A COMPARATIVE ANALYSIS OF TENS AND ACTIVE SPINAL EXERCISES VERSES TENS AND TRIGGER POINT RELEASE TECHNIQUE IN IMPROVING LOW BACK PAIN OF MECHANICAL ORIGIN

A dissertation submitted in partial fulfillment of the requirement for the degree of

MASTER OF PHYSIOTHERAPY

(ELECTIVE –PHYSIOTHERAPY IN ORTHOPEADICS)

To

The Tamil Nadu Dr. M.G.R. Medical University

Chennai-600032

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CERTIFICATE

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

SUBMITTED IN THE PARTIAL FULFILLMENT OF THE

REQUIREMENT FOR DEGREE OF

"MASTER OF PHYSIOTHERAPY"

TO

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI

APRIL 2012

DECLARATION

I hereby declare and present my project work entitled **"A COMPARATIVE ANALYSIS OF TENS AND ACTIVE SPINAL EXERCISES VERSES TENS AND TRIGGER POINT RELEASE TECHNIQUE IN IMPROVING LOW BACK PAIN OF MECHANICAL ORIGIN"** The outcome of the original research work undertaken and carried out by me, under the guidance of Professor **Mr. E. Magesh, MPT., (Ph.D).,** RVS College Of Physiotherapy, Sulur, Coimbatore.

I also declare that the material of this project work has not formed in any way the basis for the award of any other degree previously from the Tamil Nadu Dr. M.G.R Medical University.

Date: SIGNATURE

Place:

ACKNOWLEDGEMENT

I give my thanks to **God almighty** for providing me the wisdom and knowledge to complete my study successfully.

This study will be an incomplete one without my gratitude towards my **'Lovable Parents'** who made me what I am today.

I acknowledge my sincere thanks to **Chairman and Secretary of R.V.S Educational Trust,** Sulur, Coimbatore for providing me an opportunity to do this project.

I would like to express my gratitude to our principal **Mrs. R.Nagarani M.P.T., M.A., (PhD).,** for providing me constant support and motivation in the form of resources and inputs.

I would like to thank my guide **Mr. E. Magesh, MPT, (Ph.D).,** offering me perceptive inputs and guiding me entirely through the course of my work and without his tired less guidance and support this project would not have come through.

I also thank my friends for their co-operation in completion of this project.

I offer my thanks and gratitude to our librarians for their supports in providing books to complete my study.

I take this golden opportunity to thank each and every subject who took part in this study for their kind co-operation and needed information.

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LIST OF GRAPHS

1. INTRODUCTION

Pain is a process which can affect the individual physically, emotionally, psychologically, socially, occupationally and in many other ways.

Knowledge of mechanical low back pain disorders has matured beyond past that all back pain is from the intervertebral disc or the zygopophyseal joints or is myofascial in nature, or that we have only an isolated injury. If we can identify the offending forces, especially during a patients activities of daily living, and minimize these forces while allowing the person to stay active, then the healing process will more readily occur. In effect one of the goals of treatment for any mechanical injury to provide an optimal healing environment.

The clinician and patient are thus challenged to identify the forces that are stimulating the nociceptive system and reproducing symptoms and to control and alter the way that they reach the lumbopelvic region. It is extremely important that the patient have an active role in management.

Less than 2 percent of his walking time is spent in treatment, the clinician must convince the patient of the importance of other 98 percent of his walking time with respect to managing his own syndrome. Anything less invites failure and patient depending on the health care

professional. Musculoskeletal disorders are the main cause of disability in the working age population and are among the leading causes of disability in other age groups.

Transcutaneous Electrical Nerve Stimulation, electrotherapy modality in which low electrical current is sent through a pad at an injury site, stimulating the brain to release endorphins Rehabilitation medicine A modality for controlling pain by delivering low-level electric shocks to the skin; TENS effect is explained by the 'gate' theory of pain and is used to relieve pain of the lower back and neck, 'phantom' limb syndrome, amputation stump pain.

Fascia is the soft tissue component of the connective tissue that provides support and protection for most structures within the human body, including muscle. This soft tissue can become restricted due to psychogenic disease, overuse, trauma, infectious agents, or inactivity, often resulting in pain, muscle tension, and corresponding diminished blood flow. Although fascia and its corresponding muscle are the main targets of myofascial release, other tissue may be affected as well, including other connective tissue.

As in most tissue, irritation of fascia or muscle causes local inflammation. Chronic inflammation results in fibrosis, or thickening of

the connective tissue, and this thickening causes pain and irritation, resulting in reflexive muscle tension that causes more inflammation. In this way, the cycle creates a positive feedback loop and can result in ischemia and somatic dysfunction even in the absence of the original offending agent. Myofascial techniques aim to break this cycle through a variety of methods acting on multiple stages of the cycle.

Myofascial point pain is common painful muscle disorder caused by myofascial trigger points. Myofascial trigger points are characterized by pain originating from small circumscribed areas of local hyper irritability and myofascial structures resulting in local and related pain.

In medical literature, the term myofascial was historically used by Janet G. Travell, M.D. in the 1940s referring to musculoskeletal pain syndromes and trigger points. In 1976 Dr. Travell began using the term "Myofascial Trigger Point" and in 1983 published the reference "Myofascial Pain & Dysfunction: The Trigger Point Manual". There is no evidence she actually used what is now termed "myofascial release". Some practitioners use the term "Myofascial Therapy" or "Myofascial Trigger Point Therapy" referring to the treatment of trigger points, usually in medical-clinical sense. The phrase has also been loosely used for different manual therapy techniques, including soft tissue manipulation work such as connective tissue massage, soft tissue

mobilization, foam rolling, structural integration, and strain-counter strain techniques. However, in current medical terminology, myofascial release refers mainly to the soft tissue manipulation techniques described below.

The trigger point model states that unexplained pain frequently radiates from these points of local tenderness to broader areas, sometimes distant from the trigger point itself. Practitioners claim to have identified reliable referred pain patterns, allowing practitioners to associate pain in one location with trigger points elsewhere. Many practitioners of chiropractic and massage therapy find the model useful, but the medical community at large has not embraced trigger point therapy. There is no consistent methodology for diagnosis of trigger points and a dearth of theory to explain how they arise and why they produce specific patterns of referred pain. Today much treatment of trigger points and their pain complexes are handled by massage therapist, physical therapist, occupational therapist, chiropractic and acupuncturist.

The patient treatment given for myofascial pain syndrome include ultra sound, electric nerve stimulator, heat and stretch technique.

Around 75% of pain clinic patients have trigger point as the sole source of their pain .it is the common complaint of patient in all general medical practices.

Myofascial techniques generally fall under the two main categories of passive (patient stays completely relaxed) or active (patient provides resistance as necessary), with direct and indirect techniques used in each.

Myofascial release is a form of soft tissue therapy used to treat somatic dysfunction and accompanying pain and restriction of motion. This is accomplished by relaxing contracted muscles, increasing circulation, increasing venous and lymphatic drainage, and stimulating the stretch reflex of muscles and overlying fascia.

1.1 NEED FOR THE STUDY

Low back pain is very common in the general population with reported prevalence of 15 to 25 percent in patients with 40 to 50 years of age. The highest incidence is in adult aged 30 to 35 years. Women are affected slightly more frequently than men.

To regain normal function, Physiotherapy treatment like Cryotherapy, Transcutaneous electrical nerve stimulation, Ultrasound therapy, Phonophoresis, or IFT and recent advanced techniques like Manual therapy are used in general practice.

Recent researches show that manual therapy techniques are helpful in improving low back pain.

So the need was felt to find the effectiveness of myofascial trigger point release in improving mechanical low back pain.

1.2 STATEMENT OF THE PROBLEM

A comparative analysis of TENS and Active spinal exercises versus TENS and Myofascial trigger point release technique to relieve pain in low back pain of mechanical origin.

1.3 HYPOTHESIS

Null Hypothesis

Ho_1 There is no significant improvement on low back pain following TENS and myofacial trigger point release technique.

Ho_2 There is no significant improvement on low back pain following TENS and active spinal exercises in improving mechanical low back pain.

Ho_3 There is no significant difference between TENS and myofacial trigger point release and TENS and active spinal exercises.

Alternative Hypothesis

H_{A1} There is significant improvement on low back pain following with TENS and myofacial trigger point release technique.

H_{A_2} There is significant improvement on low back pain following with TENS and active spinal exercises technique.

H_{A_3} There is significant difference between TENS and myofacial trigger point release and TENS and active spinal exercises in improving mechanical low back pain.

1.4 OPERATIONAL DEFINITIONS

Pain:

It is an unpleasant sensory or emotional experience which is usually associated with or described in terms of tissue damage or both. Pain acts as a warning signal that an injury is immediately impending such as touching a hot object or has occurred

Myofascial Pain Syndrome:

Myofascial pain is defined as localized musculoskeletal pain originating from a hyperirritable spot or trigger point with a taut band of skeletal muscle or muscle fascia.

TENS: Transcutaneous Electrical Nerve Stimulation:

Electrotherapy modality in which low electrical current is sent through a pad at an injury site, stimulating the brain to release endorphins Rehabilitation medicine A modality for controlling pain by delivering

low-level electric shocks to the skin; TENS effect is explained by the 'gate' theory of pain and is used to relieve pain of the lower back and neck, 'phantom' limb syndrome, amputation stump pain.

Trigger Point:

A highly irritable localized spot of exquisite tenderness in a nodule in a palpable taut band of (skeletal) muscle.

Acute Low Back Pain:

Acute low back pain is a sharp or widespread pain and is often accompanied by a lack of flexibility and tenderness in the lower back that lasts for less than three months.

Low Back Pain In Mechanical Origin:

Pain resulting from inherent susceptibility of spine to static load due to muscle and gravitational force and to kinetic deviation from normal function.

Functional Ability:

Functional ability refers to the actual or potential capacity to perform the activities and tasks normally expected of an adult.

2. REVIEW OF LITERATURE

2.1. SECTION: A

Studies on Active spinal exercises:

1.Bartelink(1957)

Trunk flexion exercises protect the lumbar disc from excessive posteroanterior pressure through the development of intra abdominal pressure.

2.Pauley(1966)

Spinal extensors are the main muscle groups in postural holding and in the eccentric control of trunk flexion.

3.Kapandji(1979)

Extension exercises promote normal physiologic lumbar curve of the spine allowing it to withstand axial compression force.

2.2. SECTION: B

Studies on effects of TENS:

1.Melzack and Wall (1965)

Continuous stimulation of cutaneous afferents blocks pain in the substantia gelatinosa of spinal cord.

2.Bonica(1979)

TENS elevate endogenous opiate levels in the brain and spinal cord thus reducing the perceived pain.

3.Richard A Devo M. D. (1990)

Examined the effectiveness of transcutaneous electrical nerve stimulation (TENS), a program of stretching exercises, or a combination of both for low back pain. Patients with chronic low back pain (median duration, 4.1 years) were randomly assigned to receive daily treatment with TENS (n = 36), sham TENS (n = 36), TENS plus a program of exercises (n = 37), or sham TENS plus exercises (n = 36). Result was concluded that for patients with chronic low back pain, treatment with TENS is no more effective than treatment with a placebo, and TENS adds no apparent benefit to that of exercise alone.

4.**Ronald Melzack, (1990)**

Concluded that compared transcutaneous electrical nerve stimulation at intense levels and gentle, mechanically administered massage. Transcutaneous electrical nerve stimulation produced significantly greater pain relief, based on two measures of the McGill Pain Questionnaire, and significant improvement in straight leg raising. The results indicate that pain-relief scores provide valuable information and can easily be obtained from patients for whom pain is a major symptom.

2.3. SECTION: C

Studies on Mechanical low back pain

1.Torill H. Tveito, Mari Hysing (2004)

Low back pain interventions at the workplace: a systematic literature reviewThe results show that there is good reason to be careful when considering interventions aiming to prevent LBP among employees. Of all the workplace interventions only exercise and the comprehensive multidisciplinary and treatment interventions have a documented effect on LBP. There is a need for studies employing good methodology

2.Meode.T.W, Dyer.S, Browne.W, Townend.J Frank.A.O (1990)

Low back pain of mechanical origin randomized control trail-showed the effectiveness of chiropractic technique.

3.Biering Sorensen.F (1983)

A prospective study of low back pain in general population occurance and recurrence. Seal.J Rehab Med 1983

4.Craw ford ,Creed F(1990)

About the life events and psychological disturbances in patients with disc prolapse

.

5.Fishbain D,Abdel-Moty(1994)

Measuring residual functional capacity in disc prolepses based on the dictionary of occupational tital

6.T W Meade(2002)

Reported that when chiropractic or hospital therapists treat patients with low back pain as they would in day to day practice those treated by

chiropractic derive more benefit and long term satisfaction than those treated by hospitals.

2.4. SECTION: D

Studies on the effects of Trigger point release:

1.Chang-Zern Hong (2001)

Compared study on trigger point (TrP) injection between patients having both myofascial pain syndrome (MPS) caused by active TrPs and fibromyalgia syndrome (FMS) and patients with MPS due to TrPs but without FMS

2.TRAVEL et, al (1999)

Trigger point are discrete, focal hyper irritable spot are painful on compression and can be produced referred pain, referred tenderness, motor dysfunction and autonomic phenomena**.**

3.FISCHER AA (1996):

Acute sports injury caused by acute sprain or repetitive stress, surgical scar and tissue under tension frequently found after spinal surgery may predispose a patient to the development of trigger point pain**.**

4.HOPWOOD MB et al.,(1994)

Referred pain is an important characteristic of a trigger point. It differentiates a trigger point from a tender point, which is associated with pain at the site of palpation only**.**

5.RACHLIN (1994):

Occupational or recreational activities produced repetitive stress on specific muscle group commonly caused chronic stress in muscle fiber, leading to trigger point.

6.ROBERT(1992)

Ergonomic stress associated with work, computer operater, labour and any activities associated with prolonged static position lead to development of trigger point pain.

7.MENSE s et al., (1977)

The referred pain is felt not at the site of trigger point origin but remote from it. These often described as spreading or radiating.

2.6. Section : E - Studies on Visual Analogue Scale

1.Boonsta, Anne M, Schiphorst Preuper (2008)

Conducted a study to determine the reliability and validity of visual analogue scale in musculoskeletal pain aged over 18 years. The study population consists of 52 patients in the reliability study and 344 patients

in the validity study. The conclusion of the study was that the validity of VAS was moderate to good and its reliability was questionable.

2.Olaegun, Mathew, Adedoyin, Rufus (2004)

Conducted a study to determine the intraclass and inter-class correlation VAS and schematic differential sibe patients with low back pain. 25 patients with chronic low back pain patients were selected for the study. Two testers independently rated the pain experienced by the patient. The results suggested that visual analogue scale is reliable and valid for clinical rating of low back pain.

3. MATERIALS AND METHODOLOGY

3.1 STUDY DESIGN

The research design of this study is experimental, comparative in nature.

3.2 STUDY SETTING

This study was carried out in SAI Hospital Palakkad.

3.3. STUDY DURATION

Total no. of session 10

One session perday,30 minutes per session.

3.4 SAMPLING SIZE

20 subjects who fulfilled inclusion and exclusion criteria were selected by random sampling method, out of them 10 were allotted in Group “A” and 10 in group “B”

SELECTION CRITERIA

3.5. Inclusion Criteria

- Age 30 -35 Years
- Patients with acute low back pain.
- Both males and females.
- Mechanical low back pain.

3.6. Exclusion criteria

- Patients with chronic low back pain
- Patients with pathological low back pain such as herniated disc
- Patients with renal calculi
- Patients with abdominal aortic aneurysm
- Spondylolisthesis
- Spondylosis
- Sacralization

3.7 VARIABLES.

Independent Variables :

- TENS with Active spinal exercises
- TENS with Trigger point release.

Dependent Variables :

- Pain
- Range of motion.

3.8. MEASUREMENT TOOLS:

1. Visual analogue scale(VAS)

No pain Maximum pain tolerable

Visual Analog Scale :

The VAS is the most commonly known and used for measurement of pain. The scale consists of a straight line of a specified length (100mm) with verbal descriptors at each end. The line may be horizontal or vertical. NO PAIN is on one end of the line and WORST PAIN is on the other end of the line. The subjects are instructed to place a mark on the line to report, the intensity of pain experienced at that moment. Scoring is done by measuring the millimeters from the low end of the scale to the subjects mark.

Range of motion

Anatomical landmarks (spinous processes) are identified and marked. A tape measure measurement is made of the distance between the two points. The patient is asked to flex or extend the spine and the new distance between the two points were measured. With flexion, the two points will be further apart, conversely, with extension the two points will approximate. The difference between the first and second measurement is an objective assessment of segmental or regional spine mobility between the initial anatomical landmarks.

3.9. TREATMENT TECHNIQUE

Myofascial release

Preparation of patient

Explain about the nature of treatment and examination done for possible contraindications.

Position of patient

Sitting on a treatment table with adequate support using pillows.

Position of therapist

Therapist should stand at the side of the patient with feet's apart.

Technique

Pressure is applied over trigger points.

Duration

30 minutes

Repetation

10 times

2.TENS

Mode	-	Pulsed
Intensity	-	30mA
Duration	-	10 minutes
Frequency	-	1 to 5 HZ
Session	-	One session per Day
Method of application	-	By placing electrode

Preparation of the Patient

Explain about the nature of treatment and examination done for the possible contraindications.

Preparation of the part

Part to be treated is adequately exposed. Metal objects, synthetic materials and any droplets of moistures should be removed from the treatment part.

Position of the patient

Prone lying on a couch with back support using pillows.

Position of the therapist

Therapist should stand at the side of the patient with feets apart.

Method of application

The four electrodes of the tens apparatus are applied on the patients skin on the pain area in the lower back applying electrode gel..

ACTIVE SPINAL EXERCISES

1. Knee to chest

Starting position

Patient is instructed to lie on back on a firm surface.

Action

Patient is instructed to Clasp his hands behind the thigh and pull it toward his chest. Keep the opposite leg flat on the surface of the table maintain the position for 30 sec.

2 .Hip rolling

Starting position

Patient is instructed to lie on his back on a firm surface, both knees bent, feet flat on the table.

Action

Patient is instructed to cross his arms over the chest. Turn head to the right as turn both knees to the left. Allow knees to relax and go down without forcing. Bring knees back up, head to center, reverse direction.

3 .Pelvic tilt

Starting position

Patient is instructed to lie on back on a table or flat surface. Keep feet are flat on the surface and knees are bent. Keep legs together cross your arms over the chest.

Action

Patient is instructed to tilt his pelvis and push his low back to the floor as in previous exercises, then slowly lift buttocks off the floor as far as possible without straining .Tell him to Maintain this position for 5 seconds. Lower the buttocks to the floor, do not hold breath.

4.Spinal extension exercise

Starting position

Prone lying

Action

Ask the patient to raise the head. Then head with upper chest raised after that both the upper limbs and lower limbs are raised. Then alternative arm and leg are raised.

3.10. PROCEDURE

Pre test measurement was taken before starting the treatment procedure and post test was taken 10^{th} day after the intervention.

Group A were given TENS and Active spinal exercise group B were given myofascial trigger point release technique and TENS.

20 patients who fulfilled the criteria were randomly divided into two groups -group A and group B

IV. DATA ANALYSIS AND RESULT

The data collected from 20 patients were evaluated statistically. Descriptive analytical study was done by using paired 't' test and unpaired 't' test.

a) Paired 't' test

$$\bar{d} = \frac{\Sigma d}{n}$$

$$s = \frac{\sqrt{\Sigma d^2 - \frac{\Sigma(d)^2}{n}}}{n-1}$$

$$t = \frac{\bar{d}\sqrt{n}}{s}$$

Where,

$\bar{d}$ – Difference between pre test and post test values

d – Mean difference

n – Total number of subjects

s – Standard deviation

b) Unpaired 't' test,

$$s = \sqrt{\frac{\Sigma(x_1 - \bar{x}_1)^2 + \Sigma(x_2 - \bar{x}_2)^2}{n_1 + n_2 - 2}}$$

$$T = \frac{\bar{x}_1 - \bar{x}_2}{s} \qquad \sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

Where,

S = Standard deviation

n_1 = Number of subject in group-I

n_2 = Number of subject in group-II

$\bar{x}_1$ = Average of the difference in value between pre-test and post test in group-I

$\bar{x}_2$ = Average of the difference in value between pre-test and post test in group-II

TABLE - 1

MEAN AND MEAN DIFFERENCE OF PRE TEST AND POST TEST VALUES OF GROUP A (VAS)

GROUP A	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	t CALCULATED VALUE
PRE TEST	6.4	4	1.33	9.50
POST TEST	2.4			

For 14 degrees of freedom at 5% level of significance the calculated t value for VAS for group A was 9.50 and t table value was 2.14 .the t calculated value was greater than t table value, which states that there is significant difference between pre test and post test.

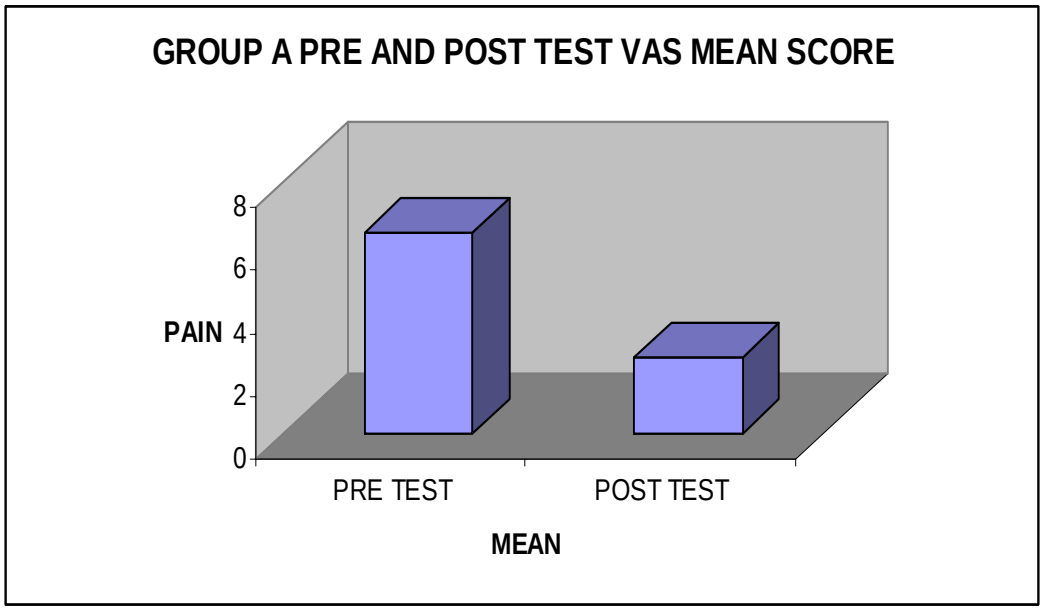

GROUP A PRE AND POST TEST VAS MEAN SCORE
PAIN
8
6
4
2
0
PRE TEST
POST TEST
MEAN

TABLE - 2

MEAN AND MEAN DIFFERENCE OF PRE TEST AND POST TEST VALUES OF GROUP B (VAS)

GROUP B	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	t CALCULATED VALUE
PRE TEST	4.7	1.6	1.15	8.24
POST TEST	3.1			

For 14 degrees of freedom at 5% level of significance the calculated t value for VAS for group A was 8.24 and t table value was 2.145 .the t calculated value was gre5ater than t table value, which states that there is significant difference between pre test and post test.

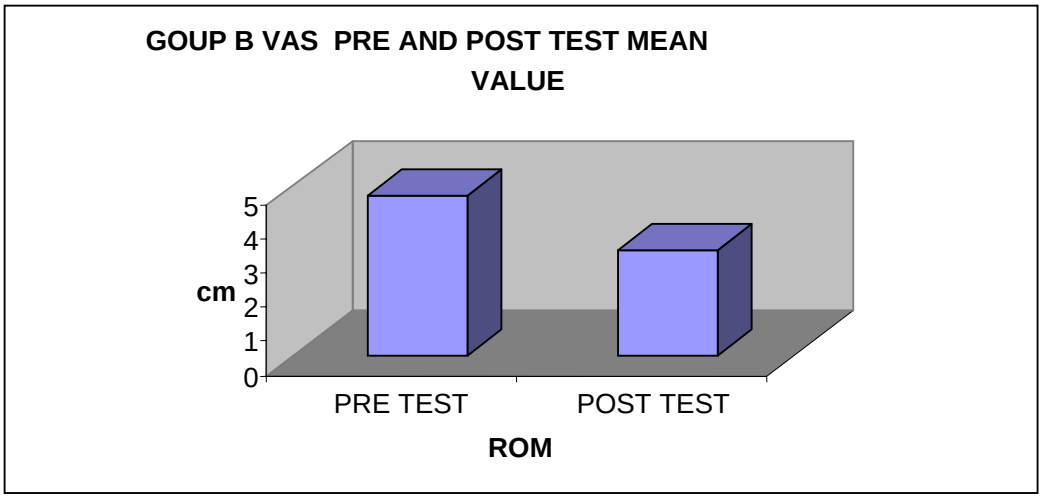

GOUP B VAS PRE AND POST TEST MEAN VALUE
cm
5
4
3
2
1
0
PRE TEST
POST TEST
ROM

TABLE - 3

MEAN AND MEAN DIFFERENCE OF PRE TEST AND POST TEST VALUES OF GROUP A FLEXION USING RANGE OF MOTION(ROM)

GROUP A	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	t CALCULATED VALUE
PRE TEST	4.74	1	.94	5.44
POST TEST	5.74			

For 14 degrees of freedom at 5% level of significance the calculated t value for ROM for group A was 5.44 and t table value was 2.145 .the t calculated value was greater than t table value, which states that there is significant difference between pre test and post test.

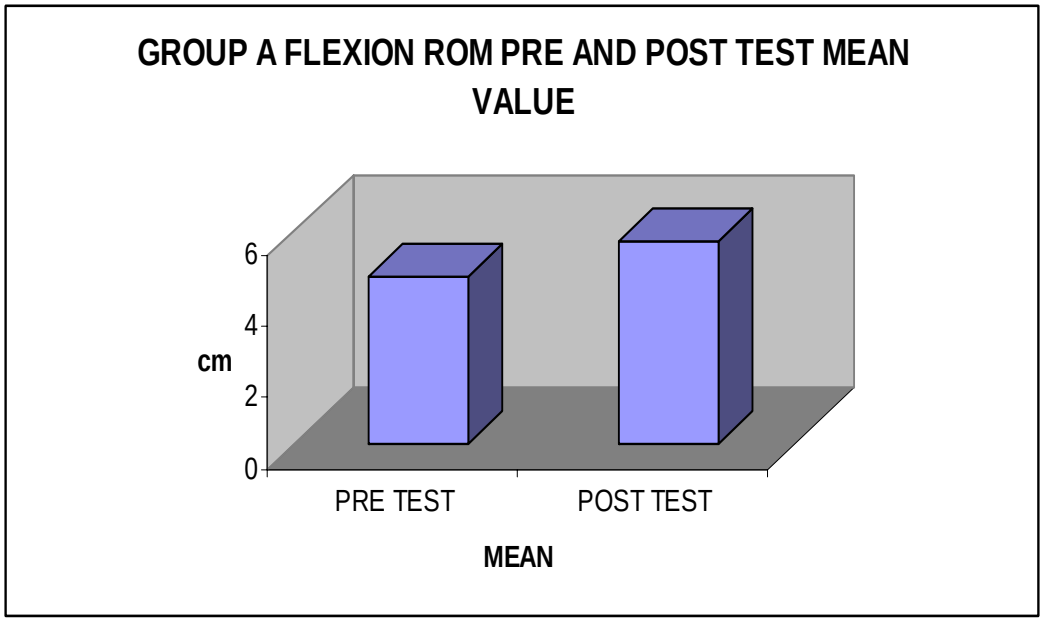

GROUP A FLEXION ROM PRE AND POST TEST MEAN VALUE
6
4
2
0
cm
PRE TEST
POST TEST
MEAN

TABLE - 4

MEAN AND MEAN DIFFERENCE OF PRE TEST AND POST TEST VALUESOF GROUP A EXTENSION USING RANGE OF MOTION(ROM)

GROUP A	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	t CALCULATED VALUE
PRE TEST	8.51	3.18	0.39	4.84
POST TEST	5.33			

For 14 degrees of freedom at 5% level of significance the calculated t value for ROM for group A was 4.84 and t table value was2.145 .the t calculated value was greater than t table value, which states that there is significant difference between pre test and post test.

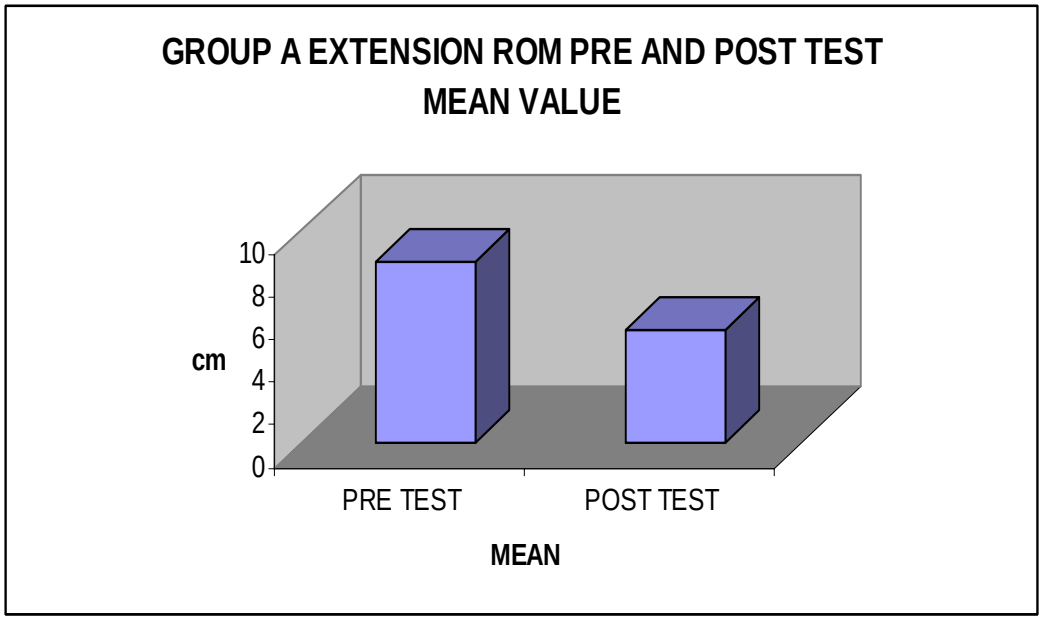

GROUP A EXTENSION ROM PRE AND POST TEST
MEAN VALUE
10
8
6
4
2
0
cm
PRE TEST
POST TEST
MEAN

TABLE - 5

MEAN AND MEAN DIFFERENCE OF PRE TEST AND POST TEST VALUES OF GROUP B EXTENSION USING RANGE OF MOTION(ROM)

GROUP B	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	t CALCULATED VALUE
PRE TEST	8.51	3.26	0.46	3.43
POST TEST	5.25			

For 14 degrees of freedom at 5% level of significance the calculated t value for ROM for group A was 3.43 and t table value was2.145 .the t calculated value was greater than t table value, which states that there is significant difference between pre test and post test.

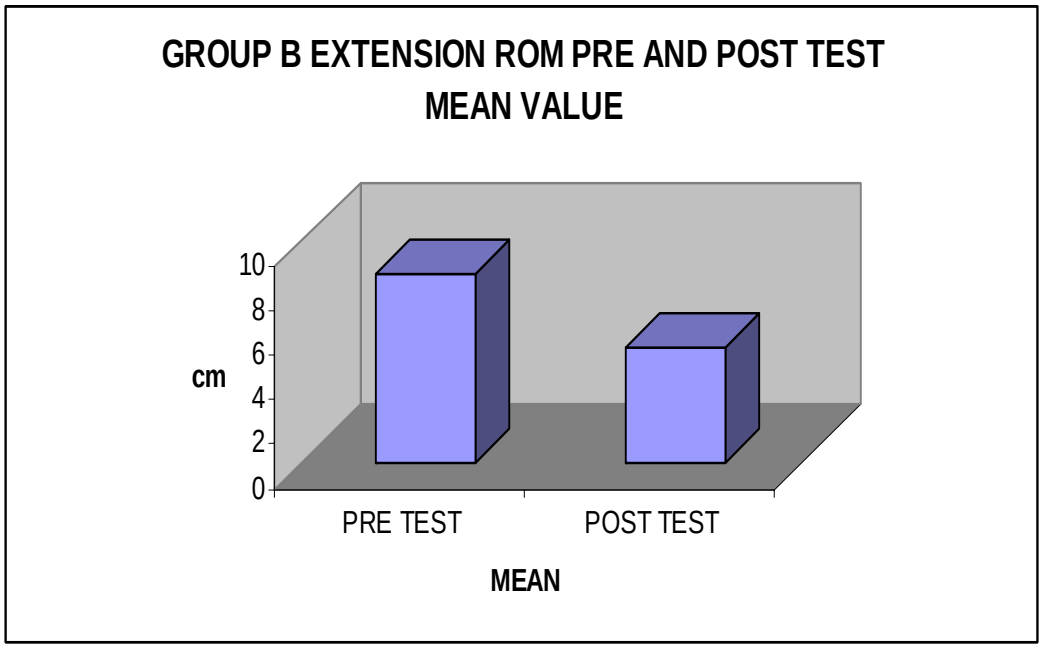
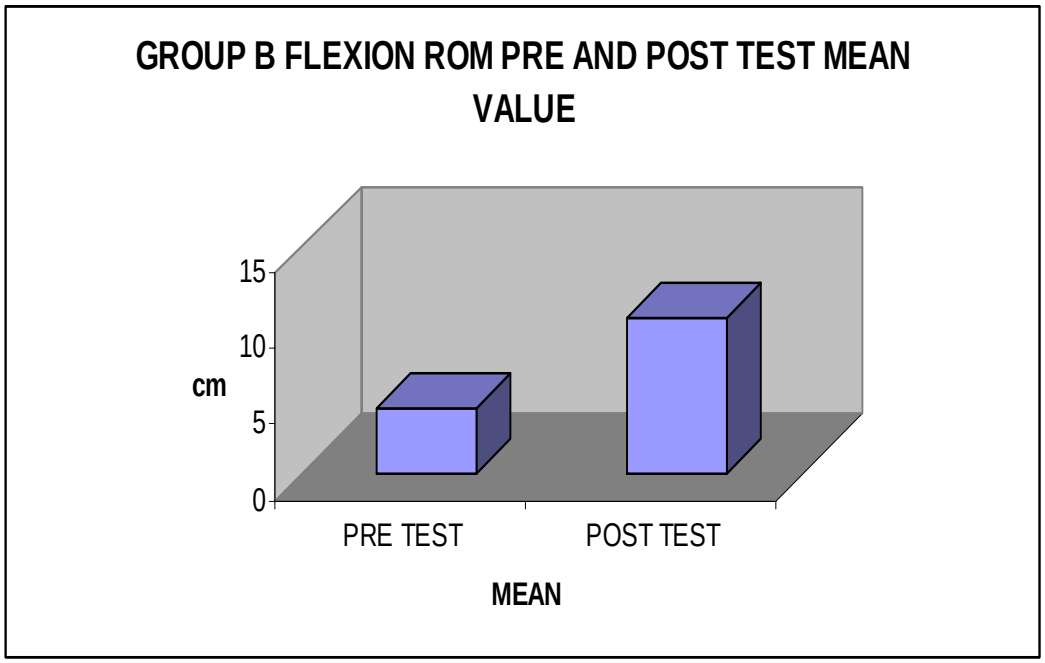

GROUP B EXTENSION ROM PRE AND POST TEST MEAN VALUE
10
8
6
4
2
0
cm
PRE TEST
POST TEST
MEAN

TABLE - 6

MEAN AND MEAN DIFFERENCE OF PRE TEST AND POST TEST VALUES OF GROUP B FLEXION USING RANGE OF MOTION(ROM)

GROUP B	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	t CALCULATED VALUE
PRE TEST	4.39	5.98	0.49	4.90
POST TEST	10.37			

14 degrees of freedom at 5% level of significance the calculated t value for ROM for group A was 4.90 and t table value was 2.145 .the t calculated value was greater than t table value, which states that there is significant difference between pre test and post test.


GROUP B FLEXION ROM PRE AND POST TEST MEAN VALUE
15
10
5
0
cm
PRE TEST
POST TEST
MEAN

RESULTS

Effectiveness of Group A (VAS) is elicited by comparing the pre test and post test values of Group A using paired ‘t’ test; the calculated value is 9.50, whereas the critical value is 2.145. Since the calculated value is greater than the critical value, there exists a significant difference between the pretest and post test values of Control group. When comparing the mean values of both, pre test mean value 64 is greater than the post test mean value 24 which confirms that there is a significant improvement in pain and functional activities.

Effectiveness of Group B (VAS) is elicited by comparing the pretest and post test values of Experimental group using paired ‘t’ test, the calculated value is 8.24 , whereas the critical value is 2.145. Since the calculated value is greater than the critical value, there exists a significant difference between the pretest and post test values of Experimental group. When comparing the mean values of both, the pre test mean value 47 is greater than the post test mean value 31, which confirms that there is a significant improvement in pain and functional activities.

In Group A flexion the mean ROM pre test value was 47.4 and post test value was 57.4 for 14 degree of freedom 0.05 level of significance. The t table value is 2.145 and t calculated value is 5.44 which is greater than t value.

In Group A, extension the mean ROM pre test value was 85.1 and post test value was 53.3 for 14 degree of freedom 0.05 level of significance. The t table value is 2.145 and t calculate value is 4.84 which is greater than t value.

In Group B, flexion the mean ROM pre test value was 43.9 and post test value was 103.7 for 14 degree of freedom 0.05 level of significance. The t table value is 2.145 and t calculate value is 4.90 which is greater than t value.

In Group B extension, the mean ROM pre test value was 85.1 and post test value was 52.5 for 14 degree of freedom 0.05 level of significance. The t table value is 2.145 and t calculate value is 3.43 which is greater than t value.

V. DISCUSSION

TRAVEL et, al (1999) stated that Trigger point are discrete, focal hyper irritable spot painful on compression and can be produced referred pain, referred tenderness, motor dysfunction and autonomic phenomena.

The project is the documentation of effects of myofascial release technique on relieving pain in mechanical low back pain patient..

Pre test and post test pain intensities were evaluated ‘t’ value shows that there was a significant effecting of giving myofascial release technique. .

Gentle pressure and sustained stretching of myofascial release believed to free adhesion, softens and lengthens the fascia.

Myofascial release is also set to enhance the body innate restorative powers by improving circulation and nervous system transmission (Suman Kuhar)

During myofascial technique ,heat will be elicited as a result the vasomotor response that increase blood flow to the affected area, enhances lymphatic drainage of toxic wastes.

It also realigns the fascial plains and most importantly resets the soft tissue proprioceptive sensory mechanism.

This last activity reprogramme the central nervous system, enabling a normal functional range of motion without eliciting the old pain pattern.

The effect of the trigger point release thus effectively reduce pain in low back pain patients

VI. CONCLUSION

In an effort to find out the effectiveness of myofascial trigger point release technique on relieving pain in mechanical low back pain20 subjects were selected by using non-probability purposive random sampling technique and assigned into two groups with 10 subjects each. Group A was treated with TENS and active spinal exercises and group B was treated with trigger point release technique and tens for a period of 10 days.

The pre test and post test scores are noted and analysis was done using independent ‘t’ test which favored the alternate hypothesis.

The intra group analysis was done and results were analysed using paid ‘t’ test, which favored the alternative hypothesis.

The statistical analysis shows there is significant improvement in pain and functional ability in following TENS and myofascial trigger point release technique.

It is concluded that combination of myofascial trigger point releasing technique with TENS was found to be more significant in improving pain and functional activities in mechanical low back pain patient.

VI. LIMITATION AND SUGGESTIONS

This study has been done with small sample size so further study can be done with larger samples.

This study was very short term study and there for to make the results more valid, long term study should be done.

Since the study has been done with very smaller group of subjects , further studies should be conducted with larger groups.

This study could be analysed with various other scales like Mc Gill questionnaire , etc.

This study is done with myofascial trigger point release techniques further studies can be conducted with taping techniques and heat modalities.

Variation in calamite, drugs, diet, personal habit, side of involvement, gender, age could not be controlled.

This study measures one time performance and results were infured. Further study can be attempted to know the follow up for long time effect

VII. BIBILOGRAPHY

1. Barnes, John F. 1990. Myofascial Release: 10/e: 126-133(p). Rehabilitation Services Inc.
2. Berner J.N.J. "Orthopaedics Myofascial Stretching a Guide of self treatment" 3/e :86-94(p).
3. Brenda Pardy , Sill mortion , Myofascial stretching a guide of self treatment" 1/e:34-46(p).
4. S. Brent Bratz man, MD, "clinical Orthopaedic Rehabilitation" 4/e:436-458(p).
5. Brotzman brent , MD, et . al. "Clinical Orthopaedic Rehabilitation" 4/e: 421-441(p)
6. Cantu, Robert I. & Grodin, Alan J. 2001. Myofascial Manipulation, Theory and Clinical Application, 2/e:39-46(p), Aspen Publishers Inc.
7. Carol J Manhein "The Myofascial Release Manual Books"
8. Crauford Jone Adams "outline of Orthopaedic " 3/e:111-119(p), New York , Churchill Living Stone Publication , 1995.
9. Cyriax JH , "Illustration Manual of Orthopaedic Medicine" 2/e:66-79(p).

10. David J Magee. “Orthopaedic Assessment”.8/e:123-140,523-536(p)
11. Donatelli Wooden , “Orthopaedic Physical Therapy ,3/e:126-134(p)
12. Jayanth Joshi, “Essential of Orthopaedics and applied Physiotherapy”. 4/e:96-102(p).
13. John Barnes, Myofascial release Therapy Practitioners – Holistic Health Therapist”
14. John Crew Ford Adams , “Outline of orthopaedics” 7/e:145-156(p).
15. John Ebenezar “Essential of Orthopaedic for Physiotherapy” 8/e:78-89(p).
16. John F Barnes , “Myofascial Release Approach” 56-75(p)
17. Lealy MP , “ Active Release Technique in Soft Tissue”
18. Lonnie R Mercier , Practical Orthopaedics 1980, 6/e:345-378(p)
19. Lucis Whyte Tengusan , Rodert Gerwin , “Clinical Mastery of the Myofascial Pain”
20. Maheswari J, Essential Orthopaedics” 1997, 2/e:1451267(p)
21. Manheim, Carol. 2001. The Myofascial Release Manual. 3/e:35-66(p).
22. Michel Stanborough, “Direct Release Myofascial Technique”
23. Myers, Tom. 2004. Structural Integration - developments in Ida Rolf's 'Recipe'- 1. Journal of Bodywork and Movement Therapies 8, 131-142

24. Natarajan M.N., Text Book of Orthopaedics and Traumatology" 3/e: 145-156(p).
25. Polly .E. Bijur , Ph.D. Wen Dy Sliver. "Journal of Orthopaedic and Sports Physiotherapy"2002,
26. Samuel. L. Turek, "Orthopaedics principles and their Applications" 4/e:243-267(p), 1998.
27. William E, Techniques in Musculo Skeletal Rehabilitation"2/e:68-79(p).
28. Robert J ,Myofascial Manipulation Theory and Clinical Application " 2/e:126-143(p), 2001
29. Prentice , "Techniques in Musculo-skeletal Rehabilitation" 2001
30. Sola AE "Myofascial pPain Syndrome" 1990
31. Simson DG "Myofascial Pain and Dysfunction" 2 /e:67-89(p),1999
32. Stanborough, Michael. 2004. Direct Release Myofascial Technique. Elsevier.
33. Ward, Robert C. 2003, Integrated Neuromusculoskeletal Release and Myofascial Release, in Ward RC, 2003, Foundations for Osteopathic Medicine, 2nd edition, Chapter 60, pp 932–968, Lippincott, Williams and Wilkins, Philadelphia
34. Yunus MB "Fibromyalgia Syndrome and Myofascial pain Syndrome" 1994
35. Ann Thomson Elecectrotherapy,Tidys Physiotherapy p461-463.

36. Bella T may,exercise for low back pain therapeutic exercisep-312-315

37. Karolyn kisner,the spine therapeutic foundation and technique p588-590

38. N H hutson,lumbar spine and sacroiliac joints, back pain p160-168

VIII. APPENDIX-I

CASE ASSESSMENT PROFORMA

CASE SHEET NO :

NAME :

AGE :

SEX :

ADDRESS :

CHIEF COMPLIANT :

PAST MEDICAL HISTORY :

PRESENT MEDICAL HISTORY :

PERSONAL HISTORY :

ON OBSERVATION :

ON EXAMIATION :

DIAGNOSIS :

MODE OF EXERCISE :

MEASUREMENT TOOL :

(VAS)

S.NO.	PRE TEST	POST TEST	

Signature of physical therapy student

APPENDIX-II

TABLE 7

PRETEST AND POST TEST VALUES OF CONTROL GROUP

USING VISUAL ANALOGUE SCALE (VAS)

NO OF PATINTS	PRE TEST VALUES	POST TEST VALUES
1	7	3
2	6	4
3	8	6
4	7	3
5	4	0
6	5	0
7	8	5
8	7	2
9	6	1
10	6	0

TABLE 8

PRE TEST AND POST TEST VALUES OF EXPERIMENTAL GROUP

USING VISUAL ANALOGUE SCALE (VAS)

NO OF PATIENTS	PRE TEST VALUES	POST TEST VALUES
1	5	8
2	2	4
3	3	5
4	3	4
5	1	2
6	4	5
7	5	6
8	5	8
9	2	4
10	1	1

TABLE 9

PRE TEST AND POST TEST VALUES OF CONTROL GROUP FOR FLEXION USING RANGE OF MOTION(ROM)

NO OF PATIENTS	PRE TEST VALUES	POST TEST VALUES
1	4.5	5.0
2	5.0	5.8
3	5.2	6.0
4	3.5	5.0
5	4.2	5.8
6	5.0	5.6
7	3.8	5.2
8	4.2	6.2
9	6.2	6.8
10	5.8	6.0

TABLE 10

PRE TEST AND POST TEST VALUES OF CONTROL GROUP FOR EXTENSION USING RANGE OF MOTION(ROM)

NO OF PATIENTS	PRE TEST VALUES	POST TEST VALUES
1	5.4	1.2
2	5.6	0.6
3	5.0	0.2
4	5.8	1.2
5	5.5	1.0
6	5.1	0.5
7	5.3	0.5
8	5.2	0.2
9	5.3	0.2
10	5.1	0.4

TABLE 11

PRE TEST AND POST TEST VALUES OF EXPERIMENTAL GROUPFOR FLEXION USING RANGE OF MOTION(ROM)

NO OF PATIENTS	PRE TEST VALUES	POST TEST VALUES
1	4.5	5.0
2	5.0	5.8
3	5.2	6.0
4	3.5	5.0
5	4.2	5.8
6	5.0	5.6
7	3.8	4.2
8	4.2	4.8
9	3.5	4.1
10	5.0	5.2

TABLE 12

PRE TEST AND POST TEST VALUES OF EXPERIMENTAL GROUP FOR EXTENSION USING RANGE OF MOTION(ROM)

NO OF PATIENTS	PRE TEST VALUES	POST TEST VALUES
1	4.2	5.4
2	5.0	5.6
3	4.8	5.0
4	4.6	5.8
5	4.5	5.5
6	4.6	4.8
7	4.8	5.2
8	5.0	5.1
9	5.1	5.3
10	4.7	4.8

APPENDIX IV

PATIENT CONSENT FORM

Participant Identification Number:

Title of project: "A Comparative Analysis Of Tens And Active Spinal Exercises Versus Tens And Trigger Point Release Technique To Relieve Pain In Low Back Pain Of Mechanical Origin"

Name of Researcher:

Name of advisor:

Please tick where appropriate:

1. I confirm that I have read the information sheet for the above study and had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. ☐

3. I agree to take part in the above study. ☐

4. I would like to receive a summary of the results. ☐

5. Please send a summary of the results to …….

Name of the participant:

Signature: Date:

Researcher:

Signature: Date: