

## Effect of Muscle Energy Technique in Treatment of Non-Specific Low Back Pain in College Going Students



### Medical Science

**KEYWORDS :** Non-specific Low Back Pain, Muscle Energy Technique, Specific Low Back Pain

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### ABSTRACT

**Objective :** To study the effect of MET in non specific low back pain among college going students.

**Method:** 41 subjects with non specific low back pain were assessed and divided into two groups: Experimental and Control groups. Before the treatment, pain and level of disability of the subjects were assessed by Functional Pain Scale (FPS) and Modified Oswestry Low Back Pain Disability Questionnaire (MOSW). During treatment, Group A was given Hip and Lumbar MET and Group B was given conventional physiotherapy and advices for 4 weeks. After completing treatment, subjects were reassessed by FPS and MOSW to check the level of differences.

**Results :** Data analysis of experimental group revealed statistically significant difference on MOSW with  $p$  value 0.00 (highly significant) and FPS 0.002 (significant) and in control group MOSW with  $p$  value 0.004 and FPS 0.001 which is also significant.

**Conclusion :** MET is effective in reducing pain and disability in Non Specific Low Back Pain.

### INTRODUCTION

Low back pain (LBP) is one of the most common complaints in today's society.<sup>1</sup> The exact cause of pain cannot be identified in most instances.<sup>2</sup> It is typically classified as being specific or non-specific.

Specific low back pain is defined as symptoms caused by red flags. These harbingers of organic disease that include spinal fractures, cancers, infections and cauda equina syndrome can be identified and dealt with appropriately.<sup>3</sup> Approximately 90% cases of back pain have no identifiable cause and are designated as nonspecific.<sup>2</sup>

Non-specific low back pain is defined as low back pain not attributable to a recognizable, known specific pathology (eg, infection, tumour, osteoporosis, fracture, structural deformity, inflammatory disorders, radicular syndrome or cauda equine syndrome).<sup>4</sup>

Most people will experience back pain at some point in their life.<sup>5</sup> In individuals with non specific low back pain, due to prolonged erect sitting, the erector spinae is held in sustained contraction and often tests weak and that inhibits multifidus<sup>6</sup>.

MET is an established osteopathic manipulative intervention.<sup>7</sup> MET are a class of soft tissue osteopathic manipulation methods that incorporate precisely directed and controlled, patient initiated, isometric and or isotonic contractions, designed to improve musculoskeletal function and reduce pain.<sup>8</sup> MET uses two types of contractions : isometric and isotonic. Isometric MET is contraction of the muscle against a counterforce so that no movement occurs. Isotonic MET is of two types : eccentric and concentric isotonic .Eccentric MET used in shortened, fibrotic musculature. Concentric MET used to strengthen physiologically weak muscles. Here we are using concentric MET in which the therapist begins with the muscles in resting length that is comfortable mid-range and allows the subject to contract the affected muscle with some force as they provide a constant amount of resistance<sup>9</sup>.

**AIM OF THE STUDY:** To study the effect of MET in non specific low back pain in college going students of Sumandeep Vidhyapeeth (SV).

### METHODOLOGY

**Study design:** Experimental study

**Sample size:** 41 individuals.

**Sampling method:** Convenient Sampling.

**Source of data collection:** Students of College of Nursing, Department of Pharmacy and College of Physiotherapy of Sumandeep Vidhyapeeth, Vadodara.

**Study duration:** 4 weeks.

### Inclusion criteria:

1. Age group : 18-25 years.
2. Healthy students having non specific low back pain.

### Exclusion criteria:

1. History of trauma
2. Thoracic pain
3. Past medical history of malignant tumor
4. Prolonged use of corticosteroids.
5. Drug abuse, HIV
6. Any systemic disease.
7. Unexplained weight loss
8. Any neurological diseases.
9. Structural deformity
10. Fever

### Materials used:

- Standard treatment table
- Pen and paper
- Towel

### Outcome measures :

- Functional Pain Scale
- Modified Oswestry Low Back Pain Disability Questionnaire

### Procedure:

After signing informed consent, subjects were assessed for non specific low back pain. 41 matches inclusion criteria, were divided into two groups : A Experimental and B Control. Students were given Functional Pain Scale and Modified Oswestry Low Back Pain Disability Questionnaire to identify disability due to low back pain. Group A was given Lumbar MET and Hip MET and Group B was given conventional physiotherapy and back advices twice a week for duration of 4 weeks. After completing treatment protocol, students were again reassessed by Functional Pain Scale and Modified Oswestry Low Back Pain Disability Questionnaire to check the level of difference.

**Ethical consideration :** The study was approved by Ethical Committee of Sumandeep Vidhyapeeth (SV). Permission of Reg-

istrar of SV was taken to conduct the study in SV Campus. The principals of Nursing, Pharmacy and Physiotherapy were approached to seek approval for the participation of students in study.

**Statistical analysis :** Data analysis was done using SPSS 20.0 statistical package. Mean and standard deviation of all variables were calculated. Normal distribution of data was checked by Shapiro Wilk test. As the data was normally distributed of control and experimental group for MOSW and extensor endurance, student t-test was used. For experimental and control group FPS data were not normally distributed so, Wilcoxon Sign Rank test was used. Comparison of FPS between experimental and control group done by Mann-Whitney U test. Comparison of MOSW and extensor endurance between experimental group and control group done by independent t test.

**RESULTS :**

**Table 1: Presents Mean and SD of Demographic characteristics.**

	Experimental group		Control group	
	Mean	SD	Mean	SD
Age (year)	20.55	1.78	20.47	1.66
Height(meter)	1.56	0.05	1.56	0.04
Weight(kg)	48.01	6.39	49.61	6.49
BMI(kg/m <sup>2</sup> )	19.91	3.09	20.16	2.08

**Table 2: Intragroup analysis of experimental group**

**Table 2 : Comparison of FPS in experimental group N=18 (Wilcoxon signed ranks test)**

	Mean	SD	P value
Pre FPS	2.1806	±1.61064	0.002*
Post FPS	1.5417	±1.32079	

\*(p<0.05)

This Table shows comparison of pre FPS (2.18 ±1.61) before exercise and post FPS after exercise in experimental group. This indicates significant improvement in FPS after exercises (1.54 ±1.32; p=0.002)

**Table 3: Intragroup analysis of experimental group**

**Table 3 : Comparison of MOSW in experimental group N=18 (paired t –test)**

	Mean	SD	P value
Pre MOSW	17.88	±7.65	0.000 <sup>HS</sup>
Post MOSW	14.88	±7.49	

**HS-highly significant**

This Table shows comparison of pre MOSW (17.88 ±1.36) before exercise and post MOSW after exercise in experimental group. This indicates significant improvement in MOSW after exercises (14.88 ±7.49; p=0.00)

**Table 4: Intragroup analysis of control group**

**Table 4 : Comparison of FPS in control group N=21 (wilcoxon signed ranks test)**

	Mean	SD	P value
Pre FPS	2.2143	±1.5355	0.001*
Post FPS	1.3452	±1.42407	

\*(p<0.05)

This Table shows comparison of pre FPS (2.21 ±1.53) before exercise and post FPS after exercise in control I group. This indicates significant improvement in FPS after exercises (1.34 ±1.42;

p=0.001)

**Table 5: Intragroup analysis of control group**

**Table 5: Comparison of MOSW in control group N=21 (wilcoxon signed ranks test)**

	Mean	SD	P value
Pre MOSW	16	±12.5681	0.004*
Post MOSW	14.4762	±11.9147	

\*(p<0.05)

This Table shows comparison of pre MOSW (16±12.56) before exercise and post MOSW after exercise in control group. This indicates significant improvement in MOSW after exercises (14.47 ±11.91; p=0.004)

**Table 6: Intergroup analysis between experimental and control group**

**Table 6: Comparison of FPS between experimental and control group (Mann Whitney test)**

	Mean	SD	P value
Experimental group	1.43	±1.36295	0.9 <sup>NS</sup>
Control group	1.53	±0.50504	

NS-not significant

This Table shows post FPS value of experimental group (1.43± 1.36) and control group (1.53 ±0.5) with p value 0.9 which is not significant.

**Table 7: Intergroup analysis between experimental and control group**

**Table 7: Comparison of MOSW between experimental and control group (Mann Whitney test)**

	Mean	U value	P value
Experimental group	21.61	160.00	0.41 <sup>NS</sup>
Control group	18.62		

NS-not significant

This Table shows post mean value of experimental group (21.61) and control group (18.62) with p value 0.41 and u value 160.00 which is not significant.

**DISCUSSION :**

The purpose of this study was to determine the effect of MET on lumbar spine in healthy subjects. Here in this study we made 2 groups, which were given different exercises. There is highly significant difference in MOSW with p value 0.00 and in control group 0.004. There is also significant difference in FPS with p value 0.002 and in control 0.001. But intergroup analysis is not showing significant difference in MOSW with p value 0.4 and in FPS with p value 0.9.

Our data support the hypothesis that MET reduces pain and disability, after 4 weeks of intervention. The 4 week intervention programme of lumbar and hip MET in this study resulted in significant improvement in pain and functional disability as well as improvement in endurance. Therefore, it is evident that 8 sessions of Lumbar and Hip MET significantly improves pain, functional disability and back extensors endurance. This study has utilized two MET procedures for the subjects in experimental group. They are effective but not superior than conventional physiotherapy. So more number of MET interventions should be checked for the subjects with non specific low back pain.

**LIMITATION OF THE STUDY :**

Large sample size should be taken.

Abdominal and back strength should be checked after giving intervention to check its effect on non specific low back pain.

Outcome measures MOSW and FPS should be checked after one/two weeks to check effectiveness of this two MET techniques in short term duration.

#### SCOPE OF THE STUDY :

More number of MET sessions should be added to improve its effect.

MET along with Progressive Resistance Exercises should be given to improve its effectiveness.

#### CONCLUSION :

In this study both MET and conventional physiotherapy produces positive results. There was however, no statistical evidence of a benefit of this two MET techniques over conventional physiotherapy. The treatment was not harmful but provided as much benefit as the control. Thus subjects who exposed to these two MET techniques showed significant improvement in non specific low back pain. So, it concludes that lumbar and hip MET is effective in reducing mechanical non specific low back pain.

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