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REVIEW: INVITED CRITICAL REVIEW

# A critical overview of the current myofascial pain literature – July 2015



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**Summary** The current overview includes thirty articles published in the recent past about myofascial pain, trigger points (TrPs) and related topics. In the Basic Research section, several interesting new studies are reviewed addressing the presence of TrPs in patients with low back pain, episodic migraine, or following a meniscectomy. An animal study of the impact of laser fluency opens the door to future studies regarding optimal dosage of low-level laser therapy in the treatment of individuals with TrPs. Six papers focus on TrP dry needling (DN), two on manual therapies, and two on injection therapy. One of the injection papers discusses the occurrence of a cardiac tamponade, which is a very rare potential complication of invasive needling therapies that can easily be avoided with proper needling techniques. Several review studies and other clinical studies conclude this overview.

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## Basic research

Landgraf, MN, Ertl-Wagner, B, Koerte, IK, Thienel, J, Langhagen, T, Straube, A, von Kries, R, Reilich, P, Pom-schar, A & Heinen, F, 2015. Alterations in the trapezius muscle in young patients with migraine – A pilot case series with MRI. *European Journal of Paediatric Neurology*, 19, 372–376.

Landgraf and colleagues conducted a pilot case series in a pediatric neurology department in Munich, Germany on the identification of upper trapezius muscle alterations in young patients with migraine. The main aim of this study was to visualize tense areas in the upper trapezius muscle via high-resolution magnetic resonance imaging (MRI) in migraine sufferers. Three students from a local university, who suffered with migraines, participated in the study. Active TrPs or “tense areas” (according to the researchers) in the upper trapezius muscle were identified using Simons et al. diagnostic criteria (Simons et al., 1999), including reproducing recognized and referred cranial pain upon pincer palpation. A nitroglycerin capsule was used as an external marker to be visualized by MR imaging, and was taped to the skin adjacent to the upper trapezius “tense area”/TrPs. MR imaging demonstrated focal signal alterations in the trapezius muscle, in close proximity to the external markers taped to the skin. These signal alterations were clearly shown in the accompanying images in the text. The researchers acknowledged important limitations that need to be taken into account when interpreting the data, namely a small sample size and no blinding of patient clinical symptoms. They recommended future larger sample with a control group and blinded physical examinations. As a pilot case series, this study has shown the association between migraines and clinically associated pathology in the upper trapezius. The external and internal validity issues of this case series make it difficult to draw conclusions, however, this encouraging exploratory research builds on previous research on soft tissue imaging (Chen et al., 2008b; Sikdar et al., 2009), which may finally lead to an objective method to identify myofascial TrPs.

Ge, HY, Vangsgaard, S, Omland, Ø, Madeleine, P & Arendt-Nielsen, L, 2014. Mechanistic experimental pain assessment in computer users with and without chronic musculoskeletal pain. *BMC Musculoskeletal Disorders*, 15, 1–10.

Researchers from Aalborg University, Denmark conducted a controlled trial to investigate central pain mechanisms, including central sensitisation, and conditioned pain modulation (CPM) in computer users with and without musculoskeletal pain. Forty-seven computer users with chronic pain in the upper extremity and neck-shoulder pain (pain group) and 17 pain-free computer users (control group) were recruited. Outcome measures consisted of PPT mapping in the neck/shoulder and elbow and mid-point tibialis anterior (TA) muscle and dynamic algometry with a specially adapted roller to the forearm. Pain intensities were recorded using a 0–10 cm electronic visual analogue scale (VAS). CPM was assessed by cuff-induced pain as a conditioning pain stimulus and PPT at the TA muscle as a test stimulus. There were no significant differences in static PPT in the neck-shoulder region, forearm/elbow and

TA muscle or pain intensity induced by dynamic pressure algometry between groups. No significant PPT differences were found between groups, in the neck-shoulder and elbow group, however, lower PPT measurements were found in the muscle belly but not over musculo-tendinous junction of the upper trapezius or tendons of the forearm extensors. During CPM, a significant increase in PPT at TA muscle was observed in both groups without significant differences between groups. For the chronic pain group, higher clinical pain intensity, lower PPT values from the neck-shoulder and higher pain intensity evoked by the roller were all correlated with less efficient descending pain modulation. This study concluded, that computer use with a low level of chronic musculoskeletal pain was not associated with generalised sensitisation and impairment of descending pain modulation. This was a well conducted study, in relation to a pain-free control group, clear experimental protocol, and blinding of the demographics and clinical characteristics from the researcher responsible for quantitative sensory testing. The findings from this research, may further inform the role of peripheral pain generators on chronic pain and central sensitisation.

Salom-Moreno J, Gil-López PP, Truyols-Domínguez S, Palacios-Ceña M, Ortega-Santiago R & Fernández-de-las-Peñas C, 2015. Puntos gatillo miofasciales en el músculo glúteo medio en pacientes con lumbalgia mecánica: análisis topográfico (in Spanish: Myofascial trigger points in the gluteus medius muscle in patients with mechanical low back pain: Topographic analysis). *Fisioterapia*, 37(1), 9–14.

Researchers from Spain examined the gluteus medius muscle to determine the most common regions affected by active TrPs in patients with mechanical low back pain. Thirteen patients with an average score on a visual analog scale (VAS) of 6.4 and symptom duration of 6.2 years were examined for the presence of active TrPs and pressure sensitivity using pain threshold measurements (PPT). A topographical map of the gluteus medius muscle was made using 9 points of the muscle to determine the most commonly affected zone. The authors found no association between the number of active TrPs in the gluteus medius and the duration of symptoms or the intensity of pain. Active TrPs were most frequently found in the posterior and superior region of the gluteus medius. The anterior/superior and middle region of the gluteus medius muscle were noted to also contain active TrPs. There was no difference in the PPT between these points.

Mechanical low back pain is one of the most common musculoskeletal conditions causing patients to seek medical care. Patients often present with complaints of pain into the gluteal region. This study can aid the clinician in the examination of patients by providing insight into regions of the gluteus medius to focus palpation, especially in the presence of excessive adipose tissue that may hinder palpation acuity. The number of subjects makes this study more or less a pilot study and larger studies are indicated.

Torres-Chica, B, Núñez-Samper-Pizarroso, C, Ortega-Santiago, R, Cleland, JA, Salom-Moreno, J, Laguarda-Val, S & Fernández-de-las-Peñas, C, 2015. Trigger points and pressure pain hypersensitivity in people with post-meniscectomy pain. *Clinical Journal of Pain*, 31, 265–272.

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