

# McKenzie Based Approach for Screening Lumbar Spine in a Patient with a Hamstring Strain: A Case Report

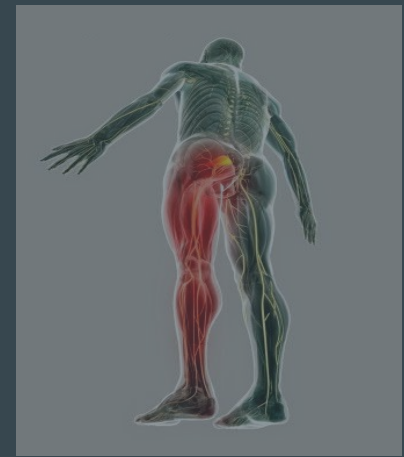


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# Background and Purpose:

- The leading cause of musculoskeletal (MSK) disorders globally is low back pain (LBP).
- The etiology of LBP remains uncertain and is a popular subject within the literature.<sup>1</sup>
- Low back pain masked as lower extremity injury is a common physical therapy referral.
- Research efforts have shifted towards classification systems.<sup>1</sup>



## Purpose of this case report:

- Outline the use of McKenzie<sup>2</sup> algorithm to achieve proper patient sub-grouping.
- Emphasize the importance of screening the lumbar spine in patients referred for lower extremity injuries

# Case Description: History and Systems Review

System	Impaired	Unimpaired	Notes
Cardiovascular and Pulmonary System		+	
Musculoskeletal	+		-Decreased Lumbar ROM -Decreased gross hip strength
Neuromuscular		+	
Integumentary		+	
Communication		+	
Affect, Cognition, Language, Learning Style		+	English is spoken, Visual and Verbal Learner

## Patient History:

- Patient's initial injury was one-year prior
- Saw his PCP and was diagnosed with a hamstring strain.
- Treated conservatively
- Exacerbation of symptoms occurs following a ski trip

# Case Description: Tests and Measures

Test and Measure	Initial Evaluation	Re-Evaluation	Notes
<b>LE MMT</b>	Hip Flexion: 5/5 Hip Abduction: 3+/5 Hip Extension: 3+/5 Knee Flexion: 5/5 Knee Extension 5/5 Ankle DF: 5/5 Ankle PF: 5/5	Hip Flexion: 5/5 <b>Hip Abduction: 4+/5</b> <b>Hip Extension: 4+/5</b> Knee Flexion: 5/5 Knee Extension: 5/5 Ankle DF: 5/5 Ankle PF: 5/5	
<b>Lumbar Spine ROM</b>	Flexion*: 50% Extension**: 50% Side-Bend L: 25% Side-Bend R: 25%	Flexion***: 50% Extension: 75% Side-Bend L: 100% Side-Bend R: 100%	*Painful with repeated lumbar flexion **Decrease in L leg pain with repeated extension. *** Pain 1/10 on NPRS
<b>Palpation</b>	-TTP Throughout L1-L5 -No significant TTP proximal hamstring attachments.	-No significant TTP through L1-L5	Pain rated at 4/10 on NPRS with palpation.
<b>Sensation</b>	Normal sensation throughout dermatome distribution.	DNT*	Did not retest due to time constraints.

Test and Measure	Initial Evaluation	Re-Evaluation	Notes
<b>Seated Slump Test</b>	Positive Finding on L LE  Negative Finding on R LE	Positive Finding on L LE  Negative Finding on R LE	
<b>Modified Bent Knee Stretch Test</b>	Negative Bilaterally	DNT	*did not retest due to time constraints.
<b>Joint Mobility</b>	Hypomobile L1-L5	Normal	
<b>Outcome Measures</b>	LEFS*: 49% functional	LEFS: Modified Oswestry: 74% functional	Test selected based on PCP referral.

# Interventions and POC:

- Directional preference exercises
- Manual Therapy
- Patient Education
- LE Strengthening/Stabilization



# Outcomes

## Improvements:

- Centralization of pain and decrease on NPRS to 1/10
- Improved bilateral hip strength
- Achieved majority of functional goals

## Caveats:

- Still limited with some functional tasks needed for employment
- Unexpected gaps in care due to insurance and COVID-19.

Type	Duration	Goal	Progress
Short Term Goal	2- Weeks	The patient will verbalize understanding of spine mechanics and mechanism of injury within 2 weeks.	Achieved at Re-Evaluation
Short Term Goal	4-Weeks	The patient will demonstrate 10 squats with proper form and without a increase in pain to decrease difficulty with work related activities.	Added at Re-Evaluation
Long Term Goal	6 Weeks	The patient will demonstrate proper body mechanics with bending and lifting to decrease difficulty with household activities.	Achieved at Re-Evaluation
Long Term Goal	6 Weeks	Patient will decrease pain levels to 0/10 when donning and doffing his shoes.	Achieved at Re-Evaluation
Long Term Goal	6 Weeks	The patient will improve postural awareness during static and dynamic tasks in order to decrease difficulty getting out of his truck.	Achieved at Re-Evaluation.
Long Term Goal	6 Weeks	The patient will verbalize independence with his HEP.	Ongoing as HEP is updated.

# Discussion, Conclusion, and Future Directions

- Highlighted the clinical usefulness of using a treatment-based classification system which rules out lumbar spine involvement of lower extremity injuries first, to help decrease waste of healthcare resources.<sup>3</sup>
- While not the focus of the case report, interventions focused on the complexity of pain may be more beneficial compared directional specific exercises only.
- Research into the frequency of lumbar spine involvement in LE injuries may be helpful.

# References:

1. Maluf KS, Sahrman SA, Van Dillen LR. Use of a classification system to guide nonsurgical management of a patient with chronic low back pain. *Phys Ther.* 2000;80(11):1097-1110.
2. Garcia A, Costa LCM, Mota STD, et al. Effectiveness of back school versus McKenzie exercise in patients with chronic nonspecific low back pain: A randomized controlled trial. *Phys Ther.* 2012;93(6):729-747.
3. Hasimoto S, Hirokada M, Takasaki H. The most common classification in the mechanical diagnosis and therapy for patients with primary complaint of non-acute knee pain was Spinal Derangement: a retrospective chart review. *J Man Manip Ther.* 2019; 27(1): 33-42 DOI: 10.1080/10669817.2018.1511316