

# Protocol for Non-Operative Femoral Acetabular Impingement

## **GOALS TO BE MET IN 6-WEEKS:**

- **Reduce pain at affected hip to 0-2/10 on the Numeric Pain Scale (Appendix A) 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.*
- **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>1,2</sup>
    - *Achieve a 4/5 on the Double Straight Leg Test (Appendix B)<sup>3</sup> 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>4,5,6</sup>
    - *Achieve a 5/5 on Manual Muscle Testing (MMT) (Appendix C)<sup>7</sup> and perform 10 consecutive single leg dips (Appendix D).*
  - *Increased flexibility of lower extremity muscles that have attachments at the hip and/or pelvis.*<sup>8</sup>
    - *Meet all standards outlined for the flexibility tests (Appendix E).*

## **THERAPEUTIC EXERCISES FOR POSTURE**<sup>1,2</sup>

### BEGINNER-ADVANCED

1. Train the patient to achieve neutral spine
  - a. Address all postural deviations with home program exercises.
2. Lumbo-pelvic mobility training
  - a. Hook-lying pelvic tilt anterior → posterior and posterior → anterior
  - b. Quadruped cat/camel
  - c. Standing pelvic tilt anterior → posterior and posterior → anterior
  - d. Squat with anterior pelvic tilt

## THERAPEUTIC EXERCISES FOR CORE STABILIZATION <sup>1,2</sup>

### BEGINNER

1. Transverse abdominus (TrA) recruitment
  - a. Breathing with abdominal draw in maneuver
2. Multifidus (MTF) recruitment
  - a. Prone posterior pelvic tilt with unilateral lower extremity elevation
3. TrA & MTF engagement with lower and/or upper extremity movement
  - a. Single knee fall out
  - b. March
  - c. Heel slide

### INTERMEDIATE

1. Bird-dog
  - a. Upper extremities only
  - b. Lower extremities only
  - c. Contralateral upper and lower extremity
2. Plank
  - a. Weight bear through hands and toes
  - b. Weight bear through elbows and toes
3. Swiss ball (SB) kneeling upper extremity roll-out

### ADVANCED

1. Rotational stability activities
  - a. Seated
    - i. Stable surface
    - ii. Unstable surface
  - b. Kneeling
    - i. Stable surface
    - ii. Unstable surface
  - c. Standing
    - i. Stable surface
    - ii. Unstable surface
2. Rotational mountain climbers

## THERAPEUTIC EXERCISES FOR PROXIMAL STRENGTHENING: <sup>4,5,6</sup>

## BEGINNER

1. Clamshell (hip flexed either 30 or 60 degrees)
2. Side-lying hip abduction to 30 degrees
3. Double leg bridge

## INTERMEDIATE

1. Standing single leg balance (hip flexed to 20 degrees)
  - a. Maintain neutral pelvis with no movement:
    - i. Stable surface
    - ii. Unstable surface
  - b. Maintain neutral pelvis with hip abduction, extension, and flexion
    - i. Stable surface
    - ii. Unstable surface
    - iii. Progress to resisted
2. Lateral band walks (knees and hips 30 degrees of flexion)
3. Lunges (<90 degrees hip flexion)
  - a. Forward
  - b. Lateral
  - c. Transverse
4. Single leg bridge

## ADVANCED

1. Single leg squats
2. Single leg deadlift
3. Double and single limb plyometrics (specific to PLOF)
  - a. Forward
  - b. Lateral
  - c. Transverse
4. Agility drills
  - a. Forward
  - b. Lateral
  - c. Transverse

## THERAPEUTIC EXERCISES FOR LOWER EXTREMITY FLEXIBILITY: <sup>8</sup>

### STATIC STRETCHING

1. Hamstring
2. Gastrocnemius
3. Piriformis
4. Quadriceps
5. Iliotibial band
6. Hip adduction
7. Double knee to chest

### DYNAMIC STRETCHING

1. Toy Soldier
2. Hip internal rotation
3. Hip external rotation
4. Butt kicks
5. High knees
6. Spider walk
7. Inch Worm

**A: Numeric Pain Scale:** Numeric scale, 0-10, for subjective pain report. (0= no pain, 10= worst Imaginable pain)

**B: Double Straight Leg Raise Test:**<sup>3</sup>

To assess core strength on a graded scale of 0-5. Place a stabilizer cuff beneath lower lumbar spine and inflate to 40 mmHg. Patient will be supine and examiner will bring his/her legs to 90 degrees of hip flexion. Examiner will release the legs as patient slowly lowers the legs. Patient is graded at the angle where the pressure is below 40 mmHg.

5: 0-15 degrees

4: 16-45

3: 46-75

2: 75-90

1: unable to hold posterior pelvic tilt

**C: MMT Testing:**<sup>7</sup>

Graded on 10-point +/- scale ranging from 0-5.

5: Normal (100%) – Complete ROM against gravity with maximal resistance

4: Good (75%) – Complete ROM against gravity with moderate resistance

3+: Fair (+) – Complete ROM against gravity with minimal resistance

3: Fair (50%) – Complete ROM against gravity

3-: Fair (-) – Some but not complete ROM against gravity

2+: Poor (+) – Initiates motion against gravity

2: Poor (25%) – Complete ROM gravity eliminated

2-: Poor (-) – Initiates motion if gravity is eliminated

1: Trace – Evidence of slight contractility but no joint motion

0: Zero – No contraction palpated

Testing positions outlined below.

Gluteus Medius: Sidelying with leg in 10-15 degrees of hip extension in neutral rotation

Gluteus Maximus: Prone with 90 degrees knee flexion and 10 degrees hip extension

Gluteus Minimus: Sidelying with leg in 10-15 degrees of hip flexion in neutral rotation

**D: Single Leg Dips:** Line chair to popliteal fossa. Patient must perform 10 consecutive dips with butt tap on surface. Maintain good alignment without genu valgum, Trendelenburg or instability. Activity must be pain-free.

**E: Flexibility Special Tests:**<sup>8</sup>

-Hamstrings: Passively flex the hip to 90 degrees. Maintain hip at 90 degrees flexion. Passively extend the knee as far as possible. Hamstrings are restricted if lacking greater than 20 degrees of knee extension.

-Thomas test (Rectus femoris, iliopsoas and iliotibial band (ITB): Negative test will be indicative of prior rectus femoris, iliopsoas and ITB length.

-Ober's Test (Iliotibial band): Negative test will be indicative of proper ITB length.

-Piriformis: In supine passively flex the hip to 90 degrees and externally rotate the leg. Piriformis is restricted if lacking greater than 40 degrees.