

Effect Of Muscle Energy Technique in Frozen Shoulder- A Literature Review

¹Simren Parihar

MPT student, Department of Physiotherapy

²Kriti Sachan

Assistant Professor, Department of Physiotherapy

Sharda School of Allied Health Sciences,

Sharda University, Greater Noida,

Uttar Pradesh

Email id: kriti.sachan@sharda.ac.in

Received: 1st Sept. 2024

Revised: 28th Sept. 24

Accepted: 1st Oct. 24

ABSTRACT

Background and need of research: Frozen Shoulder also known as Adhesive Capsulitis is a common shoulder condition marked by pain and a gradual loss of shoulder movement. Frozen shoulder patients see three overlapping stages: Stage I is inflammation, Stage II is frozen, and Stage III is thawing. According to estimates, 2–5% of the general population has frozen shoulder, which affects 8% of males and 10% of women. The present review of literature has been undertaken to discover the effect of muscle energy technique in frozen shoulders.

Methods: Various research articles were searched using the database such as PubMed, Research gate, Google Scholar, and Scopus were searched. Randomized controlled trials that studied both short- and long-term effects of muscle energy technique were selected.

Result: Majority of the reviewed studies indicated that muscle energy technique improves the range of motion, increases the flexibility, muscle activation and reduce the pain. This technique has been proven to be effective in comparison with various other techniques.

Conclusion: Muscle Energy Technique when given is individually and in combination has proven to be effective in reducing pain, enhancing functionality, and improving the range of motion.

Keywords: Frozen Shoulder, Muscle Energy Technique, Range of Motion, Pain, Function.

INTRODUCTION

Frozen Shoulder, also known as Adhesive Capsulitis, is a common shoulder condition marked by pain and a gradual loss of shoulder movement. Frozen shoulder patients see three overlapping stages: Stage I is inflammation, Stage II is frozen, and Stage III is thawing. ^[1]

According to estimates, 2–5% of the general population has frozen shoulder, which affects 8% of males and 10% of women. ^[2]

Under a microscope, the impacted capsule has more T cells, mast cells, fibroblasts, and macrophages. Increases

in fibrotic growth factors, inflammatory cytokines, and interleukins are linked to this synovitis. ^[3-5]

The patient with frozen shoulder has a sudden onset of discomfort and restriction of both active and passive range of motion of the shoulder. ^[6]

In Stage I there is pain without negligible limitation of motion and there is also hyper vascular synovitis. In Stage II there is continuation of pain with progressive limitation in motion, there is hyper vascular synovitis and loss of axillary folding. In Stage III there is ongoing stiffness. ^[1] Pain Rating Scale through numbers measure the individuals rate their discomfort in

0 means no discomfort at all to 10 which means more discomfort that is an outcome measure.^[7]

The Muscle Energy Technique is credited to Dr. Fred Mitchell. It is a non-invasive treatment for stretching or extending fascia and stiff muscles. MET mostly targets soft tissue, but it also aids with joint mobility, which improves muscular extensibility and range of motion. Voluntary isometric shrinkage of the targeted muscle occurs when the patient resists the therapist's resistance.^[7]

Muscle Energy Technique strength the muscle, which causes increase in the blood flow in that area which in turn lower the muscle tension.^[8]

Muscle Energy Technique is based upon two principles i.e., post isometric relaxation reduces the muscle tone because of isometric contraction and reciprocal inhibition which through the inhibition of alpha motor neurons, reduce the antagonist muscle tone after the contraction of agonist muscle.^[9-11]

In physiotherapy treatment there are diverse types of exercises and modalities which help in relieving pain and maintain the range of motion and also causes function restoration^[12]

REVIEW OF LITERATURE

To identify and study the effect of Muscle Energy Technique in Frozen Shoulder.

1. Deepak et al, (2023)^[12] who conducted a study on Efficacy of isometric muscle contraction (MET) on movement and discomfort in individuals with Periarthritis Shoulder with 30 subjects out of which 18 are males and 12 are female. This study shows that isometric muscle contraction (MET) improves the movements of shoulder and its ability to do the movements effectively, reducing discomforts in individuals in the early stage of protocol.

2. iraj et al, (2023)^[13] who conducted a study i.e., Efficacy of Muscle Energy Technique on improving the pain, range of motion, Muscle strength and quality of life in Diabetic Adhesive Capsulitis Conditions with 31 patients. This study concluded that MET, Exercise for stabilization and Moist Heat Therapy in individual with Periarthritis Shoulder in diabetic condition showed betterment in discomfort, Movements of shoulder muscular power and sense of joint position in 4 th weeks & 8 th weeks of programmed.

3. Sandeep Pattnak et al^[14] (2023) who conducted a comparative study on Kaltenborn mobilization technique versus muscle energy technique on Frozen Shoulder with 60 subjects which shows that, Both Kaltenborn mobilization technique versus muscle energy technique is effective in improving shoulder movements, discomfort and performance but Muscle Energy Technique showed a significant reduction in discomfort and enhancing the performance in the individual with frozen shoulder.

4. Tamjeet Ghaffar et. al (2023)^[15] who conducted comparative study Efficacy of Proprioceptive Neuromuscular Facilitation Stretch with Spencer Muscle Energy Technique on Frozen Shoulder with a sample size of 30, aged between 30 and 60 years and the outcome measure was NPRS and SPADI. The study concluded that Spencer Mets has been more effective in reducing the pain of the patients as compared to PNF treatment.

5. Ayesha Razzaq et al (2022)^[16] who conducted a study i.e. effect of MET and mulligan mobilization with movements on pain, range of motion, and disability in frozen shoulder patients with a sample size of 70 between the age group of 30-70 years, these subjects were divided into 2 groups of patients i.e. group A and group B. Group A with mulligan mobilization with movement and group B with MET. Result was that group A

treatment was more effective when compared with group B.

6.Sadia Nazir et al (2022) ^[17] who conducted a study in which they compare the effect of isometric muscle contraction technique and training of flexors deep to neck in patients with postural Neck stress with a sample size of 30 and these were divided into 2 groups. Group A was treated with isometric muscle contraction technique while Group B was given with training of flexors deep to neck. When Group A and Group B were compared it seemed Group A showed more meaningful results than Group B.

7.Prajakta Bhosalea and Sona Kolke (2022) ^[18] who conducted a comparative study of soft tissue mobilization through an instrument and isometric muscle contraction technique on after surgery elbow stiffness, with 26 subject. Result showed that were both the protocol is effective but soft tissue mobilization through an instrument was more effective in the improvement of distress and function of patient.

8.Pratik Phansapkar and Mohd Irshad Qureshi (2022) ^[19] who done research on Effect of MET (spencer), effect of Kaltenborn, effect of Mulligan, and Maitland mobilization in Patients with Periarthritis Shoulder, and the sample size was 80. The outcome measure was VAS, ROM and SPADI. This research stated that MET was better, when compared.

9.Raksha R. Jivani et al (2021) ^[20] who conducted a comparative study i.e., Importance of Isometric contraction of Muscle (spencer) and Mobilization Technique by mail land on distress, movements of shoulder in individual with Periarthritis Shoulder: Research with 58 subject between the age group of 40-60 years. Patient was divided into 2 groups with 29 patients in each group. By using VAS, SPADI and ROM study shows that both the techniques are best for minimizing the discomfort and increasing the movements of shoulder.

but isometric contraction of Muscle was better.

10.Kamya Somaiya et al (2021) ^[21] who done research on Quick effect of isometric contraction of muscle (MET) and Kalternborn Mobilization Technique in Diabetic individual with Periarthritis Shoulder with a sample size of 40. Group A received Kalternborn Mobilization and Group B received Muscle Energy Technique. The result was that there was improvement in pain and ROM as compared to Group A.

11.Mushyaida Iqbal et al (2020) ^[22] who conducted research on isometric muscle contraction (MET) and stretching passively in frozen shoulder with 60 subjects in which they concluded that isometric muscle contraction (MET) is better that passive stretching.

12.Anmol Thomas et al (2020) ^[23] who conducted a comparative study on “Isometric muscle contraction (MET) and Exercises of shoulder by individual on Function of shoulder” after surgery of radial neck in individual with Cancer of head and neck with 48 subjects and were randomly assigned into 2 groups. Group A received active range of motion and Group B received Muscle Energy Technique. This study concluded that both techniques were effective, but MET was more effective when compared to active range of motion exercises.

13.Himanshu Sharma et al (2020) ^[24] who conducted a comparative study on Muscle Energy Technique with Capsular Stretching on Frozen Shoulder Patients with a sample size of 30 between the age of 40-60 and these subjects were divided into 2 groups with 15 subject each. Group a with capsular stretching and group b with MET. The result was that group b is more effective in treatment than group a.

14.Nithya Jaiswal et al (2019) ^[25] who conducted a study on Effect of Isometric muscle contraction (MET) and Mulligan Mobilization in Periarthritis Shoulder and the sample size of 30 including both the sex group aged between 40-60 years.

The participants were divided into 2 groups. groups with 15 patients in each group. Group A received Mulligan Mobilization alone and Group B received Mulligan Mobilization along with MET. This study concluded that Group B treatment was more effective as compared to Group A.

15. Anool I Faqib et al (2019) ^[26] who conducted a study in which they examine the impact of isometric muscle contraction technique on distress, movements of shoulder in individual with stiffness of elbow after surgery with 30 subject and divided into 2 groups. Group A was given an isometric muscle contraction technique after immobilization and Group B was given isometric muscle contraction technique after 1 week with the home programmed. This study concluded that group A showed significant improvement compared to group B.

METHODOLOGY

Search was done through three search engines: google scholar, PubMed, and research gate and literature was derived from them. A thorough investigation of 20 research papers was done.

Inclusion Criteria

- Studies between year 2018-2023
- Randomized controlled trial
- Interventional studies
- cross-sectional studies
- Surveys

Exclusion Criteria

- Systemic review and meta-analysis
- Case-studies
- Studies before year 2018

From the above review of literature, the results were derived that numerous studies have been conducted individually on effects of MET for treatment of frozen shoulder. MET improves the range of motion, increase flexibility, muscle activation and reduce pain. This technique has been proven to be effective in comparison with various other techniques. Continued exploration and research in this area will contribute to refining treatment protocols and

advancing our understanding for better interventions.

CONCLUSION

In conclusion, the evidence suggests that MET is a highly effective treatment for frozen shoulder, offering improvements in range of motion, pain reduction, and functional ability. Its incorporation into physical therapy protocols has the potential to significantly improve outcomes for individuals with this condition. "e.

ACKNOWLEDGEMENT

I would like to express my deepest gratitude to all those who have supported me throughout the journey of authoring this thesis.

Primarily, I would like to thank my guide, [Dr. Kriti Sachan], for their invaluable guidance, encouragement, and insightful feedback. Your expertise and patience have been instrumental in shaping this research and helping me navigate the complexities of my topic.

Special thanks go to my colleagues and friends, [Rasleen Kour and Chahine Sharma], whose support, encouragement, and stimulating discussions provided me with the motivation and inspiration needed to complete this thesis.

Lastly, I would like to extend my heartfelt thanks to my family, whose unwavering love, patience, and support. have been my greatest strength.

Thank you all for your contributions and support.

REFERENCES

1. Millar NL, Meakins A, Struyf F, Willmore E, Campbell AL, Kirwan PD, Akbar M, Moore L, Ronquillo JC, Murrell GA, Rodeo SA. Frozen shoulder (Primer). *Nature Reviews: Disease Primers*. 2022;8(1).
2. De la Serna D, Navarro-Ledesma S, Alayón F, López E, Pruiomboom L. A comprehensive view of frozen shoulder: a mystery syndrome. *Frontiers in Medicine*. 2021 May 11; 8:638.
3. Kabbabe, Benjamin et al. "Cytogenetic analysis of the pathology of frozen shoulder." *International journal of*

- shoulder surgery vol. 4,3 (2010): 75-8. doi:10.4103/0973-6042.76966
4. Tamai, Kazuya et al. "Primary frozen shoulder: brief review of pathology and imaging abnormalities." *Journal of orthopaedic science : official journal of the Japanese Orthopaedic Association* vol. 19,1 (2014): 1-5. doi:10.1007/s00776-013-0495-x
 5. Dias, Richard et al. "Frozen shoulder." *BMJ (Clinical research ed.)* vol. 331,7530 (2005): 1453-6. doi:10.1136/bmj.331.7530.1453
 6. Kumar N, Badoni N, Sharma S. Effectiveness of Muscle Energy Technique on Pain, Range of Motion, Proprioception, Muscle Strength & QOL in Diabetic Frozen Shoulder Conditions.
 7. De Baets L, Matheve T, Dierickx C, Bijmens E, Jans D, Timmermans A. Are clinical outcomes of frozen shoulder linked to pain, structural factors or pain-related cognitions? An explorative cohort study. *Musculoskeletal Science and Practice*. 2020 Dec 1; 50:102270.
 8. Fryer, G., Ruszkowski, W. The influence of Contraction duration in MET applied to the atlantoaxial joint, *Int.Journal Osteopath Med*. 2004;7(2):79-84
 9. Goodridge JP. Muscle energy technique: definition, explanation, methods of procedure. *J Am Osteopath Assoc*. 1981;81(4):249-54. CAS PubMed Google Scholar
 10. Thomas E, Bianco A, Paoli A, Palma A. The relation between stretching typology and stretching duration: the effects on range of motion. *Int J Sports Med*. 2018;39(4):243-54. <https://doi.org/10.1055/s-0044-101146>. Article PubMed Google Scholar
 11. Chaitow L, Liebenson C. *Muscle Energy Techniques*: Harcourt publisher - Boston; 2001.
 12. Mallick DK, Paul S, Ghosh T. Effects of muscle energy technique on improving the range of motion and pain in patients with frozen shoulder. *Biomedicine*. 2023 Feb 26;43(1):26-9.
 13. Kumar N, Badoni N, Sharma S. Effectiveness of Muscle Energy Technique on Pain, Range of Motion, Proprioception, Muscle Strength & QOL in Diabetic Frozen Shoulder Conditions.
 14. Pattnaik S, Kumar P, Sarkar B, Oraon AK. Comparison of Kaltenborn mobilization technique and muscle energy technique on range of motion, pain and function in subjects with chronic shoulder adhesive capsulitis. *Hong Kong Physiotherapy Journal*. 2023 Jun 21:1-1
 15. Ghaffar T, Fatima M, Zahra C, Yousaf A, Wahid I, Ghafoor A, Maqsood H. Comparative Effectiveness of Proprioceptive Neuromuscular Facilitation Stretch Vs Spencer Muscle Energy Technique on Pain and Disability in Patients with Adhesive Capsulitis. *American Journal of Health, Medicine and Nursing Practice*. 2023 Oct 30;9(4):60-8.
 16. Razzaq A, Nadeem RD, Akhtar M, Ghazanfar M, Aslam N, Nawaz S. Comparing the effects of muscle energy technique and mulligan mobilization with movements on pain, range of motion, and disability in adhesive capsulitis. *J Pak Med Assoc*. 2022 Jan 1;72(1):13-6.
 17. Nazir S, Arslan HR, Awan NG, Bilal H. To Compare the Effectiveness of Muscle Energy Technique and Deep Neck Flexors Training on Pain, Range of Motion and Functional Disability in Patients with Mechanical Neck Pain. *Pakistan BioMedical Journal*. 2022 Jan 31:296-9.
 18. Bhosale, Prajakta, and Sona Kolke Pt. "Effectiveness of instrument assisted soft tissue mobilization (IASTM) and muscle energy technique (MET) on post-operative elbow stiffness: a randomized clinical trial." *The Journal of manual & manipulative therapy* vol. 31,5 (2023): 340-348. doi:10.1080/10669817.2022.2122372
 19. Phansopkar P, Qureshi MI. Evaluation of Efficacy of Spencer Technique, Kaltenborn, Mulligan, and Maitland mobilization on Pain, Range of Motion and Functional Disability in Patients

- with Frozen Shoulder.
20. Jivani RR, Hingarajia DN. Effect of spencer muscle energy technique versus maitland's mobilization technique on pain, rom and disability in patients with frozen shoulder: a comparative study. *Int J Physiother Res.* 2021 Aug 11;9(4):3928-36
 21. Somaiya K, Vardhan GV, Bele A. Immediate Effect of Muscle Energy Technique and Kalternborn Mobilisation Technique on Pain in Diabetic Patients with Periarthritis of Shoulder
 22. Iqbal M, Riaz H, Ghous M, Masood K. Comparison of Spencer muscle energy technique and passive stretching in adhesive capsulitis: a single blind randomized control trial. *J Pak Med Assoc.* 2020 Dec 1;70(12):2113-8
 23. Thomas, Anmol et al. "Effect of Muscle Energy Techniques V/S Active Range of Motion Exercises on Shoulder Function Post Modified Radical Neck Dissection in patients with Head and Neck Cancer - A Randomized Clinical Trial." *Asian Pacific journal of cancer prevention: APJCP* vol. 21,8 2389-2393. 1 Aug. 2020, doi:10.31557/APJCP.2020.21.8.2389.
 24. Sharma H, Patel S. Effectiveness of Muscle Energy Technique versus Capsular Stretching Among Patients with Adhesive Capsulitis. *Journal of Osteopathic Medicine* (7). 2020:11
 25. Jaiswal N, Saketa J, Rajsekhar H. Efficacy of muscle energy techniques as an adjunct with mulligans mobilization in adhesive capsulitis of shoulder. *International Journal of Physiotherapy.* 2019 Apr 8:52-7.
 26. Faqih, Anood I et al. "Effects of muscle energy technique on pain, range of motion and function in patients with post- surgical elbow stiffness: A randomized controlled trial." *Hong Kong physiotherapy journal: official publication of the Hong Kong Physiotherapy Association Limited = Wu li chih liao* vol. 39,1 (2019): 25-33. doi:10.1142/S1013702519500033
-