Current Techniques in Hip Mobility

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Differential Diagnosis of Hip Pain

Classification	Potential Etiologies
Location	
Lateral hip pain	Greater trochanteric bursitis
	Gluteus medius dysfunction
	Iliotibial band syndrome
	Meralgia paresthetica
Anterior hip pain	Osteoarthritis
	Hip flexor tendinopathy
	Iliopsoas bursitis
	Hip fracture
	Stress fracture
	Acetabular labral tear
	Avascular necrosis of humeral head
Posterior hip pain	Referred from lumbar spine
	Sacroiliac joint dysfunction
	Hip extensor or rotator strain
	Proximal hamstring rupture
	Piriformis syndrome

Medial hip pain	Groin pain
Location about joint	
Intra-articular	Labral tears
	Loose bodies
	Femoroacetabular impingement
	Capsular laxity
	Ligamentum teres rupture
	Chondral damage
Extra-articular	Iliopsoas tendonitis
	Iliotibial band
	Gluteus medius/minimus
	Greater trochanteric bursitis
	Stress fracture
	Abductor strain
	Piriformis syndrome
	SI joint pathology

Layer Concept

Use a systematic approach to examine each layer

Determine impairments at each layer

Treatment will likely need to address multiple layers

Layer Concept

Layer I

Osseous

- Femur, Acetabulum, Innominate

Layer II

Inert

- Capsule, Labrum, Ligamentous Structures

Layer III

Contractile

- Musculature

Layer IV

Neuromechanical

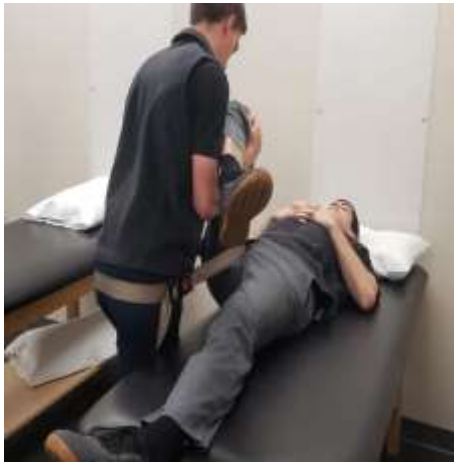
- LE and trunk mechanics, referred pain

Layer I & II

- **Structures/Pathology**
  - FAI
  - Acetabular labrum
  - Capsule
- **Assessment**
  - Hip rotational ROM
    - 75% of variance in hip IR ROM in “high” flexion can be attributed to α angle, acetabular coverage, and femoral version
    - Greater hip IR → greater femoral antetorsion and acetabular anteversion
    - Greater hip ER → greater femoral retrotorsion and acetabular retroversion
- **Intervention**
  - Hip mobilizations

Audenaert AJSM 2012
Chadayammuri JBJS 2016

Layer I & II Intervention



Layer III

- **Structures/Pathologies**
  - Gluteals
  - Hamstrings
  - Adductors
  - Deep External Rotators
  - Psoas/Hip Flexor
- **Assessment**
  - Supine Straight Leg Raise
  - Thomas Test
  - Ober's*
  - Pain provocation using palpation, stretch, and resistance testing
- **Intervention: Glute Activation**
  - Tall kneeling
  - Bridging
  - Unilateral Bridging
  - DL squatting
  - SL squatting w/ posterior toe tap [or] UE assist
  - SL squatting

	Best for NM control & local endurance	To reduce TFL activation	Functional/High Load PRE
Glute Med	• S/L Plank w/ hip Abduction • Reverse Clamshell • Front Plank w/ Hip Extension • SL bridge	• Standard Clamshell • Side Step • *SL Bridge	• Crossover Step Up • Walking Lunge w/ contralateral load • Side Step • SL RDL • Skater Squat • SL Mini Squat • Lateral Step Up
Glute Max	• Front Plank w/ Hip Extension • S/L Plank w/ Hip Abduction • Bird Dog w/ LE extended [or] flexed • *SL bridge	• Standard Clamshell • Side Step • *SL Bridge	• Crossover Step Up • Hip Thrust • Rotational SL Squat • Skater Squat • SL Squat • Lateral Step Up

Layer III Exercises

Nordic Hamstring Exercise

- Biceps femoris long head fascicle length increases after eccentric but not concentric training
- Nordics result in 13-24% increase in biceps femoris long head fascicle length across 4- to 10-week training period

Layer III Exercises

Hamstring Exercises Continued

Lengthened, eccentrics > **Not lengthened, conventional**

Layer III Exercises

Adductor Strengthening Programme



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Layer IV

- **Structures/Pathologies**
  - Sciatic N
  - Femoral N
  - Lumbar spine
- **Assessment**
  - Gait, double leg squat, double leg RDL, single leg stance, SL squat, SL RDL, forward step up or step down
    - looking for: foot progression angle, pelvic drop, genu valgum
- **Intervention**
  - Pelvic dissociation
  - Nerve glides
  - Hip Mobility

Layer IV Exercises

- **Motor Learning Component**
  - Improvements in hip flexibility do not carry over to "functional movement"
  - Motor learning principles (OPTIMAL theory of motor learning)
    - External focus of attention
    - Autonomy
    - Enhanced expectations

Layer IV Exercises

- **Pelvic Dissociation**
  - Cat/Cow
  - Split squat & DL squat w/ dowel
  - Pelvic tilts seated on PB
  - Good morning/hip hinge w/ dowel
  - Table RDL
  - SL RDL w/ dowel
- **Hip Mobility Flow** -
  - World's greatest stretch
- **Nerve glides**
  - Femoral
  - Sciatic

Layer IV Exercises








Layer IV Exercises- World's Greatest Stretch






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Thank You

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