



**PASIG** **PERFORMING ARTS**  
SPECIAL INTEREST GROUP



**PASIG MONTHLY CITATION BLAST: No. 105**

**June 2015**

Dear Performing Arts SIG members:

A **PASIG student scholarship** is available for performing arts poster and platform presentations at CSM 2016! Once you are accepted to present at CSM 2016, contact Anna Saunders, PASIG student scholarship chair, with your abstract: [annarosemary@gmail.com](mailto:annarosemary@gmail.com)

**Call for case reports:** If you have a brief, clinically-focused case report on a performing arts PT patient, or a clinical commentary, please contact Annette Karim to submit your writing for the next Orthopaedic Physical Therapy Practice Magazine: [neoluvsonlyme@aol.com](mailto:neoluvsonlyme@aol.com)

**Call for 2016 PASIG committee chairs!** We will have several positions available. Please consider nominating yourself and a colleague. For more information, contact Liz Chesarek: [echesarek@gmail.com](mailto:echesarek@gmail.com)

The **Performing Arts Fellowship Taskforce practice analysis survey** will be out soon, so keep an eye out for more information.

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Post your articles and info on your site, let's get connected!

Check out the Orthopaedic section Facebook page, where you can find and post PASIG info: <https://www.facebook.com/pages/APTA-Orthopaedic-Section/121020534595362>

**Below is a list of the PASIG leadership. Please consult this list regarding contact info:**

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**WE NEED MORE CONTRIBUTORS TO OUR MONTHLY CITATION BLASTS!!!!**

Past Monthly citation blasts are available, with citations and EndNote file, listed on the website:

[http://www.orthopt.org/content/special\\_interest\\_groups/performing\\_arts/citations\\_endnotes](http://www.orthopt.org/content/special_interest_groups/performing_arts/citations_endnotes)

**TOPICS THAT HAVE BEEN COVERED RECENTLY INCLUDE:**

*Dynamic Warm Up and Stretching*  
*Platelet Rich Plasma Injections*  
*Back Pain in Dancers*  
*Hallux Valgus in Dancers*  
*Posterior ankle impingement*  
*TMD in Musicians*  
*Concussions*  
*Bone Mineral Density in Dancers*  
*Serratus Anterior Strengthening for Dancers*  
*Focal Dystonia*  
*Gymnastics: Update on Injuries and Movement Strategies*  
*Dancers: Jumps, Landings, and Associated Injuries*

**These blasts are fairly simple to prepare. We love having contributions from our members regarding topics of great interest. If you are interested in contributing by writing a citation blast, contact me, Brooke Winder:**

[BrookeRwinder@gmail.com](mailto:BrookeRwinder@gmail.com)

Best regards,

*Brooke*

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**PERFORMING ARTS CONTINUING EDUCATION, CONFERENCES, AND RESOURCES**

Musician Health Series, Janice Ying, PT, DPT, OCS  
Glendale Adventist Therapy and Wellness Center, Los Angeles area (Eagle Rock), CA  
<http://www.musicianshealthcorner.com/>  
Healthy Musician Series - Overuse

Orthopaedic Section Independent Study Course. *20.3 Physical Therapy for the Performing Artist.*

Monographs are available for:

- Figure Skating (J. Flug, J. Schneider, E. Greenberg),
  - Artistic Gymnastics (A. Hunter-Giordano, Pongetti-Angeletti, S. Voelker, TJ Manal),
- and
- Instrumentalist Musicians (J. Dommerholt, B. Collier).

Contact: Orthopaedic Section at: [www.orthopt.org](http://www.orthopt.org)

Orthopaedic Section-American Physical Therapy Association,  
Performing Arts SIG

[http://www.orthopt.org/content/special\\_interest\\_groups/performing\\_arts](http://www.orthopt.org/content/special_interest_groups/performing_arts)

Performing Arts Citations and Endnotes

[http://www.orthopt.org/content/special\\_interest\\_groups/performing\\_arts/citations\\_endnotes](http://www.orthopt.org/content/special_interest_groups/performing_arts/citations_endnotes)

ADAM Center

<http://www.adamcenter.net/>

Publications:

<http://www.adamcenter.net/#!vstc0=publications>

Conference abstracts:

<http://www.adamcenter.net/#!vstc0=conferences>

Dance USA

<http://www.danceusa.org/>

Research resources:

<http://www.danceusa.org/researchresources>

Professional Dancer Annual Post-Hire Health Screen:

<http://www.danceusa.org/dancerhealth>

Dancer Wellness Project

<http://www.dancerwellnessproject.com/>

Becoming an affiliate:

<http://www.dancerwellnessproject.com/Information/BecomeAffiliate.aspx>

Harkness Center for Dance Injuries, Hospital for Joint Diseases

<http://hjd.med.nyu.edu/harkness/>

Continuing education:

<http://hjd.med.nyu.edu/harkness/education/healthcare-professionals/continuing-education-courses-cme-and-ceu>

Resource papers:

<http://hjd.med.nyu.edu/harkness/dance-medicine-resources/resource-papers-and-forms>

Links:

<http://hjd.med.nyu.edu/harkness/dance-medicine-resources/links>

Informative list of common dance injuries:

<http://hjd.med.nyu.edu/harkness/patients/common-dance-injuries>

Research publications:

<http://hjd.med.nyu.edu/harkness/research/research-publications>

International Association for Dance Medicine and Science (IADMS)

<http://www.iadms.org/>

Resource papers:

<http://www.iadms.org/displaycommon.cfm?an=1&subarticlenbr=186>

Links:

<http://www.iadms.org/displaycommon.cfm?an=5>

Medicine, arts medicine, and arts education organization links:

<http://www.iadms.org/displaycommon.cfm?an=1&subarticlenbr=5>

Publications:

<http://www.iadms.org/displaycommon.cfm?an=3>

Performing Arts Medicine Association (PAMA)

<http://www.artsmed.org/>

<http://www.artsmed.org/symposium.html>

Interactive bibliography site:

<http://www.artsmed.org/bibliography.html>

Related links:

<http://www.artsmed.org/relatedlinks.html>

Member publications:

<http://artsmed.org/publications.html>

***(Educators, researchers, and clinicians, please continue to email your conference and continuing education information to include in future blasts)***

## **Dry Needling**

Dry needling is becoming more commonly utilized by physical therapists in the treatment of myofascial pain and myofascial tender/trigger points. More research will be needed in the future to help support indications and contraindications for this treatment, but the following articles are a good start. Only one article focuses specifically on performing arts, but as usual, the information in these abstracts can be transferred nicely to any performing arts case.

The issue of whether the performance of dry needling is within the professional and legal scope of physical therapist practice continues to be a question posed to state regulatory boards, legislatures, and agencies. For more information regarding dry needling and state regulatory issues, the following link may be helpful.

<http://www.apta.org/StateIssues/DryNeedling/>

*Brooke Winder, PT, DPT, OCS  
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**Arias-Buría, José L., et al. "Inclusion of Trigger Point Dry Needling in a Multimodal Physical Therapy Program for Postoperative Shoulder Pain: A Randomized Clinical Trial." *Journal of manipulative and physiological therapeutics* 38.3 (2015): 179-187.**

### **Objective**

The purpose of this study was to evaluate the effects of including 1 session of trigger point dry needling (TrP-DN) into a multimodal physiotherapy treatment on pain and function in postoperative shoulder pain.

### **Methods**

Twenty patients (5 male; 15 female; age, 58 ± 12 years) with postoperative shoulder pain after either open reduction and internal fixation with Proximal Humeral Internal Locking System plate plate or rotator cuff tear repair were randomly divided into 2 groups: physiotherapy group (n = 10) who received best evidence physical therapy interventions and a physical therapy plus TrP-DN group (n = 10) who received the same intervention plus a single session of TrP-DN targeted at active TrPs. The Constant-Murley score was used to determine pain,

activities of daily living, range of motion, and strength, which was captured at baseline and 1 week after by an assessor blinded to group assignment.

### **Results**

Analysis of variance showed that subjects receiving TrP-DN plus physical therapy exhibited greater improvement in the Constant-Murley total score ( $P < .001$ ) and also activities of daily living ( $P < .001$ ) and strength ( $P = .019$ ) subscales than those receiving physical therapy alone. Between-group effect sizes were large in favor of the TrP-DN group ( $0.97 < \text{SMD} < 1.45$ ). Both groups experienced similar improvements in pain ( $P < .001$ ) and range of motion ( $P < .001$ ).

### **Conclusions**

Our results suggest that including a single session of TrP-DN in the first week of a multimodal physical therapy approach may assist with faster increases in function in individuals with postoperative shoulder pain.

**Brady, Sarah, et al. "Adverse events following trigger point dry needling: a prospective survey of chartered physiotherapists." *Journal of Manual and Manipulative Therapy* 22.3 (2014): 134-140.**

### **Objectives:**

Trigger point dry needling (TrP-DN) is commonly used to treat persons with myofascial pain, but no studies currently exist investigating its safety. The aim of this study was to determine the incidence of Adverse Events (AEs) associated with the use of TrP-DN by a sample of physiotherapists in Ireland.

### **Methods:**

A prospective survey was undertaken consisting of two forms recording mild and significant AEs. Physiotherapists who had completed TrP-DN training with the David G Simons Academy (DGSA) were eligible to take part in the study. Data were collected over a ten-month period.

### **Results:**

In the study, 39 physiotherapists participated and 1463 (19.18%) mild AEs were reported in 7629 treatments with TrP-DN. No significant AEs were reported giving an estimated upper risk rate for significant AEs of less than or equal to ( $\leq$ ) 0.04%. Common AEs included bruising (7.55%), bleeding (4.65%), pain during treatment (3.01%), and pain after treatment (2.19%). Uncommon AEs were aggravation of symptoms (0.88%), drowsiness (0.26%), headache (0.14%), and nausea (0.13%). Rare AEs were fatigue (0.04%), altered emotions (0.04%), shaking, itching, claustrophobia, and numbness, all 0.01%.

### **Discussion:**

While mild AEs were very commonly reported in this study of TrP-DN, no significant AEs occurred. For the physiotherapists surveyed, TrP-DN appeared to be a safe treatment.

**Cotchett, Matthew P., Shannon E. Munteanu, and Karl B. Landorf.**

**"Effectiveness of trigger point dry needling for plantar heel pain: a randomized controlled trial." *Physical therapy* 94.8 (2014): 1083-1094.**

**Background** Plantar heel pain can be managed with dry needling of myofascial trigger points; however, there is only poor-quality evidence supporting its use.

**Objective** The purpose of this study was to evaluate the effectiveness of dry needling for plantar heel pain.

**Design** The study was a parallel-group, participant-blinded, randomized controlled trial.

**Setting** The study was conducted in a university health sciences clinic.

**Patients** Study participants were 84 patients with plantar heel pain of at least 1 month's duration.

**Intervention** Participants were randomly assigned to receive real or sham trigger point dry needling. The intervention consisted of 1 treatment per week for 6 weeks. Participants were followed for 12 weeks.

**Measurements** Primary outcome measures included first-step pain, as measured with a visual analog scale (VAS), and foot pain, as measured with the pain subscale of the Foot Health Status Questionnaire (FHSQ). The primary end point for predicting the effectiveness of dry needling for plantar heel pain was 6 weeks.

**Results** At the primary end point, significant effects favored real dry needling over sham dry needling for pain (adjusted mean difference: VAS first-step pain= $-14.4$  mm, 95% confidence interval [95% CI]= $-23.5$  to  $-5.2$ ; FHSQ foot pain= $10.0$  points, 95% CI= $1.0$  to  $19.1$ ), although the between-group difference was lower than the minimal important difference. The number needed to treat at 6 weeks was 4 (95% CI= $2$  to  $12$ ). The frequency of minor transitory adverse events was significantly greater in the real dry needling group (70 real dry needling appointments [32%] compared with only 1 sham dry needling appointment [ $<1\%$ ]).

**Limitations** It was not possible to blind the therapist.

**Conclusion** Dry needling provided statistically significant reductions in plantar heel pain, but the magnitude of this effect should be considered against the frequency of minor transitory adverse events.

**Dunning, James, et al. "Dry needling: a literature review with implications for clinical practice guidelines 1." *Physical Therapy Reviews* 19.4 (2014): 252-265.**

**Background:**

Wet needling uses hollow-bore needles to deliver corticosteroids, anesthetics, sclerosants, botulinum toxins, or other agents. In contrast, dry needling requires the insertion of thin monofilament needles, as used in the practice of acupuncture, without the use of injectate into muscles, ligaments, tendons, subcutaneous fascia, and scar tissue. Dry needles may also be inserted in the vicinity of peripheral nerves and/or neurovascular bundles in order to manage a variety of neuromusculoskeletal pain syndromes. Nevertheless, some position statements by

several US State Boards of Physical Therapy have narrowly defined dry needling as an 'intramuscular' procedure involving the isolated treatment of 'myofascial trigger points' (MTrPs).

**Objectives:**

To operationalize an appropriate definition for dry needling based on the existing literature and to further investigate the optimal frequency, duration, and intensity of dry needling for both spinal and extremity neuromusculoskeletal conditions.

**Major findings:**

According to recent findings in the literature, the needle tip touches, taps, or pricks tiny nerve endings or neural tissue (i.e. 'sensitive loci' or 'nociceptors') when it is inserted into a MTrP. To date, there is a paucity of high-quality evidence to underpin the use of direct dry needling into MTrPs for the purpose of short and long-term pain and disability reduction in patients with musculoskeletal pain syndromes. Furthermore, there is a lack of robust evidence validating the clinical diagnostic criteria for trigger point identification or diagnosis. High-quality studies have also demonstrated that manual examination for the identification and localization of a trigger point is neither valid nor reliable between-examiners.

**Conclusions:**

Several studies have demonstrated immediate or short-term improvements in pain and/or disability by targeting trigger points (TrPs) using in-and-out techniques such as 'pistoning' or 'sparrow pecking'; however, to date, no high-quality, long-term trials supporting in-and-out needling techniques at exclusively muscular TrPs exist, and the practice should therefore be questioned. The insertion of dry needles into asymptomatic body areas proximal and/or distal to the primary source of pain is supported by the myofascial pain syndrome literature. Physical therapists should not ignore the findings of the Western or biomedical 'acupuncture' literature that have used the very same 'dry needles' to treat patients with a variety of neuromusculoskeletal conditions in numerous, large scale randomized controlled trials. Although the optimal frequency, duration, and intensity of dry needling has yet to be determined for many neuromusculoskeletal conditions, the vast majority of dry needling randomized controlled trials have manually stimulated the needles and left them *in situ* for between 10 and 30 minute durations. Position statements and clinical practice guidelines for dry needling should be based on the best available literature, not a single paradigm or school of thought; therefore, physical therapy associations and state boards of physical therapy should consider broadening the definition of dry needling to encompass the stimulation of neural, muscular, and connective tissues, not just 'TrPs'.

**Fernández-de-las-Peñas, César, Michelle Layton, and Jan Dommerholt. "Dry needling for the management of thoracic spine pain." *Journal of Manual and Manipulative Therapy* (2015): 2042618615Y-0000000001.**

Thoracic spine pain is as disabling as neck and low back pain; however, it has not received as much attention as the cervical and lumbar spine in the scientific



literature. Among the different structures that can refer pain to the thoracic spine, muscles often play a relevant role. In fact, myofascial trigger points (TrPs) from several neck, shoulder and spinal muscles can induce pain in the region of the thoracic spine. There is a lack of evidence reporting the presence of myofascial TrPs in the thoracic spine, but clinical evidence suggests that TrPs can be a potential source of thoracic spine pain. The current paper discusses the role of myofascial TrPs in the thoracic spine and summarises the proper and safe application of dry needling (DN) for the management of myofascial TrPs in two main spinal muscles involved in thoracic spine pain: the thoracic multifidi and longissimus thoracis. In addition, this paper discusses the application of DN in other tissues such as tendons, ligaments and scars.

**González-Iglesias, Javier, et al. "Mobilization with movement, thoracic spine manipulation, and dry needling for the management of temporomandibular disorder: A prospective case series." *Physiotherapy theory and practice* 29.8 (2013): 586-595.**

The purpose of this case series was to describe the outcomes of patients with temporomandibular disorder (TMD) treated with mobilization with movement (MWM) directed at the temporomandibular joint (TMJ) and the cervical spine, thoracic manipulation, and trigger point (TrP) dry needling. Fifteen patients with TMD completed the Steigerwald/Maher TMD disability questionnaire, the Visual Analog Scale (VAS), and maximal mouth opening (MMO) at baseline. The VAS and MMO were also collected at 15 days posttreatment and at a 2-month follow-up, and the Steigerwald/Maher TMD disability questionnaire was completed at the 2-month follow-up. Repeated measure ANOVAs were used to determine the effects of the intervention on each outcome. Within-group effect sizes were calculated in order to assess clinical effectiveness. Fifteen patients participated in this case series. The ANOVA revealed significant decreases (all,  $p < 0.01$ ) VAS mean, VAS Worst, and VAS Best between baseline and final visit of 25.7 (95% CI; 17.7, 33.8); 33.2 (95% CI; 23.4, 43.0); 18.4 (12.1, 24.7); and 28.3 (95% CI; 18.8, 37.9); 36.1 (95% CI; 25.0, 47.3); 19.7 (95% CI; 12.8, 26.7) between baseline and the 2-month follow-up periods, respectively. Additionally, the ANOVA revealed significant increases (all,  $p < 0.01$ ) in MMO and disability following the physical therapy management strategy between baseline and final visit with a mean of 11.4 (95% CI, 6.9, 15.9) and 10.2 (95% CI, 5.2, 15.2) between baseline and the 2-month follow-up. Within-group effect sizes were large ( $d > 1.0$ ) for all outcomes at both follow-up periods. Patients with TMD treated with a multimodal treatment exhibited significant and clinical improvements in pain intensity, disability, and MMO.

**Jayaseelan, Dhinu J., Nick Moats, and Christopher R. Ricardo.**

**"Rehabilitation of proximal hamstring tendinopathy utilizing eccentric training, lumbopelvic stabilization, and trigger point dry needling: 2 case reports." *Journal of Orthopaedic & Sports Physical Therapy* 44.3 (2014): 198-205.**

**Study Design** Case report.

**Background** Proximal hamstring tendinopathy is a relatively uncommon overuse injury seen in runners. In contrast to the significant amount of literature guiding the evaluation and treatment of hamstring strains, there is little literature about the physical therapy management of proximal hamstring tendinopathy, other than the general recommendations to increase strength and flexibility.

**Case Description** Two runners were treated in physical therapy for proximal hamstring tendinopathy. Each presented with buttock pain with running and sitting, as well as tenderness to palpation at the ischial tuberosity. Each patient was prescribed a specific exercise program focusing on eccentric loading of the hamstrings and lumbopelvic stabilization exercises. Trigger point dry needling was also used with both runners to facilitate improved joint motion and to decrease pain.

**Outcomes** Both patients were treated in 8 to 9 visits over 8 to 10 weeks. Clinically significant improvements were seen in pain, tenderness, and function in each case. Each patient returned to running and sitting without symptoms.

**Discussion** Proximal hamstring tendinopathy can be difficult to treat. In these 2 runners, eccentric loading of the hamstrings, lumbopelvic stabilization exercises, and trigger point dry needling provided short- and long-term pain reduction and functional benefits. Further research is needed to determine the effectiveness of this cluster of interventions for this condition.

**Kietrys, David M., et al. "Effectiveness of dry needling for upper-quarter myofascial pain: a systematic review and meta-analysis." *Journal of Orthopaedic & Sports Physical Therapy* 43.9 (2013): 620-634.**

**Study Design** Systematic review and meta-analysis.

**Background** Myofascial pain syndrome (MPS) is associated with hyperalgesic zones in muscle called myofascial trigger points. When palpated, active myofascial trigger points cause local or referred symptoms, including pain. Dry needling involves inserting an acupuncture-like needle into a myofascial trigger point, with the goal of reducing pain and restoring range of motion.

**Objective** To explore the evidence regarding the effectiveness of dry needling to reduce pain in patients with MPS of the upper quarter.

**Methods** An electronic literature search was performed using the key word *dry needling*. Articles identified with the search were screened for the following inclusion criteria: human subjects, randomized controlled trial (RCT), dry needling intervention group, and MPS involving the upper quarter. The RCTs that met these

criteria were assessed and scored for internal validity using the MacDermid Quality Checklist. Four separate meta-analyses were performed: (1) dry needling compared to sham or control immediately after treatment, (2) dry needling compared to sham or control at 4 weeks, (3) dry needling compared to other treatments immediately after treatment, and (4) dry needling compared to other treatments at 4 weeks.

**Results** The initial search yielded 246 articles. Twelve RCTs were ultimately selected. The methodological quality scores ranged from 23 to 40 points, with a mean of 34 points (scale range, 0–48; best possible score, 48). The findings of 3 studies that compared dry needling to sham or placebo treatment provided evidence that dry needling can immediately decrease pain in patients with upper-quarter MPS, with an overall effect favoring dry needling. The findings of 2 studies that compared dry needling to sham or placebo treatment provided evidence that dry needling can decrease pain after 4 weeks in patients with upper-quarter MPS, although a wide confidence interval for the overall effect limits the impact of the effect. Findings of studies that compared dry needling to other treatments were highly heterogeneous, most likely due to variance in the comparison treatments. There was evidence from 2 studies that lidocaine injection may be more effective in reducing pain than dry needling at 4 weeks.

**Conclusion** Based on the best current available evidence (grade A), we recommend dry needling, compared to sham or placebo, for decreasing pain immediately after treatment and at 4 weeks in patients with upper-quarter MPS. Due to the small number of high-quality RCTs published to date, additional well-designed studies are needed to support this recommendation.

**Kietrys, David M., Kerstin M. Palombaro, and Jeffrey S. Mannheimer. "Dry Needling for Management of Pain in the Upper Quarter and Craniofacial Region." *Current pain and headache reports* 18.8 (2014): 1-9.**

Dry needling is a therapeutic intervention that has been growing in popularity. It is primarily used with patients that have pain of myofascial origin. This review provides background about dry needling, myofascial pain, and craniofacial pain. We summarize the evidence regarding the effectiveness of dry needling. For patients with upper quarter myofascial pain, a 2013 systematic review and meta-analysis of 12 randomized controlled studies reported that dry needling is effective in reducing pain (especially immediately after treatment) in patients with upper quarter pain. There have been fewer studies of patients with craniofacial pain and myofascial pain in other regions, but most of these studies report findings to suggest the dry needling may be helpful in reducing pain and improving other pain related variables such as the pain pressure threshold. More rigorous randomized controlled trials are clearly needed to more fully elucidate the effectiveness of dry needling.

**Llamas-Ramos, Rocio, et al. "Comparison of the short-term outcomes between trigger point dry needling and trigger point manual therapy for the management of chronic mechanical neck pain: a randomized clinical trial." *Journal of orthopaedic & sports physical therapy* 44.11 (2014): 852-861.**

**Study Design** Randomized clinical study.

**Objectives** To compare the effects of trigger point (TrP) dry needling (DN) and TrP manual therapy (MT) on pain, function, pressure pain sensitivity, and cervical range of motion in subjects with chronic mechanical neck pain.

**Background** Recent evidence suggests that TrP DN could be effective in the treatment of neck pain. However, no studies have directly compared the outcomes of TrP DN and TrP MT in this population.

**Methods** Ninety-four patients (mean  $\pm$  SD age, 31  $\pm$  3 years; 66% female) were randomized into a TrP DN group (n = 47) or a TrP MT group (n = 47). Neck pain intensity (11-point numeric pain rating scale), cervical range of motion, and pressure pain thresholds (PPTs) over the spinous process of C7 were measured at baseline, postintervention, and at follow-ups of 1 week and 2 weeks after treatment. The Spanish version of the Northwick Park Neck Pain Questionnaire was used to measure disability/function at baseline and the 2-week follow-up. Mixed-model, repeated-measures analyses of variance (ANOVAs) were used to determine if a time-by-group interaction existed on the effects of the treatment on each outcome variable, with time as the within-subject variable and group as the between-subject variable.

**Results** The ANOVA revealed that participants who received TrP DN had outcomes similar to those who received TrP MT in terms of pain, function, and cervical range of motion. The 4-by-2 mixed-model ANOVA also revealed a significant time-by-group interaction ( $P < .001$ ) for PPT: patients who received TrP DN experienced a greater increase in PPT (decreased pressure sensitivity) than those who received TrP MT at all follow-up periods (between-group differences: posttreatment, 59.0 kPa; 95% confidence interval [CI]: 40.0, 69.2; 1-week follow-up, 69.2 kPa; 95% CI: 49.5, 79.1; 2-week follow-up, 78.9 kPa; 95% CI: 49.5, 89.0).

**Conclusion** The results of this clinical trial suggest that 2 sessions of TrP DN and TrP MT resulted in similar outcomes in terms of pain, disability, and cervical range of motion. Those in the TrP DN group experienced greater improvements in PPT over the cervical spine. Future trials are needed to examine the effects of TrP DN and TrP MT over long-term follow-up periods.

**Mason, John S., Kimberly A. Tansey, and Richard B. Westrick. "Treatment of subacute posterior knee pain in an adolescent ballet dancer utilizing trigger point dry needling: a case report." *International journal of sports physical therapy* 9.1 (2014): 116.**

**Study Design:** Case Report.

**Background and Purpose:** Dry needling (DN) is an increasingly popular intervention used by clinicians as a treatment of regional neuromusculoskeletal

pain. DN is an invasive procedure that involves insertion of a thin monofilament needle directly into a muscle trigger point (MTP) with the intent of stimulating a local twitch response. Current evidence is somewhat limited, but recent literature supports the use of this intervention in specific neuromusculoskeletal conditions. The purpose of this case report is to present the outcomes of DN as a primary treatment intervention in an adolescent subject with subacute posterior knee pain.

**Case Description:** The subject was a 16-year-old female competitive ballet dancer referred to physical therapy with a two month history of right posterior knee pain. Palpation identified MTPs which reproduced the patient's primary symptoms. In addition to an exercise program promoting lower extremity flexibility and hip stability, the subject was treated with DN to the right gastrocnemius, soleus, and popliteus muscles.

**Outcomes:** The subject reported being pain free on the Numerical Pain Scale and a +7 improvement in perceived change in recovery on the Global Rating of Change at final follow-up. Physical examination demonstrated no observed impairments or functional limitations, including normal mobility, full strength, and unrestricted execution of dance maneuvers.

**Discussion:** The patient was able to return to high level dance training and competition without physical limitations and resumed pre-injury dynamic movement activities including dancing, running, jumping, and pivoting without pain. DN can be an effective and efficient intervention to assist patients in decreasing pain and returning to high intensity physical activity. Additional research is needed to determine if DN is effective for other body regions and has long-term positive outcomes.

### **Martín-Pintado-Zugasti, Aitor, et al. "Ischemic Compression After Dry Needling of a Latent Myofascial Trigger Point Reduces Postneedling Soreness Intensity and Duration." *PM&R* (2015).**

#### **Objective**

To investigate the effect of ischemic compression (IC) versus placebo and control on reducing postneedling soreness of 1 latent myofascial trigger point and on improving cervical range of motion (CROM) in asymptomatic subjects.

#### **Design**

A randomized, double-blind, placebo-controlled trial with 72-hour follow-up.

#### **Setting**

A university community.

#### **Participants**

Asymptomatic volunteers (N = 90: 40 men and 50 women) aged 18 to 39 years (mean  $\pm$  standard deviation [SD]: 22  $\pm$  3 years).

#### **Intervention**

All subjects received a dry needling application over the upper trapezius muscle. Participants were then randomly divided into 3 groups: a treatment group who

received IC over the needled trapezius muscle, a placebo group who received sham IC, and a control group who did not receive any treatment after needling.

### **Main Outcome Measures**

Visual analog scale (VAS; during needling, at posttreatment and 6, 12, 24, 48, and 72 hours) and CROM (at preneedling, postneedling, and 24 and 72 hours).

### **Results**

Subjects in the IC group showed significantly lower postneedling soreness than the placebo and the control group subjects immediately after treatment (mean  $\pm$  standard deviation [SD]: IC, 20.1  $\pm$  4.8; placebo, 36.7  $\pm$  4.8; control, 34.8  $\pm$  3.6) and at 48 hours (mean  $\pm$  SD: IC, 0.6  $\pm$  1; placebo, 4.8  $\pm$  1; control, 3.8  $\pm$  0.7). In addition, subjects in the dry needling+IC group showed significantly lower postneedling soreness duration ( $P = .026$ ). All subjects significantly improved CROM in contralateral lateroflexion and both homolateral and contralateral rotations, but only the improvements found in the IC group reached the minimal detectable change.

### **Conclusions**

IC can potentially be added immediately after dry needling of myofascial trigger point in the upper trapezius muscle because it has the effect of reducing postneedling soreness intensity and duration. The combination of dry needling and IC seems to improve CROM in homolateral and contralateral cervical rotation movements.

**Mejuto-Vázquez, María J., et al. "Short-term changes in neck pain, widespread pressure pain sensitivity, and cervical range of motion after the application of trigger point dry needling in patients with acute mechanical neck pain: a randomized clinical trial." *Journal of orthopaedic & sports physical therapy* 44.4 (2014): 252-260.**

**Objectives** To determine the effects of trigger point dry needling (TrPDN) on neck pain, widespread pressure pain sensitivity, and cervical range of motion in patients with acute mechanical neck pain and active trigger points in the upper trapezius muscle.

**Background** TrPDN seems to be effective for decreasing pain in individuals with upper-quadrant pain syndromes. Potential effects of TrPDN for decreasing pain and sensitization in individuals with acute mechanical neck pain are needed.

**Methods** Seventeen patients (53% female) were randomly assigned to 1 of 2 groups: a single session of TrPDN or no intervention (waiting list). Pressure pain thresholds over the C5–6 zygapophyseal joint, second metacarpal, and tibialis anterior muscle; neck pain intensity; and cervical spine range-of-motion data were collected at baseline (pretreatment) and 10 minutes and 1 week after the intervention by an assessor blinded to the treatment allocation of the patient. Mixed-model analyses of variance were used to examine the effects of treatment on each outcome variable.

**Results** Patients treated with 1 session of TrPDN experienced greater decreases in neck pain, greater increases in pressure pain threshold, and higher increases in cervical range of motion than those who did not receive an intervention at both 10 minutes and 1 week after the intervention ( $P < .01$  for all comparisons). Between-group effect sizes were medium to large immediately after the TrPDN session (standardized mean score differences greater than 0.56) and large at the 1-week follow-up (standardized mean score differences greater than 1.34).

**Conclusion** The results of the current randomized clinical trial suggest that a single session of TrPDN may decrease neck pain intensity and widespread pressure pain sensitivity, and also increase active cervical range of motion, in patients with acute mechanical neck pain. Changes in pain, pressure pain threshold, and cervical range of motion surpassed their respective minimal detectable change values, supporting clinically relevant treatment effects.

**Salom-Moreno, Jaime, et al. "Trigger Point Dry Needling and Proprioceptive Exercises for the Management of Chronic Ankle Instability: A Randomized Clinical Trial." *Evidence-Based Complementary and Alternative Medicine* 2015 (2015).**

**Objective.** To compare the effects of combined trigger point dry needling (TrP-DN) and proprioceptive/strengthening exercises to proprioceptive/strengthening exercises on pain and function in ankle instability. **Methods.** Twenty-seven (44% female, mean age: years) individuals with unilateral ankle instability were randomly assigned to an experimental group who received proprioceptive/strengthening exercises combined with TrP-DN into the lateral peroneus muscle and a comparison group receiving the same proprioceptive/strengthening exercise program alone. Outcome included function assessed with the Foot and Ankle Ability Measure (FAAM) and ankle pain intensity assessed with a numerical pain rate scale (NPRS). They were captured at baseline and 1-month follow-up after the intervention. **Results.** The ANOVAs found significant Group Time Interactions for both subscales of the FAAM (ADL: ; ; SPORTS: ; ) and for pain ( ; ): patients receiving TrP-DN plus proprioceptive/strengthening exercises experienced greater improvements in function and pain than those receiving the exercise program alone. Between-groups effect sizes were large in all outcomes (SMD > 2.1) in favor of the TrP-DN group. **Conclusions.** This study provides evidence that the inclusion of TrP-DN within the lateral peroneus muscle into a proprioceptive/strengthening exercise program resulted in better outcomes in pain and function 1 month after the therapy in ankle instability.



