

EFFECT OF MAITLAND'S SPINAL MOBILIZATIONS VERSUS EFFECT OF MCKENZIE EXTENSION EXERCISES ON PAIN AND RANGE OF MOTION AND FUNCTIONAL DISABILITY IN SUBJECTS WITH SUBACUTE LOW BACK RADIATING PAIN IN POSTERO-CENTRAL DISC BULGE .”

- A comparative study

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Abstract-

INTRODUCTION: The term prolapsed disc means the protrusion or extrusion of the Nucleus Pulposus. It is not a onetime phenomenon rather it is a sequence of change the disc which ultimately leads to its prolapsed condition Subacute low back pain lasts for 3-6 months (1) McKenzie approach that consists of six specific exercises in certain positions (laying in prone position, stand-ing, laying in supine position and sitting), which gradually increasing pressure on vertebra. (2) The application of the Maitland concept can be on the peripheral or spinal joints, both require technical explanation and differ in technical terms and effects, however the main theoretical approach is similar to both [4].

METHOD: Thirty subjects who fulfilled selection criteria included using NPRS SCHOBERS'S to measure lumbar range of motion and Oswestry low back disability index subjects were evaluated for subacute low back pain in postero central disc bulge using NPRS SCHOBERS'S TEST AND OSWESTRY DISABILITY INDEX first group maitland spinal mobilizations Below and above the affected joint level , 2 sets of oscillations were given ¹. PA GLIDE -3to 4 sets 40 counts in each set – for 10 minutes Treatment continued for 5- days continuously GROUP B MCKENZIE EXTENSION EXERCISES (Treatment duration and frequency:5 sec hold 10 repetitions for 10 minutes for 5 days)

RESULT: According to Man Whittney U test both groups showed statistically significant decline in pain (NPRS) , Improvement in range of motion (SCHOBERS) and reduction in disability associated with subacute low back pain (OSD) five days of intervention found statistically no difference in both groups according to this outcome measures.

CONCLUSION: Maitland s PA mobilization and Mckenzie extension exercise are both effective in reducing the subacute low back pain and hence increase ROM and significantly improved functional independent.

Keywords: subacute low back pain, Oswestry disability index, NPRS, Schobers test, Maitland mobilization, Mckenzie exercise.

INTRODUCTION

Low back pain is a common musculoskeletal disorder (1).

The term prolapsed disc means the protrusion or extrusion of the Nucleus Pulposus. It is not a onetime phenomenon rather it is a sequence of change the disc which ultimately leads to its prolapsed condition (2).

Degeneration of the lumbar intervertebral disc is a major factor associated with low back pain (2).

Subacute low back pain lasts for 3-6 months following an injury or disease process. .

Nerve distribution varies greatly among individuals Prevalence: 60-90%, Annual incidence is 5%

The intervertebral disc is the main joint between two consecutive vertebrae in the vertebral column.Each disc consists of three different structures: annulus fibrosus gelatinous nucleus pulposus, an outer annulus fibrosus that surrounds the nucleus pulposus, and two cartilage endplates that cover the upper and lower surfaces of vertebral body

One of exercises programs for low back pain can be McKenzie approach that consists of six specific exercises, in certain positions (laying in prone position, stand-ing, laying in supine position and sitting), which gradually increasing pressure on vertebra. During this exercise program postural correction is needed as well as observation of all changing in pain intensity and location. McKenzie exercise program can start in acute pain and performed in all pain stages. It is not allowed to feel any leg pain during exercising, and if that happened, patients have to do the previous exercise. These exercises can be called

selfmanipulation exercises and it has to be done in small session but frequently, during the day. Number of session and daily frequency depends of stage of disease and pain intensity (6,7,8,9,10).

"The Maitland Concept of Manipulative Physiotherapy [as it became to be known], emphasises a specific way of thinking, continuous evaluation and assessment and the art of manipulative physiotherapy ("know when, how and which techniques to perform, and adapt these to the individual Patient") and a total commitment to the patient." [3]

The application of the Maitland concept can be on the peripheral or spinal joints, both require technical explanation and differ in technical terms and effects, however the main theoretical approach is similar to both [4].

The concept is named after its pioneer Geoffrey Maitland who was seen as a pioneer of musculoskeletal physiotherapy, along with several of his colleagues

Dermatomeal pain - pain in the distribution of a single nerve root that innervates a specific area of skin may be associated with neurologic loss. Nerve distribution varies greatly among the individuals .

NEED FOR STUDY

Studies are done in - (a) Efficacy of Maitland's spinal mobilizations versus Mckenzie press up exercises on pain, range of motion and functional disability in subjects with non radiating acute low back pain .

(b) Comparison of the effectiveness of Core strengthening exercise and Mckenzie extension exercise on the pain functional disability in Lumbar PIVD condition

(c) Sciatica : Treatment with a blend of Maitland mobilization, Mckenzie Exercises along with NMES a case study

(d) Effect of seven sessions of posterior - anterior spinal mobilization versus prone press - ups in non specific low back pain

• **Comparison between Maitland's spinal mobilizations vs Mckenzie extension Exercises in postero central disc bulge in subacute low back radiating pain has not been done yet.**

AIM

1. To compare the effect Maitland's spinal mobilizations versus Mckenzie extension exercise in subacute low back radiating pain in postero Central disc bulge .

OBJECTIVE

In subacute low back radiating pain:

1. Effect of Maitland's spinal mobilizations in postero central Disc bulge by giving posterior anterior and central glide.

2. Effect of Mckenzie extension exercises in postero central disc bulge .

HYPOTHESIS

• ALTERNATIVE HYPOTHESIS

• There will be significant difference in the effect of Maitland mobilization (PA) glide vs Mckenzie extension exercises on subjects with sub acute low back radiating pain.

NULL HYPOTHESIS

• There will be no significant difference in the effect of Maitland mobilization (PA) glide vs Mckenzie extension exercises on subjects with sub acute low back radiating pain

REVIEW OF LITERATURE

(1) Moldovan M. (2012)

This is comparative study and the aim of the present study is to compare these two protocols , Mckenzie and Williams, in terms of principles and Exercises, in order to reveal which one is more suitable in LBP. They found Mckenzie protocol is more efficient than the Williams one in terms of pain

(2) Warude T, S Shannmugam S. (2012)

The aim of this study was to analyze the efficacy of combined treatment with Mckenzie and Mobilization SNAGS . they found effectiveness in improving pain, functional ability and ROM in prolapsed intervertebral disc with unilateral radiculopathy , later is more effective

(3) Gupta S. (2015)

Study is designed to compare the effectiveness of Mckenzie Extension Exercises versus William's flexion exercises for reducing low Back in BPT students. This is conducted Experimental study, Randomized Clinical trial. 30 low back pain subjects were recruited into two groups, outcome measure using NPRS scale . they found the Mckenzie extension exercise group more effective in reducing low back pain for BPT Students as compared to William flexion exercise group.

(4) Szulc P, Wendt M, Waszak M, et al. (2015)

The aim of this study was to analyze the efficacy of combined treatment with Mckenzie method and MET, and to compare it with the outcomes of treatment with Mckenzie method on standard Physiotherapy in specific chronic lumbar pain . the study included 60 men and women with LBP DATA was analysed with the using of VAS they found combined method can be

SCORE	DISABILITY LEVEL
0 - 4	No disability
5 - 14	Mild disability
15 - 24	Moderate disability
25 - 34	Severe disability
35 - 50	Completely disabled

SECTION 1 - PAIN INTENSITY

- I can tolerate the pain I have without having to use painkillers.
- The pain is bad but I manage without taking painkillers.
- Painkillers give complete relief from pain.
- Painkillers give moderate relief from pain.
- Painkillers give very little relief from pain.
- Painkillers have no effect on the pain and I do not use them.

SECTION 2 - PERSONAL CARE (washing, dressing etc.)

- I can look after myself normally, without causing extra pain.
- I can look after myself normally, but it causes extra pain.
- It is painful to look after myself and I am slow and careful.
- I need some help, but manage most of my personal care.
- I need help every day in most aspects of self-care.
- I do not get dressed, wash with difficulty and stay in bed.

SECTION 3 - LIFTING

- I can lift heavy weights without extra pain.
- I can lift heavy weights, but it gives extra pain.
- Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently positioned (e.g., on a table).
- Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned.
- I can lift only very light weights.
- I cannot lift or carry anything at all.

SECTION 4 - WALKING

- Pain does not prevent my walking any distance.
- Pain prevents me walking more than 1 mile.
- Pain prevents me walking more than ½ of mile.
- Pain prevents me walking more than ¼ mile.
- I can only walk using a stick or crutches.
- I am in bed most of the time and have to crawl to the toilet.

SECTION 5 - SITTING

- I can sit in any chair as long as I like.
- I can sit in my favourite chair as long as I like.
- Pain prevents me sitting more than 1 hour.
- Pain prevents me from sitting more than ½ an hour.
- Pain prevents me from sitting more than 10 minutes.
- Pain prevents me from sitting at all.

SECTION 6 - STANDING

- I can stand as long as I want without extra pain.
- I can stand as long as I want but it gives me extra pain.
- Pain prevents me from standing for more than 1 hour.
- Pain prevents me from standing for more than 30 minutes.
- Pain prevents me from standing for more than 10 minutes.
- Pain prevents me from standing at all.

SECTION 7 - SLEEPING

- Pain does not prevent me from sleeping well.
- I can sleep well only by using tablets.
- Even when I take tablets, I have less than 6 hours sleep.
- Even when I take tablets, I have less than 4 hours sleep.
- Even when I take tablets, I have less than 2 hours sleep.
- Pain prevents me from sleeping at all.

SECTION 8 - SEX LIFE (If applicable)

- My sex life is normal and causes no extra pain.
- My sex life is normal but causes some extra pain.
- My sex life is nearly normal but is very painful.
- My sex life is severely restricted by pain.
- My sex life is nearly absent because of pain.
- Pain prevents any sex life at all.

SECTION 9 - SOCIAL LIFE

- My social life is normal and gives me no extra pain.
- My social life is normal, but increases the degree of pain.
- Pain has no significant effect on my social life apart from limiting my more energetic interests, e.g., dancing, etc.
- Pain has restricted my social life and I do not go out as often.
- Pain has restricted my social life to my home.
- I have no social life because of pain.

SECTION 10 - TRAVELLING

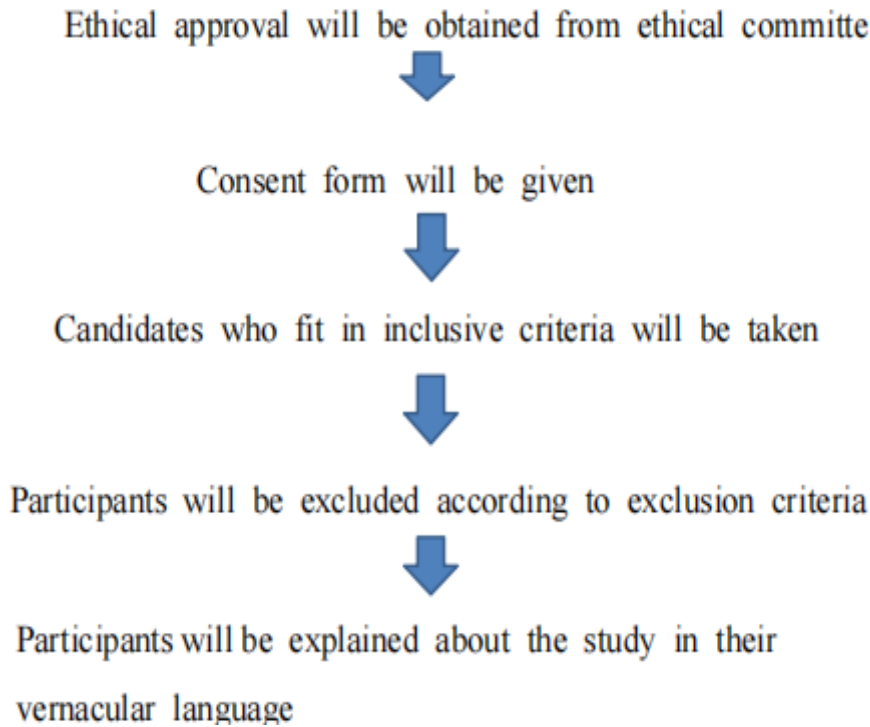
- I can travel anywhere without extra pain.
- I can travel anywhere but it gives extra pain.
- Pain is bad but I manage journeys over 2 hours.
- Pain restricts me to journeys of less than 1 hour.
- Pain restricts me to short necessary journeys under 30 minutes.
- Pain prevents travel except to the doctor or hospital.

PROCEDURE

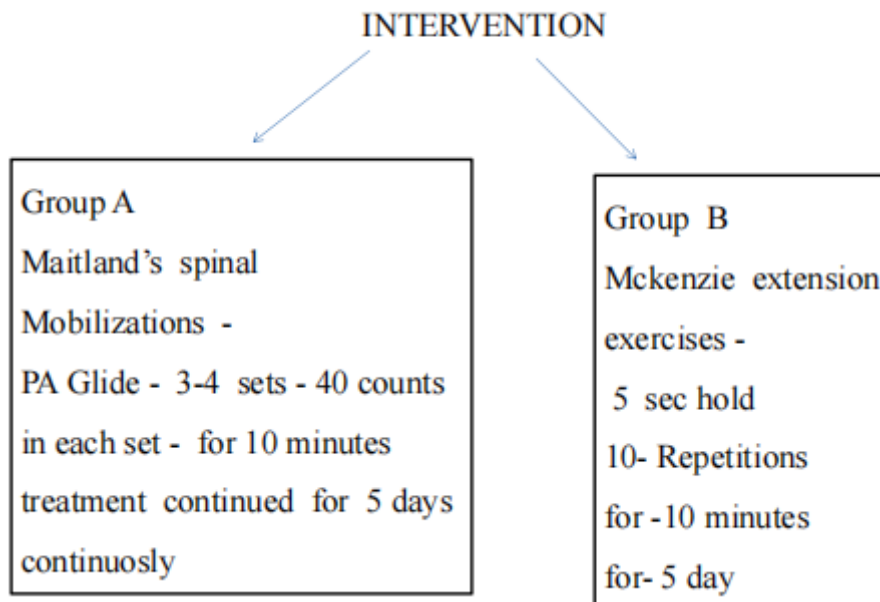
Ethical clearance will be obtained from the institutional ethical committee subjects will be selected according to the inclusion criteria . prior to the study subjects will explained the procedure A written informed consent will be taken from the subjects prior to the study .

Subjects will be tested for 1 pain according to NPRS . 2 Range of motion by Schobers test 3 and functional independence by OSD. The subjects will be randomly divided into groups GROUP A MAITLAND PA GLIDE - GROUP B MCKENZIE EXTENSION EXERCISE The intervention will be given for 5 consecutive days continuously

PROCEDURE



INTERVENTION



GROUP A

MAITLAND'S SPINAL MOBILIZATIONS (Postero-Anterior Glide)

- Patient Prone with pillow under the abdomen
- PA glide starting with grade 1 on all joint segment
- At painful joint level , the grading was increased with 3 - 4 sets of oscillations of 40 counts in each set .
- Below and above the affected joint level , 2 sets of oscillations were given ¹.

PA GLIDE -3to 4 sets 40 counts in each set – for 10 minutes Treatment continued for 5- days continuously



Figure (1) showing Maitland Mobilization of lumbar spine by giving PA glide from starting with Grade (1)



Figure (2) showing Maitland mobilization (PA) glide on Unilateral side.

GROUP B

MCKENZIE EXTENSION EXERCISES

GROUP B MCKENZIE EXTENSION EXERCISES

(Treatment duration and frequency:5 sec hold 10 repetitions for 10 minutes for 5 days)

- (1) Prone lying : - the patient adopts the prone lying position with the arms alongside the trunk and head turned to one side . this position is maintained for 20 second repeat 10 times .
- 2) -Prone on elbows : the patient , already lying prone , places the elbows under the shoulders and raises the top half of his body so that he comes to lean on elbows and forearms while pelvis and thighs remain on the couch and this position is maintained for 20 seconds repeat 10 times
- 3) -Prone press ups : lie on your stomach with palms near your shoulders . slowly push your shoulders up , keeping your hips on the surface and letting your back , repeat 10-20 times .
- 4) - Prone arm /leg raises - lie on stomach on the mat keeping neck in line with straight legs , and arms outstretched overheads lowly raise and lower each arm and leg , one at a time 5 repetitions on each limb work alternate limbs by lifting right arm and left leg at the same time repetitions ; change to work reverse pair .
- 5) -Standing extension - While standing , place your hands on your back and lean backward . hold for 20 seconds and repeat 10 times .

(6) - Prone lying superman's extension exercises - lie on your stomach on mat with arms and legs extended ; retract shoulder blades down and in towards the midline of your spine and maintainig this position, lift opposite arm and opposite leg ensuring that your hips stay in contact with the floor hold for 5-10 seconds and reverse sides. repeat 10 -20 times 2



MCKENZIE EXTENSION EXERCISES GROUP B

FIGURE (1) SHOWS PRONE ON ELBOWS- and this position is maintained for 20 second .



MCKENZIE EXTENSION EXERCISES GROUP (B)

FIGURE (2) SHOWS PRONE PRESS UPS -this exercise should be repeated 10 -20 times

FIGURE (3) PRONE LYING – SUPERMAN’S EXTENSION EXERCISES -hold for 5-10 seconds and reverse sides. repeat 10 -20 times 2



FIGURE (4) SHOWS STANDING EXTENSION EXERCISE
Hold position for 20 seconds and repeat 10 times

STATISTICAL DATA ANALYSIS

GROUP A

Pre Post intervention – t test

Group B

Pre and Post intervention - t test

Between Group A and Group B will be done by mann whittney U test ..

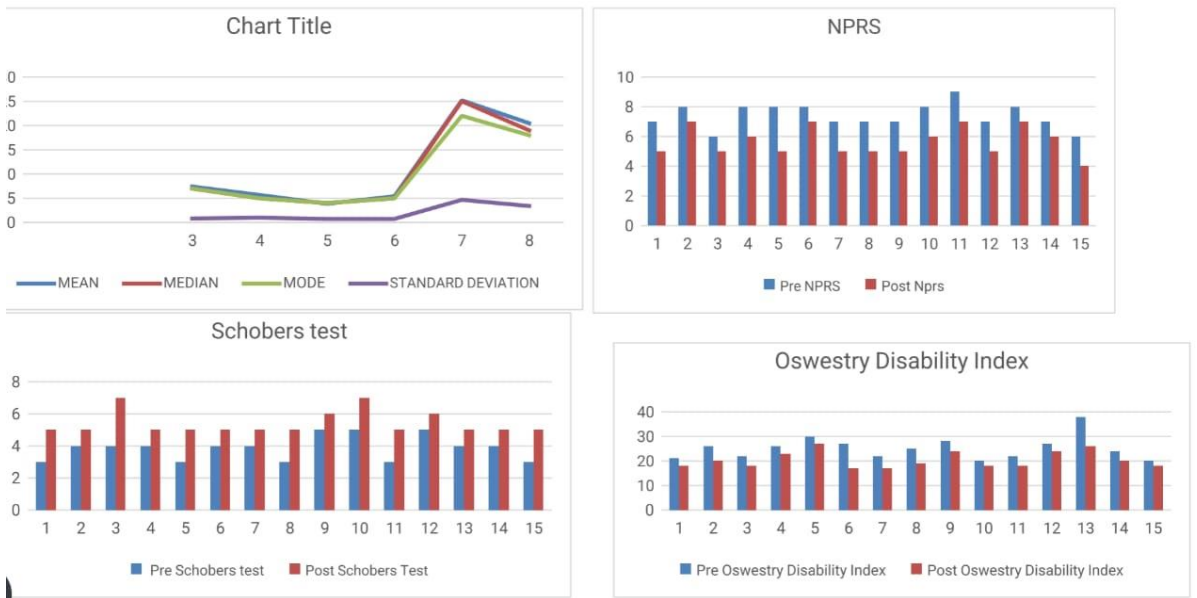
RESULT

Statistical analysis was done using mann Whitney U test to compare both groups

variable	time frame	group	mean	SD	Z-value	P-value
NPRS	Pre	Group A	7.6667	0.8997	0.68439	0.24825
		Group B	7.4	0.9759		
	post	Group A	5.9333	0.96115	0.6429	0.26109
		Group B	5.6667	0.9759		
Schobers test	Pre	Group A	3.866667	0.63994	0.02074	0.49202
		Group B	3.866667	0.743223		
	post	Group A	5.333333	0.617213	-0.06222	0.47608
		Group B	5.4	0.736788		
Oswestry Disability Index	Pre	Group A	24.6	3.290769	-0.02074	0.49202
		Group B	25.2	4.678217		
	post	Group A	20.33333	3.394674	0.06222	0.47608
		Group B	20.46667	3.398879		

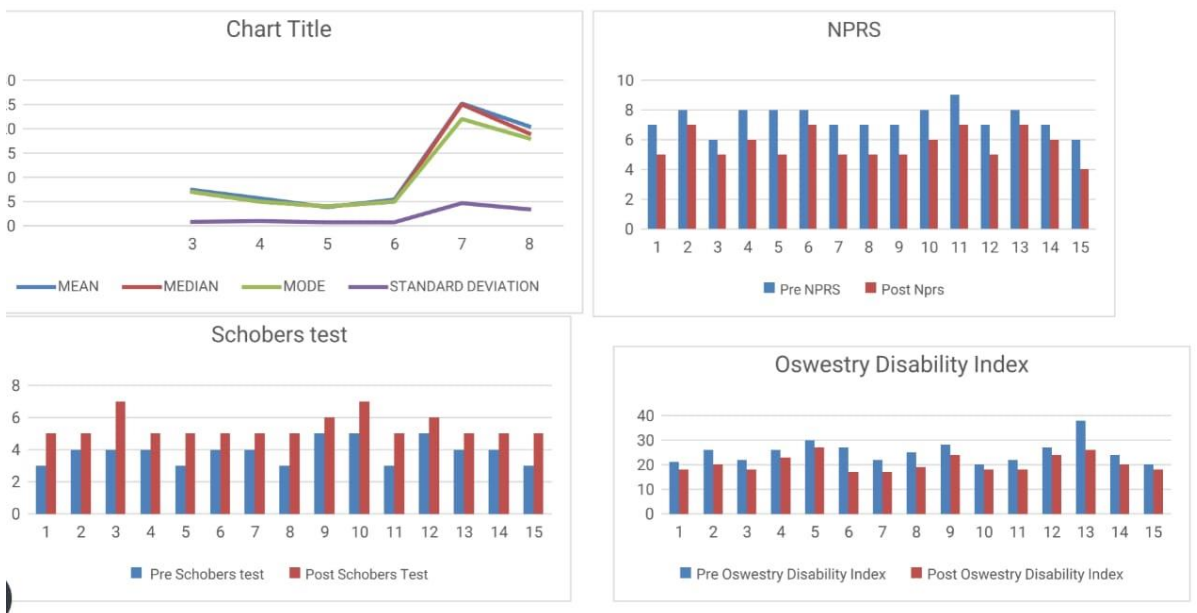
INTERPRETATION : After comparing both groups by mann Whittney u test both are showing the similar result – Result (1) – the u value is 23 the critical value of u at $p < .01$ is . therefore the result is significant at $p < .01$

Result –(2) – Z ratio – the Z score is 3.69155. the pvalue is .00011. the result is significant at $p < .01$.



GRAPH (1)

GROUP A comparing pre and post intervention Of 1 NPRS / 2 SCHOBERS / 3 OSD



GRAPH (2) SHOWING GROUP B comparing pre and post intervention .
Of MCKenzie extension exercises .

DISCUSSION

The purpose of this study was to compare the effect of Maitland’s spinal mobilization and MCKenzie extension exercise in subacute low back patients and finding the effect of each intervention and comparing its effects to fulfil the aim of the study Maitlands’s PA glide and MCKenzie extension exercise are both effective in bringing and disability in patients with subacute low back pain .

Effects of Maitland’s PA spinal mobilization on group 1 subjects

Effect on pain : Maitland’s PA mobilizing movements stimulate the type 1 postural and type 2 dynamic mechanoreceptors in the joint capsules causing reflexogenic and pain suppression effects . also , PA mobilization of an individual joint not only affects the motor activity in the muscle operating over the joint being mobilized but also in more remote muscles .

Effect on ROM : prolonged immobilization of joints due to any cause results in an increase in the synthesis of collagen and a random laying down of additional cross linkage between the collagen fibrils of soft connective tissues there is also decrease in the concentration of glycosaminoglycans and water which form the ground substance , and this reduces collagen’s lubrication efficiency in interfibril movement . the overall effect of these changes ara a decrease in the extensibility of the periarticular tissues leading to joint hypomobility .Repetitive PA Mobilization –might cause breakage of the cross linkage that cause hypomobility furthermore , if sufficient force of PA. Has been applied , some of the excess collagenfibres laid down randomly during repair might also be loaded to failer , resulting in an improvement in the joint flexibility

Effect on functional disability : According to the Oswestry scale, majority of the subjects complained of pain while lifting heavy weights, difficulty in sleeping continuously during the night and inability to sit or stand for prolonged hours. On giving the treatment to group there was a reduction in all of these complaints with an improvement in sitting or standing for longer time and ability to carry out daily activities effectively.

Dermatome pain - pain in the distribution of a single nerve root that innervates a specific area of skin may be associated with neurologic loss. Nerve distribution varies greatly among the individuals.

Effects of McKenzie extension exercises on group 2 subjects :

McKenzie extension exercises on group 2 subjects resulted in a significant reduction in pain, an improvement in the range of forward flexion and functional ability of the subjects.

McKenzie suggested extension exercise as one of the low back exercises to accentuate the lordosis and, thus, correct the derangement syndrome. McKenzie emphasizes the maintenance of both the lumbar lordosis and a full range of lumbar spine extension to maintain the nucleus pulposus anteriorly.

McKenzie suggests that all spinal pain can be attributed to alteration of the position of the disc's nucleus pulposus, in relationship to the surrounding annulus mechanical deformation of the soft tissue about the spine which has undergone adaptive shortening or mechanical deformation of soft tissue caused by postural stresses.

Cyriax postulated that the lumbar lordosis serves to protect the posterior longitudinal ligament from excessive strain and exerts anteriorly directed pressure on the intervertebral disk. Posteriorly directed disks may exert pressure on pain sensitive structures resulting in low back pain, whereas passive hyperextension exercises and maintenance of lordosis could move the disk away from these structures.

McKenzie approach that consists of six specific exercises, in certain positions (lying in prone position, standing, lying in supine position and sitting), which gradually increasing pressure on vertebra. During this exercise program postural correction is needed as well as observation of all changing in pain intensity and location. McKenzie exercise program can start in acute pain and performed in all pain stages. It is not allowed to feel any leg pain during exercising, and if that happened, patients have to do the previous exercise. These exercises can be called self-manipulation exercises and it has to be done in small session but frequently, during the day. Number of session and daily frequency depends of stage of disease and pain.

Nachemson, in his study of the lumbar disk, found high tangential strains in the posterior part of the annulus fibrosus of lumbar disks in subjects who sit unsupported or lean forward during sitting and standing and less disk pressure the more the lumbar spine was moved toward lordosis. The results of a recent study documented the effects of the McKenzie protocol in decreasing low back pain and increasing lumbar flexion and lateral flexion ROM.

Because of the reasons described above, there was a reduction in pain, improvement in the range of lumbar flexion and extension and improvement in the functional disability in the subjects receiving McKenzie extension exercises.

Comparing PA mobilizations versus McKenzie extension exercises

Pain relief – though both the techniques were individually effective in reduction of pain, none was found to be superior to the other ($p < 0.1$). **Improvement in range of flexion** : None of the treatment procedures is superior to the other; however, subjects in both the treatment groups have individually shown statistically significant improvement in the range of lumbar flexion ($p < 0.1$).

Improvement in functional disability (Oswestry low back pain scale) :

Both the study groups individually showed significant improvement in the functional ability of the subject to carry out the daily activities more efficiently, however when the intervention results was compared with each other no statistically significant difference was found between the two groups ($p < 0.1$).

CONCLUSION

- **Maitland's PA mobilization and McKenzie extension exercise are both effective in reducing the subacute low back pain and hence increase ROM and significantly improved functional independent**

LIMITATIONS AND SUGGESTION

- **LIMITATIONS :**
 1. Only subacute pain subjects were included.
 2. Short duration treatment for five continuously
- **SUGGESTIONS .**
 1. Study can be done on mechanical low back pain
 2. Study can be done on upper low back pain.
 3. Study can be done on radiculopathy with dermatome pain.

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ANNEXURE 1
ETHICAL CLEARANCE



MIRAJ MEDICAL CENTRE'S
COLLEGE OF PHYSIOTHERAPY

MINORITY INSTITUTION (Estb. 2015)
WANLESS HOSPITAL (Estb. 1894)

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Date:-04/06/2022

WH/MMC/COP/INTR./1516/2022

To,
Mr. Ajinkya Gangodak / Dr. Ahmad Noor
College of Physiotherapy, Wanless Hospital, Miraj

Ref : Your Project no. I14 entitled, To compare the effect of Maitland's spinal mobilizations versus effect of McKenzie extension exercises on pain and range of motion and functional disability in subjects with Subacute low back radiating pain in postero-central disc bulge. received by IEC on 04 June 2022.

Sub – Regarding submission of Project to IEC

Dear, Mr. Ajinkya Gangodak / Dr. Ahmad Noor

The meeting of the Institutional Ethics Committee (IEC) was held on 01/06/2022 at 2.00 pm in the incubation center with Dr .V.B Borade as a Chairperson.

12 members attended the meeting held on 07 December 2021. The list of members who attended the meeting is as follows,

SR.NO.	NAME	DESIGNATION
1	Dr .V.B Borade	Chairperson, Ex-Dean, Bharti Vidyapeeth & Medical College Wanlesswadi, dist, Sangli
2	Dr. Prabha S Quaraishi	Director & Program Co-ordinator
3	Dr. Sanjeev Waidande	Medical Superintendent
4	Dr.Ronald N. Prabhakar (PT)	Principal, College of Physiotherapy
5.	Mrs. Sangeeta Satwekar	Principal, College Of Nursing
6.	Dr. T B More	HOD Surgery
7.	Dr.Anand Sakte	HOD Medicine
8.	Dr. M.C. Rajput	HOD Obs/Gyn
9.	Dr. V.K Patki	HOD Pediatric
10	Dr. S.V Khade	HOD Orthopedic
11	Adv. K.H Kulkarni	Legal expert
12.	Prof. Sharad Patil	Person of social standing

The Institutional Ethics Committee reviewed the above – mentioned clinical study & approved the following documents submitted for this clinical study at the meeting –

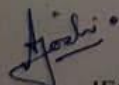
1. Suggested change in title
2. Correction in the sample size
3. Study setting

The IEC hereby approves the proposal entitled To compare the effect of Maitland's spinal mobilizations versus effect of McKenzie extension exercises on pain and range of motion and functional disability in subjects with Subacute low back radiating pain in postero-central disc bulge.. received by IEC on 04 June 2022.

It is understood that the study will be conducted under your direction, in a total of 30 research participant at Tertiary Miraj orthopedic hospital Sangli-Miraj as per the submitted protocol. This approval is valid for the entire duration of the study.

No deviations from, or changes of the protocol and informed consent document should be initiated without prior written approval by the IEC any deviations from, or changes of the protocol to eliminate immediate hazards to the trial subjects and about any new information's that may affect adversely the safety of the subjects or the conduct of the trial.

A copy of the final report should be submitted to the IEC for review.


Chairperson, IEC

Date of Approval of Study - 04/06/2022

APPENDIX II**INFORMED CONSENT FORM**

Participant's Name :

Age :

Gender : Address :

Title of the project : 'THE EFFECT OF MAITLAND'S SPINAL MOBILIZATIONS VERSUS MCKENZIE EXTENSION EXERCISES ON PAIN AND RANGE OF MOTION AND UNCTIONAL DISABILITY IN SUBJECTS WITH SUBACUTE LOW BACK IN POSTERO-CENTRAL DISC BULGE''

The details of the study have been provided to me in writing and explained to me in my own language. I confirmed that I have understood the above study and have the opportunity to ask question. I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving any reasons. By doing so I am aware that my medical care or legal rights will not be affected. I agree that the data or results obtained from this study can be used only for scientific purpose(s). I fully agree to participate in the above study.

Signature of the participant:_____

Signature of the investigator:_____

Date :

Place:

APPENDIX III**DATA COLLECTION SHEET**

Name of participants :

Age:

Gender:

Occupation:

Address:

	PRE INTERVENTION SCORE	POSTINTERVENTION SCORE
NPRS		
SCHOBER'S TEST		
OSWESTRY DISABILITY INDEX		

Signature of participants -

Signature of investigator -

Date :

Place:

MASTER CHART

MAITLAND MOBILIZATION PA GLIDE

<u>GROUP A</u>								
<u>NO</u>	<u>Age</u>	<u>Sex</u>	<u>Pre NPRS</u>	<u>POST NPRS</u>	<u>Pre Schobers Test</u>	<u>Post Schobers Test</u>	<u>Pre Oswestry Disability Index</u>	<u>Post Oswestry Disability Index</u>
1	40	M	9	7	3	5	26	20
2	50	F	9	6	4	5	19	15
3	51	F	7	5	4	5	25	20
4	36	M	9	7	3	5	28	25
5	35	M	7	5	4	6	27	24
6	36	F	7	6	5	6	21	18
7	39	M	6	5	4	6	29	24
8	40	M	8	7	3	5	30	27
9	50	M	7	5	4	5	27	22
10	52	M	8	5	4	5	24	20
11	49	M	7	5	3	5	20	17
12	50	M	8	7	4	5	25	19
13	37	M	7	5	5	7	23	19
14	40	M	8	7	4	5	23	17
15	43	M	8	7	4	5	22	18

MCKENZIE EXTENSION EXERCISE

GROUP								
B								
NO	AGE	Sex	Pre NPRS	Post Nprs	Pre Schobers test	Post Schobers Test	Pre Oswestry Disability Index	Post Oswestry Disability Index
1	49	M	7	5	3	5	21	18
2	43	M	8	7	4	5	26	20
3			6	5	4	7	22	18
4	39	F	8	6	4	5	26	23
5	49	M	8	5	3	5	30	27
6	50	F	8	7	4	5	27	17
7	52	F	7	5	4	5	22	17
8	39	M	7	5	3	5	25	19
9	46	M	7	5	5	6	28	24
10	38	M	8	6	5	7	20	18
11	28	M	9	7	3	5	22	18
12	50	F	7	5	5	6	27	24
13	48	M	8	7	4	5	38	26
14	38	M	7	6	4	5	24	20
15	36	F	6	4	3	5	20	18