Trigger point dry needling: the data do not support broad applicability or robust effect

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We read with great interest the recent systematic review by Boyles et al. entitled "Effectiveness of trigger point dry needling for multiple body regions: a systematic review".[1] We admire the work done by the authors to conduct a systematic review on an intervention of growing popularity in our profession and appreciate their efforts to enhance understanding of this intervention. However, we strongly disagree with the authors' conclusion when they write: "The majority of high-quality studies included in this review show measured benefit from trigger point dry needling for MTrPs in multiple body areas, suggesting broad applicability of trigger point dry needling treatment for multiple muscle groups".

This strongly worded conclusion overstates the findings of the actual data and misleads casual readers into believing that the research supporting trigger point dry needling is quite robust. We contend that it is not. While there are *some* measured differences between groups in *some* studies, actual clinical benefits appear questionable, at best, and suggestions of applicability are currently unwarranted. The individual data of many trials included in the systematic review demonstrate one or a combination of the following limitations:

(1) No statistically significant difference from sham treatments.[2–6]
(2) Outcomes measuring immediate effects only.[3,7–11]
(3) Clinically irrelevant effects on pain and disability.[3,7,10–15]
(4) Large degrees of uncertainty due to wide confidence intervals.[12,16]
(5) Failure to control for significant confounding variables, such as natural history, regression to the mean and non-specific treatment effects.[4,5,7,8,10,13,17,18]
(6) Withdrawn from publication at the request of the editor.[19]
(7) Required an erratum due to misreporting of kappa values.[20]

Specifically, only 47% of the included trials showed a statistically significant decrease in pain when compared to sham or alternative treatments, only 26% displayed a statistically significant decrease in disability and 42% did not include a sham or control intervention group. Of the 10 trials that did include a sham intervention, only three actually assessed the quality of blinding in the sham group. Further, 32% of the included trials investigated only the immediate effects (ranging from immediately post intervention to 72 h) of Trigger Point Dry Needling (TDN) which is a research design with remarkable limitations.[21] Further, one of the nineteen studies was retracted at the request of the journal editor. These are significant methodological concerns that should give any clinician or researcher pause when interpreting this systematic review and/or considering the implementation of trigger point dry needling.

The Cotchett et al. trial[22] on trigger point dry needling for heel pain included in the present systematic review showcases several of the issues broadly prevalent in the dry needling literature. Boyles et al. state that "Cotchett et al.[22] found significant improvements in pain and subjective foot health report for trigger point dry needling to the plantar foot as compared to sham needling". We feel this to be a misrepresentation of the Cotchett et al.[22] trials' results. While there was a statistically significant difference found between dry needling and sham dry needling measured by the Foot Health Status Questionnaire, the results failed to achieve a previously determined minimally important difference. This makes the results' clinical relevance questionable. Also of note, the adjusted mean difference between dry needling and sham for first-step pain measured by a 100-mm visual analog scale barely met the minimally important difference and exhibited rather wide confidence intervals (mean −14.4 95%CI (−23.5 to −5.2), thus limiting the certainty of the results. Most importantly, the frequency of adverse events between the dry needling group and the sham group resulted in a number needed to harm one of three. That is, for every three patients treated with dry needling (as opposed to sham), one will develop an adverse event that he/she would not have experienced had the patient not been treated with dry needling. This is a troublesome finding when considering that the authors

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found that the number needed to treat to obtain a useful outcome to be four. With the above information in mind, qualifying the trial as finding "significant improvements in pain and subjective foot health" is dubious at best.

Beyond the trial data itself, those utilizing a myofascial trigger point approach to dry needling need to acknowledge the current issues with regards to a lack of consistent criteria defining a trigger point[17,23] the questionable clinical importance, if any, of trigger points, and the poor reliability in trigger point identification.[24] Moreover, there are several foundational issues at the core of the trigger point construct including a lack of established validity and the tautological reasoning inherent in both trigger points and myofascial pain syndrome.[25–27] These issues, while beyond the scope of this letter, cast significant doubt on the foundational premise of trigger points as a clinical meaningful entity and treatment target via dry needling or other means.

Given the data included in the systematic review it is premature, if not inaccurate, for the authors to conclude that dry needling has broad applicability in the treatment of pain. We urge the readers to take pause and assess not only the individual trials included, but the premise, plausibility and proposed mechanisms of trigger point dry needling. The above concerns regarding the data on trigger point dry needling suggest that robust conclusions of effectiveness and applicability are not currently possible.

We suggest that the authors amend their strongly worded conclusions to more closely match what the actual trial data suggest that despite strong anecdotal support[28] and positive reviews (that are flawed),[1,29,30] the positive influence of dry needling is overstated in this systematic review.[31]

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Conflict of interest

None declared.

References

1 Boyles R, Fowler R, Ramsey D, Burrows E. Effectiveness of trigger point dry needling for multiple body regions: a systematic review. J Man Manipulative Ther [Internet]. 2015;2042618615Y.000. Available from: http://www.maneyonline.com/doi/10.1179/2042618615Y.0000000014

2 Edwards J, Knowles N. Superficial dry needling and active stretching in the treatment of myofascial pain–a randomised controlled trial. Acupunct Med. 2003;21(3):80–6.

3 Huguenin L, Brukner PD, McCrory P, Smith P, Wajswelner H, Bennell K. Effect of dry needling of gluteal muscles on straight leg raise: a randomised, placebo controlled, double blind trial. Br J Sports Med. 2005;39(2):84–90.

4 Ay S, Evcik D, Tur BS. Comparison of injection methods in myofascial pain syndrome : a randomized controlled trial. 2009;19–23.

5 Pérez-Palomares S, Oliván-Blázquez B, Magallón-Botaya R, De-la-Torre-Beldarraín M, Gaspar-Calvo E, Romo-Calvo L, *et al*. Percutaneous electrical nerve stimulation versus dry needling: effectiveness in the treatment of chronic low back pain. J Musculoskeletal Pain. 2010;18(1):23–30.

6 Diracoglu D, Vural M, Karan A, Aksoy C, Dıraçoğlu D. Effectiveness of dry needling for the treatment of temporomandibular myofascial pain: a double-blind, randomized, placebo controlled study. J Back Musculoskeletal Rehabil [Internet]. 2012;25(4):285–90. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23220812

7 Irnich D, Behrens N, Gleditsch JM, Stör W, Schreiber M a., Schöps P, *et al*. Immediate effects of dry needling and acupuncture at distant points in chronic neck pain: results of a randomized, double-blind, sham-controlled crossover trial. Pain. 2002;99(1–2):83–9.

8 Fernández-Carnero J, La Touche R, Ortega-Santiago R, Galan-del-Rio F, Pesquera J, Ge H-Y, *et al*. Short-term effects of dry needling of active myofascial trigger points in the masseter muscle in patients with temporomandibular disorders. J Orofac Pain. 2010;24(1):106–12.

9 Srbely JZ, Dickey JP, Lee D, Lowerison M. Dry needle stimulation of myofascial trigger points evokes segmental anti-nociceptive effects. J Rehabil Med. 2010;42(5):463–8.

10 Myburgh C, Hartvigsen J, Aagaard P, Holsgaard-Larsen A. Skeletal muscle contractility, self-reported pain and tissue sensitivity in females with neck/shoulder pain and upper trapezius myofascial trigger points – a randomized intervention study. Chiropr Man Ther [Internet]. 2012;20(1):36. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3599669&tool=pmcentrez&rendertype=abstract.

11 Tsai C-T, Hsieh L-F, Kuan T-S, Kao M-J, Chou L-W, Hong C-Z. Remote effects of dry needling on the irritability of the myofascial trigger point in the upper trapezius muscle. Am J Phys Med Rehabil. 2010;89(2):133–40.

12 Cotchett MP, Munteanu SE, Landorf KB. Effectiveness of trigger point dry needling for plantar heel pain: a randomized controlled trial. Phys Ther [Internet]. 2014;1083–94. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24700136.

13 Eroğlu PK. A comparison of the efficacy of dry needling, lidocaine injection, and oral flurbiprofen treatments in patients with myofascial pain syndrome: a double-blind (for injection, groups only), randomized clinical trial. Turkish J Rheumatol [Internet]. 2013;28(1):38–46. Available from: http://www.tjr.org.tr/text.php3?id=497.

14 Tekin L, Akarsu S, Durmus O, Cakar E, Dincer U, Kiralp MZ. The effect of dry needling in the treatment of myofascial pain syndrome: a randomized double-blinded placebo-controlled trial. Clin Rheumatol [Internet]. 2012. Available from: http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=23138883&retmode=ref&cmd=prlinks\npapers2://publication/doi/10.1007/s10067-012-2112-3

15 Mejuto-Vázquez MJ, Salom-Moreno J, Ortega-Santiago R, Truyols-Domínguez S, Fernández-de-las-Peñas C. 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. J Orthop Sports Phys Ther [Internet]. 2014;44(4):252–60. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24568260

16 Itoh K, Saito S, Sahara S, Naitoh Y, Imai K, Kitakoji H. Randomized trial of trigger point acupuncture treatment for chronic shoulder pain: a preliminary study. J Acupunct Meridian Stud [Internet]. 2013;7(2):59–64. Available from: http://linkinghub.elsevier.com/retrieve/pii/S2005290113000526

17 Llamas-Ramos R, Pecos-Martín D, Gallego-Izquierdo T, Llamas-Ramos I, Plaza-Manzano G, Ortega-Santiago R, *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. J Orthop Sport Phys Ther [Internet]. 2014;44(11):852–61. Available from: http://www.jospt.org/doi/abs/10.2519/jospt.2014.5229

18 Zheng Y, Shi D, Wu X, Gu M, Ai Z, Tang K. Ultrasound-guided mini scalpel-needle release versus dry needling for chronic neck pain: a randomized controlled trial. Evid Based Complement Altern Med. 2014;1–8.

19 Eftekhar-Sadat B, Babaei-Ghazani A, Zeinolabedinzadeh V. Evaluation of dry needling in patients with chronic heel pain due to plantar fasciitis. Foot. 2012;1–5.

20 Ware J. February 2015 letter to the Editor-in-Chief. J Orthop Sport Phys Ther [Internet]. 2015;45(2):144–46. Available from: http://www.jospt.org/doi/abs/10.2519/jospt.2015.0202

21 Cook C. Immediate effects from manual therapy: much ado about nothing? J Man Manipulative Ther. 2011;19(1):3–4.

22 Cotchett MP, Munteanu SE, Landorf KB. Effectiveness of trigger point dry needling for plantar heel pain: a randomized controlled trial. Phys Ther [Internet]. 2014. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24700136

23 Gerwin RD, Shannon S, Hong CZ, Hubbard D, Gevirtz R. Interrater reliability in myofascial trigger point examination. Pain. 1997;69(1–2):65–73.
24 Lucas N, Macaskill P, Irwig L, Moran R, Bogduk N. Reliability of physical examination for diagnosis of myofascial trigger points a systematic review of the literature identification of studies. Clin J Pain. 2009;25(1):80–9.
25 Cohen M, Quintner J. The horse is dead: let myofascial pain syndrome rest in peace. Pain Med. 2008;9(4):464–5.
26 Quintner JL, Bove GM, Cohen ML. A critical evaluation of the trigger point phenomenon. Rheumatology. 2014;54(3):392–9.
27 Quinter JL, Cohen ML. Referred pain of peripheral nerve origin: an alternative to the "myofascial pain" construct. Clin J Pain. 1994;10;243–51.
28 Ries E. Dry needling : getting to the point. PT Motion. 2015;May.
29 Dunning J, Butts R, Mourad F, Young I, Flannagan S, Perreault T. Dry needling: a literature review with implications for clinical practice guidelines1. Phys Ther Rev [Internet]. 2014;1–14. Available from: http://www.maneyonline.com/doi/abs/10.1179/1083319133X13844245102034
30 Kietrys DM, Palombaro KM, Azzaretto E, Hubler R, Schaller B, Schlussel JM, *et al.* Effectiveness of dry needling for upper quarter myofascial pain: a systematic review and meta-analysis. J Orthop Sports Phys Ther [Internet]. 2013 [cited 2013 Oct 24];43(9):620–34. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23756457
31 Harvie DS, O'Connell N, Moseley GL. Dry needling for myofascial pain: does the evidence make the grade? body in mind. 2014. Available from: http://www.bodyinmind.org/dry-needling-myofascial-pain/