ORIGINAL RESEARCH

A role of thoracolumbar fascia activation with McKenzie excercises vs only McKenzie excercises in patients with low back pain

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ABSTRACT

Background: Low back pain (LBP) remains a musculoskeletal condition with an adverse societal impact. Globally, LBP is highly prevalent and a leading cause of disability. The estimated rate of incidence of low back pain ranges from 60%–80% of adults at some point in their lifetime and estimated the annual worldwide low back pain incidence in adults is 15% and the point prevalence to 30%, with recurrence of low back pain being common. Physiotherapy plays a key role in management and treatment of lower back pain.

Objective: The objective of this study is to find out the effectiveness of thoracolumbar fascia activation with McKenzie exercises vs only McKenzie exercises for the patients who suffer from lower back pain.

Materials and Methods:A total of 30 individuals between the age of 18-50 were taken in this study having symptoms with chronic low back pain. with Inclusion Criteria 1) Back pain (more than 2 weeks). 2) Positive special test Postural low back pain. 3)Degenerative origin with or without radiation. 4) Age – 18- 50 years. Participants taken in study and were randomised into two different groups, Group A treated with thoraco-lumbar fascia activation and McKenzie exercises and Group B treated with only McKenzie exercises.

Results and Conclusions: The results of this study indicate that both thoracolumbar fascia activation with McKenzie exercises is effective in patients with low back pain. The differential effectiveness between thoracolumbar fascia activation with McKenzie exercises and only McKenzie exercises may be attributed to the active involvement of patients in the thoracolumbar fascia activation with McKenzie exercises treatment process. This active engagement may explain the superior pain relief and functional improvement associated with low back pain.

Keywords: LBA [Low Back Ache], VAS Visual Analogue Scale, Thoraco-lumbar fascia activation, McKenzie exercises.

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Introduction

"Low back pain (LBP)" originates in the paraspinal area and the lumbar-sacral spinal area which circumscribe in the upper thigh and the buttocks so, its accepted as it is a typical issue that occurs in adults. The rate of occurrence of low back pain considered as biggest public problem that affects economic, physiologic, and psychological costs.

The McKenzie method is widely utilized in the field of physiotherapy to treat patients suffering from back pain. The McKenzie technique is an active treatment that uses prolonged postures or repetitive movements to improve spine mobility and decrease pain. Mechanical Analysis and Treatment with the use of problem-specific exercises, patients of the McKenzie technique are encouraged to become as self-reliant as possible in managing their pain.[13]

Since the non-specific chronic low back pain, (NS-CLBP) actual pathophysiology remains partially unknown, many authors are tried to explain the problem as a result of interactions of biological, psychological, and social factors. Central sensitization is considered one of the key aspects of non-specific chronic low back pain, (NS-CLBP); neuroimaging research showed how some brain areas, activated by nociception stimuli, can also be influenced by emotions and behavior. This process could be adding

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mood alterations, depression, and maladaptive coping strategies.[14]

The majority of research on the McKenzie approach included individuals with a range of low back pain diagnoses, from acute to chronic. Studies that included just those with persistent low back pain had moderate to poor methodological quality. There were no statistically significant changes found between the groups despite the implementation of a variety of active control measures in these studies (such as trunk strengthening and stabilization programmes). McKenzie technique was shown to be superior than resistance exercise training, the Williams method, and unsupervised exercise for pain, lumbar strength, endurance, and quality of life in other trials of inferior methodological quality.[15]

Lumbar vertebrae are the largest segments of the vertebral column. Low back pain affects nearly 60-80% of people throughout their lifetime. This population has also shown a one-year recurrence rate of 24% to 80%. Low back pain is usually categorized into 3 subtypes: acute, sub-acute, and chronic low back pain.

The thoracolumbar fascia (TLF) is a girdling structure consisting of several aponeurotic and fascial layers that separate the paraspinal muscles from the muscles of the posterior abdominal wall. The fascial system is a "fibrous collagenous tissue which is part of a body-wide tensional force transmission system". Injury to the thoracolumbar fascia usually manifests as tightness, spasticity, and increased tone in the lower thoracic spine and lumbar spine / paraspinal regions causing severe pains.

The aim of the study is to analyze the effect of thoracolumbar fascia activation with McKenzie exercises vs only McKenzie exercises in patients with LBP.

Objective of study

The objective of the study is to compare the effectiveness of thoracolumbar fascia activation with McKenzie exercises in comparison with only McKenzie exercises in patients with chronic low back pain.

Materials and Methods

Subjects

A total of Active 30 individuals between the age of 18-50 having symptoms with a low back pain and who met the inclusion criteria of study were participated in this study.

Inclusion Criteria

1. Age – 18- 50 years.
2. Back pain (more than 2 weeks)
3. Positive special test Postural low back pain
4. Degenerative origin with or without radiation.

Exclusion criteria

1. Lumbar canal stenosis
2. Lumbar myelopathy
3. Age: less than 18 and more than 50.
4. Patient with hernia
5. Pregnancy
6. Patient with contraindicated to MRI.

Variables

Independent Variables of This Study isthoraco-lumbar fascia activation with McKenzie exercises vs only McKenzie exercise.

Dependent Variables of This Study ispatients with low back pain.

The research design used in this study is quantitative evaluative, comparative design.

Tools used

- Paper-pencil
- Treatment couch
- Goniometer

Procedure

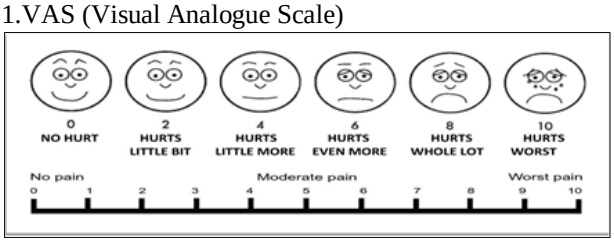
- After collecting the written consent form the patients designated by inclusion and exclusioncriteria, they would be separated into two group- group A and group B.
- The patient will be allocated to two groups: Group A and Group B, each entailing of 15 individuals. Group A will receive thoraco-lumbar fascia activation with McKenzie exercises, while Group B will receive McKenzie exercises. The range of motion (ROM), Goniometry, and VAS tools will be utilized as measures to assess the outcomes.
- Group A will be treated with thoraco-lumbar fascia activation with McKenzie exercises. (n=15)
- Group B will be treated with McKenzie exercises. (n=15)
- All the pre and post data of outcome measures would be kept safely for analyzing.
- For both groups follow up was done on post therapy 12weeks.

Data Collection

The various steps or exercise therapies used for gathering and analyzing data in a research investigation are known as the methods of data collection.

Outcome Measures

1.VAS (Visual Analogue Scale)



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2.Goniometry: To Measure the range of motion of hip joint.
3.Special Test
- Slr (straight leg raising)
- Femoral slump test
- Prone instability test

Note: Pacific Medical University, Institute's ethical approval obtained dated06/09/22, PMU/PMCH/IEC/2022/234. All participants completed information and consent form at recruitment.

Analysis and Results

The collected data was analyzed using the statistical software SPSS 16. The statistical analysis included the application of Student t-test, paired t-test, and mean improvement analysis. The student t-test was utilized to assess demographic variables and pre-intervention outcome measures between the groups. The paired t-test was employed to evaluate the results within each group, while the unpaired t-test was used to compare the results between the groups. Mean improvement analysis was conducted to determine the overall changes in lumbar range of motion, pain intensity, and disability following the intervention.
The data collected were compiled analyzed and interpreted as follows: -

Table 1:Frequency, percentage distribution, and patient demographics of group-A and group B.

Sr. No.	Demographic Variables		Group-A Participants (n=15)		Group-B Participants (n=15)	
			Frequency	Percentage%	Frequency	Percentage%
1. 2	Sex	Male	5	33.3%	8	53.3%
		Female	10	66.7%	7	46.7%
2. 1	Age	18-27 Years	0	0%	0	0%
		28-37 Years	4	26.7%	4	26.7%
		38-47 Years	9	60.6%	7	46.7%
		48 Years and above	2	13.3%	4	26.7%
3. 4	Education	No Formal Education	7	46.7%	2	13.3%
		Primary Education	3	20.0%	2	13.3%
		Sec.& high sec. Education	0	0%	2	13.3%
		Graduation and above	5	33.3%	9	60.0%
4. 8	Occupation	Unemployed	0	0%	0	0%
		Employee	8	53.3%	8	53.3%
		Business	7	46.7%	7	46.7%
5. 10	Family Income in RS	Rs. 5000 – 10000	0	0%	0	0%
		Rs. 10001 – 15000	0	0%	0	0%
		Rs. 15001 – 20000	9	60.0%	9	60.0%
		Rs. 20001 – Above	6	40.0%	6	40.0%
6. 11	Area	Rural	9	60.0%	6	40.0%
		Urban	6	40.0%	9	60.0%

The data presented in Table: 1 shows frequency and percentage distribution of the demographic variables, among the group A and group B participants.

Table 2: Distribution by frequency and proportion of Goniometry score(flection) among the patients with low back pain in group A and group B.

goniometry Score (flection)	Group A		Group B	
	Frequency	Percentage (%)	Frequency	Percentage (%)

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0-20 degree	0	0	8	53.3%
21-40 degree	9	60.0%	7	46.7%
0-20 degree	6	40.0%	0	00.0%

Table-3 unpaired 't' test for group A and group B level of pain among patients with low back pain.

Level of pain	Group A		Group B		Mean difference	't` value
	Mean	SD	Mean	SD		
Group A & Group B	0.60	0.507	0.80	0.676	0.200	0.917

(*** P<0.001 highly significant)

When comparing thirst levels in Group A with Group B, the resultant overall 't' value was 0.917, which was statistically significant at the p0.001 level (Table 5). The greatest growth was shown in the mean difference (0.220), where group A's value was 0.60 and group B's value was 0.80. It is concluded that thoracolumbar fascia activation with McKenzie exercises was highly effective in reducing pain among patients with low back pain. Hence research hypothesis is accepted.

Discussion

The present study discovered that both thoracolumbar fascia activation with McKenzie exercises treatments can be effective in reducing back pain associated. Significant differences in pain intensity were observed within each group and between the two groups on the 12 weeks of treatment. The group A showed a substantial decrease in pain intensity, although pain relief was observed in both Group A and B.

When applied for the chosen treatment duration in this study, effectively alleviated pain by addressing issues such as muscle fiber imbalance and correcting improper proprioceptive activity. Previous research has also supported the effectiveness of manipulative techniques like stretching and isometrics for treating somatic dysfunction. Studies evaluating the impact of thoracolumbar fascia activation with McKenzie exercises vs only McKenzie exercises in patients with low back pain activity have shown significantimprovements.

Regarding range of motion (ROM), both treatment groups exhibited statistically significant improvements in active lumbar rotation and lateral flexion at the end of the treatment. However, there was statistical difference observed between the two groups.

This study was conducted to A comparative study to analyze the effect of thoracolumbar fascia activation with McKenzie exercises vs only McKenzie exercises in patients with low back pain.

Students from the Institute of Physiotherapy at KLE University in Belgaum, Karnataka, India, who suffer from chronic non-specific low back pain, participated in a randomised clinical trial led by Peeyoosha V. Nitsure *et al*. They had 40 people take part in the research. After being asked to participate in the research, the individuals were screened using predetermined inclusion and exclusion criteria. Initial evaluation of outcome measures and demographic information (age, height, weight, BMI, and symptom duration) were gathered using a standardised data collecting sheet. Lumbar range of motion was measured using Modified Schober's for flexion and extension, pain was measured using a Visual Analogue Scale (VAS), functional impairment was measured using the Modified Oswestry impairment Questionnaire, and core muscular strength was measured using a Pressure Biofeedback Unit.

Study #2: The "effect of McKenzie exercises for low back pain" by Emela Mujic Skikic, Trebinjac Suad, *et al*. Thirty-four people who were experiencing low back discomfort took part in the research. Every patient was checked both before and after receiving therapy. Age, gender, and symptom duration are all included in the demographic information. The VAS was used to evaluate pain, whereas the schober test was used to evaluate spinal mobility and flexibility. Following this preliminary assessment, patients performed a series of McKenzie exercises five times daily, with a goal of achieving between five and ten repetitions each session. After each workout, the participants were instructed to straighten their bodies. After 15 days of therapy, post-intervention evaluation was conducted for the two outcome measures and recorded for analysis. Based on the results of this research, McKenzie exercises for LBP are an effective therapy for enhancing spinal flexibility and relieving pain.

Limitations of study

1) Limited Group was selected.2) Limited time frame.3) Absence of a control group 4)All patients were suffering and incapacity.

Conclusion

In conclusion, both thoracolumbar fascia activation with McKenzie exercises and McKenzie exercises have demonstrated efficacy in treating low back muscle spasm in patients with low back pain. While thoracolumbar fascia activation with McKenzie exercises showed positive results, McKenzie exercises

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exhibited a greater impact on pain reduction and functional improvement. These findings emphasize the need to consider different manual therapy approaches and tailor treatments to individual patient needs in order to optimize outcomes for patients with low back pain and low back muscle spasm.

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