Hip - Anatomy

- Multiaxial ball & socket joint
- Acetabulum 1/2 sphere
- Femoral head 2/3 sphere
- Strong ligaments &
- Maximally stable
Anatomy

• Forces
• Standing - 0.3 times body weight
• Standing on 1 leg - 2.5 times body weight
• Walking - 1.3 to 5.8 times body weight
• Walking up stairs - 3 times body weight
• Running - 4.5+ times body weight
History

• Age
  – infancy: congenital hip dysplasia
  – 3-12 year old boys: Legg-Calve-Perthes Dz
  – middle age & elderly: osteoarthritis

• Mechanism of injury
  – land on outside hip
  – land on knee
  – repetitive loading
History

• Pain details
  – location
  – snapping
  – progression of symptoms
  – exacerbating factors
  – alleviating factors

• Weakness

• Occupation, Sport
Observation

- Gait
- Posture
- Balance
- Limb position
  - shortened, adducted, medially rotated
  - abducted, laterally rotated
  - shortened, laterally rotated
- Leg shortening
Examination

• **Active Range of Motion**
  - Flexion: 110 to 120 degrees

• Extension: 10 to 15 degrees
Examination

• Active Range of Motion
• Abduction: 30 to 50 degrees

• Adduction: 30 degrees
Examination

- Active Range of Motion
- External rotation: 40 to 60 degrees
- Internal rotation: 30 to 40 degrees
Examination

• Passive Range of Motion
  – Intra-abdominal inflammation may cause pain with passive medial & lateral hip rotation
  – Hip pathology indicated by groin discomfort and decreased ROM on medial rotation
  – Acetabular rim or labral problems with click and painful hip flexion, abduction, and medial rotation
Examination

• Strength testing
  – isometric
  – eccentric
  – knee extension
  – knee flexion
Examination

• Functional Testing
  – squatting
  – up & down stairs one at a time
  – crossing legs
  – up & down stairs two at a time
  – running straight ahead
  – running and decelerating
  – running and twisting
  – one-legged hop
Special Tests

• Patrick’s Test
  (Faber, Figure 4)
  – supine
  – foot on opposite knee
  – hip involvement
    iliopsoas spasm
    SI joint involvement
Special Tests

- Ortolani’s & Barlow’s
  - Assess for congenital dislocation of hips
  - Valid for first 6 months of life
  - Positive test is “clunck” not “click”
Special Tests

• Galeazzi Test
  – knees & hips flexed to 90 degrees
  – positive test: one knee higher

• Telescoping Sign
  – knee & hip flexed to 90 degrees, axial load and distraction applied
  – positive test: increased relative movement
Special Tests

• Leg length
  – true leg length discrepancy
    congenital maldevelopment
    trauma
  – functional leg length discrepancy
    scoliosis
Special Tests

• **Leg length**
• Measured from ASIS to medial malleolus
• Functionally measured
  – knees & hips flexed with thumbs on medial malleolus then knees and hips extended
Special Tests

- **Flexibility**
  - modified Thomas Test
  - assesses both hip flexor and quad flexibility
Special Tests

• **Flexibility**
  – Ober’s Test
  – assesses iliotibial band flexibility
Special Tests

• **Flexibility**
  - Piriformis Test
  - Assesses flexibility of piriformis muscle
  - “Piriformis Syndrome”
Special Tests

- **Flexibility**
  - Popliteal Angle
  - Assesses hamstring flexibility
Palpation

- Iliac crest
- ASIS
- PSIS

Greater trochanter
Ischial tuberosity
Diagnostic Imaging

- Radiographs
  - Anterior-Posterior view
  - Frog leg view
- CT
- MRI
- Arthrogram
Case Studies

• 7 year old boy with 5 week h/o limp
• Limp is more pronounced when he’s tired
• Complains of left knee pain
Case Studies

- 55 year old male with right hip & back pain
- He notes sciatica and groin pain
- Symptoms worsen with walking
- Very active lifestyle
Case Studies

• 18 year old female hurt her hip surfing
• Hip is medially rotated and shortened
• She notes sciatic pain
Case Studies

• 12 year old large boy with limp
• Fell from chair onto floor and complains of right knee and thigh pain