

Introduction

Chronic pain is a multifactorial and complex condition affecting almost half of the UK population,^[1] and is the leading cause of disability worldwide.^[2] Defined as pain lasting > 3 months, chronic pain can be secondary to trauma, malignancy, and infection. However, it is also a condition in its own right, not purely an accompanying symptom of other ailments.^[3] Primary chronic pain lacks a somatic driver and is instead fuelled by central sensitisation. This encompasses conditions such as fibromyalgia, migraines, TMJ dysfunction and IBS.^{[4][5]}

Like many persistent conditions, the biological, psychological, and social aspects of chronic pain are dynamically interlinked (*see Figure 1 in appendix*),^[6] leading to widespread biopsychosocial implications; sleep disturbances, fatigue, depression, concentration problems, relationship difficulties and employment issues.^[7] Those living with chronic pain are often intensely and constantly aware of their body, for some, pain may be the salient feature of their daily existence. Chronic pain can be a lonely affair: a silent illness which commonly incites disbelief, poor understanding, and a lack of support from the people in their lives.^[7] Sufferers may find themselves yearning for visible physical manifestations to support their struggle for credibility.

The Mindbody Syndrome, also known as the Musculoskeletal Mindbody Syndrome (MMS), Distraction Syndrome, Psychosomatic syndrome, or Tension Myositis Syndrome (TMS), is a psychosomatic phenomenon pioneered by Dr John Sarno. It theorises that persistent pain is not exclusively of biological origin, rather, there is growing evidence to suggest that pain is a physical manifestation of suppressed emotions. A ploy by the brain to distract oneself from challenging emotions and prevent their conscious expression.^[8-11] This theory gives rise to an alternative treatment approach, one which primarily focuses on unveiling suppressed emotions through techniques such as meditation, expressive writing, and education. Conventional treatment approaches can result in insufficient pain relief and offer an array of unpleasant side-effects and potential complications. These treatments typically focus on the management of pain in day-to-day living, as opposed to finding a cure.

History

Dr Sarno specialised in physical medicine and rehabilitation. In 1965 he was appointed director of outpatient services at the Rusk institute for rehabilitation. From very early on he treated and cared for an innumerable number of patients presenting with back, neck, shoulder, and buttock pain. Initially, his approach to their care focused on identifying a musculoskeletal or neurological source to their pain; following protocol as directed by his conventional medical training. However, as Dr Sarno expanded his clinical experience, he became increasingly troubled by his findings. Often, imaging studies were unable to reveal a structural source to explain persistent pain, and in those where an abnormality was detected, pain might be experienced in unrelated anatomical regions.^[12] For many years, studies have

concluded that imaging cannot accurately predict those who will experience pain, because many patients with structural anomalies can be completely asymptomatic.^{[5][13-17]}

Many physicians became increasingly frustrated with the inconsistent and disappointing results of conventional treatment techniques. This sparked an endeavour into exposing the true source of the pain epidemic, and in doing so, interesting parallels were identified between persistent pain patients. On physical examination, almost every patient was found to have tenderness, simultaneously, in particular muscle groups, regardless of their presenting complaint. More than 70% of patients had a past medical history of conditions such as tension headaches, migraines, IBS, and TMJ dysfunction;^{[8][9][12][18]} conditions known to involve central sensitisation and have a strong psychological basis.^{[4][19]} Presenting patients often had stressful life experiences and appeared to share common personality traits; they were highly motivated, perfectionists, conscientious and responsible.^{[9][18][20]} Lastly, many patients reported temporary relief with active exercise, heat pads, and massage, the connecting denominator being an increased blood flow to the painful muscles, and thus an increased supply of oxygen.^[9]

Sarno identified muscles, tendons, and ligaments to be the local culprits of pain but suspected the true driver to be something more dynamic and intricate; the central nervous system (CNS). This paved the way to an exciting discovery; Sarno believed one's emotions could trigger the autonomic nervous system and induce pain in the muscles, tendons, and ligaments. With some re-shaping and fine-tuning, Dr Sarno successfully treated almost 10,000 patients, rendering the majority completely pain free.^{[8][9][12]} Other physicians have followed in Dr Sarno's footsteps, integrating the diagnosis and treatment of MMS into their daily practice. They, similarly, have noticed remarkable results.^{[18][21][22]}

The Psychosomatic mechanism

Pain is a protective mechanism, essential for survival. It serves to raise our awareness to harmful stimuli. The brain is a powerful organ with the capacity for neuroplasticity. In persistent pain, the brain becomes overprotective and intensifies the warning signals via a process known as central sensitisation. This hypersensitivity results in the firing of unnecessary warning signals. Patients might experience increased severity, increased frequency, reduced pain threshold, and additional pain location sites.

There is convincing evidence to suggest the route cause of persistent pain lies hidden within the emotional mind. External adversities involving life experiences and trauma can predispose people to, and perpetuate, centralised pain.^[23-28] Additionally, internal psychological conflict (such as the personality traits discussed later) can contribute to the sensitisation of neural pathways.^{[29][30]}

The conscious mind is responsible for our mature thoughts, feelings, and memories. It is controlled, moral and logical, guided by social prohibitions and obligations; all of which we

are consciously aware of. Conversely, the unconscious mind is a reservoir of feelings, urges, and irrational thoughts, it is pleasure-orientated, self-involved, irresponsible and, like a real child; perpetually angry.^{[8][10][31]} Sarno draws on a transactional analysis approach by suggesting the unconscious mind reflects the “Child” within us, whilst the “Parent” dominates control over our conscious mind.

The MMS theory postulates that the unconscious repression of powerful negative emotions such as anger, rage, and grief, can lead to internal conflict, which, once accumulated can threaten to overflow into conscious awareness. To prevent confrontation with these frightening and dangerous emotions, the brain creates pain as a physical and very real distraction.^{[8-10][18][20]} Powerful sources of unconsciously repressed emotions can include; unresolved childhood trauma, self-imposed pressure as a reflection of one’s personality, and the pressures of daily living. Consciously suppressed feelings of anger, fear, anxiety, and depression can exacerbate pain and central sensitisation, a consensus which many studies support,^{[28][32][33]} but Sarno believes they are not the root cause. In contrast, positive emotions can lead to a reduction in pain.^[34-36]

Studies have demonstrated significant brain-related changes when pain transforms from acute to chronic; a process known as “chronification”. Functional MRI imaging of persistent pain patients showed an increased activity within brain-related emotional circuitries, compared to those with acute pain, e.g. the pre-frontal cortex and structures of the Limbic system; amygdala and cingulate gyrus.^{[37][38]} It is thought that these areas are responsible for the identification of unsettling emotions and a subsequent cascade of events leads to pain via the autonomic nervous system (see *figure 2 in appendix*). However, the precise mechanism between alexithymia and pain is still not fully understood.^{[8][18][20]}

The Autonomic Nervous System (ANS), a subsection of the CNS responsible for involuntary functions, has a key role in regulating the circulation of blood flow. When blood flow to tissue structures, such as muscles and tendons, is reduced, there is a decreased supply of oxygen.^[39] Mild oxygen deprivation causes target tissues to spasm, subsequently causing pain.^[8] Over the years, laboratory evidence has proven the link between oxygen deprivation and pain. Larsson and colleagues (1994) demonstrated dysregulation of the microcirculation supplying trapezius muscles in people experiencing persistent pain at the same site.^[40] Researchers have also shown that fibromyalgia patients have an altered underlying distribution of blood flow which results in mild oxygen deprivation.^{[41][42]} Also, pain disappeared in these patients when blocking sympathetic nerve fibres (part of the ANS).^[43] Blocking these nerve fibres allowed the blood flow to return to normal, thus relieving the mild hypoxia and dissipating the pain.

Personality & Emotions

Intriguing consistencies have been identified in the personality configurations of persistent pain sufferers. Dr David Schechter describes a “Type T Personality” which predisposes individuals to persistent pain. This describes dominant traits such as: being highly motivated, a “goodist” (someone who feels driven to perform good acts for others), a perfectionist, a people pleaser, quick to judge, responsible, and someone who is self-critical.^[20]

Personality traits can exacerbate the severity of symptoms. Individuals who catastrophize, anticipate uncontrollable pain, or fear the consequences of pain, are more likely to perceive their symptoms as intense and experience greater functional disability.^[44-46] Anxiety and fear of pain primes the individual to view life through a filter of pain; amplifying their experience and leading to abnormal brain processing.^{[37][47]} Many emotions share overlapping neural circuits in the brain e.g. catastrophising and anger regulation, thus highlighting the complex dynamics of persistent pain.^[48] The brain supports a vicious cycle; repressed emotions and personality traits predispose an individual to persistent pain. Such pain can cause a turmoil of fear, anxiety, and depression, which in turn exacerbates the experience of pain.

Negative perception of pain leads to behaviour alterations, particularly activity avoidance. Such avoidance increases the likelihood and maintenance of persistent pain because it enforces the belief there is nociceptive damage.^[49] In essence, pain resulting from activity becomes a conditioned response.

Diagnosis

Dr Schechter, a former student of Dr Sarno’s, has created a comprehensive diagnostic guide to MMS, succinctly summarising the key points thus far (*Table 1 below*). Not all aspects are required for diagnosis, but it is a helpful guide during patient consultations. A patient questionnaire has also been formulated to help indicate the likelihood of an MMS diagnosis (*see figure 3 in appendix*).^[50]

The “Type T” Personality	<i>e.g., Excessive self-criticism, excessive responsibility for others, perfectionism, conscientiousness, and “goodism”.</i>
Prior history of other functional disorders	<i>IBS, tension headaches and other conditions related to tension/stress.</i>
Tender points (see Figure 4)	<i>Involves characteristic locations which may or may not be involved in the vicinity of the pain.</i>
Relief with distraction	<i>Clinical improvement on vacation or while otherwise distracted.</i>
Symptom substitution or migration	<i>Pain moves to other areas of back, neck, or even other bodily areas not associated to any site of injury.</i>
Nonspecific structural etiology	<i>No clear structural etiology on review of appropriate imaging and physical examination.</i>
Timing of symptom onset	<i>During (or more typically just after) a psychologically traumatic event or events.</i>
Failure to respond to other treatments	<i>Designed to correct structural or other organic problems</i>

Table 1: Musculoskeletal Mindbody Syndrome diagnostic criteria.^[18]

MMS is a clinical diagnosis requiring thorough history taking and physical examination. Ruling out structural abnormalities, which might require conventional treatment, is essential prior to confirming a diagnosis of MMS, for example, sinister conditions such as bone metastases and cauda equina.

Clinicians are encouraged to explore the psychosocial aspects of patients' lives, inquiring about stressful life events, accidents, injuries, childhood & adult abuse, support networks, emotional awareness, personality traits, and avoidance behaviours. Analysis of how these variables might be connected to the onset, exacerbation, and mitigation of symptoms, should be investigated with the patient.^[37]

It is common for patients to have exhausted a long list of health professionals in their search for a cure, often subjected to scepticism from others along the way. Explanation of MMS as a psychosomatic condition, one which causes legitimate pain and debilitation, should be emphasised to the patient in order to maximise engagement and enhance trust whilst examining their emotional wellbeing.

Treatment

The salient features of a successful treatment regimen involves altering patient perception of pain and improving their emotional awareness. It is important patients accept the absence of structural anomaly and nociceptive damage; thus, the first port of call is to educate patients on how psychological distress manifests as physical pain, and the process of central sensitisation. With this in mind, patients are encouraged to taper off their analgesic medications and to engage in fear-inducing activities. Expressive writing and emotional awareness encourages patients to identify their emotions, to understand their connection to pain symptoms, and to help process any unresolved trauma or psychological conflict.

Numerous studies have demonstrated statistically significant results of a Mindbody treatment approach for centrally sensitised pain. A case series demonstrates the success of a Mindbody programme in a cohort of patients using purely the educational and psychological treatment methods mentioned above. Patients reported pain reduction by up to 65% and medication use was significantly reduced in 68% of individuals. Furthermore, 77% of patients who were previously moderately/very restricted are now active without hesitation or only mild restriction.^[18] The authors acknowledge some limitations to this study e.g. the potential for recall bias relating to prior activity levels and medication use, and the possibility that non-responders lost engagement due to lack of positive results, thus skewing the results to patients who experienced favourable outcomes. Neuroscience education as a sole intervention has also proved effective and superior to basic anatomic and biomechanical education models commonly used to explain chronic low back pain.^[51]

Using a randomised control trial, Hsu et al (2010) found the benefits of expressive writing and emotional awareness in patients with fibromyalgia. Not only did patients have statistically

significant reduced pain and increased physical function, but they also had an improved pain threshold.^[22] In conventional medicine, Cognitive Behavioural Therapy (CBT) is considered a legitimate alternative therapy for persistent pain.^{[4][52]} However, emotional awareness and expression therapy (EAET) has shown far superior outcomes. Preliminary randomised control trial showed CBT to have nonsignificant impacts on pain reduction, whilst EAET had positive results of considerable magnitude.^[53]

Although Lumley & Schubiner (2019) review literature supporting the use of additional treatment approaches e.g. in-vivo exposure therapy, trauma focused psychotherapies, short-term dynamic psychotherapies, adaptive inter-personal communication therapy, further discussion of these is beyond the scope of this paper. However, Lumley & Schubiner (2019) stress the importance of psychological factors and their contribution to “centralised pain”. Ignoring this, they argue, limits treatment options and efficacy. It is important clinicians understand the brain’s role in not only regulating pain, but also in its ability to create and eliminate it.^[4]

Conventional treatment

Extensive pharmacological prescriptions, procedural intervention (e.g. steroid injections), and surgery are some of the currently used treatments for persistent pain management.

The UK faces an opioid crisis with an increase in clinician prescribing^{[54][55]} and an increase in patient abuse^[56] A Cochrane review demonstrates questionable efficacy of opioid use in the management of persistent pain.^[57] Population studies show many opioid users continue to have persistent pain and poor quality of life.^[58] The adverse side-effects and reduced efficacy of long-term opioid use have been well documented; addiction risk, hyperalgesia, pharmacological tolerance, and withdrawal symptoms are all ongoing concerns.^[59-61]

There is conflicting evidence for the use of steroid injections in the treatment of persistent low back pain.^[62] One systemic review concludes there is limited evidence for its efficacy,^[63] while others state there are benefits, but typically of short duration.^{[64][65]}

Although surgery can be beneficial in some cases, particularly for spinal fractures and deformities, studies have shown its benefit is limited for back pain caused by degenerative disc disease.^[66] This re-highlights previously mentioned research; MRI findings cannot accurately predict the development nor duration of chronic pain given that many patients with structural abnormalities can be completely asymptomatic.^{[5][13][14][16][17][63]} There is absence of literature directly comparing the efficacy of surgery to MMS therapies, however some studies do show inadequate pain relief post-surgery in patients with psychologically traumatic histories. Schofferman and colleagues (1992) reported an 85% higher likelihood of unsuccessful lumbar-back surgery in patients who have a history of childhood trauma; this may include mental trauma, sexual, or physical abuse. Whereas only 5% of operations failed in patients with no childhood risk factors.^[67] This study suggests that pain persists because

surgeons target the spine and do not treat the brain. Another study acknowledges the likely failure of lumbar surgery in patients with psychosocial pathologies and highlights the importance of a psychological assessment to identify patients who are better suited to treatment methods not involving surgery.^[68]

NICE guidelines currently recommend only two psychotherapies for persistent primary pain; CBT and acceptance/mindfulness-based therapies.^[52] Numerous studies support their use.^{[69][70]} However, it has been highlighted that only modest improvements arise with the use of these therapies.^{[21][71][72]}

Conclusion

The Mindbody syndrome is a psychosomatic condition which presents as persistent pain. Persistent pain manifests to distract the individual from challenging emotions and psychological conflict; factors which can predispose, perpetuate, and prolong the experience of pain. This is achieved through neuroplasticity and central sensitisation. Although science has not yet been able to provide concrete evidence detailing the specific underlying mechanisms, comprehension of this condition is continually evolving and there is overwhelming evidence to suggest MMS is a very real phenomenon. This is indicated by a number of studies successfully treating patients with Mindbody techniques, functional MRI studies demonstrating emotional areas of the brain are more active in persistent pain, and the experience of many MMS physicians who have witnessed the shortfalls of conventional treatments and successfully treated persistent pain sufferers.^{[8][9][20]} The Mindbody Syndrome is not currently used in mainstream medicine, this is in part due to the lack of primary research papers supporting its theories. Hopefully, given time, there will be enough research published to support the implementation of a Mindbody approach in conventional medicine.

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The Mindbody Syndrome

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Appendix

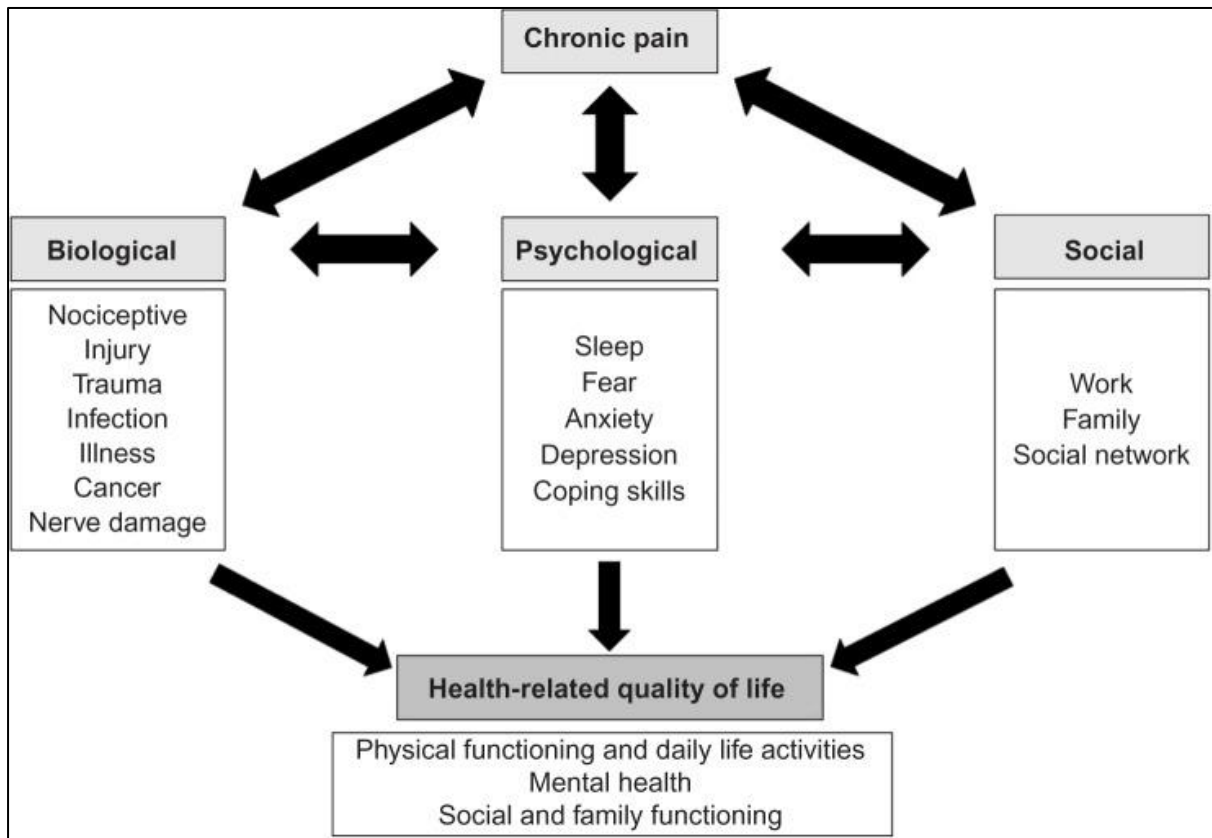


Figure 1: Biopsychosocial model of pain and consequences on quality of life.^[6]

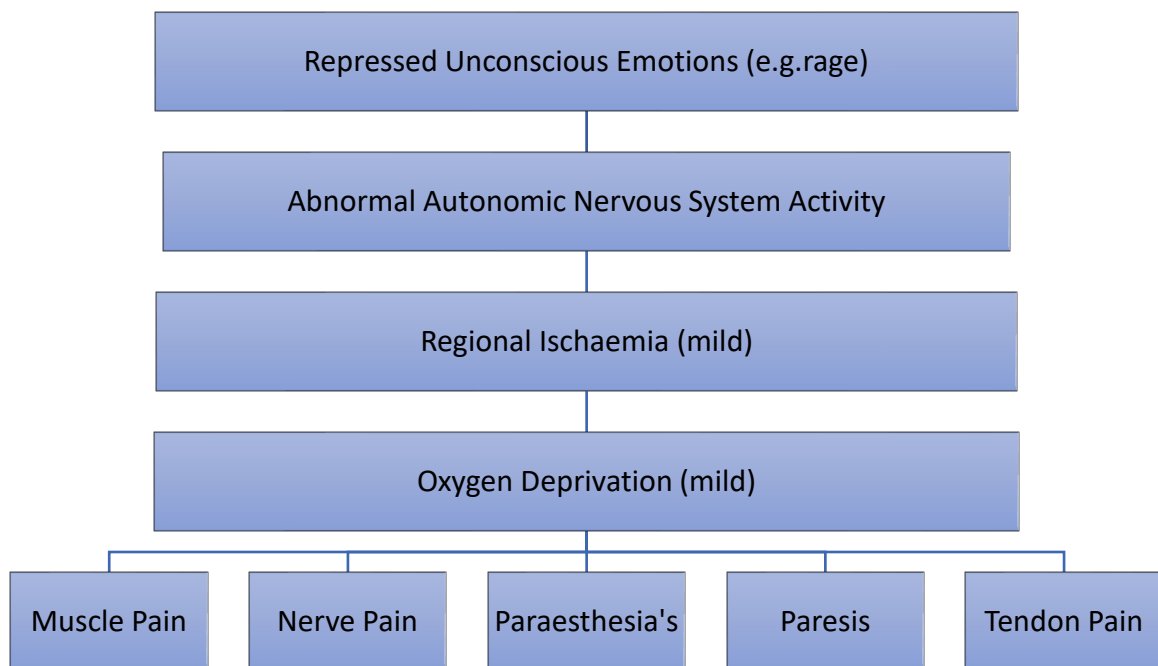


Figure 2: The Pathophysiology of MMS.^[10]

TMS QUESTIONNAIRE

© 2000-2021 David Schechter, MD

Your name _____

Date _____

This questionnaire has been designed to help you evaluate the likelihood of your having TMS. It cannot replace a detailed medical history, examination, and review of x-rays and MRI scans. Only a medical doctor with expertise in this condition should make the diagnosis of TMS during an office consultation.

Please circle your responses and total your points below:

Points

1. Have you noticed a relationship between your pain and your emotional state/stress level just prior to the onset of pain?

Definitely 2

At times 1

Not really 0

2. Would you describe yourself in general as: very hard on yourself, highly responsible for others, very thorough, orderly or perfectionistic?

Definitely 2

I've noticed some of these characteristics 1

Not really 0

3. Have you suffered from other tension-related illnesses such as:

- hives, eczema, rashes brought on by tension
- spastic colon, irritable bowel, gastritis, reflux/heartburn
- tension or migraine headaches
- unexplained prostate trouble or pelvic pain

• TMJ, teeth grinding, plantar warts *Definitely, two or more categories* 2

Yes, at least one 1

No 0

4. Have you been told regarding the cause of your pain that "there's nothing that can be done surgically," "there's nothing wrong", "it's a soft issue problem" or "the cause is degenerative changes"?

Yes 1

No 0

5. Do you spend a fair amount of time during the day thinking and worrying about your pain, researching an answer, obsessing about its cause?

Yes 1

No 0

6. Have you tried several different treatments or approaches for your pain and received only temporary or limited relief from each of them?

Yes 1

No 0

7. Do you find that massage helps your pain significantly or that you are quite sensitive to massage in several parts of your back or neck?

Yes 1

No 0

Key to total points:

Highly probable for TMS 7-10 points

Possibly TMS 4-6 points

Probably not TMS 0-3 points

No 0

Total Points:

Additional Questions (don't score these):

8. Does the pain ever move to another location in your body or jump around?

_____ *yes* _____ *no*

9. Have you noticed the pain improve when you have another tension-related illness?

_____ *yes* _____ *no*

10. Has the pain significantly changed or gone away while on vacation, away from home, or while distracted?

_____ *yes* _____ *no*

Figure 3: TMS patient questionnaire (updated).^{[50][18]}

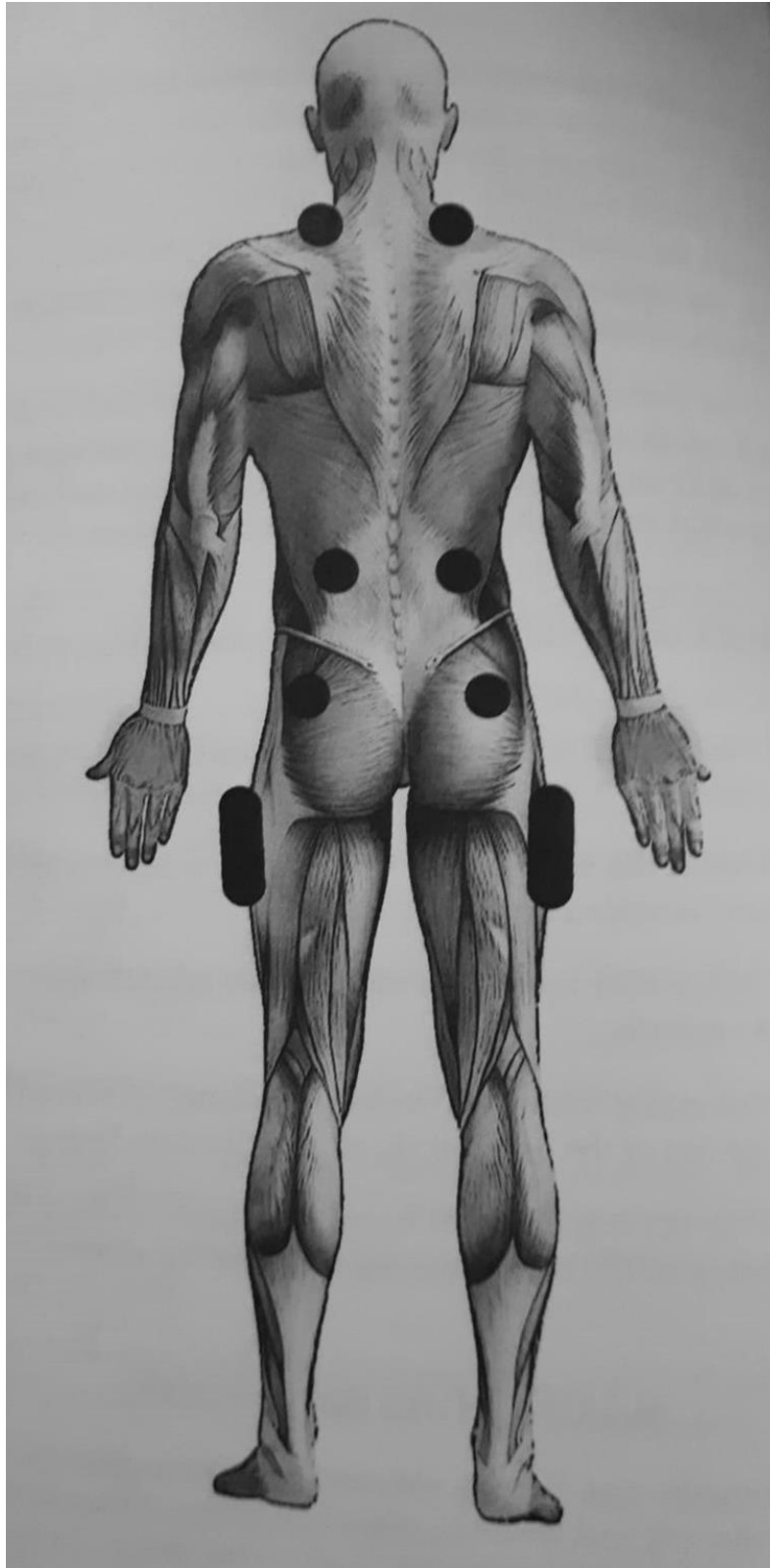


Figure 4: TMS Tender points. Presence ≥ 2 is supportive of a TMS diagnosis but not essential for diagnosis.^[20]