



## Traditional Chinese Medicine acupuncture and myofascial trigger needling: The same stimulation points?



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### ABSTRACT

**Background:** Acupuncture originates in China, and its effectiveness has been well documented in musculoskeletal pain disorders and other conditions. A widely accepted contemporary medical treatment option for myofascial pain is trigger point needling. Although there are many differences between Traditional Chinese Medicine acupuncture theory and the myofascial trigger point needling framework, it is argued that the stimulation sites for these two needling modalities are similar.

**Discussion:** In this paper we examined the correspondence between Traditional Chinese Medicine acupoints and myofascial trigger points. Based on this correspondence, we considered exploration of Ah-shi points from four aspects: pain recognition, distal Ah-shi points, Anti-Ah-shi points, and management approaches.

**Summary:** The extent of correspondence is influenced by definitions of acupoints. Myofascial trigger points are significantly correlated to Traditional Chinese Medicine acupoints, including primary channel acupoints, extra acupoints, and Ah-shi points. Considering the correlation between MTrPs and acupoints and the rarely-studied research area of Ah-shi points, it may be reasonable to incorporate research findings of myofascial trigger points into further investigations into Ah-shi points. Correspondence between myofascial trigger points and acupoints enhances contemporary understanding of the mechanism of action of acupuncture, and may serve to facilitate increased integration of acupuncture into clinical management.

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## 1. Background

Acupuncture, which literally means to puncture with a needle, was first documented in 100 BCE.<sup>1</sup> Over the 2500 years of development, a wealth of anecdotal evidence has accumulated about the practice of acupuncture, and demonstrates that there is a wide range of diseases that may be effectively treated by this approach. Overviews of systematic reviews have highlighted the positive benefits of acupuncture for a variety of conditions including chronic low back pain,<sup>2</sup> cancer-related symptoms,<sup>3</sup> neck pain,<sup>4</sup> and stroke.<sup>5</sup>

Unlike other Chinese traditional treatments, which tend to be specific to the cultural context (e.g. Miao medicine and Meng

medicine), Traditional Chinese Medicine (TCM) acupuncture is widely applied and recognised as an important analgesic therapy in the Western world. A key turning point came in the early 1970s following the journalist James Reston's article in *New York Times*,<sup>6</sup> and United States President Nixon's historic visit to China. Over the past four decades investigations on the mechanism of acupuncture have been carried out to provide physiologically and anatomically based explanations in support of its effectiveness. As a result, the theory of myofascial trigger point (MTrP) therapy for the management of myofascial pain has emerged, and MTrP needling has gradually developed into an accepted practice in Western medical acupuncture that no longer involves conventional TCM concepts (e.g. Yin and Yang, and circulation of *qi*).<sup>7</sup>

MTrPs are described as being highly localised and hyperirritable spots in a palpable taut band of skeletal muscle. They are tender to compression, and can produce both local and referred pain, motor dysfunction, and autonomic phenomena.<sup>8</sup> MTrP needling is a therapeutic approach that involves insertion of needles into MTrPs, with or without injection of local anaesthetic, cortisone, or

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**Table 1**  
Perceived differences between TCM acupuncture and MTrP needling.

	TCM acupuncture <sup>a</sup>	MTrP needling
Philosophy	Eastern energetic philosophical theory involving meridians and acupoints	Contemporary scientific neurophysiological and biomechanical principles
Objective	Control and regulate the flow and balance of energy	Deactivate trigger points at the muscle cell level and eliminate the nociceptive focus of the muscle
Basic aim	Address underlying causes (emphasise on regulation of Zang-fu functions and Qi-blood flow)	Treat symptoms
Indications	1. Pain and other diseases/disorders (e.g. depression, hypertension, leukopenia, nausea and vomiting, and stroke) 2. Improve health 3. Preventive treatment of diseases	Mainly for myofascial pain
Practitioner	Acupuncturists and therapists trained in TCM	Physiotherapists and musculoskeletal therapists
Training	University-delivered undergraduate (4–5 years) or postgraduate (1–3 years) training in TCM	Short courses often run for 2–4 days, could be as short as 12 h of training
Needling points		
Point target	TCM acupoints including 361 primary channel acupoints, extra acupoints, and Ah-shi points	MTrPs as firm, hyperirritable points located in taut bands of skeletal muscle or fascia
Point location	Fixed except for Ah-shi points. Located in accordance to historical TCM acupuncture textbooks	Varied. Located by firm palpation of suspected taut band to elicit local tenderness, referred pain or local twitch response
Point effects	Physiological and pathophysiological effects	Pathophysiological effects only
Point selection	Local and distal points	Local points mainly
Point specificity	Yes	No
Point categorisation	Yes (e.g. Five-shu points, Yuan-source points, Luo-connecting point, Back-shu point, and Front-mu point)	No
Response sought	De qi, can be heaviness, soreness, and tingling	Local twitch response with sharp pain, paraesthesia, and discomfort
Needle manipulation	1. Primary manipulation as lifting-thrusting and rotating techniques to elicit De qi; 2. Six secondary manipulation (e.g. needle-handle flicking) to strengthen needling induction; 3. Reinforcing-reducing techniques in accordance to syndrome differentiation	Not particular, can use high-pressure stimulation to elicit local twitch response
Needle retention time	Depends on the nature of diseases (e.g. hot diseases/exterior syndromes for short retention, and cold diseases/interior syndromes for long retention), average time for 10–20 min (could be longer if necessary)	0–30 min
Co-intervention while needling	Moxibustion (e.g. warm-acupuncture), and electrical stimulation (electro-acupuncture)	Needling alone (dry needling), and needling with injection (wet needling)
Frequency of treatment	Once per day, and chronic diseases may 2–3 times/week	Once per week

Abbreviations: TCM, Traditional Chinese Medicine; MTrP, myofascial trigger point.

<sup>a</sup> Based upon the conventional TCM theory.

botulinum toxin.<sup>9</sup> While this approach has roots in TCM acupuncture, MTrP needling is an adaption of classical acupuncture which provides mechanistic underpinnings from contemporary scientific-based medicine including anatomy, physiology, and pathology.<sup>10</sup> The theoretical approach rejects the traditional based explanations of meridians and the concepts of acupoints, and has developed a medical framework (e.g. terminology, theoretical constructs, and philosophies) that is (seemingly) different from TCM acupuncture.<sup>11</sup> Table 1 compares the two forms of needling.<sup>10–14</sup>

The differences summarised in Table 1 suggest that TCM acupuncture and MTrP needling are separate modalities, with different underlying theories and approaches to clinical practice. This is consistent with the statement by Travell and Simons who formally established the theoretical basis of MTrP, that these two forms should not be used interchangeably.<sup>7</sup> In the past decade, several randomised controlled trials (RCTs) have compared the efficacy of TCM acupuncture and MTrP needling in the treatment of musculoskeletal disorders, but conclusions have been conflicting. Itoh et al. investigated the effectiveness of TCM acupuncture and MTrP needling in the management of chronic low back pain,<sup>15</sup> chronic neck pain,<sup>16</sup> and knee osteoarthritis.<sup>17</sup> Results suggested

that MTrPs needling was not more effective than TCM acupuncture post-treatment or at follow-ups. Thereafter, Cesare et al. conducted a short-term RCT using mesotherapy (intra-dermal or superficial injections with local anaesthetic lidocaine cloridrate) at TCM acupoints and MTrPs for chronic low back pain, and found evidence in favour of TCM mesotherapy for pain intensity and functional improvement in the 12-week follow-up.<sup>18</sup>

Due to the limited research which has involved a direct comparison of the two forms of acupuncture, the effectiveness of TCM acupuncture in contrast to that of MTrP needling is still not clear. It may be suggested that a systematic review that summarises the evidence of relevant RCTs and provides a comprehensive evaluation is worthy of consideration. However, it has been argued by some researchers that the stimulation sites of TCM acupuncture and MTrP needling are actually similar<sup>19–21</sup>; thus, it is reasonable to first explore the relationship between acupoints and MTrPs.

## 2. Discussion

In 1977, Melzack et al. published the first evidence-based study comparing MTrPs with classical acupoints.<sup>19</sup> They reviewed a set

of 56 MTrPs, and compared these to TCM acupoints that are primarily used to treat regional pain conditions. It was found that all 56 MTrPs were within 3 cm of an acupoint, and that 71% had the same pain indications as those acupoints. The discovery of anatomically defined TCM acupoints was profound as it provided a physiologic foundation for how acupuncture might work. It widely influenced research on acupuncture until 2003 when Birch published the results of his examination of the validity of Melzack's claim and investigated the two classes of points through a broader range of literature.<sup>20</sup> In this review, correlated TCM acupoints were defined to exhibit pressure pain, and are used primarily for pain problems. Results showed an 18% rather than 71% correspondence of MTrPs and TCM acupoints for the treatment of pain, and a meaningful correlation between MTrPs and Ah-shi points only. Subsequently, Dorsher re-examined the anatomic and clinical similarities of TCM acupoints and MTrPs and compared distributions of myofascial referred-pain patterns to acupuncture meridians.<sup>21</sup> Dorsher used different criteria to Melzack for anatomic correspondence: two points were correlated anatomically if they are within 2-cm radius of each other and enter the same muscle. Study findings demonstrated that MTrPs were highly correlated to TCM acupoints (92% anatomic correspondence and 79.5% clinical); moreover, the myofascial referred-pain patterns of 76% of MTrPs accurately followed relevant meridian distributions. In a later study, Dorsher reviewed four acupuncture texts (three different to Birch's selection) to examine the validity of Birch's findings.<sup>22</sup> Dorsher suggested that trigger points could conceptually be compared to classical acupoints for pain disorders, and that the clinical correspondence was over 95%. From these reviews, the correlations between TCM acupoints and MTrPs might be difficult to be explained by chance: thus it is generally accepted by both researchers and clinicians that MTrPs are indeed relevant to acupoints. Travell and Simons in the second edition of their book<sup>8</sup> reflected the results of these reviews, raising the following question—'to what extent do MTrPs correlate to acupoints'?

The extent of such a correlation is influenced by the definitions of acupoints. It has been noted above that the range of correlated acupoints varied in these reviews. In the last two decades, an increasing body of literature about the practice of acupuncture has developed, including detection and description of "new" and "empirical" points by clinicians. It is therefore perhaps not surprising to note a higher correspondence rate in subsequent reviews that include a broader range of sources of literature. Moreover, localisation of needling points is controversial. There are usually (pragmatic) adjustments to the point localisation and the angle of needle insertion during the treatment process of acupuncture and MTrP needling.<sup>23</sup> Molsberger et al. examined the localisation of 23 commonly used acupoints by 71 experienced physicians with substantial training in acupuncture, and found significant variability in point locations ranging from 2.7 to 41.4 cm<sup>2</sup>.<sup>24</sup> Molsberger et al. suggested that an acupoint is not a spot but an area, and thus it is highly likely that acupoints *per se* overlap. Furthermore, the extent of any claimed correlation is also associated with the criteria of anatomic correspondence, such as a 3 cm radius between two points in Melzack et al.'s review<sup>19</sup> or an even smaller radius of 2 cm in Dorsher's study.<sup>21</sup> As acupoints are intensive in the head and distal extremities, it is very likely that several acupoints correlate to the same MTrP. It may therefore be of limited significance to explore the specific extent of these correlations until a defined location of a particular acupoint can be clarified. Additionally, since the theory of channels (meridians) is vital in localising acupoints in clinical practice (rather missing the acupoint than missing the channel), actual acupoints location is variable. This makes the precise correlation extent between acupoints and MTrPs a challenging question to be answered. Apart from these, another important issue about anatomical locations of MTrPs is worthy of

note. In studies on the link between MTrPs and acupoints, conclusions were based upon the premise that MTrPs have distinct anatomical locations. However, there is limited evidence to support this notion. Although Travell and Simons described specific MTrPs in numbered sequences, these are not consistent with clinical practice nor do they reveal patients' symptom manifestations.<sup>13</sup> It has been demonstrated that MTrPs are close to motor endplate zones that are associated with excessive release of acetylcholine.<sup>13,25</sup> But distinctive, precise anatomical locations of MTrPs are not definitively established, and consequently any comparison involving these should be interpreted with caution.

Based upon the above, the logical question which arises is 'with which kinds of acupoints do MTrPs correlate?' Melzack et al.<sup>19</sup> and Dorsher<sup>21</sup> assessed correlations between MTrPs and primary channel acupoints and extra acupoints using the proximate pain indications of acupoints as a major criterion for correlation. Birch<sup>20</sup> claimed that MTrPs only correlated to Ah-shi points since not all acupoints were defined by tenderness, and many of the correlating channel acupoints were not typically used for treating pain conditions according to acupuncture textbooks. However, this claim is questionable. Acupuncture literature clearly states that classical acupoints are tender and/or sensitive to pressure, particularly in pain disorders.<sup>22</sup> Moreover, in TCM meridian theory, almost every acupoint, including primary channel acupoints or extra acupoints, has both regional and distal indications, and therefore, can be used for nearby pain syndromes albeit stated or not. Thus, insistence of correspondence only between MTrPs and Ah-shi points is controversial. MTrPs correlate to all kinds of acupoints, including primary channel acupoints, extra acupoints, and Ah-shi points, at least for treating pain conditions.

In the acupuncture literature, textbooks routinely categorise acupoints into three types (primary channel acupoints, extra acupoints, and Ah-shi points), and regard Ah-shi points as an independent class.<sup>12,26</sup> While there has been extensive acupuncture research on primary channel acupoints and extra acupoints, research on mechanisms of action, localization and clinical application of Ah-shi points has been limited.<sup>27</sup> Considering the correlation between MTrPs and acupoints, it may be beneficial to incorporate research findings of MTrPs into further exploration of Ah-shi points (though the extent of the precise correspondence between MTrPs and Ah-shi points has yet to be clarified). It may be argued that Ah-shi points differ from MTrPs in terms of theoretical hypothesis and substantial bases, but there seems several similarities between these points in clinical practice: (1) both points are defined in terms of the pathological nature, and are primarily used to treat pain disorders; (2) they do not have fixed anatomical locations; (3) palpation is the main approach to locate these points; and (4) patients always feel painful when pressed on these points. From this perspective, Ah-shi points and MTrPs may be considered from four aspects.

### 2.1. Pain recognition

Pain recognition refers to the compressed local pain and/or referred pain that is similar to a patient's usual clinical complaint; it is one of the most important characteristics of MTrPs.<sup>25</sup> According to TCM theory, Ah-shi points are primarily used to treat musculoskeletal pain conditions. While identification of Ah-shi points emphasise pressure pain rather than pain recognition, Ah-shi points are widely believed to be synonymous with tender points. However, the validity of this statement is doubtful. In TCM practice many pressure pain points have been shown to be related to internal diseases rather than body musculature disorders, such as the pressure pain at the "Xin Neixi" point (located on the back of the thigh) as a sign for benign tumours, and the "Xin Daxi" point for malignancy.<sup>28</sup> Moreover, from a clinical

perspective not every tender point is significant for pain relief: for patients with fibromyalgia syndrome, it is not meaningful (nor possible) to treat the widespread ‘tender’ points. Ah-shi points should thus not be simply taken as synonymous with tender points. Rather, it may be helpful for TCM acupuncturists to pay more attention to those Ah-shi points with associated pain recognition, and treat these Ah-shi points accordingly. This may also reflect the original meaning of “Ah-shi” (Chinese for ‘oh yes, that’s where it hurts’), as a patient’s confirmation of the site of pain.

## 2.2. Distal Ah-shi points

While MTrPs are associated with referred pain patterns, it may be worthwhile to investigate whether Ah-shi points also refer distally to the pain area.<sup>27</sup> The pathogenesis of MTrPs is related to the spinal cord integration of response to the disturbance of nerve endings and abnormal contraction of multiple dysfunctional endplates; referred pain of MTrPs is mediated through spinal cord mechanisms.<sup>25</sup> MTrPs may be located outside painful regions—pain in the upper arm and forearm could be elicited by pressing over infraspinatus MTrPs, and headache may due to suboccipital MTrPs.<sup>29</sup> The insertion of needles into distal body areas has been well documented in the myofascial pain syndrome literature.<sup>30</sup> This may imply that we could search for, and then needle, Ah-shi points at a distance from the site of pain. While some TCM purists may explain the referred pain of MTrPs by distributions of meridians and involvement of primary channel acupoints (those tender to pressure in pain disorders), rather than peripheral neurophysiology, these theoretical explanations have limited influence on a therapeutic plan which would involve a combination of needling local and distal points.

## 2.3. Anti-Ah-shi points

In the past two decades, some Chinese researchers have proposed “Anti-Ah-shi points” based on clinical practice<sup>31</sup>: such Anti-Ah-shi points are opposite to Ah-shi points, as when pressed accurately, the regional pain and even the pressure pain at Ah-shi points will be reduced. Acupuncturists report detecting taut bands of muscle fibres at Anti-Ah-shi points, where patients always feel tenderness on pressure. Ah-shi points and Anti-Ah-shi points are in the same muscle, but each has a separate location in either the muscle belly, origin, or insertion site.<sup>31</sup> It has been found that needling these points may be effective in the treatment of musculoskeletal disorders, including lateral epicondylitis, wrist pain, and neck pain.<sup>31–34</sup> Although clinical studies have shown promising effects, the scientific basis for Anti-Ah-shi points is unclear. According to the current theory, *central MTrPs* found in the endplate zone of muscles are associated with taut bands of muscle fibres to the musculotendinous junction and/or the osseous attachment of the muscle. The sustained tension in taut bands can cause localised enthesopathy that is identified as *attachment MTrPs*.<sup>8</sup> It has been demonstrated that tenderness of attachment MTrPs may be reduced once central MTrPs are treated. It appears that central and attachment MTrPs may provide anatomical explanations of Ah-shi points and Anti-Ah-shi points. The concept of Anti-Ah-shi points may be considered as a potential refinement for traditional theory of Ah-shi points that deserves further exploration.

## 2.4. Management approaches

There are similar treatment modalities for Ah-shi points and MTrPs, including needling, injection, and manual therapy.<sup>27</sup> Besides these, the ‘Spray and Stretch’ technique involving passive stretching of muscles with simultaneously topical spraying of vapocoolants (e.g. fluorimethane or ethyl chloride) may also

provide an effective method to manage MTrPs.<sup>29</sup> The sudden cooling effects of the agent bring a local anaesthetic action and thereby allow the target muscle(s) to relax and accept a subsequent stretch, which inactivates MTrPs. However, application of cold is seldom used in clinical practice of TCM acupuncture. In 1960, Zhou applied ethyl chloride over acupoints in patients with headache, and found promising results<sup>35</sup>: however, this technique received little subsequent attention from researchers or clinicians. Two decades later, “cold moxibustion” (freezing acupuncture) employing a frozen probe (temperature set at  $-20^{\circ}\text{C}$  to  $15^{\circ}\text{C}$ ) on acupoints (including Ah-shi points) was developed in China as a modern acupuncture technique. However once again uptake has been limited, and the effectiveness on Ah-shi points has only been reported by a few clinical trials involving breast diseases (e.g. acute mastitis, and hyperplasia of the mammary gland).<sup>36,37</sup> The therapeutic benefit of cold moxibustion for musculoskeletal disorders is unclear. As traditional theory generally proposes that heat facilitates the flow of energy (known as *qi*) and blood, while cold impedes it, TCM acupuncture emphasises the effects of heat.<sup>12</sup> However, for those diseases that are diagnosed as “Yang Excess” and “Yin Deficiency”, the application of cold is theoretically appropriate. Given the correlation between MTrPs and acupoints and the effectiveness of a similar cold technique applied in the management of myofascial pain, further exploration of freezing acupuncture in TCM acupuncture practice may be worthwhile.

## 3. Summary

We propose that MTrPs are significantly correlated to TCM acupoints, including primary channel acupoints, extra acupoints, and Ah-shi points. MTrPs may be considered as a rediscovery of the nature of acupoints, at least for treating pain conditions. Considering the correlation between MTrPs and acupoints and the rarely-studied research area involving Ah-shi points, it may be reasonable to apply the findings of MTrPs as a valuable foundation for future investigation of Ah-shi points. Ah-shi points might be central or attachment MTrPs, and the most significant characteristic of Ah-shi points may be pain recognition rather than pressure pain. In addition, there is merit in searching for Ah-shi points at distal pain regions, and exploring new approaches to improve management.

The correspondence of MTrPs and acupoints supports neurological explanations of the action mechanism of acupuncture, and facilitates the increased integration of acupuncture into contemporary clinical management. While the primary channel acupoints and extra acupoints are important and are commonly studied, the need for more in-depth research on Ah-shi points is suggested. Additionally, since MTrPs are associated with autonomic phenomena (e.g. vasoconstriction, pilomotor response, ptosis, and hypersecretion), given the correlations of MTrPs and TCM acupoints, further exploration regarding the treatment indications of MTrPs apart from the pain relief may be another fruitful research area.

## Conflict of interest

None declared.

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