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REVIEW: LITERATURE REVIEW

A critical overview of current myofascial pain literature — March 2015

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Summary The second article in this review series considers multiple recent publications about myofascial pain, trigger points (TrPs) and other related topics. The article is divided into several sections, including a Basic Research section (4 articles), a section on Soft Tissue Approaches (5 articles), a Dry Needling and Acupuncture section (7 articles), an Injection section (2 articles), a section on. Modalities (1 article), Other Clinical Approaches (3 articles) and finally a Reviews section (7 articles). The thirty publications reviewed in this article originated in all corners of the world.

Basic research

Bailón-Cerezoa, J & Torres-Lacomba, M, 2014. Presencia de puntos gatillo miofasciales y discinesia escapular en nadadores de competición con y sin dolor de hombro: estudio piloto transversal (in Spanish: Presence of myofascial trigger points and scapular dyskinesis in competitive swimmers with and without shoulder pain: a cross-sectional pilot study). Fisioterapia, 36, 266–273.

Ten to thirty-five percent of competitive swimmers have frequent shoulder pain, commonly referred to as "swimmer's shoulder." Fifteen male competitive swimmers (5 with shoulder pain and 10 without pain) were examined for the presence of active and latent TrPs in 19 shoulder and upper extremity muscles and scapular dyskinesis in this Spanish

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cross-sectional pilot study. Scapular dsykinesis was measured with the Scapular Dyskinesis Test, while TrPs were identified using the Simons, Travell, and Simons criteria (Simons et al., 1999). Five swimmers (2 with pain and 3 without) showed scapular dyskinesis. Active TrPs were present in 36 out of 95 muscles in the shoulders of swimmers with pain, most notably in muscles involved in the propulsive phase of the swim strokes, including the subscapularis (4/5), pectoralis major, teres major, teres minor, long head of triceps brachialis, and upper trapezius (3/5). In the swimmers without pain, latent TrPs were present in 51 out of 190 muscles, most commonly in the upper trapezius, pectoralis major, infraspinatus, and teres major muscles. This is an important pilot study that demonstrates that TrPs are very common in swimmers with and without shoulder pain. In a previous study, Hidalgo-Lozano and colleagues established that active TrPs are more commonly observed in swimmers with shoulder pain (Hidalgo-Lozano et al., 2013). Further studies are indicated and should include female swimmers and a greater number of subjects. In a next phase, the effect of inactivation of TrPs on shoulder dyskinesis and sports performance should be explored. Bron and colleagues confirmed that manual treatment of TrPs in the shoulder is effective (Bron et al., 2011), but this has not yet been studied in competitive swimmers.

Hallgren, RC, Rowan, JJ, Bai, P, Pierce, SJ, Shafer-Crane, GA & Prokop, LL, 2014. Activation of rectus capitis posterior major muscles during voluntary retraction of the head in asymptomatic subjects. Journal of Manipulative and Physiological Therapeutics, 37, 433–440.

A forward head posture is a common clinical presentation associated with head and neck pain. Clinicians frequently use cervical retraction as part of a postural re-education program, which may activate the rectus capitis posterior major muscle (RCPM). Fifteen healthy subjects participated in this study of the muscle activity of the RCPM during a neutral head position (NHP) and a retracted head position (RHP). Activation of RCPM was found to significantly increase ($P < 0.0001$) during RHP (26–37% Maximum Voluntary Isometric Contraction or MVIC) as compared to NHP (10–15% MVIC). This article demonstrates the importance of the RCPM to allow for posturing of the cervical spine. Hypertonicity and TrPs within the RCPM would limit a patient's ability to restore normal neutral head posture (Fernández de las Peñas et al., 2006b; Fernández de las Peñas et al., 2006c), which implies that clinicians should consider the normalization of myofascial tissues, including the RCPM to allow for optimal functional positioning and posture.

Kraus, SL, 2014. Characteristics of 511 patients with temporomandibular disorders referred for physical therapy. Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology, 118 (4), 432–439.

A retrospective study was conducted on 511 patients with temporomandibular disorders (TMD) referred by dental professionals to a US based physical therapy outpatient clinic. This study aimed to identify the diagnostic subsets of a patient population with TMD and to use the characteristics of this TMD population to assist clinical decision-making in the management of TMD. The researcher followed the diagnostic guidelines of axis I of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). Of diagnostic and clinical interest was that overall myofascial pain was the most common diagnostic subset of TMD, with arthralgia the most common concurrent diagnosis. Of the muscle disorders, 84% of the patient population had myofascial pain, with or without limited mouth opening. Clinically the researcher identified the importance of treating TrPs in the sternocleidomastoid and upper trapezius muscles as well as the more obvious temporalis and masseter muscles for TMD. Apart from treating TrPs, a multimodal and team approach among health care professionals was recommended. This study could have included some information on statistical analysis procedure. Overall this study will add to the evidence in relation to myofascial pain and TMD.

Soydan, SS, Deniz, K, Uckan, S, Unal, AD & Tutuncu, NB, 2014. Is the incidence of temporomandibular disorder increased in polycystic ovary syndrome? British Journal of Oral and Maxillofacial Surgery, 52, 822–826.

Soydan and coworkers conducted a prospective study to examine the prevalence rate of temporomandibular disorders in patients with polycycstic ovary syndrome (PCOS). PCOS is the most common endocrinopathy in women during the premenopausal period and is characterized by chronic low-grade inflammation and excess of androgenic hormones that lead to metabolic aberrations and ovarian dysfunction. A high female-to-male ratio of degenerative joint disease has been reported and may be related to the effect of female sex hormones, including estrogen, progesterone, and relaxin (Wang et al., 2009; Warren and Fried, 2001). The authors divided 100 premenopausal women into 2 groups; 50 women diagnosed with PCOS at the endocrinology department and 50 controls.

The temporomandibular joint and the masticatory muscles were evaluated and assessed for tenderness and pain, including the masseter, temporalis, medial and lateral pterygoid, sternocleidomastoid, trapezius, splenius capitis, and digastric muscles. In addition, maximum interincisal distance, restriction of laterotrusion and protrusion, joint sounds, deviations, and visual analogue scale (VAS) were assessed. The authors reported significant differences ($p < 0.001$) in the incidence of temporomandibular disorders (86% in the PCOS group compared with 24% in the control group), muscle tenderness (64% in PCOS group versus 28% in the control group), and pain in the TMJ (mean VAS 2.9 compared to 0.3). Additionally, the incidence of unilateral and bilateral internal derangements, disc displacement, history of closed lock, deviations, and clicking were significantly greater in the PCOS group. However, there were no significant differences in interincisal opening and distance between the two groups.

The authors reported a four times greater occurrence of TMJ disorder in patient with PCOS compared to controls, which may be attributed to an increase in matrix metalloproteinases or proinflammatory cytokines. Although this study is interesting and gives credence to the systemic influence on joint pathology, the influence of joint degeneration and erosive changes may be minimal. The influence of