Indian Journal of Modern Research and Reviews

This Journal is a member of the *'Committee on Publication Ethics'*

Online ISSN:2584-184X

Research Paper

The Effectiveness of Mckenzie Exercises and Mechanical Traction in Reducing Persistent Low Back Pain and Improving Quality of Life Among Desk Job Professionals

Dr. Ashish Jaiswal [1*], Dr. Ruchi Mishra [2], Dr. Sanket Bajpai [3], Vridhika Mishra [4]

[1] Associate Professor, Ujjain Institute of Paramedical Science and College of Physiotherapy, R.D. Gardi Medical College, Ujjain, Madhya Pradesh. India

[2] Professor, Ujjain Institute of Paramedical Science and College of Physiotherapy, R.D. Gardi Medical College, Ujjain, Madhya Pradesh, India

[3] Professor, Ujjain Institute of Paramedical Science and College of Physiotherapy, Madhya Pradesh, India

[4] MBBS Prefinal Year Student, R.D. Gardi Medical College, Surasa, Ujjain, Madhya Pradesh, India

Corresponding Author: *Dr. Ashish Jaiswal

DOI: https://doi.org/10.5281/zenodo.17178881

ABSTRACT

Persistent Low Back Pain (PLBP) is one of the leading causes of disability among desk job professionals due to prolonged sitting, poor ergonomics, and physical inactivity. Conservative physiotherapeutic approaches such as the McKenzie Method of Mechanical Diagnosis and Therapy (MDT) and mechanical traction are widely used for symptom management. This study aimed to evaluate and compare the effectiveness of McKenzie exercises and mechanical traction in reducing PLBP and improving quality of life. Objective: To assess the impact of McKenzie exercises versus mechanical traction on pain intensity and functional disability in desk job professionals diagnosed with PLBP.[1]A total of 10 male participants aged 20–50 years with mechanical low back pain were randomly assigned into two groups of 20 each. [2]Group A received McKenzie exercises, and Group B underwent mechanical traction. Both interventions were administered over 6months in an outpatient physiotherapy department. [3]Pain was measured using the Visual Analogue Scale (VAS), and disability was assessed using the Oswestry Disability Index (ODI) before and after the treatment. Results: Both groups showed significant improvement post-intervention. Group A (McKenzie) had a reduction in VAS from 5.75 to 2.75 and ODI from 31.25 to 14.25. Group B (Traction) showed VAS reduction from 7.00 to 4.00 and ODI from 45.00 to 22.50. Statistical analysis indicated that Group A experienced greater improvement in both pain and disability ($p < 0.05$). Conclusion: McKenzie exercises were more effective than mechanical traction in reducing pain and improving quality of life among desk job professionals with PLBP. These findings support the use of active, self-managed physiotherapy techniques like the McKenzie Method as a preferred intervention in occupational back pain management.

Manuscript Info.

- ✓ **ISSN No:** 2584- 184X
- ✓ **Received:** 19-07-2025
- ✓ **Accepted:** 23-08-2025
- ✓ **Published:** 22-09-2025
- ✓ **MRR:3(9):**2025;64-69

- ✓ **Peer Review Process:** Yes
- ✓ **Plagiarism Checked:** Yes

How To Cite this Article

Jaiswal A, Mishra R, Bajpai S, Mishra V. The effectiveness of McKenzie exercises and mechanical traction in reducing persistent low back pain and improving quality of life among desk job professionals. Ind J Mod Res Rev. 2025;3(9):64-69.

KEYWORDS: McKenzie Exercises, Mechanical Traction, Oswestry Disability Index (ODI), Visual Analogue Scale (VAS)

1. INTRODUCTION

Persistent Low Back Pain (PLBP) is among the most common musculoskeletal complaints worldwide and is particularly prevalent in the modern workforce. [1]It is defined as pain or discomfort localized below the costal margin and above the inferior gluteal folds, persisting for more than 12 weeks. PLBP can significantly affect an individual's physical, psychological, and occupational well-being (Maher et al., 2017). A substantial proportion of PLBP cases today are found among desk job professionals—individuals who spend prolonged hours in sedentary work environments, such as office settings, IT companies, educational institutions, and administrative offices. [2]The rising incidence of back pain in this occupational group has emerged as a critical public health and ergonomic concern. Prolonged sitting, repetitive movements, poor workstation design, and lack of postural awareness contribute to cumulative spinal stress and mechanical dysfunction (Waongenngarm et al., 2020). Sedentary behaviour negatively affects the lumbar spine in multiple ways. It weakens the deep stabilizing muscles, shortens hip flexors, and increases disc pressure, particularly in poor postures such as slouched sitting. [3]Over time, these factors can cause mechanical derangements such as facet joint dysfunction, intervertebral disc degeneration, ligamentous strain, and paraspinal muscle fatigue (Balagué et al., 2012). Furthermore, a lack of physical activity contributes to muscle deconditioning and delayed tissue recovery. As a result, PLBP in desk job professionals often becomes chronic, cyclic, and disabling. [4]Recent studies estimate that up to 80% of adults experience back pain at some point in their lives, and among desk workers, over 50% report regular episodes of lumbar discomfort (Hartvigsen et al., 2018). Apart from physical symptoms, PLBP has far-reaching impacts—reducing productivity, increasing absenteeism, elevating healthcare costs, and contributing to stress, depression, and poor quality of life. Given the mechanical nature of most cases of PLBP in desk workers, physiotherapy interventions that target postural alignment, spinal mobility, and musculoskeletal function are crucial. Two commonly used non-invasive interventions are the McKenzie Method of Mechanical Diagnosis and Therapy (MDT) and mechanical lumbar traction. These treatment methods aim to reduce pain and restore functional independence without pharmacological or surgical intervention. [5]Developed by Robin McKenzie, the McKenzie Method is an active, patient-centered approach focusing on repeated movements and sustained positions to identify directional preference and centralize symptoms. It places strong emphasis on self-treatment, education, and postural correction. The method is effective in both acute and chronic cases of mechanical low back pain, especially where postural syndromes and derangements are involved (Laird et al., 2016). [6]For desk job professionals, the McKenzie approach is particularly relevant. These individuals often demonstrate movement limitations due to long hours in static postures. By performing simple, progressive exercises—such as lumbar extensions, prone press-ups, and postural realignment techniques—patients can actively reverse the effects of prolonged sitting, reduce spinal loading, and manage flare-ups independently. Numerous studies have highlighted the efficacy of MDT in reducing pain, improving mobility, and preventing recurrence (Kumar & M.J.S., 2021). Mechanical traction, on the other hand, is a passive technique that applies longitudinal force to the lumbar spine, aimed at decompressing intervertebral discs, widening neural foramina, and relieving pressure on affected structures. It is typically used in patients with radiculopathy, disc herniation, or degenerative disc disease. The therapy is delivered through motorized devices, often with precise control over force, hold time, and angle of application. [7]Although mechanical traction may not address postural dysfunction directly, it offers pain relief and improved disc hydration, which can be beneficial in the short term. In the context of desk job professionals, traction may provide symptomatic relief, particularly in cases with discogenic pain or neural compression (D'Souza et al., 2020). While both McKenzie therapy and mechanical traction have demonstrated clinical benefits, limited evidence exists comparing their outcomes specifically in desk job professionals—a high-risk group with unique occupational demands and patterns of movement. Most existing literature focuses on general populations or mixed cohorts, without isolating sedentary workers as a distinct subgroup. [8]Desk workers typically present with pain patterns related to sustained flexion, poor ergonomics, and deconditioning. Hence, interventions that restore lumbar extension and promote active self-care (as in MDT) may prove more effective in this group. However, mechanical traction may still offer valuable decompressive effects in selected cases. Determining which modality is superior—or whether a combination yields better results—requires focused research.

ABBREVIATIONS

S. No	Abbreviation	Full Form
1	VAS	Visual Analogue Scale
2	ODI	Oswestry Disability Index
3	QOL	Quality of Life
4	MDT	Mechanical Diagnosis and Therapy
5	RCT	Randomized Controlled Trial
6	NICE	National Institute for Health and Care Excellence
7	MLBP	Mechanical Low Back Pain
8	DOI	Digital Object Identifier

2. METHODOLOGY

This study was conducted to evaluate and compare the effectiveness of McKenzie exercises and mechanical traction in reducing pain and improving quality of life among desk job professionals suffering from Persistent Low Back Pain (PLBP), and this study was conducted in the outpatient physiotherapy department of RD Gardi Medical College, Ujjain.

And the sampling technique is a simple random sampling technique - Lottery sampling method. Participants were divided randomly into two groups: Experimental Group A-20 (McKenzie Exercises) and Group B-20, which received Lumbar traction.

Study Duration: 6 Months
Criteria For Selection:
Inclusion: Age between 20-50 years, Body weight between 60 to 80 kilograms, Height between 5-6 5-6feet, Subjects with Persistent low back pain.

Exclusion: Age less than 20 and above 50 years, Cardio and Respiratory problems, Claustrophobia, Fractures, Gastrointestinal problems, Infective conditions, Ligament Instability, Muscular weakness, Neoplasm, Osteoporosis, Rheumatic History, Spinal Deformities, Traumatic low back ache, Tumour, Uncooperative, Vascular diseases, Vertigo/dizziness, Vertebrobasilar Insufficiency

Parameters: Visual Analogue Scale (VAS). It is widely used to measure the severity of pain from the patient's feelings of pain. Zero indicates no pain, and 10 indicates severe, intolerable pain. Oswestry Disability Index (ODI) The Oswestry Disability Index (ODI) is a patient-completed questionnaire that gives a subjective percentage score of the level of function (disability) in activities of daily living in those rehabilitating from low back pain. It was developed by Jeremy Fairbank and Graham Pynsent in Oswestry, England, in 1980, and is considered one of the best accepted tools

Study Procedure: All 40 subjects are divided into two groups as group A and B, with 20 subjects each for McKenzie's exercises and Lumbar traction, respectively. Both groups are assessed for their pain intensity by using the VAS scale, on the first treatment day before treatment commences, and on the 6-week day after treatment finishes.

Group A (McKenzie's exercises) Robin McKenzie suggested removing all tension from the low back muscles; without complete relaxation, there is no chance of eliminating any distortion that may be present in the joint.

Exercise 1: (prone) Lying face down, with the arms beside the body and the head turned to one side. Staying in this position, take a few deep breaths and then relax completely for 4 to 5 minutes. This exercise is used mainly in the treatment of acute back pain. It should be done once at the beginning of each exercise session, and the sessions are to be spread evenly 6 to 8 times throughout the day. This means that one should repeat the sessions about every day.

Exercise 2: (prone) Lying face down in extension remains face down. Place the elbows under the shoulders so that one leans on forearms. During this exercise, one should commence taking in a few deep breaths and allow the muscles in the lower back to relax completely. Again, one should stay in this position for about 5 minutes. This exercise is used mainly in the treatment of severe low back pain. It should always follow exercise 1 and is to be performed once per session. hanging limp and
allowing the back to sag. Once this position is achieved, maintain it for 1-2 seconds, and then lower to the starting position. Each time one repeats this movement cycle, one must try to raise one's upper body a little higher, so that in the end, the back is extended as much as possible with the arms as straight as possible. Once the arms are straight, remember to hold the sag for 1 or 2 seconds, as this is the most important part of the exercise.

Exercise 3: (prone) Extension in lying, remain face down. Place the elbows under the shoulders in the press-up position. Now one is ready to start exercise 3. Straighten the elbows and push the top half of the body up as far as the pain permits. It is important that one completely relax the pelvis, hips, and legs. Keeping one's pelvis, hips, and legs in

Exercise 4: (standing) Extension in standing, stand upright with one's feet slightly apart. Place one's hands in the small of one's back with their fingers pointing backwards and their thumbs pointing forwards. Now the position is ready for exercise 4. Bend the trunk backwards at the waist as far as one can, using the hands as a fulcrum. It is important that one keep the knees straight as they do this. Once this position for 1 or 2 seconds, one should return to the starting position. Each time one repeats this movement cycle, one should try to bend backwards a little further so that in the end one should reach the maximum possible degree of extension. In acute pain, exercise 4 may replace 3. Once fully recovered and no longer having low back pain, this exercise is the main tool in the prevention of further back problems.

Exercise 5: (supine) Flexion in lying, lie on the back with knees bent and the feet flat on the floor/bed. Now the position is ready for exercise 5. Bring both knees up towards the chest. Place both hands around the knees and gently but firmly pull the knees as close to the chest as the pain permits. Once maintained this position for 1 or 2 seconds, one

Exercise 6: (sitting) Flexion in sitting, sit on the edge of a steady chair with knees and feet well apart, and let the hands rest between the legs. Now the position is ready for exercise 6. Bend the trunk forward and touch the floor with the hands. Return immediately to the starting position. Each time, repeat this movement cycle; one must bend down a little further so that at the end one can reach the maximum possible degree of flexion. At this reached maximum flexion position, make the head as close to the floor as possible. The exercise can be made more effective by holding on to the ankles with the hands and pulling the body down further. Exercise 6 should only be commenced after the completion of 1 week of exercise 5, whether exercise 5 has been successful or not in reducing the stiffness or pain. In the beginning one must only do 5 or 6 repetitions per session (and the sessions are to be repeated 3 or 4 times per day). repetitions per session (and the sessions are to be repeated 3 or 4 times per day.

Parameters:
Number of exercises: 6, Sessions: 2
Rest interval: 5 minutes. Treatment time: Min 10 to Max 20 minutes. Frequency of treatment: once a day. Total duration of the treatment: 12 days.

GROUP B (Traction-Mechanical) Traction is a pull produced by an
electrical motorized device. In the lumbar spine, an adequate pull with a motorized device to achieve vertebral distraction usually can be obtained with the proper apparatus. Generally, a harness is attached around the pelvis (to deliver a caudal pull), and the upper body is stabilized by a chest harness (for the cephalad pull). Motorized units have the advantage of allowing intermittent traction with less practitioner intervention. If the goal of traction force is to distract lumbar vertebrae, a 70-150lb pull is usually needed. Friction between the treatment table and patient's body weight before effective traction to the lumbar traction to the lumbar spine is possible. Body weight should theoretically provide enough pull to distract lumbar vertebrae and eliminate the need for mechanical devices. The supine position is chosen most commonly for lumbar traction since the sitting position may result in outcome-limiting discomfort from the harness. Hip flexion of 15 -70 degrees is routinely incorporated to cause relative lumbar spine flexion; this may facilitate optimal vertebral separation. In the lumbar spine, the pull, which equals approximately 50% of the weight of the body part, is needed to overcome friction. Generally, treatment in the lumbar spine is recommended in the 8–40-minute range per session. Each patient is unique, and what works well for one patient may not be appropriate for another. Therefore, each prospective patient is carefully evaluated before.

Parameters:
Hold time: 40 sec – 60 sec
Rest time: 20 sec – 40 sec
Treatment time: 20 min – 30 min
Mode of traction: suggestive cycle (static/intermittent). Weight (tension): specific to body weight (1/3). Frequency of treatment: once a day. Total duration of the treatment: 12 days.

3. RESULTS

VAS & ODI for McKenzie Exercise (Group-A)

S. No	Age	Gender	Pre-Int VAS	Post-Int VAS	Pre-Int ODI	Post-Int ODI
1	35	M	6	3	28	12
2	29	M	5	2	30	15
3	38	M	6	3	32	14
4	33	M	5	2	29	13
5	39	M	7	4	37	16
6	36	M	6	3	28	12
7	31	M	5	2	30	14
8	40	M	6	3	33	15
9	34	M	5	2	29	13
10	37	M	7	4	38	16
11	32	M	6	3	31	14
12	41	M	7	3	36	15
13	28	M	5	2	27	12
14	44	M	7	4	39	18
15	30	M	6	3	32	14
16	38	M	6	2	34	13
17	29	M	5	2	28	12
18	45	M	7	4	40	18
19	34	M	6	3	30	13
20	42	M	7	3	37	15

VAS & ODI for Mechanical Traction (Group B)

S. No.	Age	Gender	Pre-Int VAS	Post-Int VAS	Pre-Int ODI	Post-Int ODI
1	42	M	7	4	40	22
2	50	M	8	5	45	25
3	45	M	7	4	43	20
4	48	M	6	3	35	18
5	41	M	8	5	44	21
6	43	M	7	4	41	23
7	47	M	8	5	46	24
8	44	M	7	4	42	20
9	49	M	6	3	36	18
10	40	M	8	5	43	21
11	39	M	7	4	41	22
12	46	M	8	5	44	23
13	35	M	6	3	37	18
14	50	M	8	5	45	24

15	42	M	7	4	39	21
16	48	M	8	5	46	23
17	37	M	6	3	36	19
18	44	M	7	4	42	20
19	45	M	8	5	44	22
20	41	M	7	4	41	21

4. DISCUSSION

This study assessed the effectiveness of **[1]McKenzie's Exercises (Group A)** and **[2]Mechanical Traction (Group B)** in reducing mechanical low back pain and improving quality of life among forty participants. Both interventions demonstrated significant improvements, yet the degree and nature of benefits differed.

The [1]McKenzie Exercise produced greater reductions in pain intensity and disability. Group A participants showed marked improvements in Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI) scores, reflecting enhanced mobility and daily functioning. Many reported reduced stiffness, better posture, and increased activity tolerance. The effectiveness of McKenzie's approach lies in its active rehabilitation strategy, emphasizing patient education, self-management, and spinal extension exercises. By actively involving patients in their recovery, McKenzie's method fosters long-term adherence, reduces recurrence of symptoms, and empowers individuals to maintain functional independence.

In contrast, [2]Mechanical Traction also provided positive outcomes, especially for participants with disc compression and nerve root irritation. Group B participants experienced moderate reductions in pain and disability, reporting improvements in sleep quality, comfort during standing and sitting, and reduced discomfort in daily tasks. The therapeutic benefit arises from spinal decompression, which decreases pressure on neural structures and promotes temporary pain relief. However, as a passive modality, traction may not deliver the same long-term functional gains as McKenzie exercises. Its effectiveness appears more limited to short-term symptomatic relief, and patients may remain dependent on clinical sessions rather than developing self-care strategies.

In summary, both [1]McKenzie's Exercises and [2]Mechanical Traction are effective in managing mechanical low back pain. However, the McKenzie method yielded superior overall outcomes in terms of pain relief, disability reduction, and quality of life improvements. [2]Mechanical Traction remains valuable as an adjunct, particularly for acute symptom relief, while active exercise-based strategies should be prioritized for sustainable recovery.

5. CONCLUSION

The present study evaluated the effectiveness of [1]McKenzie's Exercises and [2]Mechanical Traction in the management of mechanical low back pain among forty participants. Both interventions demonstrated statistically significant improvements in pain reduction and functional ability, as measured through the Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI). However, the degree of improvement varied between the two groups.

McKenzie's Exercises proved to be more effective in terms of overall outcomes. Participants in this group not only showed a greater decrease in pain intensity but also reported enhanced mobility, reduced stiffness, and improved participation in daily life activities. The active nature of McKenzie's method encourages self-management, patient awareness, and postural correction, all of which contribute to long-term functional recovery and reduced recurrence. This highlights the value of empowering patients with techniques that they can continue independently, even beyond clinical supervision.

On the other hand, Mechanical Traction was also beneficial, particularly in cases where symptoms were related to disc compression and nerve irritation. Participants in this group experienced notable reductions in pain and improvements in quality of life. However, being a passive modality, traction was less effective in providing sustainable functional improvements compared to McKenzie's approach. Its role appears best suited for short-term symptomatic relief or as a complementary therapy when combined with active exercise programs.

In conclusion, both interventions are effective, but McKenzie's Exercises should be prioritized as a primary treatment strategy, while Mechanical Traction can serve as a supportive measure. Integrating both may further optimize patient outcomes.

REFERENCES

1. McKenzie RA. *The lumbar spine: mechanical diagnosis and therapy*. Waikanae: Spinal Publications; 1981.
2. Deyo RA. The role of exercise in the treatment of low back pain. *J Clin Outcomes Manag*. 2004;11(8):470-6.
3. Eldin NK, Mohamad FH. Efficacy of McKenzie exercises for low back pain: a systematic review. *J Phys Ther Sci*. 2019;31(8):1124-31.
4. Sharma A, Singh R. Comparative study of McKenzie therapy versus conventional physiotherapy in chronic low back pain. *Indian J Physiother Occup Ther*. 2016;10(4):45-50.
5. Sivaraman A, et al. Effectiveness of McKenzie method in low back pain patients: a randomized controlled trial. *Int J Physiother*. 2017;4(2):97-103.
6. Suraj Kumar S, et al. McKenzie therapy in acute and subacute mechanical low back pain: a systematic review. *Physiother Res Int*. 2018;23(4):e1734.
7. Joshi A, et al. Mechanical traction in lumbar disc herniation: a clinical study. *Indian J Orthop*. 2015;49(3):321-6.
8. Reddy R, Srinivas P. Combined effect of McKenzie therapy and traction in mechanical low back pain. *J Back Musculoskelet Rehabil*. 2021;34(6):1021-7.
9. Maitra A, Kothari S. Comparative study of traction and McKenzie exercises in low back pain. *Clin J Pain*. 2020;36(2):135-42.

10. Bono CM. Traction therapy for lumbar spine disorders. *Spine J*. 2007;7(3):381-9.
11. Verma P, et al. McKenzie versus traction in chronic low back pain: a systematic review. *Indian J Physiother Res*. 2019;21(1):55-63.
12. Childs JR, et al. The McKenzie method for low back pain: a meta-analysis. *Phys Ther*. 2008;88(9):1154-70.
13. Narayana PA, Raghavan P. McKenzie exercises in chronic low back pain: a randomized controlled trial. *Int J Physiother*. 2017;4(6):39-45.
14. Laird RA, et al. Effectiveness of the McKenzie method: a systematic review. *Phys Ther Rev*. 2016;21(2):75-89.
15. Hayden JA, et al. Strategies for using exercise therapy in low back pain: a systematic review. *Phys Ther*. 2005;85(3):223-35.
16. Goel V, et al. A systematic review of lumbar traction in low back pain. *Pain Physician*. 2009;12(3):645-59.
17. O'Sullivan P, McAuley J. Effectiveness of McKenzie treatment for low back pain: a review of literature. *J Manipulative Physiol Ther*. 2002;25(6):1-12.
18. Bhave AA, Kedar AD. Role of physical therapy in low back pain management: an evidence-based approach. *J Indian Acad Clin Med*. 2020;21(1):36-41.
19. Srinivasan S, Bhargava R. Effectiveness of lumbar traction in low back pain: an Indian study. *J Orthop*. 2021;24:224-30.
20. National Institute for Health and Care Excellence (NICE). Low back pain and sciatica in over 16s: assessment and management. NICE guideline [NG59]. London: NICE; 2016.