

## Inclusion of trigger point dry-needling in a multimodal physical therapy program for postoperative shoulder pain: a randomised controlled trial.

Arias-Buria JL, Valero-Alcaide R, Cleland JA, Salom-Moreno J, Ortega-Santiago R, Atin-Arratibel MA, et al (2015) *Inclusion of trigger point dry needling in a multimodal physical therapy program for postoperative shoulder pain: a randomised controlled trial. Journal of Manipulative and Physiological Therapeutics* 38(3): 197-87. doi: 10.1016/j.jmpt.2014.11.007. (Abstract prepared by Rose Twaddle)

### OBJECTIVE

To compare the effect of dry-needling and multimodal physiotherapy versus physiotherapy alone in individuals who have undergone rotator cuff repair or proximal humeral fracture repair with the proximal humeral internal locking system.

### METHODS

Randomised controlled trial of 20 patients (mean age 58 SD 12 years) who were experiencing post-surgical shoulder pain. Included participants were those who self-referred to a rehabilitation centre over the one month selection period. Potential participants were excluded if they were not found to have any active muscular trigger points, had sustained multiple fractures, undergone previous surgery, presented with cervical radiculopathy/myelopathy, had a diagnosis of fibromyalgia, had attended physiotherapy within the previous year; were fearful of needles, or had any contraindication to dry-needling. Participants were assigned to one of two groups, physiotherapy alone, or physiotherapy and dry-needling. They each attended five treatment sessions which comprised passive mobilisation, and soft tissue and scar tissue massage, delivered by a blinded practitioner; the final two sessions incorporated strength and proprioceptive-based exercises within the pain-free range. For the dry-needling group, this was applied once in the first intervention session. Treatment effect was measured using the Constant-Murley Score, prior to any intervention and one week following the final session; this score measures range of motion, strength, activities of daily living, and pain.

### RESULTS

Participants assigned to the dry-needling group experienced significantly greater improvements in strength (28%,  $p < 0.05$ ) and activities of daily living (37.5%,  $p < 0.001$ ) than those who received physiotherapy alone. Although no between-group differences were found a statistically significant improvement in pain and range of motion for both groups was observed.

### CONCLUSION

Participants with post-operative shoulder pain demonstrated significant improvements in strength, range of motion, pain and overall function following physiotherapy input, particularly

if dry-needling was included within the first 6 months of the rehabilitation period.

### COMMENTARY

The authors of this randomised clinical trial evaluate and argue the effectiveness of dry needling used as an adjunct to a pre-existing multimodal approach to post-surgical shoulder rehabilitation.

When analysing the characteristics of participants included in this study they are likely to be a true reflection of patients one would come across in a rehabilitative setting within Australasia. In a recent study, of those patients who presented to various public rehabilitation centres in New South Wales, Australia for upper limb rehabilitation, 8.1% were post-surgical and their average age was  $61.5 \pm 15.7$  years, with 72% of these older than 55 years (Roberts and Li 2014). In the present study, the mean age of participants was 58 years, which parallels that reported by Roberts and Li (2014), supporting the clinical applicability of these findings. However, Roberts and Li (2014) found that patients seeking post-surgical rehabilitation required an average of 10.3 sessions, which is over twice that delivered in the study by Arias-Buria et al (2015). An objective increase in range of motion correlated directly to the number of sessions the patient received and therefore, it would be interesting to specifically review the outcomes of dry-needling should the number of sessions reflect more closely what is used in the clinical setting.

In the current study, the intervention was provided at least 5.4 months post-surgery which, according to recent literature on rotator cuff repair, is associated with long term improvements that are as significant as those that occur when therapy is started immediately (Ross et al 2014). Therefore, it appears intervention timing was optimal, for the rotator cuff repair participants at least. In terms of the intervention itself, Arias-Buria et al (2015) have included best practice guidelines according to a Cochrane review on physiotherapy management of shoulder pain (Green et al 2003). This review concluded that exercise prescription was beneficial, and that outcomes were improved if mobilisation was included in conjunction with exercise. Unfortunately, neither the review nor the current study specified which exercises were used.

Post-operatively, myofascial trigger points may form in response to injury, overload or microtrauma (Kietrys et al 2013). Achieving a localised twitch response is imperative if using dry-needling, although in this study the reported improvements are only for range of motion and pain. Arias-Buria et al (2015) report strength and functional benefits are the only objective measures influenced by a twitch response. Clinically, these findings would appear to support the notion that dry-needling is a favorable adjunct to a multimodal intervention, but that alone, the clinical benefits of this treatment approach are still debatable.

Finally, with regard to outcome measures, the Constant-Murley Score is a clinically relevant, patient-centred measure; not only does it include strength and range of motion objectives that are relevant to post-operative shoulder pain, it also incorporates functional and pain-related subjective measures that will continue to drive the treatment pathway. The Constant-Murley Score has been shown to have excellent intra- and inter-tester reliability (Roy et al 2010) and so is a useful assessment tool to employ in the clinic.

Arias-Buria et al (2015) have shown that dry-needling is a beneficial adjunct to a multimodal approach for post-operative shoulder rehabilitation. Due to the invasive nature of the dry-needling component of the intervention it was not possible to conduct a double-blind study; however, the clinician undertaking assessment of the outcome methods was blinded to the treatment group allocation. A detailed description of the intervention would be useful so that a similar treatment plan could be replicated within a clinical setting.

Rose Twaddle BHSoc (Physiotherapy), PGCert (Sports Physio)  
Quality Rehabilitation Services (Therapy for Children)

### REFERENCES

- Kietrys DM, Palombaro KM, Azzaretto E, Hubler R, Schaller B, Schluskel JM, Tucker M (2013) Effectiveness of dry needling for upper-quartile myofascial pain: a systematic review and meta-analysis. *Journal of Orthopaedic and Sports Physical Therapy* 43(9):620-34. doi: 10.2519/jospt.2013.4668.
- Roberts D, Li F (2014) The presentation and outcomes of shoulder pain in public hospital physiotherapy departments in NSW: an observational study. *Physiotherapy Theory and Practice* 30(5):299-305. doi: 0.3109/09593985.2013.871764.
- Rocourt MH, Radlinger L, Sanavi S, Schmid NS, Launig M, Hertel R (2007) Evaluation of intratester and intertester reliability of the Constant-Murley shoulder assessment. *Journal of Shoulder and Elbow Surgery* 17(2):364-369. doi: 10.1016/j.jse.2007.06.024.
- Ross D, Maerz T, Lynch J, Norris S, Baker K, Anderson K (2014) Rehabilitation following arthroscopic rotator cuff repair: a review of current literature. *Journal of the American Academy of Orthopaedic Surgeons* 22(1):1-9. doi: 0.5435/JAAOS-22-01-1.
- Roy JS, MacDermid JC, Woodhouse LJ (2010) A systematic review of the psychometric properties of the Constant-Murley score. *Journal of Shoulder and Elbow Surgery* 19:157-64. doi: 10.1016/j.jse.2009.04.008.