



# **TO COMPARE THE EFFECT OF MUSCLE ENERGY TECHNIQUE VS CORE STABILITY EXERCISES, COMBINE WITH ERGONOMIC ADVICE ON FUNCTION AND PAIN ON NON-SPECIFIC LOW BACK PAIN AMONG OFFICE WORKER – A COMPARITIVE STUDY”**

**Dr. Dharmang Vyas**

Assistant Professor, Parul University

## **ABSTRACT**

**INTRODUCTION:** Low back pain is an important clinical, social, economic, and public health problem affecting the population indiscriminately. It is a disorder with much possible aetiology, occurring in many groups of the population, and with many definitions. Consequently, the vast literature available on low back pain is not only heterogeneous but also contradictory. By definition, low back pain is a symptom that cannot be validated by an external standard, the symptom being what a person reports. Numerous modalities of therapeutic interventions are available for treatment of chronic low back pain: surgery, drugs, manipulation, physical therapy, behaviour therapy, and neural blockade continue to spark debate among professionals, with regard to their effectiveness in managing chronic low back pain.

**METHOD:** 66 patients with LBP, whose informed consents were obtained, were randomly assigned into 2 groups. One group received MET while the other group received core stability 6 weeks. VAS: visual analogue scale for pain assessment. Modified Oswestry Low Back Pain Disability Questionnaire., Functional Rating Index was measured before and after 6 week of intervention.

**RESULTS:** Mann whitney and Wilcoxon tests were used for all out come measures. It was observed that both group A and group B are effective in functions and reducing pain ( $p < 0.001$ ). But group A is more effective than group B ( $p < 0.0001$ ).

**CONCLUSION:** Both techniques are equally effective for improving functions and reducing pain. But group A is more effective for reducing pain and improving functions than group B.

**KEYWORDS:** Low back pain, Ergonomics, Core strength, MET.

## MANUSCRIPT

### Introduction:

Low back pain is an important clinical, social, economic, and public health problem affecting the population indiscriminately. It is a disorder with much possible aetiology, occurring in many groups of the population, and with many definitions. Consequently, the vast literature available on low back pain is not only heterogeneous but also contradictory. By definition, low back pain is a symptom that cannot be validated by an external standard, the symptom being what a person reports. Numerous modalities of therapeutic interventions are available for treatment of chronic low back pain: surgery, drugs, manipulation, physical therapy, behaviour therapy, and neural blockade continue to spark debate among professionals, with regard to their effectiveness in managing chronic low back pain.

### CORE STABILITY

The results of these studies show that balanced development of core muscles is a key to prevention of low back pain. For this reason, the current fitness trend has been a change from exercise to eliminate pain by restricting movement by muscle strength or stretching to exercises that increase core stability. Along with exercises, joint mobilization or manipulation techniques for vertebral joints have also been used widely to treat spine imbalance. Nevertheless, core stability exercises have a few limitations.

### ERGONOMICS

Ergonomics takes into account the user's capabilities and finds methods that make tasks easier utilizing equipment and the surrounding environment. Use of ergonomics keeps workers safe, comfortable, and productive. Improving work posture, reduced force, and less repetition prevents injuries. Various experimental conditions allow suggesting that ergonomics, especially by muscle flexibility and activation, has a positive impact on low back pain, decreasing its intensity, improving trunk stabilizing muscles functional capacity and joint movement amplitude.

### Need for the Study:

There have been several studies done to check the effect of MET of low back pain. Also studies have proven that core stability exercise is effective in low back pain. These both interventions are effective in management of low back pain. Ergonomics also play an important role in the prevention and management of low back pain.

But no study had been conducted to check the effect of MET vs. core stability when combined with ergonomics in patients with low back pain. Hence this study was done to compare MET vs. Core stability exercise combined with ergonomics in treatment of nonspecific low back pain among office workers.

### **Aims & Objectives:**

**Aim:** To compare the effectiveness of MET and core stability combined with ergonomics on non-specific low back pain among office workers.

### **Objectives:**

To determine the effect of MET combined with ergonomic advice on function and pain on non-specific low back pain among office workers.

To determine the effect of core stability combined with ergonomic advice on function and pain on non-specific low back pain among office workers.

To compare the effect of MET combined with ergonomic advice vs. core stability combined with ergonomic advice on function and pain on non-specific low back pain among office workers.

### **Methodology:**

**Source of Data:** Office workers from Parul University and Parul Sevashram Hospital.

### **Inclusion Criteria:**

- Subjects with self-reported Low back pain and referred to physiotherapy OPD.
- Complain of pain since last 6 months.
- Age group between 20 to 40 years.
- Male & Females.
- Subjects who can understand English, Hindi and Gujarati.
- Subjects having at least 6 hours of sitting job.

### **Exclusion Criteria:**

- Subjects with radiculopathy
- Subjects suffering from other musculoskeletal, neurological or cardiovascular conditions.
- Subjects with previous back surgeries.

**Method of Collection of Data:** Convenient sampling.

**Study design:** Comparative Study.

**Sample Size:** 60 subjects (30 per group).

**Materials Used:**

- Paper
- Pencil
- Treatment Couch

**Procedure:**

86 subjects were screened for low back pain out of which 66 subjects were falling into inclusion criteria hence recruited for the study. Subjects were taken from Parul University and Parul Sevashram Hospital. Once the subjects agree to participate in the study they were asked to sign a written consent form.

After this the subjects were allocated into two groups using closed envelope method. 34 for group A and 32 for group B.

**Group-A** (MET group and ergonomic advice).

**Group-B** (Core stability and ergonomic advice).

Treatment duration: 4 sessions per week for 6 weeks.

All the subjects were assessed for pain (VAS), Function (Modified Oswestry Low Back Pain Disability Questionnaire and Functional Rating Index) before and after the intervention.

All the subjects were divided into two groups, group A: Muscle Energy Technique group and group B: Core stabilization group. Both the groups were also advised on ergonomics. All the subjects were assessed for outcome measures both pre and post intervention and the data recorded.

**Result:**

As already mentioned out of 86 patients only 66 were falling inclusion criteria and were included for the study as the rest were not falling into the inclusion criteria. There were total of 6 drop out from the study. Therefore, the result presented here are of 60 patients only among which 36 were males and 24 were females. All of these suffering from low back pain, their main complaint was pain during prolonged sitting activities.

For statistical analysis data was collected before and after 6 weeks of intervention. VAS, FRI and Modified OSWERSTRY were assessed pre and post intervention. -Paired t-test was used for the comparison between the pre and post values of outcome measure within groups. -Unpaired t-test was used for the comparison between the pre – post values of outcome measures between the groups. The significant level adopted for the statistical tests was  $< 0.05$  and CI was kept at 95%. All statistical tests were performed using SPSS Version 16 software.

**Discussion:**

Present study was aimed to check the effectiveness of MET combined with ergonomic advice vs. core stability combined with ergonomic advice on function and pain on non-specific low back pain among office workers in two different group named GROUP A (MET) and GROUP B (Core Stability).

In both the groups, baseline demographic characteristics were similar and there was no statistical difference in both the groups and so they were comparable. Present study showed that GROUP A (MET) and GROUP B (Core Stability) both were effective for improving function and reducing pain in office workers with low back pain. Inter group comparison for data, Maan Whitney test was used. And Wilcoxon test was applied on pre and post training mean scores within group.

MET over isometrics is reduced reflex activity. Post isometric relaxation modifies stretch perception as compared to isometrics and nociceptive nerve endings in the joint and muscle play important role via neurotransmitter modulation or gate control. Repetitive light muscle contractions increase venous, lymphatic drainage and relieve paraspinal congestion.

MET used in the second and the third intervention is known for its hypo analgesic effect. Inhibitory golgi tendon reflex gets activated during the isometric contraction that leads to reflex relaxation of muscle. Activation of muscle and joint mechanoreceptors will lead to sympathetic excitation evoked by somatic efferent and localized activation of Peri Aqueduct of Gray causes descending modulation of pain.

Further, changes in pacinian corpuscles results in relaxation of musculotendinous unit tension and decreases the perception of pain. Muscle energy technique was claimed to be an effective method for acute tension in soft tissue problems that preclude immediate spinal adjustments, reduces muscle spasm that is responsible for spinal fixation, reduces pain and lengthen the tightened back muscles to normalize function.

### Conclusion:

This study concluded that both the techniques were effective. But Group A (MET) showed more improvement in function and pain as compared to Group B (core stability).

### Reference:

1. Laxmaiah Manchikanti, MD; Epidemiology of Low Back Pain; *Pain Physician*, Volume 3, Number 2, pp 167-192 2000, Association of Pain Management, Anaesthesiologists.
2. Julie M Fritz, James J Irrgang; A Comparison of a Modified Oswestry Low Back Pain Disability Questionnaire and the Quebec Back Pain Disability Scale; *Physical Therapy*. Volume 81. Number 2. February 2001
3. Franke H, Fryer G, Ostelo RWJG, Kamper SJ. Muscle energy technique for non-specific low-back pain. *Cochrane Database of Systematic Reviews* 2015, Issue 2. Art. No.: CD009852. DOI: 10.1002/14651858.CD009852.
4. Capt. Eric Wilson, PT, DSc, OCS, SCS, CSCS Otto Payton, PT, PhD, FAPTA, Lisa Donegan-Shoaf, PT, PhD, Katherine Dec, MD. Muscle Energy Technique in Patients with Acute Low Back Pain: A Pilot Clinical Trial. *J Orthop Sports Phys Ther* • Volume 33 • Number 9 • September 2003 503.
5. Xue-Qiang Wang, Jie-Jiao Zheng, Zhuo-Wei Yu, Xia Bi, Shu-Jie Lou, Jing Liu, Bin Cai, YingHui Hua, Mark Wu, Mao-Ling Wei, Hai-Min Shen, Yi Chen, Yu-Jian Pan, Guo-Hui Xu, Pei-Jie Chen: A Meta-Analysis of Core Stability Exercise versus General Exercise for Chronic Low Back Pain: December 2012, Volume 7,| Issue 12, e52082.

6. Barr, Karen P. MD; Griggs, Miriam MD, FAAPMR, PT; Cadby, Todd MS, PT, ATC, Lumbar Stabilization: Core Concepts and Current Literature: American Journal of Physical Medicine & Rehabilitation: doi: 10.1097/01.
7. P Paul FM Kuijer, Jos HAM Verbeek, Bart Visser, Leo AM Elders, Nico Van Roden, Marion ER Van den Wittenboer, Marian Lebbink, Alex Burdorf<sup>7</sup> and Carel TJ Hulshof: An Evidence-Based Multidisciplinary Practice Guideline to Reduce the Workload due to Lifting for Preventing Work-Related Low Back Pain. Kuijer et al. Annals of Occupational and Environmental Medicine 2014, 26:16.
8. Polly E. Bijur, PhD, Wendy Silver, MA, E. John Gallagher, MD: Reliability of the visual analog scale for measurement of acute pain; academic emergency medicine • December 2001, volume 8, number 12.

