

**IMPACT OF MCKENZIE METHOD ENRICHED BY MUSCLE
ENERGY TECHNIQUE AND STRAIN COUNTER STRAIN
TECHNIQUE ON PAIN, RANGE OF MOTION, FUNCTIONAL
DISABILITY AND QUALITY OF LIFE IN PATIENTS WITH
CHRONIC NON-SPECIFIC LOW BACK PAIN.**

Dissertation submitted in

Partial fulfillment

For the degree of

MASTER OF PHYSIOTHERAPY

(ORTHOPAEDICS)

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

Chennai



May 2018



PSG COLLEGE OF PHYSIOTHERAPY

Coimbatore



PSG COLLEGE OF PHYSIOTHERAPY
Coimbatore



CERTIFICATE

This is to certify that the research work entitled **“IMPACT OF MCKENZIE METHOD ENRICHED BY MUSCLE ENERGY TECHNIQUE AND STRAIN COUNTER STRAIN TECHNIQUE ON PAIN, RANGE OF MOTION, FUNCTIONAL DISABILITY AND QUALITY OF LIFE IN PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN”** was carried out by **Reg.No:271610243**, P.S.G College of Physiotherapy, towards partial fulfillment of the requirements of the **MASTER OF PHYSIOTHERAPY (Physiotherapy in Orthopedics)** degree programme of The TamilNadu Dr. M.G.R Medical University, Chennai.

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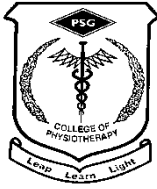
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DEDICATED TO MY EVER-
LOVING PARENTS
AND
MY DEAR SISTERS

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CONTENTS

CHAPTER	TITLE	PAGE NO
I	INTRODUCTION	1
	1.1 Aim for the Study	4
	1.2 Need for the study	4
	1.3 Objective	4
	1.4 Hypothesis	4
	1.5 Operational Definitions	5
II	LITERATURE REVIEW	7
III	MATERIALS AND METHODOLOGY	9
	3.1 Materials	9
	3.2 Study Design	9
	3.3 Study Setting	9
	3.4 Human participation protection	9
	3.5 Population / Participant	10
	3.6 Sampling	10
	3.7 Criteria for Sample Selection	10
	3.7.1 Inclusion Criteria	10
	3.7.2 Exclusion Criteria	10
	3.8 Study Duration	10
	3.9 Treatment Duration	11
	3.10 Instrument and Tool for Data Collection	11
	3.11 Technique of Data Collection	11
	3.12 Technique of Data analysis and interpretation	11
IV	DATA ANALYSIS AND INTERPRETATION	14
V	RESULTS AND DISCUSSION	26
	5.1 Limitations of the study	28
	5.2 Suggestion for future studies	29
VI	SUMMARY AND CONCLUSION	30
VII	REFERENCES	31
	ANNEXURE	
	ABSTRACT	

LIST OF ANNEXURES

Annexure	Content
I	Ethical Committee Clearance Letter
II	Assessment form
III	Informed Consent (English and Tamil)
IV	Treatment Protocol
V	Outcome measures

CHAPTER - I

INTRODUCTION

Low Back Pain is the most relevant form of musculoskeletal disorder. 70 – 80% of people experience low back pain at some stage of their life. Of these, only 39 – 76% of the patients attain complete recovery.^[1]

Chronic Non-specific Low Back Pain (CNLBP) occurs with about the same frequency in people with sedentary occupations as in those doing heavy labor, although the latter have a higher incidence of absence from work because they are unable to work with their complaint. The great majority of patients with low back pain state that they have increased pain while sitting or on arising from sitting.

According to Robin McKenzie Acute, sub-acute or chronic low back pain, which is characterized by either a slowly or a suddenly occurring rather sharp pain with or without radiation over the buttocks or slightly down the leg, and concomitant restriction of motion. When subsiding to the chronic type, the pain will be a little less severe and continue for more than two months.

Pain is produced by the application of mechanical forces as soon as the mechanical deformation of structures containing the nociceptive receptor system is sufficient to irritate free nerve endings. It is not necessary to actually damage tissues containing the free nerve endings in order to provoke pain. Pain will also be produced by the application of forces sufficient to stress or deform the ligamentous and capsular structures. Pain will disappear when the application of that force is terminated, and this often occurs by a mere change of position. A good example is the pain, incurred during prolonged sitting which disappears on standing up.

Mechanical deformation is caused by mechanical stress which, when applied to soft tissues, will lead to pain under certain circumstances. Some examples of mechanical deformation were Abnormal stress applied to a normal tissue and normal stress applied to a normal tissue.^[2]

Approximately 60% of patients with chronic low back pain did not consider themselves recovered in a period of 1 year from the onset of symptoms with moderate levels of pain and disability persisting over time.^[3]

The goal of physiotherapy in patients with chronic low back pain includes elimination of pain, restoration of the lost extent of movements, functional improvement and improvement of the quality of life. These objectives are achieved by various protocols of exercise, manipulation, massage, relaxation techniques and counseling.

Although numerous previous articles or studies have dealt with various therapeutic approaches of Low Back Pain, the evidence of their efficiency is highly inconclusive. Despite extensive research the issue of the Spinal pain management still continues a challenge for physicians, physiotherapists and researchers chronic.^[4-7]

In 1981, Robin McKenzie proposed a classification based treatment for Low back pain labeled Mechanical diagnosis and Therapy or simply the McKenzie method. Among the large number of classification systems developed in last 20 years, the McKenzie method has the greatest empirical support (eg., validity, reliability and generalizability) among the systems based on clinical features.

According to this method, the classification of CNLBP is based on patterns of pain response noted during the assessment. The centralization phenomenon is the most important pattern of pain response observed in McKenzie method. This method is focused on spinal disc disorders.^[19-25]

McKenzie method is based on the phenomenon of movement of the nucleus pulposus outside the intervertebral disc, depending on the adopted position and direction of the movement of the spine. The nucleus pulposus that is exposed to the pressure from both surface of the vertebral bodies takes the shape of a spherical joint. This means it has the ability to perform 3 rotatory movements in all directions and has 6 degrees of freedom of movement. The nucleus pulposus performs the movements of flexion, extension, lateral bend (left and right) rotation (right and left) linear displacement (slip) along sagittal axis

linear displacement along the transverse axis and separation or approximation along vertical axis.^[1]

Misconception of the McKenzie method is observed in a systematic review evaluating the effectiveness of exercise therapy for CNLBP in which this method was equated to extension exercises. This is incorrect because with the McKenzie exercise, the direction of exercise is not always extension, but instead diluted in the directional preference.^[10-16]

Muscle energy technique (MET) is a common conservative treatment for pathology around spine. Muscle Energy Technique are among the most popular therapeutic modalities aimed at the improvement of elasticity in contractile and non – contractile tissues.^[1]

It is considered as gentle manual therapy for restricted motion of the spine and extremities. This consists of voluntary muscular contraction of the muscles of varying intensity. MET and Proprioceptive neuromuscular facilitation techniques have been clearly shown to bring about changes in joint range of motion and muscle extensibility than passive & static stretching both in short term and long term.

Muscle energy technique is a manual technique that is being widely adopted because it appears safe and gentle and it is believed to be effective in patients with variety of symptoms.

For many years, Muscle energy technique has been advocated to treat muscle imbalance of the Lumbo-pelvic region such as pelvis asymmetry.^[17-21]

Strain Counter Strain technique (SCS) is an indirect manipulative osteopathic technique to relieve pain and restore function of muscle, bones and joints.

SCS is used in tender points in such a way that the pain is reduced at least by 70% to find position of ease. It is suggested that a minimum period required to hold a position of ease is 90 seconds. It is theorized that the shortening or folding over of aberrant tissues in positional release is achieved by both proprioceptive and nociceptive mechanism.^[1]

Both of the techniques were used to reduce pain, improve the elasticity of the muscles, to achieve the nociceptive and proprioceptive mechanisms via modifications. Hence the study is performed to compare the efficiency of these techniques in CNLBP patients.

1.1 AIM OF THE STUDY:

The aim of the present study was to compare McKenzie exercises enriched with Muscle energy technique and McKenzie exercises enriched with Strain counter strain technique in patients with chronic non-specific low back pain.

1.2 NEED FOR THE STUDY:

The study is to determine the efficiency of Chronic Non-specific Low back pain intensity, functional disability, range of motion and quality of life using combined manipulative techniques.

Here we have evaluated the pain intensity, amount of functional disability, range of motion and quality of life of patients with Low Back pain.

1.3 OBJECTIVE:

To compare the combined treatment efficiency of McKenzie method with Muscle energy technique and Strain counter strain technique on pain, range of motion, functional disability and quality of life in patients with chronic non-specific low Back Pain.

1.4 HYPOTHESIS:

Null Hypothesis:

There will be no significant difference in the comparison of McKenzie method enriched by muscle energy technique and strain counter strain technique in chronic non-specific low back pain.

Alternate Hypothesis:

There will be a significant difference in the comparison of McKenzie method enriched by muscle energy technique and strain counter strain technique in chronic non-specific low back pain.

1.5 OPERATION DEFINITIONS:

Pain:

The international association for the study of pain (IASP) defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage pain is not just a physical sensation.

Range of Motion:

Range of motion is the measurement of movement around a specific joint body part. It is the anatomical position to extreme limit of the joint.

Chronic Non-Specific Low Back Pain:

Robin McKenzie defined CNLBP as Acute, sub-acute or chronic low back pain, which is characterized by either a slowly or a suddenly occurring rather sharp pain with or without radiation over the buttocks or slightly down the leg, and concomitant restriction of motion. When subsiding to the chronic type, the pain will be a little less severe and continue for more than two months.

Muscle Energy Technique:

Muscle Energy Technique (MET) is a manual therapy technique which uses a muscle's own energy in the form of gentle isometric contractions to relax the muscles via autogenic or reciprocal inhibition, and lengthen the muscle.

McKenzie Method:

McKenzie method is a classification based treatment for spine pathology labeled mechanical diagnosis and therapy or simply the "McKenzie Method"

Strain Counter Strain Technique:

Strain counter strain technique (SCS) is a manual therapy technique to treat muscle and joint pain and dysfunction. The clinicians use only their hands to treat the patients.

Quebec Back Pain Disability Scale:

It is a condition specific questionnaire developed to measure the level of functional disability for patients with low back pain (LBP) that was designed, developed and validated by kopec et.al.,

WHO QOL – BREF Instrument:

It is an instrument developed by WHO that comprises of 26 items, which measures physical health, psychological health, social relationship and environment. It is used to measure the quality of life of the patients.

CHAPTER - II

LITERATURE REVIEW

Malgorzata Waszak et al., 2015, conducted a randomized study on the impacts of McKenzie method therapy enriched by muscular energy technique on subjective and objective parameters to spine function in 60 patients with mean age of 44 years with chronic low back pain. Subjects were randomly assigned into 3 groups. 10 daily sessions were performed during 5 consecutive weekdays. Electrogoniometer, Visual analogue scale and Magnetic Resonance Imaging were used as outcome measures. Outcomes were evaluated and concluded that combined application of McKenzie and MET proved more effective in individuals with chronic low back pain.

Marzouk A Ellythy, July 2012, conducted an experimental study on the efficacy of MET versus SCS on low back dysfunction patients. 30 patients with age range between 30-50 years were assigned into two groups and underwent a 4 weeks program of MET and SCS. Short form McGill pain questionnaire, Range of motion using Schober's test and Oswestry disability index were the scales used. Outcomes were valuated and concluded that both MET & SCS proved to be effective in reducing pain and functional disability in patients with chronic low back pain.

Alessandra NarcisoGracia, et al., June 2013, experimented the effectiveness of Back School and McKenzie exercises in patients with Chronic non-specific low back pain. 148 patients were randomly assigned with a blinded assessor into 2 groups. The study consists of a 4 week treatment program one session per week. One group received exercises based on Back school technique and the other group received McKenzie technique. NPRS, Roland morris questionnaire and WHO QOL BREF instrument were used as outcome measures. Outcome measures were evaluated and concluded that McKenzie is more effective than Back School exercises.

Luciana Andrade Carneiro Machado, et al., 2006, conducted a systemic review of literature with a meta-analysis approach. Eleven trials of most high quality were included. McKenzie technique reduced pain and functional disability at 1 week follow-up when compared with

passive therapy for LBP. They concluded that there are some evidences proving McKenzie method is more effective than passive therapy for Low back pain patients.

Noelle M.Selkow, et al., Journal of manipulative therapy vol-17, num-1., conducted a pilot study on the short term effect of MET on pain in 20 individuals with Lumbo-pelvic pain. Tests for current pain and worst pain with provocation were taken as baseline, immediately following intervention and 24 hours after intervention. ANOVA was used to analyze the result and concluded that MET can be useful in decreasing low back pain over 24 hours.

Stephen May, 2008., experimented an evidence informed management of chronic low back pain with McKenzie method. The study explained the effects of McKenzie exercises and combined treatment methods along with McKenzie technique. The centralizers were taken as reliability. Two high quality studies reported high reliability but the third study has low reliability. This concluded that there are no side effects or harm or adverse effects in applying McKenzie technique in CNLBP. This study also concluded that Centralizers is a more important predictor of outcome in CNLBP.

Helen A.Clare, 2004., experimented the Reliability of McKenzie spinal pain classification using patient assessment of McKenzie. 50 patients with spinal pain were examined using McKenzie assessment. The reliability of the judgments was expressed using multi-rater kappa (k) and percentage agreement. The reliability analysis suggested that the patient assessment forms evaluated in this study provided an adequate but not ideal clinical simulation and proved further studies were required to prove the reliability of McKenzie assessment.

Raymond W.J.G.Ostelo, 2008., interpreted change scores for pain and functional status in low back pain. This article provides practical guidelines for a range of commonly used back pain outcome measures. The study interpreted the outcome measure for CNLBP in pain and disability. 3 studies on visual analogue scale, 5 studies on numerical pain rating scale, 17 studies on Roland morris disability questionnaire and 5 studies on Quebec back pain disability questionnaire were identified and included. The study concluded that Quebec back pain disability scale is reliable for testing disability and Visual analogue scale is reliable in testing pain intensity in patients with Chronic Non-specific Low back pain.

CHAPTER-III

MATERIALS AND METHODS

3.1 MATERIALS:

- Table and sheet
- Chair
- Pillow
- Towel
- Assessment chart & scales
- Pen
- Inch tape

3.2 STUDY DESIGN:

A Randomized clinical trial study design in which the subjects are randomly allocated into 2 groups (Group A and Group B) by Computer generated random numbers and pre test values of both groups were compared with post test values in selected parameters over a period of time for within group analysis and both groups were analyzed for between group analysis.

3.3 STUDY SETTING:

Department of Orthopedics and Outpatient PMR department PSG Hospitals, Coimbatore.

3.4 HUMAN PARTICIPATION PROTECTION:

The study was reviewed and approved by institutional human ethics committee at PSG IMSR.

3.5 POPULATION/PARTICIPANTS:

30 patients and Chronic Non Specific Low Back Pain were selected using Randomized control trial and 15 individuals were allocated in each group.

Group A: 15 patients received McKenzie method with muscle energy technique.

Group B: 15 patients received McKenzie method with strain counter strain technique.

3.6 SAMPLING:

Computer generated random sampling

3.7 CRITERIA FOR SAMPLE SELECTION

3.7.1 Inclusion criteria:

- Age: 20 to 50 years.
- Diagnosed case of Non-specific Low back pain with or without radiating pain for at least 8 weeks duration.
- Protrusion of spinal disc.
- Unilateral or bilateral radiating pain.
- Able to understand & sign the consent form of the treatment technique.

3.7.2 Exclusion Criteria:

- Red flags of manipulation like tumours, fracture, Infection, Spondylolisthesis, senile osteoporosis .
- Cardio respiratory illness, pregnancy, psychological illness.
- Spinal canal stenosis, previous spinal surgeries, extrusion, sequestration & prolapse
- Diagnosed referred visceral pain.
- Received physiotherapy for the same problem in last 3 months.

3.8 STUDY DURATION:

Total duration of 8 months was adopted for this study.

3.9 TREATMENT DURATION:

40 minutes per session, 3 sessions per week for 4 weeks. A total of 12 sessions of treatment will be performed.

3.10 INSTRUMENT & TOOL FOR DATA COLLECTION:

- Numerical pin rating scale (NPRS) for measuring pain
- Modified Schober's test for measuring active lumbar flexion & extension range of motion
- Quebec disability questionnaire for measuring functional disability
- WHO BREF instrument for measuring quality of life

3.11 TECHNIQUES OF DATA COLLECTION:

Initial assessment was taken on the first day of intervention by using outcome measures. After obtaining the informed consent form, the Intervention was given to each group separately for 4 weeks. Final assessment was taken after the 4 weeks of treatment using same outcome measures. Comparison of pretest and post test values within the group and between the groups was done finally.

3.12 TECHNIQUES OF DATA ANALYSIS & INTERPRETATION:

Data collected from subjects were analyzed using paired 't' test to measure changes between pretest and posttest values of outcome measures within the group. Independent 't' test was used to measure changes between the groups. The analysis was performed using SPSS version 16.0.

Paired 't' test

$$SD = \sqrt{\frac{\sum (d - \bar{d})^2}{n - 1}}$$

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

\bar{d} = Calculated Mean Difference of pretest and posttest values

SD = Standard Deviation

n = Number of samples

d = Difference between pretest and posttest values

Independent 't' test

$$t = \frac{|\bar{x}_1 - \bar{x}_2|}{SD \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where,

$$SD = \sqrt{\frac{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2}{[n_1 + n_2] - 2}}$$

\bar{X}_1 = Mean difference in Group A

\bar{X}_2 = Mean difference in Group B

SD = Combined standard deviation of Group A and Group B

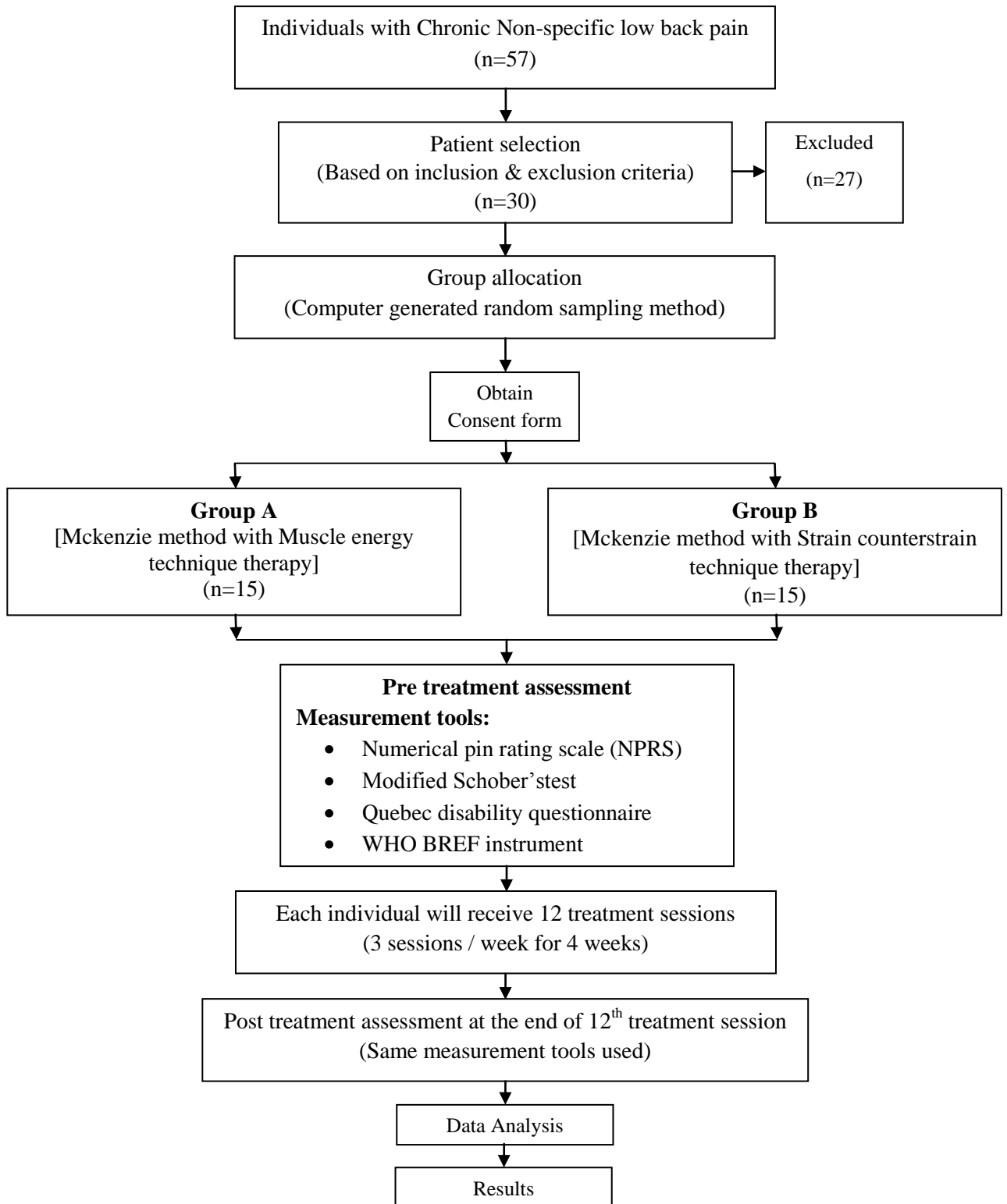
n_1 = Number of patients in Group A

n_2 = Number of patients in Group B

SD_1 = Standard Deviation of Group A

SD_2 = Standard Deviation of Group B

METHODOLOGY FLOW CHART



CHAPTER – IV

DATA ANALAYSIS AND INTERPRETATION

Data analysis is the systemic organization and synthesis of research data and testing of research hypothesis using these data. Interpretation is the process of making sense of the results of a study and examining the implication (Polit & Belt, 2004).

The pretest and posttest values for Groups A & B were obtained before and after intervention. The improvement in Pain was assessed using Numeric Pain Rating Scale (NPRS), the improvement in lumbar flexion & extension range of motion was assessed using Modified Schober's Test, the improvement in Functional disability was assessed using Quebec Back pain Disability Questionnaire (QDI) and the improvement in Quality of life was assessed using WHO BREF instrument (WHO BREF). The mean, standard deviation and Paired t test values were used to find out whether there was any significant difference between pretest and posttest values within the groups.

Independent t test is used to find the significant differences between the groups after intervention.

TABLE 1:
PRE TEST AND POST TEST VALUES OF NPRS, MODIFIED
SCHOBER'S TEST, QUEBEC DISABILITY SCALE AND WHO BREF
INSTRUMENT OF GROUP A

S.No.	Numerical Pain Rating scale (cms)		Modified Schober's test(Inches)				Quebec Back pain disability scale (percentage)		WHO BREF instrument (points)	
	Pre-test	Post-test	Pre-test		Post-test		Pre-test	Post-test	Pre-test	Post-test
			Flexion	Extension	Flexion	Extension				
1.	6	4	3	3	6	5	39	12	88	105
2.	8	5	3	4	5	6	75	45	66	91
3.	8	4	2	2	5	4	81	41	65	91
4.	6	3	3	2	5	5	41	9	91	118
5.	7	2	3	1	4	4	60	21	83	107
6.	5	2	4	5	7	7	63	24	70	90
7.	6	2	3	2	7	7	30	15	89	107
8.	6	3	3	4	6	5	43	15	89	115
9.	6	3	2	2	5	4	64	21	89	119
10.	7	4	3	3	5	4	60	18	87	103
11.	8	4	3	4	5	5	56	15	66	91
12.	7	5	3	3	5	6	81	15	69	92
13.	8	4	2	1	4	3	88	13	59	88
14.	8	5	3	3	5	5	74	25	92	116
15.	7	3	4	5	7	7	61	5	100	119

TABLE 2:

**PRE TEST AND POST TEST VALUES OF NPRS, MODIFIED
SCHOBER'S TEST, QUEBEC DISABILITY SCALE AND WHO BREF
INSTRUMENT OF GROUP B**

S.No.	Numerical Pain Rating scale (cms)		Modified Schober's test(Inches)				Quebec Back pain disability scale (percentage)		WHO BREF instrument (points)	
	Pre-test	Post-test	Pre-test		Post-test		Pre-test	Post-test	Pre-test	Post-test
			Flexion	Extension	Flexion	Extension				
1.	9	7	2	3	4	4	75	27.5	55	87
2.	6	5	3	1	6	5	40	0	89	104
3.	6	4	3	3	6	5	36.25	12.5	81	84
4.	8	6	3	2	4	3	40	17.5	93	117
5.	8	5	3	2	4	4	81.25	15	67	88
6.	7	3	5	4	6	5	77.5	35	67	99
7.	7	3	4	3	6	4	85	6.25	67	99
8.	7	4	4	3	6	5	61.25	36.25	99	113
9.	8	6	3	3	6	6	87.5	25	61	92
10.	5	2	4	4	7	6	50	26.5	66	87
11.	8	7	3	2	5	3	81.25	48.75	66	92
12.	9	6	2	2	3	3	87.5	38.75	58	103
13.	5	3	2	1	4	3	38.75	10	86	104
14.	5	3	3	2	5	5	35	13.75	77	108
15.	8	5	4	4	6	6	81.25	3.75	65	91

TABLE 3:
MEAN, MEAN DIFFERENCE, STANDARD DEVIATION AND PAIRED
‘t’ TEST VALUES OF PAIN

GROUP	PRE/POST	MEAN	MEAN DIFFERENCE	SD	‘t’ VALUE	p VALUE
GROUP A (n=15)	PRE TEST	6.86	3.33	0.81	15.81	p<0.05
	POST TEST	3.53				
GROUP B (n=15)	PRE TEST	7.06	2.46	0.91	10.43	p<0.05
	POST TEST	4.60				

Based on Table 1, the mean difference of group A was found to be 3.33, Standard deviation was 0.81 the ‘t’ value using the paired ‘t’ test was 15.81 which was greater than the table value of 1.76 at p<0.05. In Group B the mean difference was 2.46, standard deviation was 0.91, the ‘t’ value using the paired ‘t’ test was 10.43 which was greater than the table value of 1.76 at p<0.05. This shows there is a significant reduction in pain in both groups.

TABLE 4:
MEAN, MEAN DIFFERENCE, STANDARD DEVIATION AND
PAIRED ‘t’ TEST VALUES OF LUMBAR FLEXION RANGE OF
MOTION

GROUP	PRE/POST	MEAN	MEAN DIFFERENCE	SD	‘t’ VALUE	p VALUE
GROUP A (n=15)	PRE TEST	2.93	2.46	1.01	12.85	p<0.05
	POST TEST	5.40				
GROUP B (n=15)	PRE TEST	3.20	2.00	0.75	10.24	p<0.05
	POST TEST	5.20				

Based on Table 2, the mean difference of group A was found to be 2.46, Standard deviation was 1.01, the ‘t’ value using the paired ‘t’ test was 12.85 which was greater than the table value of 1.76 at p<0.05. In Group B the mean difference was 2.00, standard deviation was 0.75, the ‘t’ value using the paired ‘t’ test was 10.24 which was greater than the table value of 1.76 at p<0.05. This shows there is a significant improvement in lumbar flexion range of motion in both groups.

TABLE 5:
MEAN, MEAN DIFFERENCE, STANDARD DEVIATION AND
PAIRED ‘t’ TEST VALUES OF LUMBAR EXTENSION RANGE OF
MOTION

GROUP	PRE/POST	MEAN	MEAN DIFFERENCE	SD	‘t’ VALUE	p VALUE
GROUP A (n=15)	PRE TEST	2.93	2.20	1.01	8.40	p<0.05
	POST TEST	5.13				
GROUP B (n=15)	PRE TEST	2.60	1.86	0.91	7.89	p<0.05
	POST TEST	4.46				

Based on Table 3, the mean difference of group A was found to be 2.20, Standard deviation was 1.01, the ‘t’ value using the paired ‘t’ test was 8.40 which was greater than the table value of 1.76 at p<0.05. In Group B the mean difference was 1.86, standard deviation was 0.91, the ‘t’ value using the paired ‘t’ test was 7.89 which was greater than the table value of 1.76 at p<0.05. This shows there is a significant improvement in lumbar extension range of motion test in both groups.

TABLE 6:
MEAN, MEAN DIFFERENCE, STANDARD DEVIATION AND
PAIRED ‘t’ TEST VALUES OF FUNCTIONAL DISABILITY

GROUP	PRE/POST	MEAN	MEAN DIFFERENCE	SD	‘t’ VALUE	p VALUE
GROUP A (n=15)	PRE TEST	61.06	41.46	15.40	10.42	p<0.05
	POST TEST	19.60				
GROUP B (n=15)	PRE TEST	63.80	42.53	20.36	8.08	p<0.05
	POST TEST	21.26				

Based on Table 4, the mean difference of group A was found to be 41.46, Standard deviation was 15.40, the ‘t’ value using the paired ‘t’ test was 10.42 which was greater than the table value of 1.76 at p<0.05. In Group B the mean difference was 42.53, standard deviation was 20.36, the ‘t’ value using the paired ‘t’ test was 8.08 which was greater than the table value of 1.76 at p<0.05. This shows there is a significant reduction in functional disability in both groups.

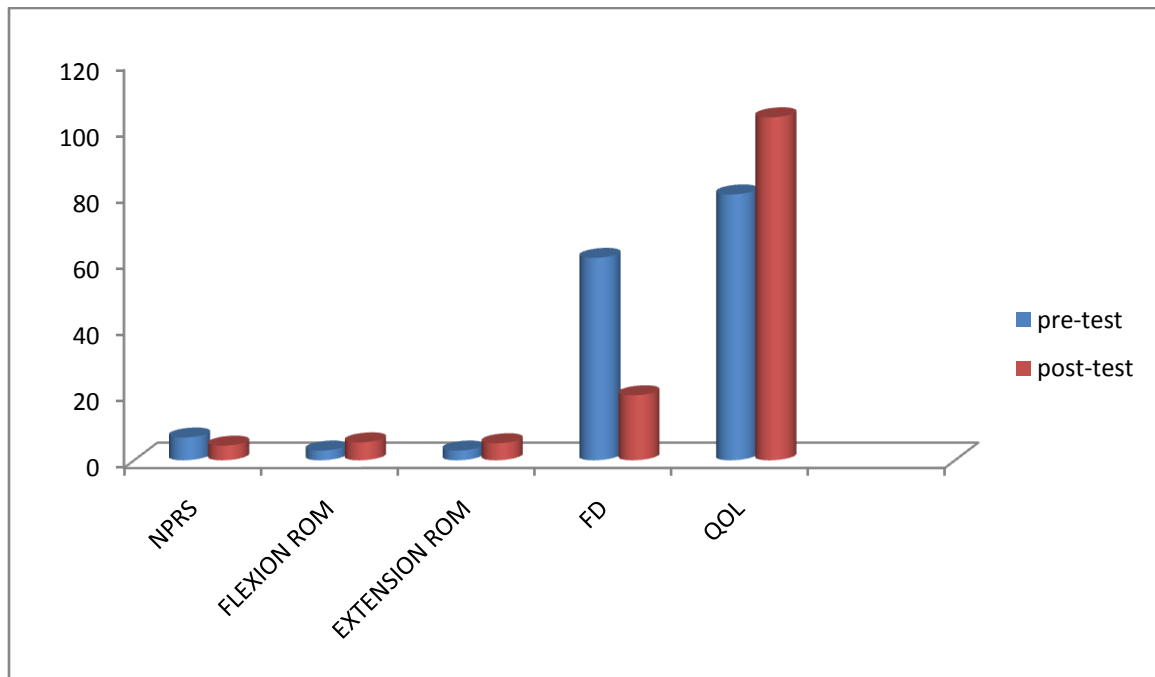
TABLE 7:
MEAN, MEAN DIFFERENCE, STANDARD DEVIATION AND
PAIRED ‘t’ TEST VALUES OF QUALITY OF LIFE

GROUP	PRE/POST	MEAN	MEAN DIFFERENCE	SD	‘t’ VALUE	p VALUE
GROUP A (n=15)	PRE TEST	80.20	23.27	4.33	20.79	p<0.05
	POST TEST	103.47				
GROUP B (n=15)	PRE TEST	73.13	24.73	10.02	9.55	p<0.05
	POST TEST	97.86				

Based on Table 5, the mean difference of group A was found to be 23.27, Standard deviation was 4.33, the ‘t’ value using the paired ‘t’ test was 20.79 which was greater than the table value of 1.76 at p<0.05. In Group B the mean difference was 24.73, standard deviation was 10.02, the ‘t’ value using the paired ‘t’ test was 9.55 which was greater than the table value of 1.76 at p<0.05. This shows there is a significant improvement in quality of life in both groups.

GRAPH 1:

PRE-TEST AND POST-TEST DIFFERENCE OF PAIN, LUMBAR FLEXION & EXTENSION ROM, FUNCTIONAL DISABILITY AND QUALITY OF LIFE OF MUSCLE ENERGY TECHNIQUE WITH MCKENZIE TECHNIQUE OF GROUP A (n=15)



GRAPH 2:

PRE-TEST AND POST-TEST DIFFERENCE OF PAIN, LUMBAR FLEXION & EXTENSION ROM, FUNCTIONAL DISABILITY AND QUALITY OF LIFE OF STRAIN COUNTER STRAIN TECHNIQUE WITH MCKENZIE TECHNIQUE OF GROUP B (n=15)

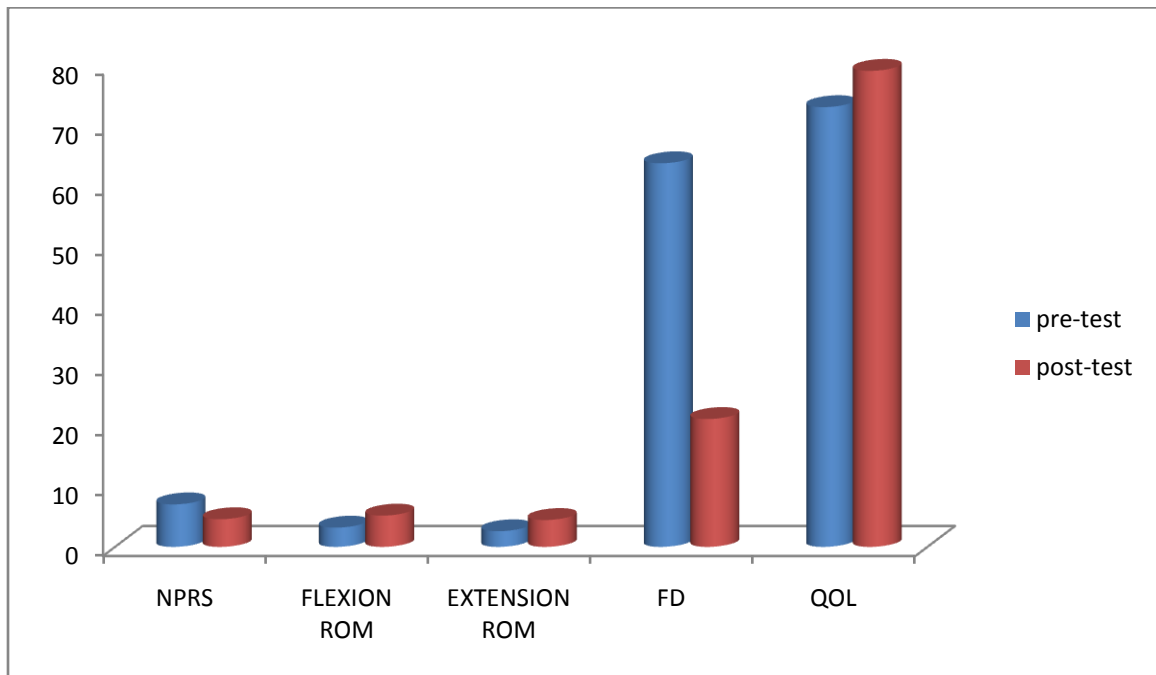


TABLE 8:**COMPARISON OF GROUP A & B USING INDEPENDENT 't' TEST**

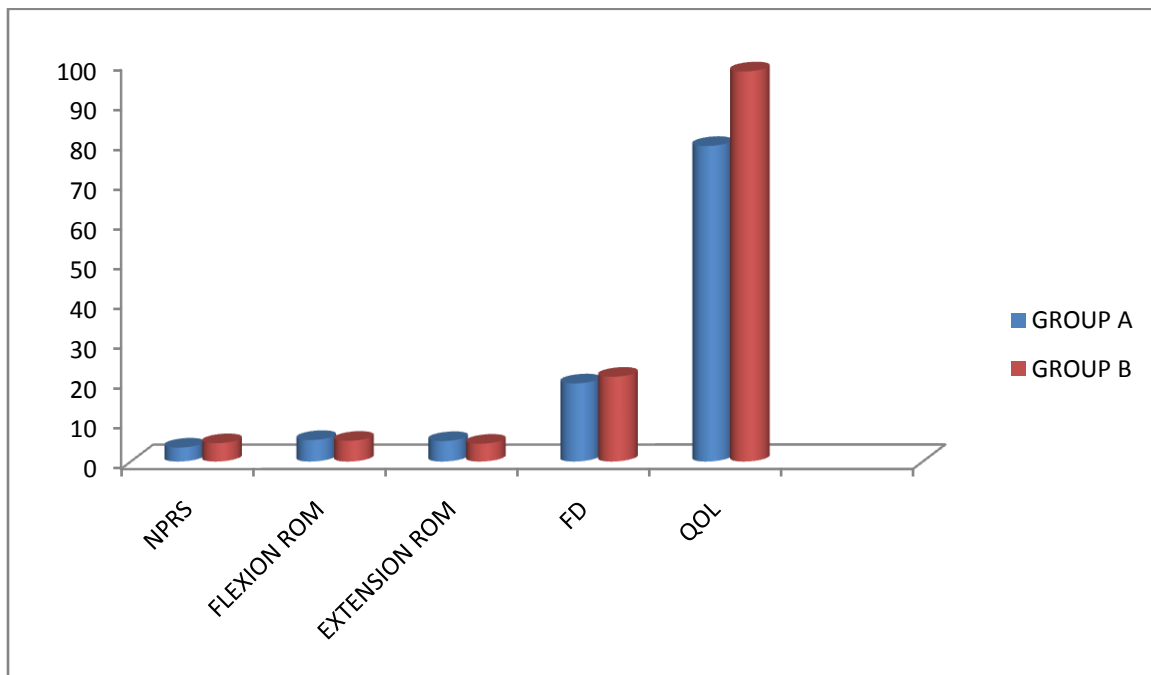
OUTCOME PARAMETERS	GROUP	MEAN	SD	't' VALUE	p VALUE
PAIN (cms)	A	3.53	0.81	2.15	Significant
	B	4.60	0.91		
FLEXION ROM (Inches)	A	5.40	0.74	0.51	NS*
	B	5.20	0.75		
EXTENSION ROM (Inches)	A	5.13	1.01	4.83	Significant
	B	4.46	0.91		
FD (Percentage)	A	19.60	15.40	0.35	NS*
	B	21.26	20.36		
QOL (Points)	A	103.47	4.33	1.37	NS*
	B	97.86	10.02		

*NS= Non Significant

Table 6 shows the Independent 't' test was performed between Group A and Group B to analyze the significant difference for pain, range of motion, functional disability and quality of life and hereby shows that there is significant difference in pain and lumbar extension range of motion and there is no statistical difference in lumbar flexion range of motion, functional disability and quality of life between Group A and Group B.

GRAPH 3:

INDEPENDENT 't' TEST DIFFERENCE OF PAIN,LUMBAR FLEXION & EXTENSION ROM, FUNCTIONAL DISABILITY AND QUALITY OF LIFE OF MUSCLE ENERGY TECHNIQUE WITH MCKENZIE TECHNIQUE OF GROUP A AND STRAIN COUNTER STRAIN TECHNIQUE WITH MCKENZIE TECHNIQUE OF GROUP B (n=30)



CHAPTER V

RESULTS AND DISCUSSION

The aim of the present study was to compare McKenzie exercises enriched with Muscle energy technique and McKenzie exercises enriched with Strain counter strain technique in patients with chronic non-specific low back pain.

A total of 30 patients in age group of 20-50 years with chronic nonspecific low back pain were selected. The participants who satisfied the selection criteria were randomly assigned into two groups. Measurements were taken at baseline using the Numerical pain rating scale for pain(NPRS), Modified Schober's test for lumbar flexion & extension range of motion, Quebec disability questionnaire for functional disability, WHO BREF instrument for Quality of life. One group received Muscle energy technique with McKenzie technique and another group received Strain counter strain technique with McKenzie technique for 4 weeks duration. At the end of 4 weeks, participants again underwent the evaluation using same outcome measures. Statistical analysis for the present study was done using SPSS version 16.0

Statistical analysis done using paired 't' test shows that there is a significant difference between pretest and posttest analysis of Muscle energy technique with McKenzie technique of Group A on pain, lumbar flexion and extension range of motion, functional disability and quality of life. The 't' and p values of pain were 15.81 and 0.000, lumbar flexion range of motion are 12.85 and 0.000, lumbar extension range of motion are 8.40 and 0.000, functional disability are 10.42 and 0.000, quality of life are 20.79 and 0.000 respectively. Hence there is significant improvement in using Muscle energy technique with McKenzie technique in treating patients with chronic non-specific low back pain.

Statistical analysis done using paired 't' test shows that there is a significant difference between pre test and post test analysis of Strain counter strain technique with McKenzie technique of Group B on pain, lumbar flexion and extension range of motion, functional disability and quality of life. The 't' and p values of pain are 10.43 and 0.000, lumbar flexion range of motion are 10.24 and 0.000, lumbar extension range of motion are 7.89 and 0.000,

functional disability are 8.08 and 0.000, quality of life are 9.55 and 0.000 respectively. Hence there is significant improvement in using Strain counter strain technique with McKenzie technique in treating patients with chronic non-specific low back pain.

But the study is intended to compare the impacts of McKenzie technique with Muscle energy technique and Strain counter strain technique in treatment of patients with chronic non-specific low back pain. Statistical analysis done using Independent 't' test shows that only pain & lumbar extension range of motion is effective on Muscle energy technique with McKenzie technique of Group A than Strain counter strain technique with McKenzie technique of Group B and there is no difference between groups on comparing lumbar flexion range of motion, functional disability and quality of life.

The improvement in Group A would be because; Muscle energy technique has an analgesic effect explained by both spinal and supraspinal mechanisms. Activation of both muscle and joint mechanoreceptors occur during an isometric contraction. This leads to sympatho-excitation evoked by somatic efferents and localized activation of the peri aqueductal grey that plays a role in descending modulation of pain. Nociceptive inhibition that occurs at the dorsal horn of the spinal cord, as simultaneous gating takes place of nociceptive impulses in the dorsal horn, due to mechanoreceptor stimulation. MET stimulates joint proprioceptors, via the production of joint movement, or the stretching of a joint capsule, may be capable of reducing pain by inhibiting the smaller diameter nociceptive neuronal input at the spinal cord level.^[21] This is supported by Degenhard et al. (2007) who reported that concentrations of several circulatory pain biomarkers (including endocannabinoids and endorphins) were altered following osteopathic manipulative treatment incorporating muscle energy. The degree and duration of these changes were greater in subjects with C LBP than in control subjects. Moreover myofascial trigger point deactivation was shown to be enhanced by use of different forms of MET.^[22] Consistent with these findings, Selkow et al. (2009)^[23] who described the effectiveness of MET for hamstring muscle. Also the analgesic effect of MET is confirmed by work Strunk, (2008),^[24] Buchmann et al. (2005), and Wilson et al. (2003). On the other hand, Ballentyne et al. (2003), still argue and hesitate about the efficacy of MET in form of post-isometric relaxation. They suggested that the PIR theory and its consequent hypoalgesic effects are poorly supported by research.^[25]

The analgesic effect of SCS technique could be attributed to Bailey and Dick (1992) who proposed a nociceptive hypothesis that tissue damage in dysfunctional muscle can be reduced by the positional release mechanism utilized by SCS. The result of the current study is supported by Carlos et al. (2011), who proved reduction in pain and muscle tension in upper trapezius, which confirm the assumptions that the application of SCS seems to relieve muscle spasm and restore appropriate painless movement and tissue flexibility. Hutchinson (2008) reported that there is significant improvement in VAS for pain intensity following SCS intervention for tennis elbow ^[26]. These finding was in agreement with Marc (2003), who confirmed the analgesic effect of SCS intervention for CLBP. This result also was supported by Meseguer et al. (2006),^[27] who claimed that the application of SCS may be effective in producing hypoalgesia and decreased reactivity of Tender Points in the upper trapezius in subjects with neck pain. Moreover, Pedowitz (2005)^[28] carried out a trial on the use of positional release on iliotibial band friction syndrome and found that the use of SCS as a treatment modality for the athlete can experience reductions in pain and be capable of returning to full activity in less than three weeks from initiation of treatment, compared to an average of 4-6 weeks of conventional therapy. This result also was supported by work of Cleland et al. (2005)^[29] and Wong et al. (2004),^[30] who confirmed the significant pain reduction in their studies.

The current findings shows that only pain & lumbar extension range of motion is effective on Muscle energy technique with McKenzie technique of Group A than other group and there is no difference between the groups on lumbar flexion range of motion, functional disability and quality of life. Hence both groups were equally effective in treating patients with chronic non-specific low back pain.

5.1 LIMITATIONS OF THE STUDY:

- Lack of long term follow-up.
- Small sample size.
- No blinding was done.
- Smaller age group people have a lesser disability and lesser difference in their quality of life.

5.2 SUGGESTION FOR FUTURE STUDIES:

- Duration of the study can be shortened to calculate the immediate effect of the treatment
- Large sample size can be used because greater the sample size greater would be the significance
- Study can be performed with repeated measures with weekly assessment
- Study can be performed using McKenzie assessment.
- Study can be performed with different treatment techniques for elderly patients with low back pain.
- Study can be performed including Lateral flexion and rotation of the lumbar vertebrae.

CHAPTER VI

SUMMARY AND CONCLUSION

The study concludes that Muscle energy technique with McKenzie technique of Group A and Strain counter strain technique with McKenzie technique of Group B are effective on treating pain, flexion and extension range of motion, functional disability and quality of life. But comparing both groups proved that only pain & lumbar extension range of motion is effective on Muscle energy technique with McKenzie technique of Group A than Strain counter strain technique with McKenzie technique of Group B and there is no difference between groups on comparing lumbar flexion range of motion, functional disability and quality of life. Hence both groups were equally effective in treating patients with chronic non-specific low back pain.

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ANNEXURE I



PSG Institute of Medical Sciences & Research Institutional Human Ethics Committee

Recognized by The Strategic Initiative for Developing Capacity in Ethical Review (SIDCER)

POST BOX NO. 1674, PEELAMEDU, COIMBATORE 641 004, TAMIL NADU, INDIA

Phone : 91 422 - 2598822, 2570170, Fax : 91 422 - 2594400, Email : ihec@psgimsr.ac.in

To
Mr Manigandan S R V
II Year MPT
Guide/s: Mr K Saravanan
PSG College of Physiotherapy
Coimbatore

Ref: Project No.17/118

Date: September 6, 2017

Dear Mr Manigandan,

Institutional Human Ethics Committee, PSG IMS&R reviewed and discussed your application dated 03.04.2017 to conduct the research study entitled "*Impact of McKenzie method enriched by muscle energy technique and strain counter strain technique on pain, range of motion, functional disability and quality of life in patients with chronic non-specific low back pain*" during the IHEC review meeting held on 21.04.2017.

The following documents were reviewed and approved:

1. Project Submission form
2. Study protocol (Version 1 dated 03.04.2017)
3. Informed consent forms (Version 2 dated 24.08.2017)
4. Data collection tool (Version 2 dated 24.08.2017)
5. Permission letter from concerned Heads of Department
6. Current CVs of Principal investigator, Co-investigators
7. Budget

The following members of the Institutional Human Ethics Committee (IHEC) were present at the meeting held on 21.04.2017 at College Council Room, PSG IMS & R between 2.30 pm and 4.30 pm:

Sl. No.	Name of the Member of IHEC	Qualification	Area of Expertise	Gender	Affiliation to the Institution Yes/No	Present at the meeting Yes/No
1	Mrs Y Ashraf	MPT	Physiotherapy	Female	Yes	Yes
2	Dr. S. Bhuvaneshwari (Member-Secretary, IHEC)	MD	Clinical Pharmacology	Female	Yes	Yes
3	Mr Gowpathy Velappan	BA., BL	Legal Advisor	Male	No	Yes
4	Dr A Jayavardhana	MD	Clinician (Paediatrics)	Male	Yes	Yes
5	Mr P Karupuchamy	M Phil in PSW	Social Scientist	Male	Yes	Yes
6	Dr G Malarvizhi	M Sc, Ph D	Nursing	Female	Yes	No



PSG Institute of Medical Sciences & Research

Institutional Human Ethics Committee

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7	Mr. R. Nandakumar (Chairperson, IHEC)	BA., BL	Legal Expert	Male	No	Yes
8	Dr. Parag K Shah	DNB	Clinician (Ophthalmology)	Male	No	Yes
9	Mrs P Rama	M Pharm	Non-Medical (Pharmacy)	Female	Yes	No
10	Dr. Seetha Panicker	MD	Clinician (Obstetrics & Gynaecology)	Female	Yes	No
11	Dr. S. Shanthakumari	MD	Pathology	Female	Yes	Yes
12	Dr. Sudha Ramalingam (Alternate Member- Secretary, IHEC)	MD	Public Health, Epidemiology, Genetics	Female	Yes	Yes
13	Mrs. Swasthika Soundararaj	MBA	Lay person	Female	No	Yes
14	Dr. D. Vijaya	M Sc, Ph D	Basic Medical Sciences (Biochemistry)	Female	Yes	No

The study is approved in its presented form. The decision was arrived at through consensus. Neither PI nor any of proposed study team members were present during the decision making of the IHEC. The IHEC functions in accordance with the ICH-GCP/ICMR/Schedule Y guidelines. The approval is valid until one year from the date of sanction. You may make a written request for renewal / extension of the validity, along with the submission of status report as decided by the IHEC.

Following points must be noted:

1. IHEC should be informed of the date of initiation of the study
2. Status report of the study should be submitted to the IHEC every 12 months
3. PI and other investigators should co-operate fully with IHEC, who will monitor the trial from time to time
4. At the time of PI's retirement/intention to leave the institute, study responsibility should be transferred to a colleague after obtaining clearance from HOD, Status report, including accounts details should be submitted to IHEC and extramural sponsors
5. In case of any new information or any SAE, which could affect any study, must be informed to IHEC and sponsors. The PI should report SAEs occurred for IHEC approved studies within 7 days of the occurrence of the SAE. If the SAE is 'Death', the IHEC Secretariat will receive the SAE reporting form within 24 hours of the occurrence
6. In the event of any protocol amendments, IHEC must be informed and the amendments should be highlighted in clear terms as follows:
 - a. The exact alteration/amendment should be specified and indicated where the amendment occurred in the original project. (Page no. Clause no. etc.)
 - b. Alteration in the budgetary status should be clearly indicated and the revised budget form should be submitted
 - c. If the amendments require a change in the consent form, the copy of revised Consent Form should be submitted to Ethics Committee for approval
 - d. If the amendment demands a re-look at the toxicity or side effects to patients, the same should be documented



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e. If there are any amendments in the trial design, these must be incorporated in the protocol, and other study documents. These revised documents should be submitted for approval of the IHEC and only then can they be implemented


f. Any deviation-Violation/waiver in the protocol must be informed to the IHEC within the stipulated period for review

7. Final report along with summary of findings and presentations/publications if any on closure of the study should be submitted to IHEC

Thanking You,

Yours Sincerely,


Dr S Bhuvaneshwar
Member - Secretary
Institutional Human Ethics Committee



ANNEXURE II
ASSESSMENT

Subject Number:

Group:

DEMOGRAPHIC DATA:

Name:

Date of admission:

Age:

Date of assessment

Gender:

IP/OP Number

Occupation:

Contact number:

Address:

SUBJECTIVE ASSESSMENT:

Chief complaints:

Present medical history:

Past medical history:

Personal history:

PAIN HISTORY:

Site:

Side:

Onset:

Duration:

Type:

Aggravating factors:

Relieving factors:

NPRS :(Numerical pain rating scale)

OBJECTIVE ASSESSMENT:

ON OBSERVATION:

Body Built:

Attitude of Limbs:

Posture:

Muscle Wasting:

Deformity:

Gait:

Tropical Changes:

External Appliances:

ON PALPATION:

Muscle tone:

Tenderness:

Muscle spasm:

Warmth:

Myofascial nodules:

ON EXAMINATION:

Range of motion: (Inch Tape)

Movements	DEGREES	
Lumbar flexion		
Lumbar extension		
Lumbar lateral flexion	Right:	Left:
Lumbar Rotation	Right	Left

HIP	RIGHT	LEFT
Flexion		
Extension		
Abduction		
Adduction		
Medial rotation		
Lateral rotation		
KNEE	RIGHT	LEFT
Flexion		
Extension		
ANKLE	RIGHT	LEFT
Dorsi flexion		
Plantar flexion		
<u>Inversion</u>		
<u>Eversion</u>		

Muscle power:

Lumbar flexors	
Lumbar extensors	
Lumbar lateral flexors	
Lumbar rotators	

HIP	RIGHT	LEFT
Flexors		
Extensors		
Abductors		
Adductors		
Medial rotators		
Lateral rotators		
KNEE		
Flexors		
Extensors		
ANKLE		
Dorsiflexors		
Plantar flexors		
<u>Invertors</u>		
<u>Evertors</u>		

Sensation:

Superficial sensation:

Deep sensation:

Reflex: (Wexler's grading)

REFLEX	RIGHT	LEFT
Knee jerk		
Ankle jerk		

Muscle Grith: (Inch tape)

AREA	RIGHT	LEFT
THIGH		
LEG		

SPECIAL TEST(ROM ASSESSMENT):

Modified Schober's test:

PAIN ASSESSMENT:

Numerical pain rating scale:

FUNCTIONAL ASSESSMENT:

Quebec disability questionnaire:

QUALITY OF LIFE ASSESSMENT:

WHO BREF instrument:

PROVISIONAL DIAGNOSIS:

PHYSIOTHERAPY MANAGEMENT:

OBJECTIVES:

TREATMENT PLAN:

A) Short term goal:

B) Long term goal:

TREATMENT GIVEN:

Date:

Therapist:

ANNEXURE III

Follow up chart

Name:

Age:

Gender:

OP No:

Date of assessment:

Chief complaints:

Scale	1 st week (pretest)	2 nd week	3 rd week	4 th week (post test)
Numerical pain rating scale				
Modified Schober's test	Flexion			
	Extension			
Quebec disability questionnaire				
WHO BREF instrument score				

Signature of the therapist:

Date:

FOLLOW UP:

- Detailed assessment will be taken only at the beginning and at the end of the exercise protocol.
- 2nd and 3rd week follow up assessment of each outcome measure will be taken only for the clarification to notice the progression of the treatment and will not be taken for the calculation.
- Only the detailed assessments taken at the beginning and the end of protocol will be used for the calculation.

Post treatment assessment will be taken on the next day of the completion of treatment.

ANNEXURE IV

**PSG Institute of Medical Science and Research, Coimbatore
Institutional Human Ethics Committee
INFORMED CONSENT FORMAT FOR RESEARCH PROJECTS**

I Manigandan.S.R.V., am carrying out a study on the topic: **“IMPACT OF MCKENZIE METHOD ENRICHED BY MUSCLE ENERGY TECHNIQUE AND STRAIN COUNTER STRAIN TECHNIQUE ON PAIN, RANGE OF MOTION, FUNCTIONAL DISABILITY AND QUALITY OF LIFE IN PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN”** as part of my research project being carried out under the aegis of the Department of Orthopedics & Physical Medicine and Rehabilitation.

My research guide is: Mr. Saravanan.K, Associate professor, PSG College of Physiotherapy.

The justification for this study is:

Low back pain is the most relevant form of musculoskeletal disorder. 70 – 80% of people experience Low Back Pain at some stage of their lives. Very few articles have been imposing the treatment effect of Muscle energy technique and strain counter strain technique in low back pain. To our knowledge, the combined treatment effect of McKenzie method with any technique was very few earlier. Therefore the study is to find out the Impact of combined treatment effects of McKenzie method with Muscle energy technique and Strain counter strain technique in relieving Pain, Disability and Quality of life in patients with chronic non-specific low back pain.

The objectives of this study:

To compare the combined treatment effects of McKenzie method with Muscle energy technique and Strain counter strain technique on pain, disability and quality of life in patients with chronic non-specific low back pain.

Sample size: 30

Study volunteers / participants are subjects with chronic non-specific low back pain of age group of 20-50 years.

Location: Department of Orthopedics and Department of PMR, PSG Hospitals.

We request you to kindly cooperate with us in this study. We propose collect background information and other relevant details related to this study. We will be carrying out:

Initial interview: 45 minutes.

Blood sample collection: Specify quantity of blood being drawn: _____ml. **NOT APPLICABLE**

No. of times it will be collected: _____. **NOT APPLICABLE**

Whether blood sample collection is part of routine procedure or for research (study) purpose:

1. Routine procedure 2. Research purpose **NOT APPLICABLE**

Specify **purpose**, discomfort likely to be felt and side effects, if any: _____**NOT APPLICABLE**

Whether blood sample collected will be stored after study period: Yes / No, it will be destroyed**NOT APPLICABLE**

Whether blood sample collected will be sold: Yes / No **NOT APPLICABLE**

Whether blood sample collected will be shared with persons from another institution: Yes / No**NOT APPLICABLE**

Medication given, if any, duration, side effects, purpose, benefits: **NOT APPLICABLE**

Whether medication given is part of routine procedure: Yes / No (If not, state reasons for giving this medication)**NOT APPLICABLE**

Whether alternatives are available for medication given: Yes / No (If not, state reasons for giving this particular medication)**NOT APPLICABLE**

Final interview: 45 minutes.

Data collected will be stored for a period of 5 years. We **will not use** the data as part of another study.

Benefits from this study:

- Pain will be reduced.
- Active Lumbar Range of motion will be improved.
- Functional Disability will be reduced.
- Quality of life will be improved.

Risks involved by participating in this study: There are minimal risks or discomforts will be experienced during this study. The discomforts are stretch pain and exercise induced pain.If pain persists ice packs will be applied to relieve pain.

How the results will be used:

Peer-reviewed scientific journals

Conference presentation

Internal report

The data collected during the study will be used without revealing your identity. Your identity will be confidential even if the results of the study are published.

If you are uncomfortable in answering any of our questions during the course of the interview, **you have the right to withdraw from the interview / study at anytime.** You have the freedom to withdraw from the study at any point of time. Kindly be assured that your refusal to participate or withdrawal at any stage, if you so decide, will not result in any form of compromise or discrimination in the services offered nor would it attract any penalty. You will continue to have access to the regular services offered to a patient. You will **NOT** be paid any remuneration for the time you spend with us for this interview / study. The information provided by you will be kept in strict confidence. Under no circumstances shall we reveal the identity of the respondent or their families to anyone. The information that we collect shall be used for approved research purposes only. You will be informed about any significant new findings - including adverse events, if any, – whether directly related to you or to other participants of this study, developed during the course of this research which may relate to your willingness to continue participation.

Consent: The above information regarding the study, has been read by me/ read to me, and has been explained to me by the investigator/s. Having understood the same, I hereby give my consent to them to interview me. I am affixing my signature / left thumb impression to indicate my consent and willingness to participate in this study (i.e., willingly abide by the project requirements).

Signature / Left thumb impression of the Study Volunteer / Legal Representative:

Signature of the Interviewer with date:

Witness:

Contact number of PI: 9488605700

Contact number of Ethics Committee Office: 0422 4345818

பூ. சா. கோ மருத்துவக் கல்லூரி மற்றும் ஆராய்ச்சி நிறுவனம், கோவை
மனித நெறிமுறைக் குழு

ஓப்புதல் படிவம்

தேதி:

சு. ரா. வெ. மணிகண்டன், ஆகிய நான்பூ. சா. கோ மருத்துவக் கல்லூரியின் /
மருத்துவமனையின் இயன்முறைமருத்துவத்துறையின் கீழ், “மெக்கன்ஸி தொழில்நுட்பத்துடன், தசை
ஆற்றல்நுட்பம், திரிபு எதிர்-திரிபு நுட்பத்தை செறிவூட்டி இணை சிகிச்சையின் தாக்கத்தை நாள்பட்ட கீழ்
முதுகு வலி, இயக்கவரம்பு, செயல்பாட்டுஇயலாமை, வழக்கை தரம் போன்றவற்றை ஒப்பிடுதல்” என்ற
தலைப்பில் ஆய்வு மேற்கொள்ள உள்ளேன்.

என் ஆய்வு வழிகாட்டி: கு. சரவணன், இணைப் பேராசிரியர், பூ. சா. கோ இயன்முறைமருத்துவக் கல்லூரி

ஆய்வு மேற்கொள்வதற்கான அடிப்படை:

முறையற்ற செயல்பாடுமட்டுமின்றி குறிப்பிடப்படாத பல காரணங்களால் கீழ் முதுகு வலி ஏற்படும். 70-85%
மக்களுக்கு இவ்வலி ஏற்படும். இவ்வலி மட்டுமின்றி இயக்கவரம்பு குறைதல், செயல்பாட்டுஇயலாமை,
வாழ்க்கைத்தரம் குறைதல் போன்றவையும் நாள்பட்ட கீழ்முதுகுவலியால் ஏற்படும்.

மெக்கன்ஸி தொழில்நுட்பத்தோடு தசையாற்றல்நுட்பம் மற்றும் திரிபு எதிர் திரிபு தொழில்நுட்பங்களை
பயன்படுத்தி கீழ்முதுகுவலியை குறைத்தல், இயக்கவரம்பை அதிகரித்தல் அன்றாட செயல்பாடுகளை
அதிகரித்தல் மற்றும் வாழ்க்கைத்தரத்தை உயர்த்தல்.

ஆய்வின் நோக்கம்:

இணை சிகிச்சையின் தாக்கத்தால் நாள்பட்ட கீழ்முதுகு

1. வலியை குறைத்தல்
2. செய்வினை இயக்கவரம்பை அதிகரித்தல்
3. அன்றாட செயல்பாடுகளை அதிகரித்தல்
4. வாழ்க்கை தரத்தை உயர்த்தல்

ஆய்வில் பங்கு பெறும் நபர்களின் எண்ணிக்கை: 36

ஆய்வில் பங்கு பெறுவோர் மற்றும் வயது: 20 - 50 வயதுக்குட்பட்ட, நாள்பட்ட முதுகுவலி நபர்கள்.

ஆய்வு மேற்கொள்ளும் இடம்: புனர்வாழ்வு மருத்துவ துறை, எலும்புமற்றும்மூட்டு சிகிச்சை பிரிவு, பூ. சா. கோ. மருத்துவமனை, கோயம்புத்தூர்.

இந்த ஆய்வில் எங்களுடன் ஒத்துழைக்குமாறு கேட்டுக்கொள்கிறோம். நாங்கள் சில தகவல்களை இந்த ஆய்விற்காக சேகரிக்க உள்ளோம்.

ஆய்வு செய்யப்படும் முறை:

இந்த ஆய்வின் மொத்த கால அளவு 8 மாதங்கள். இந்த ஆய்வில் குறிப்பிடப்படாத நாள்பட்ட கீழ்முதுகு வலி அதிகரித்த, இயக்கவரம்பு குறைந்த, அன்றாட செயல்படுகள் குறைந்த மற்றும் வாழ்க்கைத்தரம் குறைந்த 30 நபர்களை 15 பேர்கள் கொண்ட இருக்குழுக்களாக பிரித்துக் கொள்ளப்படும். முதல் வருகையின் போது ஒவ்வொருவரின் வலியை அளக்க எண்கள் கொண்ட வலி மதிப்பீட்டு அளவி மற்றும் செயல்பாட்டு இயலாமையை அளக்க க்யூபக் செயல்பாட்டு இயலாமை கேள்வித்தாள் மற்றும் உலக சுகாதார மையத்தின் வாழ்க்கைத்தரத்தை அளக்கும் கேள்வித்தாள் கொண்டு அளவிடப்படும்.

பின் ஆய்வில் ஈடுபடும் முதல் குழுவிற்கு மெக்கன்ஸி தொழிநுட்பத்துடன், தசை ஆற்றல் நுட்பத்தை இணைத்துக் கொடுக்கப்படும்.

இரண்டாவது குழுவிற்கு மெக்கன்ஸி தொழிநுட்பத்துடன் திரிபு எதிர் திரிபு தொழில்நுட்பத்தை இணைத்துக் கொடுக்கப்படும்.

இவ்விருகுழுவிற்கும் மெக்கன்ஸி பயிற்சிகளை வீட்டிலேயே இருந்து பயிற்சி செய்ய கற்றுத்தரப்படும்.

இச்சிகிச்சை தொடர்ந்து வாரத்திற்கு 3 முறை வீதம் 4 வாரங்கள் கொடுக்கப்படும். இறுதியில் எடுக்கப்படும் முடிவுகள் எண்கள் கொண்டு வலி மதிப்பீட்டு அளவி மற்றும் செயல்பாட்டு இயலாமையை அளக்க க்யூபக் செயல்பாட்டு இயலாமை கேள்வித்தாள் மற்றும் உலக சுகாதார மையத்தின் வாழ்க்கைத்தரத்தை அளக்கும் கேள்வித்தாள் கொண்டு அளவிடப்படும்.

பின்பு அளவீடுகளை ஒப்பிட்டு, வலி குறைந்துள்ளதா, இயக்கவரம்பு அதிகரித்துள்ளதா, செயல்பாட்டு இயலாமை குறைந்துள்ளதா, வாழ்க்கை தரம் உயர்ந்துள்ளதா என ஆராயப்படும்.

முதன்மை நோக்கங்கள்: 45 நிமிடங்கள்

இந்த ஆய்வில் கிடைக்கும் தகவல்கள் **2 வருடங்கள்** பாதுகாக்கப்படும். இந்த தகவல்கள் வேறு ஆய்விற்குப் பயன்படுத்தப்படும்/பயன்படுத்தப்பட மாட்டாது.

சுகாதாரக் கல்வி: அமர்வுகள்: வாரத்திற்கு 3 முறை வீதம் 4 வாரங்களுக்கு, ஒரு அமர்வுக்கான நேரம்: 40 நிமிடங்கள்

மருத்துவ பரிசோதனைகள்: உண்டு

இரத்த மாதிரி சேகரிப்பு: இல்லை

இரத்த மாதிரி எடுப்பதுவழக்கமான சிகிச்சைக்காகவோ அல்லது இந்த ஆய்விற்காகவோ:

பொருந்தாது

இதனால் ஏற்படக் கூடிய அசௌகரியங்கள் / பக்க விளைவுகள்: இதனால் எந்த அசௌகரியமோ, பக்க விளைவுகளோ ஏற்படாது.**பொருந்தாது**

இரத்த மாதிரிகள் ஆய்விற்குப்பின் பாதுகாத்து வைக்கப்படுமா? ஆம் / இல்லை, அழிக்கப்படும்:
பொருந்தாது

சேகரிக்கப்பட்ட இரத்தம் விற்கப்படுமா? ஆம் / இல்லை **பொருந்தாது**

சேகரிக்கப்பட்ட இரத்தம் வேறு நிறுவனத்துடன் பகிர்ந்து கொள்ளப்படுமா? ஆம் / இல்லை: **பொருந்தாது**

மருந்துகள் ஏதேனும் கொடுக்கப்படவிருந்தால் அவை பற்றியவிவரம் (கொடுக்கப்படும் காரணம்,காலம், பக்க விளைவுகள், பயன்கள்): **பொருந்தாது**

மருந்துகள் கொடுக்கப்படுவதுவழக்கமான சிகிச்சை முறையா?: ஆம் / இல்லை (இல்லை என்றால்கொடுக்கப்படும் காரணம்) **பொருந்தாது**

கொடுக்கப்படும்மருந்துகளுக்குமாற்றுஉள்ளதா?: ஆம் / இல்லை (ஆம் என்றால் இந்த குறிப்பிட்ட மருந்து கொடுக்கப்படும் காரணம்) **பொருந்தாது**

ஆய்வில் பங்குபெறுவதால் ஏற்படும் பலன்கள்:

இணை சிகிச்சையின் தாக்கத்தால் நாள்பட்ட கீழ்முதுகு

1. வலியை குறைத்தல்
2. இயக்கவரம்பை அதிகரித்தல்
3. அன்றாட செய்பாடுகளை அதிகரித்தல்
4. வாழ்க்கை தரத்தை உயர்த்தல்

ஆய்வினால்பங்கேற்பதால் ஏற்படும் அசௌகரியங்கள் / பக்க விளைவுகள்: இந்த ஆய்வினால் தங்களுக்கு எந்த விதமான அபாயங்களும் அசௌகரியங்களும் ஏற்படாது. கீழ்முதுகுபயிற்சியின்போது ஏதேனும் வலி ஏற்பட்டால் அதற்கு பணிக்கட்டி ஒத்தடம் கொடுக்கப்படும்.

ஆய்வின் முடிவுகள் எந்த முறையில் பயன்படுத்தப்படும்?

அகநிலை அறிக்கை, கலந்தாய்வுகளில் சமர்ப்பிப்பு, உணர்வு ஆற்றல், பத்திரிக்கைகள் ஆய்வில் சார்ந்த அராய்ச்சி பத்திரிக்கைகள்.

இந்த ஆய்வின் கேள்விகளுக்கு பதிலளிப்பதோ, இரத்த மாதிரிகள் அல்லது திசு மாதிரிகள் எடுப்பதிலோ உங்களுக்கு ஏதேனும் அசௌகரியங்கள் இருந்தால், எந்த நேரத்தில் வேண்டுமானாலும் ஆய்விலிருந்து விலகிக்கொள்ளும் உரிமை உங்களுக்கு உண்டு. ஆய்விலிருந்து விலகிக்கொள்வதால் உங்களுக்கு அளிக்கப்படும் சிகிச்சை முறையில் எந்த வித பாதிப்பும் இருக்காது என்று உங்களுக்கு உறுதியளிக்கிறோம். மருத்துவமனையில் நோயாளிகளுக்கு அளிக்கப்படும் சேவைகளை நீங்கள் தொடர்ந்து பெறலாம். இந்த ஆய்வில் பங்கேற்க ஒப்புக்கொள்ளுவதால் வேறு எந்த விதமான கூடுதலான பலனும் உங்களுக்குக் கிடைக்காது. நீங்கள் அளிக்கும் தகவல்கள் இரகசியமாக வைக்கப்படும். ஆய்வில் பங்கேற்பவர்கள் பற்றியோ அவர்கள் குடும்பத்தைப் பற்றியோ எந்தத் தகவலும் எக்காரணம் கொண்டும் வெளியிடப்படாது என்று உறுதியளிக்கிறோம். நீங்கள் அளிக்கும் தகவல்கள் / இரத்த மாதிரிகள் / திசு மாதிரிகள் அங்கீகரிக்கப்பட்ட ஆய்விற்கு மட்டுமே பயன்படுத்தப்படும். இந்த ஆய்வு நடைபெறும் காலத்தில் குறிப்பிடத்தகுந்த புதிய கண்டுபிடிப்புகள் அல்லது பக்க விளைவுகள் ஏதும் ஏற்பட்டால் உங்களுக்குத் தெரிவிக்கப்படும். இதனால் ஆய்வில் தொடர்ந்து பங்கு பெறுவது பற்றிய உங்கள் நிலைப்பாட்டை நீங்கள் தெரிவிக்க ஏதுவாகும்.

ஆய்வுக்குட்படுபவரின் ஒப்புதல்: இந்த ஆய்வைப்பற்றிய மேற்கூறிய தகவல்களை நான் படித்து அறிந்து கொண்டேன் / ஆய்வாளர் படிக்கக் கேட்டுத் தெரிந்து கொண்டேன். ஆய்வினைப்பற்றி நன்றாகப் புரிந்து கொண்டு இந்த ஆய்வில் பங்கு பெற ஒப்புக்கொள்கிறேன். இந்த ஆய்வில் பங்கேற்பதற்கான எனது ஒப்புதலை கீழே கையொப்பமிட்டு. கை ரேகை பதித்து நான் தெரிவித்துக் கொள்கிறேன்.

பங்கேற்பாளரின் பெயர், முகவரி:

பங்கேற்பாளரின் கையொப்பம் / கை ரேகை / சட்டப்பூர்வ பிரதிநிதியின் கையொப்பம்:

தேதி :

ஆய்வாளரின் கையொப்பம்:

தேதி :

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ANNEXURE V

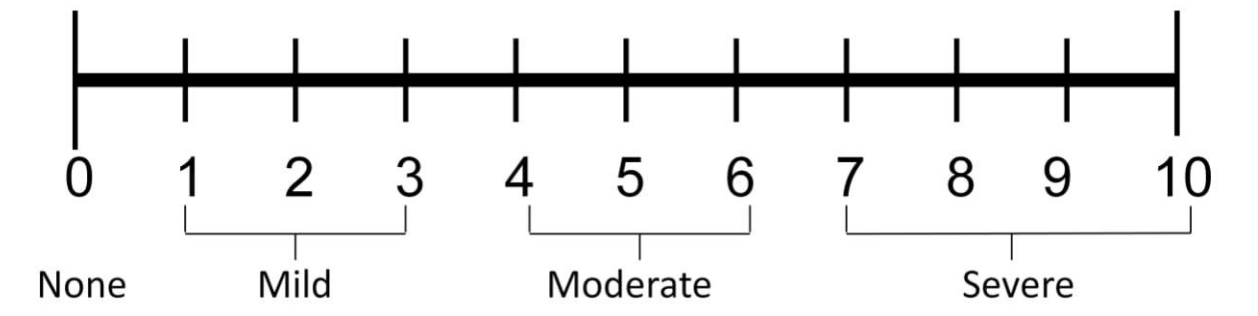
The Numeric Pain Rating Scale Instructions

General Information:

- The patient is asked to make three pain ratings, corresponding to current, best and worst pain experienced over the past 24 hours.
- The average of the 3 ratings was used to represent the patient's level of pain over the previous 24 hours.

Patient Instructions (adopted from (McCaffery, Beebe et al. 1989):

"Please indicate the intensity of current, best, and worst pain levels over the past 24 hours on a scale of 0 (no pain) to 10 (worst pain imaginable)"



Reference:

McCaffery, M., Beebe, A., et al. (1989). Pain: Clinical manual for nursing practice, Mosby St. Louis, MO.

Modified Schober Test (Lumbar Range of Motion)

Client Name _____ Date _____

INTRODUCTION:

The modified Schober method: a technique for assessing spinal motion. Although the technique is reliable (Moll & Wright, 1971), its primary usefulness may be in screening for the very limited mobility that patients exhibit who have diseases like ankylosing spondylitis.

INSTRUCTIONS:

- 1.) Use a pen to mark the midpoint between the posterior superior iliac spines (PSIS). Then use your tape measure to identify and mark two points: (1) one that is 10 cm superior to the PSIS, and (2) one that is 5 cm inferior to the PSIS.
- 2.) As the client flexes the spine as far as possible, measure and record the distance between the superior and inferior marks.
- 3.) Similarly, measure and record the distance between the superior and inferior marks as your partner extends the spine as far as possible.

VISITS:

	DATE	FLEXION	EXTENSION	COMMENTS
1.)				
2.)				
3.)				
4.)				
5.)				
6.)				

The Quebec Back Pain Disability Scale

Source: Kopec JA, Esdaile JM, Abrahamowicz M, Abenhaim L, Wood-Dauphinee S, Lamping DL, et al. The Quebec Back Pain Disability Scale. Measurement properties. *Spine*. 1995 Feb 1;20(3):341-52.

The Quebec Back Pain Disability Scale is a 20-item self-administered instrument designed to assess the level of functional disability in individuals with back pain. The scale is a reliable and valid measure used for monitoring the progress of individual patients participating in treatment or rehabilitation programs.

Scoring instructions

The patient is instructed to answer each question on a scale. Add up the selected numbers for a total score.

Interpretation of scores

The minimum score is 20 and the maximum score is 100. Higher scores correlate to greater disability.

$\% \text{ of maximal disability} = (\text{score} - 20) / 80 * 100\%$

Minimum detectable change (90% confidence) 15 points.

The Quebec Back Pain Disability Scale

This questionnaire is about the way your back pain is affecting your daily life. People with back problems may find it difficult to perform some of their daily activities. We would like to know if you find it difficult to perform any of the activities listed below, because of your back. For each activity there is a scale of 0 to 5. Please choose one response option for each activity (do not skip any activities) and circle the corresponding number.

Today, do you find it difficult to perform the following activities because of your back?

		0 Not difficult at all	1 Minimally difficult	2 Somewhat difficult	3 Fairly difficult	4 Very difficult	5 Unable to do
1	Get out of bed	0	1	2	3	4	5
2	Sleep through the night	0	1	2	3	4	5
3	Turn over in bed	0	1	2	3	4	5
4	Ride in a car	0	1	2	3	4	5
5	Stand up for 20-30 minutes	0	1	2	3	4	5
6	Sit in a chair for several hours	0	1	2	3	4	5
7	Climb one flight of stairs	0	1	2	3	4	5
8	Walk a few blocks (300-400 m)	0	1	2	3	4	5
9	Walk several kilometres	0	1	2	3	4	5
10	Reach up to high shelves	0	1	2	3	4	5
11	Throw a ball	0	1	2	3	4	5
12	Run one block (about 100m)	0	1	2	3	4	5
13	Take food out of the refrigerator	0	1	2	3	4	5
14	Make your bed	0	1	2	3	4	5
15	Put on socks (pantyhose)	0	1	2	3	4	5
16	Bend over to clean the bathtub	0	1	2	3	4	5
17	Move a chair	0	1	2	3	4	5
18	Pull or push heavy doors	0	1	2	3	4	5
19	Carry two bags of groceries	0	1	2	3	4	5
20	Lift and carry a heavy suitcase	0	1	2	3	4	5

World Health Organization Quality of Life BREF (WHOQOL-BREF)

(age 18 and older)

NAME: _____ DATE: _____

Please circle the number that best describes your feelings in the **last 60 days**.

	Very Poor	Poor	Neither	Good	Very Good
1. How would you rate your quality of life?	1	2	3	4	5

	Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied
2. How satisfied are you with your health?	1	2	3	4	5

	Not At All	A Little	Moderate Amount	Very Much	Extreme Amount
3. Do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4. How much do you need medical treatment to function in your daily life?	5	4	3	2	1
5. How much do you enjoy life?	1	2	3	4	5
6. Do you feel your life to be meaningful?	1	2	3	4	5
7. How well are you able to concentrate?	1	2	3	4	5
8. How safe do you feel in your daily life?	1	2	3	4	5
9. How healthy is your physical environment?	1	2	3	4	5

	Not At All	A Little	Moderately	Mostly	Completely
10. Do you have enough energy for daily life?	1	2	3	4	5
11. Are you able to accept your appearance?	1	2	3	4	5
12. Do you have enough money to meet needs?	1	2	3	4	5
13. How available to you is the information that you need in your daily life?	1	2	3	4	5
14. Do you have the opportunity for leisure?	1	2	3	4	5

	Very Poor	Poor	Neither	Good	Very Good
15. How well are you able to get around?	1	2	3	4	5

	Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied
16. How satisfied are you with your sleep?	1	2	3	4	5
17. How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18. How satisfied are you with your work ability?	1	2	3	4	5
19. How satisfied are you with yourself?	1	2	3	4	5
20. How satisfied are you with your personal relationships?	1	2	3	4	5
21. How satisfied are you with your sex life?	1	2	3	4	5
22. How satisfied are you with the support you get from your friends?	1	2	3	4	5
23. How satisfied are you with the conditions of your living place?	1	2	3	4	5
24. How satisfied are you with your access to health services?	1	2	3	4	5
25. How satisfied are you with your transportation?	1	2	3	4	5

	Never	Seldom	Often	Very Often	Always
26. How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

TOTAL SCORE=	
---------------------	--

ANNEXURE VI

TREATMENT PROTOCOL:

WEEK	McKENZE METHOD WITH MUSCLE ENERGY TECHNIQUE	McKENZE METHOD WITH STRAIN COUNTER STRAIN TECHNIQUE
1ST WEEK	<ul style="list-style-type: none"> • Presentation of the method, including history and general information about the McKenzie method. • Initial assessment including data collection pretreatment. • Completion of the exercises after initial evaluation and indication of movement direction preference: flexion, extension, or lateral shift of the spine. • Education component: basic information about low back pain and spinal anatomy; mechanical pain; how and why to do exercises; and types of responses that can occur in response to the exercise program. • Application of Muscle energy technique • Guidance on completing the exercises at home 	<ul style="list-style-type: none"> • Presentation of the method, including history and general information about the McKenzie method. • Initial assessment including data collection pretreatment. • Completion of the exercises after initial evaluation and indication of movement direction preference: flexion, extension, or lateral shift of the spine. • Education component: basic information about low back pain and spinal anatomy; mechanical pain; how and why to do exercises; and types of responses that can occur in response to the exercise program. • Application of Strain counter strain technique. • Guidance on completing the exercises at home
2ND WEEK	<ul style="list-style-type: none"> • Progression of the exercises defined after first session and progression in line with the responses of each patient. • Educational component: basic information about the most likely causes of low back pain, emphasizing posture when seated for a prolonged time; practice on finding the correct seated position and maintenance of lumbar lordosis while seated. • Application of Muscle energy technique. • Guidance on continuing the exercises at home 	<ul style="list-style-type: none"> • Progression of the exercises defined after first session and progression in line with the responses of each patient. • Educational component: basic information about the most likely causes of low back pain, emphasizing posture when seated for a prolonged time; practice on finding the correct seated position and maintenance of lumbar lordosis while seated. • Application of Strain counter strain technique. • Guidance on continuing the exercises at home

<p>3RD WEEK</p>	<ul style="list-style-type: none"> • Progression of the exercises defined after second session and progression toward other position in line with the responses of the patient. • Educational component: basic information about the most likely causes of low back pain, emphasizing work on bending positions; standing up; relaxing after vigorous activity; remaining in standing position for prolonged periods. • Application of Muscle energy technique. • Guidance on continuing the exercises at home. 	<ul style="list-style-type: none"> • Progression of the exercises defined after second session and progression toward other position in line with the responses of the patient. • Educational component: basic information about the most likely causes of low back pain, emphasizing work on bending positions; standing up; relaxing after vigorous activity; remaining in standing position for prolonged periods. • Application of Strain counters strain technique. • Guidance on continuing the exercises at home
<p>4TH WEEK</p>	<ul style="list-style-type: none"> • Progression of the exercises defined after third session and progression toward other positions in line with the responses of the patient. • Application of Muscle energy technique. • Educational component, review of the most important points since the first week. • Final assessment including data collection post treatment. 	<ul style="list-style-type: none"> • Progression of the exercises defined after third session and progression toward other positions in line with the responses of the patient. • Application of Strain counters strain technique. • Educational component, review of the most important points since the first week. • Final assessment including data collection post treatment.

Muscle energy technique:

Muscle energy technique begins with positioning the patient after assessment.

Patient will be positioned in supine lying position.

During MET, the subject was asked to push their leg into the examiner's shoulder and hold their leg up to 4 contractions.

The contractions were resisted by a force equal to that of the subject's force.

The contraction should be held for 5 seconds and rest for 5 seconds between each contraction.

The patient can be advised to perform their normal ADL's and asked to avoid vigorous exercises or heavy lifting & pain relieving medications.

Strain Counter strain technique:

In strain counter strain technique position of comfort is the first step.

Position of comfort is the patient position in which the TP's is least tender: at least 70% less tender than assessment.

Patient will be in Prone lying position.

Position of ease is obtained with hip abduction and extension and slight hip internal-external rotation. Resting the leg on Practitioner's thigh assures the patient remains relaxed.

The practitioner palpates the Superior sacro iliac area with a medial directed force around the tips of transverse process, spinous process, paraspinal area and attachment of quadratus lumborum

The isometric contraction or ischemic compression facilitates the release in which the medial force is held for 90 seconds with 5 seconds of rest period on the palpated tender points.

HOME PROGRAM

All the exercises should be performed 10 times a session and 3 sessions a day
ஒவ்வொருபயிற்சியையும் 10 முறை வீதம் ஒரு நாளைக்கு 3 வேளை செய்ய வேண்டும்



Trunk flexion in Lying down

From a supine position with knees and hips flexed, the patient raises the knees toward the chest, applying extra pressure using the hands. 3 sets of 10 repetitions Repetitions could be performed sequentially, with a small break between repetitions or split into different times of day, according to the response of the patient.

படுத்த நிலையில் முதுகு தண்டை முன்னே மடித்தல்

நேராக படுக்கவும், பின்பு இரு கால் முட்டிகளையும் மடித்து கைகளால் பிடித்து மார்பை தொட முயற்சிக்கவும்.



Trunk flexion in Seated

Seated on a chair, with knees and hips flexed at 90 degrees, the patient bends forward until the head is between the knees and the hands are as close to the floor as possible. The patient can hold on to the ankles, bringing the trunk even closer to the knees.

அமர்ந்த நிலையில் முதுகு தண்டை முன்னே மடித்தல்

நாற்காலியில் அமரவும், தலையை இருமுட்டுக்கும் இடையில் இருக்கும் அளவுக்கு முதுகு தண்டை முன்னேவளைத்து தரையை தொட முயற்சிக்கவும்.



Trunk flexion in Standing

With feet shoulder-width apart, the patient places his or her fingers on the front of the toes, gliding hands toward the floor and keeping the knees extended.

நின்ற நிலையில் முதுகு தண்டை முன்னே மடித்தல்

தோள்பட்டை அளவுக்கு கால்களை அகட்டிவளைக்கவும். முதுகு தண்டை முன்னேவளைத்து காலின் கட்டை விரலை கை விரல்களால் தொட முயற்சிக்கவும்.



Trunk extension in Lying down

The patient begins in a prone position with the palms of the hands on the floor just in front of the shoulders. The patient extends the elbows, elevating the upper part of the body, while the pelvis and thighs remain relaxed. 3 sets of 10 repetitions. Repetitions could be performed sequentially, with a small break between repetitions or split into different times of day, according to the response of the patient.

கீழ்நோக்கி படுத்த நிலையில் முதுகு தண்டை பின்னே மடித்தல்

கீழ்நோக்கி (குப்புற) படுக்கவும், இருகைகளையும்பக்கவாட்டில் வைத்துமுழங்கைகளை நீட்டி மேல் உடம்பையும் தலையையும் மேலே உயர்த்தவும்.



Trunk extension in Standing

With feet shoulder-width apart, the patient places his or her hands at the base of lower back, fingers pointed toward the floor, and extends the trunk backward as far as possible, keeping the neck relaxed.

நின்ற நிலையில் முதுகு தண்டை பின்னே மடித்தல்

தோள்பட்டை அளவுக்கு கால்களை அகட்டி வைக்கவும், இருகைகளையும் கீழ் முதுகில் வைத்து முதுகு தண்டை பின்னேவளைக்க முயற்சிக்கவும்.



Lateral shift in Standing with upper arm support

With feet placed shoulder-width apart and the upper arm bent at 90 degrees of elbow flexion with the hand contacting the lateral trunk. Using the hand, supported by the upper arm, the patient manually shifts the pelvis to the opposite side. 3 sets of 10 repetitions Repetitions could be performed sequentially, with a small break between repetitions or split into different times of the day, according to the response of the patient.

கைகளின் உதவியுடன் இடுப்பைபக்கவாட்டில் நகர்த்துதல்

தோள்பட்டை அளவுக்கு கால்களை அகட்டி, சுவரை ஒட்டி நிற்கவும். ஒரு முழங்கையை 90° மடித்துக்கொள்ளவும். மற்றொரு கையை இடுப்பில் வைத்து இடுப்பை மறுபுறம் நகர்த்தவும். பின்னர் இதே முறையை மறுபுறமும் செய்யவும்.

Home exercise monitoring

Exercise protocol

2 sessions/day for 3 days a week for 4 weeks

Every week 1st day patient will be asked to come to PMR or orthopedic OPD

1st week

- 1st day patient will be assessed.
- 1st day program will be performed under the supervision of the therapist with guidance.
- Alternatedays patient will be performing the exercise at home under the supervision of the care taker.
- Therapist will also monitor the exercise program through regular calls.

2nd & 3rd week

- 1st day program will be performed under the supervision of the therapist with guidance on visiting days.
- Alternate days patient will be performing the exercise at home under the supervision of the care taker.

4th week

- 1st day program will be performed under the supervision of the therapist with guidance.
- Alternate days patient will be performing the exercise at home under the supervision of the care taker.
- Last day patient will be asked to come to PMR or orthopedic OPD and will be reassessed for the results.

ABSTRACT

IMPACT OF MCKENZIE METHOD ENRICHED BY MUSCLE ENERGY TECHNIQUE AND STRAIN COUNTER STRAIN TECHNIQUE ON PAIN, RANGE OF MOTION, FUNCTIONAL DISABILITY AND QUALITY OF LIFE IN PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN

Background: Recent focus for the patients with chronic non-specific low back pain has been applying manual therapy techniques to attain immediate effects on pain, range of motion, quality of life, etc. Manual therapy techniques were beneficial for patients with chronic non-specific low back pain (CNLBP) both in reducing the symptoms of pain and in improving the function. Manual therapy trials were under process to attain maximum recovery from chronic non-specific low back pain.

Purpose: The purpose of the present study was to compare McKenzie exercises enriched with Muscle energy technique and McKenzie exercises enriched with Strain counter strain technique in patients with CNLBP.

Methods: Thirty patients (male and female) with age ranging between 20 and 50 years, with CNLBP were assigned randomly to two equal treatment groups. The first group (n=15) underwent a four weeks program of Muscle Energy technique along with McKenzie technique treatment. The second group (n=15) underwent a four weeks program of Strain Counter Strain technique along with McKenzie technique treatment. Outcome measures include pain intensity; lumbar flexion & extension range of movements, functional disability and quality of life were measured.

Results: After intervention the present study revealed that patients in both groups showed statistical significance ($p < 0.05$) differences in all outcome measures between pre test and post test values of Group A and Group B. There is no statistical significance ($p > 0.05$) difference in lumbar flexion range of motion, function disability and quality of life level between both groups and there is a significant difference ($p < 0.05$) in pain intensity level and lumbar extension range of motion in patients with CNLBP.

Conclusion: The current results proved that both Muscle energy technique and Strain counter strain technique along with McKenzie technique are effective in reducing pain, increasing lumbar flexion & extension range of motion, functional disability and quality of life in patients with CNLBP.

Keywords: McKenzie, Muscle Energy Technique, Strain Counter Strain, Low Back Pain