

# Back to Basics

*Move Better, Feel Better: What Can Physical Therapy Do For You*

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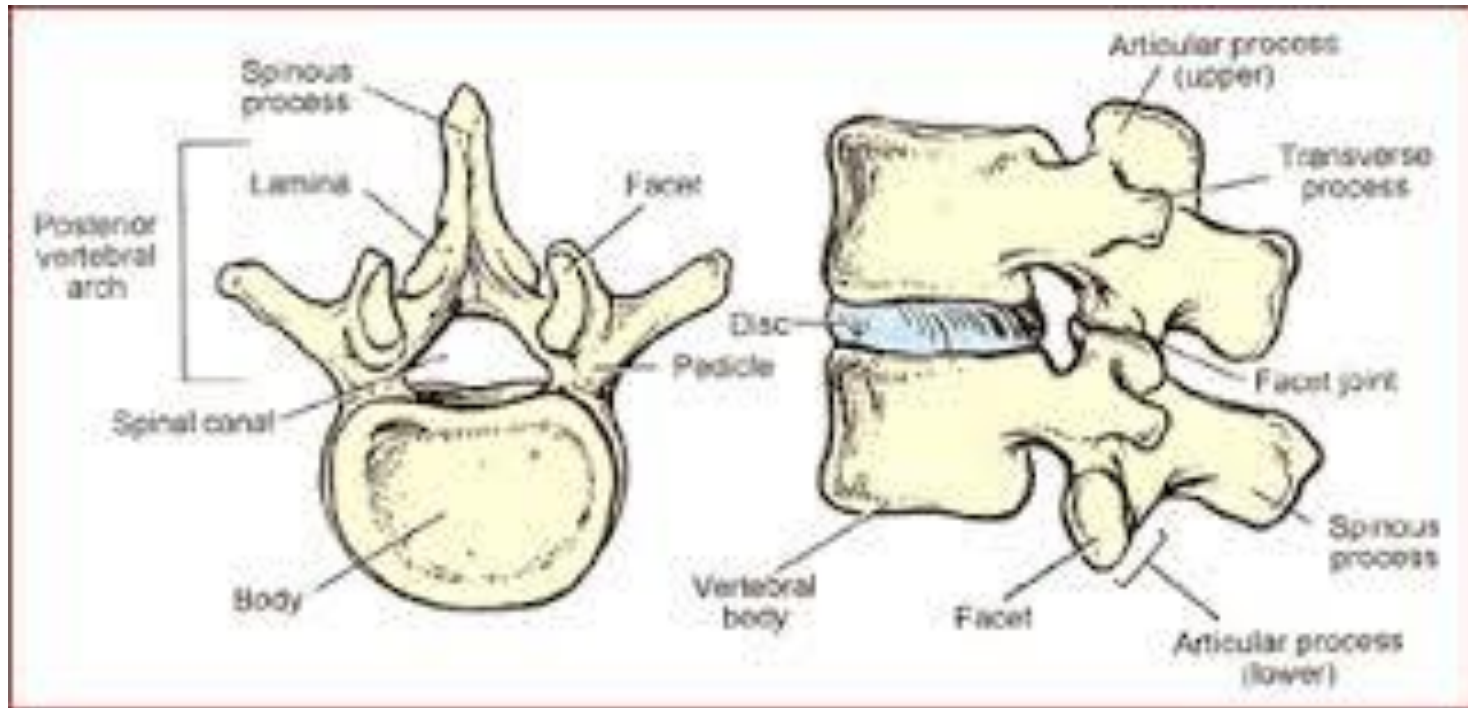
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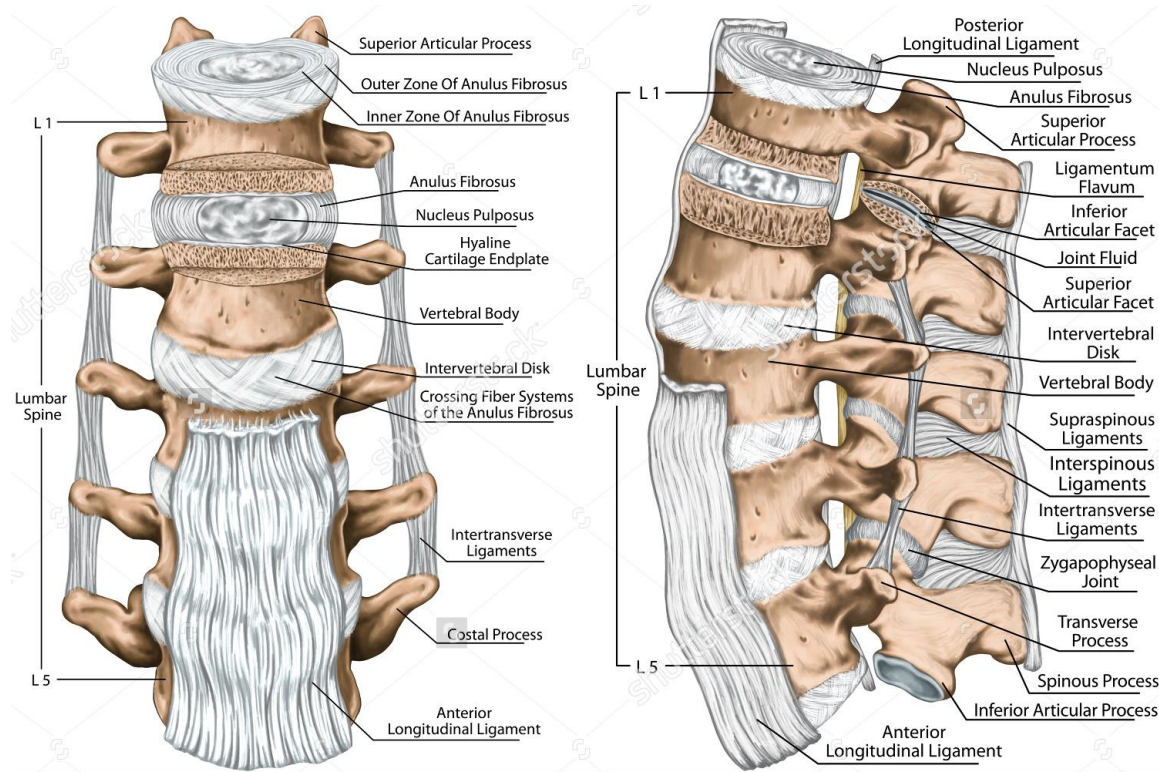
# Talk contents

- Anatomy of the spine
- Common pathologies
- What Physical therapy offers
  - Assessment
  - Treatments
    - Benefits and risks
  - Case Examples
    - Treatment examples
- Questions

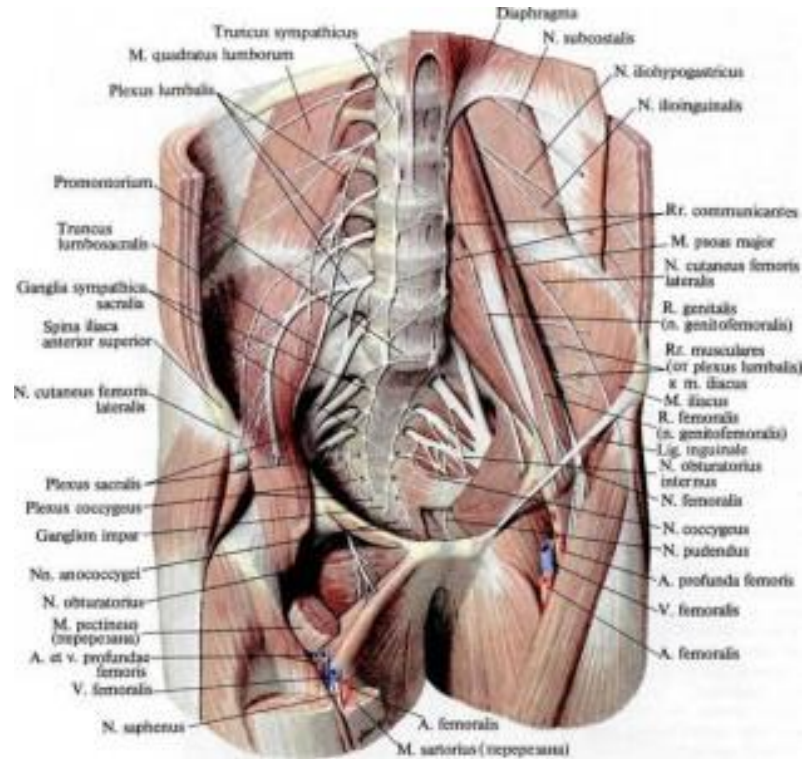
# Anatomy: bones and discs



# Anatomy: ligaments



# Anatomy: muscles



# Anatomy: organs



# How a PT assesses!

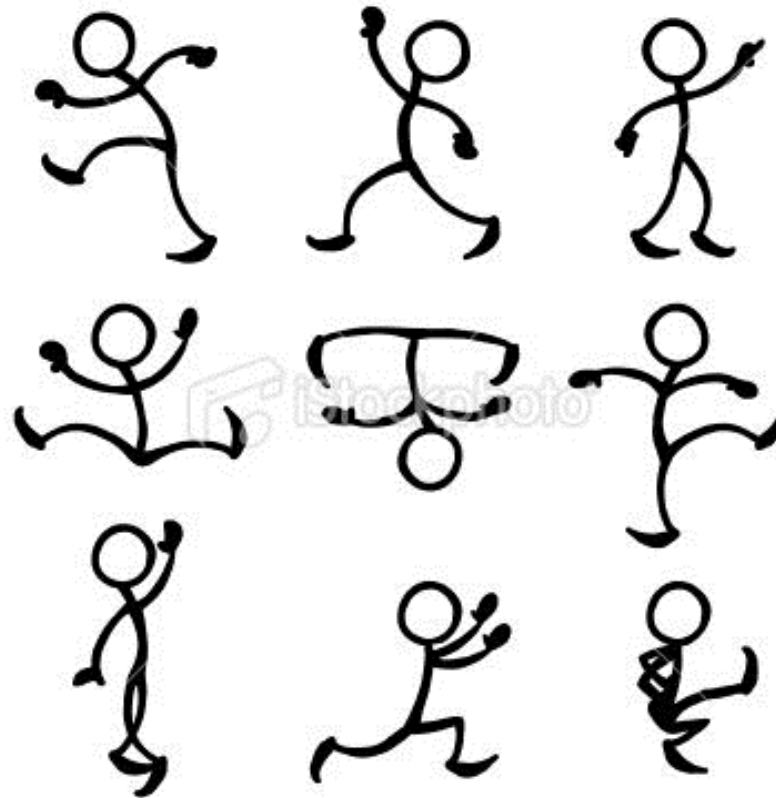
Functional diagnosis (PT diagnosis)

vs

Pathoanatomical diagnosis (MD diagnosis)



20 min break – get up and move, it's good to move!



# Common Back pain statistics

- Lower back pain (LBP) remains the most common cause of disability and lost work time among working-age adults in industrialized countries.<sup>1-2</sup>
- Patients with LBP comprise the largest cohort of people seeking care from a physical therapist.<sup>3</sup>
- The economical and societal burden of this condition is not improving, even with advancement in treatment.<sup>4-5</sup>
- Up to 80% of the population may experience back pain on any given day.<sup>6</sup>
- Chronic lower back pain may be as high as 30% in the U.S.<sup>6</sup>

# Radiologic findings and occurrence with age

Age-specific prevalence estimates of degenerative spine imaging findings in asymptomatic patients.

IMAGING FINDING	AGE (yr)						
	20	30	40	50	60	70	80
Disk degeneration	37%	52%	68%	80%	88%	93%	96%
Disk signal loss	17%	33%	54%	73%	86%	94%	97%
Disk height loss	24%	34%	45%	56%	67%	76%	84%
Disk bulge	30%	40%	50%	60%	69%	77%	84%
Disk protrusion	29%	31%	33%	36%	38%	40%	43%
Annular fissure	19%	20%	22%	23%	25%	27%	29%
Facet degeneration	04%	09%	18%	32%	50%	69%	83%
Spondylolisthesis	03%	05%	08%	14%	23%	35%	50%

# Unintended consequences of Imaging in work related Low back pain

## UNINTENDED CONSEQUENCES OF IMAGING IN WORK RELATED LOW-BACK PAIN

In 3264 cases 21% had a MRI within the first 2 weeks

	<b>NO MRI</b>	<b>EARLY MRI</b>
<b>Duration of first disability post MRI</b>	<b>22 Days</b>	<b>133 Days</b>
<b>Total medical cost post MRI</b>	<b>\$2,779</b>	<b>\$21,921</b>
<b>Surgery</b>	<b>0.8%</b>	<b>22%</b>

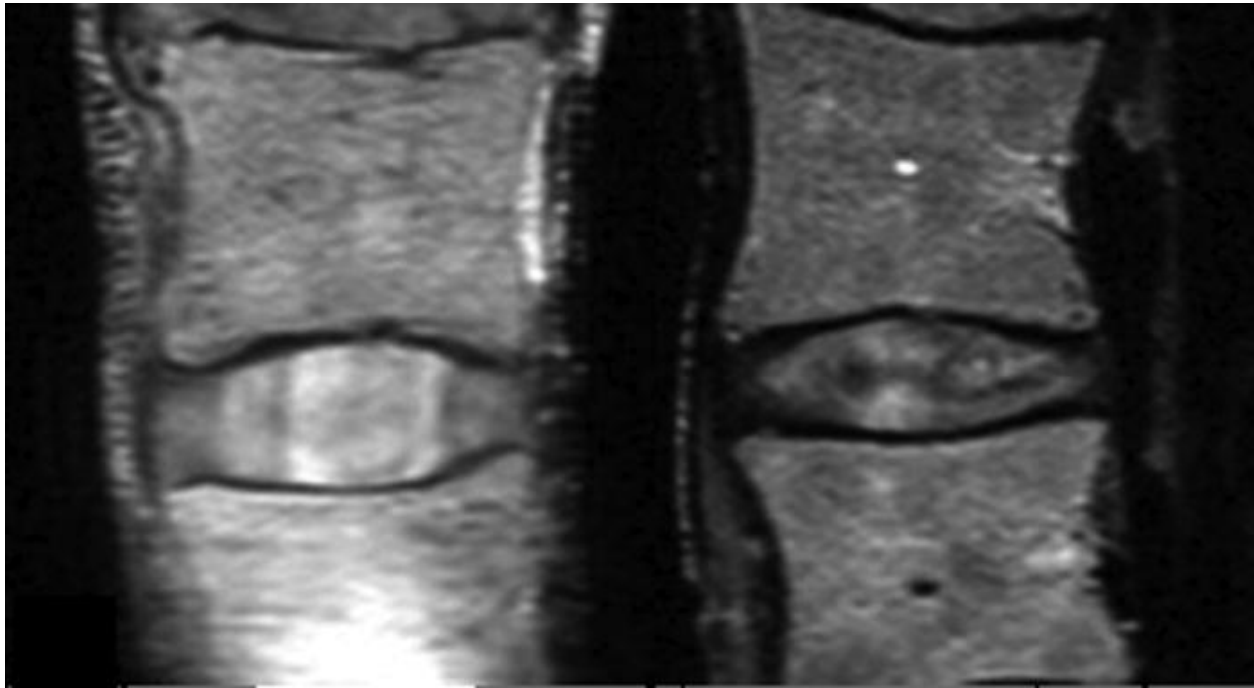
@SimoneMuscatPhysio

(Webster & Cifuentes, 2010)

# Common pathologies we will focus on

- Degenerative Disc Disease
- Stenosis
- Sciatica

# Degenerative Disc Disease: Pathophysiology



# Degenerative Disc Disease: common presentation

- Pain areas: lower back (or neck) pain can refer to the legs, thighs, and buttocks,
- Sensory: pins and needles or reduced sensation of touch
- Also common: muscle spasms, nerve involvement, physical deformity, Limitation or stiffness of motion
- Increased pain with bending or twisting. Pain often worsens with standing
- May occur due to a trauma or gradually over time

# Stenosis: Pathophysiology

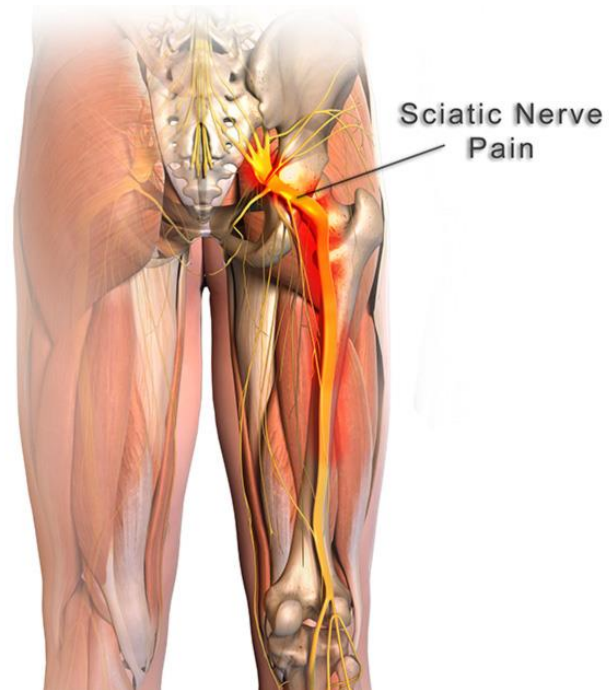




# Stenosis: common presentation

- Pain areas: in the back and leg, legs, thighs, and buttocks that worsens with standing, and extended positions
- Pain circumstances: can occur in the leg while exercising (claudication)
- Muscular: cramping or muscle weakness
- Sensory: leg numbness or pins and needles
- Stiffness: also common

# Sciatica: Pathophysiology



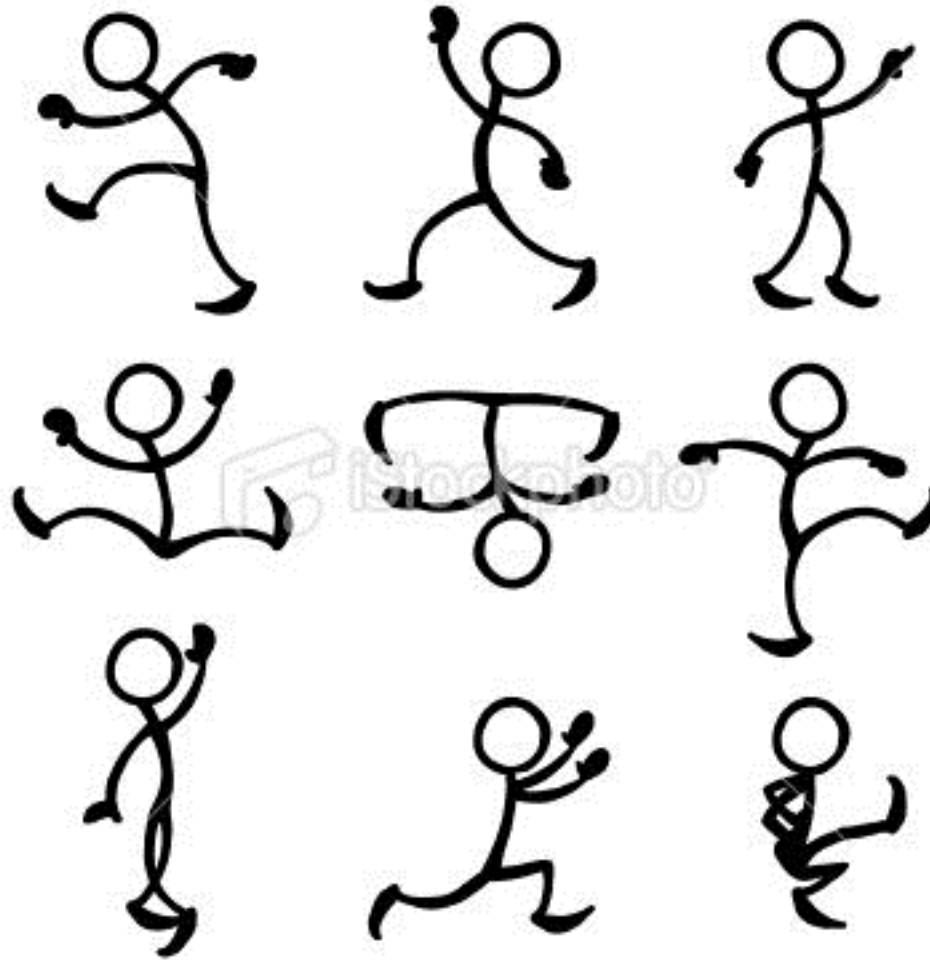
# The complexity of sciatica

- Compression from disc
- Restricted movement through the foramen
- Tethering/adhesions along its pathway/track
- Compression from soft tissue
- Double compression syndrome
- Neuritis

# Sciatica: common Presentation

- Pain originates in the spine and radiates down the back of the leg.
  - Sciatica typically affects only one side of the body.
- Pain areas: in the back, buttocks, hip, or lower extremities
- Pain types: can be mild, severe, radiating, or sharp
- Pain circumstances: can occur due to trauma or spontaneously
- Sensory: leg numbness or pins and needles
- Also common: burning sensation, foot numbness, limping, muscle weakness

40min time break- time to move again



# Physical therapy Assessment

- Subjective information
- Observation
- Range Of Movement
- Strength
- Special Testing
- Functional Testing



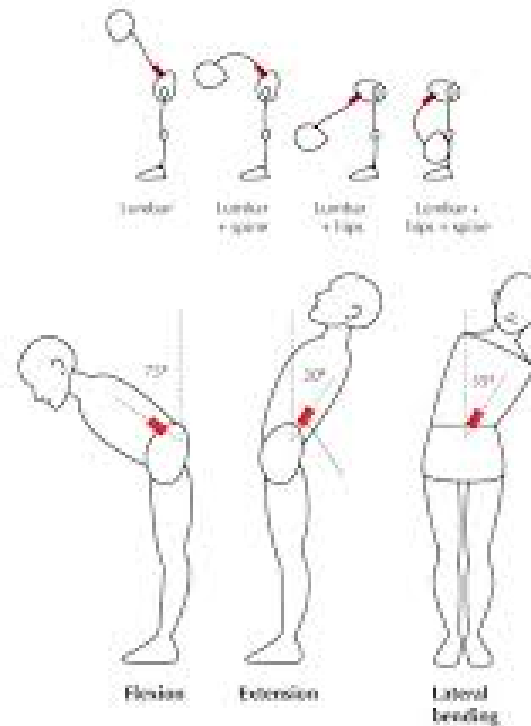
# Observation

- Walking
- Sit to stand
- Transitional movements



# Range of movements all directions

- Flexion
- Extension
- Side flexion
- Rotation





# Strengthen

- Lumbar strength
- Lower extremity strength
- Core strength
  - activation
  - strength
  - Endurance



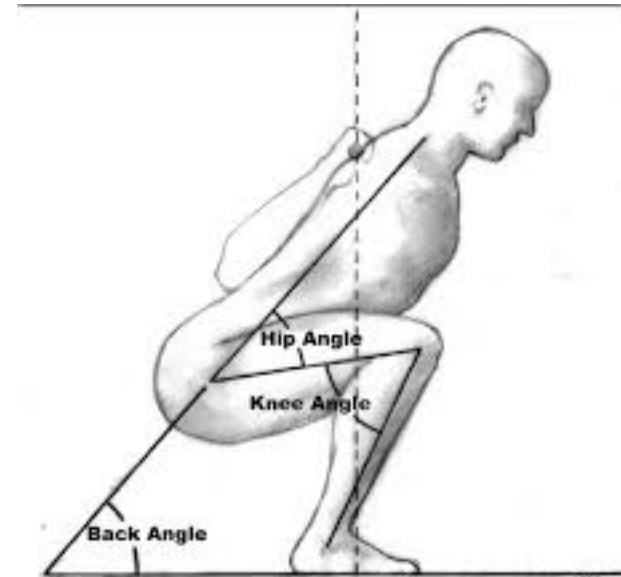
# Advanced Tests

- Neural screen
- Quadrant testing
- Palpation
- Passive accessory intervertebral mobilizations



# Functional Testing

- Balance
- Squatting
- Stairs
- Lifting
- Carrying



# Physical Therapy Treatment

- Patient Education
- Exercise Therapy
- Manual Therapy
  - Joint mobilizations
  - Soft Tissue treatments
- Electrotherapy
- Pain Management
  - Mindfulness
  - Meditation
  - Pain education
- Alternative Therapies
  - Acupuncture/acupressure

# DDD case study treatment approach

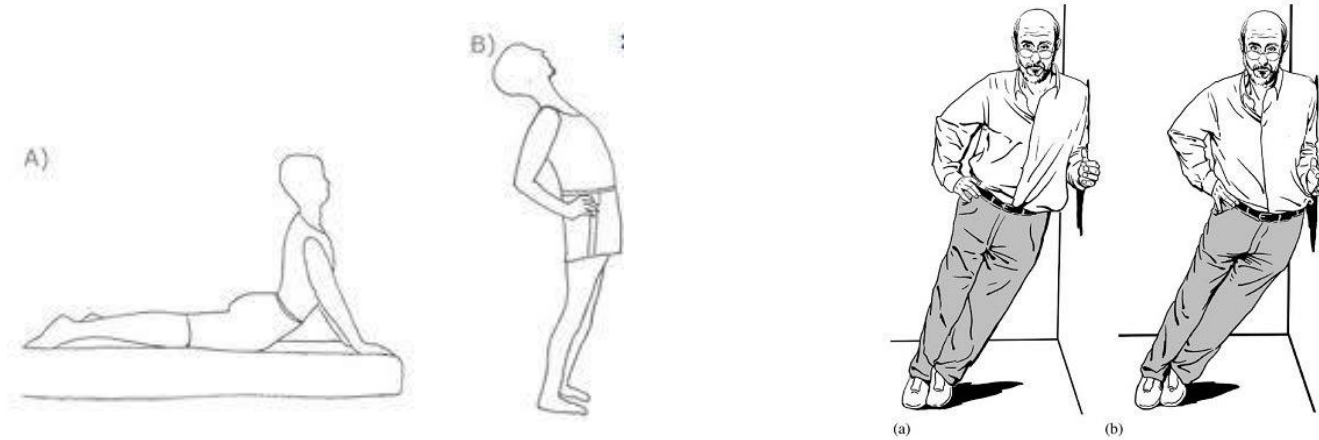
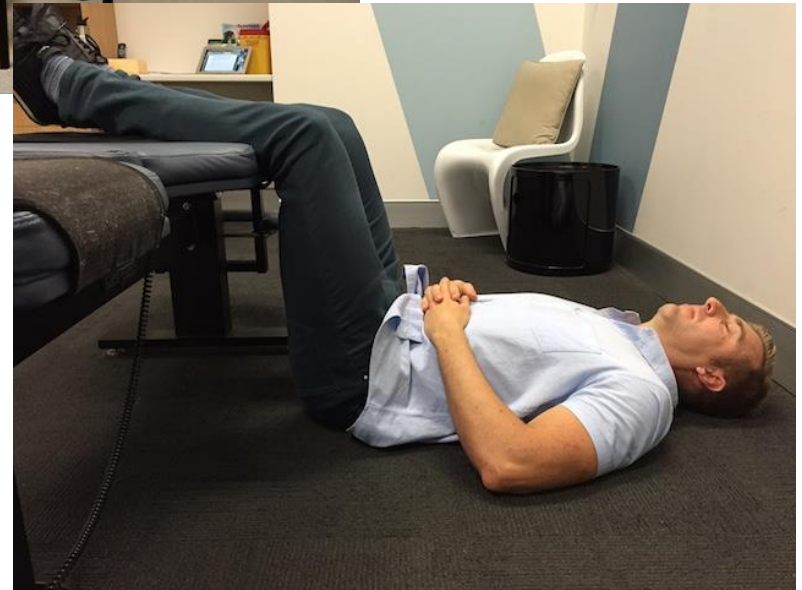
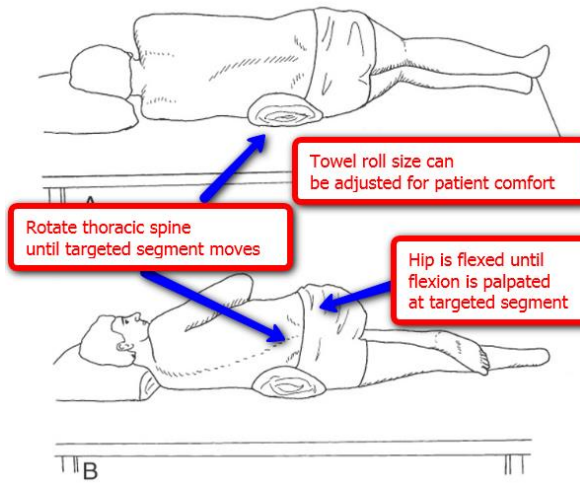
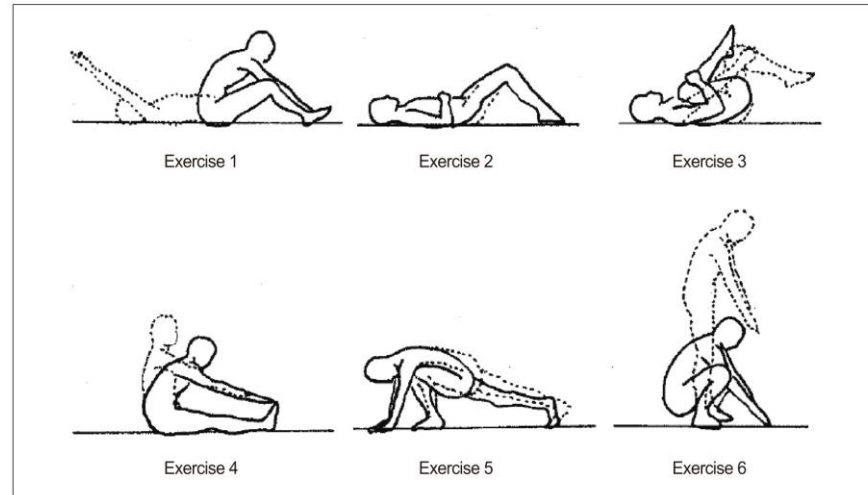


Figure 6 Pelvic side shift: (a) start position (b) end position.

# Sciatica case study treatment approach



# Stenosis case study treatment approach



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