



McKenzie Method® of Mechanical Diagnosis and Therapy® (MDT): Overview of Supportive Studies

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MDT continues to be one of the most researched conservative approaches to musculoskeletal problems. It has been examined in depth in relation to its utility in the spine, and the research is accumulating in the extremities. The following is a selection of some of the most relevant and supportive studies on the approach to date. However, studies on MDT are not universally supportive, to get a comprehensive sense of the literature exploring MDT and for the most up-to-date MDT references, please visit: www.mckenzieinstitute.org

Classification Reliability

Reliability means that different examiners will agree on the assessment findings and reach the same patient classification. Since treatment decisions rely exclusively on the assessment and classification, this is critical. The following two systematic reviews summarise reliability for MDT. When applied by Credentialed or Diplomaed clinicians, MDT has acceptable reliability for the lumbar spine and conflicting levels of reliability for the neck. For the extremities there is strong evidence for acceptable reliability with some study designs and using experienced clinicians:

- [Garcia A, Costa L, de Souza F et al. Reliability of the MDT system in patients with spinal pain: A systematic review. J Orthop Sports Phys Ther. 2018;48:12:923-933.](#)
- [Takasaki H, Okuyama K, Rosedale R. Inter-examiner classification reliability of MDT for extremity problems – Systematic review. Musculoskelet Sci Pract. 2017;27:78-84.](#)

Treatment Efficacy

The following RCTs endorse the treatment value of MDT, showing efficacy in the spine and in the extremities.

- [Long A, Donelson R, Fung T. Does it matter which exercise? A RCT of exercises for LBP. Spine 2004;29:2593-2602.](#)

This high-quality RCT endorsed the value of sub-classifying patients using MDT, establishing directional preference (DP) and matching specific exercises based upon these findings. All patient outcomes including pain, function and medication use were significantly superior in the group where the exercises with matched to the DP.

- [Petersen T, Larsen K, Nordsteen J, Olsen S, Fournier G, Jacobsen S. The McKenzie Method compared with manipulation when used adjunctive to information and advice in LBP patients presenting with Centralization or Peripheralization. A RCT. Spine 2011;36:24:1999-2010.](#)

With a one-year follow-up, this study compared two alternative interventions. MDT was found to be more effective than manipulation, and the study gives support to the Method's classification-based approach.

- [Albert H, Manniche C. The efficacy of systematic active conservative treatment for patients with severe sciatica. A single-blind, randomized, clinical, controlled trial. Spine 2012;37:7:531-542.](#)

The patients in this study had symptoms that would normally qualify them for surgery. The patients given DP exercises determined by MDT improved significantly more with respect to global improvement, sick leave, vocational status, root compression signs, and patient satisfaction.

- [Rosedale R, Rastogi R, May S et al. Efficacy of exercise intervention as determined by the McKenzie System of MDT for knee OA: A RCT. J. Ortho Sports Phys. 2014;44:173-181.](#)

Patients who were given exercises based on an MDT assessment had superior outcomes compared to those of wait-list controls for both pain and function. 40% of the knees examined were classified as having a DP; they demonstrated large effect sizes at two weeks for all primary outcomes and up to large effect sizes at three months.

- [Fritz JM, Lane E, McFadden M et al. Physical Therapy Referral from Primary Care for Acute Back Pain with Sciatica: A RCT. Ann Intern Med. Oct 6 2020. Online first.](#)

This RCT with 220 patients, used an exercise-based approach utilising MDT principles, including force progressions, compared to 'usual care'. At one year follow-up the MDT group showed greater improvements with function, pain and with self-reported success.

Association with Psychosocial Factors

Numerous studies and one systematic have explored the association between MDT and psychosocial outcomes. There has been a positive association shown in relation to fear avoidance beliefs, somatisation, depressive symptoms and pain self-efficacy.

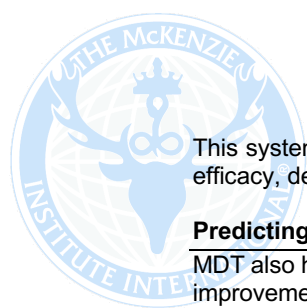
- [Werneke M, Edmond S, Young M, Grigsby D, McClenahan B, McGill T. Association between changes in function among patients with lumbar impairments classified according to the STarT Back Screening Tool and managed by McKenzie credentialed physiotherapists. Physiother Theory and Pract. 2020;36\(5\):589-597.](#)

This large cohort study followed 705 patients who completed functional scores and the STarT Back Questionnaire at baseline and received MDT care. Over 90% classified at a high-risk level decreased to either low (67%) or medium risk (25%) by discharge indicating that MDT care may reduce some of the STarT physical and psychosocial impairments.

- [Werneke M, Edmond S, Young M, Grigsby D, McClenahan B, McGill T. Directional preference and functional outcomes among subjects classified at high psychosocial risk using STarT. Physiother Res Int. 2018;23:e1711.](#)

This cohort study took 138 patients with LBP and high STarT risk. Those with a DP and given matched intervention showed significant and clinically important differences in function compared to those with no DP.

- [Kuhnnow A, Kuhnnow J, Ham D, Rosedale R. The McKenzie Method and its association with psychosocial outcomes in low back pain: a systematic review. Physiother Theory and Pract. 2020 Jan 7:1-15 Online first.](#)



This systematic review found there was an association between MDT and improvement in fear-avoidance, pain self-efficacy, depression and psychological distress.

Predicting Outcomes

MDT also has a proven ability to predict patient outcome. With Centralisation / DP the prognosis for a rapid and lasting improvement is very good.

- [Werneke M, Hart D, Guillermo C et al. Association between directional preference and centralization in patients with LBP. J. Ortho Sports Phys. 2011;41:22-31.](#)
- [May S, Runge N, Aina A. Centralization and directional preference: An updated systematic review with synthesis of previous evidence. Musculoskelet Sci Pract. 2018;38:53-62.](#)
- [Yarznbowicz R. A prospective study of patients with shoulder pain and MDT. J Man Manip Ther. 2020;28:41-48.](#)

Assisting in Spinal / Extremity Differentiation

MDT is used as a means for clinicians to differentiate whether extremity symptoms are from a spinal or extremity source. Case studies have outlined this process for individual patients and one cohort study details this MDT process.

- [Rosedale R, Rastogi R, Kidd J, Lynch G, Supp G, Robbins SM. A study exploring the prevalence of Extremity Pain of Spinal Source \(EXPOSS\). J Man Manip Ther. 2020 Sep;28\(4\):222-230.](#)

Using an MDT based 'baseline-test-retest baseline' process, clinicians determined which of the 369 patients with extremity pain had symptoms that were of 'spinal source' and which had 'extremity source' symptoms. Overall, 43.5% of the patients were designated as having a 'spinal source' and were treated with solely spinal intervention.

Avoiding potential Surgery and Cost-Saving Implications

Several studies have shown the potential of MDT for pre-surgical screening and intervention to reduce surgery rates in the spine. This could have significant cost-saving implications. In the first study, 4 years after implementation of MDT based spine clinics in a Danish county, lumbar disc surgery rates were reduced by 50% compared with previous years. In the second study, transforaminal epidural injections followed by MDT, demonstrated the potential to be an effective strategy in preventing surgical interventions for patients with lumbar disc herniation.

- [Rasmussen C, Nielson G, Hansen V, Jensen O, Schioettz-Christensen B et al. Rates of lumbar disc surgery before and after implementation of multidisciplinary nonsurgical spine clinics. Spine 2005;30;21:2469-73.](#)
- [Van Helvoirt H, Apeldoorn A, Ostelo R et al. Transforaminal epidural steroid injections followed by MDT to prevent surgery for lumbar disc herniation. Pain Med.2014;15\(7\):1100-8.](#)

Systematic Reviews and Guidelines featuring MDT

MDT and the phenomenon of Centralisation and DP have been the subject of, or included in, many systematic reviews and guidelines. Here are a few examples.

- [Delitto A, Georg S, van Dillen L et al. Low Back pain. Clinical Practice Guidelines. J. Ortho Sports Phys. 2012;42;4:A1-A57.](#)

It was recommended that clinicians should use specific repeated movements to promote centralisation in patients with acute, subacute or chronic LBP, with the recommendation based on Grade A, 'strong evidence'.

- [Stynes S, Konstantinou K, Dunn K. Classification of patients with LB-related leg pain: a systematic review. BMC MSK Disorders 2016;17:226-245.](#)

This review evaluated 22 systems that classify populations with low back-related leg pain. MDT scored the highest of any system, with criteria based upon purpose, validity, feasibility, reliability and generalisability.

- [Brosseau L, Taki J, Desjardins B et al. The Ottawa panel clinical practice guidelines for the management of knee osteoarthritis. Strengthening exercise programs. Clin Rehab. 2017;1-16.](#)

This clinical practice guideline developed by a panel of international experts made recommendations on the management of knee OA in regard to exercise. MDT was 'strongly recommended' as an intervention.

- [Lam O, Strenger D, Chan-Fee M, Pham P, Preuss R, Robbins S. Effectiveness of the McKenzie Method of MDT for treating LBP: Literature review with meta-analysis. J. Ortho Sports Phys. 2018;48;6:476-490.](#)

This review concluded that there was moderate to high quality evidence that MDT is superior to other rehabilitation interventions for pain and disability in patients with chronic LBP.

- [Halliday M, Garcia A, Amorim A et al. Treatment effect sizes for pain and disability are moderated by the delivery approach for MDT in a population with LBP: A systematic review with a meta-regression approach. J. Ortho. Sports Phys. 2019;49:219-229.](#)

This review grouped MDT RCTs into those that followed the core principles of MDT and those that did not and compared treatment effect sizes. Those *adherent* studies showed significantly greater reduction in pain and disability, demonstrating that when the approach used is consistent with the core MDT principles, better outcomes are achieved.