IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Effectiveness Of Muscle Energy Technique Along With Kinesio Taping In Treating Sacroiliac Joint Dysfunction

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ABSTRACT

Background : Sacroiliac joint dysfunction is a condition in which the joint is locked, Partially dislocated (or) subluxated in a non-anatomical position due to hyper mobility (or) hypo mobility within the joint. The biomechanics of the SI joint are complex.SI joint motion is affected by motion of the spine, ilium, pubic symphysis, and hip. The sacrum becomes dysfunctional between the two iliac bones either unilaterally or bilaterally**. Aim:** The aim of the study to find out the effectiveness of muscle energy technique along with kinesio taping in treating sacroiliac joint dysfunction. **Methods:** A total number of 15 subjects who met inclusion and exclusion criteria were recruited. Prior to the treatment, pre test were conducted with Numerical pain rating scale for pain, Oswestry disability index for functional ability.After a brief demonstration about muscle energy technique with kinesio taping, subjects were treated with the same period of 4 weeks. The post test were onducted for subjects by Numerical pain rating scale for pain, oswestry disability index for functional ability.Pre and post results were recorded and analyzed.**Results:** Result show that muscle energy technique along with kinesio taping was effective to improve pain and disability in sacroiliac joint. Muscle energy technique along with kinesio taping shows significant different in pre and post test value before and after application.**Conclusion:** The study was concluded that muscle energy technique along with kinesio taping was significant improvement on pain and disability in sacroiliac joint.

Keywords : Kinesio Taping., Muscle Energy Technique., NPRS., Sacroiliac Joint.

INTRODUCTION

Sacroiliac joint dysfunction is a condition in which the joint is locked, Partially dislocated (or) subluxated in a non-anatomical position due to hyper mobility (or) hypo mobility within the joint. The biomechanics of the SI joint are complex.SI joint motion is affected by motion of the spine, ilium, pubic symphysis, and hip. The sacrum becomes dysfunctional between the two iliac bones either unilaterally or bilaterally. The bone does not twist or change its shape; the findings are the result of the unilateral restriction of both the overturning and translatory movement on one side relative to its ilia. One sided dysfunction is easily explained by the common asymmetry of the two sacroiliac joints. One appears to continue to function normally and the other becomes restricted, either anteriorly or posteriorly nutated. The torsional restrictions include both joints and involve the

oblique axes. The diagnostic finding that identifies the torsional dysfunctions is the sacral base and ILA(Inferior Lateral Angle) being posterior on the same side. These presentations are;

1. Rotational malalignment (80-85%) – anterior rotated innominate, posterior rotated innominate

2. Pelvic flare - innominate out flare/inflare (40- 50%), and 3. Upslip (15-20%) or downslip is rare

Dysfunction of sacroiliac joint may causes low back (or) leg pain. Sacroiliac Joint dysfunction can mimic the pain caused by a number of others spinal structures. Lumbar disc, nerve root, facet joint. The pain is typically felt on one side of buttocks, and can radiate down to the leg. The pain usually remains above the knee but at times pain can extend to the ankle or foot. It is reported that it 15% to 38% of general population with women being 3 (or) 4 times more likely to be affected than men.

There are many different causes of sacroiliac joint pain, pregnancy may be a factor in developing of sacroiliac joint dysfunction. Also it is a lesion has one leg is shorter than the other leg. The abnormal alignment may end up causing sacroiliac joint pain and problems. The exact cause is unknown, risk factors for SI Joint pain include abnormal gait pattern, limb length discrepancy, scoliosis, prolonged heavy physical exercise, trauma and pregnancy. Dysfunction of the SI Joint is an especially common cause of pain during pregnancy. Hyperlordosis of pregnancy, increased ligamentous laxity caused by weight gain and increased hormone production create significant mechanical tension in the pelvis and low back. These factors particularly put stress on the SI Joint, thereby contributing to SI Joint pain.

The most important role is played by the physiotherapist, in which Physiotherapy reduces pain and improves the joint range of motion and muscle Power. Many physiotherapeutic interventions are done which include exercise therapy and electro therapy. Electrotherapy includes paraffin wax path. Exercise therapy includes active and passive movements, soft tissue stretch and Isometric stabilizing exercise, general grip strengthening exercise and passive joint mobilization technique.

Muscle Energy Technique(MET) is a type of osteopathic manipulative treatment in which patient's use their muscles actively upon request. It is used to treat somatic dysfunction, decreased Range of motion, muscular hypertonicity, muscular spasm, and pain. It's also engages and regulates sensorimotor impulses and any musculature that moves a particular body joint. MET is most effective for the mobilization of joints, correction of postural and movement asymmetries, stretching of muscles and reduction of pain. 4

Kinesio taping(KT) is another treatment method used for musculoskeletal disorders. It fascilitates motion and circulation raises the skin and subcutaneous interstitial tissues, reduces pain and inflammation, improves performance, increases neuromuscular re-education, accelerates recovery and prevent injury. Kinesio tape is used as non-invassive treatment tool in low back pain.

Numerical Pain Rating Scale (NPRS) are the simplest and most commonly used scales. The numerical scale is most commonly 0 to 10, with 0 being "No pain" and 10 being "Worst pain" imaginable. The patient picks or draw a circle around the number the best describes the pain dimension, usually intensity.

Functional ability was measured by using oswestry disability index which consist of 10 sections with 6 statement contained in each section. The patient made 10 marks on the one statement in each section which described their limitation most accurately.

NEED OF THE STUDY

Sacroiliac joint dysfunction it is one of the most common condition seen in now a days. Many intervention program given to sacroiliac joint dysfunction such as Ultrasound, IFT and wax bath but few study done by Muscle energy technique and kinesio taping for SI joint dysfunction, so my project aim to improve the performance by muscle energy technique along with kinesio taping for sacroiliac joint dysfunction.

AIM AND OBJECTIVES

AIM:

- The aim of the study to find out the effectiveness of muscle energy technique along with kinesio taping in treating sacroiliac joint dysfunction.

OBJECTIVES:

- To assess the effectiveness of muscle energy technique along with kinesio taping by using Numerical pain rating scale (NPRS).
- To assess the effectiveness of muscle energy technique along with kinesio taping by using Oswestry disability index(ODI).

MATERIALS AND METHODOLOGY

MATERIALS:

- Couch
- Pillow
- Towel
- Kinesio tape
- Numerical pain rating scale (NPRS)
- Oswestry disability index (ODI)

METHODOLOGY

STUDY DESIGN: Study was Pre and Post experimental design.

SAMPLE TECHNIQUE: Convenient sampling technique

STUDY SETTING: The study was carried out at Thanthai roever college of physiotherapy Outpatient department, perambalur.

SAMPLING SIZE: Total number of 15 members are taken for study.

STUDY DURATION: The study was conducted for a period of 4 weeks

VARIABLES

DEPENDENT VARIABLES:

- Pain.
- Disability.

INDEPENDENT VARIABLES:

- Muscle energy technique.
- Kinesio taping.

VARIABLES	TOOLS
Pain	NPRS
Disability	Oswestry disability index

INCLUSION AND EXCLUSION CRITERIA

INCLUSION CRITERIA:

- Age- 25 to 35 years
- Gender- Male
- Low back pain (Sacroiliac joint dysfunction)

EXCLUSION CRITERIA:

- Female
- IVDP (Intervertebral disc prolapse)
- Fractures
- Spondylolisthesis
- Associated cardio vascular disease
- Sacroiliac tumors
- Osteoporosis
- Spinal stenosis
- Myofascial pain syndrome
- Piriformis syndrome
- Gout

STUDY PROCEDURE

A total number of 15 subjects who met inclusion and exclusion criteria were recruited. Prior to the treatment, pre test were conducted with Numerical pain rating scale for pain, Oswestry disability index for functional ability.After a brief demonstration about muscle energy technique with kinesio taping, subjects were treated with the same period of 4 weeks. The post test were onducted for subjects by Numerical pain rating scale for pain, oswestrydisability index for functional ability.Pre and post results were recorded and analyzed.

OUTCOME MEASURES

NUMERICAL PAIN RATING SCALE:

APPLICATION:

The NPRS was used to capture the patients level of pain. Patients were asked to indicate the intensity of their current pain level using an 11 point scale, ranging from 0 - 10. The patients were instructed to check the duration time of their pain. A stick mark indicated the duration time of their pain lasted; indicated a state of absent duration time of pain, while 24 indicated that pain lasted all day long.

INTERPRETATION:

0 No pain(0%)

1-3 Mild pain(25%)

4-7 Moderate pain(50%)

7-10 Severe pain(75%)

10 Maximum pain(100%)

MODIFIED OSWESTRY DISABILITY INDEX SCORE (%)s	LEVEL OF DISABILITY
0-20	Minimal disability
21-40	Moderate disability
41-60	Severe disability
61-80	Cripple, pain impinge on all aspects of patients life
81-100	Patient are bed-bound or exaggerating their symptom

TREATMENT PROCEDURE

MUSCLE ENERGY TECHNIQUE FOR SACROILIAC JOINT DYSFUNCTION:

I. Iliac inflare

II. Iliac outflare

III. Anterior iliac rotation

IV. Posterior iliac rotation

1) ILIAC INFLARE:

Patient Position:

Supine Lying

Therapist Position:

Therapist stands on the same side of the problem facing leg side.

Hand Placement:

Cephalad hand stabilizing non affected side ASIS, caudal hand holding the ankle of the affected side.

Starting Position:

Flexion abduction and full external rotation of hip holding the leg on unaffected knee.

Ending Position:

Adduction of hip against the isometric resistance of restraining arm for 10 secs while Holding the breath, repetition 2 – 3 mins. On relaxation complete exhalation Position

2) ILIAC OUTFLARE:

Patient Position:

Supine Lying

Therapist Position:

Stands same side dysfunction ilium facing towards the body.

Hand Placement:

Supinated cephalad hand place under the patients buttock with fingrtip Hooked into sacral sulcus of the affected side.

Caudal hand hold the patients foot and the feature side with the forearm resting along medial calf bar shin area of the hand grasp the floor.

Starting Position:

Hip and knee on affected side is fully flexed, adducted and internally rotated.

Ending Position:

Abduction against the isometric resistance with 50% of the strength for 10 secs while holding for breath. Rep 2-3 times.

3) ANTERIOR ILIAC ROTATION:

Patient position:

Supine Lying

Therapist Position:

Sitting on the edge of the table to the treatment side.

Starting position:

The legs and hips are flexed over the edge of the table. The foot and ankle are supported with practitioner's shoulder.

Ending position:

Patient is asked inhale and hold the breath and performing extension of hip joint against the isometric resistance with 20% of available strength with 10 secs hold. Rep 2-3 times.

4) POSTERIOR ILIAC ROTATION:

Patient position:

Supine lying

Therapist position:

Stands same side of the dysfunction sacroiliac joint. Table side hand support the Anterior aspect of the hand on ASIS of unaffected side.

Starting position:

Hyper extension to the end movement

Ending position:

Try to make flexion against isometric resistance for 10 counts for 10secs with 20% of strength of holding breath. Rep 2-3 times.

KINESIO TAPING FOR SACROILIAC JOINT DYSFUNCTION:

EQUIPMENTS NEEDED:

- 2 Strips of KT Tape.
- 1 full 10' strip.
- 1 full 10' strip cut in half.

BEFORE ACTIVITY:

Apply one hour before beginning activity.

- Clean skin - clean dirt, oil and lotion from area.

Activate Adhesive - After application rub tape vigorously to activate adhesive.

Patient position:

Half forward bending position with couch support.

Therapist position:

Stand behind the patient

STRIP ONE:

ANCHOR:

- 80% stretch
- The middle of a full strip of tape over the point of pain.

FINISH:

- 0% Stretch
- Lay ends down without stretch.

STRIP TWO:

ANCHOR:

- 80% STRETCH
- The middle of a half strip at a diagonal over the point of pain.

FINISH:

- 0% Stretch
- Lay end of tape down without stretch

STRIP THREE:

ANCHOR:

- 80% Stretch.
- The middle of the another half strip over the first strip as shown.

FINISH:

- 0% Stretch.
- Lay ends of tape down without stretch

DATA ANALYSIS

A sample of 15 subjects were included for the study. Mean and mean difference calculated, the test was applied to the group pre and post treatment values.

FORMULA OF MEAN:

$M = \sum X/N$

M = Mean

$\sum$ =Sum of all subjects

N = Number of all subjects

TABLE 1: MEAN VALUE OF NUMERICAL PAIN RATING SCALE

	N	MEAN	MEAN DIFFERENCE
PRE	15	8.2	5.7
POST	15	2.5	

GRAPH 1: MEAN VALUE OF NUMERICAL PAIN RATING SCALE

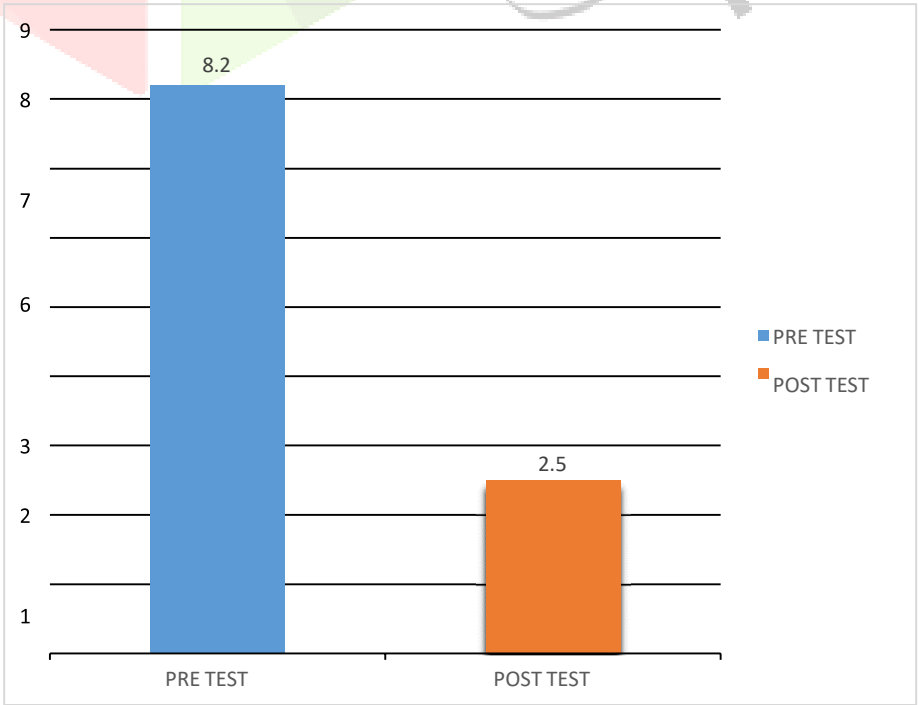
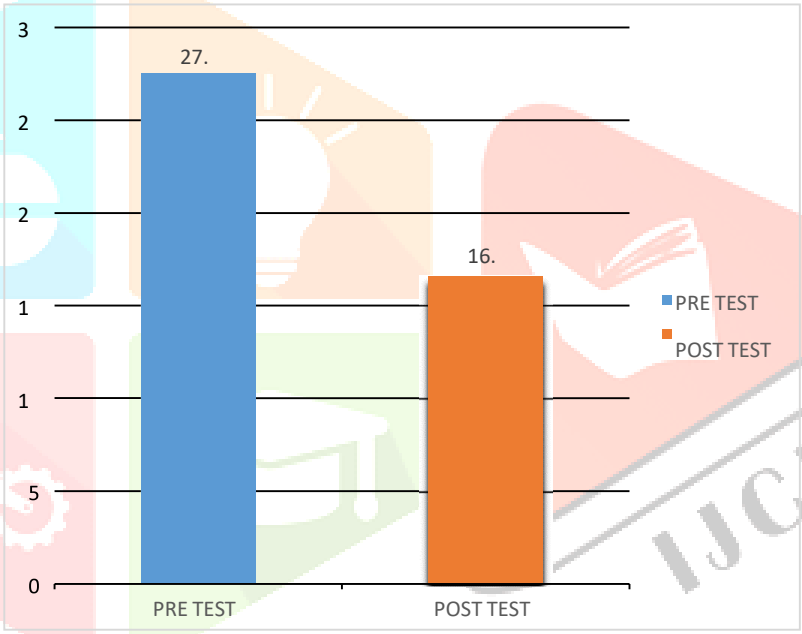


TABLE 2: MEAN VALUE OF OSWESTRY DISABILITY INDEX

	N	MEAN	MEAN DIFFERENCE
PRE	15	27.5	10.9
POST	15	16.6	

GRAPH 2: MEAN VALUE OF OSWESTRY DISABILITY INDEX



RESULTS

Result show that muscle energy technique along with kinesio taping was effective to improve pain and disability in sacroiliac joint. Muscle energy technique along with kinesio taping shows significant different in pre and post test value before and after application.

Comparison of mean value of pre and post of muscle energy technique alongwith kinesio taping.

NPRS (Numerical Pain Rating Scale)Pre testvalue is 8.2 Post test value is 2.5

ODI (Oswestry Disability Index)Pretestvalue is 27.5 Post test value is 16.6

DISCUSSION

Following application of muscle energy technique(MET) along with kinesio taping(KT) to 15 patients with sacroiliac joint dysfunction for 4 weeks of intervention proving MET with KT to be effective for patient with sacroiliac joint dysfunction.

Application of the muscle energy technique along with kinesio taping for control pain is interpreted to be effective for improving problems of patients with sacroiliac joint dysfunction.

Result of the study showed a significant improvement in post treatment scoresof all measured showing the greatest improvement.

In the study application of the muscle energy technique along with kinesio taping to patient with sacroiliac joint dysfunction was confirmed to be effectivein reducing the pain duration time. Therefore application of the muscle energy technique along with kinesio taping on the pain generating segmentum can be considered effective in reduce pain duration time in a positive way.

In the study measured NPRS of 15 patients with sacroiliac joint dysfunction. In the average NPRS was 8.2 points before treatment and after 2.5 treatment showing a significant decreases in pain.In the study as a result of application of the muscle energy technique along with kinesio taping to reduced disability of sacroiliac joint.

In the study measured ODI of 15 patients with sacroiliac joint dysfunction. In theaverage ODI was 27.5 points before treatment and after 16.6 points treatment showing a significant decreases in disability. Application of the muscle energy technique along with kinesio taping to sacroiliac joint is considered effective in reducing the duration of pain and disability of sacroiliac joint as well as improving the function of sacroiliac joint.

This study was aimed at proposing appropriate guidelines for application in further clinical practice and providing a base line data to be put to use.

In 2014, Deepali Sharma et al. Conducted a study on effects of muscle energy technique on pain and disability in subjects with SI joint dysfunction. 20 men and women were divided in 2 groups (MET + Mobilization) (Mobilization only) for 2 weeks. VAS and MODI were used as outcome measure before and 1 and 2 week of treatment. It included that MET and mobilization are both effective in treating chronic low back pain due to sacroiliac joint dysfunction.

In 2011, Mullai Dhinkaran et al. Conducted a comparative analysis of muscle energy technique and conventional physiotherapy in treatment of sacroiliac joint dysfunction. In this study 30 subjects with age of 18-35 year complaining of low back pain due to SI joint dysfunction were participated and divided in 2 groups (MET + corrective exercise) (TENS + corrective exercise). Oswestry disability index and numerical pain rating scale reading were taken before and at the end of 6 treatment sessions. This study concluded that along with corrective exercises, MET is moderately significant over conventional physiotherapy in improving functional ability and decreasing pain.

In 2009, Kanchan Ranal et al. Conducted a comparative analysis on the efficacy of G.D. Maitland's concept of mobilization and muscle energy technique in treating sacroiliac joint dysfunction. 45 subjects were recruited with mean age of 22.82 and were divided in 3 groups (MET + Mobilization) (control). Pain (thermometer pain rating scale), disability (ODI) and hip range of motion (Goniometry) were evaluated at baseline and after 6 sessions. This study concluded that along with active exercises muscle energy technique (MET) is moderately significant over the G.D. Maitland's technique of mobilization in improving functional ability and increasing the medial rotation of hip joint in mechanical chronic low back pain caused due to SI joint dysfunction.

CONCLUSION

The study was concluded that muscle energy technique along with kinesiotaping was significant improvement on pain and disability in sacroiliac joint.

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