5 Min Back Exam

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PURPOSE: Demonstrate a way of screening a patient with back pain for a radicular vs non-radicular problem

IDENTIFY:

- Painful structures (Weinstein et al 1989 p41)
  - Ligaments: Anterior, Posterior, Interspinous
  - Facet articulation & capsule
  - Compressed nerve root: Posterior, Anterior (Lindahl, O. Acta Orthop Scandinav 1966;37:367-74)
  - Muscle / tendon
- Non-painful structures
  - Ligament flavum=between lamina
  - Vertebral
    - Body
    - Disk (Specifically, nucleus pulposus)

HISTORY:

- See patient care note
- Differ entiate the following types of pain:
  - Radiated: Local spread
  - Referred: What is referred pain? Aching, boring & crampy. Distant perceived pain without root damage
    - Feinstein JBJS 1954;36:981=Hypesthesia to pin in referred area of pain
    - Loyola Anatomy Lab (6% saline)
    - Milette: Pain from HNP = referred not radicular. Am J Neuroradiol 1995;16:1605
  - Radicular: Posterior, Anterior
- SCIATICA: What do most people mean by sciatica? Symptoms and signs resulting from compression or stretch of the anterior rami (Weinstein et al 1989 p38)

PHYSICAL:

- Leg length in standing; hands on pelvis
- Walk to exam table on toes for S1

- Range of motion
  - 4" from C7 to top of sacrum vs what happens from C7 to sacrum when the patient sits
  - Sitting: 30 degrees lateral bending: Figs 1 & 2

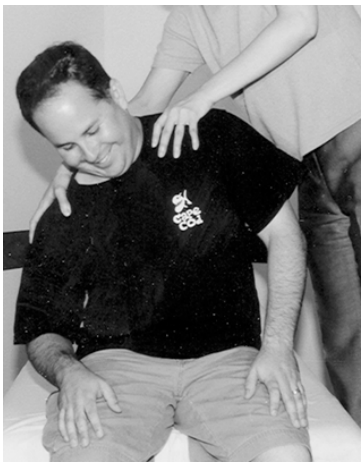


Fig 1

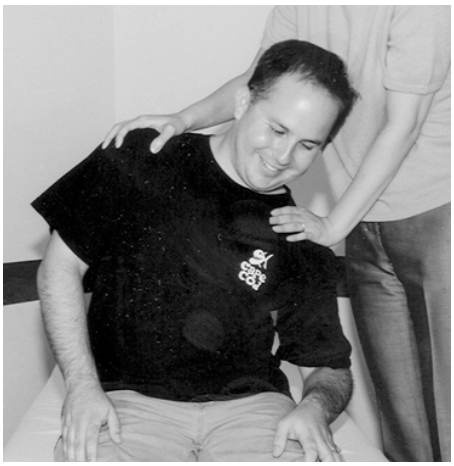


Fig 2

Hollinshead WH. Anatomy for Surgeons: Vol. 3 The Back and Limbs. A Hoeber- Harper, New York. 1964; pp 120-21

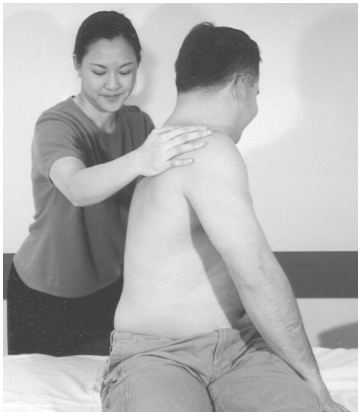


Fig 3

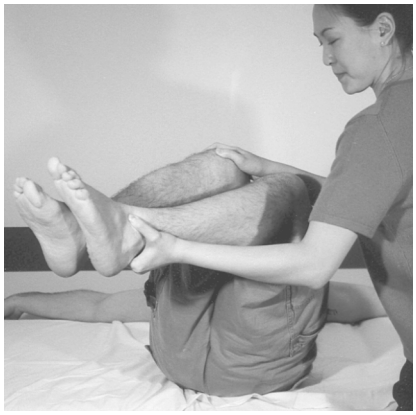


Fig 4

45 degrees rotation of trunk on pelvis (Fig 3) and pelvis on trunk (Fig 4) for thoraco-lumbar problems

Thomas: ROM (Don't overflex hip and produce a contracture) (Fig 5)

Up-side; flexion of:

Hips: 120 degrees flexion

Knees: 135 degrees

Down-side: Extension of hip: neutral (not hyperextension) 5a: classic Thomas test. 5b: Leg over end of bed because if person has knee flexion contracture the knee contracture doesn't interfere with performing the test. With the knee extended if there is no hip flexion contracture then neither the Y ligament of Bigelow (from inferior iliac spine to intertrochanteric line) nor the iliopsoas is tight.

Fig 5a

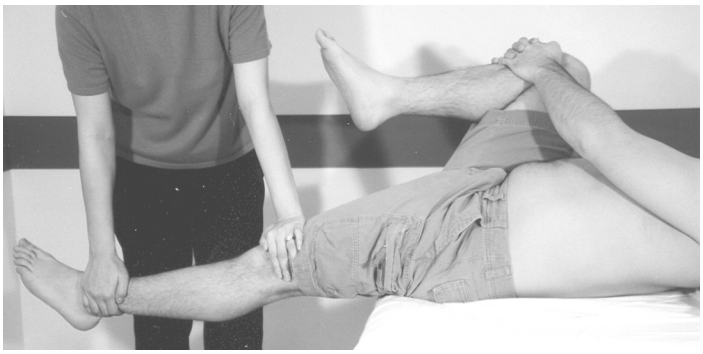


Fig 5b

Gaenslens: Sacroiliac Joint. Same as the Thomas test (Fig 5) except the down side leg (left leg in Fig 5b) is pushed into hyperextension to rotate the one half of the pelvis on the other half of the pelvis. The test is positive if the patient has pain in the area of the sacroiliac joint

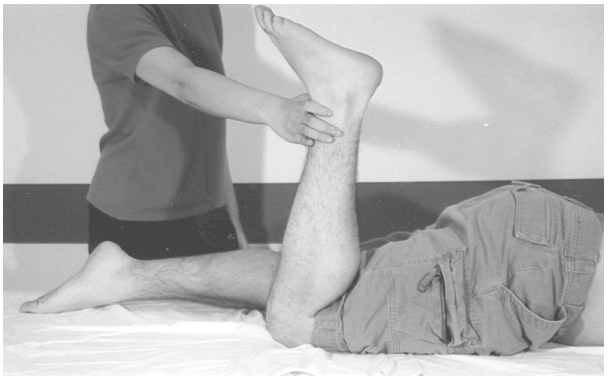


Fig 6

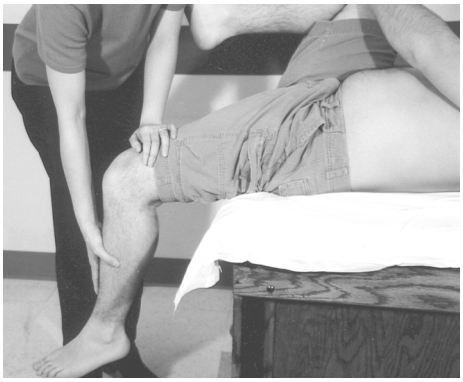


Fig 7. Slight tightness of Rectus femoris

Ely and Femoral nerve stretch test: Prone: Fig 6; Supine: Fig 7;

Tight rectus: Hip flexes when the knee is flexed & complaints of tight thigh muscles

L4 root irritation: Pain down front of thigh & leg with hip ext & knee flexion

Obers (lateral part of fascia lata: deep fascia is iliotibial tract) Figs 8, 9. Extend hip, flex knee. Negative test if thigh can be adducted to the point where the thigh is parallel to the sagittal axis of the body.

Back lying (Fig 8) same as side lying (Fig 9)

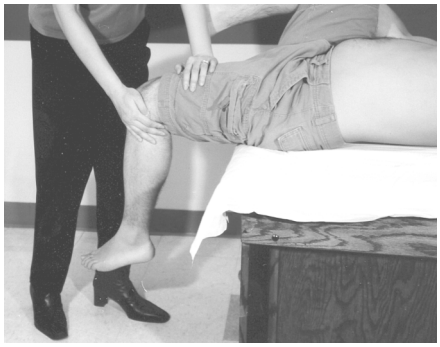


Fig 8

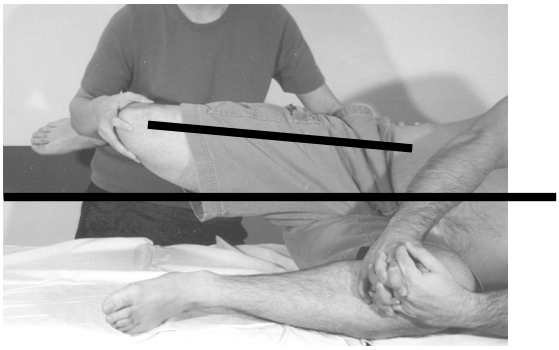


Fig 9

Hip rotation: Test in 90 degrees flexion

Internal: (Fig 10)

Limited by Y ligament of Bigelow

45 degrees in flexion (35 degrees in extension)

External: (Fig 11)

Limited by Ischiofemoral

45 degrees in flexion and extension

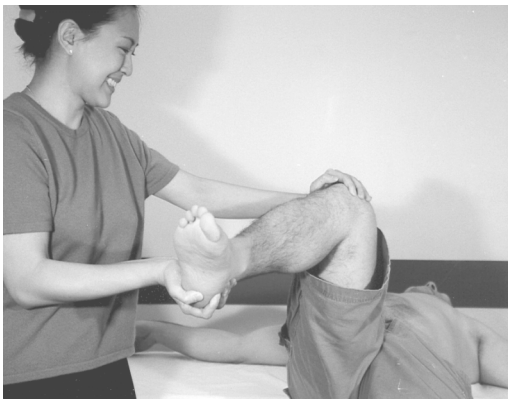


Fig 10

Fig 11

FABERE'S: **F**lex; **AB**d; **E**xt **R**ot; **E**xten: (Fig 12)

Groin pain: Acetabular/Femoral head pathology

Sacroiliac pain: Sacroiliac pathology

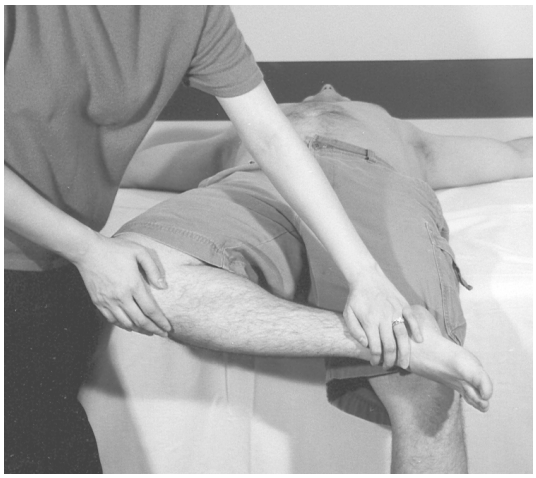
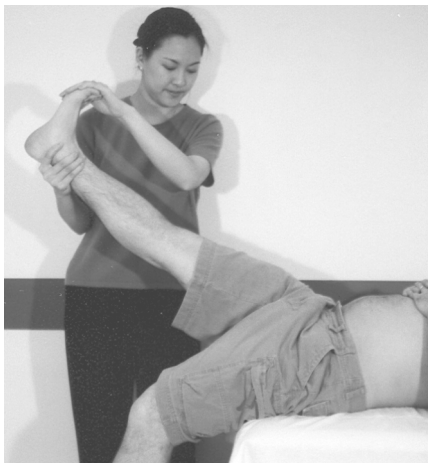


Fig 12

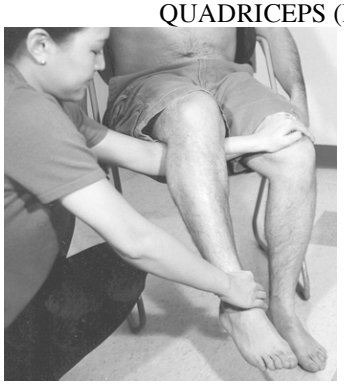


SLR test for nerve root irritation

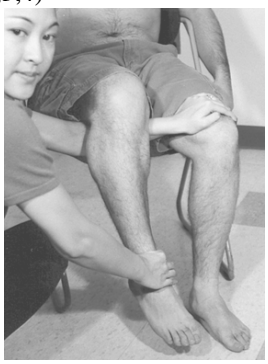
Motor Power:

Back lying lift thigh with knee bent with patient contracting hip extensors for S1

QUADRICEPS (Femoral; L2,3,4)



Initial Position

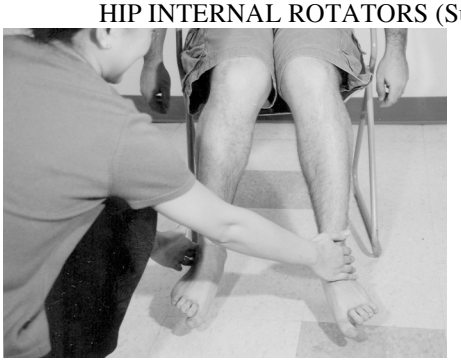


Final Position

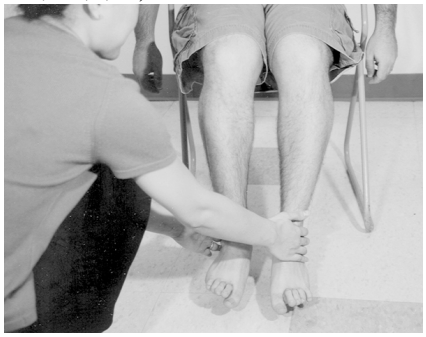
MUSCLE TESTING:

1. The patient sits with the hip and knee bent
2. With the knee in about 70° of flexion, the examiner grasps the patient's ankle and attempts to push the patient's knee into about 90° of flexion

HIP INTERNAL ROTATORS (Superior gluteal; L4,5,S1)



Initial Position

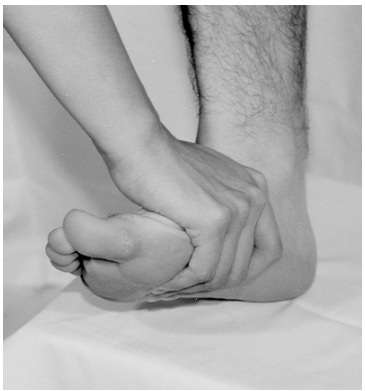


Final Position

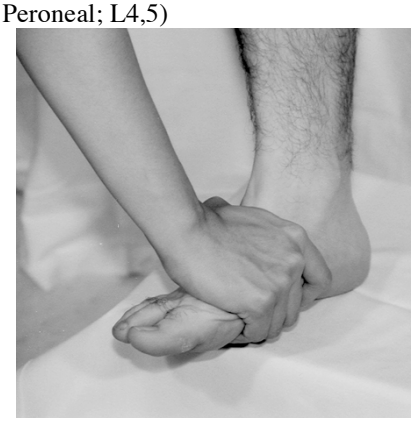
MUSCLE TESTING:

1. The patient sits with the hip and knee bent
2. The patient internally rotates the hips, the examiner grasps the ankles and pushes the feet together, forcing the hips out of internal rotation

TIBIALIS ANTERIOR (Peroneal; L4,5)



Initial Position

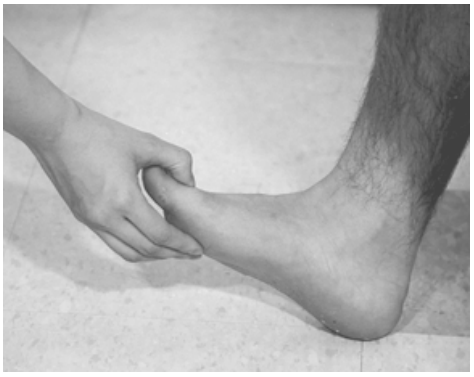


Final Position

MUSCLE TESTING:

1. The patient dorsiflexes the ankle
2. The examiner forces the foot into plantar flexion with the other hand

EXTENSOR HALLUCIS LONGUS (Peroneal; L5,S1)



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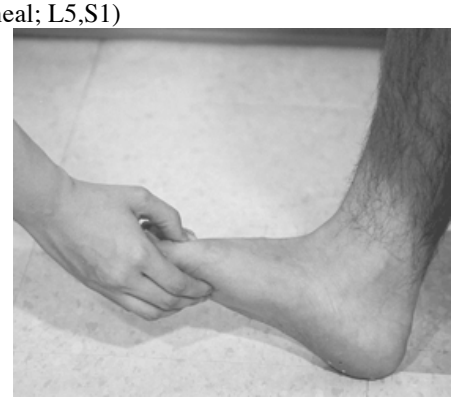


Final Position

MUSCLE TESTING:

1. The patient dorsiflexes the great toe
2. The examiner places fingers on the ball of the foot and pushes on the dorsum of the proximal phalanx with the thumb, forcing the great toe into plantar flexion

TIBIALIS POSTERIOR (Tibial; L5,S1)

MUSCLE TESTING:

1. The patient plantar flexes and inverts the
2. The examiner grasps the medial distal foot and pulls it into eversion.

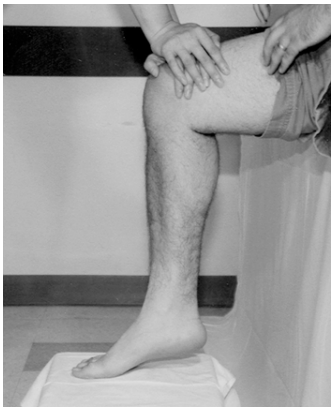
Be sure the tibialis anterior muscle does not contract by observing its tendon at the anterior medial ankle.

PERONEUS LONGUS/BREVIS (Peroneal; L5,S1)

MUSCLE TESTING:

1. The patient plantar flexes and everts the foot (Be sure of no dorsiflexion)
2. The examiner grasps the lateral distal foot and pulls it into inversion.

PLANTAR FLEXORS (Tibial; L5, S1,2)



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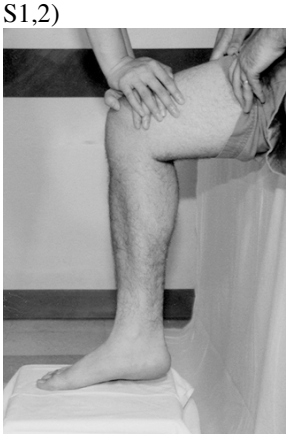
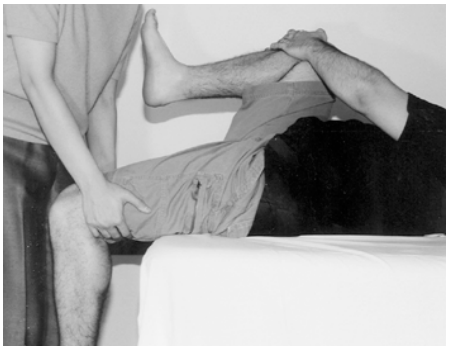


Final

MUSCLE TESTING -- Two methods

1. If the patient is able to stand, have patient rise on her/his ball of foot 5 times.
2. If patient unable to walk:
    a. Patient sits with foot on floor
    b. Have patient plantar flex with ball of foot on floor, elevating heel about 1 to 2 inches
    c. Examiner pushes forcefully on top of knee forcing the foot into plantar flexion

HIP EXTENSORS (Inferior Gluteal; L5, S1,2)



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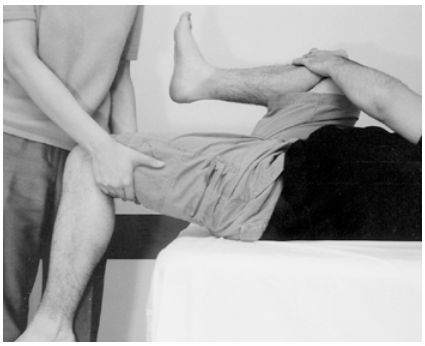
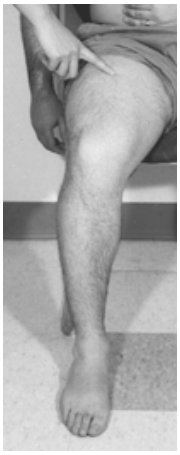


Final

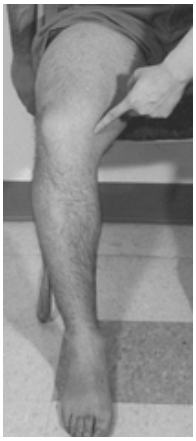
MUSCLE TESTING

1. Patient holds one knee to chest and forces the other hip into extension by contracting the gluteus maximus
2. The examiner pulls the hip into flexion

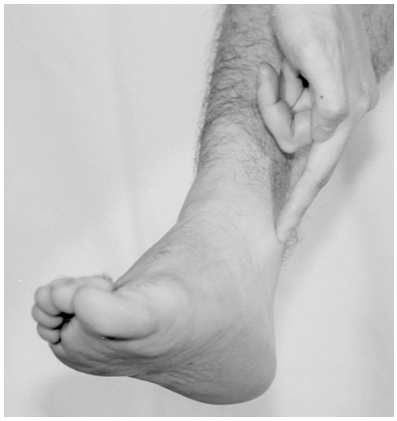
PIN / TOUCH



L2: midline of thigh, half way

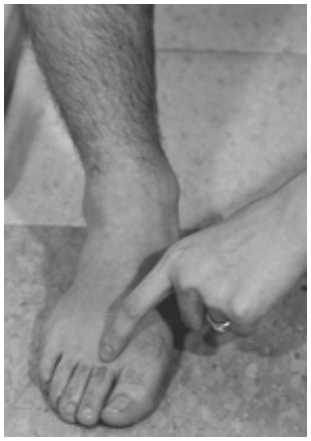


L3: medial epicondyle



L4: medial malleolus

between the inguinal ligament
and the patella

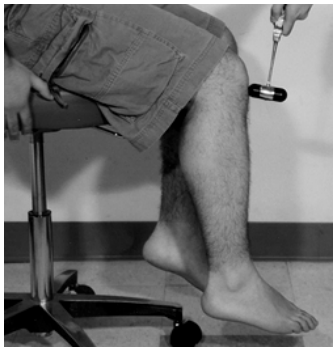


L5: Base of
second toe

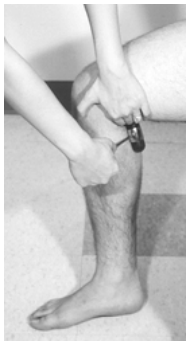
S1: Base of
little toe

VIBRATION / POSITION (Vibration split midline?)

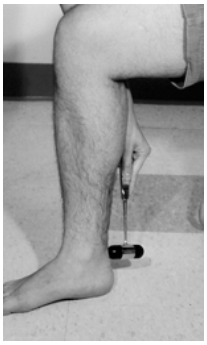
DEEP TENDON REFLEXES



L4: briskly tap the patellar tendon between the patella & the tibial tubercle & observe for knee extension or quadriceps contraction



L5: firmly compress the medial hamstring tendon with the fingers & briskly tap your fingers with the hammer & observe for contraction of hamstring tendon under the fingers



S1: briskly tap achilles tendon & observe for plantar flexion or contraction of the gastrocnemius

Babinski

Waddell Signs of Non-Organic. Spine 1980; 5: 117; We all use them some way
Superficial tenderness
Axial load on head or rotation without rotation of spine
Straight leg: Sit vs supine **(take issue with this)**
Sensory doesn't fit
Over-reaction

Weinstein J, LaMotte R, Rydevik B et al. Chapter 4 Nerve In Frymoyer JW, Gordon SL eds. New Perspectives on Low Back Pain. Park Ridge Il: American Academy of Orthopedic Surgeons 1989 pp 35-130

CHIEF COMPLAINT:

HISTORY: The patient has mild, moderate or severe, sharp or dull pain in the _____, associated with pain in_____, and with numbness, tingling and or burning in the _____. The symptoms began on _____, 19___, with (no) a history of an accident.

PMI & ROS: There is no past medical history and there are no symptoms referable to the cardiovascular, pulmonary, gastrointestinal, genitourinary, neurologic, musculoskeletal, integumentary, psychiatric or endocrine (diabetes) systems except for: There is no history of weight loss, malaise, fatigue, cancer, allergies, operations, smoking or drinking except for:

MEDICATIONS:

FUNCTIONAL HISTORY: The patient is independent in eating, bathing, dressing, cooking, cleaning the house and washing clothes but not:

SOCIAL HISTORY: The patient lives alone, or with _____, with the bed and bath on the _____ floor.

TRANSPORTATION: The patient drives his/her own car, is driven or takes public transportation.

WORK HISTORY: The patient has (has not) been out of work for this problem since _____.

FAMILY HISTORY: Unremarkable except for:

PHYSICAL EXAMINATION: The range of motion of the back, hips, knees are normal. There is no evidence of subluxation, swelling, increased temperature or erythema of any joint in the lower extremity. Gaenslens (no sacroiliac joint instability), fabere's, the reverse (femoral nerve stretch) and straight leg raising signs are normal except for _____ and the following tests are positive:

The motor power, pin and touch sensation, and deep tendon reflexes in the lower extremities and position and vibratory sensation in the great toes are normal except for _____. The toes are down (up) going on the (right and/or left) side.

	Motor Power		**Reflexes**		**Touch**		**Pin**		**Root**
	R	**L**	**R**	**L**	**R**	**L**	**R**	**L**	
Hip Flexors L2,3									L3
Hip Int Rot/Abd's L4,5,S1; Superior Gluteal									
Hip Extensors L5,S1,2; Inferior Gluteal									
Quadriceps L3,4; Femoral									L4
Medial Hamstrings L4,5,S1; Tibial									L5
Tibialis Anterior L4,5; Peroneal									
Extensor Hallucis Longus L5,S1; Peroneal									
Flexor Hallucis Longus L5,S1; Tibial									
Peroneus Longus/Brevis L5,S1; Peroneal									
Tibialis Posterior L5,S1; Tibial									
Gastrocnemius S1,2; Tibial									S1

IMPRESSION:

PLAN: