

Thigh, Hip, & Low Back Evaluation

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Thigh Injuries

- Quad contusions - *Myositis Ossificans*
- Trochanteric bursitis - “snapping hip”
- Ischial bursitis - “bench-warmer’s bursitis”
- Strains
- Fractures - femur, stress, apophysitis
- IT band friction syndrome – may predispose an athlete - leg length difference

Hip Injuries

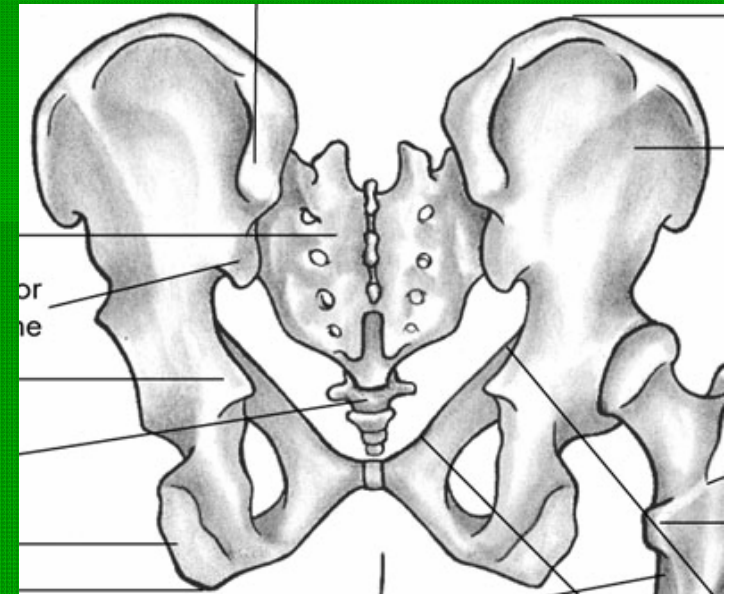
- Fractures – pelvis, ischial tuberosity (hamstring attachment)
 - Iliac crest contusion - *hip pointer*
 - Sprains – hip
 - Hip dislocation
 - *Posterior dislocation – lower leg position – adduction & internal rotation*
 - Piriformis syndrome –
 - Proximal insertion: sacrum
 - Distal insertion: medial aspect of greater trochanter
- *can compress sciatic nerve between ischium & greater trochanter if tight

Lowback Injuries

- Contusions, lacerations, subluxations, sprains, strains
- Disc & Neurologic Pathology
- Fractures - stress, apophysitis
- **Spondylosis**- arthritis or osteoarthritis of the vertebrae; results in pressures being placed on the vertebral nerve roots
- **Spondylolysis**- degeneration of a vertebral structure secondary to repetitive stress
 - most commonly affecting pars interarticularis but with no displacement of the vertebral body (Scotty dog)
- **Spondylolisthesis** - anterior slippage of vertebrae superior to pathological site; causes increased back pain upon extension

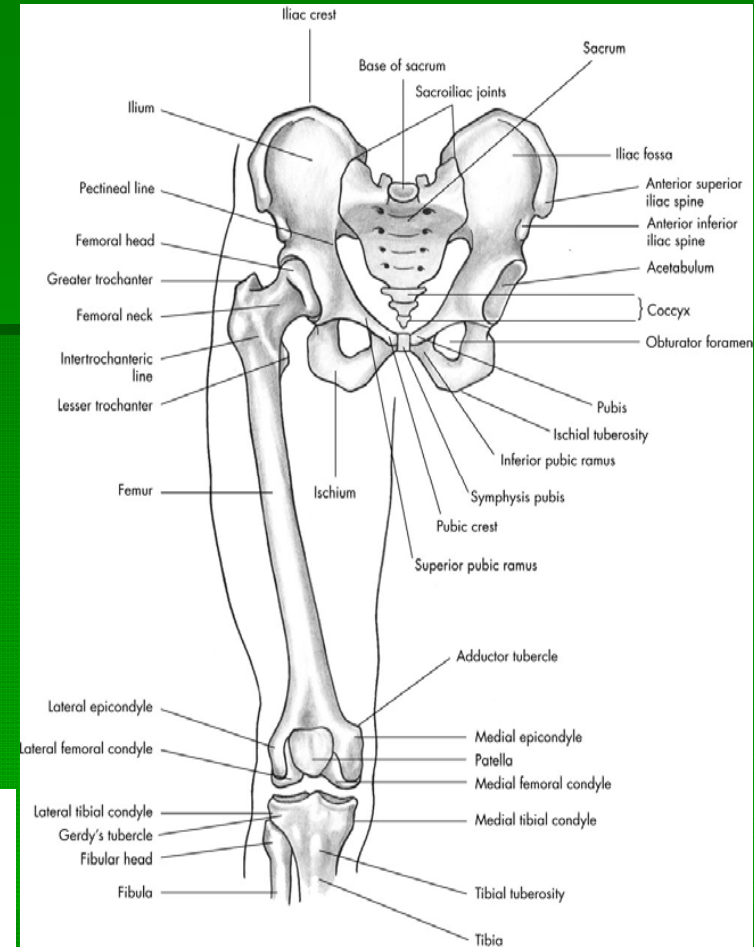
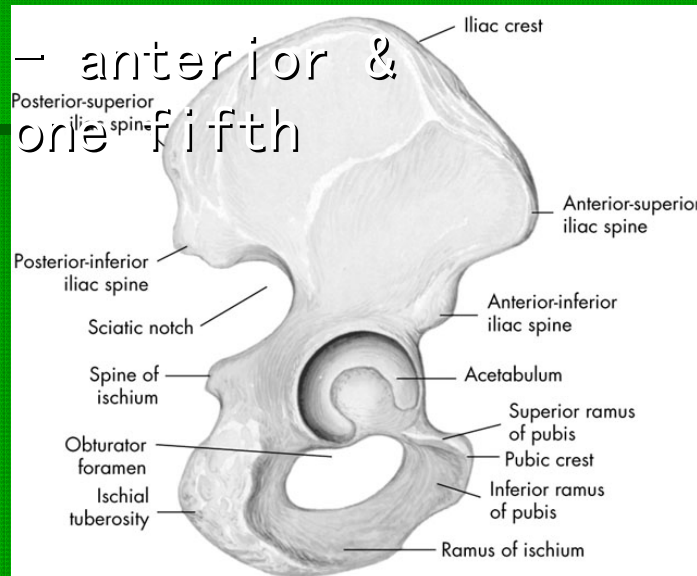
Anatomy

- Lumbar vertebrae (transverse processes, spinous process)
- Sacroiliac (SI) joints
- Capsule around the joint, bursa (trochanteric, ischial)
- Muscles
 - Erector Spinae, Adductors, Abductors, Hamstrings, Quadriceps, External rotators of hip
- Intervertebral discs
- Sacrum



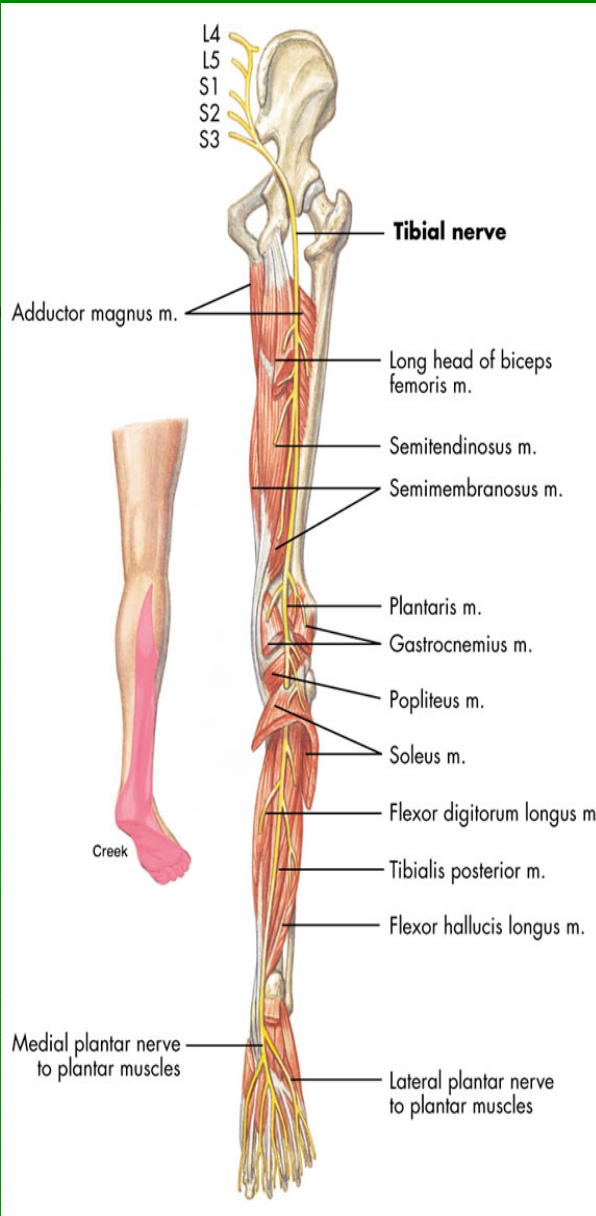
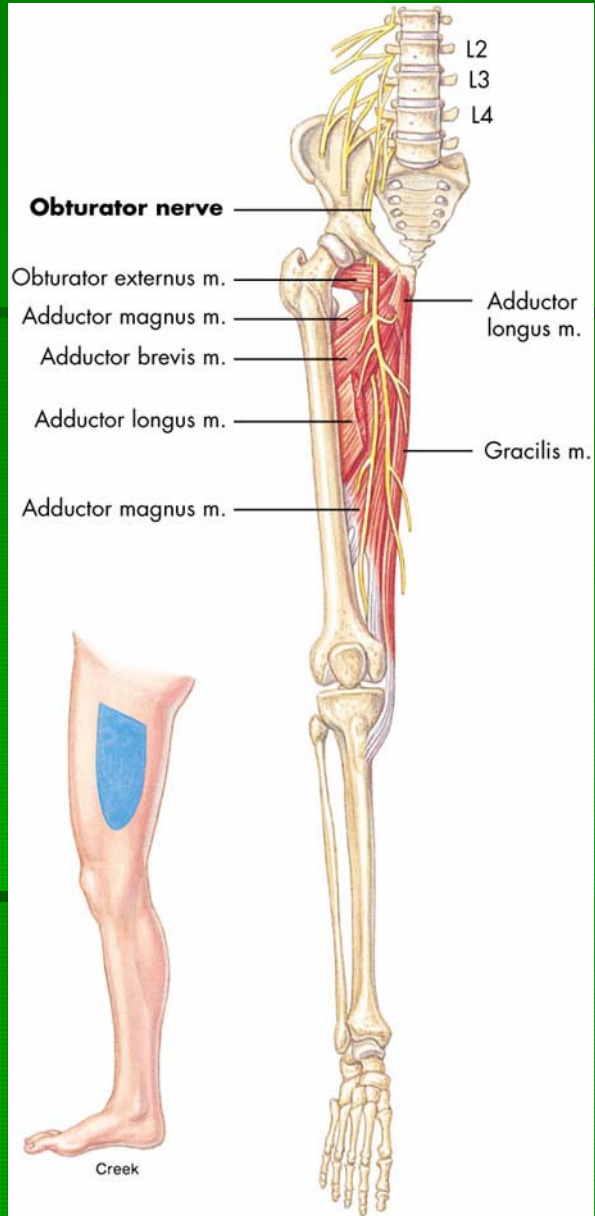
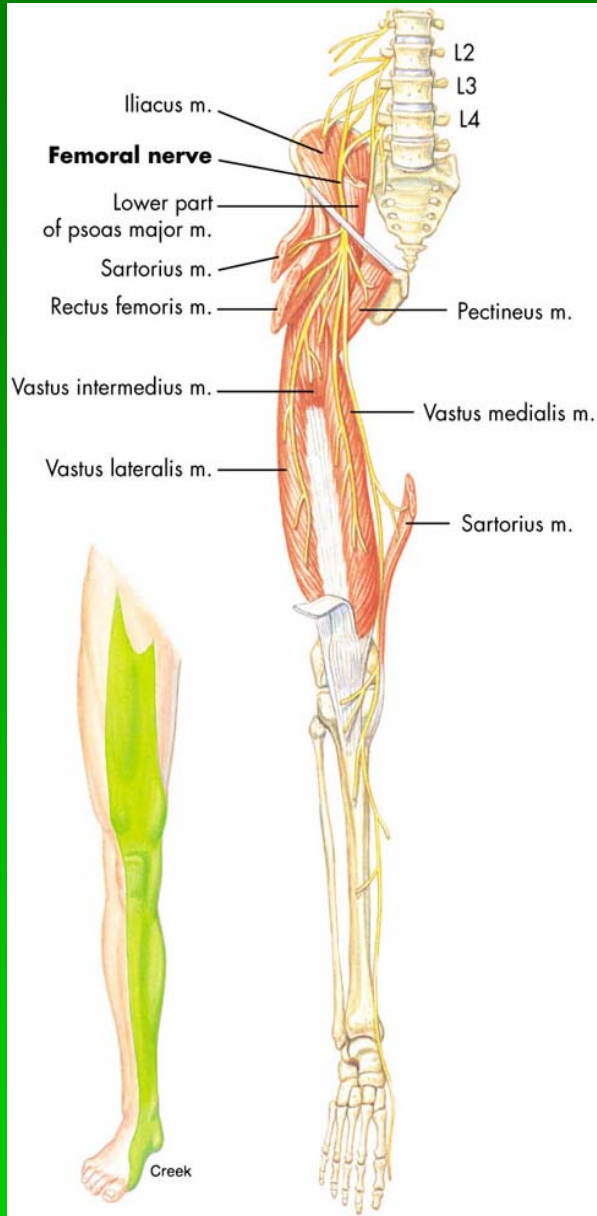
Anatomy

- Pelvic bone – divided into 3 areas
 - Ilium – upper two fifths
 - Ischium – posterior & lower two fifths
 - Pubis – anterior & lower one fifth
- Femur



Anatomy

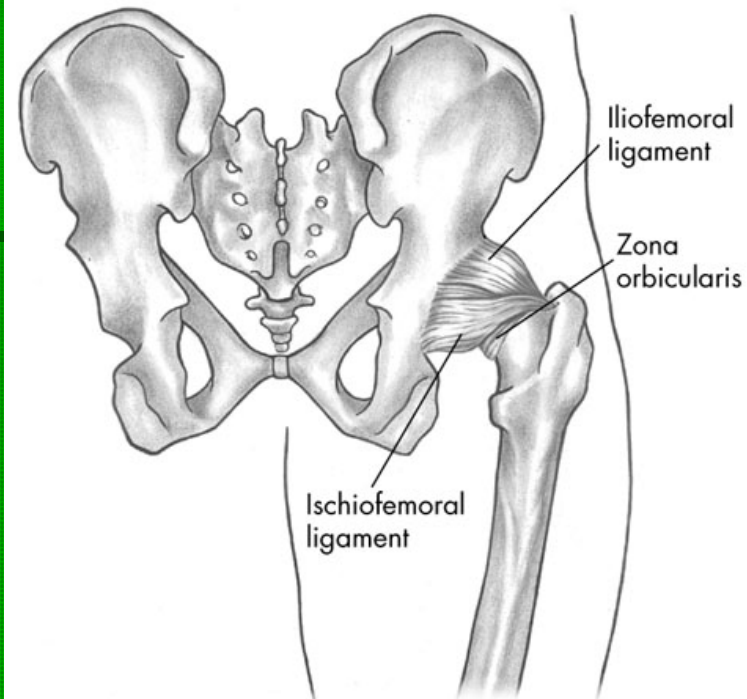
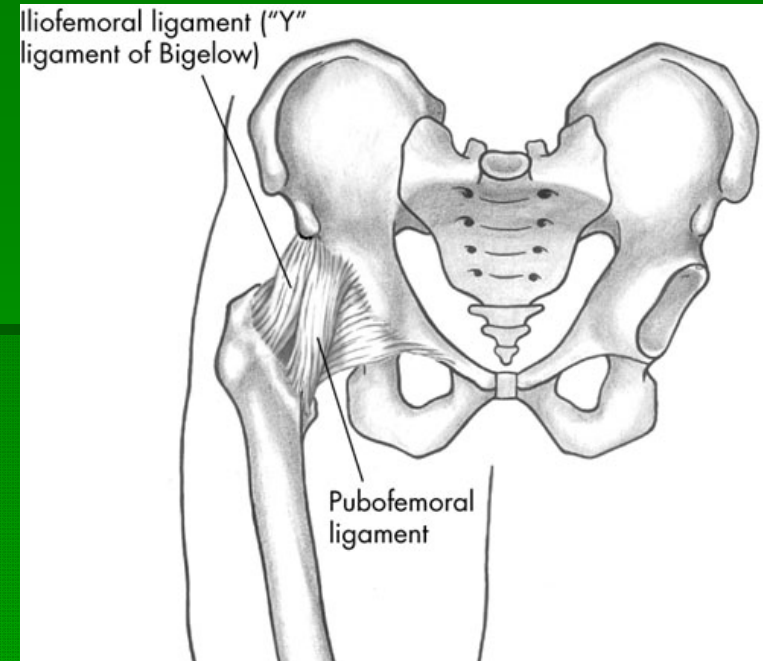
- Lumbar plexus (T12-L5, some say L3-S1)
- Femoral Nerve - L2, L3, & L4 n. roots converge
 - (anterior branches form Obturator n.)
- Sacral plexus (L4-S5)
- Sciatic n. – 1) Tibial n., 2) Common Peroneal n., 3) Slip of Tibial n. innervates hamstring
- Femoral Triangle – femoral n., femoral a. & v.
 - Sartorius – lateral edge
 - Adductor longus – medial edge
 - Inguinal ligament – superior edge



Anatomy

■ Ligaments

- Iliofemoral ligament (Y ligament of Bigelow)
 - Reinforces anterior joint capsule (limits hyperextension)
 - Keeps us upright
- Pubofemoral ligament
 - Limits abduction & hyperextension
- Inguinal ligament
 - Runs from ASIS to pubic symphysis
 - Superior border of femoral triangle



Evaluation - History

- MOI – *direct blow vs. overuse*
- Pain
 - Pain scale, Type, Location, Time, Consistency (constant/intermittent)
 - Radiating, numbness/tingling, burning, aching, throbbing
- Onset
 - Acute vs. Chronic
- Training Techniques
 - Changes in intensity, frequency, & duration of training, surface (terrain, hills), shoes
- Prior history
 - *Legg-Calve-Perthes disease – avascular necrosis of prox. femoral epiphysis*

Evaluation - Observation

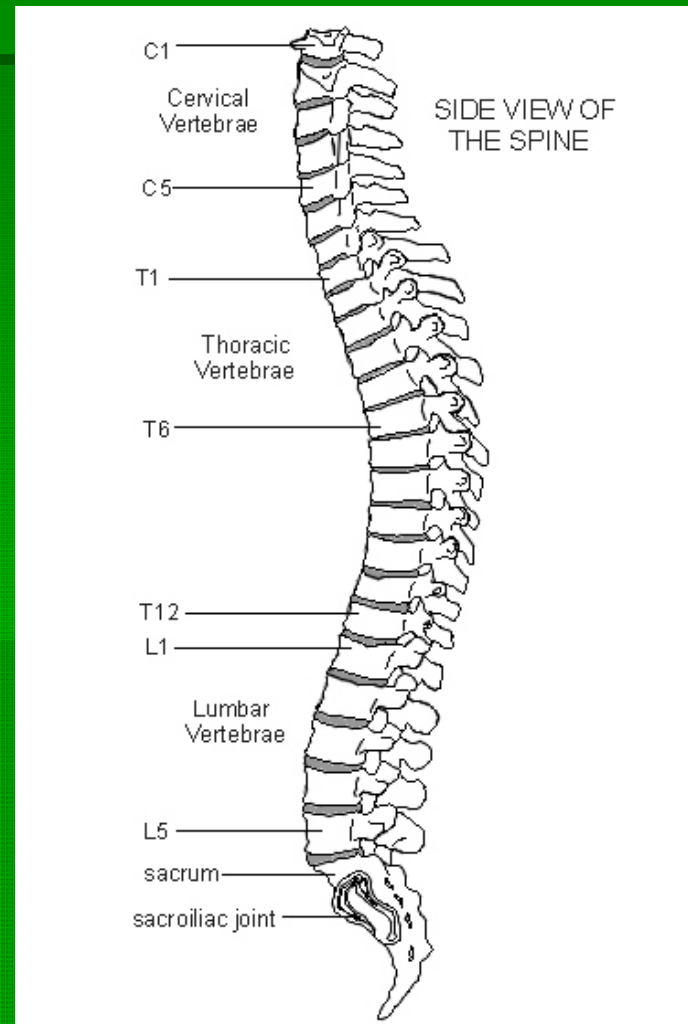
- Deformities
- Musculature
- Bony –
 - Nelaton's line - ASIS to ischial tuberosity
 - Hip angulations
 - Angle of Inclination – angular relationship between femur & tibia
 - Frontal plane
 - Coxa valga, coxa vara, patellar position
 - Normally 125° (♀ slightly ↓)
 - Angle of Torsion – relationship between femoral head & shaft
 - Transverse plane
 - Normally 15°
 - Anteversion: internal femoral rotation, toed-in gait (pigeon-toed), squinting patellae
 - Retroversion: external femoral rotation, toed-out gait (duck-footed), frog-eyed patellae

Evaluation - Observation

- Leg Length Discrepancy
 - True Leg Length – ASIS to medial malleolus
 - BONY
 - Apparent Leg Length – Umbilicus to medial malleolus
 - SOFT TISSUE
 - Greater than 1/4" difference is considered a discrepancy
- Level of iliac crest when standing
- Gait –
 - Level of iliac crest
 - ROM
 - Limp

Evaluation - Observation

- Spinal column curvature
 - Lumbar spine – Lordotic curve (sway back)
 - Thoracic spine – Kyphotic curve
 - Cervical spine – Lordotic curve (hunch back)
 - Lateral curve - scoliosis
- Pelvic Tilt



Evaluation - Palpation

- Use discretion when palpating in this region!
Provide privacy when palpating area!
- Bony
 - Step-off deformity of lumbar spine (spondylolisthesis)
 - T7 vertebrae – inferior angle of scapula
 - L3 – posterior from umbilicus
 - L4 – level of iliac crest
 - L5 – bilateral dimples (may vary)
 - S2 – PSIS level
- Femoral Triangle

Evaluation – Palpation Muscles

- Hip joint & pelvic girdle muscles
 - Anterior – primarily hip flexion
 - Iliopsoas
 - Pectineus
 - Rectus femoris
 - Sartorius
 - Medial – primarily hip adduction
 - Adductor brevis
 - Adductor longus
 - Adductor magnus
 - Gracilis
 - Posterior – primarily hip extension
 - Gluteus maximus
 - Biceps femoris
 - Semitendinosus
 - Semimembranosus
 - External rotators
 - Lateral – primarily hip abduction
 - Gluteus medius
 - Gluteus minimus
 - External rotators
 - Tensor fasciae latae

Evaluation

- ROM – active, passive, resistive (knee flex/ext)
 - Hip flexion – neutral to 120-130°
 - Hip extension – neutral to 10-20°
 - Hip abduction – neutral to 35-45°
 - Hip adduction – neutral to 30°
 - Internal rotation – neutral to 45°
 - External rotation – neutral to 50°
 - Trunk rotation, lateral bending, flexion, extension
 - Active – standing position
 - *Beevor's Sign* - Partial Sit-up (T5-T12 n. innervation)
 - Anterior, Posterior, Left & Right Lateral pelvic rotation
- True Leg Length Discrepancy Test
- Apparent Leg Length Discrepancy Test

Evaluation – Stress Tests

- Musculature tests
 - Trendelenburg's Test – gluteus medius
 - Thomas Test – hip flexor tightness
 - Rectus femoris vs. Iliopsoas
 - Ober Test – IT band
 - Noble's Compression Test – IT band
 - Ely's Test – Rectus femoris (PROM)

Evaluation – Stress Tests

- Ligamentous testing – no specific tests
- Neurologic testing –
 - Beevor's Sign – thoracic n. inhibition
 - Piriformis Test
 - Piriformis Syndrome – impingement of sciatic n. from spasm of piriformis
 - Resisted hip abd. while seated can duplicate pain caused by this syndrome
 - Straight Leg Raise (SLR) test – sciatic n. irritation *or* disc (Passive)
 - Well SLR test – disc (opposite side)
 - Increased Intrathecal Pressure
 - Valsalva test (maneuver) – herniated disc
 - Milgram test – disc (active double SLR)
 - Kernig's test or Kernig/Brudzinski test – disc (active SLR w/ knee extended)
 - 90-90 SLR
 - Slump test – sciatic *or* other neurologic
 - Quadrant test – nerve vs. facet

Evaluation – Stress Tests

- Neurological testing
 - Femoral Nerve Stretch Test - disc
 - Single Leg Stance Test – lumbar spine *or* SI area
- Lower Quarter (Extremity) Neurological Screen (p. 352)
 - Sensory testing L1- S2
 - Motor testing L1-S2
 - L1 & 2 – hip flexion
 - L3 – knee extension
 - L4 – dorsiflexion
 - L5 – great toe extension
 - S1 – plantarflexion
 - Reflex testing L4 (patellar tendon), S1 (achilles)
- Hip Scouring test – articular cartilage of femur or acetabulum, labral tear

Evaluation – Stress Tests

- Sacroiliac joint problems
 - SI Compression
 - SI Distraction
 - FABER(E) test
 - Gaenslen's test
 - Long Sit test – rotated ilium
 - March test
- Other
 - Spring Test - hyper/hypomobility
 - Hoover test – malingering

On-field Evaluation

- On-field Neurologic tests
 - History: MOI, location of pain, peripheral symptoms (pain, weakness, numbness)
 - Inspection: position, posture, willingness to move
 - Neurologic: sensory & motor tests
 - Palpation: bony & musculature