



# A SCOPING REVIEW TO DETERMINE THE EFFICACY OF MUSCLE ENERGY TECHNIQUE ON LOW BACK PAIN

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## ABSTRACT

**Background:** Low back pain has shown deterioration in patient health. Absenteeism has found to be increased in work place. There is a high need to find a effective treatment for the cause.

**Objective:** The aim of the study is to find out whether muscle energy technique is effective in case of low back pain.

**Study design:** Systemic review

**Method:** Around 65 articles were screened for the study with the help of google scholar, PubMed and Cochrane. Out of which 10 articles were considered for the review on the basis of inclusion criteria. These articles were verified and read thoroughly.

**Results:** Muscle energy technique came out to be effective in treatment of low back pain. As it aimed to decrease pain and improve functional disability.

**Conclusion:** This study conclude that the muscle energy found to be effective in individual with low back pain. It helps in improving the joint range of motion, managing the pain, improves stability, strengthening weak muscles. MET has shown effect in LBP in chronic condition, involvement of SI joint, mechanical LBP and also non-specific low back pain.

**KEYWORDS:** low back pain, muscle energy technique, non-specific back pain

## INTRODUCTION

One of the most common musculoskeletal disabilities is low back pain. Acute low back pain is considered when the pain is of less than 4-6 weeks. Around 80% individual experience low back pain at some point of time. People with wide variety of profession like heavy labour, repetitive stress and other experience acute low back pain which include labours, teachers, computer professionals and students. There are many factors for low back pain which can be various risk factors such as age, lifestyle, gender, psychosocial profile, pain perception. [1] Mostly acute low back pain results from sprain, strains and mechanical loading in back. Low back pain varies it may be dull, sharp achy or stabbing. For identifying low back pain, we can use questionnaire to identify. It is one of the common reasons for patient to visit to a physiotherapist. [2]

The causes of low back pain can be mechanical, non-specific or can be due to trauma. Overuse of soft tissue is the most common cause of low back pain. Muscles which are associated are mainly quadratus lumborum, iliopsoas, erector spinae group. Piriformis, hamstring, quadriceps and iliotibial band. All these muscles could develop shortening which can be the cause for pain in lower back. Due to stiffness in some muscles also pain is felt while doing movements.

Approaches use by physiotherapist to manage low back pain is to by using a variety of interventions such as various modalities, exercises like resistance training, manual therapy and neuromuscular re-education. [3] Many other techniques are

found to be effective in low back pain like myofascial release and interferential modality and TENS but this treatment didn't show a long-term effective improvement in the condition. In manual therapy we have many techniques that are considered to be beneficial in treating low back pain which include soft tissue manipulation, myofascial release technique, functional techniques and strain counterstrain technique, muscle energy technique. [4]

Muscle energy technique is a manual treatment that involves voluntary contraction of muscle in a controlled contraction at varying level of intensity against a distant counter force. This is an active technique in which patients also have to actively participate during the treatment unlike static stretching. Autogenic inhibition and reciprocal inhibition are the concepts on which muscle energy technique is based upon. This technique is useful for muscle which are shortened, contracted and spastic. Strengthening a physiologically weakened muscles in reducing localized edema and relieve passive congestion. And also, useful in mobilizing an articulation which has mobility restriction. MET has been found to be effective in lumbopelvic pain. [5]

Muscle energy technique is found to be effective in low back pain but there is no strong study to prove its effectiveness so the study needs to be done to know which all parameter supports the effectiveness of MET in low back pain.



As no thrusting is used in this procedure, has very low likelihood of producing any complications. It has been stated that MET improves tissue extensibility, strengthen the muscles, stimulated mechanoreceptors and also improves the restricted joints. Strengthening physiologically weakened muscles in reducing localized edema and relieve passive congestion. And also, useful in mobilizing an articulation which has mobility restriction. MET has been found to be effective in lumbopelvic pain.

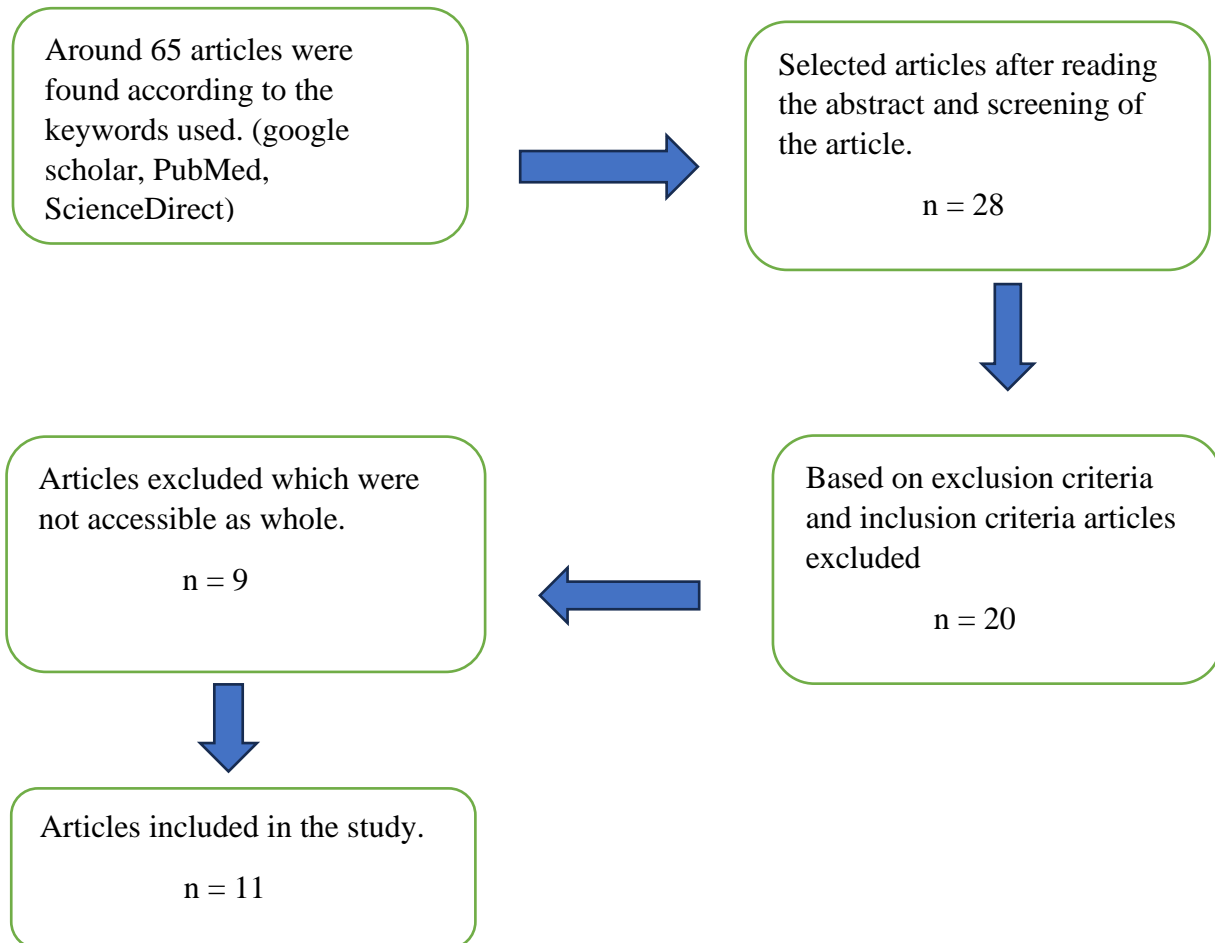
### Methodology

Articles selected for the review were 11.

#### Source of evidence searched

- Google Scholar
- PubMed

### FLOW CHART



#### Inclusion criteria

- Cochrane
- Articles sorted from year 2004 to 2022.
- Articles included low back pain complaint
- Articles included Muscle energy technique as an intervention.
- Limited to human

#### Exclusion criteria

- No case report was included.
- No articles included before 2004.
- Articles with low back pain along with lumbar dysfunction were discarded.
- Articles with surgical pain and degeneration pain leading to LBP were not included.
- Muscle energy not a secondary intervention.

### REVIEW OF LITERATURE

1. TeUaBA, UzorCU, et al. conducted research with the aim of determining the efficacy of positional release technique and muscle energy technique on acute and subacute low back pain. 44 volunteers were chosen for the study, and they were split into two groups: the first group got the MET approach, and the other group got the positional release technique. It was discovered that

both strategies worked well for treating low back pain. To treat low back pain, any of the treatments can be utilized on its own.<sup>[3]</sup>

2. Prachi N. et al did research in which they have used muscle energy technique for quadratus lumborum in patients with acute LBP. 40 subjects who were diagnosed with acute low back pain were included. In which they have included two group in one group that is



- the controlled group received interferential modality and interventional group muscle energy technique with interferential modality. The group with MET + IFT found to be effective statically significant difference showed decreased in pain and increase in spinal range of motion.<sup>[5]</sup>
- Priyanka rishi et al. did research on non -specific LBP they included MET along with a supervised exercise and MET on quadratus lumborum and iliopsoas. These two interventions were compared in their research with 30 participants. Significant improvement was found in MET with supervised exercise.<sup>[6]</sup>
  - Marzouk A. Ellythy et al. they did research on strain counter strain along with muscle energy technique. Their research includes 30 subjects both male and female age ranging from 35 to 55 years divided into half one receiving MET and the other one received strain counterstains for 4 weeks. data was recorded and calculated. According to the data interpretation and analysis it came out that both techniques showed significant results. And are effective in managing low back pain. Great improvement in joint range of motion and muscle extensibility was shown with muscle energy technique.<sup>[7]</sup>
  - Usman abba Ahmed et al. have done a systemic review on effectiveness of muscle energy technique in mechanical low back pain. They performed a systemic search of online databases with help of keywords and collected the articles. 25 thousand plus articles were selected then screening was done and finally 15 articles were selected in which 11 articles met all the inclusion criteria and eligibility. These 11 articles were used for analysis and discussion. It came out that muscle energy technique is standalone treatment in many articles for treatment of MCLBP. They included further study to be conducted to see long term effect.<sup>[8]</sup>
  - Capt. Eric Wilson et al. conducted a prospective pilot clinical trial. They carried on this research with 2 group. One group received moist heat + muscle energy technique followed by exercises. And the second group carried on with moist heat and randomized placebo manual therapy followed by exercise. The exercise program they included were drawing hip maneuver, Romanian dead lift, simple supine obliques, standing extension and dumbbell overhead. The result showed that MET group showed supervised as compared to other.<sup>[9]</sup>
  - Noelle M. Selkow et al. did a pilot study in which their objective was to know the effect of the MET they compared this with other group that is the sham group. It was double blinded study; subjects were randomly assigned by the third party in the group. According to the result the main finding was that the group with MET as intervention showed decreased in VAS score after the treatment. They concluded that MET can be used to treat low level of pelvic pain. There are number of limitations in this research. Further study has to be done with multiple MET treatment in one session to determine how many treatments are effective in pain management.<sup>[4]</sup>
  - Praveen Kumar et al. did research on 30 subjects with hamstring tightness for chronic LBP. Outcome measures used were pre and post knee range of motion and NPRS. 3 groups were made, in which one received muscle energy technique, second one received PNF stretching and the last one received static stretching for hamstring. These three groups have equal number of subjects. All the three group show significant improvement in NPRS score and Range of motion. And hence these therapeutic manoeuvres can decrease pain, increase range of motion.<sup>[2]</sup>
  - Wahyuddin et al. did a pilot study on 21 subjects and compared the treatment intervention between muscle energy technique and LSE. The outcome measures were pain intensity, disability level and kinematic changes. This was the first study to compare the immediate changes in subjects after the MET and LSE intervention given. They concluded that the difference in effect were not found. Although the study shows increased in active side bending. Decrease in pain intensity and also in disability level.
  - Supreet Bindra et al. did study on 30 subjects in which 24 were females and 6 males between 30 to 50 years reported with chronic LBP. 2 groups were made group 1 received Muscle energy technique and group 2 received conventional therapy. Outcome measures were Visual analogue scale, Oswestry disability index and limb length measurement treatment were given for 6 days, pre and post measurement were taken. This study show that MET along with conventional therapy shows better management. He concluded it by saying that therapeutic management can help in treating LBP.<sup>[11]</sup>
  - Ganesh Sundaram Subramanian conducted research to demonstrate the efficacy of MET in conjunction with Tens for treating lumbar strain-related low back pain. Based on predetermined criteria, a total of thirty volunteers—a mix of male and female—without a history of musculoskeletal diseases were chosen. Three groups of participants were created: the first group witnessed TENS treatment, the second group underwent MET treatment, and the third group received treatment that combined TENS and MET. The combined TENS and MET treatment shown significantly higher gains in lowering pain and disability compared to either treatment alone. The results showed a decrease in both pain and disability across all groups. These results imply that using TENS and MET together may be very beneficial.<sup>[12]</sup>

## DISCUSSION

Low back pain occurs in mostly every individual and are often overlooked in youth. This causes more strain over the back muscle which may gets shortened. Low back pain can occur due to many other reasons like sacroiliac joint dysfunction and lumbar dysfunction. Weakening of core muscles also can cause low back pain. Working on quadratus lumborum and iliopsoas can eventually helpful in managing the acute pain. With regard



to muscle energy technique, it is one of the interventions that is found to be effective in managing low back pain, improving disability level. Decreasing the pain intensity and providing stability. Praveen Kumar et al. mentioned that muscle energy technique on hamstring helps in relieving low back pain and increase in range of motion. [2] Noelle M. Selkow et al. concluded that muscle energy technique has a short-term effect, he mentioned further study on long term effect on low back pain in muscle energy technique. The data from the systemic review cleared that muscle energy technique with supervised exercise program is effective. MET is useful in chronic low back pain whether specific or non-specific mechanical low back pain and SI joint dysfunction. There was not much evidence regarding acute low back pain for MET further more studies can be done to show the effectiveness of muscle energy technique on acute low back pain. MET with strain and counter-strain also shows a great outcome. [4] TeUaBA et al. find out that MET is independently enough for the management of low back pain. The outcome measures used were VAS, Oswestry disability index and range of motion. All these shows significant improvement after MET. [3] The present study describes the positive effect of muscle energy technique in regard to low back pain. It improves functionality, decrease disability, stability and increase strength to the muscle. Prachi et al. mention that MET on quadratus lumborum in patients with acute low back pain found to be effective and helpful in decreasing pain intensity. MET on quadratus lumborum, iliopsoas and hamstring are more effective in LBP cases. As muscle energy technique is manual therapy training and practicing in this area as physiotherapist can help many individuals with low back pain without wasting much energy. It would be one of that treatment that can be solely effective in case of treating patient with low back pain

## CONCLUSION

This study concludes that the muscle energy found to be effective in individual with low back pain. It helps in improving the joint range of motion, managing the pain, improves stability, strengthening weak muscles. MET has shown effect in LBP in chronic condition, involvement of SI joint, mechanical LBP and also non-specific low back pain. The data from the systemic review cleared that muscle energy technique with supervised exercise program is effective. MET is useful in chronic low back pain whether specific or non-specific mechanical low back pain and SI joint dysfunction. There are few articles to support MET in acute condition of low back pain. a study has to be done for acute condition. MET along with the conventional therapy and supervised exercise also has shown good result. Further study can be made for MET along with other manual therapy to show its effectiveness. Also, we need to look for in how many days MET can show a good improvement in an acute case.

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