

Core Strengthening and Lower Extremity Flexibility

A Model for Physical Therapy Treatment of Acute Nonspecific Low Back Pain: A Case Report

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Background & Purpose:

- Development of effective physical therapy treatment strategies is needed in order to improve outcomes for patients with low back pain. Current practice guidelines support the use of core strengthening in the treatment of low back pain⁽¹⁾; however, there is limited research investigating the combined use of core strengthening and lower extremity flexibility exercises.
- The purpose of this report is to describe the physical therapy management and functional recovery of an individual with work-related acute nonspecific low back pain.

Case Description:

- 51 year-old male with a one-month history of low back pain without radiating symptoms secondary to a work-related injury.
- Symptoms compromise his ability to optimally perform regular work activities which include prolonged standing, walking, forward bending, and lifting.

Examination:

Participation Restrictions

- Patient is unable to optimally perform work activities due to pain and/or difficulty with work-specific tasks.

Activity Limitations

- Unable to bend to lift more than 30 lbs.
- Unable to stand for more than one hour without pain.

Impairments

- Impaired thoracolumbar core strength.
- Impaired lower extremity flexibility.
- Impaired spine and hip joint mobility.
- Impaired posture.
- Pain.

Interventions:

- The patient completed a three-week, six-visit episode of physical therapy care.

	Rx Day 1	Rx Day 2	Rx Day 3	Rx Day 4	Rx Day 5	Rx Day 6
Bike Warm-Up		10 min.	10 min.	10 min.	10 min.	10 min.
Quadriceps Str.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.
Hamstring Str.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.
Single Knee to Chest Str.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.
Piriformis Str.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.
Quadratus Lumborum Str.		3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.	3 x 30 s.
Forward Planks			3 x 10 s.	5 x 10 s.	10 x 10 s.	10 x 10 s.
Bridges			2 x 10	2 x 15	2 x 15	2 x 15
Bird Dogs				2 x 15	2 x 15	2 x 15
Side Steps					2 x 15	2 x 15
Lunges					4 x 10	4 x 10
Review HEP		X	X	X	X	X
Lumbar Mobs: Grade II-IV		10 min.	10 min.	10 min.	10 min.	10 min.
Soft Tissue Mobilization	10 min.	5 min.	5 min.	5 min.	5 min.	5 min.
Heat Pack		10 min.	10 min.	10 min.	10 min.	10 min.

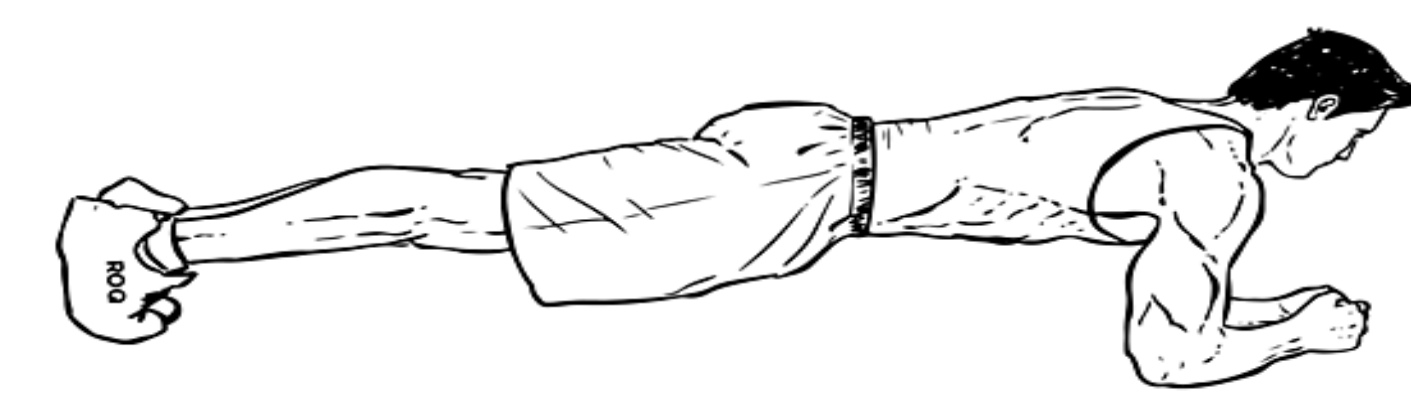


Fig. 1: Forward Planks

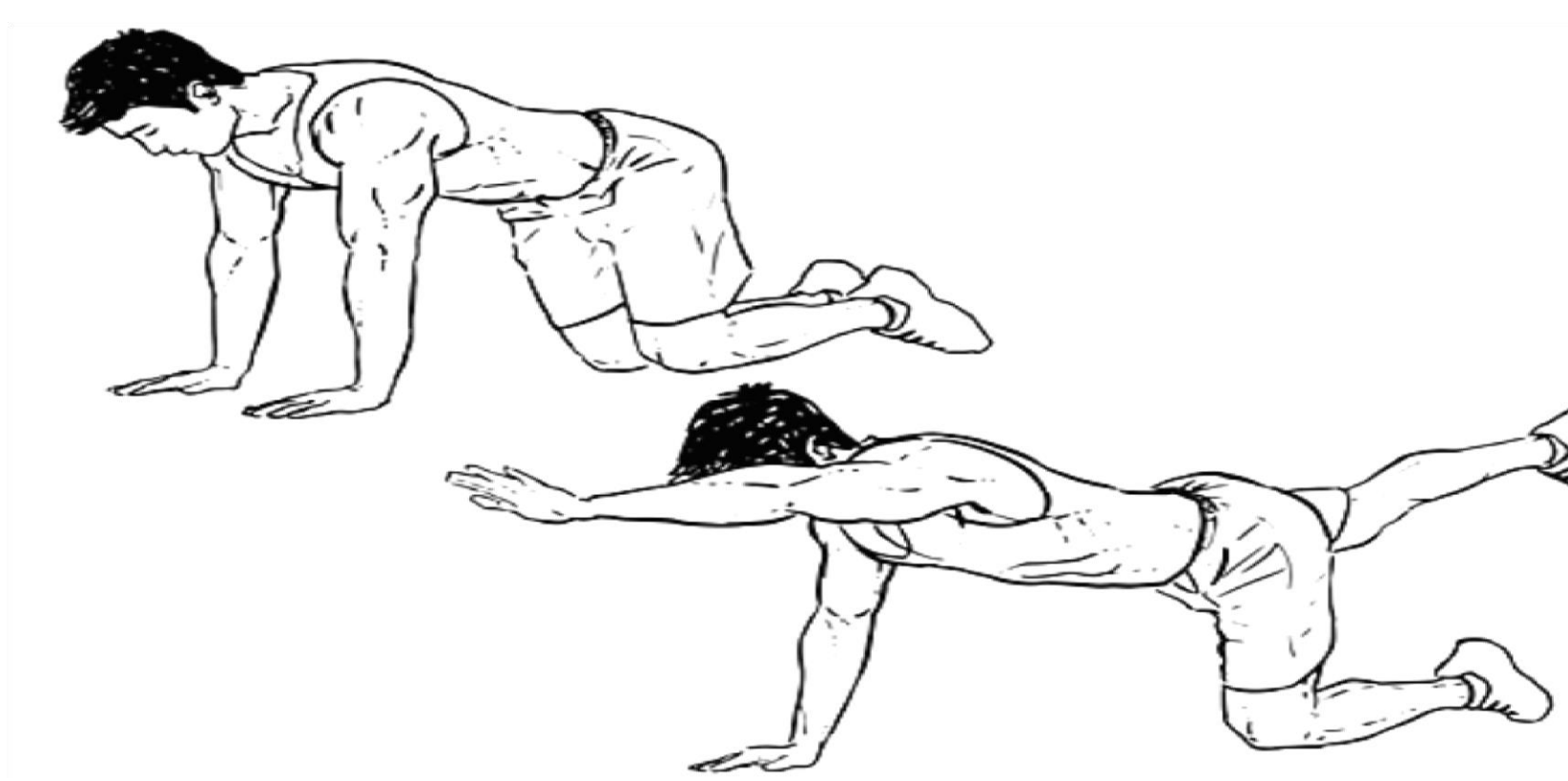


Fig. 2: Bird Dogs

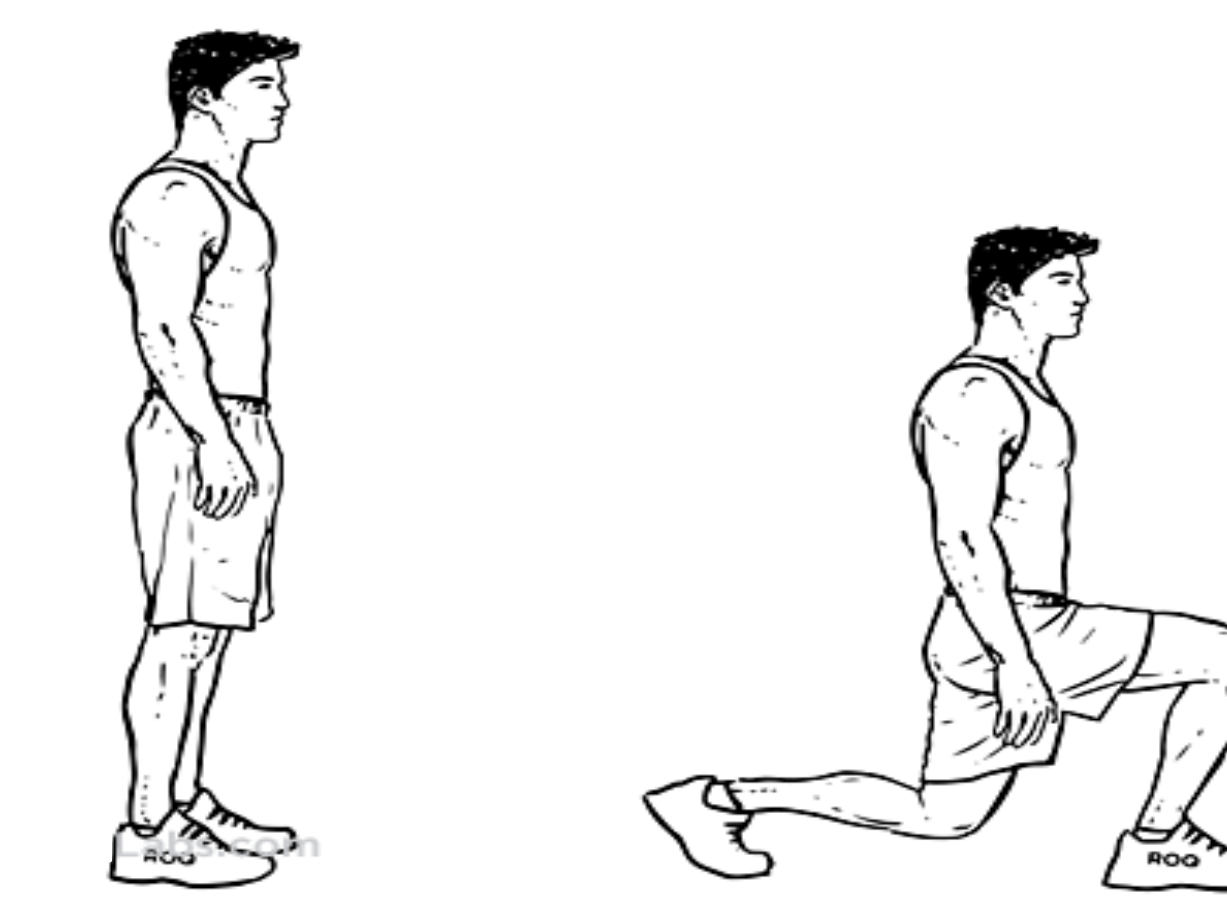


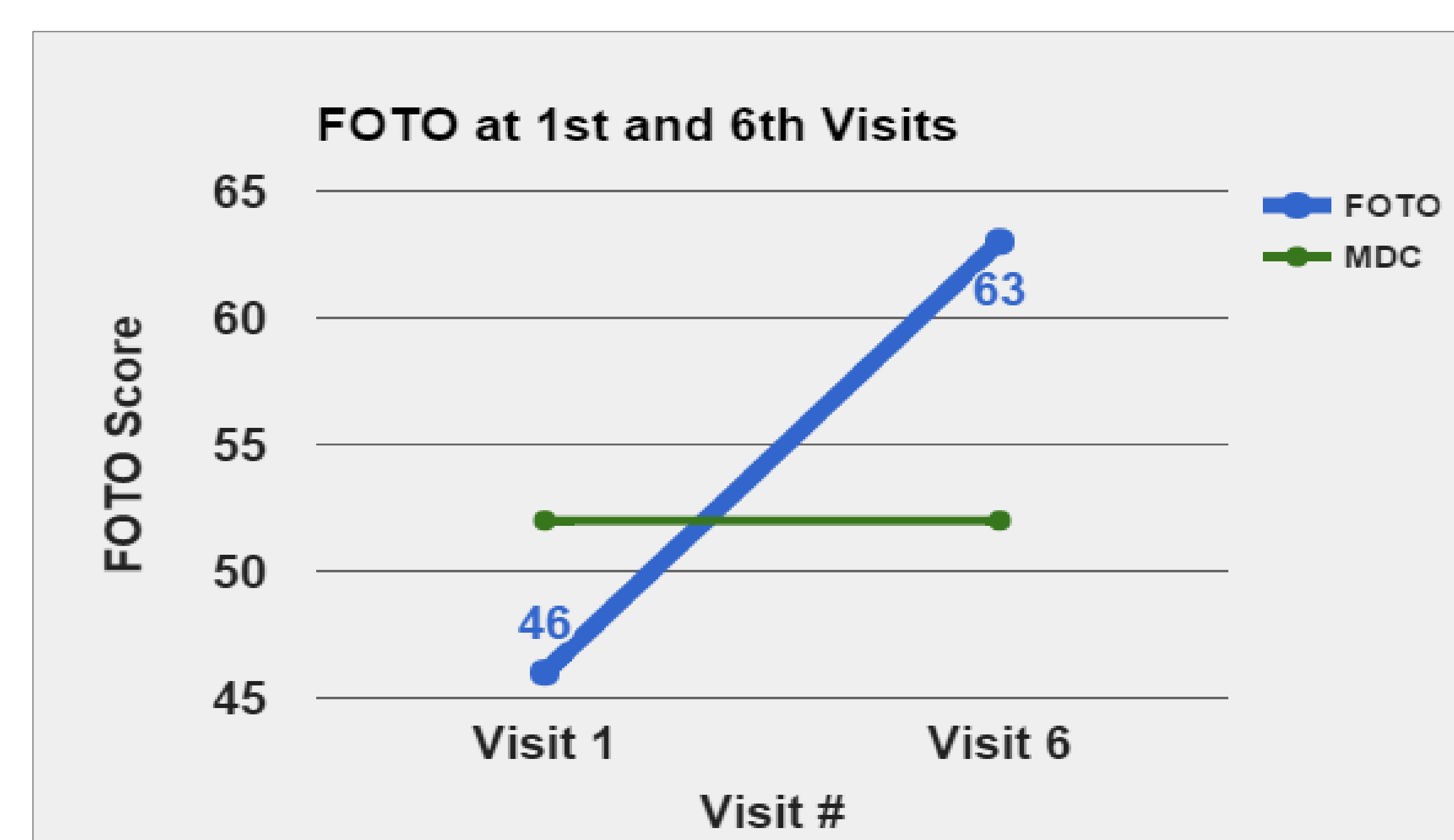
Fig. 3: Lunges

Discussion:

- Over the limited duration of the episode of care, the patient improved in work capacity and functional outcome measures.
- FOTO scores improved from 46 to 63, surpassing the minimum detectable change and clinically important difference.
- Oswestry scores improved from 30 to 26, which was not sufficient to surpass the minimum detectable change.
- Improvements in core strength, LE flexibility, and posture may have positively contributed to the patient's outcomes.
- Further research of longer duration and with larger sample sizes is needed to investigate the outcomes of this model of physical therapy management.

Outcomes:

	Admission	Discharge
Pain Score	6-7/10	4-5/10
Work Tolerance	1-2 hrs.	3-5 hrs.
Posture	Ant. Pelvic Tilt, L. Lordosis	Slight improvement
LE Flexibility	31 cm to floor	14 cm to floor
Gross Thoracolumbar MMT	4/5	5/5
FOTO	46	63 (Higher is Better)
Oswestry	30	26 (Lower is Better)



References:

- Delitto A, George SZ, Van dillen LR, et al. Low back pain. J Orthop Sports Phys Ther. 2012;42(4):A1-57.
- For the complete case report manuscript, visit dune.une.edu
- Exercise figures sourced from workoutlabs.com
- Contact the author at twilde@une.edu