

Should Dry Needling for Myofascial Pain be Within the Scope of Practice for Physical Therapists?

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INTRODUCTION

Health care expenditure in the United States reached \$2.2 trillion in 2007, increasing 6.2% from the previous year, and amounted to 16.2 % of the gross domestic product.¹ Professional services, including physical therapy, accounted for \$62 billion of this cost.¹ Myofascial pain is one of the leading complaints of patients presenting in general medical practice, with reported prevalence of 20% to 93% in general practice^{2,3} thus imposing significant financial burdens on state and national health care budgets.³ With high prevalence and associated costs, there is unrelenting pressure on insurers, clinicians, and researchers to reduce costs while optimizing outcomes. The physical therapy profession is at the forefront of cost containment by promoting comparisons of the effectiveness of different interventions in management of musculoskeletal pain.⁴ Physical therapists use nonsurgical, non-pharmaceutical modalities in the prevention and treatment of disability.⁵ Moreover, the 2020 vision statement of the American Physical Therapy Association (APTA) reflects the emerging priorities of the profession by emphasizing the provision of expert care using evidence-based practice.⁶ With 44 states allowing direct access to physical therapists (PTs) at a lower cost than physical therapy via physician referral,⁷ PTs are a part of the vanguard of cost containment in health care.

Physiotherapists began musculoskeletal care in 1894 as a group of nurses practicing remedial massage in the United Kingdom (UK), and evolved into established professional organizations on both sides of the Atlantic. Today there are 170,000 practicing PTs in the United States and 36,000 chartered physiotherapists in the United Kingdom, with therapists recognized as expert clinicians in management of musculoskeletal and myofascial pain.^{8,9}

Physiotherapists practicing internationally in the United Kingdom, Australia, New Zealand, and throughout Europe use dry needling alongside traditional modalities

in management of myofascial pain.¹⁰⁻¹² The multimodal, direct access practice model is beneficial to both the consumer and the clinical practitioner, as well as cost effective for all involved parties.⁷ There are growing numbers of national and international courses in dry needling for physical therapists,¹³⁻¹⁵ with 5,500 physiotherapists in the UK¹⁶ and over a thousand such therapists in Australia¹⁷ now licensed to use needling in physical therapy practice.

Direct access to physical therapy gives patients suffering from myofascial pain a gateway into a broad spectrum of pain management techniques. Physical therapy professionals are expert first-line clinicians in delivery of pain management modalities. With inclusion of dry needling in the battery of techniques available to skilled clinicians, cost-effective nonsurgical pain management options could improve patient outcomes and contribute to containing health care costs. In order to understand how dry needling by physical therapists can enhance pain management, knowledge of its history and current use is warranted. This paper will outline the background of the trigger point theory and describe dry needling as used in management of myofascial pain. It will then compare and contrast the educational processes of acupuncturists and physical therapists with regard to use of needling. Finally, the case will be made for broadening the physical therapist's scope of practice to include dry needling, with special reference to use of evidence-based practice in the current fiscally challenging medical environment.

DRY NEEDLING: BACKGROUND

Dry needling, generally understood as the insertion of filiform (fine filament) needles without use of saline or other liquid substances, has its roots in ancient practice of acupuncture. Nearly 3,000 years of Chinese acupuncture has resulted in regional Asian variations in technique and ideology.^{18,19} Development of modern Chinese medical and therapeutic practices has com-

bined with western empirical medical practices to result in the practice of dry needling. This is the use of filiform needles to treat myofascial trigger points without reference to oriental medicine philosophy and principles of practice. Dr. Janet Travell developed and popularized the treatment of myofascial trigger points (MTrP) using dry needling techniques.^{20,21} This method of myofascial pain management has become popular among physical therapists and medical doctors worldwide, especially over the past 3 decades. Histopathology, electrical activity, neurophysiology and clinical features of MTrPs have been studied since the 1940s, and though this body of knowledge continues to grow, the mode of efficacy of needling MTrPs remains poorly understood.

Myofascial Trigger Points, Definitions, and Mode of Efficacy

A MTrP is defined as a highly localized and hyper-irritable spot in a palpable taut band of skeletal muscle tissue.²² The main criteria used for diagnosis of MTrPs are the following: a tender spot in a taut band of contractile skeletal muscle, patient pain report upon palpation of this point, a predictable pattern of referred pain from palpation of this point, and a local twitch response elicited upon palpation.³ Despite widespread use of these criteria, there have been few studies that have examined inter-examiner reliability and diagnostic sensitivity and specificity,^{3,23-24} nor has there been standardization of the manner in which the examination is conducted.²¹

TRIGGER POINT THEORY AND NEEDLING RESPONSE

Trigger points are known to occur and to be maintained at the level of a spinal segmental reflex.² It is thought that excessive local release of acetylcholine² or calcium²² at the neuro-motor endplate results in spontaneous electrical activity (SEA), with sustained depolarization and shortening of sarcomeres.²¹ The resultant prolonged local muscle spasm is thought to impair blood

flow, cause tissue damage, and perpetuate an inflammatory cycle.^{2,21,22} To date, therapy has been aimed at inhibiting muscle spasm and reducing the pain of MTrPs using many modalities, including spraying with ethyl chloride followed by specific stretching, deep massage, injection of various substances, and dry needling.^{2,21,25} Elicitation of local twitch response has been demonstrated to occur with needle insertion into active MTrPs.^{2,21,26} Pain relief is associated with reduced electrical activity following needle insertion into an MTrP in which a twitch response is observed.^{21,22,26,27} Activation of spinal endogenous opioids is a likely factor in the effectiveness of many therapeutic interventions in pain management. Direct stimulation of peripheral nociceptors by needling may act to desensitize the central nervous system via SEA endplate inhibition and enhance stimulation of opioid activity within spinal wide-range dynamic neurons.^{22,28} While acupuncture and dry needling are theorized to have similar mechanisms of action, the education, philosophy of practice, and techniques are quite dissimilar.

COMPARING ACUPUNCTURE AND DRY NEEDLING

Acupuncture is one of the oldest forms of therapy, and is based on Chinese philosophy, namely that disease is an outward manifestation of internal imbalance of Yin and Yang energetic forces.¹⁸ Although filiform needles are used in both dry needling and acupuncture, the similarities are limited. Whereas acupuncture is used to diagnose and manage systemic conditions, dry needling of myofascial trigger points purportedly targets specific tissue responses without reference to energetic systems.^{22, 27} Acupuncture education entails 3 years of study with mentored residency and competency examinations. Dry needling certification is adjunctive to a medical degree, or a physical therapy masters or doctoral qualification, which takes 5 to 7 years of study. Certification for dry needling in the United States occurs after 50 hours of post-graduate coursework and 200 to 400 documented interventions. Competency examination is required in the United Kingdom, Europe, and Australia with some programs demanding rigorous dissertations at the culmination of a full academic year of acupuncture related physiotherapy.²⁹ Such competency exams are similar in depth to APTA board certification areas such as orthopaedic sports, and women's health physical therapy certifications. Medical doctors and

physical therapists practice dry needling when it is determined to be within the scope of practice by their relevant states. Available evidence for efficacy of acupuncture and dry needling in myofascial pain is limited, and conclusive results are few.^{18,19,25,30} Most studies have been limited by small sample size, nonstandardization of techniques and poor research design, with few high quality studies or systematic reviews. The majority of published manuscripts investigating the effects of acupuncture and needling underscore the need for high quality clinical research in this area.^{18,30-32}

Dry Needling Within the Scope of Physical Therapy Practice

Canada, the United Kingdom, Ireland, the Netherlands, Norway, Switzerland, Belgium, Spain, Chile, South Africa, Australia, and New Zealand, among other nations, and some 18 states in the United States have determined that dry needling techniques fall within the scope of physical therapy practice.^{33,34} Other states such as California, New York, North Carolina, Hawaii, and Tennessee have proscribed the practice outright.³⁵ In order to understand the potential benefits and risks of amending state practice acts, the arguments of the stakeholders on both sides need to be addressed.

ACUPUNCTURISTS

Acupuncturists have been licensed to practice in the US since 1973³⁶ and many programs obtained national certification in 1982,³⁷ culminating in 16,000 acupuncturists currently in practice³⁸ nationwide. Forty-three states require certification for licensure.³⁹ Acupuncture practitioners have been opposed to the inclusion of dry needling in physical therapy practice acts in Virginia and Colorado^{40,41} and other states.³⁵ Their objections are based on the duration of the needling certification programs, concerns for the safety of patients and encroachment on professional territory by physical therapists.^{35,40,41} with resultant specific criteria changes to the practice acts in these states. Acupuncture professional associations claim that physical therapists can become certified in dry needling techniques with a course of only 54 hours, while the majority of acupuncture certification programs have requirements of 1,905⁴² to 3,000 hours of education from some 57 accredited programs.^{35,43} This claim disguises the fact that dry needling certification is a postgraduate course following graduation

from one of 200 masters or doctoral physical therapy programs that receive accreditation from the Commission on Accreditation in Physical Therapy Education (CAPTE).⁴⁴ Entry-level DPT programs typically comprise 2,676 hours of education^{33,45} and a more extensive anatomy component than acupuncture programs.³³

Concern for patient safety is not without merit, since skin penetration carries risk of infection, disease transmission, and potential injury to soft tissue, nerve, and blood vessels. However, there is no documented evidence of increased litigation involving therapists practicing dry needling or other skin penetration techniques in states where this is allowed.^{46,47} Regarding the territorial concerns, acupuncture practitioners are concerned that the use of dry needling by physical therapists encroaches on their professional practice grounds. Dry needling has been identified as a component of acupuncture practice, with acupuncturists invited to participate and teach on dry needling courses.^{14,46} However, dry needling practitioners limit their practice to management of MTrPs, with no claim to diagnosis or management of systemic disease processes. Diagnosis and treatment of conditions using oriental medicine techniques remains the domain of the acupuncture and oriental medicine professions, and this is affirmed by physical therapy practitioners teaching courses in the United States and internationally.⁴⁶

PHYSICIANS

Physicians in particular, have been concerned about skin penetration by physical therapists, objecting to the use of electromyography (EMG) by physical therapists despite the inclusion of such procedures in many state physical therapy practice acts for decades.^{33,46,48} Several states license physical therapists to use skin penetration in EMG testing,³³ and to date there has been no documentation of any injuries or health hazards for such therapists.^{33,46} Insurance companies providing liability coverage for physical therapists practicing dry needling impose no additional requirements, other than that they practice in a state that permits the technique.⁴⁷

CHIROPRACTORS

The Maryland chiropractic profession took an interesting position towards dry needling, initially opposing dry needling, determining that it fell within the regulatory

practices of the state board of Acupuncture. However, the Maryland Chiropractic Board reversed its position in 2007 and allowed chiropractors to use dry needling under their physical therapy privileges, since the physical therapists in the state had been licensed to do so since 1987. As in other states and international communities, acupuncture is determined to be “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.”^{36,41,49} The Maryland Chiropractic Board ruling was based on the fact that acupuncture uses needle insertion into fixed points and is based on pre-scientific philosophies, whereas dry needling into myofascial trigger points is solely a local soft-tissue technique. Thus dry needling is not based on Chinese philosophy of energetic systems, does not constitute acupuncture, and is therefore not subject to the regulation of the acupuncture licensing boards.⁴⁹

PHYSICAL THERAPISTS

The APTA is the national professional organization of 72,000 physical therapists in the United States.⁸ The APTA does not yet have an official position on dry needling by physical therapists, but recognizes that it is a technique being used by some of its members.⁵⁰ The APTA acknowledges that state licensing boards, which have jurisdiction over administration of each state’s PT act, have been consulted regarding whether dry needling falls within the scope of practice. The answer across the states is mixed, with 5 states explicitly proscribing dry needling (NV, NY, NC, ID, TN), stating that it is not in the scope of practice. Fifteen boards have interpretive opinions that it is within the scope of practice in states allowing it, and there have been no definitive statements by the remaining 32. Arizona and Pennsylvania are legally prohibited from issuing an interpretive statement. Statements by physical therapy boards in the 18 states that have amended the scope of PT practice to include dry needling include language stipulating that neither the state medical board nor the acupuncture board could rule on the eligibility of appropriately trained physical therapists to practice dry needling.^{51,52} Some states issue contradictory statements. For example, Florida proscribes “skin penetration” in dry needling by physical therapists, but allows them to perform and analyze EMGs, which by definition involves skin

penetration. Tennessee takes the position that since no academic institutions in that state teach dry needling to physical therapy students, it should remain outside of the scope of PT practice.³³ This introduces the dilemma of what to do once dry needling is part of entry-level DPT programs, as it is currently at Georgia State University,⁵³ for example. It may be time to encourage a national review of the scope of practice for physical therapists. A recent report by the Federation of State Boards of Physical Therapy (FSBPT) outlines that there is a historic basis, education and training, and a scientific basis for use of dry needling by physical therapists, provided competency is determined to ensure safe practice.⁵⁴ The FSBPT conducts an analysis every 5 years to determine actual practices within the profession. Also, the highly respected American Academy of Orthopedic Manual Therapists supports dry needling in the PT scope of practice and indicates that research supports its use.⁵⁵ As with any policy or practice change, the process is likely to be slow and piecemeal in nature, but gradual implementation of such changes can facilitate reflection and necessary critical analysis. In order to reflect on the possibility of changing the scope of practice of physical therapists, it is important to understand the process by which practice guidelines are determined.

Determining the Scope of Practice for the Physical Therapists

In the United States, state physical therapy boards determine the legal scope of physical therapy practice in each state. The Federation of State Boards of Physical Therapy (FSBPT) Model Practice Act provides language to states for reference and consideration in the development of their individual practice acts. In evaluating the current climate of health care practice and education, the FSBPT recognizes the overlap of many skills and procedures among professions, stating that it is “no longer reasonable to expect each profession to have a completely unique scope of practice.”⁵⁴ Devised with the collaboration of the medical, nursing, social work, pharmacist, occupational and physical therapy professional communities, the FSBPT document provides a protocol for state boards to use in decision making about whether an intervention should be included in the scope of practice. This protocol assists in decision-making when considering practice act changes, with the primary focus on whether the proposed changes “will better

protect and enhance consumers’ access to competent health care services.”⁵⁴ Proposed changes to the scope of practice should evaluate 4 critical areas: established history of specific practices, adequate training, adequate evidence of benefit to public health, and appropriate regulation. The FSBPT maintains that adequate evidence in each of these areas suggests that scope of practice changes would be in the public’s best interest.⁵⁴ This position echoes that of the Federation of State Medical Boards (FSMB), an allied, parallel organization for physicians and osteopaths. This group outlines the multifactorial nature of scope of practice decisions, including workforce needs and availability, financial motivations, economic circumstances, and consumer demand, with the ultimate goal of protecting public health and safety.⁵⁶ In order for there to be a rational, useful approach to broadening the scope of practice of a health care practitioner, there must be judicious use of the guidelines that have been developed for this purpose.

Guidelines for Changes to the Scope of Practice

According to the FSBPT and the FSMB, scope of practice should be reviewed when the following factors have been considered: where there exists a need for the proposed scope of practice; when the existing scopes of practice, if altered, will result in a positive change in public health and safety; where there exists formal education, training, and accreditation processes for the change in scope of practice; where appropriate evaluation and disciplinary procedures are established; where accountability and liability issues have been clarified and where the effects on other practitioners have been reviewed.^{54,56} Using these criteria, the broadening of the scope of practice for physical therapists to include dry needling, would be approved. First, more than a third of the US physical therapy boards have issued interpretations that dry needling is within the PT scope of practice. Such changes in physical therapy state practice acts parallel the practices of Canada and many countries in Europe, Asia, and South America. Second, there has been no increased incidence of injury to the health of patients when managed by physical therapists who use techniques that puncture the skin. Third, there are 3 main US programs for accredited needling education programs, and reciprocity already exists among the international programs for dry needling certification. Fourth,

physical therapists practicing dry needling are accountable under standard rules of practice, and have the same requirements to carry malpractice and liability insurance as those who do not practice needling. Finally, there is no documented adverse financial effect on other practitioners when physical therapists are licensed to practice dry needling. In fact, there may be an opportunity for both acupuncturists and physical therapists to improve their position in the market if both groups could market their nonsurgical, nonpharmaceutical approach to pain management.

Planning or Policy Strategies that Might Mitigate Differences

In negotiations, success results from collaborative efforts to resolve any impasse.⁵⁷ The APTA and the American Association of Acupuncture and Oriental Medicine (AAAOM) could collaborate on combined statements, with a unified marketing campaign for consumer education to differentiate between acupuncture and dry needling. University programs for dry needling could be developed in collaboration with all interested parties.^{33,58} Combined physical therapist and acupuncturist lobbying for third party payor reimbursement could be more successful than the current situation where each professional community struggles for reimbursement independently.^{59,60} Benefits could include improved teamwork of medical doctors, physical therapists, and acupuncturists to optimize patient care. Reduced costs for the consumer could result as all providers compete in the open market for myofascial pain management services. As continued research would determine best practices, collaborating professionals would be quick in adjusting their practice to reflect new knowledge. The concept of an extended scope of practice for physical therapists is not an expansion of physical therapists interest in needling therapy, but is a component of a global shift in health care service utilization.

Extended Scope of Practice in Health Care Professions

An international summit on advanced scope of practice and direct access to physical therapy was held in Washington in October 2009 to examine current international demands and practices, and to determine the implications of increased practice scope on interprofessional relationships, professional boundaries, and role definitions.⁶¹ National and international developments



to alter the scope of practice of physical therapists and other medical professionals are underway, in order to mitigate the current stresses on the health care system.^{54,56,61}

These scope of practice changes follow the development of the nurse practitioner and physician assistant professions, whose origins as legitimate medical professionals grew, in the past 50 years, out of the financial and workforce constraints on the general physician and medical community.^{62,63} Physical therapists are currently being trained in joint injections,⁶⁴ musculoskeletal triage in emergency rooms,⁶⁵ and first-line health care management.⁶⁶ The changing tide of clinical practice is not likely to reverse, as increasing demands on finite financial resources continue.¹

SUMMARY

Current US and International Practice, Recommendations for the Future

Dry needling is already within the scope of physical therapy practice in many areas (18 US states³⁴); skin penetration by physical therapists for EMG is allowed in many US states, and Canada, South America, Europe, Asia, Australia, and New Zealand. With minimal risk and increased benefits to the majority of stakeholders, dry needling practiced within an increased scope of PT professionals will be of benefit to the public, bringing American clinicians in-line with their international colleagues.

The APTA's "2020 vision" for physical therapy includes a commitment to lifelong learning with use of evidence-based practice.⁶ Articles published in respected, peer-reviewed journals underscore the continued need for expert clinicians to critically appraise and conduct research. The current emphasis in physical therapy education is on research to support and challenge clinical practices. With increasing use of dry needling by physical therapists, the research emphasis should include dry needling within efficacy and comparative effectiveness studies. Doctoral level physical therapists who acquire these skills as part of their core curricula⁶⁷ are well suited for such

analysis and research, and their dissertations could explore the comparative effectiveness of dry needling and other manual therapy techniques.

Many techniques are not unique to a specific profession. There are ongoing battles for territory between chiropractors and physical therapists over manipulation and joint mobilization,^{68,69} between athletic trainers and physical therapists over manual therapy techniques,⁷⁰ with physicians and physical therapists performing EMG tests,^{71,72} and physicians referral to in-house physical therapy practices.^{73,74} The global trends in health care management are to look broadly across the professional spectrum to determine where patients can benefit from skilled care provided by appropriately trained clinicians, at the lowest cost. The future objective will be to use best practices for best outcomes and for the best financial value. The territorial battles are likely to continue, but will diminish in intensity as adversaries compete to demonstrate optimization of outcomes and not compete over ownership of specific techniques.

CONCLUSIONS

Physical therapists are positioned as expert clinicians in the health care community with a broad spectrum of techniques for nonsurgical management of musculoskeletal pain and dysfunction. Inclusion of dry needling within the scope of PT practice will ensure further high-quality research and clinical practice with better outcomes in this field. Use of dry needling by qualified, licensed physical therapists will bring American physical therapy professionals in line with current international standards of practice, and provide patients with more options for management of musculoskeletal pain. In the costly arena of arthritis, movement dysfunction, and pain management, extending the physical therapy scope of practice to include dry needling will improve in consumer choice, increase evidence-based practice, and facilitate cost-containment.

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Nominations

Orthopaedic Section Awards

Now is the time to be thinking about and submitting nominations for the Orthopaedic Section Awards! There are many therapists in our profession who have contributed so much, and who deserve to be recognized. Please take some time to think about these individuals and nominate them for the Orthopaedic Section's highest Awards. Let's celebrate the success of these hard-working people!

Visit our Web site for more information about the awards offered by the Orthopaedic Section and the criteria for nominating an individual:
<http://www.ortho.org/awards.php>.

- James A. Gould Excellence in Teaching Orthopaedic Physical Therapy
- Outstanding Physical Therapy & Physical Therapist Assistant Student Award
- Paris Distinguished Service Award
- Rose Excellence in Research Award
- Richard W. Bowling - Richard E. Erhard Orthopaedic Clinical Excellence Award

