

# A Pain in the Butt: Rehabilitation for Hip Pathologies

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**360**  
sports  
medicine

A PROGRAM OF  
Rady  
Children's  
Hospital  
San Diego

# Objectives

- I. Identify differential diagnoses for hip pain
- II. Identify common hip pathologies
- III. Select key elements of a hip pain evaluation/examination
- IV. Understand the relationship between the foot, core and hip as related to hip pain
- V. Explain femoral acetabular impingement
- VI. Introduce protocol for rehabilitation of femoral acetabular impingement

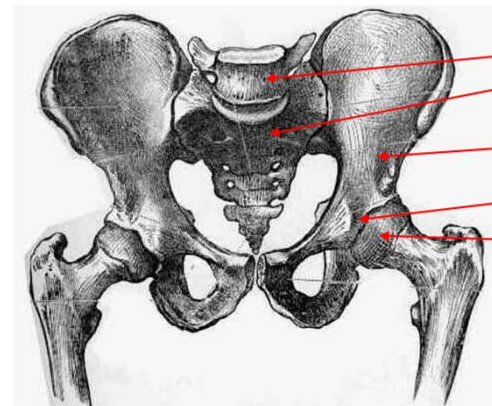
# 360 Sports Medicine

- Collaborative care for medical, surgical, rehabilitative, preventative and sports enhancement services
- 27 ortho/sports PTs at 5 sites
- Physical therapists' roles:
  - Post-operative rehabilitation
    - First post-operative visit and PT evaluation conducted with surgeon and PT present when possible
  - Non-operative injury rehabilitation
  - Injury prevention workshop
  - Community outreach to educate athletes, parents, trainers and coaches



# Differential Diagnosis for Hip Pain

- **Sacroiliac dysfunction**<sup>1</sup>
  - Anterior or posterior innominate rotation
  - Ilium inflare or outflare
  - Upslip or Downslip
  - Sacral torsion
  - Flexed or extended sacrum
- **Lumbar spine involvement**<sup>1</sup>
  - Discogenic pathology
  - Spondylolysis or spondylolisthesis
  - Radiculopathy and/or neural impingement
  - Lumbar paraspinal muscle strain
- **Red flags for hip pain related to hip pathology**<sup>2</sup>
  - Presence of a limp
  - Groin pain
  - Limited internal hip rotation



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# Common Hip Pathologies

- Trochanteric bursitis
- Iliotibial band tightness/friction disorder
- Piriformis syndrome
- Labral tear
- Avulsion fracture
  - Anterior inferior iliac spine
  - Iliac crest
- Muscle strain
- Femoral acetabular impingement



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# Key Elements for Hip Examination

## ➤ History

### ▪ Identify

- Mechanism of initial injury
- Movements that reproduce symptoms
- Sport involvement
- **Foot wear (shoes, orthotics, etc.)**



# Key Elements for Hip Examination

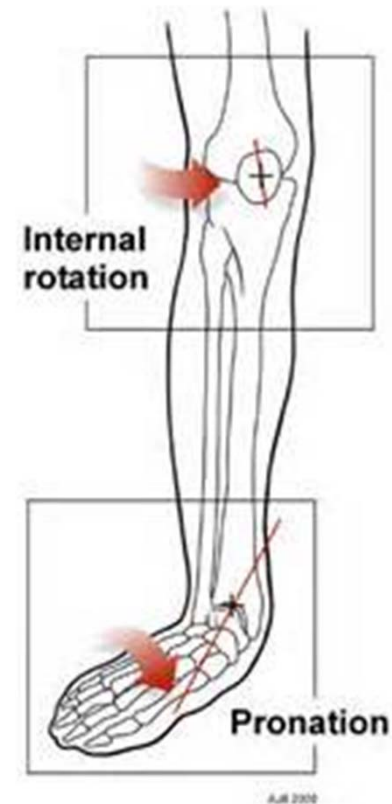
## ➤ Objective Measures

- **Postural screen**
  - Sagittal, frontal and transverse plane assessment
- Palpation
- Range of motion (ROM)
- Flexibility
  - Hamstrings, quadriceps, piriformis, iliotibial band/tensor fascia lata, gastrocnemius/soleus
- **Strength**
  - **Core, gluteus medius, gluteus maximus**, gluteus minimus, quadriceps, hamstrings, gastrocnemius
- Special tests
  - Rule out low back and/or sacroiliac diagnoses
  - Determine hip diagnosis
- **Functional screen**
  - **Double leg squat, single leg squat/dip, heel raise, functional step up, double leg jump, single leg jump, walk, run**



# Linking the Foot and Hip

- **Postural assessment finding → Excessive subtalar pronation <sup>5</sup>**
  - **Causes of:**
    - Ligamentous laxity at the ankle joint
    - Weak hip abductors
    - Poor mechanical alignment of lower limb during high impact activities
  - **Results in:**
    - Tibial internal rotation
      - Induces a compensatory femoral internal rotation
    - Genu valgum
      - Increases Q angle
    - Femoral anteversion





# Linking the Foot and Hip

- **Treatment for excessive pronation**
  - **Orthotic management**
    - Demonstration
  - **Posterior tibialis strengthening (isolated)**
    - Towel curl
    - Wiper
    - Big toe push
  - **Gluteus medius strengthening (isolated)<sup>23</sup>**
    - Clam
    - Side-lying hip abduction
    - Single leg bridge
    - Lateral band walk
    - Single leg squat
- **Link increased isolated strength to functional skills to change movement patterns**



# Linking the Core and Hip

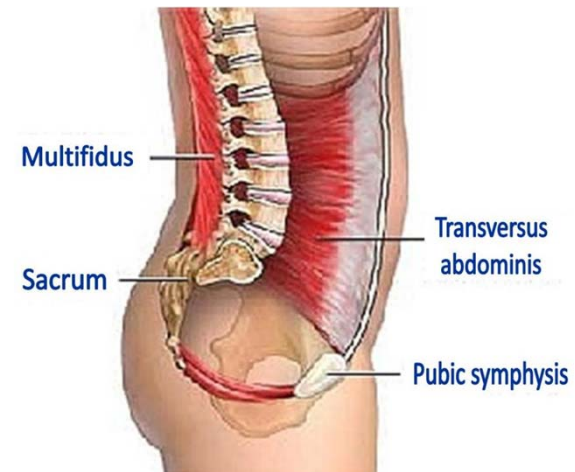
- **“CORE”** does not mean **“Six-pack”**

- Four parts of the core:

- I. Diaphragm
- II. Pelvic floor
- III. Transverse abdominus
- IV. Multifidus

- Function of the core

- Stabilize lumbar spine
  - Increase stability and control for functional skills
  - Generate increased power for functional skills

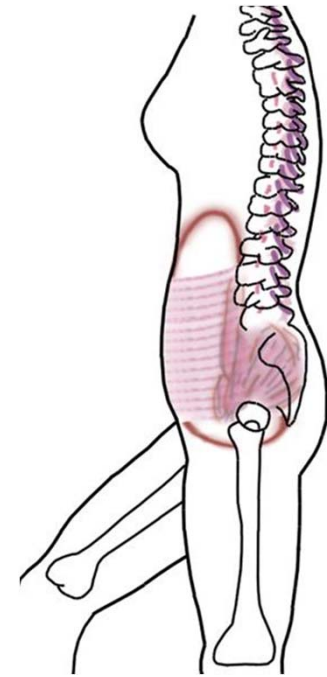


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# Linking the Core and Hip

## ➤ Core stabilization will:

- Decrease overuse of hip flexor tendons
- Reduce lumbar extension to keep the body operating in neutral
- Improve balance and control
- Reduce asymmetrical loading at the hip joint



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# Femoral Acetabular Impingement <sup>9</sup>

*“Femoral acetabular impingement is a pathological condition leading to abutment between the proximal femur and the acetabular rim.” <sup>9</sup>*

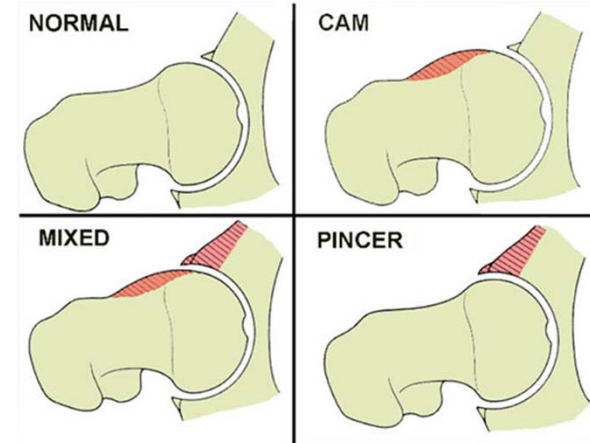
## Two Types:

### I. Pincer lesion

- Soft tissue abnormality = Excessive coverage of the acetabulum
  - Repetitive contact of the over-covered acetabulum rim and femoral neck with hip flexion and/or internal rotation will create impingement.

### II. CAM lesion

- Bony abnormality= Non-spherical femoral head
  - Repetitive contact with hip flexion and/or internal rotation will create impingement due to the abnormal femoral head shape.



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# Femoral Acetabular Impingement<sup>9</sup>

## Current non-operative management

- Discontinuation of sport
- Avoid repetitive hip flexion and internal rotation
- Non-steroidal anti-inflammatory agents
- **??? Physical Therapy ???**



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According to Banerjee, et al.,

*“Surgical intervention is a more realistic option. Physiotherapy has no role in the management of FAI and hence not recommended.”*

# Protocol for Non-Operative Femoral Acetabular Impingement

## Protocol for Non-Operative Femoral Acetabular Impingement

- *Purpose: To determine if physical therapy is effective as a non-operative treatment for FAI*

### GOALS:

- 1. Reduce pain at affected hip to 0-2/10 on the Numeric Pain Scale<sup>12</sup> with:**
  - *Repetitive transitions from supine → sit, sit → stand and stand → sit over at least 10 minutes*
  - *Ambulation on varied terrain (i.e. flat ground, grass, sand or incline) for at least 20 minutes*
  - *Seated position for at least 60 minutes*
  - *Run and/or jog for at least 30 minutes*
  - *Sport specific tasks like cut, jump and pivot for at least 30 minutes*

# Protocol for Non-Operative Femoral Acetabular Impingement

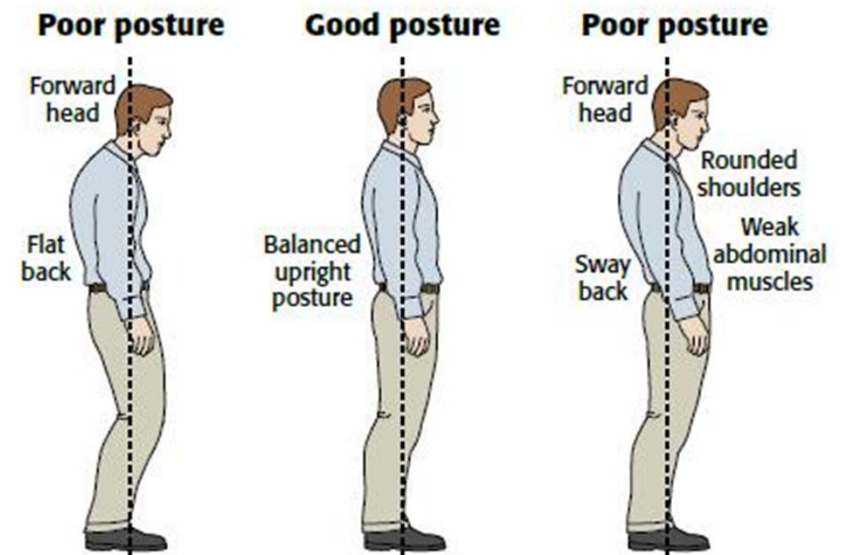
## 2. Return patient to prior level of function without the need for surgical intervention through:

- *Improved postural alignment to locate neutral spine and improve body awareness*
- *Increased strength and endurance of core stabilizers* <sup>13,14</sup>
  - Achieve a 4/5 on the Double Straight Leg Test and maintain neutral alignment for 60 seconds in prone plank
- *Increased strength and endurance of proximal hip muscles (i.e. Gluteus medius, Gluteus maximus, Gluteus minimus)* <sup>15,16,17</sup>
  - Achieve a 5/5 on Manual Muscle Testing (MMT)<sup>18</sup> and perform 10 consecutive single leg dips
- *Increased flexibility of lower extremity muscles that have attachments at the hip and/or pelvis*<sup>19</sup>
  - Meet all standards outlined for the flexibility tests

# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Posture<sup>13,14</sup>

## BEGINNER-ADVANCED

- Train the patient to achieve neutral spine
  - I. Address all postural deviations with home program exercises.
- Lumbo-pelvic mobility training
  - I. Hook-lying pelvic tilt anterior → posterior and posterior → anterior
  - II. Quadruped cat/camel
  - III. Standing pelvic tilt anterior → posterior and posterior → anterior
  - IV. Squat with anterior pelvic tilt



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# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Core Stabilization<sup>13,14</sup>

## BEGINNER

- Transverse abdominus (TrA) recruitment
  - I. Breathing with abdominal draw in maneuver
- Multifidus (MTF) recruitment
  - I. Prone posterior pelvic tilt with unilateral lower extremity elevation
- TrA & MTF engagement with lower and/or upper extremity movement
  - I. Single knee fall out
  - II. March
  - III. Heel slide
  - IV. Contralateral upper extremity and lower extremity extension



# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Core Stabilization<sup>13,14</sup>



## INTERMEDIATE

- Bird-dog
  - I. Upper extremities only
  - II. Lower extremities only
  - III. Contralateral upper and lower extremity
- Plank
  - I. Weight bear through hands and toes
  - II. Weight bear through elbows and toes
- Swiss ball kneeling upper extremity roll-out

# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Core Stabilization<sup>13,14</sup>

## ADVANCED

### ➤ Rotational stability activities

#### I. Seated

- Stable surface
- Unstable surface

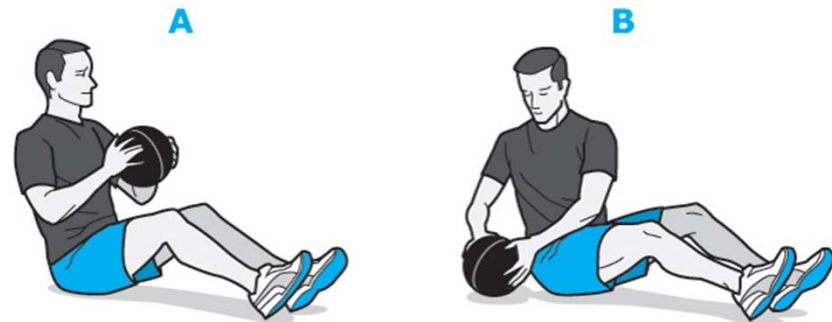
#### II. Kneeling

- Stable surface
- Unstable surface

#### III. Standing

- Stable surface
- Unstable surface

### ➤ Rotational mountain climbers

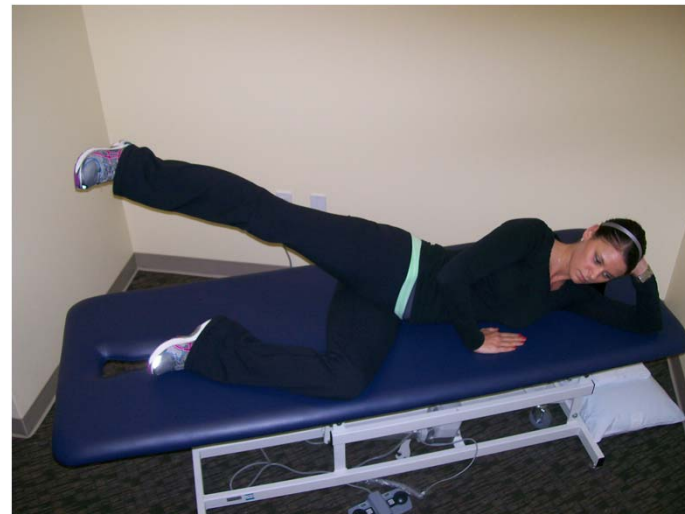


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# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Proximal Strengthening<sup>15,16,17</sup>

## BEGINNER

- Clamshell  
(hip flexed 30 degrees)
- Side-lying hip abduction  
(hip extended 30 degrees)
- Double leg bridge



# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Proximal Strengthening<sup>15,16,17</sup>

## INTERMEDIATE

- Standing single leg balance (hip flexed to 20 degrees)
  - I. Maintain neutral pelvis with no movement
    - Stable surface
    - Unstable surface
  - II. Maintain neutral pelvis with hip abduction, extension, and flexion
    - Stable surface
    - Unstable surface
    - Progress to resisted
- Lateral band walks (knees and hips 30 degrees of flexion)
- Lunges (<90 degrees hip flexion)
  - I. Forward
  - II. Lateral
  - III. Transverse
- Single leg bridge



L2

I cropped the picture, which will allow you more space to increase font.

Laura, 6/21/2013

# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Proximal Strengthening<sup>15,16,17</sup>

## ADVANCED

- Single leg squats
- Single leg deadlift
- Double and single limb plyometrics (specific to PLOF)
  - I. Forward
  - II. Lateral
  - III. Transverse
- Agility drills
  - I. Forward
  - II. Lateral
  - III. Transverse



# Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Lower Extremity Flexibility<sup>19</sup>

## STATIC STRETCHING

- Hamstring
- Gastrocnemius
- Piriformis
- Quadriceps
- Iliotibial band
- Hip adduction
- Double knee to chest



## DYNAMIC STRETCHING

- Toy Soldier
- Hip internal rotation
- Hip external rotation
- Butt kicks
- High knees
- Spider walk
- Inch Worm





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- Linda Heartness, Administrative Associate
- Eric Julienne, Rehabilitation Aide
- Physical Therapy Team



**ANY QUESTIONS???**

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