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McKenzie Evaluation and Treatment for Lumbar Dysfunction and ANR

Michael Brooks, SPT

Doctor of Physical Therapy, University of North Dakota, 2016

A Scholarly Project Submitted to the Graduate Faculty of the

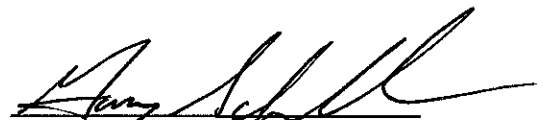
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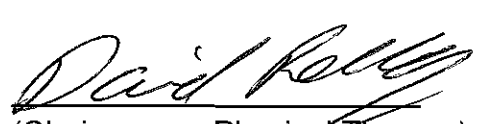
In partial fulfillment of the requirements for the degree of

Doctor of Physical Therapy

Grand Forks, North Dakota
May, 2016

This Scholarly Project, submitted by Michael Brooks in partial fulfillment of the requirements for the Degree of Doctor of Physical Therapy from the University of North Dakota, has been read by the Advisor and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.


(Graduate School Advisor)


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Department Physical Therapy

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ABSTRACT

Background and Purpose: When it comes to low back pain, McKenzie theory is considered highly effective for evaluating and treating patients with low back symptoms. There are three main classifications within McKenzie theory; postural, dysfunction, and derangement syndromes. The main focus of this case will be on the dysfunction classification and its subcategory adherent nerve roots (ANR). Dysfunction syndrome is characterized by pain due to deformation of structures and tissues that limit ROM causing pain at end range. ANR's are caused by scar tissue build up encompassing nerve roots due to trauma or surgery that produces symptoms when nerve tension is present.

Case Description: The patient is a 32 year old male who presents with low back pain which later was diagnosed as a lumbar extension dysfunction and RLE ANR. **Interventions:** Treatment focused on correction of dysfunction and ANR through prone press ups and nerve flossing. Treatment goals were to decrease pain, increase spinal ROM, and improve functional abilities. **Outcomes:** Treatment lasted 9 weeks from initial evaluation with a total of 10 visits. Upon discharge the patient displayed full and pain-free spinal ROM in all directions with SLR, and slump test being negative with improved functional mobility at home and work. **Discussion:** The patient reported high satisfaction with treatment outcomes. Additional studies would be beneficial due to limited research in the area of ANR's and dysfunctions.

CHAPTER I

BACKGROUND AND PURPOSE

The spine is a complex region of the body. It is made up of 33 vertebrae which can be divided further into 5 areas: cervical, thoracic, lumbar, sacral, and coccygeal. Each vertebra is separated by a cartilaginous disc that acts as a shock absorber and spacer between each vertebra.¹ There are dozens of ligaments and muscles that originate and insert onto the spine that give support to movements during daily activities. Furthermore, the spine protects the spinal cord as it descends from the brain to the pelvic region.¹ The spinal cord gives off nerve roots that branch out into the body through vertebral foramen. These nerve roots are what give the skin the ability to sense touch and pain and they give muscles their ability to move. With the complexity of the spine and all of its supporting structures, it is no wonder low back pain injuries are so common.

Low back pain is a prevalent, every day problem with up to 85% of people having some sort of low back pain during their life time and up to half the population already having had back pain.¹ Waterman² investigated the incidence of low back pain in the United States and found that an estimated 2.06 million episodes of low back pain occurred per year.

When it comes to low back pain (LBP), McKenzie theory is considered highly effective for evaluating and treating patients with low back symptoms.³ "Previous studies indicated that 83–88% of low back patients can be classified

into one of the McKenzie syndromes and thereafter managed successfully with conservative care".⁴ There are three main classifications of syndromes within McKenzie theory; postural, dysfunction, and derangement syndromes. Postural syndrome occurs when normal tissue is deformed over prolonged periods. A common cause is slouching while sitting and if continued for a prolonged duration may lead to derangement or dysfunction syndromes.

Dysfunction syndrome is characterized by pain due to deformation of structures and tissues that limit range of motion causing pain at end range.⁴ A duration longer than 6-8 weeks of initial onset of symptoms must be present to be classified into the dysfunction category.⁴ This allows the proper timeframe (6-8 weeks) for scar tissue to form. A subcategory of a dysfunction is an adherent nerve root (ANR) typically caused by scar tissue formation around the disc and/or nerve root from previous trauma or surgery. Symptoms are produced due to the nerves inability to smoothly glide with movement.⁵

The final classification within McKenzie's Theory is derangement. Derangement syndrome is related to intervertebral disc displacement that may or may not cause pain into leg in addition to back pain. The pain and symptoms change with directional movements due to force changes on affected intervertebral disc(s).⁴

According to May⁶, out of 607 spinal patients with mechanical syndrome classifications, only 3% were classified as a dysfunction, while only 1% were classified as adherent nerve root (ANR). Since there is such a low prevalence rate of dysfunctions and ANR's, research is limited. The purpose of this case

report is to demonstrate how a patient with an ANR is classified into McKenzie's dysfunction syndrome and illustrate how conservative treatment in physical therapy progresses from examination to discharge.

CHAPTER II

CASE DESCRIPTION

History:

The patient was an English speaking, 32 year old, Caucasian, male who lived at home with his wife. They have no children. He had no significant family medical history. He reported unremarkable medical issues, but his past medical history was significant for a L3 burst fracture due to falling from a tree-stand while deer hunting. Emergency surgical intervention was required and a spinal fusion from T11-L4 was performed in September of 2011.

He worked in a factory which required standing many hours, bending over, and lifting upwards of 40 pound objects. Patient was self-remodeling his home, which required bending, lifting, and being on his hands and knees. He refused to allow his wife to assist with the work and wanted to complete the renovations independently. Due to his painful back his responsibilities of mowing the lawn, keeping the house clean, and finishing the remodeling project were not being completed in an efficient time frame.

Examination:

He presented to physical therapy on September 9, 2014, with constant low back pain and intermittent symptoms radiating into his right lower extremity (RLE) with a pain of 7/10. His signs and symptoms included occasional numbness and

tingling down to the knees bilaterally. Patient was skeptical that physical therapy would reduce his symptoms due to prior PT services being ineffective.

Prior to the examination, the patient completed the Oswestry Low Back Disability Index (ODI), which is considered the 'gold standard' of low back functional outcome tools⁸ The Oswestry is presented as a percentage of disability consisting of 10 questions with a total possible score of 50. The higher the score the greater the disability. See attached document in appendix A for reference. According to Dawson⁹, the test-retest reliability for the ODI is excellent [$r=.88(.77-.94)$] with 95% confidence interval. Following completion of the initial ODI the patient scored 27/50, which is categorized as severe disability. (See Table 1)⁸

Table 1: Interpretation of ODI scores

| | |
|-------------------------------|---|
| 0% to 20%: minimal disability | The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise. |
| 21%-40%: moderate disability | The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means. |
| 41%-60%: severe disability | Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation. |
| 61%-80%: crippled | Back pain impinges on all aspects of the patient's life. Positive intervention is required. |
| 81%-100%: | These patients are either bed-bound or exaggerating their symptoms. |

Systems Review:

GI, Renal, Reproductive, and Cancer- Patient denied any bowel or bladder dysfunction. All systems were unremarkable due to questioning, family history, patient history, observation, and palpation.

Cardiopulmonary- HR=83 bpm, BP=130/82 mmHg, RR= 14 bpm, and SO2= 99%. All are within normal range for age and gender according to Watchie.^{10, 11}

Integumentary- Upon inspection of skin patient presented with a 6 inch vertical scar central to low back from back surgery. The scar was well healed and unraised. No other remarkable findings were noted.

Musculoskeletal- No imaging was available for viewing prior to examination. The McKenzie Institute Lumbar Spine Assessment form was used as an evaluation guide for this patient. (See appendix B) The patient reported increased symptoms with bending, standing or walking for greater than 30 minutes, and lifting items greater than 15 pounds. Symptoms decreased with side-lying and medications. Patient stated he was currently taking recommended dosage of Tramadol (Ultram) for chronic pain. He was independent with activities of daily living (ADL's), as symptoms permitted.

A gross assessment of the patient's posture yielded no significant abnormalities. His seated and standing balance was normal; however he was modified independent during mat mobility with decreased speed and use of the log rolling technique. Transfers were modified independent with decreased speed and require a neutral spine to prevent symptoms. He demonstrated decreased

velocity and decreased step length bilaterally with ambulation due to increase in symptoms when striding with RLE.

McKenzie movement testing was conducted with results shown in Tables 2 and 3. Movement testing has two variables: movement loss and repeated movement testing. Movement loss testing is a single repetition movement in desired plane to assess for movement loss in the sagittal (flexion/extension), coronal (lateral flexion), and transverse (rotation) planes. Repeated motion testing is utilized to determine if certain movements cause an onset of symptoms or cause symptoms to worsen. In addition, it helps determine if a patient has a preferred direction of motion, that is, a direction that feels the best for the patient.

Table 2:

| Movement Loss | Range Loss | Symptoms |
|-----------------------------|-------------------|--------------------------------|
| Lumbar flexion (standing) | Moderate | Not worse |
| Lumbar flexion (sitting) | Nil | No Effect |
| Lumbar extension (standing) | Major | Central back pain at end range |
| Rotation (R/L) | Nil | No Effect |
| Lateral flexion (R/L) | Nil | No Effect |

Table 3:

| Repeated Motion Testing | Symptoms |
|--------------------------------|-------------------------------------|
| Lumbar flexion (standing) | Not worse |
| Lumbar flexion (sitting) | Not worse |
| Lumbar extension (standing) | Centralized; back pain at end range |

To better understand how McKenzie uses terms during the evaluation, see Tables 4 and 5.¹²

Table 4: During movement testing during loading

| | |
|--------------------------|---|
| Produce | Movement or loading creates symptoms that were not present prior to the test. |
| Abolish | Movement or loading abolishes symptoms that were present prior to the test. |
| Increase | Symptoms already present are increased in intensity |
| Decrease | Symptoms already present are decreased in intensity. |
| No Effect | Movement or loading has no effect on the symptoms during the testing. |
| Centralizing | Movement or loading moves the most distal pain proximally |
| Peripheralization | Movement or loading moves the pain more distally. |

Table 5: After movement testing after loading

| | |
|-----------------------|--|
| Worse | Symptoms produced or increased with movement or loading remain aggravated following the test. |
| Not Worse | Symptoms produced or increased with movement or loading return to baseline following the test. |
| Better | Symptoms decreased or abolished with movement or loading remain improved after testing. - Or - Symptoms produced, decrease on repetition, remain better after testing. |
| Not Better | Symptoms decreased or abolished with movement or loading return to baseline after testing. |
| Centralized | Distal pain abolished by movement or loading; remain abolished after testing. |
| Peripheralized | Distal pain produced during movement or loading; remain after testing. |
| No Effect | Movement or loading has no effect on symptoms after testing. |

Range of Motion- Following movement testing of the lumbar spine, ROM of the lower extremity was initiated. Hip, knee, and ankle motions were tested in all planes and were within normal limits (WNL). Normal values for hip flexion (0-120°), hip abduction (0-45°), hip adduction (0-20°), and hip IR/ER both (0-45°). Normal knee flexion is (0-135°). Normal values for ankle PF are (0-45°) and DF (0-20°).¹³

Strength Testing- Strength testing was conducted bilaterally. RLE was strong and pain-free. Left lower extremity (LLE) was strong and pain-free with exception of great toe extension, which was weak and pain-free. A manual muscle test was done on the great toe and was graded at a 4+/5.

Neurologic Testing- Dermatomes L1-S2 were negative bilaterally.

Special Tests- Special tests included the straight leg raise and slump test. Straight leg raise was positive on the patient's right with 45° of motion and negative on the left with 80° of motion. This test is conducted in supine and is used to assess possibility of disc herniation and/or neural adhesion. A positive test is indicative of compressed or irritated nerve root(s), which may cause symptoms into patient's LE. A false-positive may be produced due to tight hamstrings, however the patient denied feeling tightness in his posterior thigh. Straight leg raise was negative on left with a measurement of 80 degrees. The test has a sensitivity of .91 and specificity of .26.¹⁴

Slump test was positive on right with increased in symptoms during knee extension. A positive test can indicate multiple disorders, including disc herniation or neural tension. Slump test was completed to assess the presence of neural tension in the patient's spine and lower extremities.

During repeated trunk flexion in standing the patient experienced an increase in symptoms; however no symptoms or loss of spinal flexion was noted during seated testing. Repeated motion in flexion was utilized to verify the cause of the neural irritation. In standing, the nerve roots have increased tension compared to when sitting, when the nerves are on slack. When the patient completed trunk flexion pain was produced attend-range secondary to nerve tension. When he returned back to the neutral positon his pain was no worse due to reduced tension on the nerve. A positive slump test with knee extension is indicative of possible neural tension and irritation via ANR.¹⁵ For this patient, the

positive slump test indicated neural irritation and tension by way of ANR. The test has a sensitivity of .84 and specificity of .83.¹⁵

Examination Review- There are a few findings worth noting. First, the patient had a major loss of extension with centralized back pain at end range while standing. The time frame since injury (>6-8 weeks), centralized pain with standing extension, and onset of pain at end range are major indicators of extension dysfunction.⁶ Secondly, standing flexion increased, but did not worsen symptoms and seated flexion had no effect on symptoms; however the seated slump test with knee extension produced symptoms into his RLE. This is indicative of an ANR because in the seated knees flexed position the nerve roots are on slack; however when the knee is moved into extension, that slack is replaced with nerve tension producing peripheral leg symptoms. Symptoms may be caused by a buildup of scar tissue from previous injuries and/or surgeries that prevent a smooth, gliding, and pain free motion.⁶

Evaluation:

Following the examination a problem list was created. The International Classification of Functioning, Disability, and Health (ICF) Disease Taxonomy was used to help create this list. According to the World Health Organization the ICF is used in the clinical setting for functional status assessment, goal setting, treatment planning, and monitoring, as well as outcome measurement.¹⁶ (See Appendix C)

The list of impairments included: increased pain, decreased spinal ROM in standing extension and standing flexion, impaired function to bend and lift at

work, decreased ADL's, ODI score of 27/50, decreased stride and step length, and decreased gait speed.

Short term and long terms goals were created from the problem list to help address patient's limitation. The goals are as follows:

Short Term Goals (STG); to be met in 1-2 weeks

Following Physical Therapy Intervention:

1. Patient will decrease pain to 4/10 to be able to complete his ADL's such as donning/doffing his pants and bending over to tie his shoes.
2. Patient will increase standing spinal extension to moderate loss so he can reach objects up on shelves at home and work.
3. Patient will increase standing spinal flexion to minimal loss to be able to bend down at pick items up at work.
4. Patient will improve ODI score to $\leq 20/50$ to show improvement at home with getting dressed and show improvement with standing and lifting at work.
5. Patient will demonstrate the ability to be independent with his home exercise program (HEP) so he can progress through treatment.

Long Term Goals (LTG); to be met in 6-8 weeks

Following Physical Therapy Intervention:

1. Patient will decrease LBP pain to $\leq 1/10$ to complete cleaning and maintenance chores around the house and so he can continue to self-remodel his home.

2. Patient will increase standing spinal flexion and extension to minimal loss so he can reach objects at work
3. Patient will demonstrate independence with proper bending and lifting techniques of object >40 pounds to prevent re-injury while at home and/or work.
4. Patient will improve ODI score to $\leq 10/50$ to show improvement with sitting, standing, walking, and lifting so he can work longer periods of time without breaks due to pain and discomfort.
5. Patient will demonstrate improved gait velocity with normal stride length bilaterally with no radiating pain into right leg.

Diagnosis:

Following the examination, a diagnosis of an extension dysfunction with RLE ANR was concluded. This diagnosis has a practice pattern of 4D: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Connective Tissue Dysfunction and an ICD-9 code of 724.9.¹⁷

Prognosis:

The prognosis for the patient was good to return to prior level of function secondary to being relatively young, having no significant comorbidities, and having no contraindications. A major factor in a positive prognosis is consistency in HEP. If patient is not consistent, it is likely he will not see results. In addition, patient's skepticism of treatment may play a role in HEP adherence.

Plan of Care (POC):

Following the examination it was determined the patient would benefit from physical therapy 3x/week for 2 weeks to try and correct his dysfunction and ANR. The patient was reassessed every 2 weeks to monitor progression of HEP and to reassess his impairments and goals. Educating the patient regarding the timeline and importance of compliance to the HEP in the treatment of the ANR is key for a successful outcome. The interventions included improving spinal ROM, manual therapy, strengthening, body mechanics, and gait training. Every 2 weeks the patient completed the ODI to document progress and improvements.

CHAPTER III

INTERVENTIONS

Patient education was completed prior to treatment being initiated. Education included discussion on extension dysfunction and ANR and how they are treated. Scar tissue formation takes 6-12 weeks to form.¹⁸ The body did not have any mechanism to mobilize the scar formation naturally, so stress administered by a therapist or self-stress by patient had to be completed. Tissue remodeling can take from 6 weeks up to 3 months to correct and only occurs if the HEP is completed consistently every few hours within that timeframe¹⁸⁻¹⁹

Weeks 1-4:

Intervention for the first month of treatment consisted of prone press ups to treat his extension dysfunction and improve ROM via breaking up adhesions in connective tissue causing the limitation. Prone press ups were completed by having the patient lying on their stomach, pushing their chest off the table with their hands on the mat. The goal is to fully extend the arms so the back has an arch to it.

Treatment was progressed by adding Posterior-Anterior (PA) glides between sets of press ups. PA glides increased vertebral motion and overall spinal extension.²⁰ Grades I and II PA glides were used to reduce pain

and irritability, while III and IV were used to increase ROM by stretching the joint capsule and passive tissues that surround the joint.²¹ The glides were applied at grade II and progressed up to grade IV as tolerated. Table 6 identifies different levels of PA glide grades. Since he had a T11-L4 spinal fusion, the glides were only applied to the sacrum, L5, T10, and segments above.

Table 6: PA Grade Levels

| Grade | Description |
|-------|---|
| I | A small-amplitude movement near the starting position of the range. |
| II | A large-amplitude of movement the carries well into the range. It can occupy any part of the range that is free of stiffness or muscle spasm that does move into stiffness or muscle spasm. |
| III | A large-amplitude movement, but one that does move into stiffness or muscle spasm. |
| IV | A small-amplitude movement stretching into stiffness or muscle spasm. |

20

Repeated flexion in sitting was completed to initiate ANR flossing and was progressed to repeated flexion in sitting with RLE extension. Leg extension placed tension through the nerve which helped release adhesions. Greater tension was integrated by elevating right heel off ground while continuing repeat flexion. The added elevation increased the tension throughout the nerve, which placed added stress on the scar tissue. Table 7 below shows treatment completed for weeks 1-4.

Table 7: Weeks 1-4 Treatment

| Treatment | Sets | Reps | Grades |
|--|------|------|--------|
| Prone press ups | 3 | 15 | |
| PA glides | 2 | 5 | II-IV |
| Repeated flexion (sitting with RLE extended) | 3 | 15 | |

The patient HEP included repeated prone press ups, standing lumbar extension, and repeated flexion with leg extension as a HEP. (See Table 8)

Table 8: Home Exercise Program

| HEP | Sets | Reps | Frequency |
|--|-------------|-------------|------------------|
| Repeated flexion (sitting with RLE extended) | 2 | 15 | Every 1-2 hours |
| Prone press ups | 2 | 15 | Every 1-2 hours |
| Standing back extension | 2 | 15 | Every 1-2 hours |

Weeks 5-9:

During week 5 of treatment patient's extension dysfunction was progressed far enough to reduce visits to every 2 weeks. Since ANR's take prolonged time to witness change, he was ordered to complete his HEP and to schedule appointments every 2 weeks to treat

The treatment focused on threatening his ANR and to consistently complete seated flexion with knee extension. During each session the patient was able to gradually increase seated flexion with knee extended without symptoms. All STG were met following 5 weeks of PT intervention.

At this time, core exercises were implemented into the POC, which consisted of bridges, core ball rotation and pull-ins, and straight leg raises. These exercises were added to POC due to muscle weakness from patient's years of muscle compensation due to pain. These exercise targeted the core musculature along with the lower extremity anterior and posterior chains. Core strengthening assisted with maintaining correct posture throughout the day and assisted in achieving treatment goals. (See Table 9)

Table 9: Weeks 5-9 Treatment

| Treatment | Sets | Reps | Grades |
|---|-------------|-------------|---------------|
| Prone press ups | 3 | 15 | |
| PA glides | 2 | 5 | II-IV |
| Repeated flexion (sitting with RLE extended) | 3 | 15 | |
| Core exercises (each) | 1 | 20 | |

CHAPTER IV

OUTCOMES

The patient was discharge at week 9 post initial evaluation. Patient reported doing well overall, with only mild pain intermittently during rotational movements at work. He stated having no symptoms in lower extremities at discharge. His discharge HEP consisted of core exercises, prone press ups, and repeated flossing exercises (See Table 9). He was encouraged to continue his HEP for an additional two months.

The patient presented with a lumbar extension dysfunction and a RLE ANR syndrome. Upon discharge, the patient demonstrated minimal spinal extension loss. Spinal flexion with repetition was WNL with no radiation of symptoms into leg. Patient was able to complete bed mobility, transfers, normal gait, and all lifting without compensation or pain. Strength was strong and pain free bilateral throughout his LE with MMT (5/5 bilaterally). The SLR and slump tests were negative bilaterally. Overall, the patient was very satisfied with results from therapy and reported having intermittent, centralized, and 2/10, low back pain.

CHAPTER V

DISCUSSION

In conclusion, it is likely the patient's symptoms came from scar tissue build up resulting from his status-post spinal fusion. The damage resulting from the fall and the addition of surgery possibly caused scar tissue formation around the anterior vertebra and lumbar spinal nerves. With the limited motion he had in his lower spine due to the fusion, the lumbar joints became less mobile possibly resulting in scar formation, which resulted in an extension dysfunction and ANR. Initially, he was skeptical if therapy would work due to lack of results from previous therapies. As he became more consistent with his HEP he realized that his symptoms were decreasing, he became more confident in his therapist and started placing more effort into rehabilitation.

This patient was similar to other case reports in respect to the initial symptoms, type of treatment, and outcomes.²² This case report illustrates with proper knowledge and training McKenzie low back evaluation and application can produce significant outcomes. It is important to understand which syndrome the patient has to effectively interpret the tests and symptoms the patient presents with. The limitations of the case study included only having one patient in which treatment results possibly would vary. Though, as stated by Melbye, "since the ANR classification is relatively seldom, randomized controlled trials of the exercises treatment are difficult to conduct and is suggested that clinicians

publish case studies or randomized controlled trial (N-of-1 trial) on this type of patient.”²² (p.128)

The most important concept is educating the patient in the importance of consistent HEP completion. Because of the limited amounts of treatment techniques for dysfunctions and ANR’s, I would maintain the repetitive prone press ups and nerve flossing. An additional treatment option could be to manually nerve floss the patient, however that would promote passive patient participation in treatment since patient should be able to complete this treatment themselves.

The functional assessment used was the ODI. I chose this assessment because it is simple to complete and is timely. As stated earlier the test-retest reliability is excellent with [$r=.88(.77-.94)$] and 95% confidence interval.

Further research regarding additional treatments and exercises in treating dysfunctions and ANR’s is needed. Due to rare occurrence of extension dysfunctions and ANR’s it may not be possible to conduct larger clinical trials. Continuing to publish and review case reports may be the best option available in better understanding the most effective treatment options.²²

Appendix A: Oswestry Low Back Disability Questionnaire

Oswestry Low Back Pain Disability Questionnaire

Sources: Fairbank JCT & Pynsent, PB (2000) The Oswestry Disability Index. *Spine*, 25(22):2940-2953.

Davidson M & Keating J (2001) A comparison of five low back disability questionnaires: reliability and responsiveness. *Physical Therapy* 2002;82:8-24.

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's permanent functional disability. The test is considered the 'gold standard' of low back functional outcome tools ^[1].

Scoring instructions

For each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. If all 10 sections are completed the score is calculated as follows:

Example: 16 (total scored)
 50 (total possible score) x 100 = 32%

If one section is missed or not applicable the score is calculated:

 16 (total scored)
 45 (total possible score) x 100 = 35.5%

Minimum detectable change (90% confidence): 10% points (change of less than this may be attributable to error in the measurement)

Interpretation of scores

| | |
|---------------------------------------|---|
| 0% to 20%: minimal disability: | The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise. |
| 21%-40%: moderate disability: | The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means. |
| 41%-60%: severe disability: | Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation. |
| 61%-80%: crippled: | Back pain impinges on all aspects of the patient's life. Positive intervention is required. |
| 81%-100%: | These patients are either bed-bound or exaggerating their symptoms. |

Oswestry Low Back Pain Disability Questionnaire

Instructions

This questionnaire has been designed to give us information as to how your back or leg pain is affecting your ability to manage in everyday life. Please answer by checking ONE box in each section for the statement which best applies to you. We realize you may consider that two or more statements in any one section apply but please just shade out the spot that indicates the statement which most clearly describes your problem.

Section 1 – Pain intensity

- I have no pain at the moment
- The pain is very mild at the moment
- The pain is moderate at the moment
- The pain is fairly severe at the moment
- The pain is very severe at the moment
- The pain is the worst imaginable at the moment

Section 2 – Personal care (washing, dressing etc)

- I can look after myself normally without causing extra pain
- I can look after myself normally but it causes extra pain
- It is painful to look after myself and I am slow and careful
- I need some help but manage most of my personal care
- I need help every day in most aspects of self-care
- I do not get dressed, I wash with difficulty and stay in bed

Section 3 – Lifting

- I can lift heavy weights without extra pain
- I can lift heavy weights but it gives extra pain
- Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently placed eg. on a table
- Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned
- I can lift very light weights
- I cannot lift or carry anything at all

Section 4 – Walking*

- Pain does not prevent me walking any distance
- Pain prevents me from walking more than 2 kilometers
- Pain prevents me from walking more than 1 kilometer
- Pain prevents me from walking more than 500 meters
- I can only walk using a stick or crutches
- I am in bed most of the time

Section 5 – Sitting

- I can sit in any chair as long as I like
- I can only sit in my favourite chair as long as I like
- Pain prevents me sitting more than one hour
- Pain prevents me from sitting more than 30 minutes
- Pain prevents me from sitting more than 10 minutes
- Pain prevents me from sitting at all

Section 6 – Standing

- I can stand as long as I want without extra pain
- I can stand as long as I want but it gives me extra pain
- Pain prevents me from standing for more than 1 hour
- Pain prevents me from standing for more than 3 minutes
- Pain prevents me from standing for more than 10 minutes
- Pain prevents me from standing at all

Section 7 – Sleeping

- My sleep is never disturbed by pain
- My sleep is occasionally disturbed by pain
- Because of pain I have less than 6 hours sleep
- Because of pain I have less than 4 hours sleep
- Because of pain I have less than 2 hours sleep
- Pain prevents me from sleeping at all

Section 8 – Sex life (if applicable)

- My sex life is normal and causes no extra pain
- My sex life is normal but causes some extra pain
- My sex life is nearly normal but is very painful
- My sex life is severely restricted by pain
- My sex life is nearly absent because of pain
- Pain prevents any sex life at all

Section 9 – Social life

- My social life is normal and gives me no extra pain
- My social life is normal but increases the degree of pain
- Pain has no significant effect on my social life apart from limiting my more energetic interests eg, sport
- Pain has restricted my social life and I do not go out as often
- Pain has restricted my social life to my home
- I have no social life because of pain

Section 10 – Travelling

- I can travel anywhere without pain
- I can travel anywhere but it gives me extra pain
- Pain is bad but I manage journeys over two hours
- Pain restricts me to journeys of less than one hour
- Pain restricts me to short necessary journeys under 30 minutes
- Pain prevents me from travelling except to receive treatment

*Note: Distances of 1 mile, ½ mile and 100 yards have been replaced by metric distances in the Walking section



THE MCKENZIE INSTITUTE LUMBAR SPINE ASSESSMENT

Date _____

Name _____ Sex M / F _____

Address _____

Telephone _____

Date of Birth _____ Age _____

Referral: GP / Orth / Self / Other _____

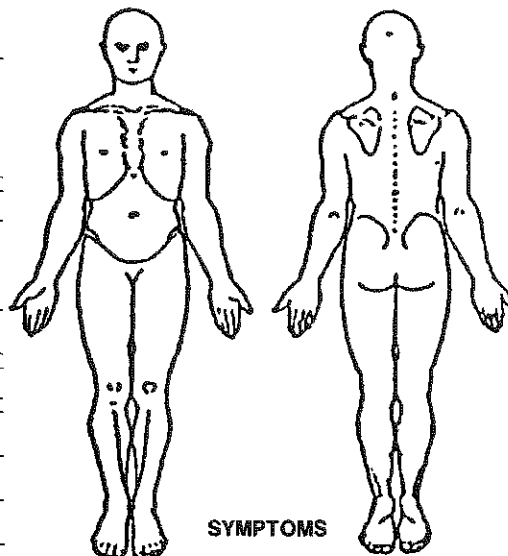
Work: Mechanical Stresses _____

Leisure: Mechanical Stresses _____

Functional Disability from present episode _____

Functional Disability score _____

VAS Score (0-10) _____



HISTORY

Present Symptoms _____

Present since _____ *Improving / Unchanging / Worsening*

Commenced as a result of _____ *Or no apparent reason*

Symptoms at onset: *back / thigh / leg* _____

Constant symptoms: *back / thigh / leg* _____ Intermittent symptoms: *back / thigh / leg*

Worse *bending Sitting / rising standing walking lying*
am / as the day progresses / pm when still / on the move
other _____

Better *bending sitting standing walking lying*
am / as the day progresses / pm when still / on the move
other _____

Disturbed Sleep Yes / No Sleeping postures: *prone / sup / side R / L* Surface: *firm / soft / sag*

Previous Episodes 0 1-5 6-10 11+ Year of first episode _____

Previous History _____

Previous Treatments _____

SPECIFIC QUESTIONS

Cough / Sneeze / Strain / +ve / -ve Bladder: *normal / abnormal* Gait: *normal / abnormal*

Medications: *Nil / NSAIDS / Analg / Steroids / Anticoag / Other* _____

General Health: *Good / Fair / Poor* _____

Imaging: Yes / No _____

Recent or major surgery: Yes / No _____ Night Pain: Yes / No _____

Accidents: Yes / No _____ Unexplained weight loss: Yes / No _____

EXAMINATION

POSTURE

Sitting: *Good / Fair / Poor* Standing: *Good / Fair / Poor* Lordosis: *Red / Acc / Normal* Lateral Shift: *Right / Left / Nil*

Correction of Posture: *Better / Worse / No effect* _____ Relevant: *Yes / No*

Other Observations: _____

NEUROLOGICAL

Motor Deficit _____ Reflexes _____

Sensory Deficit _____ Dural Signs _____

MOVEMENT LOSS

| | Maj | Mod | Min | Nil | | Pain |
|----------------|-----|-----|-----|-----|--|------|
| Flexion | | | | | | |
| Extension | | | | | | |
| Side Gliding R | | | | | | |
| Side Gliding L | | | | | | |

TEST MOVEMENTS Describe effect on present pain – **During:** produces, abolishes, increases, decreases, no effect, centralising, peripheralising. **After:** better, worse, no better, no worse, no effect, centralised, peripheralised.

| | Symptoms During Testing | Symptoms After Testing | Mechanical Response | | |
|--------------------------------------|-------------------------|------------------------|---------------------|-----|-----------|
| | | | Rom | Rom | No Effect |
| Pretest symptoms standing: | | | | | |
| FIS | | | | | |
| Rep FIS | | | | | |
| EIS | | | | | |
| Rep EIS | | | | | |
| Pretest symptoms lying: | | | | | |
| FIL | | | | | |
| Rep FIL | | | | | |
| EIL | | | | | |
| Rep EIL | | | | | |
| If required pretest symptoms: | | | | | |
| SGIS – R | | | | | |
| Rep SGIS - R | | | | | |
| SGIS - L | | | | | |
| Rep SGIS- L | | | | | |

STATIC TESTS

Sitting slouched _____ Sitting erect _____

Standing slouched _____ Standing erect _____

Lying prone in extension _____ Long sitting _____

OTHER TESTS _____

PROVISIONAL CLASSIFICATION

Derangement Dysfunction Posture Other

Derangement: Pain location _____

PRINCIPLE OF MANAGEMENT

Education _____ Equipment Provided _____

Mechanical Therapy: *Yes / No* _____

Extension Principle: _____ Lateral Principle: _____

Flexion Principle: _____ Other: _____

Treatment Goals: _____

ICF Disease Taxonomy

Extension Dysfunction with ANR

| | | |
|--|--|---|
| <p>Body Structures/Functions (Impairments)</p> <ul style="list-style-type: none"> • Pain • ↓ spinal ROM: flexion/extension • Impaired vertebral joint mobility • Nerve entrapment (ANR) | <p>Activities</p> <p><u>Abilities:</u></p> <ul style="list-style-type: none"> • Sitting activities <p><u>Limitations:</u></p> <ul style="list-style-type: none"> • Standing/walking >30 min. - pain • Lifting >15 lbs. - pain • Bending over • Bed mobility and transfers – pain • ↓ stride length on right - pain • ↓ ambulation speed - pain | <p>Participation</p> <p><u>Abilities:</u></p> <ul style="list-style-type: none"> • Low exertion ADL's and house work <p><u>Limitations:</u></p> <ul style="list-style-type: none"> • Work • High exertion ADL's and house work • Home improvement projects |
| <p>Personal Factors</p> <p><u>Positive:</u></p> <ul style="list-style-type: none"> • Family, friends, and work • Motivated • Home projects to get back to <p><u>Negative:</u></p> <ul style="list-style-type: none"> • Past experience with PT • Pain • Spinal fusion | <p>Contextual Factors</p> <p style="text-align: center;">← →</p> | <p>Environmental Factors</p> <p><u>Positive:</u></p> <ul style="list-style-type: none"> • Family/friends support <p><u>Negative:</u></p> <ul style="list-style-type: none"> • ↓ productivity at work • Stress from chronic pain |

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