

Hip Injuries in the Athlete

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48th Annual
Symposium on Sports Medicine
January 22-24, 2021

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- I DO **NOT** have a financial interest/arrangement and/or an actual or potential conflict of interest in relation to this presentation



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OUTLINE

- Basic Hip Anatomy
- Athletic Hip Injuries
- Hip Exam
- Hip Impingement (FAI)
- Rehab

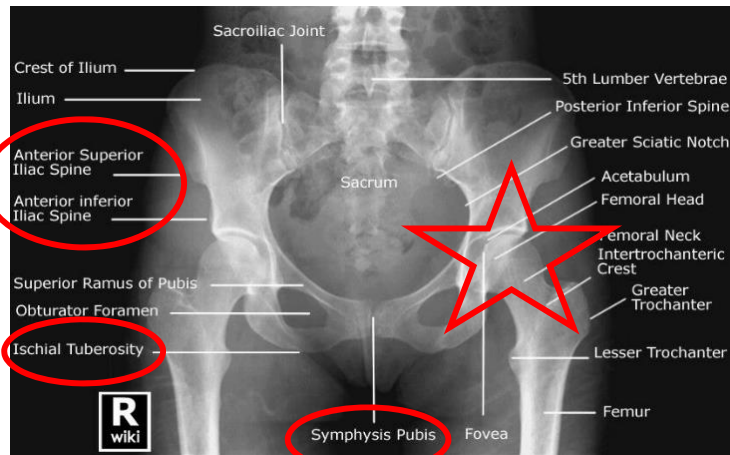


HIP ANATOMY

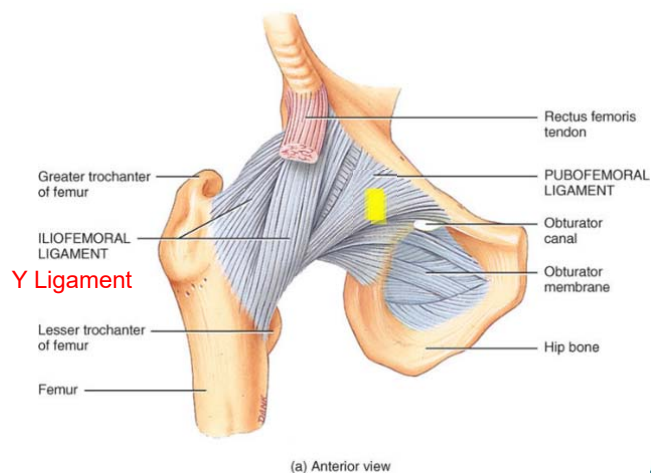
- Largest Weight Bearing Joint
- Femur and Pelvis (Ilium, ischium, pubis)
- Femoral head deeply recessed acetabulum
- Hip Surrounded by almost 30 muscles



HIP ANATOMY

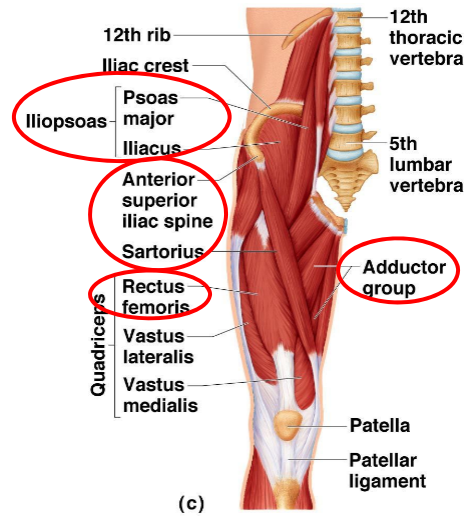


HIP LIGAMENT ANATOMY



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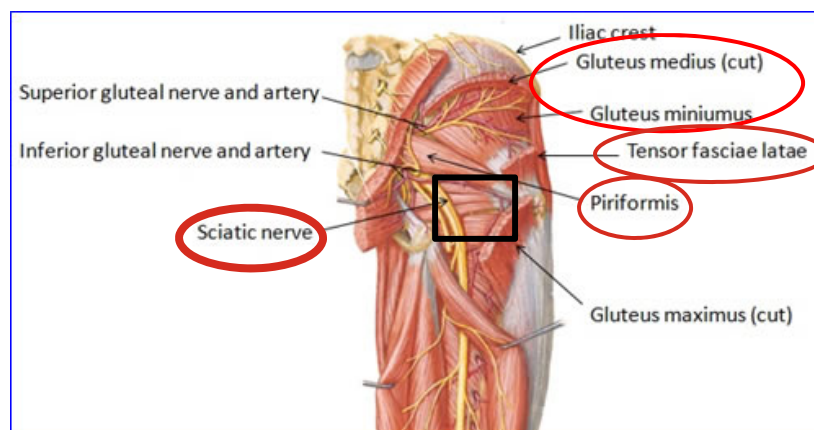
ANTERIOR MUSCLE ANATOMY



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POSTERIOR MUSCLE ANATOMY



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EXTRA-ARTICULAR SOURCES PAIN

- **ANTERIOR**

- Internal snapping hip
 - Tight IP - Thomas test
 - Flex-Abd-ER to a position of Ext-IR
 - +Stinchfield
 - Retroverted Acetabulum-FAI
- Osteitis Pubis
 - Palpate PS for tenderness
 - Stress fx, OA
- Sports Hernia or Inguinal Hernia
 - Tenderness over lower abdominal fascia
 - Pain with resisted sit-up
 - Referral to general surgeon



EXTRA-ARTICULAR SOURCES PAIN

- **LATERAL**

- External Snapping Hip
 - Tight ITB snapping usually standing hip abduction and flex/ext
 - Reproducible by patient
- Abductor weakness
 - + TTP bursitis
 - Weakness with resisted abduction
 - Ext-glut max
 - Knee flex glut medius
 - Hip flexion glut minimus
 - Profound weakness-MRI for tear



EXTRARTICULAR SOURCE PAIN

POSTERIOR:

- Piriformis syndrome
 - TTP piriformis
 - Pain with resisted Abd/ER hip
 - Sciatic nerve sx with radiating pain
- Proximal Hamstring
 - TTP ischial tuberosity
 - Pain with flexed hip and ext knee
 - Pain with resisted knee flex
- Sacroiliac Joint Dysfunction
 - + FABER
 - +TTP
 - CT scan to assess arthritis: diagnostic injection



MISCELLANEOUS SOURCES PAIN

- Lumbar pathology
 - Full Neuro exam LE
- Knee sources pain
- Hyperlaxity
 - Hip microinstability
- THINGS NOT TO MISS
 - Hip stress fracture
 - Female, recent increase in activity
 - Hip infection



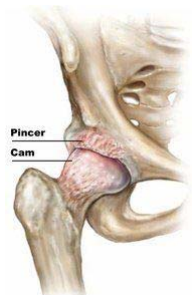
INTRAARTICULAR SOURCE PAIN

- Labral Tear/Chondral injury
- FAI-Hip impingement
 - CAM
 - Pincer
 - Combined
 - Subspine
- Osteoarthritis-older patient
- Loose body
- Ligament Teres Tear



FAI - CAM IMPINGEMENT

- Bimodal Distribution:
 - 70%: Young 20 yo male 3.1:1
 - Middle age Male 1.9:1
- Non-spherical femoral head
- Early cartilage delamination followed by labral tear
- Loss of hip IR: FADDIR
- MRA to assess labral tear and cartilage damage



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IMPINGEMENT Test

Hip Flexed to 90 degrees
Adducted and Internally
Rotated

- Reproduces groin pain
- limited internal rotation




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CAM IMPINGEMENT INCIDENCE

- 95% of 134 asymptomatic hips with radiographic evidence of CAM or combine Pincer abnormality in Collegiate Football players¹
- 69% incidence of labral tears in asymptomatic volunteers²
- **CONCLUSION:** high incidence abnormality in asymptomatic patients- Not everyone needs surgery but if symptomatic large CAM and young would recommend

1. Kapron et al. JBJS 2011.
2. Phillipon et al AJSM 2012.


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INDICATIONS FOR SURGERY

- Prolonged and significant hip pain > 3 months
- Failed non-operative management, activity modification, therapy for maintenance of hip motion, addressing secondary muscular dysfunction, hip add/abd and core strengthening
- >2mm joint space---No osteoarthritis (Tonnis grade 1 or less)

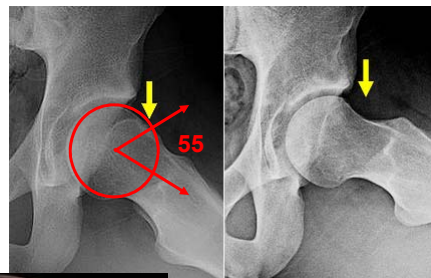
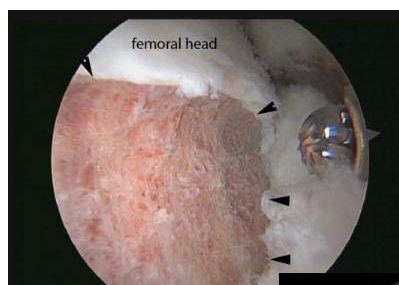
Philippon AJSM 2014

5 year minimum follow-up showed 86% of those ≤ 2 mm joint space had converted to THA

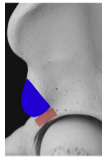
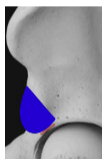

- No dysplasia



CAM IMPINGEMENT



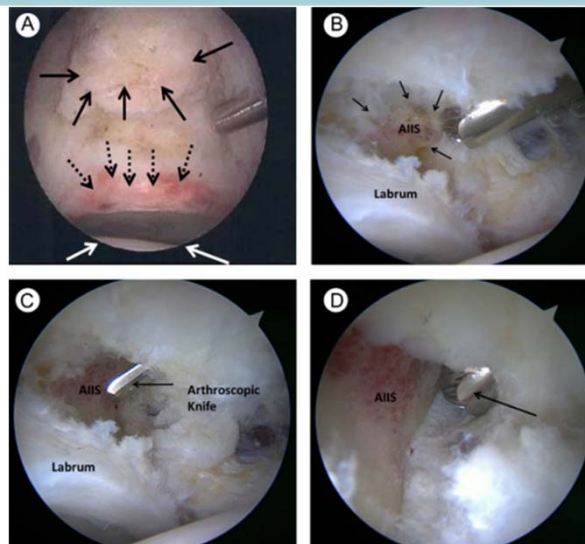
SUBSPINE IMPINGEMENT

Type	Description	Example
I	Smooth ilium wall without bony prominences between the caudad level of the AIIS and the acetabular rim	
II	Bony prominence on the ilium wall extending from the caudad area of the AIIS sits just at the level of the acetabular rim	
III	The AIIS extends distally to the anterosuperior acetabular rim	



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SUBSPINE IMPINGEMENT



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PHYSICAL THERAPY

- Strengthen muscle imbalance
- Increase flexibility
- Maintain range of motion
- Decrease the associated inflammation.
- Physical therapy will not heal a labral tear
- Muscular training and activity modification- the condition may become asymptomatic and therefore require no surgery.
- Core strengthening: with core weakness can have overactivation of hip flexors with increased pressure anterior hip joint “sway back position”



HSS REHABILITATION PROTOCOL

- **Goal: Functional-based [Not Time]**
- **Phase 1**
 - The protective phase
- **Phase 2**
 - The independence phase
- **Phase 3**
 - The recreational phase
- **Phase 4**
 - Return to play



Edelstein, Ranawat et al. CRMM 2012



HSS REHABILITATION PROTOCOL

Phase 1: The Protective Phase

- **Linear 0-4 Weeks**
- **The goal is to**
 - Reduce extremity edema
 - Gently progress hip ROM
 - Regain normal neuromuscular firing



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Phase 2: The Independence Phase

- **Linear: 4–8 weeks**
- **Goal: achieve independence in ADL**
- **Ambulate for long distances**
- **Reciprocate 8 in. steps up and down with good pelvis and hip control**



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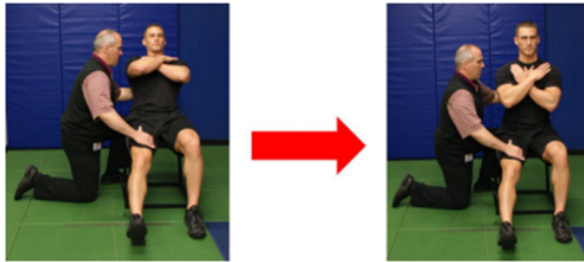
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Phase 2: The Independence Phase

- Eccentric Psoas Training



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Phase 2: The Independence Phase

- Three Point Step with Elastic Band



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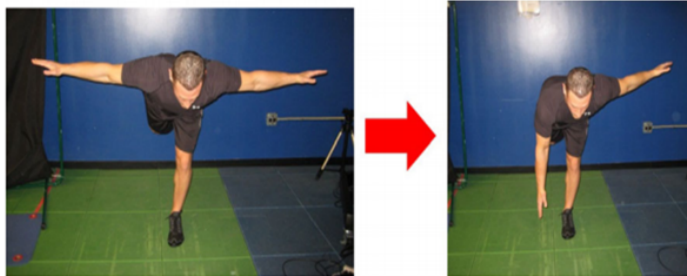
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Phase 2: The Independence Phase

- **Windmill:** Stance leg is the affected leg. Alternating arm movements creates dynamic stability over the loaded hip



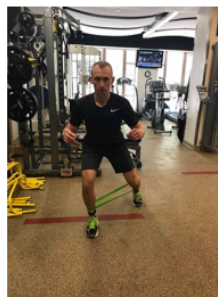
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Phase 3: The Recreational Phase

- **Linear:** 8–12 weeks
- **Goal:** recreationally asymptomatic.
- **Strength and endurance,** precursors to being able to functionally control one's own body weight in space



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Phase 3: The Recreational Phase

- **Lawn Mower:** Unilateral stabilization over the operated leg against resistance moving from hip flexion to neutral hip extension



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Phase 4: Return to Play

- **Linear:** 12-16 weeks
- **Goal:**
 - Return to a pain free competitive state
 - Avoid both breakdown and any type of an acute inflammatory response
- **Errs to the side of caution**



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Phase 4: Return to Play

- **Completely recovered**
 - Consistently and painlessly repeat the movement responsible for the mechanism of injury.
- **Micromanaged**
 - Highest level of activity in months



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