THE HIP

PTA 216
THE HIP

- Largest, most stable joint in the body
- Pathology is usually evident through a person’s gait pattern
- Must first be distinguished from lumbo-sacral pathology

Magee, 2008. pg. 659
Hip Joint

- Ball and socket joint
- Comprised of the rounded head of the femur and the articular surface of the pelvis

Dutton, 2012. pg. 477
Hip Joint

- Allows movement in all three planes
  - Sagittal: flexion and extension
  - Frontal: abduction and adduction
  - Transverse: internal and external rotation

Dutton, 2012. pg. 483
Motions of the hip

- Flexion: 110-120 degrees
- Extension: 10-15 degrees
- Abduction: 30-50 degrees
- Adduction: 25-30 degrees
- Internal Rotation: 30-40 degrees
- External Rotation: 40-60 degrees

Dutton, 2012. pg. 483
Hip

- **Closed-packed position:**
  - Full hip extension, external rotation, and abduction

- **Open-packed position:**
  - 10-30 degrees of flexion
  - 10-30 degrees of abduction
  - 0-5 degrees of external rotation

Dutton, 2012. pg. 119 and 484
Soft Tissue Injuries

Muscle strains of the hip most commonly affect:

* hamstrings
* iliopsoas
* adductors
* rectus femoris

Shankman, 2011. pg. 310
Treatment of Muscle Strains:

- Rest
- Ice
- Compression bandaging
- Possible crutches to decrease weight bearing status

Shankman, 2011. pg. 311
THERAPEUTIC EXERCISE

● What is our goal with TE?
  – Strengthen
  – Stabilize
  – Flexibility
  – Endurance
Bursitis

- Greater trochanter (trochanteric bursitis)
- Ischial tuberosity (ischial bursitis)
- Iliopsoas muscle/tendon (iliopectineal bursitis)

Dutton, 2012. pg. 498
Trochanteric Bursitis

- Most common for us as clinicians to treat
  - Common in the active population

This is caused by the Iliotibial Band “snapping” over the greater trochanter with movement.

Shankman, 2011. pg. 309
Dutton, 2012. pg. 498
Treatment Goals:

- Reduce pain and inflammation:
  - Rest
  - Ice
  - Restriction of activity
  - Anti-inflammatory meds
  - Stretching in pain free range

- Maintaining flexibility
- Strengthening
- Modalities PRN
- Modification of activity to prevent further irritation

Shankman, 2011. pg. 309
Iliotibial Band Syndrome

- ITB syndrome can cause hip pain (possibly in conjunction with greater trochanteric bursitis) and lateral knee pain.
  - lateral tracking of the patella
  - Commonly found as result of gluteus medius weakness
    - Common in runners (overuse/poor mechanics)
    - Adolescent females (increased Q angle during development)

Magee, 2012. pg. 746
Hip Fractures

Stable vs. Unstable

- **Stable** – fractures that maintain their positions following reduction
- **Unstable** – fractures that will return to their fractured position after reduction. These will require hardware to maintain positioning.

Shankman, 2011. pg. 314
Dutton, 2012. pg. 500
Open Reduction and Internal Fixation

- ORIF- surgical procedure in which the fracture is visualized, manually re-aligned into anatomical position and stabilized with fixation device of choice (pins, plates, wires, and/or screws)
  - Prevents non-union healing
Complications following a Hip Fracture

- Non-union of fracture
- Mal-union of fracture
- Neurological damage
- Blood clots
- Infection
- Pneumonia
DID YOU KNOW?

- We spend $19 billion annually on the care of hip fractures
- 50% of patients who lived independently prior to a hip fracture will never regain their independence
- One year mortality rates are between 15-20%
  - Of those who survive 15-25% will live in long-term care facilities at the end of one year
Labral Tear

- Labrum - ring of soft tissue that acts as a suction cup to hold the hip joint together
  - A tear can result in clicking or catching sensation deep in the joint
  - Most commonly, the tear would be removed with any loose fragments.

Magee, 2008. pg.660
Labral Repairs

- Surgical intervention in which the tear is anchored down with sutures.
  - Performed less often as there are possible post-surgical complications
HIP ARTHROPLASTY

- Arthroplasty: surgical reconstruction or replacement of a joint to restore function
  - All or part of a joint is replaced with metal or plastic prosthesis

Dutton, 2012. pg. 502
HEMIARTHROPLASTY

- Replacement of the femoral head with a prosthesis due to osteonecrosis and/or femoral head fractures
  - Requires normal acetabular surface
    - Rarely performed in persons with arthritis

Shankman, 2011. pg. 303
Bi-polar vs. Unipolar Femoral Prosthesis

- Bi-polar: large diameter femoral head over smaller diameter femoral head

- Unipolar: single piece prosthetic incorporating both the shaft and femoral head

Shankman, 2011. pg. 303
Total Hip Arthroplasty

- Replacement of both the femoral head and the acetabulum
  - Rheumatoid arthritis
  - Osteoarthritis
  - Fractures
  - Decreased ADL status
  - Pain

Shankman, 2011. pg. 303
Fixation of prosthetic devices

- Cemented: polymethylmethacrylate (PMMA), a material to use as a filler between bone and prosthesis
- Un-cemented: no filler is used between prosthesis and bone, usually in younger, more active population

Shankman, 2011. pg. 303
Rehabilitation following THA

- Follow protection phases as per MD direction
  - Maximal
  - Moderate
  - Minimal

- Maintenance of total hip precautions as necessary
Special Tests for the Hip
Noble Compression Test

- Patient lies in the supine position
- Examiner flexes the patient’s hip and the knee to 90 degrees
- Pressure is then applied to the lateral femoral epicondyle
- With pressure maintained, the patient’s knee is passively extended. Pain at approximately 30 degrees of flexion is a positive result

Konin, 2006. pg. 803
Hip Scour Test

- Patient lies supine with the examiner on the involved side. Tester passively flexes the patient’s knee and provides an axial load through the femur while performing a sweeping compression and rotation movement from external rotation through internal rotation.

Cook, 2013. pg. 381
PATRICK (FABER) TEST

- Patient lies supine on the plinth, then flexes, abducts, and externally rotates the involved leg until the foot of the involved leg rests on the knee of the uninvolved leg. The examiner then provides a gentle downward pressure on the knee of the tested side and the ASIS of the uninvolved side.

Cook, 2013. pg. 383
PATRICK (FABER) TEST

- A positive test is concordant pain near the anterior or lateral capsule of the hip.
TRENDELENBURG’S TEST

- The patient stands on one lower extremity and holds for 10 seconds prior to switching extremities.
- The examiner watches to see if the pelvis on the unsupported side drops noticeably lower than the pelvis on the supported side.

Konin, 2006. pg. 200
OBER’S TEST

- The patient is positioned in side lying with the hips and knees extended with the test leg superior to the non-test leg. The examiner is standing behind the patient with one hand stabilizing the pelvis and the other positioning the test leg into knee flexion.
- The pelvis is stabilized at the iliac crest and the test hip is abducted and extended to move the ITB behind the greater trochanter.
- Then slowly allow the leg to adduct towards the plinth.

Konin, 2006. pg. 203
OBER’S TEST

- A positive result is demonstrated when the tested leg reacts in a “springboard” fashion and the leg will remain abducted.
  - Caution is taken to ensure that the pelvis is stabilized throughout to prevent false negative
**FEMORAL NERVE TRACTION TEST**

- The patient lies on the uninvolved side with the hip and knee slightly flexed with the tester having one hand on the pelvis (involved side) and the other hand grasping the lower leg.

- Maintaining the spine in neutral, the pt slightly flexes the head while the tester fully extends the knee and extends the hip to 15 degrees, then flexes the patient's knee.

Konin, 2006. pg. 215
FEMORAL NERVE TRACTION TEST

- Patient reports of pain in the anterior thigh may indicate decreased mobilization of the femoral nerve.
Exercises for the Hip
Hip flexion with lunge
10 reps x 10 second hold
Hip flexor with quad stretch
10x10 seconds
Supine piriformis stretch
10 x 10 seconds
Hamstring stretch
10x10 seconds
Standing ITB stretch

10x10 seconds
Hip 4-way with resistance
3x 10 reps in each direction
Resisted external/internal rotation
3 x 10 reps each
Bridging
3 x 10 reps
Gluteus Medius strengthening

3x 10 reps
Hip hiking

3x10 reps
Double knee to chest

10x10 second hold
Bibliography

- Cook, Orthopedic Physical Examination Tests. Pearson. 2013