

### Faculty development

Low back pain can be divided into mechanical (most common reason), low back pain with radicular symptoms, and secondary low back pain due to cancer or visceral disease. Usually, a precise cause for the back pain cannot be found. Thus, the goal of the diagnostic evaluation of back pain is to rule out serious causes.

(The association between symptoms and imaging results is weak. Up to 30% of imaging tests done in normal persons show evidence of a herniated disk.)

With radiculopathy, the patient is more likely to have an asymmetric gait abnormality (rather than a symmetric gait).

- weakness of gluteus maximus with backward lean suggests L5-S1 radiculopathy
- Trendelenburg gait (affected hip drops when bearing weight on unaffected side) suggests weakness in hip abductors (gluteus medius and minimus) indicating L4-L5 radiculopathy

If a patient has both a foot drop and Trendelenberg gait, lumbosacral radiculopathy is much more likely (LR =24)

Percussion is useful eliciting pain from spinal abscess. Good sensitivity, low specificity.

- A positive straight leg test is pain radiating down the leg with 30° -70° hip flexion with a straight knee (NOT just hip or back pain)

Sensitivity for lumbosacral radiculopathy (usually caused by disc herniation): 73%-98% but specificity low.

- Contralateral straight leg test: Elevation of the contralateral leg produces pain radiating down the affected leg. Low sensitivity but 90% specificity for disc herniation.

- Over 90% of radiculopathy affect the L4/L5 and L5/S1 roots
- Look for muscle bulk, strength, reflexes, and sensation.

#### L3/L4:

MUSCLE: quadriceps (Patellar reflex)

MOTOR WEAKNESS: knee extension: Single leg sit to stand test

SENSATION: Medial aspect of the calf and ankle

#### L4/L5

MUSCLE: Extensor hallucis longus, tibialis anterior (Medial hamstring reflex)

MOTOR WEAKNESS: Dorsiflexion of ankle (unable to walk on the heels)

SENSATION: Web space between 1<sup>st</sup> and 2<sup>nd</sup> toe

#### L5/S1:

MUSCLE: Flexor hallucis longus, gastrocnemius (Achilles reflex)

MOTOR WEAKNESS: ankle plantar flexion, unable to stand on toes

SENSATION: lateral border of the foot (S1 is Tibial nerve)

This patient presents with **BACK PAIN** radiating down to his left thigh. Please examine them to decide what further management is needed.

	PHYSICAL EXAM TECHNIQUE	Y / N	AREAS FOR FEEDBACK
INSPECTION	<b>Observe the patient</b> * Did the learner observe the patient's gait and stance? * Did the learner comment on the patient's apparent pain level and vitals? * Did the learner expose the patient's back? * Did the learner evaluate the curvature of the spine and notice any abnormalities? * Did the learner comment on scars or rashes?		- Learner evaluates the back without exposing the entire back. - Learner does not verbalize findings of rashes or scars to the patient to clarify abnormalities.
	<b>Palpate the spine and paraspinal area</b> * Did the learner have a systematic approach to palpate the vertebrae and paraspinal area? * Did the learner specifically palpate the reported painful area?		- Learner does not palpate each vertebra to elicit pain. - Learner does not firmly palpate - Learner does not palpate paraspinal area. - Learner did not ask the patient to report pain if elicited.
RANGE OF MOTION	<b>Examine the range of motion of the spine</b> * Did the learner test forward flexion, backward flexion, side-to-side flexion, and notice decrease ROM and pain?		
NEUROLOGICAL <i>Strength, Sensation, &amp; Reflexes</i>	<b>Perform a neurological examination</b> * Did the learner perform a straight leg test and interpret it correctly? * Did the learner try to identify the level of disc involvement with strength, sensation, and reflexes?		- Learner interpreted the straight leg raise incorrectly - Learner did not do a cross straight leg test when the ipsilateral straight leg test was positive - Learner was unable to evaluate the spinal segment - Learner did not correctly elicit Achilles tendon reflex.
		Did the learner have an organized and structured approach to the exam?	
	Did the learner maintain the patient's comfort and well being?		