

**When  
Moving  
Hurts**



**Assess  
Understand  
Take Action**

## **GLOBAL YEAR AGAINST MUSCULOSKELETAL PAIN**

OCTOBER 2009 – OCTOBER 2010

### **Myofascial Pain**

#### **Introduction**

Myofascial pain syndrome (MPS) is a musculoskeletal pain condition characterized by local and referred pain perceived as deep and aching, and by the presence of myofascial trigger points in any part of the body.

#### **Epidemiology**

- Few epidemiological studies have investigated the prevalence or incidence of myofascial trigger points. One study found that trigger points were the source of pain in 30% of patients consulting a primary care clinician for pain, and a second study reported that trigger points were the principal cause of pain in 85% of patients visiting a tertiary pain clinic.
- Different studies have demonstrated that myofascial trigger points are associated with several pain conditions, including migraine, tension-type headache, temporomandibular disorder, neck pain, shoulder pain, epicondylalgia, carpal tunnel syndrome, low back pain, pelvic pain, and whiplash syndrome.

#### **Pathophysiology**

The pathophysiology of myofascial trigger points is incompletely understood, and a number of morphological changes, neurotransmitters, neurosensory features, electrophysiological features, and motor impairments have been implicated on its pathogenesis:

- *Morphological changes:* A significant increase in stiffness has been found within the taut band of myofascial trigger points.
- *Neurotransmitters:* Higher levels of neuropeptides (e.g., substance P or calcitonin gene-related peptide), catecholamines (e.g., norepinephrine), and proinflammatory cytokines (e.g., tumor necrosis factor alpha, interleukin 1-beta, interleukin 6, and interleukin 8) have been found in active trigger points.
- *Neurosensory features:* Spreading referred pain, hypersensitivity to nociceptive stimuli (hyperalgesia) and non-nociceptive stimuli (allodynia), mechanical pain sensitivity, sympathetic facilitation of mechanical sensitization, facilitation of local and referred pains, and attenuated cutaneous blood flow responses.
- *Electrophysiology:* Some studies have found spontaneous electrical activity, attributed to an increase in miniature endplate potentials and excessive acetylcholine release in myofascial trigger points, although future studies are needed to confirm these findings.
- *Motor impairments:* Myofascial trigger points can induce changes in normal muscle activation patterns and result in motor dysfunction.

#### **Clinical Features**

- Trigger points characteristically elicit referred pain when stimulated.
- The duration of the referred pain is variable (second, hours, or days).
- The referred pain is perceived as a deep, aching, and burning pain, although sometimes it may be perceived as superficial pain.
- The referred pain may spread caudally or cranially.
- The intensity and expanded area of referred pain are positively correlated with the degree of trigger point activity (irritability).

## Diagnostic Criteria

The diagnostic criteria for trigger points are under debate, but there are three minimum clinical diagnostic criteria (1–3) and six confirmatory criteria (4–9):

- 1) Presence of a palpable taut band within a skeletal muscle
- 2) Presence of a hypersensitive spot within the taut band
- 3) Reproduction of a referred pain sensation with stimulation of the spot
- 4) Presence of a local twitch response with snapping palpation of the taut band
- 5) Presence of a jump sign
- 6) Patient recognition of the elicited pain
- 7) Predicted referred pain patterns
- 8) Muscle weakness or muscle tightness
- 9) Pain with stretching or contraction of the affected muscle

## Diagnosis and Treatment

Management of myofascial trigger points is multimodal. The most commonly used interventions are as follows:

- Massage, ischemic compression, pressure release, and other soft tissue interventions (such as muscle energy) have shown moderately strong evidence for immediate pain relief.
- Dry needling of trigger points has shown clinical benefits, but more studies are needed.
- Laser therapy shows strong evidence of effectiveness for pain relief.
- Transcutaneous electrical nerve stimulation and magnet therapy have shown moderate evidence for immediate effects over myofascial trigger points.
- Exercise has shown moderate benefit and can include stretching and range of motion, strengthening, endurance, or coordination exercises.
- Ultrasound therapy has weak evidence for effectiveness in management of trigger points.

## References

1. Fernández de las Peñas C, Cuadrado ML, Arendt-Nielsen L, Simons DG, Pareja JA. Myofascial trigger points and sensitisation: an updated pain model for tension type headache. *Cephalalgia* 2007;27:383–93.
2. Simons D, Travell J, Simons P. *Travell & Simons' myofascial pain & dysfunction: the trigger point manual*. Baltimore: Williams & Wilkins; 1999.
3. Tough EA, White AR, Cummings TM, Richards SH, Campbell JL. Acupuncture and dry needling in the management of myofascial trigger point pain: a systematic review and meta-analysis of randomised controlled trials. *Eur J Pain* 2009;13:3–10.
4. Vernon H, Schneider M. Chiropractic management of myofascial trigger points and myofascial pain syndrome: a systematic review of the literature. *J Manipulative Physiol Ther* 2009;32:14–24.

