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REVIEW: INVITED CRITICAL REVIEW

A critical overview of the current myofascial pain literature – October 2015



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Summary The number of publications about myofascial pain and trigger points (TrP) seems to increase every year. In the current overview we include 27 articles published in past months. The Basic Review section includes articles about the presence and characteristics of TrPs in various neck and shoulder muscles, the correlation between referred pain from active TrPs and knee osteoarthritis, and an anatomical study exploring whether the location of TrPs may be related to the nerve innervation of muscles. Zuil-Escobar and colleagues from Spain considered the intra-rater reliability of the identification of latent TrPs in several leg muscles and the possible correlation of TrP and the presence of a lower medial longitudinal arch. In the section on manual approaches, contributing author Rob Grieve and colleagues continue their studies of TrPs in the lower extremity muscles, while Méndez-Rebolledo and colleagues studied the impact of cross taping and compression. Dry needling (DN) continues to be a topic of interest. We included twelve papers addressing a wide range of topics, such as the effectiveness and safety of DN, and the impact of DN on proprioception, spasticity, and fibromyalgia. Two papers investigated the utilization of repetitive transcranial magnetic stimulation and laser on TrPs. The final section on other clinical studies and reviews includes 8 papers.

The studies originated in thirteen different countries with Spain leading the charts with 7 contributions to the literature, followed by Brazil with four. As we have mentioned in previous

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editions of this literature overview, many studies suffer from very small sample sizes, which makes it difficult to reach definitive conclusions. Nevertheless, myofascial pain continues to be a topic of interest to researchers and clinicians around the globe.

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Basic research

Wytrazek, M, Huber, J, Lipiec, J & Kulczyk, A, 2015. Evaluation of palpation, pressure algometry, and electromyography for monitoring trigger points in young participants. *Journal of Manipulative and Physiological Therapeutics*, 38, 232–243.

Manual palpation is the main method for the clinical assessment of active and latent TrPs. Although debate persists upon the reliability of evaluating for the detection of a palpable nodule (Lucas et al., 2009), studies have found palpation to be reliable when performed by skilled practitioners (Bron et al., 2007; Gerwin et al., 1997; Al-Shenqiti et al., 2005). Wytrazek et al. examined the presence of active, latent, and non-referring latent TrPs in the sternocleidomastoid, upper trapezius, middle deltoid, and infraspinatus in a group of 70 healthy subjects (48 women and 22 men, ranging in age between 19 and 27) via clinical palpation. They analyzed the pressure pain threshold (PPT) via algometry and surface electromyography (sEMG) of these TrPs. One of the objectives of this study was to evaluate the sequential sequence of various stages of TrPs from non-referring latent TrPs to latent and active TrPs as suggested by several authors.

The authors found non-referring latent TrPs most frequently, followed by latent, and then active TrPs. The PPT was lower in women compared to men and TrPs had a moderate increase in resting EMG amplitude, however, EMG data were not significantly different between groups during a maximum contraction. They found similar readings using algometry for all types of TrPs, thus suggesting an inability to distinguish between types using algometry. This is in contrast to the findings of Hong, who established significantly lower PPT values in active TrPs compared to latent TrPs (Hong, 1998). These differences could result from this study being conducted on healthy subjects compared to subjects with myofascial pain. This study does demonstrate the ability to detect TrPs clinically and correlate those with algometric measurements and sEMG recordings.

Albuquerque-Garcia, A, Rodrigues-De-Souza, DP, Fernandez-De-Las-Penas, C & Albuquerque-Sendin, F, 2015. Association between muscle trigger points, ongoing pain, function, and sleep quality in elderly women with bilateral painful knee osteoarthritis. *Journal of Manipulative and Physiological Therapeutics*. 38, 262–268.

Researchers from Spain conducted a cross-sectional study to investigate if referred pain elicited by active TrPs reproduced the symptoms of bilateral painful knee osteoarthritis (OA) in elderly female patients. A further aim was to determine the relationship between the presence of active TrPs, intensity of ongoing pain, function, quality of

life, and sleep quality in individuals with painful knee OA. Eighteen women (79–90 yrs) with bilateral painful knee OA were age and sex-matched with no-knee-pain controls. The tensor fascia latae, sartorius, rectus femoris, vastus lateralis, vastus medialis, gracilis, biceps femoris, semitendinosus, tibialis anterior, and gastrocnemius muscles were examined for TrPs using the Simons et al. diagnostic criteria (Simons et al., 1999). Pain was collected with a numerical pain rate scale (0–10), function with the Western Ontario and McMaster Universities index, quality of life with the Medical Outcomes Study Short Form 36 questionnaire, and sleep quality was determined with the Pittsburgh Sleep Quality Index. Women with knee OA had a mean number of 5 TrPs (1 active; 4 latent) compared to healthy controls with 4 TrPs (0 active; 4 latent). There was a significant positive association between the number of active TrPs and the intensity of pain, but no association between TrP prevalence and function, quality of life or sleep was found in the painful knee OA group. Due to the acknowledged lack of cause and effect relationship of this cross-sectional design, there may be other factors apart from active TrPs causing the knee pain. The authors noted the same mean number of latent TrPs between the OA and healthy group and acknowledged the growing clinical importance of latent TrPs. In the gastrocnemius muscles of the healthy women, the reported percentage of latent TrPs ranged from 22 to 44%, which is similar to a previous cross sectional study of healthy participants (n = 220), which found a range of 21–30% of latent TrPs in the gastrocnemius muscle (Grieve et al., 2013). Due to the lack of myofascial pain and TrP research in the lower limb, this is a needed study. Unfortunately, as acknowledged by the authors, a key limitation is the small sample size in this underpowered study, which does limit the external validity of the results.

Akamatsu, FE, Ayres, BR, Saleh, SO, Hojajj, F, Andrade, M, Hsing, WT & Jacomo, AL, 2015. Trigger points: an anatomical substratum. *BioMed Research International*, ID 623287.

Researchers from Brazil conducted an anatomical dissection to test the hypothesis that TrPs in the trapezius muscle are related to muscle innervation. The author's claimed that no previous reports in the literature describe the distribution of the accessory nerve branches and their anatomical relationship with TrPs in the trapezius muscle. Twelve human cadavers (6 males and 6 females) were dissected to expose the dorsal primary rami that innervate the trapezius muscle and to observe the exact point where the branches of the spinal accessory nerve entered the muscle belly. The authors reported that it was difficult to determine the exact entry point of fibers from the spinal accessory nerve due to the intricate relationship between nerve fibers, fascia, and fat. No descriptive or statistical

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