

McKenzie Method (MDT)

Mechanical Diagnosis and Treatment

A Review of the System &
Dispelling Myths and Misconceptions

Training for Work Comp Nurses and Physicians

About the Presenter



Cynthia Larsen

DPT, Cert-MDT, OCS, CSCS

- 🎓 19 years of clinical experience in outpatient orthopaedic physical therapy
- ✅ Credentialed in the McKenzie Method (MDT) — Certified 2017
- 🦴 Orthopedic Certified Specialist (OCS)
- 💪 Certified Strength and Conditioning Specialist (CSCS)
- 👜 Specialization in Workers' Compensation rehabilitation and return to work

Learning Objectives

01

Identify common misconceptions about the McKenzie Method and explain its role in evidence-based musculoskeletal care.

02

Distinguish the McKenzie Method from protocol-based physical therapy by describing its patient response-driven assessment and treatment approach.

03

Explain how the McKenzie Method supports functional outcomes, self-management, and return-to-work planning within a case management framework.

The Discovery of MDT

How Robin McKenzie Accidentally Changed Spine Care

The Accidental Discovery — 1956

New Zealand physiotherapist Robin McKenzie had a patient with chronic low back and leg pain who had failed to improve.

While waiting for McKenzie, the patient lay face-down on a treatment table left in a raised position at the head end — placing him in passive lumbar extension.

When McKenzie returned, the patient reported his leg pain had moved back toward the spine and significantly decreased — a phenomenon McKenzie had never seen before.

This accidental observation led McKenzie to systematically explore the role of repeated movements and positions in spine pain — giving birth to Mechanical Diagnosis and Therapy (MDT).

MDT Today

- ✓ Practiced in 30+ countries worldwide
- ✓ Credentialed training program recognized globally
- ✓ Extensive peer-reviewed evidence base
- ✓ Used for lumbar, cervical spine, and extremities
- ✓ Emphasizes patient self-management

Cardinal Features of MDT

1

CLASSIFICATION SYSTEM

Based on mechanical and symptomatic responses — not diagnosis or imaging. MDT is first and foremost a diagnostic classification system. Every patient is a “Mckenzie Patient”

2

Patient Education

Educating patients about their condition is central to the approach.

3

Self-Management

The primary goal is patient independence and self-treatment

4

Progression of Forces

A logical, response-guided sequence of force application. Built in safety

5

Directional Preference & Centralization

The key phenomena that drive classification and treatment direction

MDT vs. Other Treatment Approaches

"We watch the patient's response and reaction — not what we see pathoanatomically"

MDT Approach

- Repeated movements for assessment AND management
- Classification treatment
- Response to movement drives decisions
- Patient independence is the goal
- Minimal intervention necessary
- Clinician procedures enable self-treatment

Traditional PT

- Often protocol-based by diagnosis
- Treatment based on imaging/pathology
- Structural findings drive decisions
- Clinician-driven and passive
- More reliance on hands-on treatment
- Risk of clinician dependency

MYTH #1

Debunking Common Misconceptions

⚠ MYTH: "The McKenzie Method is only extension exercises"

THE REALITY

78%

Extension

Most common DP

16%

Lateral

Side-glides & rotation

6%

Flexion

Also used in treatment

Source: May & Rosedale 2019 — 486 lumbar patients, 54 Diploma-qualified clinicians, 15 countries

MDT uses flexion, rotation, sideglidess, and lateral movements — treatment is driven by the patient's response, not a preset protocol.

MYTH #2

Debunking Common Misconceptions

⚠ MYTH: "Movement patterns correlate well with anatomical/imaging findings"

THE REALITY — Nakashima 2015

73%

Asymptomatic males
in their 20s with disc bulges

78%

Asymptomatic females
in their 20s with disc bulges

10%/7%

Males/females in their 60s
with spinal cord compression

All subjects were ASYMPTOMATIC — no pain, no symptoms

"It is dangerous to make interventional decisions only by judging degenerative changes using MR images alone" — Nakashima 2015

MDT focuses on mechanical and symptomatic RESPONSE — not what the image shows.

Key Definitions

Understanding the Language of MDT

Centralization

The phenomenon where referred, distal pain (e.g., in the leg) moves toward the midline of the spine (proximally) and decreases or abolishes in response to specific repeated movements or sustained postures. A key positive prognostic indicator. Associated only with Derangement Syndrome.

Directional Preference (DP)

The clinical phenomenon where a specific direction of repeated movement and/or sustained position results in a lasting, clinically relevant improvement in symptoms — usually accompanied by improvement in function or mechanics. Determined over 2–3 visits.

Peripheralization

The phenomenon where proximal symptoms move progressively in a proximal-to-distal direction in response to specific movements or positions. May be associated with worsening neurological status. Indicates the **WRONG** treatment direction.

Centralization vs. Directional Preference

An Important Distinction

KEY CONCEPT: All patients who centralize have a Directional Preference — but not all patients with a DP will centralize.

Directional Preference

- Broader range of responses
- Lasting improvement in symptoms
- Not always a change in pain location
- Present with all Derangements
- Essential for classification
- Indicates good prognosis

Centralization

- A subset of Directional Preference
- Lasting CHANGE in location of pain
- Pain moves from distal → proximal → abolished
- Specific to Derangement Syndrome
- Strongest positive prognostic indicator
- High inter-rater reliability (kappa 0.79)

Centralization in Action

Pain Moving from Distal → Proximal → Abolished

Each photo demonstrates a stage of centralization — draw in the pain location to show movement toward the spine over time.



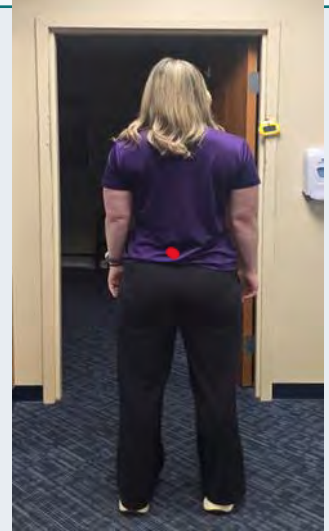
Initial: Distal leg pain



Pain moves to thigh



Pain centralizes to back



Pain abolished

Centralization & DP as Prognostic Indicators

Evidence-Based Outcomes

When a patient centralizes, the data consistently shows:

↓ Pain	↓ Disability	↓ Surgery rates	21/23	Studies supporting prognostic validity of Centralization <i>May 2012 Systematic Review</i>
↓ Depression	↓ Fear-avoidance	↑ Return to work	-2 pts	Less pain (0–10 scale) in centralizing Derangements <i>Yarznbowicz 2018, n=639</i>
			-3.4	Points on Roland Morris Disability Questionnaire (0–24) <i>Yarznbowicz 2018, n=639</i>

Moderate evidence: DP management significantly more effective than comparison interventions for pain, function, and work participation (Surkitt 2012 — 5 high-quality RCTs)

Derangement Syndrome

The Most Common MDT Classification

Derangement is by far the most common MDT classification and is the most rapidly responding.

Definition

A clinical presentation demonstrating Directional Preference in response to loading strategies, typically associated with movement loss. Centralization is a common feature.

Response to Treatment

- ✓ Responds to repeated end-range loading
- ✓ Directional Preference is present and identifiable
- ✓ Centralization is achievable
- ✓ Most rapid responder of all MDT classifications

Pain Locations

- Central or symmetrical
- Unilateral/asymmetrical above knee
- Unilateral/asymmetrical below knee

Presentation is variable but predictably variable.

Prognosis

Excellent when Centralization or DP is established. Self-management is the primary goal. Failure to achieve Centralization indicates a poorer prognosis.

Clues for Derangement & Directional Preference

What the Patient's History Tells You

Before the physical exam — listen carefully. Patients often describe their Directional Preference without knowing it.

↑ Extension Responder

✓ Better with:

- Moving around / walking
- Standing upright
- Sitting tall or with lumbar support
- Lying on stomach

✗ Worse with:

- Prolonged sitting or slumped posture
- Bending forward (dishes, tying shoes)
- Flexion activities (gardening, vacuuming)
- Curve reversal / loss of lordosis

Classic quote: "I have to get up and walk around" or "I can't sit through a whole car ride."

↓ Flexion Responder

✓ Better with:

- Sitting or curled forward
- Lying in fetal position
- Leaning on a shopping cart or walker
- Going uphill or upstairs

✗ Worse with:

- Standing upright for long periods
- Walking long distances on flat ground
- Extension activities (reaching overhead)
- Early morning stiffness into extension of flexion

Classic quote: "I lean on the cart at the grocery store" or "Walking is worse but biking helps."

← → Lateral / Sideglide Responder

✓ Better with:

- Shifting weight or leaning to one side
- Carrying something on one side
- Lying on a specific side
- One particular posture that "unlocks" them

✗ Worse with:

- Standing symmetrically / weight-bearing equally
- Walking in a straight line
- Certain rotational movements
- Pain often unilateral, may radiate to leg

Watch for: visible lateral trunk shift, list to one side, or patient who "can't stand straight."

Dysfunction & Postural Syndromes

Less Common but Important Classifications

DYSFUNCTION SYNDROME — 1.8% of lumbar presentations

Key Feature:

Tensions **adaptatively shortened tissues**. Takes time to develop. Not acute. Symptoms are produced consistently and ONLY at a limited end-range of movement — not at mid-range.

Slow to respond to treatment.

Subtype: Adherent Nerve Root.

POSTURAL SYNDROME — 0.2% of lumbar presentations

Key Feature:

Pain is produced only by sustained positioning/loading of **normal tissue** — not by movement.

Symptoms resolve immediately upon correcting the position. No movement loss.

Rare presentation.

Treatment is postural correction and education.

The OTHER Subgroups

Why Classification Changes Everything

Unlike Derangement, OTHER subgroups typically do NOT respond to repeated end-range loading — treatment must be tailored to the specific subgroup.

OTHER Subgroups — Different Approach (25% of lumbar presentations)

MUR (Mechanically Unresponsive Radicular Syndrome): Radicular pattern in extremity. No centralization. No lasting improvement with any loading strategy. May need injections or surgical consult — MDT is valuable for screening.

Spinal Stenosis: Older population. Leg symptoms relieved with flexion, exacerbated with extension. Longstanding extension loss. Variable MDT response; flexion bias often preferred.

Chronic Pain Syndrome: Persistent widespread pain. Aggravated by all activity. Disproportionate pain response. Nociplastic driver — psychosocial and cognitive-emotional management is central.

Structurally Compromised: Mechanical symptoms (locking, catching, instability). ROM restricted. Long history or trauma. Examples: grade 3-4 spondylolisthesis, painful scoliosis, RA instability. Irreversible with conservative care.

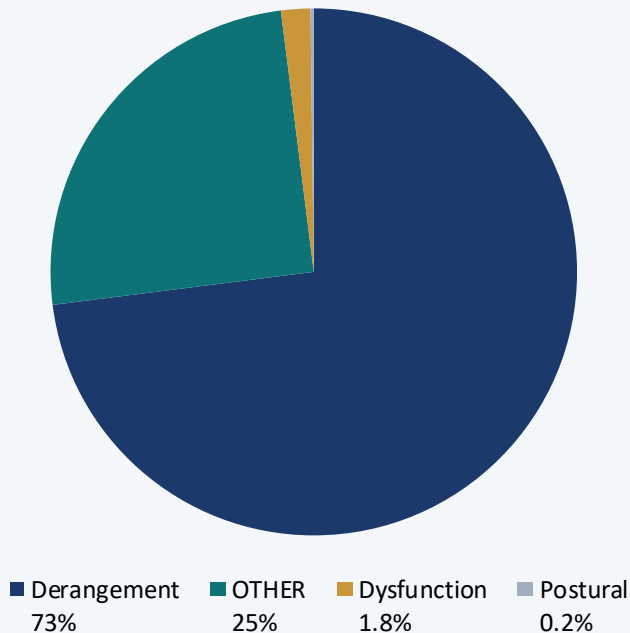
Mechanically Inconclusive: Symptoms affected by movement but no recognizable pattern. Inconsistent responses on loading. All other classifications excluded. Further investigation may be needed.

Inflammatory Arthropathy / Post-Surgery / Trauma / SIJ: Inflammatory: constant pain, morning stiffness (e.g. RA, AS). Post-Surgery/Trauma: tissue healing constraints apply; staged recovery. SIJ/PGP: 3+ positive provocation tests; lumbar spine excluded.

Screening tools: NPRS, 4-Item Pain Intensity Measure (P4) — useful across all classifications to track progress

The MDT Classification System

May & Rosedale 2019 — 486 Lumbar Patients



OTHER Subgroups (25%)

Subgroup	n
Mechanically Inconclusive	39
MUR (Radicular)	32
Spinal Stenosis	12
Chronic Pain Syndrome	8
Post-Surgery	9
SIJ / Pelvic Girdle Pain	8
Structurally Compromised	5
Trauma / Recovering	5
Serious Pathology	2
Inflammatory Arthropathy	0

Pain Drivers & MDT Classification

Understanding What's Driving the Patient's Pain

Nociceptive Pain

MDT: Primary driver in most Derangements, Dysfunction, Postural
Most common pain type in spine patients. Responds well to mechanical loading strategies. Directional Preference and Centralization are hallmarks.

Screening: NPRS, P4

Peripheral Neuropathic Pain

MDT: Primary driver in: Derangement with radiculopathy, MUR, Spinal Stenosis, Adherent Nerve Root
Caused by a lesion or disease of the peripheral somatosensory nervous system (IASP). Presents as painful radiculopathy with pain, numbness, paraesthesia. Poorer outcomes than nociceptive LBP (Baron 2016, Spahr 2017). Distinct from somatic referred pain — implicates the nerve root.

Screening: StEP, Pain
DETECT (PD-Q), DN4

Nociplastic Pain

MDT: Primary driver in: Chronic Pain Syndrome (OTHER subgroup)
Pain arising from altered nociception with no clear tissue damage or nerve lesion (IASP 2017). Also called Central Sensitisation. Widespread pain with hypersensitivity in apparently normal tissue (Kosek 2016). Psychosocial and cognitive-emotional management is central.

Screening: STarT
Back, FABQ

"A considerable number of operations may have been avoided by this safe, low-cost treatment" (Albert 2012) | MDT may reduce surgery rates in MUR population (van Helvoirt 2014)

Phases of Treatment

A Comprehensive, Progressive Program

Phase 1: Reduction

Identify Directional Preference. Reduce the Derangement using repeated movements/positions. Centralization of symptoms is the goal.

Phase 2: Maintenance

Maintain the reduction. Patient learns to sustain gains independently. Education on posture and activity modification.

Phase 3: Return to Function

Reintroduce normal movements in ALL directions including FLEXION. Assess and address deficits in strength, mobility, confidence. Return to work is a key functional goal.

Phase 4: Prophylaxis

Prevention of recurrence. Patients taught self-management strategies and home exercise programs for long-term spine health.



Often misunderstood: MDT works THROUGH return to full movement — including flexion — not just pain relief. Return to work IS return to function.

Management of Derangement: Progression of Forces

A Logical, Response-Guided Sequence

The following management principles apply specifically to Derangement Syndrome — the most common MDT classification.

1	Self-Treatment Procedures	Patient's own positions/movements explored FIRST. Majority of patients need only this level. Clarifies classification and identifies need for additional forces.
2	Patient Overpressure	Assists patient in moving to end-range. Exposes Dysfunction or reduces Derangement.
3	Clinician Overpressure	Required when patient self-generated forces are insufficient. Used only until patient can self-treat effectively.
4	Clinician Mobilisation	Applied with continuous response assessment. General and non-specific as to segmental level but mechanically specific in intent.
5	Clinician Manipulation	Required in very small % of patients. High velocity, low amplitude. Final step to enable effective self-treatment.

Lumbar Extension Progression

Self-Treatment Procedures – BUILT IN SAFETY



1. Prone Lying

Starting position



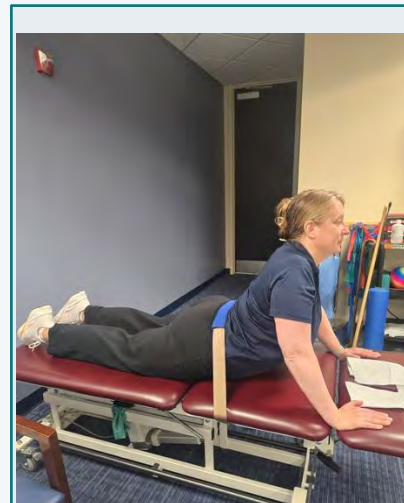
**2. Repeated Extension
in Lying**

Primary self-treatment



3. Patient Overpressure

Exhale, lock and sag



4. Belted Overpressure

Additional self-generated force

Replace placeholders with your own clinical photos

Clinician-Assisted Procedures 30% of the time

Applied When Self-Treatment Forces Are Insufficient

Clinician procedures are applied only until the patient can self-treat effectively — the goal remains patient independence.



Clinician Overpressure



Clinician Mobilization

Replace placeholders with your own clinical photos

Recovery of Function

Beyond Pain Relief — Restoring Full Capacity

Following successful Derangement reduction, normal movements in ALL directions must be reintroduced — including flexion.



Reintroduce Flexion

Patients are often fearful of flexion after a Derangement. The clinician demonstrates that it can be safely reintroduced at this stage — directly addressing fear-avoidance.



Assess Capability & Confidence

Not just physical capacity — the clinician assesses whether the patient has the **CONFIDENCE** to resume their previous activity level, including work tasks.



Address All Deficits

Any deficits in mobility, strength, endurance, or confidence are identified and specifically addressed as part of the recovery program.



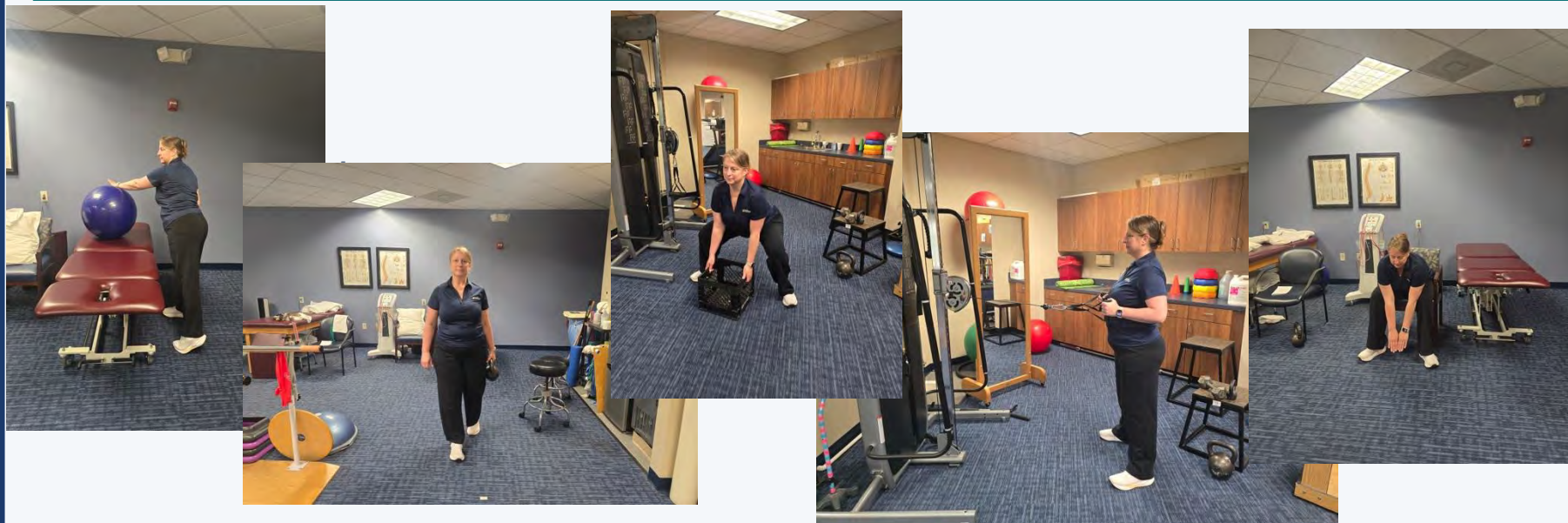
Return to Work = Return to Function

For work comp patients, returning to occupational function is the primary functional outcome — not simply symptom reduction.

Return to Function & Return to Work

MDT in Action — Clinical Examples

Functional recovery goes beyond pain relief — restoring the patient's capacity and confidence to return to work and daily life.



MDT Clinician Education & Credentialing

The McKenzie Institute International

MDT is not a technique — it is a comprehensive educational and credentialing system requiring rigorous training and examination.

Part A

28 hrs

Lumbar Spine

Foundation course covering MDT assessment, classification, and treatment principles for the lumbar spine. Includes written and practical examination.

Part B

28 hrs

Cervical & Thoracic Spine

Extends MDT principles to the cervical and thoracic spine. Builds on Part A classification skills with upper quadrant assessment.

Part C & D

28 hrs ea.

Advanced Clinical Courses

Advanced application of MDT principles including complex presentations and clinical reasoning at higher levels of force progression. Parts A–D required before sitting Credentialing Exam.

Cert-MDT Exam

*Parts A–D
required*

McKenzie Credentialing Examination

Multi-method written and practical exam — the worldwide MII standard. Passing indicates basic competency in MDT as established by the McKenzie Institute International. Credential holders are listed in the online Therapist Locator and may use the initials "Cert. MDT".

McKenzie Institute International — www.mckenzieinstitute.org | Cert-MDT: the highest level of credentialing in the McKenzie Method

Reliability of the MDT Examination

How Does MDT Compare?

A systematic review of 48 lumbar physical examination studies found that most commonly used procedures (e.g., palpation) either LACK reliability or have conflicting evidence. (May 2006)

Moderate–High

Reliability of pain response
to repeated movements

May 2006

$\kappa = 0.79$

Inter-rater agreement for
Centralization (substantial)

Fritz 2000

$\kappa = 0.76–0.87$

Range from students to
experienced clinicians

Fritz 2000

All agreement was substantial — even for students. This consistency supports the teachability and reliability of the MDT assessment process across experience levels.

RCT Evidence for MDT Efficacy

Key Clinical Trials

Long et al. 2004 — Spine | n = 312

Design: 74% classified as Derangements with DP. Randomized to: (1) Matched DP treatment, (2) Opposite DP treatment, (3) Evidence-based advice + generic exercise.

Finding: Matched DP treatment significantly better for pain, function, and medication use vs. both opposite and control groups. Validates sub-classification and matching treatment to DP.

Petersen et al. 2011 | n = 350

Design: Compared MDT vs. spinal manipulation in patients presenting with Centralization or Peripheralization. 1-year follow-up.

Finding: MDT significantly more effective at 2 months. Superior in disability at 2 AND 12 months. Supports classification-based, predominantly self-treatment approach over manipulation.

Note: Not all trials show superiority — a balanced, evidence-based view acknowledges both supportive and unsupportive trials.

MDT & Psychosocial Outcomes

Beyond Physical Symptoms

Kuhn et al. 2020 — Systematic Review

16 studies reviewed | Physiotherapy Theory & Practice

MDT is associated with improvement in:



Fear-Avoidance Beliefs

Patients develop more adaptive beliefs about movement and activity — reducing catastrophizing and avoidance behavior.



Depression

MDT is associated with reduction in depressive symptoms alongside improvements in physical function.



Pain Self-Efficacy

Patients gain confidence in their ability to manage their own symptoms — a core goal of MDT's self-treatment focus.



Psychological Distress

Overall psychological distress is reduced as patients gain control over their condition and functional ability.

MDT & Surgery Reduction

Cost-Effective Implications for Work Comp

50%

Reduction in lumbar disc surgery rates

After MDT-based spine clinics were implemented in a Danish county — while surgery rates INCREASED slightly in the rest of the country.

Rasmussen 2005

2025 RCT — The Spine Journal

MUTUBUKI et al. 2025

MDT + Transforaminal Epidural Steroid Injections vs. Injections Alone

Population: Patients on surgical waiting list for chronic lumbar herniated disc

Result: MDT combined with injections was BOTH effective AND cost-effective

Significance: Demonstrates MDT's role as a pre-surgical intervention — potentially reducing surgery in complex cases

MDT & the Work Comp Claim

What Case Managers and Nurses Should Know

Classification drives claim trajectory — knowing the MDT classification helps predict recovery time, complexity, and RTW timeline.



Derangement = Expect Rapid Response

Derangement is the most common classification and the fastest responder. If your claimant has MDT-confirmed Derangement with centralization, expect a short, focused course of treatment and early RTW potential.



MDT May Reduce Surgery & Costs

50% reduction in lumbar disc surgery (Rasmussen 2005). MDT screens surgical candidates before escalation — a low-cost, low-tech intervention with significant cost-avoidance potential for complex claims.



OTHER Subgroups = Longer, Complex Course

If classified as MUR, Stenosis, or Chronic Pain Syndrome, expect a longer timeline and possible need for specialist involvement. MDT provides clarity on this early in the claim.



Ask About Classification in Progress Notes

Look for documentation of: MDT classification, presence/absence of Directional Preference, centralization status, and phase of treatment. These are meaningful clinical milestones — not just pain scores.



Psychosocial Factors Are Addressed

MDT improves fear-avoidance, self-efficacy, and depression (Kuhnaw 2020) — key drivers of delayed RTW in work comp. Classification helps identify when psychosocial management should be prioritized.



RTW is a Core MDT Goal — Not an Afterthought

Return to function — including occupational function — is built into the MDT treatment phases. Your MDT clinician is already working toward RTW as a primary outcome.

Key Takeaways

1

MDT is a comprehensive, classification-based system — NOT just extension exercises. Treatment is driven by patient response.

2

Patient response to movement — not imaging or pathoanatomy — guides classification and treatment direction.

3

Centralization and Directional Preference are powerful, reliable prognostic tools with strong evidence behind them.

4

MDT emphasizes self-management, patient independence, and full return to function — including return to work.

5

MDT has demonstrated improvements in psychosocial outcomes and has the potential to significantly reduce surgery rates and costs.

Bringing It All Together

✗ Myths Debunked

✓ DEBUNKED

""McKenzie is just extension exercises""

MDT is a classification system and treatment system. It uses flexion, lateral, and rotation — treatment follows the patient's Directional Preference, not a protocol.

✓ DEBUNKED

""Imaging findings explain the pain""

73–78% of asymptomatic young adults have disc bulges. MDT focuses on response to movement, not pathoanatomy.

✓ DEBUNKED

""PT is one-size-fits-all""

MDT classifies each patient — Derangement, Dysfunction, Postural, and OTHER subgroups each require a different approach.

✓ Objectives Met

01



Identified common misconceptions about the McKenzie Method and explained its role in evidence-based musculoskeletal care.

02



Distinguished MDT from protocol-based PT by describing its patient response-driven assessment and classification system.

03



Explained how MDT supports functional outcomes, self-management, and return-to-work planning within a case management framework.

References

1. Kuhn timer A, Kuhn timer J, Ham D, Rosedale R. The McKenzie Method and its association with psychosocial outcomes in low back pain: A systematic review. *Physiother Theory Pract*. 2020.
2. May S, Rosedale R. An international survey of the comprehensiveness of the McKenzie classification system and the proportions of classifications and directional preferences in patients with spinal pain. *Musculoskelet Sci Pract*. 2019;39:10-15.
3. Yarnsbrowicz R, Tao M, Owens A, et al. Pain pattern classification and directional preference are associated with clinical outcomes for patients with low back pain. *J Man Manip Ther*. 2019;26:18-24.
4. Mutubuki EN, van Helvoirt H, et al. Effectiveness and cost-effectiveness of MDT combined with transforaminal epidural steroid injections for chronic lumbar herniated disc. *The Spine Journal*. 2025.
5. Long A, et al. Does it matter which exercise? A randomized control trial of exercise for low back pain. *Spine*. 2004.
6. Petersen T, et al. The McKenzie method compared with manipulation when used adjunctive to information and advice in low back pain patients. *Spine*. 2011.
7. Rasmussen C, et al. Manipulation does not add to the effect of extension exercises in chronic low-back pain. *Joint Bone Spine*. 2005.
8. Fritz JM, Delitto A, Vignovic M, Busse RG. Interrater reliability of judgments of centralization of symptoms. *Arch Phys Med Rehabil*. 2000.
9. May S. Lumbar physical examination: reliability of pain provocation tests. *Physiotherapy*. 2006.
10. Surkitt LD, et al. Efficacy of directional preference management for low back pain: a systematic review. *Phys Ther*. 2012.
11. Nakashima H, et al. Abnormal findings on magnetic resonance images of the cervical spines in 1211 asymptomatic subjects. *Spine*. 2015.
12. Baron R, et al. Peripheral neuropathic pain: a mechanism-related organizing principle. *Pain*. 2016.
13. Kosek E, et al. Do we need a third mechanistic descriptor for chronic pain states? *Pain*. 2016.