

## Medical Policy



### Title: Dry Needling of Myofascial Trigger Points

#### Professional

Original Effective Date: July 8, 2016  
 Revision Date(s): July 8, 2016;  
 January 1, 2017; June 9, 2017  
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#### Institutional

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Populations	Interventions	Comparators	Outcomes
Individuals: <ul style="list-style-type: none"> <li>With myofascial trigger points associated with neck and/or shoulder pain</li> </ul>	Interventions of interest are: <ul style="list-style-type: none"> <li>Dry needling of trigger points</li> </ul>	Comparators of interest are: <ul style="list-style-type: none"> <li>Standard physical therapy</li> </ul>	Relevant outcomes include: <ul style="list-style-type: none"> <li>Symptoms</li> <li>Functional outcomes</li> <li>Quality of life</li> <li>Treatment-related morbidity</li> </ul>
Individuals: <ul style="list-style-type: none"> <li>With myofascial trigger points associated with plantar heel pain</li> </ul>	Interventions of interest are: <ul style="list-style-type: none"> <li>Dry needling of trigger points</li> </ul>	Comparators of interest are: <ul style="list-style-type: none"> <li>Standard physical therapy</li> <li>Heel lift(s)</li> </ul>	Relevant outcomes include: <ul style="list-style-type: none"> <li>Symptoms</li> <li>Functional outcomes</li> <li>Quality of life</li> <li>Treatment-related morbidity</li> </ul>

Populations	Interventions	Comparators	Outcomes
Individuals: <ul style="list-style-type: none"> <li>• With myofascial trigger points associated with temporomandibular myofascial pain</li> </ul>	Interventions of interest are: <ul style="list-style-type: none"> <li>• Dry needling of trigger points</li> </ul>	Comparators of interest are: <ul style="list-style-type: none"> <li>• Standard physical therapy</li> </ul>	Relevant outcomes include: <ul style="list-style-type: none"> <li>• Symptoms</li> <li>• Functional outcomes</li> <li>• Quality of life</li> <li>• Treatment-related morbidity</li> </ul>

## **DESCRIPTION**

Trigger points are discrete, focal, hyperirritable spots within a taut band of skeletal muscle fibers that produce local and/or referred pain when stimulated. Dry needling refers to a procedure whereby a fine needle is inserted into the trigger point to induce a twitch response and relieve the pain.

### **Objective**

The objective of this evidence review is to evaluate whether dry needling of myofascial trigger points improves health outcomes in patients with myofascial pain.

### **Background**

Dry needling refers to a procedure in which a fine needle is inserted into the skin and muscle at a site of myofascial pain. The needle may be moved in an up-and-down motion, rotated, and/or left in place for as long as 30 minutes. The intent is to stimulate underlying myofascial trigger points, muscles, and connective tissues to manage myofascial pain. Dry needling may be performed with acupuncture needles or standard hypodermic needles, but is performed without the injection of medications (eg, anesthetics, corticosteroids). Dry needling is proposed to treat dysfunctions in skeletal muscle, fascia, and connective tissue; diminish persistent peripheral pain; and reduce impairments of body structure and function.

The physiological basis for dry needling depends on the targeted tissue and treatment objectives. The most studied targets are trigger points. Trigger points are discrete, focal, hyperirritable spots within a taut band of skeletal muscle fibers that produce local and/or referred pain when stimulated. Trigger points are associated with local ischemia and hypoxia, a significantly lowered pH, local and referred pain, and altered muscle activation patterns.<sup>1</sup> Trigger points can be visualized by magnetic resonance imaging and elastography. The reliability of manual identification of trigger points has not been established.

Deep dry needling is believed to inactivate trigger points by eliciting contraction and subsequent relaxation of the taut band via a spinal cord reflex. This local twitch response is defined as a transient visible or palpable contraction or dimpling of the muscle, and has been associated with alleviation of spontaneous electrical activity; reduction of numerous nociceptive, inflammatory, and immune system related chemicals; and relaxation of the taut band.<sup>1</sup> Deep dry needling of trigger points is believed to reduce local and referred pain, improve range of motion, and decrease trigger point irritability.

Superficial dry needling is thought to activate mechanoreceptors and have an indirect effect on pain by inhibiting C-fiber pain impulses. The physiological basis for dry needling treatment of excessive muscle tension, scar tissue, fascia, and connective tissues is not as well described in the literature.<sup>1</sup>

Alternative nonpharmacologic treatment modalities for trigger point pain include manual techniques, massage, acupressure, ultrasonography, application of heat or ice, diathermy, transcutaneous electrical nerve stimulation, and spray cooling with manual stretch.<sup>2</sup>

### **Regulatory Status**

Dry needling is considered a procedure and, as such, is not subject to regulation by the U.S. Food and Drug Administration.

### **POLICY**

Dry needling of trigger points for the treatment of myofascial pain is considered **non-covered** or **experimental / investigational** depending on individual member benefits.

**Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.**

### **RATIONALE**

This evidence review has been updated with searches of the MEDLINE database. The most recent literature review was performed through February 23, 2017.

Randomized controlled trials (RCTs) are particularly important to assess treatment of pain, due to expected placebo effect, the subjective nature of pain outcomes, and the variable natural history of pain that often responds to conservative care. For these reasons, controlled trials are needed to demonstrate the clinical effectiveness of dry needling of trigger points for treating myofascial pain. Evidence assessed for this review focuses on sham-controlled randomized trials and RCTs that compare dry needling with manual therapy.

### **Dry Needling of Trigger Points**

#### **Neck and/or Shoulder Pain**

A 2015 qualitative systematic review by Cagnie et al included 8 studies published through 2013 that met selection criteria for deep dry needling of trigger points of the upper trapezius in patients with neck pain.<sup>3</sup> Only studies rated as moderate or good quality were included. Outcomes for the short and medium term were assessed for pain, range of motion (ROM), functionality, and quality of life (QOL). Control treatments included lidocaine injection plus self-stretching, non-trigger point deep needling, mini-scalpel needling, sham acupuncture, and superficial dry needling. All studies showed a decrease in pain with dry needling, but only 1 study

found greater reduction in pain with dry needling than with other treatments. Reviewers found moderate evidence that dry needling, ROM exercises, and lidocaine injections increased ROM. One study found an improvement in QOL comparable to that of nonsteroidal anti-inflammatory medications and, of 3 studies that assessed depression, which was used as a proxy for QOL, only 1 found a significant improvement after treatment with deep dry needling.

Several RCTs have been published since the Cagnie review.<sup>4-8</sup> As noted above, the review focused on trials comparing dry needling with sham or manual therapy. None of the new RCTs was sham-controlled; 2 compared dry needling and manual therapy and are described next.

A 2014 RCT by Llamas-Ramos et al compared trigger point dry needling with trigger point manual therapy in 94 patients.<sup>4</sup> Patients had mechanical neck pain, defined as “neck and shoulder pain with symptoms provoked by neck postures, neck movement, or palpation of the cervical muscles.” Strengths of this trial included allocation concealment, blinding, intention-to-treat analysis, and adequate power. Multivariate analyses did not find statistically significant differences between groups in neck pain or in disability scores. However, patients in both groups had similar decreases in pain intensity and disability. For example, pain intensity was 6.2 at baseline for both groups; it decreased to near 2 immediately postintervention and near 1 at 2-week follow-up. Cervical ROM was also improved to a similar extent in the 2 groups, while pain pressure threshold was significantly better for the dry needling group. Temporary muscle soreness or fatigue was reported by 55% of the dry needling group and by 23% of the manual therapy group.

In 2017, De Meulemeester et al published an RCT assessing 42 patients with myofascial neck and/or shoulder pain.<sup>5</sup> Patients were assigned to receive 4 sessions of dry needling (n=20) or manual pressure (n=22). The primary outcome was disability assessed using a 50-point Neck Disability Index (NDI). Baseline NDI score was at least 10 in all patients. Patients were evaluated at the end of the intervention period and again after 3 months. There were no significant differences in NDI scores between the dry needling group and the manual pressure group at either follow-up point (p>0.05). In addition, findings were not significantly better in the dry needling compared with the manual pressure group for secondary outcomes, including the pressure pain threshold and pain intensity (measured on a numeric rating scale).

### ***Section Summary: Neck and/or Shoulder Pain***

A number of RCTs have evaluated dry needling of myofascial trigger points for neck and/or shoulder pain, and there is a systematic review of RCTs published through 2013. As reported in 1 systematic review, only 1 of 8 studies found significantly greater reductions in pain with dry needling compared with other treatments. Two more recent RCTs comparing dry needling and manual therapy did not find significantly better outcomes after dry needling.

### **Plantar Heel Pain**

In 2010, Cotchett et al reported on a systematic review of dry needling and injections of myofascial trigger points associated with plantar heel pain.<sup>9</sup> Three quasi-experimental trials were identified: 2 evaluated dry needling combined with acupuncture and a third evaluated lidocaine injections combined with physical therapy. The methodologic quality of the trials was rated as poor and meta-analysis was not conducted due to heterogeneity among trials.

Two RCTs, published after the systematic review, are described next. In 2014, Cotchett et al reported on a double-blinded, sham-controlled randomized trial of trigger point dry needling for plantar heel pain.<sup>10</sup> Patients (N=84) with plantar heel pain of at least 1 month in duration were assigned to 6 weekly active or sham treatments. The primary outcomes, first step heel pain and Foot Health Status Questionnaire (FHSQ) scores at 6 weeks, were measured in 81 (96.4%) patients. The group given dry needling had statistically significant greater reduction in first step pain and foot pain (adjusted mean difference, 14.4 mm on a 100-mm visual analog scale [VAS] and 10.0 points on the FHSQ), but the magnitude of change did not meet the prespecified minimally important difference (MID) for the scales used. Seventy (32% of treatments) minor adverse events were reported in the active dry needling group compared with only 1 (<1%) in the sham group. The number needed to harm was 3. Strengths of this trial included allocation concealment, patient and evaluator blinding, sample size calculations for adequate power, and a high rate of follow-up. Limitations included the lack of reporting response rates (ie, the percentage of patients who experienced improvement on the primary outcome measures that was equal to or greater than the prespecified MID).

In 2016, Eftekharsadat et al published a single-blinded RCT with 20 patients with plantar fasciitis in Iran.<sup>11</sup> Patients with plantar heel pain of at least 1 month in duration were assigned to treatment with dry needling (n=10) or to usual care (n=10). The intervention group received 1 dry needling session of myofascial trigger points per week for 4 weeks. In addition, all patients were instructed in stretching exercises and were administered anti-inflammatory medication. The primary outcomes—pain on a 100-point VAS, and range of motion of ankle joint in dorsiflexion (ROMDF) and plantar extension (ROMPE)—were measured at baseline, at the end of the intervention period, and 4 weeks after the intervention ended. All patients completed the trial. At the end of the intervention, the mean VAS score was significantly lower in the treatment group (2.6) than in the usual care group (6.6;  $p < 0.001$ ). However, 4 weeks after the intervention had ended, there was no statistically significant difference in VAS scores between groups (mean VAS, 3.0 vs 3.5;  $p = 0.36$ , respectively). Moreover, there was no significant between-group difference in ROMDF or ROMPE scores at the end of the intervention or at 4 weeks postintervention. Adverse events were not reported.

### ***Section Summary: Plantar Heel Pain***

The evidence base consists of a systematic review of quasi-experimental studies and 2 RCTs. The systematic review rated the quality of the studies it assessed as poor. One randomized trial was double-blinded and sham-controlled; it found a statistically significantly greater reduction in pain in the dry needling group compared with sham, but the difference was not clinically significant (ie, did not reach the prespecified MID). The other, a single-blind trial comparing dry needling with usual care, found significantly greater reductions in pain at the end of active treatment, but not at the follow-up 1 month later. Moreover, ROM outcomes did not differ significantly between groups at either time point. To date, research has not demonstrated a statistical and clinical benefit of dry needling. Additional RCTs, especially those with a sham-control group, would strengthen the evidence base.

### **Temporomandibular Myofascial Pain**

A double-blind, sham-controlled trial of dry needling for the treatment of temporomandibular myofascial pain was reported by Diracoglu et al in 2012.<sup>12</sup> Patients (N=52) with symptoms for at least 6 weeks with 2 or more myofascial trigger points in the temporomandibular muscles were included in the trial. Trigger points were stimulated once weekly over 3 weeks. The sham

condition involved dry needling in areas away from the trigger points. Patients were evaluated 1 week after the last needling. At follow-up, there was no significant difference between groups in pain scores assessed by a 10-point VAS. Mean VAS scores were 3.88 in the treatment group and 3.80 in the control group ( $p=0.478$ ). In addition, the difference in unassisted jaw opening without pain did not differ significantly between the treatment group (40.1 mm) and the control group (39.6 mm;  $p=0.411$ ). The mean pain pressure threshold was significantly higher in the treatment group ( $3.21 \text{ kg/cm}^2$ ) than in the control group ( $2.75 \text{ kg/cm}^2$ ;  $p<0.001$ ).

### ***Section Summary: Temporomandibular Myofascial Pain***

One RCT evaluating dry needling for the treatment of temporomandibular myofascial pain was identified; this trial was double-blind and sham-controlled. One week after completing the intervention, there were no statistically significant differences between groups in pain scores or function (unassisted jaw opening without pain). There was a significantly higher pain pressure threshold in the treatment group. This single RCT does not provide sufficient evidence on which to draw conclusions about the impact of dry needling on health outcomes in patients with temporomandibular myofascial pain.

### **Adverse Events**

A prospective survey (2014) of 39 physical therapists, providing 7629 dry needling treatments, reported 1463 (19.18%) mild adverse events (bruising, bleeding, pain) and no serious adverse events.<sup>13</sup>

### **Summary of Evidence**

For individuals who have myofascial trigger points associated with neck and/or shoulder pain who receive dry needling of trigger points, the evidence includes randomized controlled trials (RCTs) and a systematic review. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. As reported in the systematic review of literature published through 2013, only 1 of 8 studies found significantly greater reductions in pain with dry needling compared with other treatments. Two more recent RCTs comparing dry needling to manual therapy did not find significantly better outcomes after dry needling. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have myofascial trigger points associated with plantar heel pain who receive dry needling of trigger points, the evidence includes RCTs, quasi-experimental studies, and a systematic review. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. The systematic review, which included 3 quasi-experimental studies, rated study quality as poor. One RCT was double-blinded and sham-controlled; it found a statistically significant greater reduction in pain in the dry needling group than in the sham group, but the difference was not clinically significant (ie, it did not meet the prespecified minimally important difference). The other RCT, a single-blind trial comparing dry needling with usual care, found a significantly greater reduction in pain at the end of active treatment, but not at follow-up 1 month later. Moreover, range of motion outcomes did not differ significantly between groups at either time point. To date, the studies have not demonstrated a statistical or a clinical benefit for dry needling. Additional RCTs, especially those with a sham-control group, would strengthen the evidence base. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have myofascial trigger points associated with temporomandibular pain who receive dry needling of trigger points, the evidence includes 1 RCT. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. One double-blind, sham-controlled randomized trial was identified; it found that, 1 week after completing the intervention, there were no statistically significant differences between groups in pain scores or function (unassisted jaw opening without pain). There was a significantly higher pain pressure threshold in the treatment group. Additional RCTs, especially those with a sham-control group, are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

### Practice Guidelines and Position Statements

#### American Physical Therapy Association

A 2012 educational resource paper by the American Physical Therapy Association (APTA) stated: "Dry needling (DN) is a skilled intervention used by physical therapists (where allowed by state law) 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."<sup>14</sup>

In 2013, APTA issued an educational resource paper that included the following indications for dry needling: radiculopathies, joint dysfunction, disc pathology, tendonitis, craniomandibular dysfunction, carpal tunnel syndrome, whiplash-associated disorders, and complex regional pain syndrome.<sup>1</sup>

#### American Academy of Orthopaedic Physical Therapists

In 2009, the American Academy of Orthopaedic Physical Therapists (AAOMPT) issued a statement that dry needling fell within the scope of physical therapist practice.<sup>15</sup> In support of this position, AAOMPT stated that "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 interventions. 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."

### U.S. Preventive Services Task Force Recommendations

Not applicable.

### Ongoing and Unpublished Clinical Trials

Some currently unpublished trials that might influence this review are listed in Table 1.

**Table 1. Summary of Key Trials**

NCT No.	Trial Name	Planned Enrollment	Completion Date
<b>Ongoing</b>			
NCT02312895	Randomized Controlled Trial Comparing the Use of Dry Needling to Manual Therapy for Patients With Mechanical Low Back Pain	100	Dec 2016 (ongoing)
NCT02532595	Trigger Point Dry Needling, Manual Therapy and Exercise vs Manual Therapy and Exercise For the Management of Achilles Tendinopathy	66	Dec 2016 (ongoing)

NCT No.	Trial Name	Planned Enrollment	Completion Date
NCT02373631	Dry Needling Versus Conventional Physical Therapy in Patients With Knee Osteoarthritis: a Multi-center Randomized Clinical Trial	105	Feb 2017 (ongoing)
NCT02373618	Dry Needling Versus Conventional Physical Therapy in Patients With Plantar Fasciitis: a Multi-center Randomized Clinical Trial	108	Feb 2017 (ongoing)
NCT02373644	Spinal Manipulation and Dry Needling Versus Conventional Physical Therapy in Patients With Sacroiliac Dysfunction: a Multi-center Randomized Clinical Trial	95	Feb 2017 (ongoing)
NCT02415660	Short-Term Response of Thoracic Spine Manipulation With or Without Trigger Point Dry Needling for Mechanical Neck Pain: A Randomized Clinical Trial	58	Oct 2017

NCT: national clinical trial.

### **CODING**

**The following codes for treatment and procedures applicable to this policy are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.**

### CPT/HCPCS

- 20999 Unlisted procedure, musculoskeletal system, general
- 97799 Unlisted physical medicine/rehabilitation service or procedure

- There is currently no specific CPT code for dry needling. CPT instructs that the unlisted code 20999 should be used for the dry needling procedure.
- Because dry needling is not acupuncture, CPT codes 97810 - 97814 are not appropriate.
  - 97810: Acupuncture, 1 or more needles; without electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient,
  - 97811: Acupuncture, 1 or more needles; without electrical stimulation, each additional 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s) (List separately in addition to code for primary procedure)
  - 97813: Acupuncture, 1 or more needles; with electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient
  - 97814: Acupuncture, 1 or more needles; with electrical stimulation, each additional 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s) (List separately in addition to code for primary procedure)

### Diagnoses

Experimental / Investigational for all diagnoses related to this medical policy.

### **REVISIONS**

07-08-2016	Policy published 06-08-2016. Policy effective 07-08-2016.
01-01-2017	Policy published 12-20-2016. Policy effective 01-01-2017.
	In Policy section

	<ul style="list-style-type: none"> <li>▪ Added "non-covered or" and "depending on individual member benefits" to read "Dry needling of trigger points for the treatment of myofascial pain is considered non-covered or experimental / investigational depending on individual member benefits."</li> </ul>
06-09-2017	Description section updated
	Rationale section updated
	In Coding section: <ul style="list-style-type: none"> <li>▪ Coding notations updated</li> </ul>
	References updated

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