Interaction of Movement & Morphology: better function follows better movement

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Morphology

Cam

Pincer

Femoroacetabular Impingement

Syndrome (FAI)

Hip Pain

Acetabular Labral Tear



Dysplasia



Morphology Hip Pain Movement









Modifying movement improves function



Lacrosse player

Modifying movement: Recreational runner

- 31 yo female
- Right anterior hip pain





Corrected



Lewis, Khuu & Marinko, 2015



Verbal cues to change posture during gait



Preferred: 6/10



Corrected: 2/10

Verbal cues to change posture during gait



- Swayback:
 - Greater peak hip extension
 - Higher hip flexion moment
- Forward flexed:
 - Less hip extension angle
 - Lower hip flexion moment











Modifying movement improves function



Return to running

- Shorten stride to reduce hip extension
- Lean forward to reduce hip flexion moment
- Push off from the ankle to reduce hip moments and forces
- Treadmill running:
- Movement modifications, not activity modification or elimination

Modifying movement: Lacrosse player

- 15 yo female athlete
- Right hip pain
- Right mild dysplasia



- 15 yo female athlete
- Right hip pain
- Right mild dysplasia
- Backward rotation of the pelvis
 > Hip external rotation
- Pelvic drop & hip adduction
- Knee valgus





- 12 physical therapy visits over 2 months
- Neuromuscular control of trunk, pelvis and lower extremity
- Progressed to functional activities
- Return to sport





Modifying movement: Soccer goalie

- 16 yo female athlete
- Bilateral FAIS (L > R)





- Poor control
- Trunk shift & rotation
- Hip adduction -
- Trunk, hip flexion -



- Poor control
- Trunk shift & rotation
- Hip adduction
- Trunk, hip flexion





- Poor control
- Hip adduction and medial rotation
- Knee valgus



 Physical therapy to address control and strength deficits
 → returned to sport



Movement matters







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