

# PREVALENCE, INCIDENCE, LOCALIZATION, AND PATHOPHYSIOLOGY OF MYOFASCIAL TRIGGER POINTS IN PATIENTS WITH SPINAL PAIN: A SYSTEMATIC LITERATURE REVIEW

Enrique Lluch, PT,<sup>a</sup> Jo Nijs, PhD,<sup>b,c</sup> Margot De Koning, PhD,<sup>b,d</sup> Dries Van Dyck, PT,<sup>e</sup> Rob Vanderstraeten, PT,<sup>e</sup> Filip Struyf, PhD,<sup>f,g,h</sup> and Nathalie Anne Roussel, PhD<sup>f,i,j</sup>

## ABSTRACT

**Objective:** A systematic review was performed to evaluate the existing evidence related to the prevalence, incidence, localization, and pathophysiology of myofascial trigger points (MTrPs) in patients with spinal (back and neck) pain.

**Methods:** A systematic review following Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines was performed in 2 electronic databases (PubMed and Web of Science) using predefined keywords regarding MTrPs and spinal pain. A “PICOS” questionnaire was used to set up the search strategies and inclusion criteria. Full-text reports concerning MTrPs in patients with back or neck pain, which described their prevalence, incidence, location, or underlying physiopathology were included and screened for methodological quality by 3 independent researchers. Each study was assessed for risk of bias using a checklist derived from the Web site of the Dutch Cochrane Centre.

**Results:** Fourteen articles were retrieved for quality assessment and data extraction. Studies reporting the incidence of MTrPs in patients with spinal pain were lacking. Within spinal pain, patients with neck pain were found to have the highest prevalence rates of MTrPs. The trapezius descendens, levator scapulae, and suboccipitales muscles were the most prevalent locations for active MTrPs in patients with neck pain. Latent MTrPs were present in asymptomatic people, but no significant differences were found in the prevalence rate of latent MTrPs between patients with spinal (neck) pain and healthy controls. The only study investigating prevalence of MTrPs in different localizations of the same muscle reported no significant differences in prevalence between active and latent MTrPs within the trapezius descendens muscle. Studies examining pathophysiological mechanisms underlying MTrPs demonstrated an acidic environment, high concentration of algogenic/inflammatory substances, stiffer muscle tissue, retrograde diastolic blood flows, spontaneous muscle activity at rest, and loss of muscle contractibility in muscles with MTrPs. Altered central processing was also found to play a role in the development of MTrPs.

**Conclusions:** Myofascial trigger points are a prevalent clinical entity, especially in patients with neck pain. Evidence was not found to support or deny the role of MTrPs in other spinal pain. Compelling evidence supports local mechanisms underlying MTrPs. Future research should unravel the relevance of central mechanisms and investigate the incidence of MTrPs in patients with spinal pain. (*J Manipulative Physiol Ther* 2015;xx:1-14)

**Key Indexing Terms:** *Trigger Points; Myofascial Pain Syndromes; Systematic Review; Neck Pain; Low Back Pain*

<sup>a</sup> Professor, Department of Physical Therapy, University of Valencia, Valencia, Spain.

<sup>b</sup> Professor, Pain in Motion Research Group, Departments of Human Physiology and Physiotherapy, Faculty of Physical Education & Rehabilitation, Vrije Universiteit Brussel, Belgium.

<sup>c</sup> Physiotherapist, Department of Physical Medicine and Physiotherapy, University Hospital, Brussels, Belgium.

<sup>d</sup> Physiotherapist, Department of Physical Medicine and Physiotherapy, University Hospital, Brussels, Belgium.

<sup>e</sup> Physiotherapist, Department of Physiotherapy and Rehabilitation Sciences (REVAKI), Faculty of Medicine and Health Sciences, University of Antwerp, Belgium.

<sup>f</sup> Professor, Department of Health Sciences, Artesis University College Antwerp, Antwerp, Belgium.

<sup>g</sup> Professor, Pain in Motion Research Group, Departments of Human Physiology and Physiotherapy, Faculty of Physical Education & Physiotherapy, Vrije Universiteit Brussel, Belgium.

<sup>h</sup> Professor, Division of Musculoskeletal Physiotherapy, Department of Health Sciences, Artesis University College Antwerp, Antwerp, Belgium.

<sup>i</sup> Professor, Pain in Motion Research Group, Departments of Human Physiology and Physiotherapy, Faculty of Physical Education & Physiotherapy, Vrije Universiteit Brussel, Belgium.

<sup>j</sup> Professor, Division of Musculoskeletal Physiotherapy, Department of Health Sciences, Artesis University College Antwerp, Antwerp, Belgium.

Submit requests for reprints to: Enrique Lluch, PT, Department of Physical Therapy, University of Valencia, Gascó Oliag 5, 46010 Valencia, Spain. (e-mail: [enrique.lluch@uv.es](mailto:enrique.lluch@uv.es)).

Paper submitted May 12, 2015; in revised form June 15, 2015; accepted June 15, 2015.

0161-4754

Copyright © 2015 by National University of Health Sciences.  
<http://dx.doi.org/10.1016/j.jmpt.2015.08.004>

**M**yofascial trigger points (MTrPs) are a common source of (regional) pain in patients presenting with musculoskeletal pain,<sup>1,2</sup> with a lifetime prevalence of up to 85% in the general population.<sup>3</sup> An MTrP is a taut band of skeletal muscle, which is painful on compression that, when stimulated (ie, by compression, percussion, or needling), can evoke a characteristic pattern of referred pain and related autonomic responses.<sup>4</sup> Clinically, MTrPs are either being classified as active or latent. Active and latent MTrPs have similar physical findings, except that latent MTrPs do not elicit spontaneous symptoms and the local and referred pain reproduced by stimulating them is not recognizable as familiar to the patient.<sup>4</sup>

The prevalence of MTrPs has been studied in healthy people<sup>5</sup> and different painful conditions such as patellofemoral pain,<sup>6</sup> cervical radiculopathy,<sup>7</sup> shoulder impingement syndrome,<sup>8</sup> chronic tension-type headache,<sup>9</sup> complex regional pain syndrome<sup>10</sup> or lateral epicondylalgia.<sup>11</sup> All the aforementioned studies show a high prevalence of MTrPs. However, the prevalence of MTrPs in patients with spinal pain is unknown.

Some studies have investigated the incidence of MTrPs in different pain populations. For example, Torres Lacomba et al<sup>12</sup> assessed the incidence of MTrPs prospectively over a 12-month period after breast cancer surgery. Interestingly, almost half of the women who underwent breast cancer surgery developed MTrPs. Another incidence study showed a significant correlation between carpal tunnel syndrome and MTrPs of the *M. trapezius descendens*.<sup>13</sup>

The cause of MTrPs is still a matter of speculation, and several hypothetical models have tried to explain the formation of MTrPs. The integrated hypothesis provides the most prominent and accepted explanation for MTrPs.<sup>14</sup> However, other alternative models have been also developed such as the central modulation hypothesis,<sup>15</sup> the neurogenic hypothesis,<sup>16,17</sup> the neurophysiological hypothesis,<sup>18</sup> or the radiculopathy hypothesis.<sup>19</sup> Results from several evaluation techniques looking at MTrP physiopathology such as microdialysis,<sup>20,21</sup> magnetic resonance elastography imaging,<sup>22,23</sup> or vibration sonoelastography<sup>24,25</sup> seem to support at least part of those theories. All the aforementioned studies provide independent data about possible underlying mechanisms of MTrPs. However, to date, no study has systematically reviewed the scientific literature to ascertain the physiopathological mechanisms potentially involved in MTrP formation in patients with spinal pain.

The primary aim of this study was to systematically review the current knowledge regarding the prevalence, incidence, and localization of MTrPs in patients with spinal pain (study objective A). As a secondary aim, pathophysiological mechanisms underlying MTrP formation in patients with spinal pain were thoroughly investigated (study objective B).

## METHODS

### Search Strategy

This systematic review was written in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.<sup>26</sup> To identify relevant articles concerning the study objectives, a systematic search was performed in 2 electronic databases (PubMed and Web of Science [WoS]) between the 25th of October and the 5th of November 2013. The search strategies and inclusion criteria were based on keywords derived after making a “PICOS” questionnaire. Specifically, “P” (patients) made reference to subjects with spinal (back or neck) pain; “I” (intervention), assessment of MTrPs; “C” (comparison), healthy subjects; “O” (outcome study objective A), prevalence, incidence, and localization of MTrPs or “O” (outcome study objective B), etiological, (patho)physiological, biochemical, nociceptive, inflammatory, electrical, or homeostatic mechanisms of MTrPs; and “S” (study design), randomized controlled trials, case-control, cohort, cross-sectional studies.

Two search strategies were built, 1 for each study objective (A and B). Two groups of keywords were combined, and for each study objective, a third group of keywords was added as detailed in [Table 1](#). Two filters were activated (ie, human and English) in PubMed for both search strategies. Relevant hand-searched articles were also included to obtain as complete information as possible. No authors were contacted to obtain additional studies.

### Study Selection

Articles were eligible for this systematic review if they fulfilled the following inclusion criteria: (I) the authors studied MTrPs in patients with spinal (back or neck) pain without a central neurological cause; (II) studies were published in English; (III) articles were full-text reports of original studies; and (IV for the study objective A) studies had to describe the prevalence, incidence, or the localization of MTrPs or (IV for the study objective B) studies had to investigate the underlying etiological, (patho)physiological, biochemical, nociceptive, inflammatory, electrical, or homeostatic mechanisms of MTrPs. If any of these inclusion criteria were not fulfilled, the article was excluded from the literature search.

### Study Process

After performing the literature search, duplicate articles were removed. Eligibility assessment was performed based on title and abstract. The full-text article was searched and analyzed when the article seemed to fulfill the inclusion criteria. When there was uncertainty regarding the content of the article based on title and abstract, the full text was read and evaluated against the inclusion criteria. Screening was performed by 2 researchers independently (DVD and RV). The researchers were holders of a bachelor of science

Download English Version:

<https://daneshyari.com/en/article/5863908>

Download Persian Version:

<https://daneshyari.com/article/5863908>

[Daneshyari.com](https://daneshyari.com)