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Intervention Protocol for the “Effectiveness of the mckenzie approach and pilates-based exercise in treating occupational recurrent low back pain- A Randomized Controlled Trial” V.1

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We use this protocol and it's working

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Keywords: exercise approaches in an occupational recurrent lbp population, pilate, recurrent low back pain, related recurrent low back pain, reducing pain intensity, exercise approach, lumbar mobilization, based exercise, effectiveness of the mckenzie method, pain intensity, effectiveness of the mckenzie approach, mobility exercise, conventional therapy, prior spinal surgery, mckenzie method, advanced directional exercise, treating occupational recurrent, clinical guideline, painful episode, mckenzie approach, randomized controlled trial, occupational recurrent lbp population, morris disability questionnaire, significant pain, disability among adult, disability

Abstract

Background: Occupational recurrent non-specific low back pain (LBP) is common among adults engaged in prolonged seated or static work, leading to significant pain and disability. The McKenzie Method (Mechanical Diagnosis and Therapy, MDT) and Pilates-based exercises are widely used approaches, but their comparative effectiveness when added to conventional therapy remains unclear in this specific population.

Objective: To compare the effectiveness of the McKenzie Method versus Pilates-based exercise, both added to conventional therapy, in reducing pain intensity and disability among adults with occupational recurrent non-specific low back pain.

Methods: This is a two-arm, assessor-blinded, parallel-group randomized controlled trial. Adults aged 18–55 years with recurrent non-specific LBP (at least two painful episodes interrupting daily life in the past year, current episode >24 hours but <12 weeks, related to occupational seated/static positions) will be recruited. Exclusion criteria include red flags (e.g., tumors, fractures), neurological deficits, prior spinal surgery, or pregnancy. Participants will be randomly allocated (computer-generated randomization) to one of two groups (n per group not specified in protocol).

Both groups receive conventional therapy (patient education, flexibility/mobility exercises, core stability, lumbar mobilization, soft tissue techniques, neurodynamic techniques, and electrotherapeutic modalities) for 60 minutes, 3 sessions/week over 8 weeks. Group 1 adds the McKenzie Method (MDT assessment, repeated extensions in lying/standing, self-overpressure, advanced directional exercises, progressive across weeks). Group 2 adds Pilates-based exercises (diaphragmatic breathing, pelvic tilt, dead bug, bridging, bird-dog, clamshells, single-leg bridge, focus on control/precision). Home programs are prescribed daily or as needed.

Primary outcomes are pain intensity (Visual Analog Scale, VAS) and disability (Roland-Morris Disability Questionnaire, RMDQ), assessed at baseline and after 8 weeks.

Expected Results/Conclusion: This trial will provide evidence on the comparative effectiveness of these two exercise approaches in an occupational recurrent LBP population. Results may inform clinical guidelines for managing work-related recurrent low back pain.

Guidelines

****Key Exclusion Criteria:****

- Red flag conditions, such as tumors, infections, or fractures, requiring alternative management. (Confirm through X-ray, MRI, CT scan, Patient history, medical records)
- Neurological deficits or radiculopathy. (Confirm through Neurological examination)
- Prior spinal surgery (Patient History, Surgical scar, Radiological imaging, Medical records).
- Pregnancy (Patient history, Medical records)

****Randomization & Blinding:** Participants will be randomly allocated to one of two groups using computer-generated random numbers. Outcome assessors will be blinded to group allocation.

****Exercise Protocol:****

****Group 2: Conventional Therapy + Pilates-Based Exercise****

****Week 1-2****

Conventional (35 mins):

- Patient Education (10 mins)
- Flexibility/Mobility Exercises (10 reps each, 5 mins)
- Core Stability Exercises (2 sets of 10 reps, 5 mins)
- Lumbar Spine Mobilization 6 Soft Tissue Techniques (10 mins)
- Electrotherapeutic Modalities (Hot/Cold pack, TENS, UST) (5 mins)

Pilates (25 mins):

- Diaphragmatic Breathing (5 mins)
- Pelvic Tilt (3 sets of 12 reps, 10 mins)
- Bent Knee Fallout (3 sets of 10 reps, 10 mins)

Daily:

- Pelvic Tilt: 3 sets of 15 reps
- Bent Knee Fallout: 3 sets of 12 reps
- Diaphragmatic Breathing: 5 minutes

****Week 3-4****

Conventional (30 mins):

- Progressed Mobility Exercises 6 Lumbar Spine Mobilization (3 sets of 12 reps, 10 mins)
- Advanced Core Stability 6 Strengthening Exercises (3 sets of 12 reps, 10 mins)
- Neurodynamic Techniques 6 Soft Tissue Techniques (10 mins)



Pilates (30 mins):

- Dead Bug (3 sets of 10 reps, 15 mins)
- Bridging (3 sets of 15 reps, 15 mins)

Daily:

- Dead Bug: 3 sets of 12 reps
- Bridging: 3 sets of 15 reps
- Previous exercises: 2 sets of 15 reps each

****Week 5-8****

Conventional (25 mins):

- Functional Integration with Strengthening Exercises (3 sets of 15 reps, 10 mins)
- Lumbar Spine Traction 6 Neurodynamic Techniques (10 mins)
- Electrotherapeutic Modalities as needed (5 mins)

McKenzie (35 mins):

- Flexion Recovery Testing (10 mins)
- Advanced Directional Exercises (3 sets of 15 reps, 25 mins)

Daily:

- Core MDT exercises: 3 sets of 10 reps, twice daily
- Functional integration: Apply principles during all activities
- Maintenance exercises: 1 set of 15 reps each

****Pilates (35 mins):****

- Bird-Dog (3 sets of 12 reps, 15 mins)
- Clamshells (3 sets of 15 reps, 10 mins)
- Single-Leg Bridge (3 sets of 12 reps, 10 mins)

****Full Pilates routine: 3 sets of 15 reps each exercise**

- Focus on control and precision

****Outcome Measures (To be assessed at Baseline and after 8 weeks)****

****Primary Outcomes:****

- Pain Intensity: Visual Analog Scale (VAS)
- Ronald-Morris Disability Questionnaires (RMDQ)



Inclusion Criteria

- 1 Adults aged 18–55 years with recurrent non-specific low back pain.
- 2 A history of at least two painful episodes interrupting daily life in the past year and current pain episode lasting more than 24 hours but less than 12 weeks (de Souza et al., 2019).
- 3 Participants engaged in work for at least 6–8 hours daily over an extended period, remaining in seated or static positions for prolonged time (Coenen et al., 2014).
- 4 Willing and able to provide informed consent.

Key Exclusion Criteria

- 5 Red flag conditions, such as tumors, infections, or fractures, requiring alternative management. (Confirm through X-ray, MRI, CT scan, Patient history, medical records)
- 6 Neurological deficits or radiculopathy. (Confirm through Neurological examination)
- 7 Prior spinal surgery (Patient History, Surgical scar, Radiological imaging, Medical records).
- 8 Pregnancy (Patient history, Medical records)

Randomization & Blinding

- 9 Participants will be randomly allocated to one of two groups using computer-generated random numbers. Outcome assessors will be blinded to group allocation.

Intervention Protocols

- 10 Group 1: Conventional Therapy + McKenzie Method (MDT)



Week	Key Interventions (60-minute Supervised Sessions, 3x/week)	Home Program Dosage
1-2	Conventional (35 mins): • Patient Education (10 mins) • Flexibility/Mobility Exercises (10 reps each, 5 mins) • Core Stability Exercises (2 sets of 10 reps, 5 mins) • Lumbar Spine Mobilization & Soft Tissue Techniques (10 mins) • Electrotherapeutic Modalities (Hot/Cold pack, TENS, UST) (5 mins) McKenzie (25 mins): • MDT Assessment (10 mins) • Repeated Extension in Lying (3 sets of 10 reps, 10 mins) • Postural Correction (5 mins)	Daily: • Repeated Extension in Lying: 10 reps every 2 waking hours • Posture checks: Every 30 minutes while sitting • Flexibility exercises: 1 set of 10 reps each.
3-4	Conventional (30 mins): • Progressed Mobility Exercises & Lumbar Spine Mobilization (3 sets of 12 reps, 10 mins) • Advanced Core Stability & Strengthening Exercises (3 sets of 12 reps, 10 mins) • Neurodynamic Techniques & Soft Tissue Techniques (10 mins) McKenzie (30 mins): • Extension in Standing (3 sets of 15 reps, 15 mins)	Daily: • Extension exercises: 10 reps every 3-4 hours • Self-Overpressure: 10 reps every 2 hours as needed • Core exercises: 2 sets of 15 reps



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	• Extension with Self-Overpressure (3 sets of 10 reps, 15 mins)	
5-8	Conventional (25 mins): • Functional Integration with Strengthening Exercises (3 sets of 15 reps, 10 mins) • Lumbar Spine Traction & Neurodynamic Techniques (10 mins) • Electrotherapeutic Modalities as needed (5 mins) McKenzie (35 mins): • Flexion Recovery Testing (10 mins) • Advanced Directional Exercises (3 sets of 15 reps, 25 mins)	Daily: • Core MDT exercises: 3 sets of 10 reps, twice daily • Functional integration: Apply principles during all activities • Maintenance exercises: 1 set of 15 reps each

12 Group 2: Conventional Therapy + Pilates-Based Exercise



Week	Key Interventions (60-minute Supervised Sessions, 3x/week)	Home Program Dosage
1-2	Conventional (35 mins): • Patient Education (10 mins) • Flexibility/Mobility Exercises (10 reps each, 5 mins) • Core Stability Exercises (2 sets of 10 reps, 5 mins) • Lumbar Spine Mobilization & Soft Tissue Techniques (10 mins) • Electrotherapeutic Modalities (Hot/Cold pack, TENS, UST) (5 mins) Pilates (25 mins): • Diaphragmatic Breathing (5 mins) • Pelvic Tilt (3 sets of 12 reps, 10 mins) • Bent Knee Fallout (3 sets of 10 reps, 10 mins)	Daily: • Pelvic Tilt: 3 sets of 15 reps • Bent Knee Fallout: 3 sets of 12 reps • Diaphragmatic Breathing: 5 minutes
3-4	Conventional (30 mins): • Progressed Mobility Exercises & Lumbar Spine Mobilization (3 sets of 12 reps, 10 mins) • Advanced Core Stability & Strengthening Exercises (3 sets of 12 reps, 10 mins) • Neurodynamic Techniques & Soft Tissue Techniques (10 mins) Pilates (30 mins): • Dead Bug (3 sets of 10 reps, 15 mins) • Bridging (3 sets of 15 reps, 15 mins)	Daily: • Dead Bug: 3 sets of 12 reps • Bridging: 3 sets of 15 reps • Previous exercises: 2 sets of 15 reps each
5-8	Conventional (25 mins):	Every Other Day:

Outcome Measures

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• Functional Integration with Strengthening Exercises (3 sets of 15 reps, 10 mins) • Lumbar Spine Traction & Neurodynamic Techniques (10 mins) • Electrotherapeutic Modalities as needed (5 mins) Pilates (35 mins): • Bird-Dog (3 sets of 12 reps, 15 mins) • Clamshells (3 sets of 15 reps, 10 mins) • Single-Leg Bridge (3 sets of 12 reps, 10 mins)	• Full Pilates routine: 3 sets of 15 reps each exercise • Focus on control and precision
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Primary Outcomes:

Pain Intensity: Visual Analog Scale (VAS)

Ronald-Morris Disability Questionnaires (RMDQ)