to treat neuromuscular pain and functional movement deficits. LAC §46:LIV.123 specifically excludes reliance on meridians, Eastern medicine practices, stimulation of auricular points, and acupuncture by physical therapists. Dry needling treatment by a physical therapist also requires that the physical therapist use Western medical concepts to indicate the location of neuromuscular pain and the propriety for using dry needling. In contrast, acupuncture involves the insertion of needles at a point or combination of points on the surface of the body that has been predetermined on the basis of the theory of the physiological interrelationship of body organs with an associated point or combination of points, for the purpose of inducing anesthesia, relieving pain, or healing diseases, disorders and dysfunctions of the body, or achieving a therapeutic or prophylactic effect.¹⁴ However, even if the treatments of dry needling and acupuncture overlap, physical therapists are not precluded from utilizing dry needling if it is allowed by their scope of practice.¹⁵

Louisiana Revised Statute 37:2407 (5) defines the practice of physical therapy as follows:

"Practice of physical therapy" is the health care profession practiced by a physical therapist licensed under this Chapter and means the holding out of one's self to the public as a physical therapist and as being engaged in the business of, or the actual engagement in, the evaluation and treatment of any physical or medical condition to restore normal function of the neuromuscular and skeletal system, to relieve pain, or to prevent disability by use of physical or mechanical means, including therapeutic exercise, mobilization, passive manipulation, therapeutic modalities, and activities or devices for preventative, therapeutic, or medical purposes, and further shall include physical therapy evaluation, treatment planning, instruction,

¹³ Ky. Atty. Gen. Op. No. 13-010.

¹⁴ La. R.S. 37:1356 (1).

¹⁵ La. R.S. 37:1291 (3) recognizes that there may be overlap in the scope of practice of practitioners of allied health fields.

consultative services, and the supervision of physical therapy supportive personnel, including physical therapist assistants.¹⁶

Dry needling is utilized by physical therapists for the treatment of neuromuscular pain and functional movement deficits. The treatment of neuromuscular pain and medical conditions related to the function of the neuromuscular system is specifically authorized by La. R.S. 37:2407 (5). Therefore, the treatment of the conditions listed in Rule 123 is within the scope of the practice of physical therapy.

Next, we must address whether the solid filiform needle used in dry needling is authorized by La. R.S. 37:2407 (5). The Attorney General of Tennessee recently found that dry needling is a "therapeutic intervention" that is outside the scope of practice of the Tennessee Board of Physical Therapy. The Tennessee opinion stated that because dry needling is not specifically listed among the therapeutic interventions identified in the Board of Physical Therapy's scope of practice, physical therapists are not authorized to insert needles for therapeutic purposes.¹⁷ We believe that La. R.S. 37:2407 (5) is distinguishable from the more restrictive statute analyzed in the Tennessee opinion. Louisiana Revised Statute 37:2407 (5) states that treatment may be by "physical or mechanical means, including therapeutic exercise, mobilization, passive manipulation, therapeutic modalities, and activities or devices for preventative, therapeutic, or medical purposes." The use of these general descriptive terms in La. R.S. 37:2407 (5), along with the illustrative modifier "including," indicates that the statute was not intended to specifically list by name every single device or treatment that may be utilized in the practice of physical therapy. The LSBME argues that the term "mechanical means" refers to devices such as equipment, weights, and machines and does not include solid filiform needles. However, we can find no support for this interpretation. Louisiana Revised Statute 37:2407 (5), which authorizes treatment by mechanical means and devices for therapeutic or medical purposes, is broad enough to include the use of solid filiform needles. Support for this conclusion is found in La. R.S. 37:1356 (1), which describes the insertion of needles in the practice of acupuncture as: "treatment by means of mechanical . . . stimulation effected by the insertion of needles." We also note that other jurisdictions have also found that the definition of "mechanical device" may include acupuncture needles.¹⁸

In conclusion, it is our opinion that the treatment of dry needling, as defined by Rule 123, is within the scope of practice of physical therapy.

¹⁶ (Emphasis added).

¹⁷ Tenn. Op. Atty. Gen. No. 14-62.

¹⁸ 95 Md. Op. Atty. Gen. 138; Miss. Atty. Gen. Op. Nos. 2012-00428 and 2012-00478.

Chiropractors

The Board of Chiropractic Examiners was established in 1974 and is within the Department of Health and Hospitals.¹⁹ The powers and duties of the board are set forth in La. R.S. 37:2804.²⁰ Louisiana Revised Statute 37:2803 (E) states that the Board of Chiropractic Examiners shall adopt and promulgate rules and regulations to govern its actions and to provide for the enforcement of the provisions of Chapter 36, pursuant to the Louisiana Administrative Procedure Act.

In construing an administrative rule or regulation, a court must look to the administrative agency's interpretation where the meaning of the words used is ambiguous because such construction provides the best indication of the agency's intent in promulgating a rule or regulation.²¹ However, this deference is not required for an administrative interpretation of its enabling legislation. It is well established that an administrative agency cannot exceed the authority granted to it by the legislature.²² Although courts may give due consideration to the administrative construction of a statute, the court is not bound by the board's interpretation of such a statute; the interpretation of state law is reserved to the judiciary.²³ Therefore, when analyzing whether dry needling is included within the scope of the practice of chiropractic, we rely on La. R.S. 37:2801, which defines the practice of chiropractic as:

[h]olding one's self out to the public as a chiropractor and as being engaged in the business of, or the actual engagement in, the diagnosing of conditions associated with the functional integrity of the spine and treating by adjustment, manipulation, and the use of the physical and other properties of heat, light, water, electricity, sound, massage, therapeutic exercise, mobilization, mechanical devices, and other physical rehabilitation measures for the purpose of correcting interference with normal nerve transmission and expression. A chiropractor may also make recommendations relative to personal hygiene and proper nutritional practices for the rehabilitation of the patient. A chiropractor may also order such diagnostic tests as are necessary for determining conditions associated with the functional integrity of the spine.

¹⁹ La. R.S. 36:259 (E)(7).

²⁰ Prior to 1974 La. Acts. No. 39 chiropractors were required to be qualified physicians. See *Louisiana State Board of Medical Examiners v. Cronk*, (La. 1924), 157 La. 321, 102 So. 415; *State Board of Medical Examiners v. Fife*, (La. 1927), 162 La. 681, 111 So. 58; and La. Atty. Gen. Op. 1942-44 p. 1153.

²¹ *Women's & Children's Hosp. v. State Dep't of Health and Hosps.*, 08-946 (La. 1/21/09), 2 So.3d. 397,402; *Hill v. Dep't of Health & Human Res., Office of Mental Health & Substance Abuse*, 83-1043 (La.App. 1 Cir. 10/9/1984), 457 So.2d 781, 785 (La.App. 1 Cir. 10/9/1984).

²² *Jurisich v. Jenkins*, 99-0076 (La. 11/17/1999), 749 So.2d. 597, 605.

²³ *Harrah's Bossier City Inv. Co., LLC v. Bridges*, 09-1916 (La. 5/11/10), 41 So.3d 438, 449.

(c) The practice of chiropractic does not include the right to prescribe, dispense, or administer medicine or drugs, or to engage in the practice of major or minor surgery, obstetrics, X-ray therapy, radium therapy, or nuclear medicine. For purposes of this Chapter, the terms "medicine" and "drugs" shall not include orthotic devices, vitamin, mineral, and nutritional supplements, therapeutic devices, postural modification equipment, exercise equipment, or homeopathic remedies. Any chiropractor applying to practice acupuncture shall comply with the provisions of R.S. 37:1358.²⁴

As represented to our office in correspondence concerning dry needling as related to the practice of chiropractic, the Louisiana Board of Chiropractic Examiners interprets Rule 321 as follows:

Dry needling is based on Western neuroanatomy and modern scientific study of the musculoskeletal and nervous system. It is used for the assessment and treatment of myofascial pain syndromes and dysfunction due to myofascial triggerpoints/tension areas, muscle spasm and increased tonicity. The decision to needle is based on identifying a clear clinical relationship between the myofascial trigger point and the patient's pain experience.²⁵

The treatment of dry needling, as defined and interpreted by the Board of Chiropractic Examiners, is distinguishable from the practice of acupuncture. Chiropractors are specifically prohibited from practicing acupuncture, as defined by La. R.S. 37:1356, unless they comply with the provisions of La. R.S. 37:1358. Although both dry needling and acupuncture utilize solid filiform needles, dry needling in chiropractic is limited to treating conditions associated with the functional integrity of the spine using Western medical concepts to determine the location of pain and to determine whether the treatment of dry needling is appropriate. Dry needling, as defined and interpreted by the Board of Chiropractic Examiners, does not involve the insertion of needles at a point or combination of points on the surface of the body that has been predetermined on the basis of the theory of the physiological interrelationship of body organs with an associated point or combination of points, for the purpose of inducing anesthesia, relieving pain, or healing diseases, disorders and dysfunctions of the body, or achieving a therapeutic or prophylactic effect.

As noted earlier, the solid filiform needle utilized in dry needling could fall within the definition of mechanical or therapeutic devices, which are authorized for use by chiropractors in La. R.S. 37:2801. Accordingly, it is our opinion that the treatment of dry needling, as defined and interpreted by the Louisiana Board of Chiropractic Examiners, is within the scope of chiropractic and may be used to treat the conditions set forth in La. R.S. 37:2801.

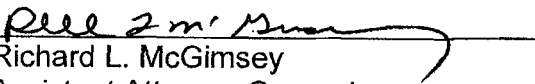
²⁴ (Emphasis added).

²⁵ Correspondence received from the Board of Chiropractic Examiners.

We hope that this opinion has adequately addressed the questions you have submitted. If our office can be of any further assistance, please do not hesitate to contact us.

With best regards,

JAMES D. "BUDDY" CALDWELL
ATTORNEY GENERAL

BY: 
Richard L. McGimsey
Assistant Attorney General

JDC: EGA

Exhibit E



Texas State Board of Acupuncture Examiners

Position Statement on CPT Code Billing by Licensed Texas Acupuncturists

In 2011, the Texas State Board of Acupuncture Examiners (TSBAE) established a stakeholder group to address recurring reports from licensed practitioners that insurance carriers are routinely denying legitimate claims for payment in regard to treatments provided within the scope of practice for licensed Texas acupuncturists and alleging insurance fraud on the part of licensed acupuncturists.

As a result of the efforts of the stakeholder group and the TSBAE Ad Hoc Subcommittee on CPT Coding, the TSBAE has adopted this position paper, with the intention to eliminate premature or unfounded allegations of fraud by insurance companies, help acupuncturists to better understand their scope of practice, and establish working parameters for dealing with any fraud allegations in the context of CPT coding for properly documented acupuncture care.

Specific Codes

The pertinent codes for acupuncturists in the state of Texas are for acupuncture performed in accordance with § 205.001(2)(A) of the Acupuncture Practice Act (the Act). They are as follows:

97810 Acupuncture, one or more needles, without electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient.

97811 Acupuncture, one or more needles, without electrical stimulation, each additional 15 minute increment of personal one- to-one contact with the patient, with reinsertion. (List separately in addition to code for primary procedure)

97813 Acupuncture, one or more needles, with electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient.

97814 Acupuncture, one or more needles, with electrical stimulation, each additional 15 minute increment of personal one-on- one contact with the patient, with reinsertion. (List separately in addition to code for primary procedure)

The definition of acupuncture in the Texas Acupuncture Practice Act, §205.001(2) of the Tex. Occ. Code, can be a source of confusion in that it contains statements requiring clarification. The Act states: "*Acupuncture*" means: *the nonsurgical, nonincisive insertion of an acupuncture needle...*" Acupuncture is an incisive and invasive procedure. The needle is applied subcutaneously. There can be bleeding or bruising. Acupuncture also refers to a medical discipline that requires diagnosis, treatment and prognosis based on the theories of Oriental medicine to prevent and treat various diseases and promote wellness.

The procedures of the discipline include but are not limited to manual therapies, and use of physical agents such as cupping (negative pressure), scraping, mechanical devices, heat, cold, air, light, water, electricity, and sound in the aid of diagnosis or treatment. In Texas, the recommendation of herbal medicine and nutrition are within the scope of practice for acupuncture. Licensing and scope of practice parameters provide autonomy, but also convey responsibility and potential liability. For these reasons among others, safe and effective practice requires comprehensive education.

The following list of codes are representative of practice standards among acupuncturists in general, based upon educational standards from the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM), National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) job task analysis, and conventions of acupuncture practice in the state of Texas. As noted below, this list is not necessarily all inclusive and there may be other codes that should be utilized as being appropriate and consistent with authorized practice in Texas. In addition, all coverage decisions are made by terms of private agreement; however, there is no restriction on independent billing in Texas for acts performed within the scope of the practice.

The TSBAE has determined that the following acts are within the practice of acupuncture and are permitted under §205.001(2)(B) of the Acupuncture Practice Act:

Physical Medicine

- 97010 Hot or cold packs (scope of Tex. Occ. Code, Sec. 205.001 allow for thermal treatments)
- 97014 Electrical stimulation (performed without needle procedures)
- 97016 Vasopneumatic devices (cupping)
- 97026 Infrared (heat lamp)

Therapeutic Procedures

- 97110 Therapeutic
- 97112 Neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and/or proprioception for sitting and/or standing activities
- 97116 Gait training (movement with needles in)
- 91739 Unlisted procedures - procedures that are otherwise allowed through the scope of acupuncture (submission of medical records should be submitted when this code is applied)

Vitamins and Herbs

- A9150 Nonprescription drug (herbal preparations)
- A9152 Single vitamin/mineral trace element per dose
- A9153 Multiple vitamins w or w/o minerals per dose

Tens and Supplies

- E0720 Tens unit (two lead)
- E0730 Tens unit (four lead)
- A4556 Electrodes (per pair)
- A4558 Conductive paste or gel (NMES divide)

Heat and Cryotherapy

- E0238 Heat moist
- E0210 Electric heat pad
- E0230 Ice pack
- E0220 Hot water bottle

Additional Procedures

- 97530 Therapeutic activities (energetic exercise)
- 97535 Self care management instruction (i.e., recommendation of and training of use of energy flow exercises)

Modifiers

- 51 Multiple procedures
- 59 Distinct procedural service

Evaluation and Management (E&M)

This discussion of E&M Codes is limited to the issue of whether the mere use of such codes by acupuncturists is fraudulent per se. The Board takes the position that the mere use of E&M Codes is not fraudulent per se and will not automatically subject licensees to discipline. However, the Board takes no position on whether the use of E&M codes is appropriate or reimbursable by health insurance companies.

The utilization of evaluation and management codes would appear to be permissible given §205.001(2)(A) of the Act. Evaluation and management (E&M) are part of an acupuncturist's scope of practice. The inclusion of E&M in the acupuncture codes is divided into three minimal segments:

- Pre-service is 3 minutes and includes greeting the patient and a brief interval history.
- Intra-service is 15 minutes for actions connected to the acupuncture procedure: hand washing, patient positions, locating and cleaning the points, inserting and stimulating the needles, checking on the patient, removing the needles. This does not include needle retention time without direct patient monitoring or communication.
- Post-service is 3 minutes and includes charting and any instructions to the patient.

The intention behind the CPT code set for E&M allocations was for appropriate additional amounts to be added under E&M codes. If pre and post service time substantially exceed 6 minutes it is appropriate to charge for a suitable level of E&M. Further, chart notes must accurately reflect that work.

Additional E&M codes are necessary to honestly represent work. They are divided into a new and a returning patient series of five levels of increasing complexity, time, and charge. New patient codes are 99201 through 99205. Established patient codes are 99211 through 99215. The difference between a new patient and an established patient is three years. If the patient has not been seen by anyone in a given clinic during that time, they can be considered new.

It is essential to document the fulfilled requirements of an E&M code per the CPT manual. For example, modify the E&M code with a -25 modifier to denote that this is a significant, separately identifiable level of service. Insurers should expect E&M to be billed with a new patient and on reevaluation or a new diagnosis of an established patient. It is inappropriate to bill an E&M code for each visit.

These listings are not all inclusive and there may be other codes that are representative of care within acceptable scope and standards of practice.

Conclusion

Billing administration and coding can be extremely challenging. In recent years, considerable attention has been brought to bear on coding problems for almost all licensee groups. It is not the role of the TSBAE to determine what payment structure should be applied to reimbursement for acupuncture services. That said, it is clearly within the TSBAE's scope to determine what is allowed to be performed under an acupuncture license in this state. Whether those services will ultimately be considered covered services and be compensated by insurance companies is solely a matter of private contract and to be determined by providers and the insurance companies. In addition, this position statement is only intended to apply to licensed acupuncturists.

Exhibit F



**Office of the Attorney General
State of Texas**

July 8, 1997

<p>Bruce A. Levy, M.D., J.D. Executive Director Texas State Board of Medical Examiners P.O. Box 2018 Austin, Texas 78768-2018</p>	<p>Opinion No. DM-443</p> <p>Re: Authority of a physical therapist to perform needle electromyography testing (RQ-928)</p>
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Dear Dr. Levy:

On behalf of the State Board of Medical Examiners (the "board"), you have asked this office a series of questions relating to the authority of a physical therapist to perform a procedure called needle electromyography. The questions arise, as we understand it, from a controversy as to whether this procedure requires specialized medical training, and as to whether such testing invariably involves a diagnosis of the sort which would constitute the practice of medicine. This office has and professes no skill in the technical questions which may be involved here, for the resolution of which we will defer to the board. Rather, we restrict ourselves to the legal questions involved. Here too we find the decision of the board at its August 17, 1996 meeting, a transcript of which has been provided to us, to be entitled to great weight.

You ask first whether the performance of needle electromyography is the practice of medicine, and falls within the scope of practice for licensed physicians. The practice of medicine is defined by V.T.C.S article 4495b, section 1.03(a)(12), as follows:

A person shall be considered to be practicing medicine within this Act:

(A) who shall publicly profess to be a physician or surgeon and shall diagnose, treat, or offer to treat any disease or disorder, mental or physical, or any physical deformity or injury by any system or method or to effect cures thereof; or

(B) who shall diagnose, treat, or offer to treat any disease or disorder, mental or physical, or any physical deformity or injury by any system or method and to effect cures thereof and charge therefor, directly or indirectly, money or other compensation.

The statutory definition of the practice of medicine is a broad one, as this office has noted in the past. Attorney General Opinion DM-423 (1996) at 2. Moreover the board has express statutory authority to "determine whether or not an act constitutes the practice of medicine." *Id.* (citing V.T.C.S. art. 4495b, § 3.06(d) (1)). The board by a resolution adopted at its meeting on August 17, 1996, has so decided, and this office defers, as it customarily does, to a reasonable interpretation by a state agency of the statute it is charged to enforce. Accordingly, we answer your first two questions in the affirmative. The decision by the board that needle electromyography constitutes the practice of medicine and is within the scope of practice of a licensed physician is a reasonable one.

You next ask whether the practice of needle electromyography falls within the scope of practice of a licensed physical therapist. As you are aware, the Texas Board of Physical Therapy Examiners has taken the position that it does. The Board of Physical Therapy Examiners' position is based upon its interpretation of the definition of physical therapy in its enabling statute, which includes the following language: "Physical therapy includes the testing and measurement of the function of the musculoskeletal, neurological, pulmonary and cardiovascular systems" V.T.C.S. art. 4512e, § 1(1).⁽¹⁾

Based upon this interpretation, the Board of Physical Therapy examiners in 1993 adopted by rule a definition of physical therapy which includes the practice of electromyography. 22 T.A.C. § 321.1. In our view, the decision that electromyography is "testing and measurement" of the sort described in article 4512(e), section 1(1) is not unreasonable. Under section 2G of article 4512e, the Board of Physical Therapy Examiners is charged with the enforcement of the Physical Therapy Act. Accordingly, its reasonable interpretation of that act is entitled to the same deference we give to your interpretation of the Medical Practice Act. Therefore we answer your third question in the affirmative as well. The decision by the Board of Physical Therapy Examiners that electromyography is within the scope of practice of a licensed physical therapist is a reasonable one.

You next ask which state agency or agencies have the authority to regulate such practice. Insofar as electromyography constitutes the practice of medicine, you have that authority. Insofar as electromyography is within the scope of practice of a licensed physical therapist, the Board of Physical Therapy Examiners has that authority. The question is directly analogous to one this office considered in Attorney General Opinion DM-423. In that opinion request, the board asked whether a particular procedure was within the practice of medicine, and whether it was within the practice of podiatry. We declined to answer whether the particular therapy constituted podiatry, noting that "the determination of what constitutes the practice of podiatry is the business of the Board of

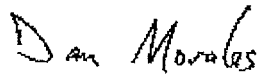
Podiatric Medical Examiners more than of this office." Attorney General Opinion DM-423 (1996) n.1 at 4. However, we further noted that if the relevant body did so decide, the Board of Medical Examiners could not regulate the activity of licensed podiatrists in that regard. *Id.* Here, the rule adopted by the Board of Physical Therapists is a clear and reasonable determination that electromyography is within the scope of practice of physical therapists. For that reason, and because by its terms the Medical Practice Act does not apply to "duly licensed physical therapists who confine their activities or practice strictly to physical therapy and who are not in violation of any law relating to physical therapy practice," the board has no regulatory authority over physical therapists practicing electromyography. V.T.C.S. art. 4495b, § 3.06(a)(7).

To answer your final question, the jurisdictional limit recited above would appear to be the principal limitation on your rule-making authority, and conversely on that of the Board of Physical Therapy Examiners as well. Accordingly, the development of any general rules regulating this activity would require the cooperation of both boards, and is not within the province of either board exclusively. Physical therapists would, in their practice, be governed by the rules of the Board of Physical Therapy Examiners, doctors by those of the Board of Medical Examiners.

S U M M A R Y

The decision by the Board of Medical Examiners that needle electromyography constitutes the practice of medicine and is within the scope of practice of a licensed physician is a reasonable one. The decision by the Board of Physical Therapy Examiners that electromyography is within the scope of practice of a licensed physical therapist is a reasonable one. Insofar as electromyography constitutes the practice of medicine, the Board of Medical Examiners has the authority to regulate the activity. Insofar as electromyography is within the scope of practice of a licensed physical therapist, the Board of Physical Therapy Examiners has that authority. Accordingly, the development of any general rules regulating this activity would require the cooperation of both boards, and is not within the province of either board exclusively. Physical therapists would, in their practice, be governed by the rules of the Board of Physical Therapy Examiners, doctors by those of the Board of Medical Examiners.

Yours very truly,



DAN MORALES
Attorney General of Texas

JORGE VEGA
First Assistant Attorney General

SARAH J. SHIRLEY
Chair, Opinion Committee

Prepared by James E. Tourtelott
Assistant Attorney General

Footnotes

1. The act further provides that "a license issued hereunder shall not authorize the diagnosis of diseases or the practice of medicine as defined by law." A brief submitted in response to this request suggests that electromyography is generally diagnostic. A determination of what constitutes diagnosis would, in our view, require expertise that this office does not purport to possess, as well as factual determinations of a sort that we cannot make in the opinion process. We defer here to the informed judgment of the Boards of Medical and Physical Therapy Examiners as to when and whether the practice is diagnostic.

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Exhibit G



**Office of the Attorney General
State of Texas**

DAN MORALES
ATTORNEY GENERAL

March 30, 1998

Bruce A. Levy, M.D., J.D.
Executive Director

Texas State Board of Acupuncture Examiners
P.O. Box 2018
Austin, Texas 78768-2018

Opinion No. DM-471

Re: Whether the performance of acupuncture is within the scope of practice of a licensed Texas chiropractor (RQ-988)

Dear Dr. Levy:

You ask whether the practice of acupuncture is within the scope of practice of a licensed doctor of chiropractic, a question that we considered in Attorney General Opinion DM-415. We conclude that the practice of acupuncture as defined in V.T.C.S. article 4495b is within the scope of the practice of chiropractic, and consequently that the conclusion reached in DM-415 with respect to the practice of acupuncture by chiropractors is superseded by statute.

The issue in DM-415 was whether the practice of acupuncture¹ was within the scope of practice of a licensed chiropractor who was not also a licensed acupuncturist. Attorney General Opinion DM-415 (1996). Central to our determination was a consideration of whether acupuncture, defined in part as "the insertion of an acupuncture needle" into the human body, is an "incisive or surgical procedure" under V.T.C.S. article 4512b. *Id.* at 4. We reasoned that because the legislature expressly excluded from the range of procedures that are incisive or surgical "the use of a needle for the purpose of drawing blood for diagnostic testing," the legislature considered the use of a needle for the purpose of drawing blood to be an incisive or surgical procedure. *Id.* at 5. Seeing no distinction between the use of a needle for drawing blood and the use of acupuncture needles, we concluded that acupuncture was not within the scope of practice of chiropractic.

¹When Attorney General Opinion DM-415 was issued, V.T.C.S. article 4495b, which governs the practice of acupuncture in Texas, defined acupuncture as:

(A) the insertion of an acupuncture needle and the application of moxibustion to specific areas of the human body as a primary mode of therapy to treat and mitigate a human condition; and

(B) the administration of thermal or electrical treatments or the recommendation of dietary guidelines, energy flow exercise, or dietary or herbal supplements in conjunction with the treatment described by Paragraph (A) of this subdivision.

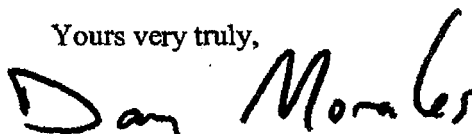
As a part of the acupuncture board's sunset legislation, the Seventy-fifth Legislature amended the definition of acupuncture in V.T.C.S. article 4495b, subchapter F (the "acupuncture statute"), to define acupuncture in part as the "nonsurgical, nonincisive insertion of an acupuncture needle." Act of May 29, 1997, 75th Leg., R.S., ch. 1170, 1997 Tex. Sess. Law Serv. 4418, 4418 (codified at V.T.C.S. art. 4495b, § 6.02(1)). Because the acupuncture statute and the chiropractic statute both regulate health care professions, we believe they may be read *in pari materia*. Acupuncture is defined in the acupuncture statute as a "nonsurgical, nonincisive" procedure. Therefore, it is not an "incisive or surgical procedure" excluded by the chiropractic statute from the scope of the practice of chiropractic. Furthermore, the legislative history of the amendment to the acupuncture statute indicates that the amendment was intended to allow chiropractors to practice acupuncture without being separately licensed to do so. See Hearing on S.B. 361 Before the House Public Health Comm., 75th Leg. (May 8, 1997) (testimony of Rep. Patricia Gray) (tape available in House Video/Audio Services Office). Therefore, our conclusion in DM-415 that needle acupuncture is not within the scope of the practice of chiropractic has been superseded by statute.

It has been argued that the use of acupuncture needles by chiropractors not licensed to practice acupuncture contravenes the federal Food and Drug Administration's ("FDA") classification of acupuncture needles. We disagree. The FDA defines an acupuncture needle as "a device intended to pierce the skin in the practice of acupuncture." 21 C.F.R. § 880.5580. Acupuncture needles are classified by the FDA as "Class II" medical devices, which are devices for which general controls are insufficient to assure the safety and effectiveness of the device, and which are therefore subject to special controls. See 21 U.S.C. § 360c(a) (defining classes of devices); 21 C.F.R. § 860.3 (same). The FDA requires acupuncture needles to be labeled for single use only, conform to FDA requirements for prescription devices, and comply with biocompatibility and sterility requirements. 21 C.F.R. § 880.5580. FDA regulations restrict the use of prescription devices, including acupuncture needles, to practitioners licensed by state law to use or order the use of such devices. *Id.* § 801.109. The FDA does not, however, prescribe who may be licensed by a state to use the device. Any person authorized by state law to use acupuncture needles must do so in accordance with FDA regulations.

S U M M A R Y

The practice of acupuncture, as defined by V.T.C.S. article 4495b, is not an "incisive or surgical procedure" excluded from the scope of the practice of chiropractic. The conclusion reached in Attorney General Opinion DM-415 with respect to the practice of acupuncture by chiropractors is superseded by statute.

Yours very truly,

A handwritten signature in black ink that reads "Dan Morales". The signature is written in a cursive, flowing style.

DAN MORALES
Attorney General of Texas

JORGE VEGA
First Assistant Attorney General

SARAH J. SHIRLEY
Chair, Opinion Committee

Prepared by Barbara Griffin
Assistant Attorney General

Exhibit H

MEMORANDUM

TO: APTA Component Leaders, State Legislative Chairs, Component Executives, and Chapter Lobbyists

FROM: Paul Rockar, Jr, PT, MS, DPT
President, American Physical Therapy Association

DATE: January 6, 2014

RE: Letter from National Center for Acupuncture Safety and Integrity (NCASI)

APTA is aware that a number of state regulatory boards are in receipt of a November 13, 2013, letter from the National Center for Acupuncture Safety and Integrity (NCASI) alleging, among other things, that physical therapists' (PT) use of acupuncture needles in "trigger point dry needling" (TPDN) procedures, and various state boards' determination that TPDN is within the physical therapist scope of practice, are inconsistent with the requirements for acupuncture needles under the Federal Food, Drug, and Cosmetic Act (FDC Act), 21 U.S.C. § 301 et seq., and U.S. Food and Drug Administration (FDA) implementing regulations. APTA commissioned a legal analysis from the law firm of Hogan Lovells US LLP to investigate whether NCASI's allegation against physical therapists and the physical therapy licensing boards has merit.

Based on the legal analysis, we believe the conclusions of the NCASI letter are without merit. FDA regulates acupuncture needles as class II medical devices. When the FDA down-classified acupuncture needles and promulgated 21 C.F.R. § 880.5580, the FDA stated that acupuncture needles are for use by qualified practitioners as determined by the states. We believe that the FDA, in doing this, was clearly signaling that it would not involve itself in determining who is a qualified practitioner to use acupuncture needles, leaving it to the states to decide. The regulations require that acupuncture needles comply with the following special controls: (1) "labeling for single use only and conformance to the requirements for prescription devices set out in 21 C.F.R. § 801.109" ("prescription device regulation"), (2) "material biocompatibility," and (3) "sterility." *Id.* § 880.5580(b). This regulation does not designate acupuncture needles as restricted devices but rather categorizes them as prescription devices requiring compliance with 21 C.F.R. § 801.109.

To comply with the prescription device regulation special control generally, according to 21 C.F.R. § 801.109(b)(1), prescription devices must bear the following statement:

“Caution: Federal law restricts this device to sale by or on the order of a _____”, the blank to be filled with the word “physician”, “dentist”, “veterinarian”, or with the description designation of any other practitioner licensed by the law of the State in which he practices to use or order the use of the device.” (emphasis added)

Together, the FDA regulations at 21 C.F.R. §§ 880.5580 and 801.109 make clear that the determination of who is authorized to use acupuncture needles is a matter left to the states.

This approach is consistent with the principle behind § 1006 of the FDC Act, 21 U.S.C. § 396, which says that nothing in the FDC Act limits the authority of a health care practitioner to administer a legally marketed device for any condition within a legitimate practitioner-patient relationship. The legislative history for this provision indicates that Congress intended to emphasize that FDA should not interfere in the practice of medicine.

I hope this information is helpful. If you need any further information or have any questions, please contact Justin Elliott, Director, State Affairs at justinelliott@apta.org or 703-706-8533. Thank you for your service to the profession.

PR/je

Exhibit I



Analysis of Competencies for Dry Needling by Physical Therapists

Final Report

Prepared
for: Federation of State Boards of Physical Therapy
124 West Street South, Third Floor
Alexandria, VA 22314

Authors: Joseph Caramagno
Leslie Adrian
Lorin Mueller
Justin Purl

Date: July 10, 2015

Acknowledgements

Many people, in addition to the authors, helped conceptualize and complete the work described in this report. The Task Force organized by the Federation of State Boards of Physical Therapy (FSBPT) was instrumental in completing this work, and we would like to recognize their commitment to the profession and their expertise in the practice of dry needling. Without their participation, this work would not have been possible. Members of the Task Force are listed individually in the appendix. We would also like to thank all the physical therapists who completed the Dry Needling Competency Survey in support of this important effort.

Dr. Lorin Mueller, FSBPT's Managing Director of Assessment, oversaw the work and provided invaluable guidance and assistance throughout the process. His responsiveness to HumRRO's various requests for information ensured this project progressed smoothly and efficiently. We would also like to acknowledge the support and insights of Leslie Adrian, DPT (FSBPT's Director of Professional Standards) throughout the course of this project. Her knowledge of the physical therapy profession, the issues surrounding dry needling in the U.S., and the diverse perspectives and philosophies on dry needling were tremendous contributions in ensuring discussions with the Task Force were productive and thoughtful. Finally, we would like to express gratitude for the assistance provided by Ashley Ray (Assessment Research Associate).

From HumRRO, we wish to thank Drs. Deirdre Knapp and Teresa Russell for their recommendations and guidance on numerous aspects of the planning and conduct of the competency development and in the preparation of this report.

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 entry-level 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.

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 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
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)

Analysis of Competencies for Dry Needling by Physical Therapists

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Analysis of Competencies for Dry Needling by Physical Therapists

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).

The definition adopted by Arizona Physical Therapy Board which was developed to address many of the same issues was presented. 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 (Tsacouris & 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	
<i>Information Gathering & Synthesis</i>	
	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	
<i>Manual Therapy Techniques</i>	
	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 entry-level education (e.g., coursework; clinical internships), 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)

Physical Therapy Skills and Abilities Needed for Dry Needling

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.

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. PTAs spend roughly 16 weeks in clinical education, whereas PTs spend more than 27. In addition, PTAs 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, which are based on a strong foundation in evaluation and differential diagnosis, it is not appropriate to assume the same competencies would qualify a PTA to perform the treatment.

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 entry-level education, including knowledge related to evaluation, assessment, diagnosis and plan of care 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

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).

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 palpation of tissues specifically in regard to dry needling appropriately require specialized training. Because this report focused on the competencies required of the PT to perform dry needling, which are based on a strong foundation in evaluation and differential diagnosis, it is not appropriate to assume the same competencies would qualify a PTA to perform the treatment.

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Appendix A

Background Review Source Materials

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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... <ol style="list-style-type: none"> 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... <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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

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Appendix D

Physical Therapy Tasks Required for the Competent Performance of Dry Needling

ID#	Tasks
PATIENT/CLIENT ASSESSMENT	
<i>Information Gathering & Synthesis</i>	
	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)
<i>Systems Review</i>	
	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	
<i>Cardiovascular and Pulmonary</i>	
	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)
<i>Anthropomorphic</i>	
24.	Quantify edema (e.g., palpation, volume test, circumference)
<i>Arousal, Attention, & Cognition</i>	
	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)
<i>Evaluation & Diagnosis</i>	

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 needled
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 needled
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)
Integumentary Repair	
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)
Therapeutic Modalities	
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
Mechanical Modalities	
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
Documentation	
106.	Document intervention/plan of care for specialized services and settings (e.g., individual education plan, individual family service plan, vocational transition plan)
Education	
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
Patient/client & Staff Safety	
Emergency Procedures	
109.	Implement disaster response procedures
Environmental Safety	
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
<i>Interventions</i>	
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	
<i>Foundations for Evaluation, Differential Diagnosis, & Prognosis</i>	
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
<i>Interventions</i>	
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	
<i>Foundations for Evaluation, Differential Diagnosis, & Prognosis</i>	
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
<i>Interventions</i>	
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	
<i>Physical Therapy Examination</i>	
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
<i>Foundations for Evaluation, Differential Diagnosis, & Prognosis</i>	
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
<i>Interventions</i>	
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	
<i>Foundations for Evaluation, Differential Diagnosis, & Prognosis</i>	
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

Anatomy and Physiology

- | | |
|------|---|
| 102. | Surface anatomy as it relates to underlying tissues, organs, and other structures, including variations in form, proportion, and anatomical landmarks |
|------|---|

Emergency Preparedness and Response

- | | |
|------|---|
| 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) |

Safety & Protection

- | | |
|------|--|
| 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

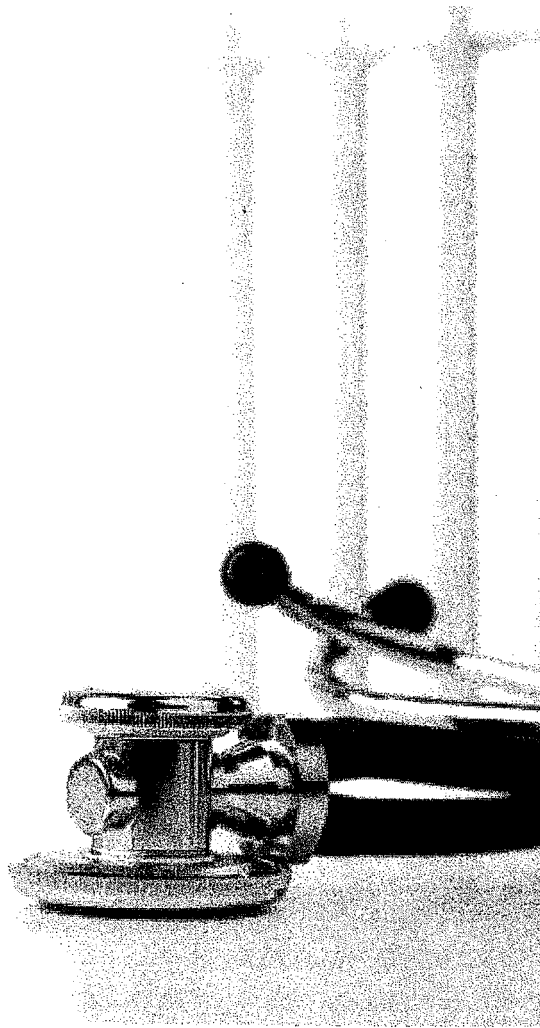
HumRRO was selected from an RFP process from among five qualified vendors. All of the proposals were deemed acceptable but HumRRO's proposal had the best understanding of the needs of the licensing jurisdictions.

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.

Exhibit J



Changes in
Healthcare Professions'
Scope of Practice:
Legislative Considerations

This document is the result of collaboration between the following organizations:

Association of Social Work Boards (ASWB)

Federation of State Boards of Physical Therapy (FSBPT)

Federation of State Medical Boards of the United States, Inc. (FSMB)

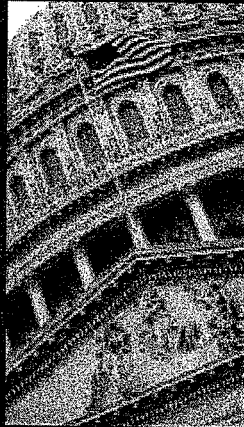
National Association of Boards of Pharmacy (NABP®)

National Board for Certification in Occupational Therapy, Inc. (NBCOT®)

National Council of State Boards of Nursing, Inc. (NCSBN®)

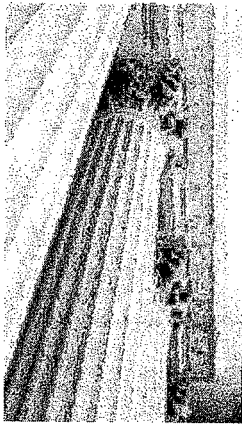
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A new era of healthcare reform is sweeping state and federal government in the U.S. During these difficult economic times policymakers are faced with many challenges, not the least of which are legislative

and regulatory debates on how to maximize the use of all healthcare practitioners and the debate among healthcare practitioners regarding the continuous evolution of scopes of practice. Law and rule makers charged with consumer protection will find this document helpful in guiding discussions on how the most effective and efficient care can be delivered to the American public in an era of continuous changes in healthcare.



Executive Summary

This document is a result of a collaborative effort in 2006 by representatives from six healthcare regulatory organizations. It has been developed to assist legislators and regulatory bodies with making decisions about changes to healthcare professions' scopes of practice.

Proposed changes to a healthcare professions' scope of practice often elicit strongly worded comments from several professional interest groups. Typically, these debates are perceived as turf battles between two or more professions, with the common refrain of "this is part of my practice so it can't be part of yours." Often lost among the competing arguments and assertions are the most important issues of whether this proposed change will better protect the public and enhance consumers' access to competent healthcare services.

Healthcare education and practice have developed in such a way that most professions today share some skills or procedures with other professions. It is no longer reasonable to expect each profession to have a completely unique scope of practice, exclusive of all others. We believe that scope of practice changes should reflect the evolution of abilities of each healthcare discipline, and we have therefore attempted to develop a rational and useful way to make decisions when considering practice act changes.

Based on reports from the Institute of Medicine¹ and the Pew Healthcare Commission² we propose a process for addressing scope of practice, which is focused on patient safety. The question that healthcare professionals must answer today is whether their profession can provide this proposed service in a safe and effective manner. If an issue does not address this question, it has no relevance to the discussion.

¹ *Crossing the Quality Chasm: A New Health System for the 21st Century*, The Institute of Medicine, National Academy Press, 2001.

² *Reforming Healthcare Workforce Regulation: Policy Considerations for the 21st Century*, Report of the Pew Health Professions Commission's Taskforce on Healthcare Workforce Regulation, December 1995, ix.

This process gets to the heart of regulation which, according to Schmitt and Shimberg³, is intended to:

1. "Ensure that the public is protected from unscrupulous, incompetent and unethical practitioners";
2. "Offer some assurance to the public that the regulated individual is competent to provide certain services in a safe and effective manner"; and
3. "Provide a means by which individuals who fail to comply with the profession's standards can be disciplined, including the revocation of their licenses."

The argument for scope of practice changes should have a foundational basis within four areas: (1) an established history of the practice scope within the profession; (2) education and training; (3) supporting evidence; and (4) appropriate regulatory environment. If a profession can provide support evidence in these areas, the proposed changes in scope of practice are likely to be in the public's best interest.

³ *Demystifying Occupational and Professional Regulation: Answers to Questions You May Have Been Afraid to Ask*, Schmitt, K. and Shimberg, B., Council on Licensure, Enforcement and Regulation, 1996.



Changes in Healthcare Professions' Scope of Practice: Legislative Considerations

A. Purpose

The purpose of this document is to provide information and guidance for legislative and regulatory agency decision making regarding changes in the scope of practice of healthcare professions. Specifically, the purpose is to:

- Promote better consumer care across professions and competent providers;
- Improve access to care; and
- Recognize the inevitability of overlapping scopes of practice.

We envision this document as an additional resource to be used by state legislatures, healthcare professions and regulatory boards in preparing proposed changes to practice acts and briefing legislators regarding those changes, just as various professions' model practice acts are used.

B. Background

This paper was a collaborative project developed by representatives of the regulatory boards of the following healthcare professions: medicine, nursing, occupational therapy, pharmacy, physical therapy and social work. It attempts to address scope of practice issues from a public protection viewpoint by determining whether a specific healthcare profession is capable of providing the proposed care in a safe and effective manner.

We believe that it is critical to review scope of practice issues broadly if our regulatory system is going to achieve the recommendations made by both the Institute of Medicine and the Pew Health Commission Taskforce on Healthcare Workforce Regulation. These reports urge regulators to allow for innovation in the use of all types of clinicians in meeting consumer needs in the most effective and efficient way, and to explore pathways to allow all professionals to provide services to the full extent of their current knowledge, training, experience and skills.

C. Historical Context

The history of professional licensure must be taken into account if one is to understand the current regulatory system governing scope of practice. Physicians were the first health professionals to obtain legislative recognition and protection of their practice authority. The practice of medicine was defined in broad and undifferentiated terms to include all aspects of an individual's care. Therefore, when other healthcare professions sought legislative recognition, they were seen as claiming the ability to do tasks which were already included in the universal and implicitly exclusive authority of medicine. This dynamic has fostered a view of scope of practice that is conceptually faulty and potentially damaging.

D. Introduction

The scope of practice of a licensed healthcare profession is statutorily defined in each state's laws in the form of a practice act. State legislatures have the authority to adopt or modify practice acts and therefore adopt or modify a particular scope of practice of a healthcare profession. Sometimes such modifications of practice acts are just the formalization of changes already occurring in education or practice within a profession due to the results of research, advances in technology, and changes in societal healthcare demands, among other things.

This process sometimes pits one profession against another before the state legislature. As an example, one profession may perceive another profession as "encroaching" into their area of practice. The profession may be economically or otherwise threatened and therefore opposes the other profession's legislative effort to change scope of practice. Proposed changes in scopes of practice that are supported by one profession but opposed by other professions may be perceived by legislators and the public as "turf battles." These turf battles are often costly and time consuming for the regulatory bodies, the professions and the legislators involved.⁴ Aside from guidance on scope of practice issues, this document may assist in preventing costly legislative battles; promote better consumer care and collaboration among regulatory bodies, the professions and between competent providers; and improve access to care.

⁴ *Strengthening Consumer Protection: Priorities for Healthcare Workforce Regulation*, Report from Pew Health Professions Commission, 1998.



The Purpose of Regulation

Before providing information regarding scope of practice decisions, we must ask the very basic question, "What is the purpose of regulation?" According to Schmitt and Shimberg,⁵ regulation is intended to:

1. "Ensure that the public is protected from unscrupulous, incompetent and unethical practitioners";
2. "Offer some assurance to the public that the regulated individual is competent to provide certain services in a safe and effective manner"; and
3. "Provide a means by which individuals who fail to comply with the profession's standards can be disciplined, including the revocation of their licenses."

A. Defining Scope of Practice

A 2005 Federation of State Medical Boards report defined scope of practice as the "Definition of the rules, the regulations, and the boundaries within which a fully qualified practitioner with substantial and appropriate training, knowledge, and experience may practice in a field of medicine or surgery, or other specifically defined field. Such practice is also governed by requirements for continuing education and professional accountability."⁶

B. Assumptions Related to Scope of Practice

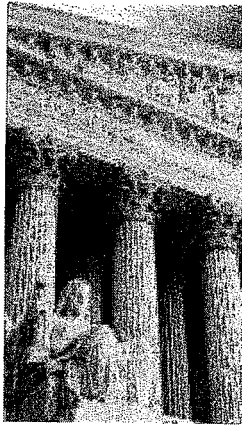
In attempting to provide a framework for scope of practice decisions, basic assumptions can be made:

1. **The purpose of regulation — public protection — should have top priority in scope of practice decisions, rather than professional self-interest.** This encompasses the belief that the public should have access to providers who practice safely and competently.

⁵ *Demystifying Occupational and Professional Regulation: Answers to Questions You May Have Been Afraid to Ask*, Schmitt, K. and Shimberg, B., Council on Licensure, Enforcement and Regulation, 1996.

⁶ *Assessing Scope of Practice in Health Care Delivery: Critical Questions in Assuring Public Access and Safety*, Federation of State Medical Boards, 2005.

2. **Changes in scope of practice are inherent in our current healthcare system.** Healthcare and its delivery are necessarily evolving. These changes relate to demographic changes (such as the aging of the "baby boomers"); advances in technology; decreasing healthcare dollars; advances in evidence-based healthcare procedures, practices and techniques; and many other societal and environmental factors. Healthcare practice acts also need to evolve as healthcare demands and capabilities change.
3. **Collaboration between healthcare providers should be the professional norm.** Inherent in this statement is the concept that competent providers will refer to other providers when faced with issues or situations beyond the original provider's own practice competency, or where greater competence or specialty care is determined as necessary or even helpful to the consumer's condition.
4. **Overlap among professions is necessary.** No one profession actually owns a skill or activity in and of itself. One activity does not define a profession, but it is the entire scope of activities within the practice that makes any particular profession unique. Simply because a skill or activity is within one profession's skill set does not mean another profession cannot and should not include it in its own scope of practice.
5. **Practice acts should require licensees to demonstrate that they have the requisite training and competence to provide a service.** No professional has enough skills or knowledge to perform all aspects of the profession's scope of practice. For instance, physicians' scope of practice is "medicine," but no physician has the skill and knowledge to perform every aspect of medical care. In addition, all healthcare providers' scopes of practice include advanced skills that are not learned in entry-level education programs and would not be appropriate for an entry-level practitioner to perform. As professions evolve, new techniques are developed, but not all practitioners are competent to perform these new techniques.



The Basis for Decisions Related to Changes in Scope of Practice

Arguments for scope of practice changes should have a foundational basis within four areas: (1) an established history of the practice scope within the profession; (2) education and training; (3) supportive evidence; and (4) appropriate regulatory environment. This foundation should provide the framework for analyzing and determining if a change in statutory scope of practice is warranted in a particular situation. If a profession can provide supporting evidence in these areas, the proposed changes in scope of practice should be adopted.

A. Historical Basis

The first of these relates to the history and evolution of the profession and its practice. This historical framework provides the basis for the essentials of the profession, including its theoretical basis, how it developed over the years and how it is presently defined. Changes in statutory scope of practice should fit within the historical, evolutionary and present practice context for the profession.

Questions to be considered in this area include:

1. Has there been an evolution of the profession towards the addition of the new skill or service?
2. What is the evidence of this evolution?
3. How does the new skill or service fit within or enhance a current area of expertise?

B. Education and Training

Tasks added to scopes of practice are often initially performed by professionals as advanced skills. Over time, as these new skills and techniques are utilized by a sufficient cohort of practitioners, they become entry-level skills and are taught as such in entry-level curricula. It is not realistic to require a skill or activity to be taught in an entry-level program before it becomes part of a profession's scope of practice. If this were the standard, there would be few, if any increases in scope of practice. However, the entry-level training program and its accompanying accrediting standards should provide the framework,

including the basic knowledge and skills needed, to acquire the new skill once out in the field. There should be appropriate accredited postprofessional training programs and competence assessment tools that indicate whether the practitioner is competent to perform the advanced skill safely.

Questions to be considered in this area include:

1. Does current entry-level education prepare practitioners to perform this skill as their experience increases?
2. If the change in scope is an advanced skill that would not be tested on the entry-level licensure examination, how is competence in the new technique assured?
3. What competence measures are available and what is the validity of these measures?
4. Are there training programs within the profession for obtaining the new skill or technique?
5. Are standards and criteria established for these programs?
6. Who develops these standards?
7. How and by whom are these programs evaluated against these standards?

C. Evidence

There should be evidence that the new skill or technique, as used by these practitioners, will promote access to quality healthcare. The base of evidence should include the best available clinical evidence, clinical expertise and research. Other forms of evidence include evolving concepts of disease/disability management, quality improvement and risk data, standards of care, infection control data, cost-effectiveness analysis and benchmarking data. Available evidence should be presented in an easy-to-understand format and in an objective and transparent manner.

Questions to be considered in this area include:

1. Is there evidence within the profession related to the particular procedures and skills involved in the changes in scope?
2. Is there evidence that the procedure or skill is beneficial to public health?

D. Regulatory Environment

A consideration in proposing changes in scope of practice is the regulatory environment. Often, it is the professional association that promotes and lobbies for scope of practice changes. The regulatory board should be involved in the process and be prepared to deal with the regulatory issues related to the proposed changes.

Questions to be considered in this area include:

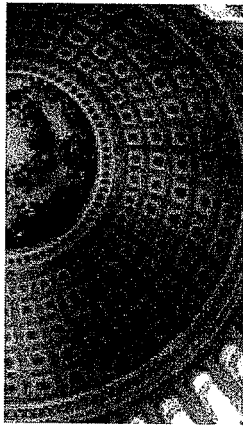
1. Is the regulatory board authorized to develop rules related to a changed or expanded scope?
2. Is the board able to determine the assessment mechanisms for determining if an individual professional is competent to perform the task?
3. Is the board able to determine the standards that training programs should be based on?
4. Does the board have sufficient authority to discipline any practitioner who performs the task or skill incorrectly or might likely harm a patient?
5. Have standards of practice been developed for the new task or skill?
6. How has the education, training and assessment within the profession expanded to include the knowledge base, skill set and judgments required to perform the tasks and skills?
7. What measures will be in place to assure competence?

Basis for Legislative Decision Making

Although the areas for decision making previously listed do not specifically mention public protection, supplying documentation in historical basis, education and training, evidence, and the regulatory environment is likely to ensure that the public will be protected when these changes are made.

Potential for harm to the consumer is difficult to prove or disprove relative to scope of practice. It is the very fact that there is potential for harm that necessitates regulation. If a strong basis for the redefined scope is demonstrated as described, this basis will be rooted in public protection.

This document rests on the premise that the only factors relevant to scope of practice decision making are those designed to ensure that all licensed practitioners be capable of providing competent care.



Conclusion

This document presents important issues for consideration by legislators and regulatory bodies when establishing or modifying a profession's scope of practice. The primary focus of this paper is public protection. When defining a profession's scope of practice, the goal of public protection can be realized when legislative and/or regulatory bodies include the following critical factors in their decision-making process:

- **Historical basis** for the profession, especially the evolution of the profession advocating a scope of practice change;
- Relationship of **education and training** of practitioners to scope of practice;
- **Evidence** related to how the new or revised scope of practice benefits the public; and
- The **capacity of the regulatory agency** involved to effectively manage modifications to scope of practice changes.

Overlapping scopes of practice are a reality in a rapidly changing healthcare environment. The criteria related to who is qualified to perform functions safely without risk of harm to the public are the only justifiable conditions for defining scopes of practice.

Appendix

Contact Information:

Association of Social Work Boards (ASWB)

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www.aswb.org

Federation of State Boards of Physical Therapy (FSBPT)

124 West Street South, Third Floor
Alexandria, VA 22314
703.299.3100
www.fsbpt.org

Federation of State Medical Boards Inc. (FSMB)

400 Fuller Wiser Road
Suite 300
Euless, TX 76039
817.868.4000
www.fsmb.org

Related resource information:

www.fsmb.org/pdf/2005_grpol_scope_of_practice.pdf

National Association of Boards of Pharmacy (NABP®)

1600 Feehanville Drive
Mount Prospect, IL 60056
847.391.4406
www.nabp.net

**National Board for Certification in Occupational Therapy, Inc.
(NBCOT®)**

12 South Summit Avenue
Suite 100
Gaithersburg, MD 20877
301.990.7979
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**National Council of State Boards of Nursing, Inc.
(NCSBN®)**

111 East Wacker Drive
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Chicago, IL 60601
312.525.3600
www.ncsbn.org

Related resource information:

www.ncsbn.org/NursingRegandInterpretationofSoP.pdf

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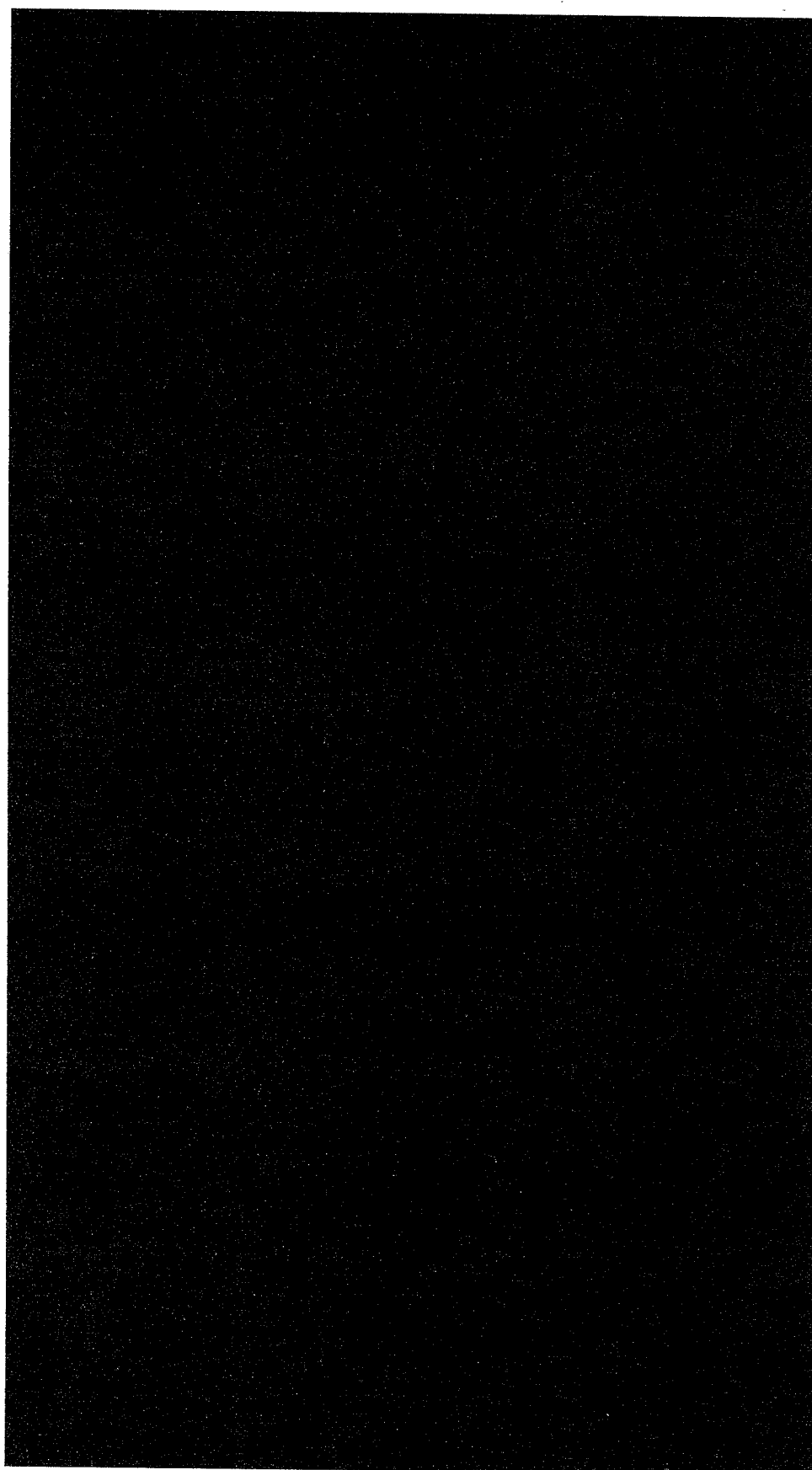
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Revised 1/12

Exhibit K

Description of Dry Needling In Clinical Practice:

An Educational Resource Paper

PRODUCED BY THE APTA PUBLIC POLICY, PRACTICE, AND PROFESSIONAL AFFAIRS UNIT

FEBRUARY 2013



DESCRIPTION OF DRY NEEDLING IN CLINICAL PRACTICE

FORWARD

The American Physical Therapy Association (APTA) created this document to provide background information on the performance of dry needling in clinical practice for members and components. APTA is the national professional association representing more than 85,000 physical therapists, physical therapist assistants, and students nationwide.

DESCRIPTION OF DRY NEEDLING

Dry needling is a skilled intervention that uses a thin filiform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular, and connective tissues for the management of neuromusculoskeletal pain and movement impairments. Dry needling (DN) is a technique used to treat dysfunctions in skeletal muscle, fascia, and connective tissue, and, diminish persistent peripheral nociceptive input, and reduce or restore impairments of body structure and function leading to improved activity and participation.

The physiological basis for DN depends upon the targeted tissue and treatment objectives. The treatment of myofascial trigger points (referred to as TrPs) has a different physiological basis than treatment of excessive muscle tension, scar tissue, fascia, and connective tissues. TrPs are hyperirritable spots within a taut band of contracted skeletal muscle fibers that produce local and/or referred pain when stimulated. TrPs are divided into active and latent TrPs dependent upon the degree of irritability. Active TrPs are spontaneously painful, while latent TrPs are only painful when stimulated, for example, with digital pressure. TrPs can be visualized by magnetic resonance imaging and sonography elastography,¹⁻⁵ which has shown that active TrPs are larger than latent TrPs and feature a reduction in circulation.² TrPs are physiological contractures,⁶ characterized by local ischemia and hypoxia,^{2,7} a significantly lowered pH (active TRPs only),⁸⁻¹⁰ a chemically altered milieu (active TRPs only),⁸⁻¹⁰ local and referred pain,¹¹⁻¹³ and altered muscle activation patterns.^{14,15} Although latent TrPs are not spontaneously painful, recent research has shown that they do contribute to nociception, therefore they need to be included in the treatment plan. TrPs are associated with dysfunctional motor endplates,^{16,17} endplate noise,¹⁸ and an increased release of acetylcholine.¹⁹⁻²³ TrPs activate muscle nociceptors and are peripheral sources of persistent nociceptive input, thus contributing to the development of peripheral and central sensitization.²⁴⁻²⁷ Stimulation of TrPs activates the periaqueductal grey and anterior cingulate cortex in the brain,²⁸⁻³⁰ and enkephalinergic, serotonergic, and noradrenergic inhibitory systems associated with A- Δ (A delta) fibers through segmental inhibition.^{31,32}

DN can be divided into deep and superficial DN. Deep DN has been shown to inactivate TrPs by eliciting local twitch responses (LTR),^{33,34} which are modulated by the central nervous system.^{35,36}

A LTR is a spinal cord reflex that is characterized by an involuntary contraction of the contracted taut band,^{36,37} which can be elicited by a snapping palpation or penetration with a needle.³⁸⁻⁴⁰ The LTR has been shown to be associated with alleviation and mitigation of spontaneous electrical activity or motor endplate noise,^{17,18,41,42} a reduction of the concentration of numerous nociceptive, inflammatory, and immune system related chemicals,^{9,10,43} and relaxation of the taut band.⁴⁴ Deep DN of TrPs is associated with reduced local and referred pain,^{45,46} improved range of motion,^{14,15} and decreased TrP irritability both locally^{18,47} and more remotely.^{42,48} DN normalizes the chemical milieu and pH of skeletal muscle⁸⁻¹⁰ and restores the local circulation.⁴⁹ Superficial DN is thought to activate mechanoreceptors coupled to slow conducting unmyelinated C fiber afferents, and indirectly, stimulate the anterior cingulate cortex.⁵⁰ Superficial DN may also be mediated through stimulation of A- Δ fibers,⁵¹ or via stretching of fibroblasts in connective tissue.³² Superficial DN is associated with reduced local and referred pain and improved range of motion,^{52,53} but it is not known at this time whether superficial DN has any impact on normalizing the chemical environment of active TrPs or reducing motor endplate noise associated with TrPs in general.

The physiological basis for DN treatment of excessive muscle tension, scar tissue, fascia, and connective tissues is not as well described in the literature, but the available research shows that there may be several benefits. Muscle tension is determined by a combination of the basic viscoelastic properties of a muscle and its surrounding fascia, and the degree of activation of the contractile apparatus of the muscle.⁵⁴ There is some evidence that excessive muscle tension, as seen for example in spasticity, can be alleviated with DN.^{55,56} Scar tissue has been linked to myofascial pain⁵⁷ and fibroblasts.^{58,59} Fibroblasts are specialized contractile cells within the fascia that are of particular interest, as they synthesize, organize, and remodel collagen, dependent upon the tension between the extracellular matrix and the cell.^{60,61} DN, especially when used in combination with rotation of the needle, can place fibroblasts in a high tension matrix, at which point the fibroblast changes shape and assumes a lamellar shape, and increases its collagen synthesis and cell proliferation.^{62,63} DN has been shown to directly activate fibroblasts through mechanical manipulation of the needle,^{31,64,65} which in turn activates the release of cytokines and other pro-inflammatory mediators.⁶⁶⁻⁷⁰ DN can play a substantial role in the process of *mechanotransduction*, which is described as the process by which the body converts mechanical loading into cellular responses.^{20,71-76} Fibroblast activation with a solid filament has been shown to result in pain neuromodulation.^{32,66}

INDICATIONS FOR USE

DN may be incorporated into a treatment plan when myofascial TrPs are present, which may lead to impairments in body structure, pain, and functional limitations. TrPs are sources of persistent peripheral nociceptive input²⁴ and their inactivation is consistent with current pain management insights.⁷⁷ DN also is indicated with restrictions in range of motion due to contracted muscle fibers or taut bands, or other soft tissue restrictions, such as fascial adhesions or scar tissue. TrPs have been identified in numerous diagnoses, such as radiculopathies,⁷⁸ joint dysfunction,⁷⁹ disk pathology,⁸⁰ tendonitis,⁸¹ craniomandibular dysfunction,^{82,83} migraines,^{84,85} tension-type headaches,^{86,87} carpal tunnel syndrome,^{88,89} computer-related disorders,^{90,91} whiplash associated disorders,⁹²⁻⁹⁴ spinal dysfunction,⁹⁵ pelvic pain and other urologic syndromes,⁹⁶⁻⁹⁹ post-herpetic neuralgia,^{100,101} complex regional pain syndrome,^{102,103} nocturnal cramps,¹⁰⁴ phantom pain,^{105,106} and other relatively uncommon diagnoses such as Barré Liéou syndrome,¹⁰⁷ or neurogenic pruritus,¹⁰⁸ among others.¹⁰⁹

PATIENT SELECTION

Safe DN practice includes the knowledge, skills, and attributes to perform the technique, which at a minimum incorporates appropriate patient selection, creation of a safe and comfortable environment, assessment of one's own capacity to provide the treatment (eg time constraints, stress, fatigue), safe handling of needles, handling and positioning of the patient, anatomical knowledge, appropriate needle technique (direction and depth), and appropriate monitoring of the patient both during and following treatment.

Regarding patient selection, DN is appropriate for nearly all patients who present with any of the indications for DN. Physical therapists (PTs) must recognize when patients present with significant needle phobia or other anxiety about being treated with needles. PTs must decide on an individual basis whether a patient with needle phobia or significant anxiety is an appropriate candidate for DN. If DN treatment is perceived as a threatening input, it is unlikely to be therapeutic.⁷⁷ In any case, to be considered for DN, patients must be able to communicate with the PT either directly or via an interpreter and they must be able to consent to the treatment.

Caution is warranted with younger patients. Based on empirical evidence, DN is not recommended for children younger than 12 years of age. When treating children, DN should only be performed with parent and child's consent. Care should be taken assuming a child understands the procedure.

PRECAUTIONS

There are certain precautions to be considered with the use of DN:

1. Patients with a needle aversion or phobia may object to the physical therapy treatment with DN. With appropriate education, however, these patients may still consider DN.
2. Patients with significant cognitive impairment may have difficulty understanding the treatment parameters and DN intervention.
3. Patients who are unable to communicate directly or via an interpreter may not be appropriate for DN treatments.
4. Patients may not be willing to be treated with DN.
5. Patients need to be able to give consent for the treatment with DN.
6. Local skin lesions must be avoided with DN.
7. Local or systemic infections are generally considered to be contraindicated.
8. Local lymphedema (note: there is no evidence that DN would cause or contribute to increased lymphedema, ie, postmastectomy, and as such is not a contraindication).
9. Severe hyperalgesia or allodynia may interfere with the application of DN, but should not be considered an absolute contraindication.
10. Some patients may be allergic to certain metals in the needle, such as nickel or chromium. This situation can easily be remedied by using silver or gold plated needles.
11. Patients with an abnormal bleeding tendency, ie, patients on anticoagulant therapy or with thrombocytopenia, must be needled with caution. DN of deep muscles, such as the lateral pterygoid or psoas major muscle, that cannot be approached with direct pressure to create hemostasis may need to be avoided to prevent excessive bleeding.
12. Patients with a compromised immune system may be more susceptible to local or systemic infections from DN, even though there is no documented increased risk of infection with DN.¹¹⁰
13. DN during the first trimester of pregnancy, during which miscarriage is fairly common, must be approached with caution, even though there is no evidence that DN has any potential abortifacient effects.¹¹¹⁻¹¹³
14. DN should not be used in the presence of vascular disease, including varicose veins.
15. Caution is warranted with DN following surgical procedures where the joint capsule has been opened. Although septic arthritis is a concern, DN can still be performed as long as the needle is not directed toward the joint or implant.

PROCEDURE

DN techniques should be guided by randomized clinical trials, basic research, systematic reviews, and clinical expertise.¹¹⁴ Clinician education, training, and clinical experience with DN should be clearly communicated to the patient. PTs should use DN only after obtaining the knowledge, skills, and attributes associated with safe and effective DN techniques. The patient should give verbal consent prior to each treatment with DN. Some jurisdictions do require a written consent for treatments with DN.

In clinical practice, DN is performed once the physical therapy examination and evaluation are completed and clear therapeutic goals and objectives are established. The solid filament needle allows the PT to target tissues that are not manually palpable, such as the subscapularis, iliacus, and lateral pterygoid muscles.¹¹⁵

As part of the procedural guidelines for DN, physical therapists must practice consistent with the OSHA Blood Borne Pathogens standard¹¹⁶ (osha.gov), which applies to all occupational exposure to blood or other potentially infectious materials. According to the OSHA Blood Borne Pathogens Standard, "gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin."¹¹⁶ As DN creates "non-intact skin" and recent research has shown that the most common adverse event of dry needling is minor bleeding,¹¹⁰ it follows that the OSHA Blood Borne Pathogens Standard applies.

An explanation of the procedure to the patient should be performed prior to the application of DN. The patient should be educated on DN rationale and theory, what to expect during and after the treatment, the type of needle used, precautions, possible side effects, and expected outcomes. Possible fear of needling and pain associated with DN must be addressed. Research has shown that by activating patients' conditioned pain modulation system, patients are able to differentiate and even appreciate the inhibition of their pain by a second noxious stimulus, ie, the pain associated with DN.¹¹⁷ This realization can activate an endogenous pain inhibitory mechanism, which inhibits early nociceptive processing. By placing DN in this broader context, patients can usually tolerate the discomfort associated with DN without risking further sensitization or windup.¹¹⁸

When using DN techniques for the treatment of TrPs, the PT should palpate the target muscle for a taut band and identify a hyperirritable spot within the taut band confirming TrPs to be treated. DN is usually performed with a solid filiform needle in a tube. The filiform needle in its tube is fixed with the non-needling hand against the suspected area by using a pincer grip or flat palpation depending on the muscle orientation, location, and direction of needle penetration. With the needling hand, the needle is gently loosened from the tube. The top of the needle is tapped or flicked allowing the needle to penetrate the skin. With deep DN, the needle is

guided toward the TrP until resistance is felt and a LTR is elicited. The elicitation of a LTR is considered essential in obtaining a desirable therapeutic effect.^{33,34} The needle is then focused in this area or other neighboring areas by drawing the needle back toward the subcutaneous tissue without taking it out of the skin, and then redirecting the needle toward the remaining TrPs.¹¹⁹ Generally, numerous LTRs can be elicited. Cessation of a given DN procedure may occur as a result of notable decreased frequency or eradication of LTRs, decreased resistance to palpation of the underlying tissue, or patient intolerance of continued needling at that particular site. Once the needle has been withdrawn completely from the skin, pressure (hemostasis) can be applied directly to the skin over the needle insertion site to aid in the prevention of possible swelling or post needling soreness. The muscle is then palpated again to reassess for taut bands and TrPs. Further needling can be performed for the same muscle or for other clinically relevant musculature within the same treatment session. With superficial needling, the needle is just slightly into a muscle in the vicinity of a TrP, but LTRs are not elicited. The needle is kept in place for approximately 30 seconds. At that time, the needle is withdrawn to the subcutaneous tissue. The therapist assesses whether the sensitivity of the TrP has decreased. If so, the DN needling can be discontinued. If the TrP is still sensitive, the needle is guided again into the muscle in the vicinity of the TrP and left in place for approximately 2 minutes.⁵¹ The superficial DN procedure is usually repeated over several TrPs in a given region. LTRs are not elicited with superficial needling techniques. Superficial DN techniques may be used when patients do not tolerate deep DN, or when excessive cramping or stiffness of the underlying tissue occurs while needling.

DN can be combined with electrical stimulation in which the needles become the electrodes. To use electrical stimulation combined with DN, a minimum of 2 needles is required per channel, but multiple channels can be used simultaneously. The best results are reached when the needles are placed within the dermatomes corresponding to the region of dysfunction.¹¹⁹ Frequencies between 2 and 4 Hz with high intensity are commonly used in nociceptive pain conditions and may result in the release of endorphins and enkephalins. For neuropathic pain, frequencies between 80 and 100 Hz are recommended, which are thought to affect the release of dynorphin, gamma-aminobutyric acid, and galanin.¹²⁰ The needles can be placed directly in or at either side of a TrP.^{121,122}

The DN treatment of fascia and connective tissues, including scar tissue, is similar to the approach for TrPs. The PT should palpate the tissues for adhesions and movement restrictions. The needle is inserted in the same manner as for TrPs, but after insertion, the needle is directed more superficially toward the adhesion or restriction. Rotating the needle facilitates mechanotransduction and eventually will lead to tissue relaxation. The needle is left in place until tissue relaxation has been achieved, at which point the needle can easily be removed. DN of fascia usually is a superficial DN technique.

After DN, functional reassessment should be performed to determine if the established outcome has been achieved. Standardized outcome tools such as the modified Oswestry Disability Index, Disability of the Arm Shoulder Hand, Patient Specific Functional Scale or Lower extremity function scale as examples should be utilized to monitor progress. The patient is monitored during the procedure for tolerance and for possible reproduction of local or referred pain sensations. It should be made clear to the patient that the treatment would cease at any time upon his or her request or if he or she was clearly not tolerating the procedure. Tolerance to the treatment should be evaluated during every session.

Manual soft tissue mobilization, therapeutic exercise, neuromuscular re-education, and functional retraining should be used in combination with DN interventions. The patient should be educated in appropriate self-care techniques post DN treatment, which may include specific stretches of the involved muscles, thermo applications, or gentle TrP pressure.

DN is rarely a stand-alone procedure and should be part of a broader physical therapy approach.¹¹⁹ DN should result in a more efficient progression to corrective exercises to improve activity limitations and participation restrictions.

OTHER CONSIDERATIONS

Physical therapists need to be cognizant of any legal or regulatory requirements or restrictions on the performance of dry needling in their state. Information on dry needling scope of practice considerations can be found in the January 2012 APTA Education Resource Paper *Physical Therapists & the Performance of Dry Needling*, available online at www.apta.org/stateissues. In addition, PTs should check with the insurance payer to see if it has issued any specific policies regarding billing of dry needling. As with any physical therapy service, PTs are responsible for providing complete and accurate documentation; resources on documentation are available online at www.apta.org/documentation.

NOTE

APTA will revise this document as new information and data becomes available and updates occur. For questions or comments regarding this document, please contact APTA Public Policy, Practice, and Professional Affairs Unit at advocacy@apta.org.

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Exhibit L

Myofascial Trigger Points: An Evidence-Informed Review

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Received the 2006 OPTP Award for Excellence in a Published Review of the Literature

Abstract: This article provides a best evidence-informed review of the current scientific understanding of myofascial trigger points with regard to their etiology, pathophysiology, and clinical implications. Evidence-informed manual therapy integrates the best available scientific evidence with individual clinicians' judgments, expertise, and clinical decision-making. After a brief historical review, the clinical aspects of myofascial trigger points, the interrater reliability for identifying myofascial trigger points, and several characteristic features are discussed, including the taut band, local twitch response, and referred pain patterns. The etiology of myofascial trigger points is discussed with a detailed and comprehensive review of the most common mechanisms, including low-level muscle contractions, uneven intramuscular pressure distribution, direct trauma, unaccustomed eccentric contractions, eccentric contractions in unconditioned muscle, and maximal or sub-maximal concentric contractions. Many current scientific studies are included and provide support for considering myofascial trigger points in the clinical decision-making process. The article concludes with a summary of frequently encountered precipitating and perpetuating mechanical, nutritional, metabolic, and psychological factors relevant for physical therapy practice. Current scientific evidence strongly supports that awareness and working knowledge of muscle dysfunction and in particular myofascial trigger points should be incorporated into manual physical therapy practice consistent with the guidelines for clinical practice developed by the International Federation of Orthopaedic Manipulative Therapists. While there are still many unanswered questions in explaining the etiology of myofascial trigger points, this article provides manual therapists with an up-to-date evidence-informed review of the current scientific knowledge.

Key Words: Myofascial Pain Syndrome, Trigger Points, Myofascial, Etiology, Pathophysiology

During the past few decades, myofascial trigger points (MTrPs) and myofascial pain syndrome (MPS) have received much attention in the scientific and clinical literature. Researchers worldwide are investigating various aspects of MTrPs, including their specific etiology, pathophysiology, histology, referred pain patterns, and clinical applications. Guidelines developed by the International Federation of Orthopaedic Manipulative

Therapists (IFOMT) confirm the importance of muscle dysfunction for orthopedic manual therapy clinical practice. The IFOMT has defined orthopedic manual therapy as "a specialized area of physiotherapy/physical therapy for the management of neuromusculoskeletal conditions, based on clinical reasoning, using highly specific treatment approaches including manual techniques and therapeutic exercises." The educational standards of IFOMT require that skills will be demonstrated in—among others—"analysis and specific tests for functional status of the muscular system," "a high level of skill in other manual and physical therapy techniques required to mobilize the articular, muscular or neural systems," and "knowledge of various manipulative therapy approaches as practiced within physical therapy, medicine, osteopathy and chiropractic"¹.

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However, articles about muscle dysfunction in the manual therapy literature are sparse and they generally focus on muscle injury and muscle repair mechanisms² or on muscle recruitment³. Until very recently, the current scientific knowledge and clinical implications of MTrPs were rarely included⁴⁻⁷. It appears that orthopedic manual therapists have not paid much attention to the pathophysiology and clinical manifestations of MTrPs. Manual therapy educational programs in the US seem to reflect this orientation and tend to place a strong emphasis on joint dysfunction, mobilizations, and manipulations with only about 10%-15% of classroom education devoted to muscle pain and muscle dysfunction.

This review of the MTrP literature is based on current best scientific evidence. The field of manual therapy has joined other medical disciplines by embracing evidence-based medicine, which proposes that the results of scientific research need to be integrated into clinical practice⁸. Evidence-based medicine has been defined as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients”^{9,10}. Within the evidence-based medicine paradigm, evidence is not restricted to randomized controlled trials, systematic reviews, and meta-analyses, although this restricted view seems to be prevalent in the medical and physical therapy literature. Sackett et al^{9,10} emphasized that external clinical evidence can inform but not replace individual clinical expertise. Clinical expertise determines whether external clinical evidence applies to an individual patient, and if so, how it should be integrated into clinical decision-making. Pencheon¹¹ shared this perspective and suggested that high-quality healthcare is about combining “wisdom produced by years of experience” with “evidence produced by generalizable research” in “ways with which patients are happy.” He suggested shifting from evidence-based to evidence-informed medicine, where clinical decision-making is informed by research evidence but not driven by it and always includes knowledge from experience. Evidence-informed manual therapy involves integrating the best available external scientific evidence with individual clinicians’ judgments, expertise, and clinical decision-making¹². The purpose of this article is to provide a best evidence-informed review of the current scientific understanding of MTrPs, including the etiology, pathophysiology, and clinical implications, against the background of extensive clinical experience.

Brief Historical Review

While Dr. Janet Travell (1901-1997) is generally credited for bringing MTrPs to the attention of health care providers, MTrPs have been described and rediscovered for several centuries by various clinicians and researchers^{13,14}. As far back as the 16th century, de Baillou (1538-1616), as cited by Ruhmann, described what is now known as myofascial pain syndrome (MPS)¹⁵. MPS is defined as

the “sensory, motor, and autonomic symptoms caused by MTrPs” and has become a recognized medical diagnosis among pain specialists^{16,17}. In 1816, British physician Balfour, as cited by Stockman, described “nodular tumors and thickenings which were painful to the touch, and from which pains shot to neighboring parts”¹⁸. In 1898, the German physician Strauss discussed “small, tender and apple-sized nodules and painful, pencil-sized to little-finger-sized palpable bands”¹⁹. The first trigger point manual was published in 1931 in Germany nearly a decade before Travell became interested in MTrPs²⁰. While these early descriptions may appear a bit archaic and unusual—for example, in clinical practice one does not encounter “apple-sized nodules”—these and other historic papers did illustrate the basic features of MTrPs quite accurately¹⁴.

In the late 1930s, Travell, who at that time was a cardiologist and medical researcher, became particularly interested in muscle pain following the publication of several articles on referred pain²¹. Kellgren’s descriptions of referred pain patterns of many muscles and spinal ligaments after injecting these tissues with hypertonic saline²²⁻²⁵ eventually moved Travell to shift her medical career from cardiology to musculoskeletal pain. During the 1940s, she published several articles on injection techniques of MTrPs²⁶⁻²⁸. In 1952, she described the myofascial genesis of pain with detailed referred pain patterns for 32 muscles²⁹. Other clinicians also became interested in MTrPs. European physicians Lief and Chaitow developed a treatment method, which they referred to as “neuromuscular technique”³⁰. German physician Gutstein described the characteristics of MTrPs and effective manual therapy treatments in several papers under the names of Gutstein, Gutstein-Good, and Good³¹⁻³⁴. In Australia, Kelly produced a series of articles about fibrositis, which paralleled Travell’s writings³⁵⁻³⁸.

In the US, chiropractors Nimmo and Vannerson³⁹ described muscular “noxious generative points,” which were thought to produce nerve impulses and eventually result in “vasoconstriction, ischaemia, hypoxia, pain, and cellular degeneration.” Later in his career, Nimmo adopted the term “trigger point” after having been introduced to Travell’s writings. Nimmo maintained that hypertonic muscles are always painful to pressure, a statement that later became known as “Nimmo’s law.” Like Travell, Nimmo described distinctive referred pain patterns and recommended releasing these dysfunctional points by applying the proper degree of manual pressure. Nimmo’s “receptor-tonus control method” continues to be popular among chiropractic physicians^{39,40}. According to a 1993 report by the National Board of Chiropractic Economics, over 40% of chiropractors in the US frequently apply Nimmo’s techniques⁴¹. Two spin-offs of Nimmo’s work are St. John Neuromuscular Therapy (NMT) method and NMT American version, which have become particularly popular among massage therapists³⁰.

In 1966, Travell founded the North American Academy of Manipulative Medicine, together with Dr. John Mennell, who also published several articles about MTrPs^{42,43}. Throughout her career Travell promoted integrating myofascial treatments with articular treatments¹⁶. One of her earlier papers described a technique for reducing sacroiliac displacement⁴⁴. However, Travell, as cited by Paris⁴⁵, maintained the opinion that manipulations were the exclusive domain of physicians and she rejected membership in the North American Academy of Manipulative Medicine by physical therapists.

In the early 1960s, Dr. David Simons was introduced to Travell and her work, which became the start of a fruitful collaboration eventually resulting in several publications, including the *Trigger Point Manuals*, consisting of a 1983 first volume (upper half of the body) and a 1992 second volume (lower half of the body)^{46,47}. The first volume has since been revised and updated and a second edition was released in 1999¹⁶. The *Trigger Point Manuals* are the most comprehensive review of nearly 150 muscle referred-pain patterns based on Travell's clinical observations, and they include an extensive review of the scientific basis of MTrPs. Both volumes have been translated into several foreign languages, including Russian, German, French, Italian, Japanese, and Spanish. Several other clinicians worldwide have also published their own trigger point manuals⁴⁸⁻⁵⁴.

Clinical Aspects of Myofascial Trigger Points

An MTrP is described as "a hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band"¹⁶. Myofascial trigger points are classified into active and latent trigger points¹⁶. An active MTrP is a symptom-producing MTrP and can trigger local or referred pain or other paraesthesiae. A latent MTrP does not trigger pain without being stimulated. Myofascial trigger points are the hallmark characteristics of MPS and feature motor, sensory, and autonomic components. Motor aspects of active and latent MTrPs may include disturbed motor function, muscle weakness as a result of motor inhibition, muscle stiffness, and restricted range of motion^{55,56}. Sensory aspects may include local tenderness, referral of pain to a distant site, and peripheral and central sensitization. Peripheral sensitization can be described as a reduction in threshold and an increase in responsiveness of the peripheral ends of nociceptors, while central sensitization is an increase in the excitability of neurons within the central nervous system. Signs of peripheral and central sensitization are allodynia (pain due to a stimulus that does not normally provoke pain) and hyperalgesia (an increased response to a stimulus that is normally painful). Both active and latent MTrPs are painful on compression. Vecchiet et al⁵⁷⁻⁵⁹ described specific sensory changes over MTrPs. They

observed significant lowering of the pain threshold over active MTrPs when measured by electrical stimulation, not only in the muscular tissue but also in the overlying cutaneous and subcutaneous tissues. In contrast, with latent MTrPs, the sensory changes did not involve the cutaneous and subcutaneous tissues⁵⁷⁻⁵⁹. Autonomic aspects of MTrPs may include, among others, vasoconstriction, vasodilatation, lacrimation, and piloerection^{16,60-63}.

A detailed clinical history, examination of movement patterns, and consideration of muscle referred-pain patterns assist clinicians in determining which muscles may harbor clinically relevant MTrPs⁶⁴. Muscle pain is perceived as aching and poorly localized. There are no laboratory or imaging tests available that can confirm the presence of MTrPs. Myofascial trigger points are identified through either a flat palpation technique (Figure 1) in which a clinician applies finger or thumb pressure to muscle against underlying bone tissue, or a pincer palpation technique (Figure 2) in which a particular muscle is palpated between the clinician's fingers.

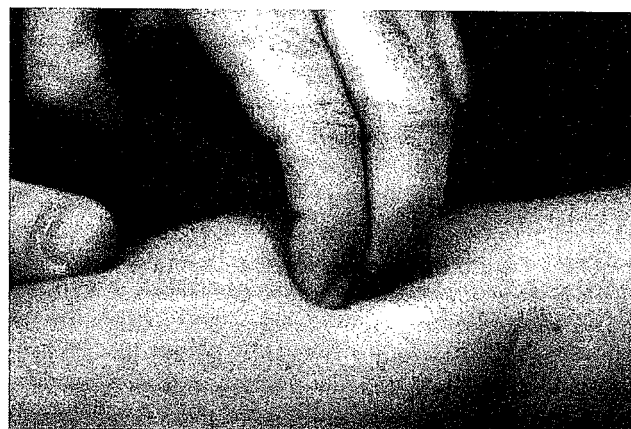


Fig. 1: Flat palpation



Fig. 2: Pincer palpation

By definition, MTrPs are located within a taut band of contractured muscle fibers (Figure 3), and palpating for MTrPs starts with identifying this taut band by palpating perpendicular to the fiber direction. Once the taut band is located, the clinician moves along the taut band to

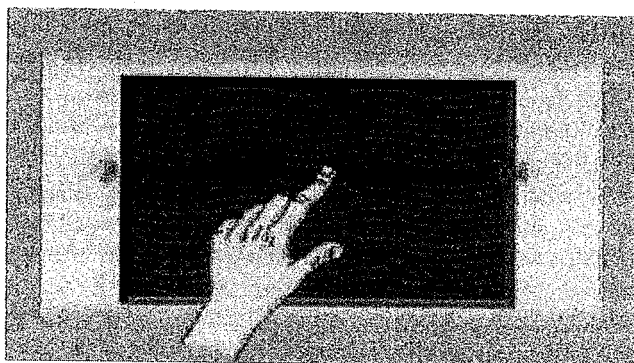


Fig. 3: Palpation of a trigger point within a taut band (reproduced with permission from Weisskircher H-W. Head Pains Due to Myofascial Trigger Points. CD-ROM, www.trigger-point.com, 1997)

find a discrete area of intense pain and hardness.

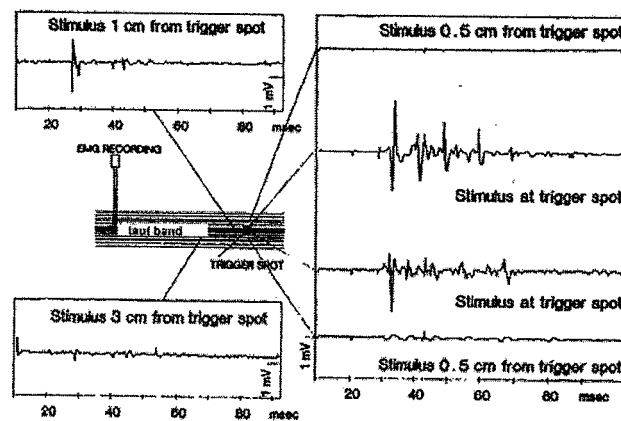
Two studies have reported good overall interrater reliability for identifying taut bands, MTrPs, referred pain, and local twitch responses^{65,66}. The minimum criteria that must be satisfied in order to distinguish an MTrP from any other tender area in muscle are a taut band and a tender point in that taut band⁶⁵. Although Janda maintained that systematic palpation can differentiate between myofascial taut bands and general muscle spasms, electromyography is the gold standard to differentiate taut bands from contracted muscle fibers^{67,68}. Spasms can be defined as electromyographic (EMG) activity as the result of increased neuromuscular tone of the entire muscle, and they are the result of nerve-initiated contractions. A taut band is an endogenous localized contracture within the muscle without activation of the motor endplate⁶⁹. From a physiological perspective, the term "contracture" is more appropriate than "contraction" when describing chronic involuntary shortening of a muscle without EMG activity. In clinical practice, surface EMG is used in the diagnosis and management of MTrPs in addition to manual examinations^{67,70,71}. Diagnostically, surface EMG can assist in assessing muscle behavior during rest and during functional tasks. Clinicians use the MTrP referred pain patterns in determining which muscles to examine with surface EMG. Muscles that harbor MTrPs responsible for the patient's pain complaint are examined first. EMG assessments guide the clinician with postural training, ergonomic interventions, and muscle awareness training⁶⁷.

The patient's recognition of the elicited pain further

guides the clinician. The presence of a so-called local twitch response (LTR), referred pain, or reproduction of the person's symptomatic pain increases the certainty and specificity of the diagnosis of MPS. Local twitch responses are spinal reflexes that appear to be unique to MTrPs. They are characterized by a sudden contraction of muscle fibers within a taut band, when the taut band is strummed manually or needled. The sudden contractions can be observed visually, can be recorded electromyographically, or can be visualized with diagnostic ultrasound⁷². When an MTrP is needled with a monopolar teflon-coated EMG needle, LTRs appear as high-amplitude poly-phasic EMG discharges⁷³⁻⁷⁸.

In clinical practice, there is no benefit in using needle EMG or sonography, and its utility is limited to research studies. For example, Audette et al⁷⁹ established that in 61.5% of active MTrPs in the trapezius and levator scapulae muscles, dry needling an active MTrP elicited an LTR in the same muscle on the opposite side of the body. Needling of latent MTrPs resulted in unilateral LTRs only. In this study, LTRs were used to research the nature of active versus latent MTrPs. Studies have shown that clinical outcomes are significantly improved when LTRs are elicited in the treatment of patients with dry needling or injection therapy^{74,80,81}. The taut band, MTrP, and LTR (Figure 4) are objective criteria, identified solely by palpation, that do not require a verbal response from the patient⁸².

Active MTrPs refer pain usually to a distant site. The referred pain patterns (Figure 5) are not necessarily



*Fig. 4: Local twitch response in a rabbit trigger spot. Local twitch responses are elicited only when the needle is placed accurately within the trigger spot. Moving as little as 0.5 cm away from the trigger spot virtually eliminates the local twitch response (reproduced with permission from Hong C-Z, Torigoe Y. Electrophysiological characteristics of localized twitch responses in responsive taut bands of rabbit skeletal muscle. *J Musculoskeletal Pain* 1994;2:17-43)*

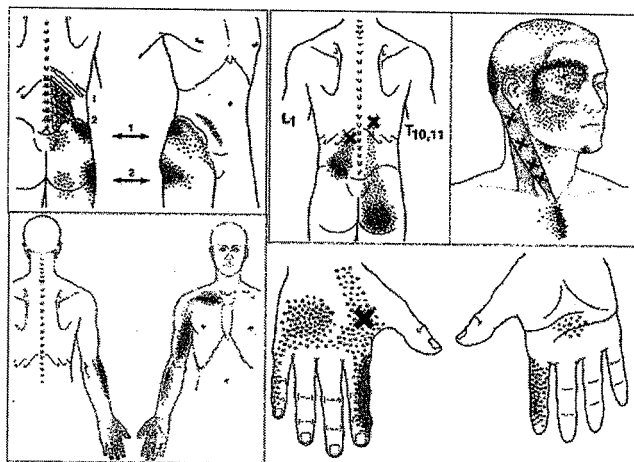


Fig. 5: MTrP referred pain patterns (reproduced with permission from MEDICLIP, Manual Medicine 1 & 2, Version 1.0a, 1997, Williams & Wilkins)

restricted to single segmental pathways or to peripheral nerve distributions. Although typical referred pain patterns have been established, there is considerable variation between patients^{16,48}.

Usually, the pain in reference zones is described as "deep tissue pain" of a dull and aching nature. Occasionally, patients may report burning or tingling sensations, especially in superficial muscles such as the platysma muscle^{83,84}. By mechanically stimulating active MTrPs, patients may report the reproduction of their pain, either immediately or after a 10-15 second delay. Normally, skeletal muscle nociceptors require high intensities of stimulation and they do not respond to moderate local pressure, contractions, or muscle stretches⁸⁵. However, MTrPs cause persistent noxious stimulation, which results in increasing the number and size of the receptive fields to which a single dorsal horn nociceptive neuron responds, and the experience of spontaneous and referred pain⁸⁶. Several recent studies have determined previously unrecorded referred pain patterns of different muscles and MTrPs⁸⁷⁻⁹⁰. Referred pain is not specific to MPS but it is relatively easy to elicit over MTrPs⁹¹. Normal muscle tissue and other body tissues, including the skin, zygapophyseal joints, or internal organs, may also refer pain to distant regions with mechanical pressure, making referred pain elicited by stimulation of a tender location a nonspecific finding^{84,92-95}. Gibson et al⁹⁶ found that referred pain is actually easier to elicit in tendon-bone junctions and tendon than in the muscle belly. However, after exposing the muscle to eccentric exercise, significantly higher referred pain frequency and enlarged pain areas were found at the muscle belly and the tendon-bone junction sites following injection with hypotonic saline. The authors suggested that central sensitization may explain the referred pain

frequency and enlarged pain areas⁹⁷.

While a survey of members of the American Pain Society showed general agreement that MTrPs and MPS exist as distinct clinical entities, MPS continues to be one of the most commonly missed diagnoses^{17,98}. In a recent study of 110 adults with low back pain, myofascial pain was the most common finding affecting 95.5% of patients, even though myofascial pain was poorly defined as muscle pain in the paraspinal muscles, piriformis, or tensor fasciae latae⁹⁹. A study of adults with frequent migraine headaches diagnosed according to the International Headache Society criteria showed that 94% of the patients reported migrainous pain with manual stimulation of cervical and temporal MTrPs, compared with only 29% of controls^{100,101}. In 30% of the migraine group, palpation of MTrPs elicited a "full-blown migraine attack that required abortive treatment." The researchers found a positive relationship between the number of MTrPs and the frequency of migraine attacks and duration of the illness¹⁰⁰. Several studies have confirmed that MTrPs are common not only in persons attending pain management clinics but also in those seeking help through internal medicine and dentistry¹⁰²⁻¹⁰⁷. In fact, MTrPs have been identified with nearly every musculoskeletal pain problem, including radiculopathies¹⁰⁴, joint dysfunction¹⁰⁸, disk pathology¹⁰⁹, tendonitis¹¹⁰, craniomandibular dysfunction¹¹¹⁻¹¹³, migraines^{100,114}, tension-type headaches^{7,87}, carpal tunnel syndrome¹¹⁵, computer-related disorders¹¹⁶, whiplash-associated disorders^{60,117}, spinal dysfunction¹¹⁸, and pelvic pain and other urologic syndromes¹¹⁹⁻¹²². Myofascial trigger points are associated with many other pain syndromes¹²³, including, for example, post-herpetic neuralgia^{124,125}, complex regional pain syndrome^{126,127}, nocturnal cramps¹²⁸, phantom pain^{129,130}, and other relatively uncommon diagnoses such as Barré-Liéou syndrome¹³¹ and neurogenic pruritus¹³². A recent study suggested that there might be a relationship between MTrPs in the upper trapezius muscle and cervical spine dysfunction at the C3 and C4 vertebrae, although a cause-and-effect relationship was not established in this correlational study¹³³. Another study described that persons with mechanical neck pain had significantly more clinically relevant MTrPs in the upper trapezius, sternocleidomastoid, levator scapulae, and suboccipital muscles as compared to healthy controls⁵.

Etiology of MTrPs

Several possible mechanisms can lead to the development of MTrPs, including low-level muscle contractions, uneven intramuscular pressure distribution, direct trauma, unaccustomed eccentric contractions, eccentric contractions in unconditioned muscle, and maximal or submaximal concentric contractions.

Low-level muscle contractions

Of particular interest in the etiology of MTrPs are low-level muscle exertions and the so-called Cinderella

Hypothesis developed by Hägg in 1988¹³⁴. The Cinderella Hypothesis postulates that occupational myalgia is caused by selective overloading of the earliest recruited and last de-recruited motor units according to the ordered recruitment principle or Henneman's "size principle"^{134,135}. Smaller motor units are recruited before and de-recruited after larger ones; as a result, the smaller type 1 fibers are continuously activated during prolonged motor tasks¹³⁵. According to the Cinderella Hypothesis, muscular force generated at sub-maximal levels during sustained muscle contractions engages only a fraction of the motor units available without the normally occurring substitution of motor units during higher force contractions, which in turn can result in metabolically overloaded motor units, prone to loss of cellular Ca^{2+} -homeostasis, subsequent activation of autogenic destructive processes, and muscle pain^{136,137}. The other pillar of the Cinderella Hypothesis is the finding of an excess of ragged red fibers in myalgic patients¹³⁶. Indeed, several researchers have demonstrated the presence of ragged red fibers and moth-eaten fibers in subjects with myalgia, which are indications of structural damage to the cell membrane and mitochondria and a change in the distribution of mitochondria or the sarcotubular system respectively¹³⁸⁻¹⁴².

There is growing evidence that low-level static muscle contractions or exertions can result in degeneration of muscle fibers¹⁴³. Gissell^{144,145} has shown that low-level exertions can result in an increase of Ca^{2+} -release in skeletal muscle cells, muscle membrane damage due to leakage of the intracellular enzyme lactate dehydrogenase, structural damage, energy depletion, and myalgia. Low-level muscle stimulation can also lead to the release of interleukin 6 (IL-6) and other cytokines^{146,147}.

Several studies have confirmed the Cinderella Hypothesis and support the idea that in low-level static exertions, muscle fiber recruitment patterns tend to be stereotypical with continuous activation of smaller type 1 fibers during prolonged motor tasks¹⁴⁸⁻¹⁵². As Hägg indicated, the continuous activity and metabolic overload of certain motor units does not occur in all subjects¹³⁶. The Cinderella Hypothesis was recently applied to the development of MTrPs¹¹⁶. In a well-designed study, Treasters et al¹¹⁶ established that sustained low-level muscle contractions during continuous typing for as little as 30 minutes commonly resulted in the formation of MTrPs. They suggested that MTrPs might provide a useful explanation for muscle pain and injury that can occur from low-level static exertions¹¹⁶. Myofascial trigger points are common in office workers, musicians, dentists, and other occupational groups exposed to low-level muscle exertions¹⁵³. Chen et al¹⁵⁴ also suggested that low-level muscle exertions can lead to sensitization and development of MTrPs. Forty piano students showed significantly reduced pressure thresholds over latent MTrPs after only 20 minutes of continuous piano playing¹⁵⁴.

Intramuscular pressure distribution

Otten¹⁵⁵ has suggested that circulatory disturbances secondary to increased intramuscular pressure may also lead to the development of myalgia. Based on mathematical modeling applied to a frog gastrocnemius muscle, Otten confirmed that during static low-level muscle contractions, capillary pressures increase dramatically especially near the muscle insertions (Figure 6). In other words, during low-level exertions, the intramuscular

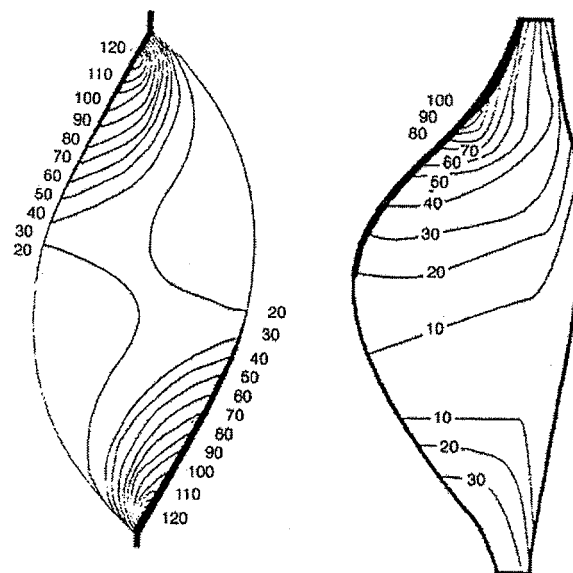


Fig. 6: Intramuscular pressure distribution in the gastrocnemius muscle of the toad (reproduced with permission from E. Otten, 2006)

pressure near the muscle insertions might increase rapidly, leading to excessive capillary pressure, decreased circulation, and localized hypoxia and ischaemia¹⁵⁵. With higher level contractions in between 10% and 20% of maximum voluntary effort, the intramuscular pressure increases also in the muscle belly^{156,157}. According to Otten, the increased pressure gradients during low-level exertions may contribute to the development of pain at the musculotendinous junctions and eventually to the formation of MTrPs (personal communication, 2005).

In 1999, Simons introduced the concept of "attachment trigger points" to explain pain at the musculotendinous junctions in persons with MTrPs, based on the assumption that taut bands would generate sufficient sustained force to induce localized enthesopathies^{16,158}. More recently, Simons concluded that there is no convincing evidence that the tension generated in shortened sarcomeres in a muscle belly would indeed be able to generate passive or resting force throughout an entire taut band resulting in enthesopathies, even though

there may be certain muscles or conditions where this could occur (personal communication, 2005). To the contrary, force generated by individual motor units is always transmitted laterally to the muscle's connective tissue matrix, involving at least two protein complexes containing vinculin and dystrophin, respectively¹⁵⁹. There is also considerable evidence that the assumption that muscle fibers pass from tendon to tendon is without basis¹⁶⁰. Trotter¹⁶⁰ has demonstrated that skeletal muscle is comprised of in-series fibers. In other words, there is evidence that a single muscle fiber does not run from tendon to tendon. The majority of fibers are in series with inactive fibers, which makes it even more unlikely that the whole muscle length-tension properties would be dictated by the shortest contracted fibers in the muscle¹⁶¹.

In addition, it is important to consider the mechanical and functional differences between fast and slow motor units^{162,163}. Slow motor units are always stiffer than fast units, although fast units can produce more force. If there were any transmission of force along the muscle fiber, as Simons initially suggested, fast fibers would be better suited to accomplish this. Yet, fast motor units have larger series of elastic elements, which would absorb most of the force displacement^{164,165}. Fast fibers show a progressive decrease in cross-sectional area and end in a point within the muscle fascicle, making force transmission even more unlikely¹⁶³. Fast fibers rely on transmitting a substantial proportion of their force to the endomysium, transverse cytoskeleton, and adjacent muscle fibers^{162,163}. In summary, the development of so-called "attachment trigger points" as a result of increased tension by contracted sarcomeres in MTrPs is not clear and more research is needed to explain the clinical observation that MTrPs appear to be linked to pain at the musculotendinous junction. The increased tension in the muscle belly is likely to dissipate across brief sections of the taut band on both sides of the MTrP and laterally through the transverse cytoskeleton¹⁶⁶⁻¹⁶⁸. Instead, Otten's model of increased intramuscular pressure, decreased circulation, localized hypoxia, and ischaemia at the muscle insertions provides an alternative model for the clinically observed pain near the musculotendinous junction and osseous insertions in persons with MTrPs, even though the model does not explain why taut bands are commonly present¹⁵⁵.

Direct trauma

There is general agreement that acute muscle overload can activate MTrPs, although systematic studies are lacking¹⁶⁹. For example, people involved in whiplash injuries commonly experience prolonged muscle pain and dysfunction¹⁷⁰⁻¹⁷³. In a retrospective review, Schuller et al¹⁷⁴ found that 80% of 1096 subjects involved in low-velocity collisions demonstrated evidence of muscle pain with myogeloses among the most common find-

ings. Although Schuller et al¹⁷⁴ did not define these myogeloses, Simons has suggested that a myogelosis describes the same clinical entity as an MTrP¹⁷⁵. Baker¹¹⁷ reported that the splenius capitis, semispinalis capitis, and sternocleidomastoid muscles developed symptomatic MTrPs in 77%, 62%, and 52% of 52 whiplash patients, respectively. In a retrospective review of 54 consecutive chronic whiplash patients, Gerwin and Dommerholt¹⁷⁶ reported that clinically relevant MTrPs were found in every patient, with the trapezius muscle involved most often. Following treatment emphasizing the inactivation of MTrPs and restoration of normal muscle length, approximately 80% of patients experienced little or no pain, even though the average time following the initiating injury was 2.5 years at the beginning of the treatment regimen. All patients had been seen previously by other physicians and physical therapists who apparently had not considered MTrPs in their thought process and clinical management¹⁷⁶. Fernández-de-las-Peñas et al^{177,178} confirmed that inactivation of MTrPs should be included in the management of persons suffering from whiplash-associated disorders. In their research-based treatment protocol, the combination of cervical and thoracic spine manipulations with MTrP treatments proved superior to more conventional physical therapy consisting of massage, ultrasound, home exercises, and low-energy high-frequency pulsed electromagnetic therapy¹⁷⁷.

Direct trauma may create a vicious cycle of events wherein damage to the sarcoplasmic reticulum or the muscle cell membrane may lead to an increase of the calcium concentration, a subsequent activation of actin and myosin, a relative shortage of adenosine triphosphate (ATP), and an impaired calcium pump, which in turn will increase the intracellular calcium concentration even more, completing the cycle. The calcium pump is responsible for returning intracellular Ca^{2+} to the sarcoplasmic reticulum against a concentration gradient, which requires a functional energy supply. Simons and Travell¹⁷⁹ considered this sequence in the development of the so-called "energy crisis hypothesis" introduced in 1981. Sensory and motor system dysfunction have been shown to develop rapidly after injury and actually may persist in those who develop chronic muscle pain and in individuals who have recovered or continue to have persistent mild symptoms^{172,180}. Scott et al¹⁸¹ determined that individuals with chronic whiplash pain develop more widespread hypersensitivity to mechanical pressure and thermal stimuli than those with chronic idiopathic neck pain. Myofascial trigger points are a likely source of ongoing peripheral nociceptive input, and they contribute to both peripheral and central sensitization, which may explain the observation of widespread allodynia and hypersensitivity^{60,62,63}. In addition to being caused by whiplash injury, acute muscle overload can occur with direct impact, lifting injuries, sports performance, etc.¹⁸².

Eccentric and (sub)maximal concentric contractions

Many patients report the onset of pain and activation of MTrPs following either acute, repetitive, or chronic muscle overload¹⁸³. Gerwin et al¹⁸⁴ suggested that likely mechanisms relevant for the development of MTrPs included either unaccustomed eccentric exercise, eccentric exercise in unconditioned muscle, or maximal or sub-maximal concentric exercise. A brief review of pertinent aspects of exercise follows, preceding linking this body of research to current MTrP research.

Eccentric exercise is associated with myalgia, muscle weakness, and destruction of muscle fibers, partially because eccentric contractions cause an irregular and uneven lengthening of muscle fibers¹⁸⁵⁻¹⁸⁷. Muscle soreness and pain occur because of local ultra-structural damage, the release of sensitizing algogenic substances, and the subsequent onset of peripheral and central sensitization^{85,188-190}. Muscle damage occurs at the cytoskeletal level and frequently involves disorganization of the A-band, streaming of the Z-band, and disruption of cytoskeletal proteins, such as titin, nebulin, and desmin, even after very short bouts of eccentric exercise^{186,189-194}. Loss of desmin can occur within 5 minutes of eccentric loading, even in muscles that routinely contract eccentrically during functional activities, but does not occur after isometric or concentric contractions^{193,195}. Lieber and Fridén¹⁹³ suggested that the rapid loss of desmin might indicate a type of enzymatic hydrolysis or protein phosphorylation as a likely mechanism.

One of the consequences of muscle damage is muscle weakness¹⁹⁶⁻¹⁹⁸. Furthermore, concentric and eccentric contractions are linked to contraction-induced capillary constrictions, impaired blood flow, hypoperfusion, ischaemia, and hypoxia, which in turn contribute to the development of more muscle damage, a local acidic milieu, and an excessive release of protons (H^+), potassium (K^+), calcitonin-gene-related-peptide (CGRP), bradykinin (BK), and substance P (SP), and sensitization of muscle nociceptors^{184,188}. There are striking similarities with the chemical environment of active MTrPs established with microdialysis, suggesting an overlap between the research on eccentric exercise and MTrP research^{184,199}. However, at this time, it is premature to conclude that there is solid evidence that eccentric and sub-maximal concentric exercise are absolute precursors to the development of MTrPs. In support of this hypothesized causal relation, Itoh et al²⁰⁰ demonstrated in a recent study that eccentric exercise can lead to the formation of taut and tender ropy bands in exercised muscle, and they hypothesized that eccentric exercise may indeed be a useful model for the development of MTrPs.

Eccentric and concentric exercise and MTrPs have been associated with localized hypoxia, which appears to be one of the most important precursors for the development of MTrPs²⁰¹. As mentioned, hypoxia leads to the release of multiple algogenic substances. In this

context, recent research by Shah et al¹⁹⁹ at the US National Institutes of Health is particularly relevant. Shah et al analyzed the chemical milieu of latent and active MTrPs and normal muscles. They found significantly increased concentrations of BK, CGRP, SP, tumor necrosis factor- α (TNF- α), interleukin- 1β (IL- 1β), serotonin, and norepinephrine in the immediate milieu of active MTrPs only¹⁹⁹. These substances are well-known stimulants for various muscle nociceptors and bind to specific receptor molecules of the nerve endings, including the so-called purinergic and vanilloid receptors^{85,202}.

Muscle nociceptors are dynamic structures whose receptors can change depending on the local tissue environment. When a muscle is damaged, it releases ATP, which stimulates purinergic receptors, which are sensitive to ATP, adenosine diphosphate, and adenosine. They bind ATP, stimulate muscle nociceptors, and cause pain. Vanilloid receptors are sensitive to heat and respond to an increase in H^+ -concentration, which is especially relevant under conditions with a lowered pH, such as ischaemia, inflammation, or prolonged and exhaustive muscle contractions⁸⁵. Shah et al¹⁹⁹ determined that the pH at active MTrP sites is significantly lower than at latent MTrP sites. A lowered pH can initiate and maintain muscle pain and mechanical hyperalgesia through activation of acid-sensing ion channels^{203,204}. Neuroplastic changes in the central nervous system facilitate mechanical hyperalgesia even after the nociceptive input has been terminated (central sensitization)^{203,204}. Any noxious stimulus sufficient to cause nociceptor activation causes bursts of SP and CGRP to be released into the muscle, which have a significant effect on the local biochemical milieu and microcirculation by stimulating "feed-forward" neurogenic inflammation. Neurogenic inflammation can be described as a continuous cycle of increasing production of inflammatory mediators and neuropeptides and an increasing barrage of nociceptive input into wide dynamic-range neurons in the spinal cord dorsal horn¹⁸⁴.

The Integrated Trigger Point Hypothesis

The integrated trigger point hypothesis (Figure 7) has evolved since its first introduction as the "energy crisis hypothesis" in 1981. It is based on a combination of electrodiagnostic and histopathological evidence^{179,183}.

Already in 1957, Weeks and Travell²⁰⁵ had published a report that outlined a characteristic electrical activity of an MTrP. It was not until 1993 that Hubbard et al²⁰⁶ confirmed that this EMG discharge consists of low-amplitude discharges in the order of 10-50 μV and intermittent high-amplitude discharges (up to 500 μV) in painful MTrPs. Initially, the electrical activity was termed "spontaneous electrical activity" (SEA) and thought to be related to dysfunctional muscle spindles²⁰⁶. Best available evidence now suggests that the SEA is in fact endplate noise (EPN), which is found much more

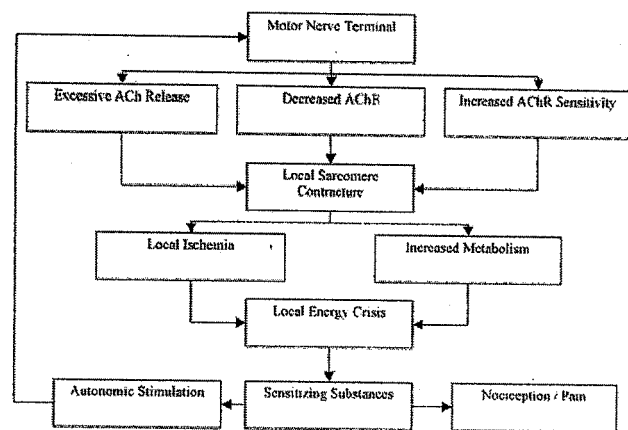


Fig. 7: The integrated trigger point hypothesis.
Ach- acetylcholine; *AchE-* acetylcholinesterase; *AchR-* acetylcholine receptor

commonly in the endplate zone near MTrPs than in an endplate zone outside MTrPs²⁰⁷⁻²⁰⁹. The electrical discharges occur with frequencies that are 10-1,000 times that of normal endplate potentials, and they have been found in humans, rabbits, and recently even in horses^{209,210}. The discharges are most likely the result of an abnormally excessive release of acetylcholine (ACh) and indicative of dysfunctional motor endplates, contrary to the commonly accepted notion among electromyographers that endplate noise arises from normal motor endplates¹⁸³. The effectiveness of botulinum toxin in the treatment of MTrPs provides indirect evidence of the presence of excessive ACh²¹¹. Botulinum toxin (BoTox) is a neurotoxin that blocks the release of ACh from presynaptic cholinergic nerve endings. A recent study in mice demonstrated that the administration of botulinum toxin resulted in a complete functional repair of dysfunctional endplates²¹². There is some early evidence that muscle stretching and hypertonicity may also enhance the excessive release of ACh^{213,214}. Tension on the integrins in the presynaptic membrane at the motor nerve terminal is hypothesized to mechanically trigger an ACh release that does not require Ca^{2+} ²¹³⁻²¹⁵. Integrins are receptor proteins in the cell membrane involved in attaching individual cells to the extracellular matrix.

Excessive ACh affects voltage-gated sodium channels of the sarcoplasmic reticulum and increases the intracellular calcium levels, which triggers sustained muscle contractures. It is conceivable that in MTrPs, myosin filaments literally get stuck in the Z-band of the sarcomere. During sarcomere contractions, titin filaments are folded into a gel-like structure at the Z-band. In MTrPs, the gel-like titin may prevent the myosin filaments from detaching. The myosin filaments may actually damage the regular motor assembly and prevent

the sarcomere from restoring its resting length²¹⁶. Muscle contractures are also maintained because of the relative shortage of ATP in an MTrP, as ATP is required to break the cross-bridges between actin and myosin filaments. The question remains whether sustained contractures require an increase of oxygen availability.

At the same time, the shortened sarcomeres compromise the local circulation causing ischaemia. Studies of oxygen saturation levels have demonstrated severe hypoxia in MTrPs²⁰¹. Hypoxia leads to the release of sensitizing substances and activates muscle nociceptors as reviewed above. The combined decreased energy supply and possible increased metabolic demand would also explain the common finding of abnormal mitochondria in the nerve terminal and the previously mentioned ragged red fibers. In mice, the onset of hypoxia led to an immediate increased ACh release at the motor endplate²¹⁷.

The combined high-intensity mechanical and chemical stimuli may cause activation and sensitization of the peripheral nerve endings and autonomic nerves, activate second order neurons including so-called "sleeping" receptors, cause central sensitization, and lead to the formation of new receptive fields, referred pain, a long-lasting increase in the excitability of nociceptors, and a more generalized hyperalgesia beyond the initial nociceptive area. An expansion of a receptive field means that a dorsal horn neuron receives information from areas it has not received information from previously²¹⁸. Sensitization of peripheral nerve endings can also cause pain through SP activating the neurokinin-1 receptors and glutamate activating N-methyl-D-aspartate receptors, which opens post-synaptic channels through which Ca^{2+} ions can enter the dorsal horn and activate many enzymes involved in the sensitization⁸⁵.

Several histological studies offer further support for the integrated trigger point hypothesis. In 1976, Simons and Stolov published the first biopsy study of MTrPs in a canine muscle and reported multiple contraction knots in various individual muscle fibers (Figure 8)²¹⁹. The knots featured a combination of severely shortened sarcomeres in the center and lengthened sarcomeres outside the immediate MTrP region²¹⁹.

Reitinger et al²²⁰ reported pathologic alterations of the mitochondria as well as increased width of A-bands and decreased width of I-bands in muscle sarcomeres of MTrPs in the gluteus medius muscle. Windisch et al²²¹ determined similar alterations in a post-mortem histological study of MTrPs completed within 24 hours of time of death. Mense et al²²² studied the effects of electrically induced muscle contractions and a cholinesterase blocker on muscles with experimentally induced contraction knots and found evidence of localized contractions, torn fibers, and longitudinal stripes. Pongratz and Spath^{223, 224} demonstrated evidence of a contraction disk in a region of an MTrP using light microscopy. New MTrP histopathological studies are currently being conducted at the Friedrich

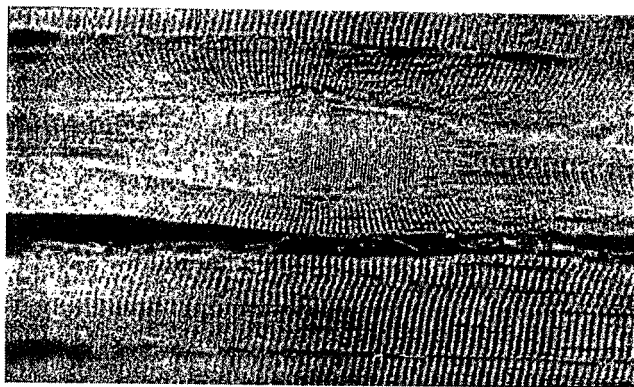


Fig. 8: Longitudinal section of a contraction knot in a canine gracilis muscle (reproduced with permission from: Simons DG, Travell JG, Simons LS. Travell and Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual. Vol. 1. 2nd ed. Baltimore, MD: Williams & Wilkins, 1999)

Baur Institute in Munich, Germany. Gariphanova²²⁵ described pathological changes with biopsy studies of MTrPs, including a decrease in quantity of mitochondria, possibly indicating metabolic distress. Several older histological studies are often quoted, but it is not clear to what extent those findings are specific for MTrPs. In 1951, Glogowsky and Wallraff²²⁶ reported damaged fibril structures. Fassbender²²⁷ observed degenerative changes of the I-bands, in addition to capillary damage, a focal accumulation of glycogen, and a disintegration of the myofibrillar network.

There is growing evidence for the integrated trigger point hypothesis with regard to the motor and sensory aspects of MTrPs, but many questions remain about the autonomic aspects. Several studies have shown that MTrPs are influenced by the autonomic nervous system. Exposing subjects with active MTrPs in the upper trapezius muscles to stressful tasks consistently increased the electrical activity in MTrPs in the upper trapezius muscle but not in control points in the same muscle, while autogenic relaxation was able to reverse the effects²²⁸⁻²³¹. The administration of the sympathetic blocking agent phentolamine significantly reduced the electrical activity of an MTrP^{228,232,233}. The interactions between the autonomic nervous system and MTrPs need further investigation. Hubbard²²⁸ maintained that the autonomic features of MTrPs are evidence that MTrPs may be dysfunctional muscle spindles. Gerwin et al¹⁸⁴ have suggested that the presence of alpha and beta adrenergic receptors at the endplate provide a possible mechanism for autonomic interaction. In a rodent, stimulation of the alpha and beta adrenergic receptors stimulated the release of ACh in the phrenic nerve²³⁴. In a recent study, Ge et al⁶¹ provided for the first time experimental evidence of sympathetic facilitation of me-

chanical sensitization of MTrPs, which they attributed to a change in the local chemical milieu at the MTrPs due to increased vasoconstriction, an increased sympathetic release of noradrenaline, or an increased sensitivity to noradrenaline. Another intriguing possibility is that the cytokine interleukin-8 (IL-8) found in the immediate milieu of active MTrPs may contribute to the autonomic features of MTrP. IL-8 can induce mechanical hyper-nociception, which is inhibited by beta adrenergic receptor antagonists²³⁵. Shah et al found significantly increased levels of IL-8 in the immediate milieu of active MTrPs (Shah, 2006, personal communication).

The findings of Shah et al¹⁹⁹ mark a major milestone in the understanding and acceptance of MTrPs and support parts of the integrated trigger point hypothesis¹⁸³. The possible consequences of several of the chemicals present in the immediate milieu of active MTrPs have been explored by Gerwin et al¹⁸⁴. As stated, Shah et al found significantly increased concentrations of H⁺, BK, CGRP, SP, TNF- α , IL-1 β , serotonin, and norepinephrine in active MTrPs only. There are many interactions between these chemicals that all can contribute to the persistent nature of MTrPs through various vicious feedback cycles²³⁶. For example, BK is known to activate and sensitize muscle nociceptors, which leads to inflammatory hyperalgesia, an activation of high-threshold nociceptors associated with C-fibers, and even an increased production of BK itself. Furthermore, BK stimulates the release of TNF- α , which activates the production of the interleukins IL-1 β , IL-6, and IL-8. Especially IL-8 can cause hyperalgesia that is independent from prostaglandin mechanisms. Via a positive feedback loop, IL-1 β can also induce the release of BK²³⁷. Release of BK, K⁺, H⁺, and cytokines from injured muscle activates the muscle nociceptors, thereby causing tenderness and pain¹⁸⁴.

Calcitonin gene-related peptide can enhance the release of ACh from the motor endplate and simultaneously decrease the effectiveness of acetylcholinesterase (AChE) in the synaptic cleft, which decreases the removal of ACh^{238,239}. Calcitonin gene-related peptide also up-regulates the ACh-receptors (AChR) at the muscle and thereby creates more docking stations for ACh. Miniature endplate activity depends on the state of the AChR and on the local concentration of ACh, which is the result of ACh-release, reuptake, and breakdown by AChE. In summary, increased concentrations of CGRP lead to a release of more ACh, and increase the impact of ACh by reducing AChE effectiveness and increasing AChR efficiency. Miniature endplate potential frequency is increased as a result of greater ACh effect. The observed lowered pH has several implications as well. Not only does a lower pH enhance the release of CGRP, it also contributes to a further down-regulation of AChE. The multiple chemicals and lowered pH found in active MTrPs can contribute to the chronic nature of MTrPs, enhance the segmental spread of nociceptive input into the dorsal horn of the

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graph TD
    MC[Muscle Contraction  
subnormal concentrations, nociceptors] --> HP[Hypoperfusion]
    SNSA[Sympathetic Nervous System Activity] --> HP
    SNSA --> CGRP_MNT[CGRP Release from Motor Nerve Terminal]
    HP --> I[Ischemia]
    HP --> H[Hypoxia]
    I --> MI[Muscle Injury]
    H --> MI
    MI --> APH[Acidic pH]
    MI --> Hplus[H+]
    APH --> Hplus
    Hplus --> K_BK_CK_ATP_SP["K+, Bradykinin, Cytokines, ATP, SP"]
    K_BK_CK_ATP_SP --> MMA[Muscle Membrane Activation]
    MMA --> TP[Tenderness/Pain]
    HP --> AChEI[AChE Inhibition]
    HP --> CGRP_R[CGRP Release]
    AChEI --> IAC[Increased ACh Concentration in the Synaptic Cleft]
    CGRP_R --> ACIR[ACIR Up-Regulation]
    CGRP_MNT --> AChRT[ACh Release from Motor Nerve Terminal]
    AChRT --> IAC
    IAC --> IFMEPP[Increased Frequency of MEPP Sarcomere Contraction Test Band]
    ACIR --> IFMEPP
  
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Perpetuating Factors

There are several precipitating or perpetuating factors that need to be identified and, if present, adequately managed to successfully treat persons with chronic myalgia. Even though several common perpetuating factors are more or less outside the direct scope of manual physical therapy, familiarity with these factors is critical especially considering the development of increasingly autonomous physical therapy practice. Simons, Travell, and Simons¹⁶ identified mechanical, nutritional, metabolic, and psychological categories of perpetuating factors. Mechanical factors are familiar to manual therapists and include the commonly observed forward head posture, structural leg length inequalities, scoliosis, pelvic torsion, joint hypermobility, ergonomic stressors, poor body mechanics, etc.^{16,102,116,240}.

In recent review articles, Gerwin^{241,242} provided a comprehensive update with an emphasis on non-structural perpetuating factors. Management of these factors usually requires an interdisciplinary approach, including

Vitamin B12 deficiencies are rather common and may affect as many as 15%-20% of the elderly and approximately 16% of persons with chronic MTrPs^{103,243}. B12 deficiencies can result in cognitive dysfunction, degeneration of the spinal cord, and peripheral neuropathy, which is most likely linked to complaints of diffuse myalgia seen in some patients. Serum levels of vitamin B12 as high as 350 pg/ml may be associated with a metabolic deficiency manifested by elevated serum or urine methylmalonic acid or homocysteine and may be clinically symptomatic²⁴⁴. However, there are patients with normal levels of methylmalonic acid and homocysteine, who do present with metabolic abnormalities of B12 function²⁴². Folic acid is closely linked to vitamin B12 and should be measured as well. While folic acid is able to correct the pernicious anaemia associated with vitamin B12 deficiency, it does not influence the neuromuscular aspects.

Close to 90% of patients with chronic musculoskeletal pain may have vitamin D deficiency²⁴⁵. Vitamin D deficiencies are identified by measuring 25-OH vitamin D levels. Levels above 20 ng/ml are considered normal, but Gerwin²⁴² suggested that levels below 34 ng/ml may represent insufficiencies. Correction of insufficient levels of vitamin B12, vitamin D, and iron levels may take many months, during which patients may not see much improvement.

Even when active MTrPs have been identified in a particular patient, clinicians must always consider that MTrPs may be secondary to metabolic insufficiencies or other medical diagnoses. It is questionable whether physical therapy and—as an integral part of physical therapy management—manual therapy intervention can be successful when patients have nutritional or metabolic insufficiencies or deficiencies. A close working relationship with physicians familiar with this body of literature is essential. Therapists should consider the possible interactions between arthrogenic or neurogenic dysfunction and MTrPs^{4,5,118,133,246,247}.

Clinically, physical therapists should address all aspects of the dysfunction. There are many other conditions that feature muscle pain and MTrPs, including hypothyroidism, systemic lupus erythematosus, Lyme disease, babesiosis, ehrlichiosis, candida albicans infections, myoadenylate deaminase deficiency, hypoglycaemia, and parasitic diseases such as fascioliasis, amoebiasis, and giardia^{64, 242}. Therapists should be familiar with the symptoms associated with these medical diagnoses⁶⁴.

Psychological stress may activate MTrPs. Electromyographic activity in MTrPs has been shown to increase dramatically in response to mental and emotional stress, whereas adjacent non-trigger point muscle EMG activity remained normal^{229, 230}. Relaxation techniques, such as autogenic relaxation, can diminish the electrical activity²³¹. In addition, many patients with persistent MTrPs are dealing with depression, anxiety, anger, and feelings of hopelessness²⁴⁸. Pain-related fear and avoidance can lead to the development and maintenance of chronic pain²⁴⁹. Sleep disturbance can also be a major factor in the perpetuation of musculoskeletal pain and must be addressed. Sleep problems may be related to pain, apnea, or to mood disorders like depression or anxiety. Management can be both pharmacologic and non-pharmacologic. Pharmacologic treatment utilizes drugs that promote normal sleep patterns and induce and maintain sleep through the night without causing daytime sedation. Non-pharmacologic treatment emphasizes sleep hygiene,

such as using the bed only for sleep and sex, and not for reading, television viewing, and eating²⁵⁰. Therapists must be sensitive to the impact of psychological and emotional distress and refer patients to clinical social workers or psychologists when appropriate.

The Role of Manual Therapy

Although the various management approaches are beyond the scope of this article, manual therapy is one of the basic treatment options and the role of orthopedic manual physical therapists cannot be overemphasized^{82,158}. Myofascial trigger points are treated with manual techniques, spray and stretch, dry needling, or injection therapy. Dry needling is within the scope of physical therapy practice in many countries including Canada, Spain, Ireland, South Africa, Australia, the Netherlands, and Switzerland. In the United States, the physical therapy boards of eight states have ruled that physical therapists can engage in the practice of dry needling: New Hampshire, Maryland, Virginia, South Carolina, Georgia, Kentucky, New Mexico, and Colorado⁸⁰. A promising new development used in the diagnosis and treatment of MTrPs involves shockwave therapy, but as of yet, there are no controlled studies substantiating its use^{251,252}.

Summary

Although MTrPs are a common cause of pain and dysfunction in persons with musculoskeletal injuries and diagnoses, the importance of MTrPs is not obvious from reviewing the orthopedic manual therapy literature. Current scientific evidence strongly supports that awareness and a working knowledge of muscle dysfunction; in particular, MTrPs should be incorporated into manual physical therapy practice consistent with the IFOMT guidelines for clinical practice. While there are still many unanswered questions with regard to explaining the etiology of MTrPs, this article provides manual therapists with an up-to-date evidence-informed review of the current scientific knowledge. ■

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Exhibit M



**Office of the Attorney General
State of Texas**

DAN MORALES
ATTORNEY GENERAL

November 6, 1996

Bruce A. Levy, M.D.
Executive Director
Texas State Board of Medical Examiners
P.O. Box 2018
Austin, Texas 78768-2018

Opinion No. DM 423

Re: Authority of the Board of Medical
Examiners to regulate hyperbaric oxygen
therapy (RQ-890)

Dear Dr. Levy:

You have asked this office a series of questions concerning the authority of the Board of Medical Examiners (the "board") to regulate hyperbaric oxygen therapy. As we understand it from the materials you have presented to us, hyperbaric oxygen therapy involves placing a patient, usually for a period of ninety minutes, in a chamber filled with 100% oxygen the atmospheric pressure of which has been increased, generally to 2.4 atmospheres absolute pressure.

You first ask us whether the board has the authority to determine whether hyperbaric oxygen therapy is the practice of medicine for the purposes of the Medical Practice Act. We conclude that it does.

The Medical Practice Act (the "act"), article 4495b, V.T.C.S., gives the board broad powers to regulate the practice of medicine. In section 1.02(2), the legislature declares that the board "should remain the primary means of licensing, regulating, and disciplining the individual physicians and surgeons who are licensed to practice medicine." The phrase "[p]racticing medicine" is defined by section 1.03(a)(12) of the act as follows:

A person shall be considered to be practicing medicine within this Act:

(A) who shall publicly profess to be a physician or surgeon and shall diagnose, treat, or offer to treat any disease or disorder, mental or physical, or any physical deformity or injury by any system or method or to effect cures thereof; or

(B) who shall diagnose, treat, or offer to treat any disease or disorder, mental or physical, or any physical deformity or injury by any system or method and to effect cures thereof and charge therefor, directly or indirectly, money or other compensation.

This definition of the practice of medicine seems to us sufficiently broad to include hyperbaric oxygen therapy. Such therapy would certainly appear to be a "system or

method” designed to “treat . . . [a] disease or disorder, . . . physical deformity or injury. . . .” V.T.C.S. art. 4495b, § 1.03(12). This conclusion is further supported, in our view, by the rather limited amount of case law referring to hyperbaric oxygen therapy, by section 3.06(d)(1) of the act, and by *Thompson v. Texas State Board of Medical Examiners*, 570 S.W.2d 123 (Tex. Civ. App.—Tyler 1978, writ ref’d n.r.e.).

Our research has identified a total of twenty-two American cases referring to hyperbaric oxygen therapy in the last nineteen years. See, e.g., *Roberts v. Lowry*, 673 So. 2d 1323 (La. Ct. App. 1996); *Wilkerson v. Prelutsky*, No. 66263, 1996 WL 192052 (Mo. Ct. App. 1996); *Keefe v. Shalala*, 71 F.3d 1060 (2d Cir. 1995). While the question of whether this therapy constitutes the practice of medicine is not squarely presented by these cases, they indicate that hyperbaric oxygen therapy generally is regarded as a medical procedure.

Moreover, Texas law provides that the board may determine whether particular procedures constitute the practice of medicine. Section 3.06(d)(1) of the act expressly states that “[t]he board may determine whether or not an act constitutes the practice of medicine. . . .” See *Mitchell v. Amarillo Hosp. Dist.*, 855 S.W.2d 857, 874 (Tex. App.—Amarillo 1993), cert. denied, 115 S. Ct. 510 (1994). Additionally, in *Thompson*, two physicians argued that the board had no right to revoke their licenses to practice medicine for permitting unlicensed persons to perform acupuncture on their premises. They argued, *inter alia*, that the board was without authority to define acupuncture as within the practice of medicine. This contention the court rejected out of hand: “In our opinion acupuncture is properly included within the practice of medicine.” 570 S.W.2d at 127. It further held the board’s exercise of this authority to be a valid exercise of the police power of the state:

The statutes in question and the actions of the Board clearly have a real and substantial relation to the object sought to be attained. The State seeks to protect the general health, safety and welfare of all its citizens through the actions of its Board of Medical Examiners. . . . By requiring only licensed physicians to administer acupuncture treatments, the Board fulfilled its duty to the people of this State to insure as best it can the competency of those practicing medicine.

Id. at 128-29.

Accordingly, based on the broad statutory definition of the practice of medicine, the express statutory authority provided in section 3.06(d)(1), the holding of *Thompson*, and our reading of those cases which discuss hyperbaric oxygen therapy, we conclude that the board has the authority to determine that the administration of such therapy is the practice of medicine.

Your second question is whether, having determined that hyperbaric oxygen therapy is the practice of medicine, the board may regulate the performance of such

therapy. Again, our answer is affirmative. Section 2.09(a) of the act reads, in pertinent part:

The board may make rules, regulations, and bylaws not inconsistent with this Act as may be necessary for . . . the regulation of the practice of medicine in this state

This broad grant of discretionary rule-making authority is in our view sufficient to permit the board to make rules concerning the regulation of hyperbaric oxygen therapy.

You next ask whether the board's authority is sufficiently broad to permit rules which limit the ability of physicians to delegate performance of such therapy or establish standards for supervision of such therapy when a delegation has been made. We think that, generally speaking, the board has sufficient authority to adopt such rules. Physicians in Texas may prescribe treatment and delegate its administration to others. *Tatro v. Texas*, 703 F.2d 823, 827 (5th Cir. 1983), *aff'd in part, rev'd in part on other grounds*, 468 U.S. 883 (1984). Section 3.06(d)(1) of the act affirms that

a person licensed to practice medicine shall have the authority to delegate to any qualified and properly trained person or persons acting under the physician's supervision any medical act which a reasonable and prudent physician would find is within the scope of sound medical judgment to delegate.

However, under section 3.06(d)(1), the board has the power to determine "whether or not an act constitutes the practice of medicine . . . and may determine whether any medical act may or may not be properly delegated by physicians." Accordingly, physicians' powers to delegate a procedure such as this may be limited by rule as a part of such a determination.

Finally, you ask whether the administration of hyperbaric oxygen therapy is "within the scope of independent practice of a licensed Texas podiatrist." If it is, the board may not regulate the podiatrist's practice of it, since the board's powers derive from the act, which by its own terms does not apply to "duly licensed podiatrists who confine their practice strictly to podiatry as defined by law." V.T.C.S. art. 4495b, § 3.06(b)(5).

The practice of podiatry is governed by chapter 11 of title 71, V.T.C.S., articles 4567 through 4576. The definition of podiatry offered by articles 4567(a) and 4567b is as follows:

Any person shall be regarded as practicing podiatry within the meaning of this law, and shall be deemed and construed to be a podiatrist, who shall treat or offer to treat any disease or disorder, physical injury or deformity, or ailment of the human foot by any system or method and charge therefor, directly or indirectly, money or other compensation. . . .

Whether hyperbaric oxygen therapy may constitute the practice of podiatry depends, therefore, on whether it is a "system or method" which may be used to treat "any disease or disorder, physical injury or deformity, or ailment of the human foot." In our view, the answer to such a question would depend upon the resolution of factual questions concerning, for example, the value and appropriateness of such therapy in treating the human foot which we cannot answer in the opinion process.¹ However, if the answer is affirmative, then the board cannot regulate the practice of hyperbaric oxygen therapy by a licensed podiatrist. Such regulation would by law be within the purview of the State Board of Podiatric Medical Examiners.² V.T.C.S. art. 4568(j).

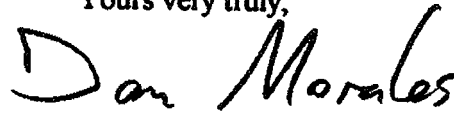
¹While we have determined that the therapy is within the practice of medicine generally, we cannot make the same determination with respect to the practice of podiatry because the case law is not helpful in this regard and because it would require determinations about this specialized field we cannot make. In any event, the determination of what constitutes the practice of podiatry is the business of the Board of Podiatric Medical Examiners more than of this office.

²It is our understanding, based upon a brief prepared by the Board of Podiatric Medical Examiners, that that body does take the view that this therapy is within the practice of podiatry. It has accordingly drafted a proposed rule requiring that podiatrists practicing the therapy must follow the guidelines of the Undersea and Hyperbaric Medical Society ("UHMS"), must practice the therapy in a hospital setting, and must complete a course of training recognized by the UHMS and be certified as competent by that training agency.

S U M M A R Y

The Board of Medical Examiners has the authority to determine whether hyperbaric oxygen therapy constitutes the practice of medicine, the power to regulate the performance of such therapy, and the power to make rules which limit the ability of physicians to delegate performance of such therapy or which establish standards for supervision of such therapy when a delegation has been made. Whether hyperbaric oxygen therapy is within the practice of podiatry depends upon the resolution of factual questions. However, if hyperbaric oxygen therapy is within the practice of podiatry, its practice by podiatrists is regulated by the Board of Podiatric Medical Examiners, not the Board of Medical Examiners.

Yours very truly,

A handwritten signature in black ink that reads "Dan Morales". The signature is fluid and cursive, with the first name "Dan" and last name "Morales" clearly distinguishable.

DAN MORALES
Attorney General of Texas

JORGE VEGA
First Assistant Attorney General

SARAH J. SHIRLEY
Chair, Opinion Committee

Prepared by James E. Tourtelott
Assistant Attorney General

Exhibit N

Texas PT Practice Act

Texas Board of Physical Therapy Examiners

Title 3, Subtitle H, Chapter 453, Occupations Code

Sec. 453.001. DEFINITIONS.

...

(9) "Referring practitioner" means a qualified licensed health care professional who, within the scope of professional licensure, may refer a person for health care services. The term includes:

- (A) a physician licensed to practice medicine by a state board of medical examiners;
- (B) a dentist licensed by a state board of dental examiners;
- (C) a chiropractor licensed by a state board of chiropractic examiners; and
- (D) a podiatrist licensed by a state board of podiatric medical examiners.

Sec. 453.301. TREATING PATIENT UNDER PRIOR REFERRAL.

(a) A physical therapist may treat a patient for an injury or condition that was the subject of a prior referral if the physical therapist:

- (1) has been licensed to practice physical therapy for at least one year;
- (2) notifies the referring practitioner of the therapy not later than the fifth business day after the date therapy is begun;
- (3) begins any episode of treatment before the first anniversary of the referral by the referring practitioner;
- (4) for physical therapy episodes subsequent to the episode which was initiated by the referral, treats the patient for not more than 20 treatment sessions or 30 consecutive calendar days, whichever occurs first; and
- (5) satisfies any other requirement set by the board. (b) The physical therapist must confer with the referring practitioner before the physical therapist may continue treatment that exceeds treatment authorized under Subsection (a)(4).

Sec. 453.302. TREATING PATIENT WITHOUT REFERRAL.

(a) In this section:

- (1) "Emergency circumstance" means an instance in which emergency medical care is necessary.
- (2) "Emergency medical care" means a bona fide emergency service provided after the sudden onset of a medical condition manifesting itself by acute symptoms of sufficient severity, including severe pain, such that the absence of immediate medical attention could reasonably be expected to result in:
 - (A) serious jeopardy to the patient's health;
 - (B) serious dysfunction of any bodily organ or part; or (C) serious impairment to bodily functions.

(b) In an emergency circumstance, including a minor emergency, a physical therapist may provide emergency medical care to a person to the best of the therapist's ability without a referral from a referring practitioner.

(c) A physical therapist may provide physical assessments or instructions to an asymptomatic person without a referral from a referring practitioner.

Sec. 453.351. GROUNDS FOR DENIAL OF LICENSE OR DISCIPLINE OF LICENSE HOLDER.

(a) The board may deny a license or suspend or revoke a license, place a license holder on probation, reprimand a license holder, impose an administrative penalty, or otherwise discipline a license holder if the applicant or license holder has:

- (1) except as provided by Section 453.301 or 453.302, provided physical therapy to a person without a referral from a referring practitioner;

...

