

Effects of the Muscle Energy Technique and Myofascial Release Technique in Cervicogenic Headache: A Brief Review

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ABSTRACT

Headache is a substantial global public health problem. A type of headache known as cervicogenic headache (CGH) is caused by a referral of pain from the cervical spine. This type of headache is usually persistent, manifests as unilateral cephalgia, and is thought to be brought on by neck musculoskeletal dysfunction. Numerous methods have been put forth to treat headaches, but the most effective approach has been suggested by recent research to involve manipulation and therapeutic exercise. Muscle energy technique is a beneficial and successful therapeutic exercise because the patient actively participates in its execution. Numerous studies have examined the benefits of myofascial release technique, including increased range of motion, improved joint biomechanics, increased soft tissue extensibilities, and a marked reduction in pain.

Keywords: Cervicogenic headache, Muscle energy technique, Myofascial release technique.

INTRODUCTION

Headaches are a prevalent neurological condition that can impact an individual's emotional, social, economic, and physical

well-being.¹ They are broadly classified into two groups: primary and secondary. Migraines and tension-type headaches (TTH) are the most common types of primary headaches. Other types of secondary headaches include cervicogenic headaches (CGHs). Headaches result in significant declines in the quality of life for patients and have important economic consequences, including medical costs, the inability to work, and impact on both social and family life. In 2016, headache disorders ranked as the third-highest cause of disability.²

Cervicogenic headache (CGH) is a classification of headache in which pain is referred from the cervical spine. This category of headache is typically chronic, presented as unilateral cephalgia, and is believed to be caused by musculoskeletal dysfunction of the neck. The convergence of sensory fibers from the upper three cervical spinal nerves and trigeminal nerve at the trigeminocervical nucleus has been proposed to be the mechanism by which pain from the cervical spine is referred to the face and head.³

Cervicogenic headache is a common form of headache, which is estimated to affect 2.5% of the general population and 17.8% of people who suffer from frequent headache. Middle-aged patients and particularly women are more likely to have CGH. Common clinical characteristics of CGH

include unilateral headache without signs of side shift (pain)consistently on the same side of the head); pain that is exacerbated with neck movements or abnormal postures; pain produced with pressure applied over the supero-posterior ipsilateral neck; ipsilateral neck, shoulder, or arm pain; and restricted cervical spine range of motion (ROM).⁴

The International Headache Society defines CGH as “pain, referred from a source in the neck and perceived in 1 or more regions of the head and/or face.” Headache can be triggered from various structures in the cervical spine which can be either vertebral joints from occiput to C3 or the facetal joints from the same area.⁵

Physical therapies have been reported as some to be the most frequently used alternative or complementary treatments for headaches. Studies also proved the effects of muscle energy technique (MET) on relieving trigger points and little evidence regarding positive impact of myofascial release technique (MFR) on relieving headache.⁶ Pain-sensitive structures are many in the neck, including muscles, bony attachments, nerve roots, arteries, dural matter, joints, intervertebral ligaments, periosteum of vertebral bodies and skin. Although not completely understood, the nerve supply of the atlantooccipital articulation, the upper cervical segments (C1–C3) converge with trigeminal sensory fibers in the

trigemincervical nucleus in the upper cervical spinal cord. Headache may originate from this area. However, other areas of the neck can be involved and the lower cervical segments may also cause radiating pain to the neck, shoulder or arm.⁸ In addition, there is a duramuscular band that connects the posterior spinal dura mater to the rectus capitus posterior minor muscle at the atlantooccipital junction. It is presumed that stimulation, repetitive muscle contraction or torsion strain injuries of the neck can directly precipitate pain and headache.⁹

In the CGH patient, the reported sleep quality and headache related quality of life were worse, and the level of stress higher.¹⁰

Muscle Energy Technique

Muscle energy technique (MET) is manipulative procedure are designed to lengthen muscle and fascia and to mobilize joints. MET is an advanced stretching technique which is used normalize muscle length and increase range of motion, and its main objective includes relaxation of hypertonic musculature.¹¹

Myofascial release technique

Myofascial release (MFR) is a form of manual therapy that involves applying sustained pressure or gentle stretching to the myofascial connective tissue to release restrictions and restore mobility.¹¹

Authors, Journal, Year	Objectives	Design	Characteristics of participants sample size	Methods	Outcome measures	Results
Chaudhary et al. (2013) ¹⁵	To compare the effectiveness of Myofascial Release technique (MFR) versus Cold pack in relieving pain, improving cervical ROM and pressure pain threshold in upper trapezius spasm patients.	Cross sectional Study.	N=45 subjects with cervicogenic headache 20-40 years of age group randomly divided into 3 groups. Group A (n=15) Group B (n=15) Group C (n=15)	Group A underwent MFR + exercises, Group B Cold pack + exercise Group C only exercises once daily for 5 days.	VAS Pain Pressure Threshold (PPT) ROM.	Result of this study showed that MFR and Cold pack along with exercises was effective in upper trapezius muscle spasm.
Ebrahim Ramezani et al. (2017) ⁷	To Compare the Myofascial Release (MFR) technique than conventional exercises to improve cervical	Randomized control study	N=34 patients with cervicogenic headache 15-75 Years of age	Exercise Group received craniocervical flexion and extension exercise and isometric resistance exercise	Isometric cervical muscle strength (flexors, extensors, right and left rotators	Result of this study showed that treatment of MFR are more useful than coventional exercise.

	muscle strength in patients with cervicogenic headache		Randomly divided into two groups Exercise group (n=17) suboccipital myofascial release Group (n=17)	suboccipital myofascial release Group received deep myofascial release in upper cervical region. Total ten treatment sessions were given, 6 times a week for each group.	and lateral flexors)	
Ahmed GM et al. (2018) ¹²	To compare the effect of mulligan technique and muscle energy technique in improving cervical range of motion in cervicogenic headache patients.	Randomized control study	N=45 cervicogenic headache patients of Male/female with the age range between 35 and 45 years; group (A) the control group, group(B) mulligan technique group (C) met	Group (A); the control group received TENS and hot packs on the neck muscles Group (B) received an additional treatment of mulligan technique while group (C) received an additional muscle energy technique	CROM	Result of this study showed that additional mulligan technique and additional muscle energy technique were effective in improving cervical mobility in patient with cervicogenic headache
Mohammad Akbari et al. in (2020) ¹³	To evaluate the effect of muscle energy technique on headache, upper cervical rotation and deep upper cervical muscle thickness in cervicogenic headache	Randomized control study	N= 30 subjects of cervicogenic headache. Age w 18-55 years and randomly assigned into two groups.	Intervention group involved MET in cervical muscles + Infrared radiation Control group involved Infrared radiation Both groups were received 6 sessions, 3 times a week for 2 weeks.	HDI CROM	Result of this study showed that MET combined with IR improving CGH and upper cervical rotation ROM is better than IR alone and had more durable effects on headache
Sohail R et al. (2021) ⁴	To Evaluate the Effects of Muscle Energy Technique in Patients with Tension Type Headache	Randomized Control Clinical Trial	N= 48 participants of both genders whose age 18 to 40 years with complain of tension type headache. randomly selected and allocated into two groups (experimental and control group).	The experimental group received both muscle energy technique and myofascial release technique on trapezius and sternocleidomastoid of both sides. The intervention was applied for 6 weeks (3 sessions per week). Assessments were done at baseline, 4th week and 6 th week	NPRS HDI HIT CROM	Result of this study showed that muscle energy technique is effective for tension type headache; it helps to decreased range of motion at cervical spine and disability related to TTH.
Aadish A. Singh et al. (2022) ¹⁴	To evaluate effect of muscle energy technique in cervicogenic headache over conventional treatment.	Randomized Control Clinical Trial	N= 30 patients with cervicogenic headache randomly divided into two groups.	Group A received MET + Conventional treatment Group B received conventional physiotherapy alone. Both groups received 3 weeks treatment program for 5 days in a week.	VAS NDI	Result of this study showed that MET along with conventional therapy has more effective as compare to conventional therapy only.
Sharma A et al. (2022) ¹⁵	Comparing the effect of myofascial release and muscle energy technique on craniocervical angle and headache in tension-type headache patients	Randomized Control Study	N= 75 subjects with tension-type headache and suboccipital muscle tenderness randomized blindly into three groups: the MFR group, the MET group, and the control group 25 subjects in each group.	The MFR group receives craniocervical release in the suboccipital region with neck exercises The MET group receives post-isometric relaxation in the suboccipital region with exercises, control group receives only exercises for two weeks.	Craniovertebral Angle Headache Index	Result of this study showed that Craniovertebral angle and headache index showed significant improvement in both the MET and MFR groups

CONCLUSION

The primary goal of the muscle energy technique is to reduce muscle tightness or spasm by first realigning the muscle spindles and then contracting the muscles by activating the Golgi tendons. The physiological mechanisms underlying changes in muscle extensibility-reflex relaxation, viscoelastic change, and changes to stretch change can be used to explain the effects of MET on an increase in range of motion. MFR is one of the manual therapy methods that works best at relaxing muscles, improving blood circulation, and lowering pain and disability. It is because pain gate theory is interfered with by mechanoreceptor impulses from applied pressure. Myofascial release technique has physiological effects that include decreased pain sensitivity and enhanced muscle performance due to increased underlying musculature flexibility. There are frequently numerous hyperactive trigger points in the muscles of the neck and upper back. When direct pressure is applied to the musculotendinous junction of the cervical muscles at the base of the skull, soft tissues become more extensible (a phenomenon known as the viscoelastic effect) and muscle tone decreases, allowing muscles to relax and relieve pain.

Declaration by Authors

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