

Effectiveness of the Ischaemic Compression Technique and Post-Isometric Relaxation Technique on Myofascial Trigger Points in Patients with Neck Pain: A Brief Review

Pooja Kumari¹, Suman Mehra², Hemant More³, Aasha⁴

¹PG Student, College of Physiotherapy, Pt. B.D. Sharma University of Health Sciences, Rohtak, India

²Assistant Professor, College of Physiotherapy, Pt. B.D. Sharma University of Health Sciences, Rohtak, India

³Associate Professor, Department of Orthopaedics, Pt. B.D. Sharma University of Health Sciences, Rohtak, India

⁴PG Student, College of Physiotherapy, Pt. B.D. Sharma University of Health Sciences, Rohtak, India

Corresponding Author: Pooja Kumari

DOI: <https://doi.org/10.52403/ijhsr.20240420>

ABSTRACT

Neck pain can significantly affect physical and social function. Most affected individuals recover while a few develop chronic neck pain. Studies have reported patients with chronic neck pain were found to have higher prevalence of Myofascial trigger points (MTrPs).¹ Pain features of commonly occurring neck pain resembles the clinical features of referred pain which originate from muscle trigger points (TrPs). Manual therapy has got a profound role in treating myofascial trigger points. Among many treatment approaches, The Ischaemic compression and Post-isometric relaxation technique has been used in treating myofascial trigger points in chronic neck pain patients.

Keywords- Chronic Neck Pain, Ischaemic Compression Technique, Myofascial Trigger Points, Post- isometric relaxation Technique.

INTRODUCTION

International Association for the Study of Pain (IASP) defines chronic pain as pain without apparent biological value that has persisted beyond the normal tissue healing time (usually taken to be 3 months)². Chronic pain is one of the most disabling problems with significant health, social, and economic repercussions. Studies have reported the role of muscle TrPs in chronic disorders of the neck and concluded that the neck pain may be triggered due to referred pain arising from TrPs in the posterior head, neck and shoulder muscles. This myofascial pain syndrome clinically presents as referred pain, limitation in joint range of motion and a twitch response

which is caused due to mechanical deformation of fascial and muscular areas known as myofascial trigger points (MTPts)³.

Trigger points have been described as hyperirritable spot, usually within taut band of skeletal muscles or in the muscle fascia. The spot is painful on compression and can give rise to tenderness. Studies have reported, prolonged stress result in excessive release of acetylcholine from nerve terminal. Chronic or prolonged stress causes sarcoplasmic reticulum to tear and release calcium. This calcium and ATP cause the sarcomere to contract which shortens the muscle in localized area producing taut

bands. This will increase metabolic activity and ischemia in the area; thus, release of substances causes irritability of nerve ending producing pain. Sustained postural overload, prolonged immobilization and poor ergonomics may leads to trigger point formations.⁴

Regarding the upper quarter body region, upper trapezius, levator scapulae, infraspinatus and sternocleidomastoid muscles myofascial trigger points are the most prevalent in chronic non- traumatic cervical syndrome.^{5,6}

Manual therapy has got a profound role in treating myofascial trigger points. Among many treatment approaches, The Ischaemic compression and Post-isometric relaxation technique has been used in treating myofascial trigger points.

Post- Isometric Relaxation Technique-

Muscle Energy Technique (MET) is a technique that was developed in 1948 by Fred Mitchell. It is a manual therapy that uses muscle's own energy in the form of gentle isometric contractions to relax the muscles via autogenic or reciprocal inhibition and lengthen the muscle. Post-isometric relaxation (PIR) works on the concept of autogenic inhibition.⁷ According to John Gibbons Post- isometric relaxation technique can help to release and relax muscles, and promote the body's own healing mechanism. The approach involves the introduction of an isometric contraction

to the affected muscle producing post-isometric relaxation through the influence of the Golgi tendon organs (autogenic inhibition). When isometric contraction is sustained, neurological feedback through the spinal cord to the muscle itself results in post-isometric relaxation causing reduction in tone of the contracted muscle. This lasts for 20 to 25 seconds, during which tissue can be more easily manipulated to a new resting length.⁸ PIR has been shown to be a helpful and effective therapeutic intervention for treating myofascial trigger points in neck pain patients.

Ischaemic Compression Technique-

Ischaemic compression technique is another manual approach in the treatment of trigger points involves applying sustained pressure to the trigger points with sufficient force and for long enough to slow down the blood supply and relieve tension in the muscle involved. Ischaemic pressure on the trigger point stops blood from flowing into the affected area making it ischaemic (deprived of oxygen). After 8 to 20 seconds, the pressure is released and the circulation of blood, oxygen, and nutrients to the area increases and patient feel comfortable or relief in pain.⁹ Research studies have reported ischaemic compression technique is effective therapeutic intervention in decreasing pain, reducing neck disability and increasing cervical range of motion in patients with myofascial trigger points.

Authors, (Year)	Objectives	Design	Study Subjects and sample size	Intervention	Outcome measures	Conclusion
G.Yatheendra kumar et al. (2015) ¹⁰	To compare the effectiveness of muscle energy technique, ischaemic compression and strain and counter strain on upper trapezius trigger points, in patient with mechanical neck pain.	Randomized control study	N=45 Randomly divided into three groups. Group A Group B Group C	Group (A) received Muscle energy technique with tens Group (B) received Ischaemic compression technique with tens Group (C) received strain counter-strain technique with tens for three times a week for 4 consecutive weeks.	VAS NDI Cervical range of motion	This study concluded that muscle energy technique is more effective in the treatment of upper trapezius trigger points.
Amir iqbal et al. (2016) ¹¹	To establish the best possible long term effective choice of treatment program for deactivating	Pretest-Post test control group design.	N=90 male subjects age between 19 to 38 were randomly placed into three groups:	Group A received Hot Packs, Active Stretching exercises, followed by Ischaemic compression	VAS NDI Pressure pain threshold (PPT)	Conclusion of this study showed that Ischaemic compression technique with muscle energy

	MTTrP's by using the combination of ischaemic compression technique with muscle energy technique		Experimental group A (n=30), Experimental group B (n=30) and a Control group C (n=30) into two groups.	technique, muscle energy technique. Group B received all the exercises of group A except ischaemic compression technique only. Control group C received all the exercises of group A except IC and MET For three alternate days for one week followed by follow up of one week after the termination of treatment.		technique has been shown to produce greater improvement in pain pressure threshold, neck disability and reduction in pain intensity
Richa Kashyap et al. (2018) ¹²	To compare the clinical efficacies of manual pressure release and the muscle energy technique on trigger points of upper trapezius	Randomized Control Study	N= 45 Female subjects with neck pain due to Myofascial trigger points, which were divided into three groups.	Experimental group A received manual pressure release postural advice +active exercises Experimental group B received +postural advice + active exercises muscle energy technique. Control group received postural advice + active exercises) postintervention and follow-up data collected at their stipulated time Days 1 and 5 postintervention and at days 10 and 15 during follow-up.	VAS NDI PPT Cervical range of rotation	Conclusion of this study showed that Manual pressure release and muscle energy technique are equally effective for reducing pain, muscle tenderness and for improving neck disability and range of rotation in patient with non-specific neck pain
Daniel Pecos-Martin et al. (2019) ¹³	To determine the effect of varying duration of the pressure release technique on myofascial trigger points of levator scapulae.	Double-blinded randomized clinical trial	N= 48 twenty-three men and thirty-seven women with myofascial trigger point of levator scapulae muscle.	Subjects were assigned to receive pressure release in one latent myofascial trigger point of levator scapulae lasting 30s(n=17), 60s(n=22), 90s(n=21).	VAS Cervical range of motion PPT	Conclusion of this study showed that 60s and 90s application of the pressure release technique may be recommended to increase strength, pressure pain threshold, respectively.
Muhammad Junaid et al. (2020) ¹⁴	To compare the effects of post-isometric relaxation, myofascial trigger point release and routine physical therapy on pain, disability and cervical range of motion in patients with acute mechanical neck pain.	Randomized Control Clinical Trial	N= 60 they were randomised into three groups Group1 Group 2 Group 3	Group 1 received post-isometric relaxation Group 2 received myofascial trigger point release Group 3 received routine physical therapy. Outcome measures were documented before intervention, after the first session and after 6 sessions in two weeks.	NPRS NDI Cervical range of motion	Conclusion of this study showed that Acute mechanical neck pain treated with post-isometric relaxation technique had more and faster effect in decreasing pain and disability and in improving mobility.

CONCLUSION

Ischaemic compression technique and post-isometric relaxation technique have been

found effective in reducing pain intensity and neck disability. Both techniques also found very effective in improving cervical range of

motion and pressure pain threshold in patients with neck pain having myofascial trigger points.

So, it expected that these techniques can be usefully utilized in clinical practice for treatment of neck pain patients having myofascial trigger points.

Declaration by Authors

Ethical Approval: Not Required

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Ribeiro DC, Belgrave A, Naden A et al. The prevalence of myofascial trigger points in neck and shoulder-related disorders: a systematic review of the literature. *BMC Musculosk Disord.* 2018;19(1):1-3.
2. Saxena AK, Jain PN, Bhatnagar S. The prevalence of chronic pain among adults in India. *Indian J Palliat Care.* 2018;24(4):472-7.
3. Ravichandran P, Ponni HK, Aseer PA. Effectiveness of ischemic compression on trapezius myofascial trigger points in neck pain. *Int J Physio.* 2016; 8:186-92.
4. Simons DG, Travell JG, Simons LS. *Travell & Simons' myofascial pain and dysfunction: upper half of body.* Lippincott Williams & Wilkins; 1999.
5. Sata J. A comparative study between muscle energy technique and myofascial release therapy on myofascial trigger points in upper fibres of trapezius. *Indian J Physio and Occu Ther.* 2012;6(3):150-4.
6. Sharma R, Mehra S. Prevalence of Upper Quadrant Musculoskeletal Disorders among Healthcare Professionals in a Tertiary Care Hospital *Indian J Physio Occu.*2023; 17(2):51-9.
7. Schenk R, Adelman K, Rousselle J. The effects of muscle energy technique on cervical range of motion. *J Man Manip Ther.* 1994;2(4):149-55.
8. Gibbons J. *Muscle energy techniques: A practical guide for physical therapists.* North Atlantic Books; 2022 Jun 21.
9. Basak T, Pal TK, Sasi MM et al. A comparative study on the efficacy of ischaemic compression and dry needling with muscle energy technique in patients with upper trapezius myofascial trigger points. *Int J Health Sci Res.* 2018;8(4):74-81.
10. Kumar GY, Sneha P, Sivajyothi N. Effectiveness of Muscle energy technique, Ischaemic compression and Strain counterstrain on Upper Trapezius Trigger Points: A comparative study. *IJEFS.* 2015;1(3):22-5.
11. Iqbal A, Ahmed H, Shaphe MA. Long Term Effectiveness of Ischaemic Compression Technique in Combination with Muscle Energy Technique on Managing Upper Trapezius Myofascial Trigger Point Pain: An Experimental Study. *Indian J Physio Occu.* 2016;10(1):171-77.
12. Kashyap R, Iqbal A, Alghadir AH. Controlled intervention to compare the efficacies of manual pressure release and the muscle energy technique for treating mechanical neck pain due to upper trapezius trigger points. *J Pain Res.* 2018; 11:3151-58.
13. Pecos-Martin D, Ponce-Castro MJ, Jiménez-Rejano JJ et al. Immediate effects of variable durations of pressure release technique on latent myofascial trigger points of the levator scapulae: a double-blinded randomised clinical trial. *Acupun Med.* 2019;37(3):141-50.
14. Junaid M, Yaqoob I, Rehman SU, et al. Effects of post-isometric relaxation, myofascial trigger point release and routine physical therapy in management of acute mechanical neck pain: a randomized controlled trial. *J Pak Med Assoc.* 2020; 70(10):1688-92.

How to cite this article: Pooja Kumari, Suman Mehra, Hemant More, Aasha. Effectiveness of the ischaemic compression technique and post-isometric relaxation technique on myofascial trigger points in patients with neck pain: a brief review. *Int J Health Sci Res.* 2024; 14(4):140-143. DOI: [10.52403/ijhsr.20240420](https://doi.org/10.52403/ijhsr.20240420)
