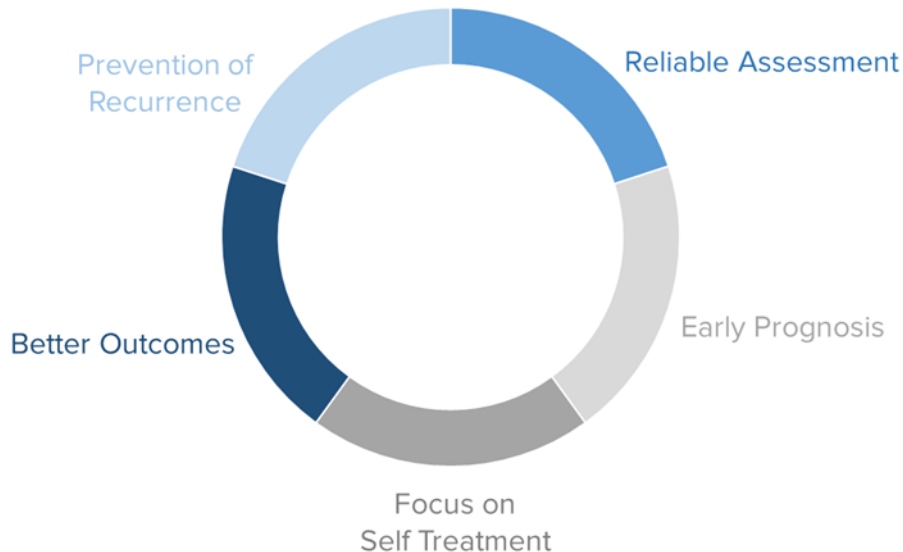


THE BENEFITS OF MDT & SUPPORTIVE STUDIES

The McKenzie Institute International



1. Reliable Assessment

To be effective, any treatment system must be based upon a sound assessment and an accurate diagnosis or classification.

Scientific research supports the reliability of the McKenzie system¹⁻⁴ and can assist to further improve the formal education⁵.

Numerous studies provide data on the prevalence rates, demonstrate the comprehensiveness of the system⁶⁻⁸ and the validity of the diagnostic process^{9,10}.

2. Early Prognosis

Patients seek information on their estimated prognosis¹¹⁻¹³.

The McKenzie evaluation process makes it possible to predict patient prognosis mostly within 1-2 consultations¹⁴⁻¹⁷.

3. Focus on Self Treatment

The emphasis on self-treatment empowers the patient and helps foster a strong sense of independence. Research demonstrates that patients who are empowered through participation in their own care acquire the skills, knowledge and confidence that result in beneficial outcomes¹⁸.

Further research has shown that management with a patient specific exercise program based on a classification system monitoring symptomatic and mechanical responses achieves better outcomes than non-specific exercise therapy^{19,20}.

4. Better outcomes

The MDT evaluation allows a quick determination of who will benefit from management according to the MDT principles^{21,22}.

Using MDT strategies has been shown to be able to:

- reduce surgery rates²³
- avoid surgical interventions^{24,25}
- lead to better outcomes than therapy that is focused on spinal manipulation²⁶ or general exercise²⁷
- be cost effective^{28,29}

5. Prevention of recurrence

Patients who have been educated in self-management are able to initiate treatment at the first sign of recurrence.

Symptoms can usually be relieved before they become severe³⁰⁻³².

References

1. Heidar Abady 2014
2. Kilpikoski 2002
3. May and Ross 2009
4. Willis 2016
5. Werneke 2014
6. May and Aina 2012
7. Hefford 2008
8. May and Rosedale 2012
9. Werneke 2010
10. Apeldoorn 2016
11. Hasenbring and Pincus 2015
12. Schmidt 2012
13. Ali and May 2015
14. Edmond 2014
15. Edmond 2010
16. Werneke 2008
17. Deutscher 2014
18. Vahdat 2014
19. Long 2004
20. Rosedale 2014
21. Rosedale 2014
22. Long 2004
23. Rasmussen 2005
24. van Helvoirt 2014
25. van Helvoirt 2016
26. Petersen 2011
27. Albert and Manniche 2012
28. Deutscher 2014
29. Manca 2007
30. Larsen 2002
31. Matsudaira 2015
32. Udermann 2004

References – Full list (Alphabetised by First Author)

- Heidar Abady, Afshin; Rosedale, Richard; Overend, Tom J.; Chesworth, Bert M.; Rotondi, Michael A. (2014): Inter-examiner reliability of diplomats in the mechanical diagnosis and therapy system in assessing patients with shoulder pain. In: *The Journal of manual & manipulative therapy* 22 (4), S. 199–205. DOI: 10.1179/2042618614Y.0000000068.
- Ali, Nancy; May, Stephen (2015): A Qualitative Study into Egyptian Patients' Satisfaction with Physiotherapy Management of Low Back Pain. In: *Physiotherapy research international: the journal for researchers and clinicians in physical therapy*. DOI: 10.1002/pri.1647.
- Albert H, Manniche C. The Efficacy of Systematic Active Conservative Treatment for Patients with Severe Sciatica. A Single-Blind, Randomized, Clinical, Controlled Trial. *Spine* Vol 37, 7. 2012
- Apeldoorn, Adri T.; van Helvoirt, Hans; Meihuizen, Hanneke; Tempelman, Henk; Vandeput, David; Knol, Dirk L. et al. (2016): The Influence of Centralization and Directional Preference on Spinal Control in Patients With Nonspecific Low Back Pain. In: *The Journal of orthopaedic and sports physical therapy* 46 (4), S. 258–269. DOI: 10.2519/jospt.2016.6158.
- Deutscher, Daniel; Werneke, Mark W.; Gottlieb, Ditz; Fritz, Julie M.; Resnik, Linda (2014): Physical therapists' level of McKenzie education, functional outcomes, and utilization in patients with low back pain. In: *The Journal of orthopaedic and sports physical therapy* 44 (12), S. 925–936. DOI: 10.2519/jospt.2014.5272.
- Edmond, Susan L.; Cutrone, Guillermo; Werneke, Mark; Ward, Jason; Grigsby, David; Weinberg, Jon et al. (2014): Association between centralization and directional preference and functional and pain outcomes in patients with neck pain. In: *The Journal of orthopaedic and sports physical therapy* 44 (2), S. 68–75. DOI: 10.2519/jospt.2014.4632.
- Edmond, Susan L.; Werneke, Mark W.; Hart, Dennis L. (2010): Association between centralization, depression, somatization, and disability among patients with nonspecific low back pain. In: *The Journal of orthopaedic and sports physical therapy* 40 (12), S. 801–810. DOI: 10.2519/jospt.2010.3334.
- Hasenbring, Monika I.; Pincus, Tamar (2015): Effective reassurance in primary care of low back pain: what messages from clinicians are most beneficial at early stages? In: *The Clinical journal of pain* 31 (2), S. 133–136. DOI: 10.1097/AJP.0000000000000097.
- Hefford, Cheryl (2008): McKenzie classification of mechanical spinal pain: profile of syndromes and directions of preference. In: *Manual therapy* 13 (1), S. 75–81. DOI: 10.1016/j.math.2006.08.005.
- Kilpikoski, Sinikka; Airaksinen, Olavi; Kankaanpaa, Markku; Leminen, Paivi; Videman, Tapio; Alen, Markku (2002): Interexaminer reliability of low back pain assessment using the McKenzie method. In: *Spine* 27 (8), S. E207-14.
- Larsen, Kristian; Weidick, Flemming; Leboeuf-Yde, Charlotte (2002): Can passive prone extensions of the back prevent back problems? A randomized, controlled intervention trial of 314 military conscripts. In: *Spine* 27 (24), S. 2747–2752. DOI: 10.1097/01.BRS.0000035677.18307.FC.
- Long, Audrey; Donelson, Ron; Fung, Tak (2004): Does it matter which exercise? A randomized control trial of exercise for low back pain. In: *Spine* 29 (23), S. 2593–2602.
- Manca A, Dumville J, Torgerson D, Klaber Moffett J, Mooney M, Jackson D, Eaton S (2007) Randomized trial of two physiotherapy interventions for primary care back and neck pain patients: cost-effectiveness analysis. *Rheumatology* 46: 1495-1501
- Matsudaira, Ko; Hiroe, Miho; Kikkawa, Masatomo; Sawada, Takayuki; Suzuki, Mari; Isomura, Tatsuya et al. (2015): Can standing back extension exercise improve or prevent low back pain in Japanese care workers? In: *The Journal of manual & manipulative therapy* 23 (4), S. 205–209. DOI: 10.1179/2042618614Y.0000000100.
- May, Stephen; Aina, Alessandro (2012): Centralization and directional preference: a systematic review. In: *Manual therapy* 17 (6), S. 497–506. DOI: 10.1016/j.math.2012.05.003.
- May, Stephen; Ross, Jenny (2009): The McKenzie classification system in the extremities: a reliability study using Mckenzie assessment forms and experienced clinicians. In: *Journal of manipulative and physiological therapeutics* 32 (7), S. 556–563. DOI: 10.1016/j.jmpt.2009.08.007.
- May, Stephen J.; Rosedale, Richard (2012): A survey of the McKenzie Classification System in the Extremities: prevalence of mechanical syndromes and preferred loading strategies. In: *Physical therapy* 92 (9), S. 1175–1186. DOI: 10.2522/ptj.20110371.
- Petersen, Tom; Larsen, Kristian; Nordsteen, Jan; Olsen, Steen; Fournier, Gilles; Jacobsen, Soren (2011): The McKenzie method compared with manipulation when used adjunctive to information and ad-

vice in low back pain patients presenting with centralization or peripheralization: a randomized controlled trial. In: *Spine* 36 (24), S. 1999–2010. DOI: 10.1097/BRS.0b013e318201ee8e.

Rasmussen C, Nielsen G, Hansen V, Jensen O, Schioetz-Christensen B. Rates of Lumbar Disc Surgery Before and After Implementation of Multidisciplinary Nonsurgical Spine Clinics. *Spine* Vol. 30, 21. 2005

Rosedale, Richard; Rastogi, Ravi; May, Stephen; Chesworth, Bert M.; Filice, Frank; Willis, Sean et al. (2014): Efficacy of exercise intervention as determined by the McKenzie System of Mechanical Diagnosis and Therapy for knee osteoarthritis: a randomized controlled trial. In: *The Journal of orthopaedic and sports physical therapy* 44 (3), S. 173-81, A1-6. DOI: 10.2519/jospt.2014.4791.

Schmidt, E.; Gramm, L.; Farin, E. (2012): Kommunikationspräferenzen chronischer Rückenschmerzpatienten in der medizinischen Rehabilitation. In: *Schmerz (Berlin, Germany)* 26 (1), S. 69–76. DOI: 10.1007/s00482-011-1105-5.

Udermann, Brian E.; Spratt, Kevin F.; Donelson, Ronald G.; Mayer, John; Graves, James E.; Tillotson, John (2004): Can a patient educational book change behavior and reduce pain in chronic low back pain patients? In: *The spine journal: official journal of the North American Spine Society* 4 (4), S. 425–435. DOI: 10.1016/j.spinee.2004.01.016.

Vahdat S ; Hamzehgardeshi L; Hessam S; Hamzehgardeshi Z (2014): Patient involvement in health care decision making: A review. In: *Iran Red Cross Med J*, 16 (1):e12454: DOI: 10.5812/ircmj.12454

van Helvoirt, Hans; Apeldoorn, Adri T.; Knol, Dirk L.; Arts, Mark P.; Kamper, Steven J.; van Tulder, Maurits W.; Ostelo, Raymond W. (2016): Transforaminal epidural steroid injections influence Mechanical Diagnosis and Therapy (MDT) pain response classification in candidates for lumbar herniated disc surgery. In: *Journal of back and musculoskeletal rehabilitation*. DOI: 10.3233/BMR-160662.

van Helvoirt, Hans; Apeldoorn, Adri T.; Ostelo, Raymond W.; Knol, Dirk L.; Arts, Mark P.; Kamper, Steven J.; van Tulder, Maurits W. (2014): Transforaminal epidural steroid injections followed by mechanical diagnosis and therapy to prevent surgery for lumbar disc herniation. In: *Pain medicine (Malden, Mass.)* 15 (7), S. 1100–1108. DOI: 10.1111/pme.12450.

Werneke, Mark W.; Deutscher, Daniel; Hart, Dennis L.; Stratford, Paul; Ladin, Joel; Weinberg, Jon et al. (2014): McKenzie lumbar classification: inter-rater agreement by physical therapists with different levels of formal McKenzie postgraduate training. In: *Spine* 39 (3), S. E182-90. DOI: 10.1097/BRS.000000000000117.

Werneke, Mark W.; Hart, Dennis; Oliver, Dave; McGill, Troy; Grigsby, David; Ward, Jason et al. (2010): Prevalence of classification methods for patients with lumbar impairments using the McKenzie syndromes, pain pattern, manipulation, and stabilization clinical prediction rules. In: *The Journal of manual & manipulative therapy* 18 (4), S. 197–204. DOI: 10.1179/106698110X12804993426965.

Werneke, Mark W.; Hart, Dennis L.; Resnik, Linda; Stratford, Paul W.; Reyes, Adrian (2008): Centralization: prevalence and effect on treatment outcomes using a standardized operational definition and measurement method. In: *The Journal of orthopaedic and sports physical therapy* 38 (3), S. 116–125. DOI: 10.2519/jospt.2008.2596.

Willis, Sean; Rosedale, Richard; Rastogi, Ravi; Robbins, Shawn M. (2016): Inter-rater reliability of the McKenzie System of Mechanical Diagnosis and Therapy in the examination of the knee. In: *Journal of Manual & Manipulative Therapy*, S. 1–18. DOI: 10.1080/10669817.2016.1229396.

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

Richard Rosedale PT, Dip. MDT, Robert Medcalf PT, Dip. MDT

The McKenzie Method of MDT continues to be one of the most researched conservative approaches to musculoskeletal problems available. It has been examined in depth in relation to its utility in the spine, and the research is accumulating to support its use in the extremities. The following is a small selection of some of the most important studies on the approach to date, with an explanation of their significance.

Assessment Reliability

It is fundamentally important that any system of assessment and treatment has established 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 four studies demonstrate that the McKenzie Method, when applied by Credentialed or Diplomaed clinicians to the spine and extremities, found good to almost perfect reliability using a concurrent reliability design:

[Kilpikoski S, et al. Inter-examiner reliability of LBP assessment using the McKenzie method. Spine 15:27. 2002](#)

[Clare HA, et al. Reliability of McKenzie classification of patients with cervical or lumbar pain. JMPT 28. 2005](#)

[Heidar Abady A, et al. Inter-examiner reliability of diplomats in the MDT system in assessing patients with shoulder pain. JMMT 22. 4. 2014](#)

[Willis S, et al. Inter-rater reliability of the McKenzie System of MDT in the examination of the knee. JMMT Published online 07 Sept 2016](#)

Treatment Efficacy

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

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

This groundbreaking study clearly endorses the value of sub-classifying our patients using a McKenzie assessment, establishing directional preference and matching specific exercises based upon these findings. All patient outcomes including pain, function and medication use were dramatically affected.

[Petersen T, et al. The McKenzie Method Compared with Manipulation When Used Adjunctive to Information and Advice in LBP Patients Presenting with Centralization or Peripheralization. A RCT. Spine Vol 36. 24. 2011](#)

With a one year follow-up, this study compared two alternative LBP interventions. The McKenzie Method 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 Vol 37, 7. 2012](#)

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

[Rosedale R, et al. Efficacy of Exercise Intervention as Determined by the McKenzie System of Mechanical Diagnosis and Therapy for Knee OA: A RCT. JOSPT. Vol 44, No.3. 2014](#)

Patients given exercises based on an MDT assessment had superior outcomes compared to those of wait-list controls. 40% of the knees examined were classified as Derangements; they demonstrated large effect sizes at two weeks for all primary outcomes and up to large effect sizes at three months. This demonstrated success with a population with severe knee OA awaiting potential knee joint replacement.

Efficacy with Psychosocial Factors

Numerous studies have explored the effect of MDT on psychosocial outcomes. There have been positive effects in relation to fear avoidance, fear and disability beliefs, somatization, depressive symptoms and pain self-efficacy.

[Werneke M, et al. Change in psychosocial distress associated with pain and functional status outcomes in patients with lumbar impairments referred to PT services. JOSPT. 41:969-980. 2011](#)

Data from 586 patients with LBP showed that those who demonstrated non-centralization (37%) had significantly worse pain, functional disability and psychosocial distress outcomes compared to those who centralized (45%).

[Mbada C, et al. Comparative efficacy of three active treatment modules on psychosocial variables in patients with long-term mechanical low- back pain: a randomized-controlled trial, Archives of Physiotherapy. 5, 10, 2015](#)

This RCT looked at psychosocial outcomes in patients with lumbar Derangement responding to the extension principle, given directional preference exercises alone and in combination with strengthening. At 4 and 8 weeks all groups demonstrated significant improvements on all measures of beliefs and fear avoidance

Predicting Outcomes

The McKenzie Method also has an important asset in its ability to predict patient outcome through classification and the determination of Centralisation. If a patient with lumbar or cervical pain is classified as a Derangement and can centralise their symptoms in a short time after initiating MDT, the prognosis for a rapid and lasting improvement is very good.

[Werneke M, Hart DL. Centralization phenomenon as a prognostic factor for chronic LBP and disability. Spine, 26\(7\). 2001](#)

[Werneke MW, Hart DL. Categorizing patients with occupational LBP by use of the Quebec Task Force classification system versus pain pattern classification procedures. PTJ 84. 2004](#)

[Skytte L, et al. Centralization: Its prognostic value in patients with referred symptoms and sciatica. Spine 30. 2005](#)

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, four years after implementation of McKenzie 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, et al. Rates of Lumbar Disc Surgery Before and After Implementation of Multidisciplinary Nonsurgical Spine Clinics. Spine 30, 21. 2005](#)

[Van Helvoirt H, et al. Transforaminal Epidural Steroid Injections Followed by MDT to Prevent Surgery for Lumbar Disc Herniation. Pain Med.15\(7\). 2014](#)

Systematic Reviews and Guidelines featuring The McKenzie Method

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

[May S, Alessandro A. Centralisation and directional preference: a systematic review. Manual Therapy 17, 497-506. 2012](#)

This review found that centralisation and directional preference had been reported in 62 studies. The majority of evidence was supportive of these responses as being reliably assessed and associated with a good prognosis.

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

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.

[Danish Health Technology Assessment: LBP. Frequency, management and prevention from an HTA perspective. National Board of Health, Copenhagen, Denmark. 1-106. 1999](#)

This wide-ranging review and guideline includes a summary of the McKenzie approach, both as a treatment and as a diagnostic method. They concluded there was limited evidence to support its use as a treatment for both acute and

chronic LBP, and moderate evidence indicating its value as a diagnostic tool and prognostic indicator.

[Rossignol M, et al. Clinic on LBP in Interdisciplinary Practice \(CLIP\) Guidelines Montreal: Direction de sante publique, Agence de la sante et des services sociaux de Montreal. 2007](#)

The McKenzie Method is a recommended 'therapeutic intervention' for acute, subacute and chronic LBP patients with varying grades of scientific evidence.

[Delitto A, et al. Low Back pain. Clinical Practice Guidelines. JOSPT 42, 4. 2012](#)

It was recommended that clinicians should use specific repeated movements to promote centralization in patients with acute, subacute or chronic low back pain, with the recommendation based on Grade A 'Strong evidence'

For the most up-to-date and complete list of MDT references, visit:

www.mckenzieinstitute.org