Connecting the Spine and Hip

SHARING ALL MY KNOWLEDGE AND EXPERIENCE FROM TWO DECADES WORKING IN PROFESSIONAL SPORT

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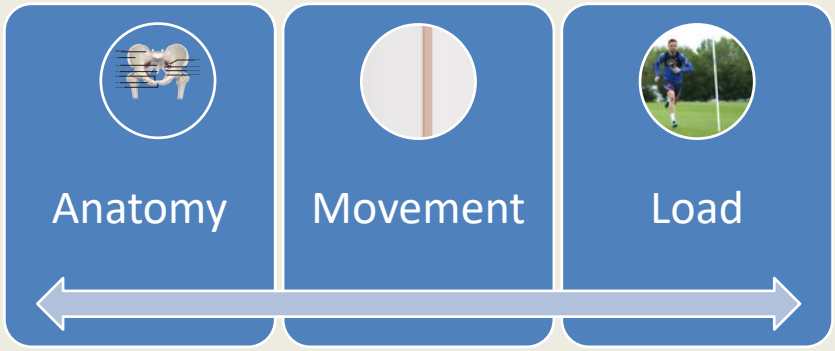
Factors to consider with every patient



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Influence of sport on anatomy

- Hip and groin pathology more prevalent in athletes who participate in rotational sports (Harris-Hayes et al. 2009)
- Hip impingement plays a major role in limiting hip function however, myofascial influence is less understood (Kennedy et al. 2009)
- Recent developments in research have changed this opinion (Mottram et al. 2019; Todd et al. 2019)

Understand the influence of movement

Kinematics of the ***hip*** and ***pelvis*** during ***sport specific*** tasks like kicking, a single leg drop landing and a change of direction task are ***different*** in athletes with groin injury when compared to athletes without (Severin et al. 2017; Janse van Rensburg et al. 2017; FranklynMiller et al. 2016)

The pelvis is considered one of the ***central segments assisting in proximo-to-distal sequencing*** of high-speed body movements (Shan & Westerhoff 2007; Zajac 2002)

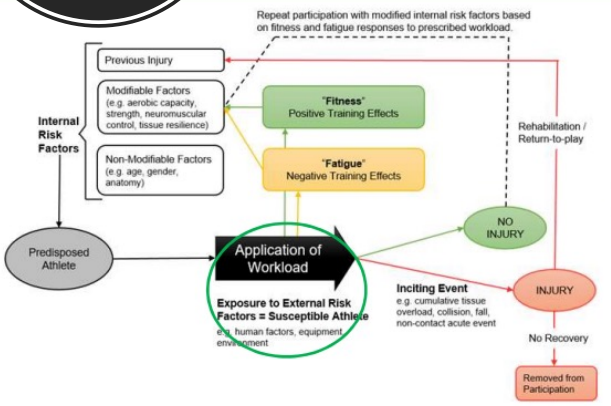
Impaired pelvic movement may ***reduce*** athlete performance and induce a ***higher risk*** of ***recurrence*** and chronicity of groin injury (Waldén et al. 2015)

Restoring APT should be considered part of rehabilitation for injured athletes as it allows ***mechanical energy transfer*** during sports actions (Naito et al. 2012)

Kinematics of the hip change with lateral hip pain, increased contralateral pelvic drop, in late stance and greater contralateral trunk lean in early stance (Allison et al., 2016). This leads to alterations in motor control due to abductor weakness with a greater contribution from the TFL muscle (Allison et al., 2018)

Influence of workload

Workload-Injury Aetiology Model



*Load is the vehicle that drives athletes to **or from** injury...*

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Spine

- Disc ruled out: ROM Flex –ve SLR (sensitivity 97%) slump testing (sensitivity 83%) [1]
- Facet ruled out: ROM Ext/Rot –ve (sensitivity 100%) [2]
- SIJ ruled out: thigh thrust test (sensitivity 88%) [3]

1. Deville L et al. 2000. The test of lasegue: systematic review of the accuracy in Dx herniated discs. Spine 25:1140-1147
2. Laslett M, McDonald B, Aprill CN, Tropp H, Öberg B. Clinical predictors of screening lumbar zygapophyseal joint blocks: development of clinical prediction rules. *Spine J*. 2006;6:370-379.
3. Laslett M, Aprill CN, McDonald B, Young SB. Diagnosis of sacroiliac joint pain: validity of individual provocation tests and composites of tests. *Man Ther*. 2005;10:207-218.

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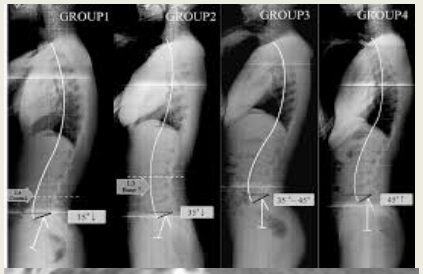
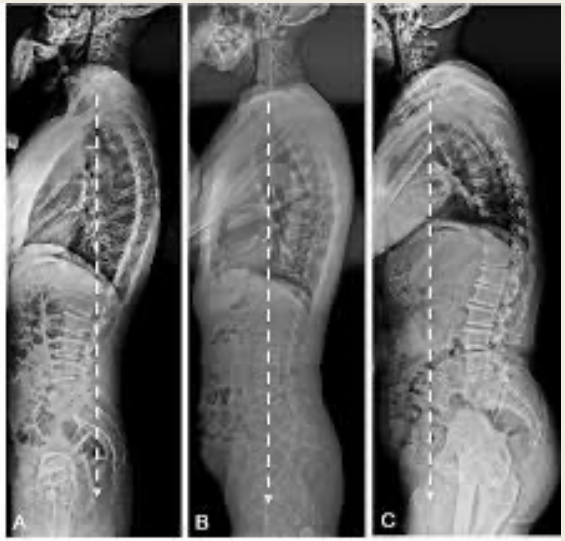
Spino-pelvic-hip complex



- Spino-pelvic alignment integration of anatomical regions that provide shape, position, form and function between the spine, pelvis and hips
- Maintains upright alignment, conservation of energy, bipedalism.(Roussouly & Nnadi 2010: Roussouly & Pinherio-Franco 2011; Roussouly et al. 2005; 2003)



Hip intra-capsular

- Radiology
- Dx injection
- Clinical testing
  FADIR, FABRE, BKF

Griffin D et al 2016. The Warwick Agreement on FAI syndrome: an international consensus statement. Br J Sports Med 50:1169-1176

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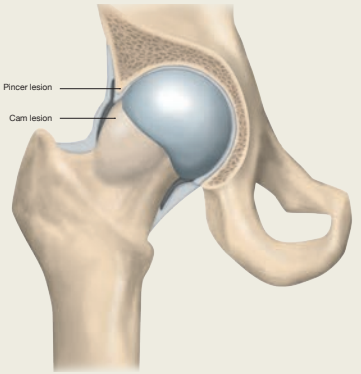
What is FAI syndrome?

- FAI syndrome is a motion-related clinical disorder of the hip with a triad of symptoms, clinical signs and imaging findings. (Griffin et al. 2016)
- It represents symptomatic premature contact between the proximal femur and the acetabulum
- Pain may be experienced in the back, buttock or thigh



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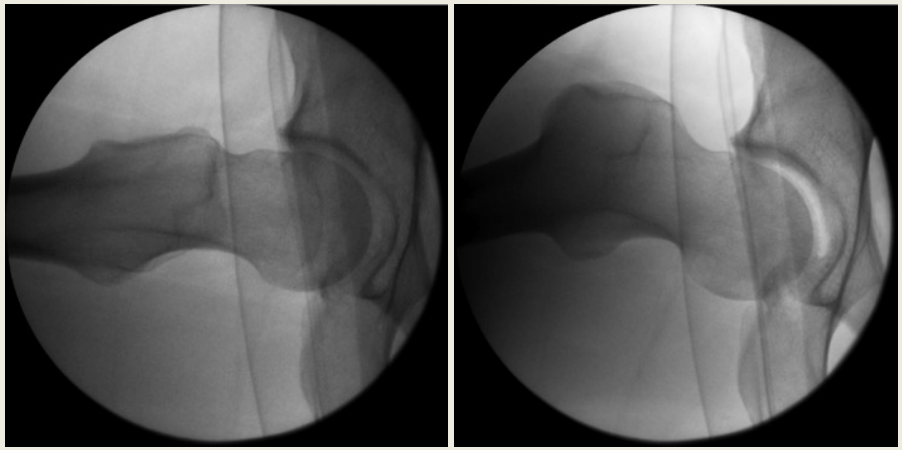
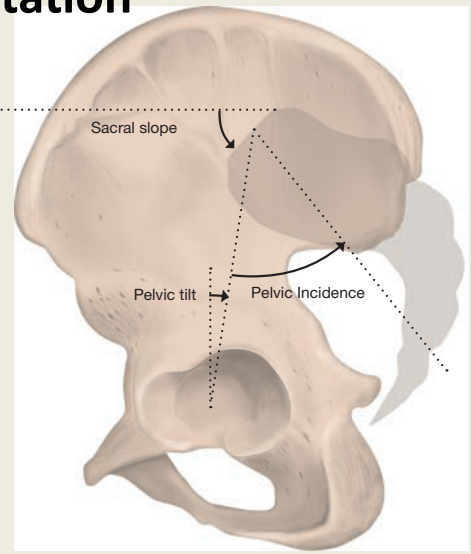
ROM limitations are not always myofascial



Pelvic Tilt may influence acetabular orientation

- 10° anterior PT reduced hip joint impingement free ROM Int Rot 5°-9°
- 10° posterior PT improved hip joint impingement free ROM Int Rot 5°-9° (Ross et al. 2014)
- Pelvic tilt reduces hip ROM (Sward et al. 2018)



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CLINICAL TRIAL REPORT

The effect of pelvic tilt and cam on hip range of motion in young elite skiers and nonathletes

This article was published in the following Dove Press journal:
Open Access Journal of Sports Medicine

- The hips with cam morphology had reduced internal rotation but the effect of pelvic PT on hip ROM was the same in both hips regardless of cam morphology

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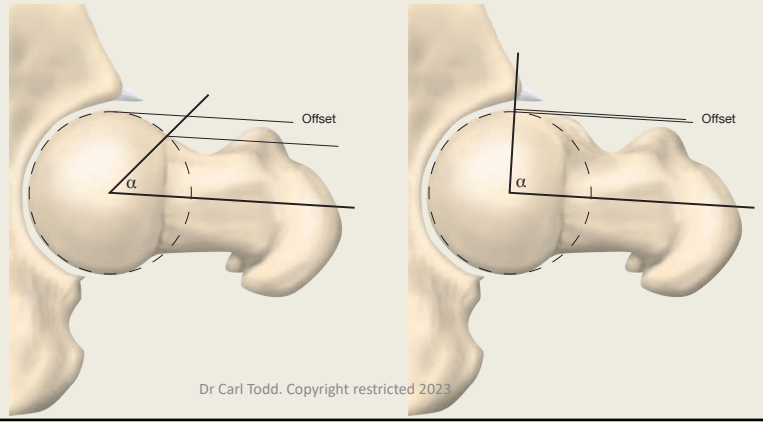
Pelvic parameters & FAI development

Original Article

A Low Pelvic Incidence Angle May Not Place Young Athletes at Risk of Developing Cam Morphological Changes in The Hip Joint



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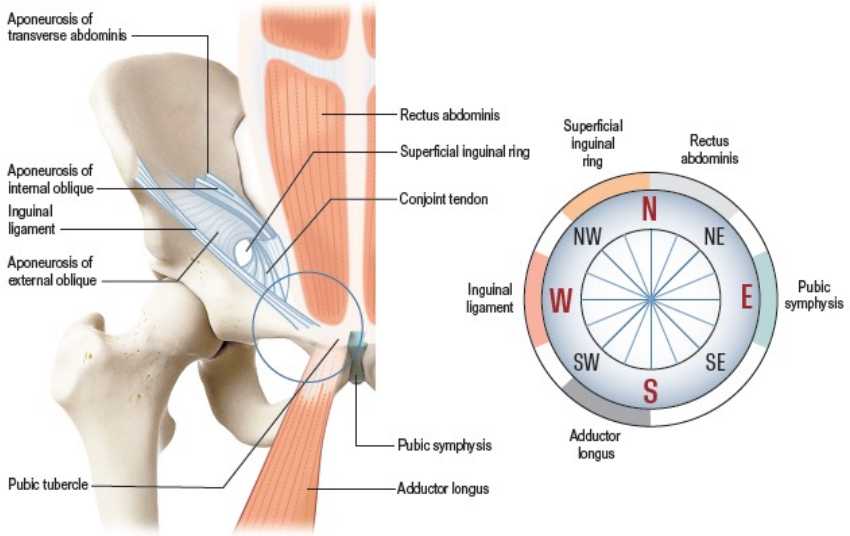
Hip extra-capsular

- Adductor (palpation, contraction, stretch)
- Psoas (palpation, contraction, stretch)
- Inguinal (palpation, contraction of abdominals)

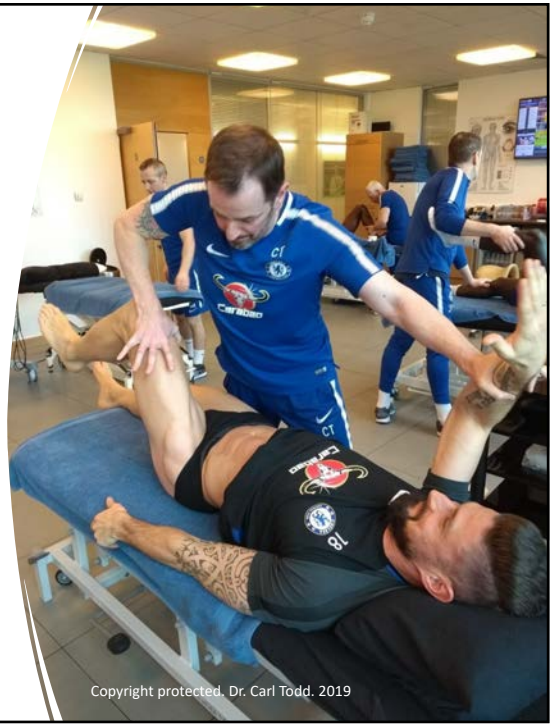
Weir A et al. 2015. Doha agreement meeting on terminology and definitions of groin pain in athletes. Br J Sports Med 49:768-774.

Complexity of this region is a challenge



Influence of pathology on function

- Extra-articular system dependent upon a delicate balance that delegates load and responsibility
- If one structure is strained it contributes less to workload and balance resulting in overload of other structures (Holmich et al. 2011; Kibler et al. 2006)



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