

# Comprehensive Physical Therapy Management of Chronic Low Back Pain with Associated Remote Right Hamstring Injury: A Case Report



Emily Larson, B.S., Doctor of Physical Therapy Student  
University of New England, Doctor of Physical Therapy Program, Portland, Maine

## Background

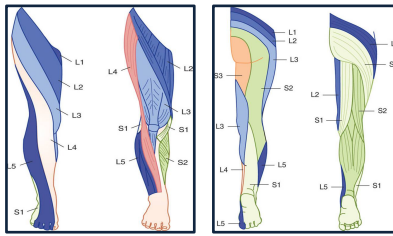
- Low back pain (LBP) is a health condition associated with back, core, and hip muscle dysfunction as well as reduced lumbar range of motion<sup>1</sup>
- Core muscle stabilization, hip abductor strengthening, and lumbar range of motion are all effective techniques for treating patients with chronic LBP<sup>1</sup>
- Lumbar muscular imbalance can lead to hamstring injury because of change in the functional load<sup>2</sup>

## Purpose

- The purpose of this case report was to review a therapeutic exercise approach to the treatment of chronic low back pain after a remote hamstring injury, including a focus on lumbar and core stabilization, lumbar and hamstring stretching and hamstring strengthening, and a comprehensive home exercise program

## Case Description

- 31-year-old male Navy veteran who was an avid runner
- Diagnosis of chronic LBP and reported a history of remote right hamstring injury
- Symptoms: constant ache in the low back with occasional sharp bilateral pain in the paraspinal muscles right greater than left from L3 to S1 spinal levels
- Subjective pain reported with repetitive forward flexion and left rotation and occasional paresthesia's in the right lower extremity (LE) in the L4 dermatome distribution
- Initial deficits in strength, pain with range of motion, running form, and muscular tightness
- Unrelated diagnosis of mild traumatic brain injury due to indirect blast exposures and a fall from a ladder well in 2012 with minimal residual effects



L4 Dermatome: <https://doctorlib.info/anatomy/clinical-neuroanatomy-28/28.html>

## Timeline



## Tests and Measures

Test	Result
<b>SLUMP</b>	Negative on the left, Positive on the right (possible hamstring involvement)
<b>Quadrant Test</b>	Positive on the right
<b>Straight Let Raise (SLR)</b>	Left negative to 60 degrees, right negative to 45 degrees due to hamstring tightness
<b>FAIR</b>	Positive on the right, Painful
<b>Manual Muscle Testing</b>	Hip Extension: 4+/5 Right Knee Flexion: 4+/5 Right
<b>Range of Motion</b>	Left rotation painful but unrestricted
<b>Palpation</b>	Mild to moderate paraspinal tightness noted at L4-S2 left greater than right
<b>Oswestry Disability Index</b>	22%: Moderate Disability
<b>Numeric Pain Rating Scale</b>	3-4/10

## Interventions

- Lumbar, Hamstring, Gastrocnemius/Soleus Stretching
- Lumbar and Core Stabilization
- Hip Abductor and Hamstring Strengthening



Lumbar Stretch: Double Knee to Chest: [www.hep2go.com](http://www.hep2go.com)

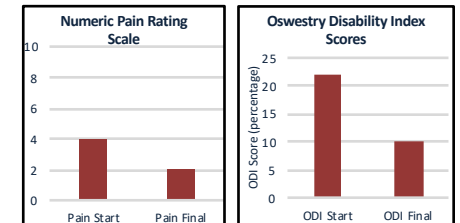
Supine Active Hamstring Stretch with towel: [www.hep2go.com](http://www.hep2go.com)



Side step with Black TheraBand: [www.hep2go.com](http://www.hep2go.com)

Supine Dead Bug: [www.hep2go.com](http://www.hep2go.com)

## Results



- Increase in hip extension and knee flexion strength from 4+/5 to 5/5
- Subjective report of decreased pain with forward flexion and rotation to the left and increased ability to run further distances at a faster speed without an increase in LBP

## Discussion

- Over the treatment course the patient demonstrated improvements in LE strength, patient reported outcome measures, and lumbar spine range of motion
- Discharge ODI suggests the combination plan of care contributed to the patients perceived decrease in disability level from LBP
- Limiting factor: one treatment per week with heavy reliance on the home exercise program
- Outcomes suggest combination plan of care used in this patient were beneficial in helping decrease subjective level of pain and improving his running ability
- Patient ODI score improved from moderate to minimal disability but did not surpass the MCID level of 12.88
- Findings are similar to those found by Kumar et al<sup>1</sup>, who stated that a combination POC involving core/lumbar stabilization, lumbar/hamstring stretching, and hip strengthening can result in decrease ODI scores

## Conclusion

- A therapeutic exercise protocol focused on stabilizing and improving muscle imbalances was beneficial in reducing LBP during running and forward flexion in an active male Navy veteran with a remote right hamstring injury which aligns with the intended purpose of this case report

## Acknowledgements and References

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Address all correspondence to [el Larson2@une.edu](mailto:el Larson2@une.edu) for more information

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