

# Efficiency of myofascial release in patients with tension-type headaches: integrative review

*Eficácia da liberação miofascial em pacientes com cefaleias do tipo tensional: revisão integrativa*

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## ABSTRACT

**BACKGROUND AND OBJECTIVES:** Headaches are the most common neurological symptom and the most frequent medical complaint, with tension-type pain being one of the most reported forms, being considered a public health problem. Among the manual therapies indicated for the treatment of tension type headaches (TTH) is myofascial release (MRL), which consists of releasing muscle and fascia tension, through techniques that deactivate trigger points (TP). Thus, the objective of this integrative review is to determine the effectiveness of physical therapy using MRL in the treatment of TP-induced TTH.

**CONTENTS:** The guiding question of the study was: "What is the effect of manual therapy using myofascial release as a treatment in patients with tension-type headaches"? Searches were performed in LILACS and Pubmed/Medline databases until August 2021. Sixteen studies published between 2003 and 2021 were included in this integrative review, including case reports and clinical trials, presenting a total of 481 patients.

**CONCLUSION:** It was possible to conclude that the MRL technique showed positive results as a treatment for TTH through the reduction of pain, intensity and frequency.

**Keywords:** Musculoskeletal manipulations, Tension-type headache, Trigger points.

## RESUMO

**JUSTIFICATIVA E OBJETIVOS:** As cefaleias se constituem no sintoma neurológico mais comum e de queixa médica mais frequente, sendo a dor de tipo tensional uma das formas mais relatadas e um problema público de saúde. Entre as terapias manuais indicadas ao tratamento da cefaleia de tipo tensional (CTT), está a liberação miofascial (LM), que consiste na liberação da tensão do músculo e da fáscia por meio de técnicas para desativação de pontos-gatilhos (PG). O objetivo deste estudo foi determinar a eficácia da fisioterapia utilizando a LM no tratamento das CTT induzidas por PG.

**CONTEÚDO:** A questão norteadora do estudo foi: "Qual o efeito da terapia manual utilizando a liberação miofascial como tratamento em pacientes com cefaleias do tipo tensional"? As buscas foram realizadas nas bases de dados LILACS e Pubmed/Medline até agosto de 2021. Foram incluídos nessa revisão 16 estudos publicados entre 2003 e 2021, sendo relatos de caso e ensaios clínicos, com um total de 481 pacientes.

**CONCLUSÃO:** A técnica de LM apresentou resultados positivos como tratamento para CTT, pela diminuição intensidade e frequência da dor.

**Descritores:** Cefaleia do tipo tensional, Manipulações musculoesqueléticas, Pontos-gatilho.

## INTRODUCTION

Headaches are neurological symptoms common in doctors' offices and may present different characteristics. The most reported headaches are tension-type, cervicogenic and migraines<sup>1</sup>. These are associated with a high burden of suffering and considerable socioeconomic costs<sup>2</sup> because they are debilitating disorders which make routine actions impossible and are considered a public health problem<sup>3</sup>.

According to the World Health Organization (WHO)<sup>4</sup>, headaches will be experienced at some point by most people around the world. The belief is that about 80% of the population suffers from this disease every year, and only in 10 to 20% of the cases a doctor is consulted<sup>5,6</sup>. The low consultation rate can be explained by insufficient information about the effectiveness of treatments or by negative health care experiences<sup>7</sup>. Authors<sup>8</sup> reported that 82% of physicians who perform primary health care were not aware of the classification and diagnostic criteria for primary headache disorders.

The types and characteristics of tension-type headaches (TTH) were included in the primary headaches category by

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the International Headache Society (IHS) in 2004<sup>9</sup>. The most common TTH are episodic tension-type headaches (ETTH), in which the frequency is less than 15 days per month, and chronic tension-type headaches (CTTH), in which the frequency is more than 15 days per month. CTTH is also characterized by pain episodes that vary from 30 minutes to 7 days, and in most cases, impairment in work performance is reported<sup>10</sup>, generating a risk factor for excessive use of analgesic drugs<sup>11</sup>.

Musculoskeletal system impairments play an important role in headaches<sup>12</sup>, such as myofascial trigger points (TP), bringing evidence of a potential association with TTH<sup>13</sup>. TP are defined as “hypersensitive nodules in the taut bands of the skeletal muscles that cause referred and autonomic pain, as well as motor symptoms when stimulated”<sup>14</sup>. Studies have reported that the referred pain caused by TP active in the muscles of the head, neck, and shoulder mimic the pain pattern in individuals with ETTH<sup>13,15</sup> and CTTH<sup>16,17</sup>. Neck and head TP in patients with TTH present greater pain in intensity and frequency compared to patients with TTH and no TP<sup>18</sup>.

Several therapeutic approaches have been proposed for the treatment of headaches, such as drugs, physical therapy, and relaxation/cognition therapies<sup>19</sup>. The clinical guidelines on the treatment of TTH by the European Federation of Neurological Societies concluded that conservative management such as physical therapy and acupuncture should always be considered, although their scientific basis is still limited<sup>20</sup>. A study conducted in the USA revealed that manual therapies are the most requested therapeutic strategies by patients with TTH<sup>21,22</sup>.

Manual therapy is a type of non-surgical conservative treatment that is based on the treatment of neuromusculoskeletal dysfunction through analytical muscle and joint manipulations, with the goal of assessing, diagnosing, and treating a variety of symptoms and conditions<sup>23</sup>. Manual therapy consists of a wide variety of techniques<sup>24</sup>, and all show positive results regarding the reduction of drug use and decrease in symptoms of pain<sup>25</sup>. Among manual therapies, a widely used technique is myofascial release (MRL), which consists of releasing muscle and fascia tension through TP deactivation techniques, thus increasing local circulation, which consequently decreases pain, spasms, and symptoms of TTH, besides bringing other benefits<sup>26</sup>.

Therefore, the aim of the present study was to determine the effectiveness of physical therapy using MRL in the treatment of PG-induced TTH.

## CONTENTS

An integrative literature review, characterized by the researcher’s interest in summarizing results of a set of studies on the same subject, allowing the link between research evidence and health practices, with the possibility of contributing to the care provided to users of health services<sup>27</sup>. The study will be developed in the following stages: identification of the subject and elaboration of the guiding question; establishment of inclusion and exclusion criteria; search in the scientific literature; definition of the information to be collected and

assessment of the studies selected for review; interpretation; and knowledge synthesis.

The study’s guiding question was: “What is the effect of manual therapy using myofascial release as treatment in patients with tension-type headaches”? Searches were performed in LILACS and Pubmed/Medline databases until August 2021. The descriptors used were: “*Cefaleia do Tipo Tensional*”, “*Fisioterapia*”, “*Manipulações Musculoesqueléticas*”, “*Liberção Miofascial*” e “*Terapia Manual*”, present in the Descriptors in Health Sciences (DeCS - *Descritores em Ciências da Saúde*) - and their correspondents in English: “Tension-Type Headache”, “Physical Therapy Specialty”, “Musculoskeletal Manipulations”, “Myofascial Release” and “Manual Therapy”, present in the Medical Subject Headings (MeSH). The descriptors were associated with each other using the Boolean operator AND.

Inclusion criteria were case reports or clinical trials using MRL therapy, published in Portuguese, English or Spanish, with full text available in the selected databases. The exclusion criteria were articles that did not use MRL therapy, duplicates, texts with incomplete text or unavailable in full, and those that did not fit the study’s subject and aim.

To assess the data, a research instrument was developed structured according to the guiding question, divided into 11 items in order to record information from the articles: numbering, title, authors identification, authors titles, year of publication, journal, study objective, methodology, study location, results, and conclusions. This instrument was filled out after reading the content of the articles, taking into account the guiding question.

For data analysis and interpretation, a synoptic table was prepared to record the synthesis of the information obtained in the articles. These elements served as a basis for the analysis and discussion of the results and to answer the research problem.

To analyze the data, an initial evaluation of the selected articles took place, and they were compared to each other, aiming to create a dialogue with the similarities and to point out the differences. Then, the data obtained were registered in the form of a synoptic table, which enabled a more synthesized and comparative interpretation of the data found.

## RESULTS

The database search selected 330 articles, including 99 studies in LILACS and 231 studies in Pubmed/Medline. All duplicate references were excluded, and the inclusion/exclusion criteria were applied, resulting in 16 articles. The results found in the databases are shown in table 1.

**Table 1.** Distribution of bibliographic references found and selected according to the databases and descriptors

Databases	Studies found	Studies selected
LILACS	99	3
Pubmed	231	13
Total	330	16

A total of 16 studies<sup>28-43</sup> published between 2003 and 2021 were included. Fifteen studies were clinical trials, while 3 were case reports. Nine studies used MRL therapy alone and 9 studies used MRL therapy associated with other manual therapies. This review included a total of 481 patients. The features of the included studies are listed in table 2.

## DISCUSSION

In all selected studies, participants were diagnosed with TTH by neurologists or physical therapists. According to study<sup>44</sup>, the diagnostic interview with a specialist is the gold standard, whereas questionnaires and interviews with laypersons are less accurate diagnostic tools regarding headache disorders.

**Table 2.** Distribution of selected studies

Authors	n	Type of study	Treatments	Conclusion
Mignelli, Tollefson and Stefanowicz <sup>28</sup>	1	Case report	MRL of masseter and temporalis muscles	Manual therapy in the form of cervical flexion-distraction with MRL was effective in reducing neck and chest pain and reducing headache frequency.
Corum et al. <sup>29</sup>	15	RCT	MRL and suboccipital inhibition	Manipulative exercise was shown to be more effective than MRL.
Pérez-Llanes et al. <sup>30</sup>	12	Clinical trial	MRL and suboccipital inhibition	MRL reduced disability and impact of headache on daily life by 4 weeks.
Shields and Smith <sup>31</sup>	4	Clinical trial	Release of myofascial TP in anterior neck, mandible and skull region, and neuromuscular therapy	Applied therapy reduced the frequency of headaches, and may be an effective method for treating TTH.
Georgoudis et al. <sup>32</sup>	24	RCT	MRL and stretching	The combination of physical therapy in the form of MRL, acupuncture and stretching to improve analgesic effect is strongly recommended
Moraska et al. <sup>33</sup>	62	RCT	MRL in trapezius and suboccipital muscles	The proposed therapy may show complete resolution of headache after several treatment sessions.
Antunes et al. <sup>34</sup>	20	Clinical trial	MRL associated with pompage	Both massage therapy and pompage promoted an improvement in pain and quality of life, with massage therapy having a better result in the pain condition and pompage in quality of life.
Ferragut-Garcías et al. <sup>35</sup>	97	Clinical trial	MRL and neural mobilization	MRL with neural mobilization techniques is more effective in the management of patients with chronic headache.
Sousa et al. <sup>36</sup>	9	Clinical trial	MRL	Presented a significant result in the reduction of overall subjective pain intensity, relief of sensory and affective components and decrease in pain frequency in women.
Bastos et al. <sup>37</sup>	1	Case report	MRL and Stretching	Manual therapy improved quality of life of patients with chronic tension headache.
Rodríguez-Fernández et al. <sup>38</sup>	76	Clinical trial	MRL	Participants were classified as having achieved a successful outcome one week after the session based on perceived recovery. Data from 76 individuals were included in the analysis, of which 36 had a successful outcome (48%).
Hoffmann et al. <sup>39</sup>	22	Clinical trial	MRL	Improvement in pain, discomfort and quality of life, but there are limitations due to the small number of patients treated.
Macedo et al. <sup>40</sup>	37	Clinical trial	MRL and Stretching	Manual therapies with cranial and cervical maneuvers are effective and should be used for the treatment of women with chronic headache.
Morelli and Rebelatto <sup>41</sup>	6	Clinical trial	MRL	Regarding intensity, the treatment showed greater difficulty in improving symptoms in the group of individuals who don't have vertebral alterations, but in relation to the threshold of pain by pressure, the individuals with associated vertebral alterations showed marked improvement.
Morelli and Rebelatto <sup>42</sup>	24	Clinical trial	MRL	Effectiveness in headache relief and increasing pain threshold was observed.
Hoffmann and Teodoroski <sup>43</sup>	1	Case report	MRL associated with pompage	The pompage technique on the posterior and lateral muscles of the cervical spine showed effectiveness in the treatment of TTH.

MRL = myofascial release; RCT = randomized clinical trial; TP = trigger point; TTH = tension-type headache.

The studies<sup>34,36,39,40</sup> evaluated only female patients, as this is the audience most susceptible to these types of ailments<sup>45</sup>. In the other studies, the delineation was between both sexes, however, a higher number of females was observed, with ages ranging from 18 to 65 years. By analyzing these studies, it was not possible to identify which age group suffers the most from TTH and which had the best results after treatment.

All studies presented differences in their methodologies regarding the number of patients, physiotherapeutic techniques, and treatment time, which often prevents reaching what is considered the gold standard in clinical case studies<sup>46</sup>. However, the studies<sup>39-43</sup> followed a standard regarding treatment time, and the report is that a total of ten sessions is enough to achieve positive results, although in the randomized study<sup>29</sup> a period of three months with two weekly sessions was required for full effectiveness of MRL.

The treatment effect regarding pain frequency and intensity was assessed using guided questionnaires, the visual analog scale (VAS), or a combination of both. The VAS was the most used instrument in the studies, for being an instrument that is easy-to-apply and to be understood by the patient, and which can provide pain quantification, facilitating the search for positive or negative responses about the developed therapy. Another instrument used was the Headache Impact Test (HIT-6).

Some review studies have shown that MRL combined with other physical therapy techniques, such as cervical relaxation, cervical mobilization and stretching, have greater efficacy in reducing the frequency, intensity and duration of pain in patients with TP, besides increasing range of motion<sup>37,40</sup>. However, few are the studies that implement specific physical therapy techniques based on manual therapies for the treatment of headache, probably due to the effectiveness in pain relief through pharmacological measures<sup>25</sup>.

Study<sup>47</sup> performed a systematic review of RCT to determine the effectiveness of physical therapy in patients with TTH. Eight RCT that used physical therapy in the treatment of TTH in adults were selected. These studies showed a variety of interventions, and only two were of high quality; however, they showed high clinical heterogeneity, making it impossible to draw valid conclusions.

More evidence-based studies are needed to determine the efficacy of physical therapy in patients with TTH, and RCT divided into groups with MRL treatment or with an association of techniques, associated or not with the use of drugs, may better evaluate the impacts of manual therapies in the treatment of TTH. This review highlighted other physical therapy techniques that include manipulative manual therapy and the important evaluations in different spheres such as quality of life, disability, pain impact and pain perception. The main limitation of the present study is that the results did not take into consideration the risk of bias.

## CONCLUSION

The MRL technique showed positive results as a treatment for TTH by decreasing pain intensity and frequency, as well as im-

proving quality of life, pain impact, disability, and psychological aspects.

## AUTHORS' CONTRIBUTIONS

### Marcela Galdina Silva

Data Collection, Conceptualization, Writing - Preparation of the original

### Victor Augusto Alves Bento

Methodology, Writing – Review and Editing

### Daisilene Baena Castillo

Supervision, Validation

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