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Original research article

A comparative study to analyze the effect of thoraco-lumbar fascia activation with McKenzie exercises vs only McKenzie exercises in patients with low back pain

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Abstract

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

The estimated rate of incidence of low back pain ranges from 60%-80% of adults at some point in their lifetime and the estimated annual worldwide low back pain incidence in adults is 15%.

Aim and Objective: To analyze the result of thoracolumbar fascia activation with McKenzie exercises, to analyze the effect of only McKenzie exercises in patients with low back pain and to compare the effectiveness of thoracolumbar fascia activation with McKenzie exercises v/s only McKenzie exercises for those who suffer from backache.

Materials and Methods: A total of 30 participants individuals aged 18 to 50 years were taken in this study having symptoms of chronic low back pain with inclusion criteria 1. Age – 18- 50 years, 2. Back pain (more than 2 weeks), 3. Positive special test Postural low back pain and 4. The degenerative origin with or without radiation.

Participants taken in the study were convenient sampling in to two different group, designated as group-A and group-B

Result and conclusion: The distribution of outcome overall 't' value for the level of thirst between Group A & Group B was 0.917 which was highly significant at $p<0.001$ Group A's mean was 0.60 whereas in group B was 0.80 and their mean difference was 0.200 which had greater improvement than other parameters. It is concluded that thoracolumbar fascia activation with McKenzie exercises was highly effective in reducing pain among patients with low back pain.

Keywords: thoracolumbar fascia, McKenzie exercise, thoracolumbar fascia activation.

Introduction

"Low back pain (LBP)" originates in the paraspinal area and the lumbar-sacral spinal area which circumscribes in the upper thigh and the buttocks so, it's accepted as it is a typical issue that occurs in adults [10]. Low back pain is the most common condition in medicine that causes the client unable to do a routine activity. restricted body movement such as lifting objects, also difficulty in sitting, or standing, twisting, squatting, and limitations in movements,[1] other playing activity [11]. restricted body movements such as lifting objects, also difficulty in sitting, or standing, twisting, squatting, and limitations in movements, other playing activities, and not able to do routine work and it may lead to disability or deformity [2].

The McKenzie method is widely utilized in the field of physiotherapy to treat patients suffering from back pain [7]. The McKenzie technique is an active treatment that uses prolonged postures or repetitive movements to improve spine mobility and decrease pain [3]. 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 [6].

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 [8]. The fascial system is a "fibrous collagenous tissue which is part of a body-wide tensional force transmission system" [4]. 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 [5].

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In this study assessing comparison between 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.
The study aimed to assess the impact of an intervention on lumbar range of motion, pain intensity, and disability in individuals with low back issues. Three outcome measures were utilized in the study: the lumbar range of motion test, the visual analogue scale (VAS) and goniometry [9].
The collected data were 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.

Objective of study
The objective of this study is to analyze the result of thoracolumbar fascia activation with McKenzie exercises, to analyze the effect of only McKenzie exercises in patients with low back pain, to compare the effectiveness of thoracolumbar fascia activation with McKenzie exercises v/s only McKenzie exercises for those who suffer from backache.

Materials and Methods
Subjects
A total of active 30 individual between the age of 18 to 50 were taken in this study having symptoms with low back pain were participated in this study.

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

Exclusion criteria
- Lumbar canal stenosis
- Lumbar myelopathy
- Age: less than 18 and more than 50.
- Patient with hernia
- Patient with contraindicated to MRI.
- Pregnancy

Variables
- **Independent variables:** Thoraco-lumbar fascia activation with McKenzie exercises v/s only McKenzie exercise
- **Dependent variables:** Patients with low back pain.

Tool used
1. Average VAS (visual analogue scale) for pain at rest and activity.
2. Goniometry

Procedure
Informed consent was taken and patients were included in the study with inclusion criteria.
After the approval of the Institutional Ethics Committee (IEC), patients between the age group of 18 to 50 years having low back pain were selected for the study based on the inclusion and exclusion criteria. The intensity of pain was recorded using Visual Analogue Scale and graded as ‘no pain’, ‘mild’, ‘moderate’ and ‘severe’ and SLR (STRAIGHT LEG RAISING), femoral slump test, prone instability test was performed.
Group-A were received thoraco-lumbar fascia activation with McKenzie exercises, while Group B will receive McKenzie exercises. Thoracolumbar fascia activation through Curl- up were give Position at the side of a couch Position of a patient, The patient is in crook lying or lying on his back with feet flat on the couch with hips and knees flexed, and place both the hands behind the head. Therapist gives command to the patient to lift the head with the arms flexed and hands below the head and then return slowly to the starting position. 2 set of 10 repetitions in first week (after that added 3 repetitions in every set for the next four weeks) Interval: - 3 sec interval in every repetition and 2-minute interval after completion of 1set and Tapping while lying on the chest, the therapist percusses on the thoracolumbar fascia for 10-15 second which loosens the inhibited thoracolumbar fascia and activates it by tapping. At the side of a couch the patient lies in prone position with forearm and elbow supported on couch. Ask the patient to relax and take deep breath. 2 set of 10 repetitions in first week (after that added 3 repetitions in

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every set for the next four weeks)

Note: Pacific Medical University, Institute's ethical approval obtained dated 06/09/22, PMU/PMCH/IEC/2022/234. All participants completed information and consent form at recruitment.

Statistical Analysis and Results

The paired statistical comparisons of distribution of categorical variables were tested using Wilcoxon's signed rank test. The inter - group statistical comparisons of means of normally distributed continuous variables was done using analysis of variance unpaired T- test. The underlying normality assumption was tested before subjecting the study variables to unpaired T- test. All results are shown in tabular as well as graphical format to visualize the statistically significant difference more clearly.

Table 1: Visual analogue scale

Severity of pain (VAS) [Quartiles]	Group-A	Group-B
Mild pain (0-3)	(5) 33.3%	(6) 40.0%
Moderate pain (4-6)	(8) 53.3%	(9) 60.0%
Severe pain (7-10)	(2) 13.3%	(0) 00.0%
Total	15	15

Table 2: 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 & B	0.60	0.507	0.80	0.676	0.200	0.917

(***p<0.001 highly significant)

Results

over all 't' value for level of thirst between the Group A & Group B was 0.917 which was highly significant at p<0.001 The group A mean of was 0.60 whereas in group B was 0.80 and their mean difference was 0.200 which had greater improvement than other parameters.

Discussion

In this study, the pain was assessed using Visual Analogue scale (VAS) which is one of the most widely accepted pain rating scale

The present study discovered that both thoracolumbar fascia activation with McKenzie exercises treatments can be effective in reducing back pain. Significant differences in pain intensity were observed within each group and between the two groups and after 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. Studies evaluating the impact of thoracolumbar fascia activation with McKenzie exercises in patients with low back pain have shown significant improvisent.

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.

The pain ratings from day 12 of evaluation for group A, 2 subjects (13.3%) had mild pain and 5 subjects (33.3%) had Moderate pain and 8 subjects (53.3%) had severe pain. And that the level of pain in group B on the 12 weeks of assessment, 6 subjects (40.0%) had mild pain and 9 subjects (60.0%) had moderate pain and no one had severe pain.

Conclusion and Clinical Implication

The results of this study indicate that both thoracolumbar fascia activation with McKenzie exercises is effective in patients with low back pain. Over the course of 12 weeks, both techniques showed positive outcomes in reducing pain and improving functional abilities.

Thoracolumbar fascia activation, which involves applying sustained pressure and stretching to release muscles stimulator, proved to be a viable treatment option.

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.

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 exhibited a greater impact on pain reduction and functional improvement.

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Scope and limitation

Scope: Study should be concluded with larger sample size and duration. Study also aims to analyze the effect of thoracolumbar fascia activation with McKenzie exercises v/s only McKenzie exercises in patients with LBP.

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