



Prevention in Groin Injury

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Groin Injury

- Recognized in activities that combine high running loads, rapid changes of direction and kicking.



- Most common sports associated with this syndrome: Soccer, Basketball, Rugby, Ice Hockey ...



Risk Factors

- Lack of flexibility
- Lack of strength
- Impaired core stability
- Previous injury
- Level of sports
- Increase of training intensity/volume



(Hölmich, Maffey & Emery in IOC Handbook « Sports Injury Prevention » 2009)



Low flexibility - a risk factor??

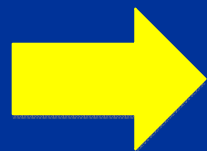
- In football, decreased flexibility seems to be a risk factor for ADD strains (*Ekstrand and Gillquist, 1983; Arnason et al., 2004; Ibrahim et al., 2007*)
- Decreased flexibility isn't associated with injury risk in football (*Witvrouw et al., 2003*)

➔ role remains unclear but probably not to neglect



ADD/ABD strength - a risk factor??

- ADD/ABD ratio is probably important, but exactly how is not clear *(Tyler 2001)*
- A pre-season adductor muscle strengthening program significantly reduced the incidence of adductor muscle strains in ice hockey players *(Tyler et al; AJSM 2002)*

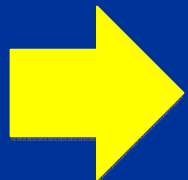


**ADD/ABD strength and ratio measurement
might help to identify athletes « at risk »**



Lack of Core stability - a risk factor??

- Delayed onset of transversus abdominis in athletes with long standing ADD related groin pain (*Cowan SM et al. MSSE, 2004*)
- The relative thickness of abdominal muscles, after core stability exercise for athletes with long-standing groin pain, showed no association with changes in pain (*Jansen et al. JOSPT 2009*)

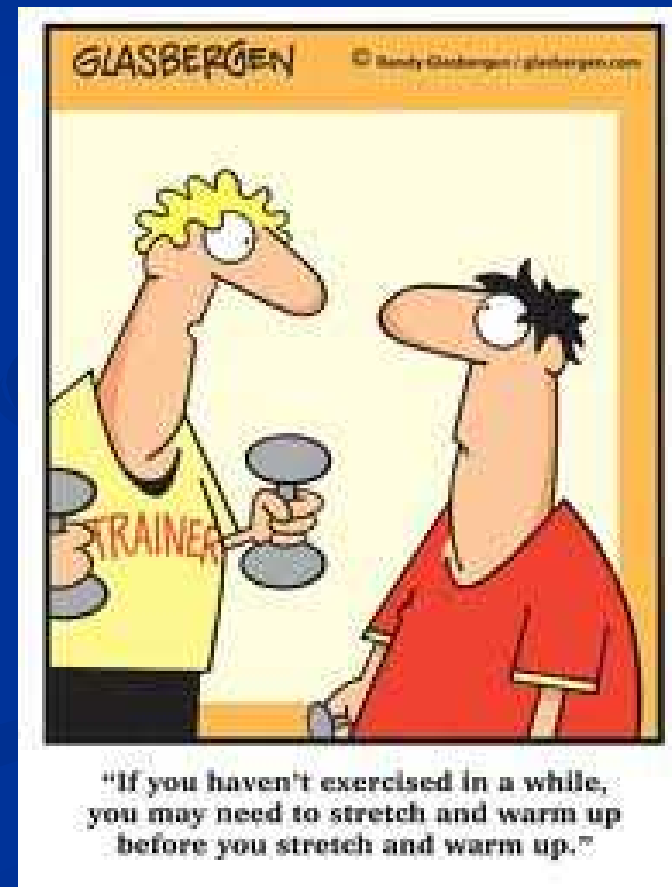


Impaired core stability seems to play a role in the development of this syndrome ≠ main cause



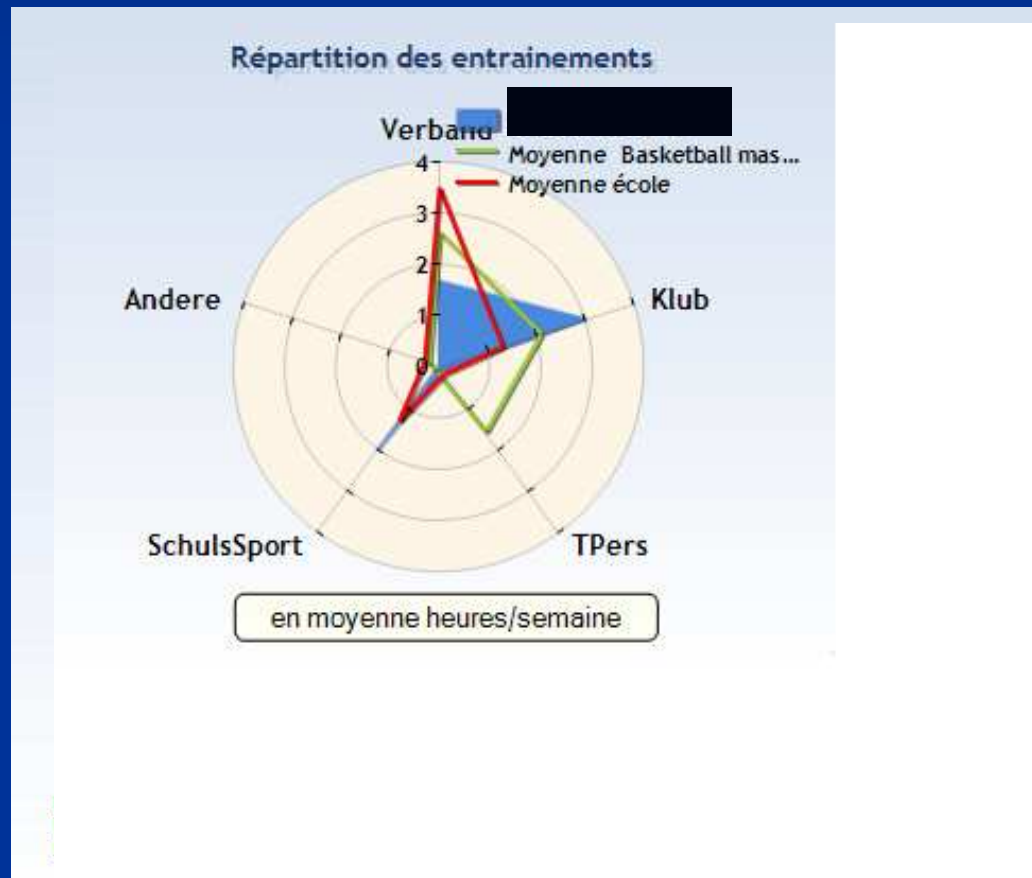
The level of competition - a risk factor??

- The risk of sustaining a groin injury increased with the level of competition and the number of training sessions
(Hölmich et al; SJMSS 2009)



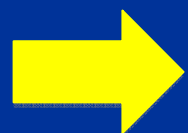
Increase of training intensity/volume

Training and Injury Prevention Platform for Sports



Previous hip/groin injury - a risk factor!!

- Hip or groin injury sustained at junior level football is a significant predictor of reinjury at elite level (*Gabbe et al. BJSM 2010*)
- Previous groin injury increase the risk of groin injury between 2 and 7-fold in football and ice hockey (*Emery et al; MSSE 2001*) (*Arnason et al; AJSM 2004*) (*Hagglund et al; BJSM 2006*) (*Hölmich et al; SJMSS 2009*)



Importance of primary/secondary prevention



Assessment

- Why? -Identify athletes at risk/return to sports?
- When? -Before and after Prevention/Rehabilitation
- What? -Hip muscles strength(ABD/ADD, Flex/Ext)
-Core stability
(-Flexibility)



Strength testing

Hand-held dynamometry:

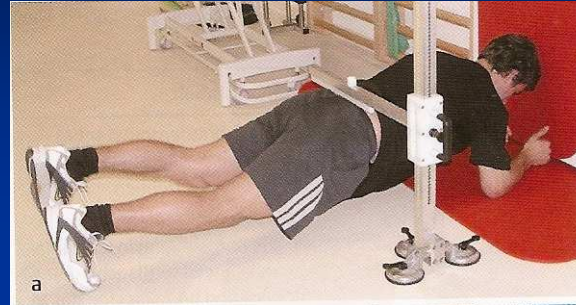
-reliable, inexpensive, quick



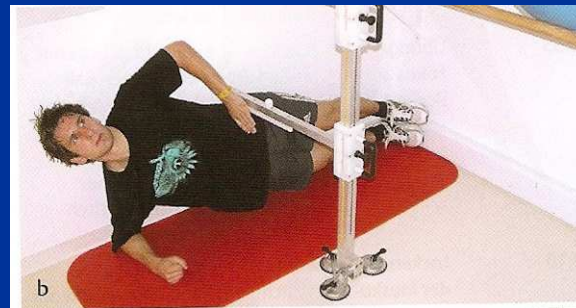
(Thorborg et al. Scand J Med Sci Sports 2010)

Swiss Olympic tests

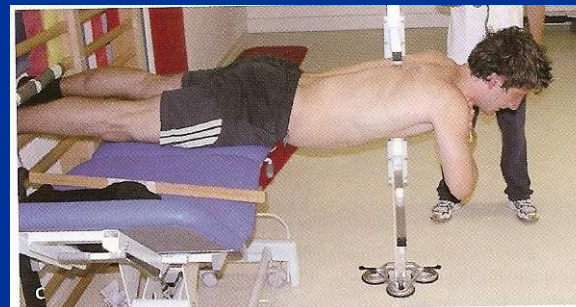
Ventral chain



Lateral chain



Dorsal chain



(Bourban et al. 2001)

What do we need to exercise?

- Strengthen the muscles most often injured

Concentric?-eccentric?-isometric?

No consensus yet!

-static/dynamic

-without/ with external loads

-general to sportspecific

-integrate in the regular practice routine



What do we need to exercise?

- Work trunk and pelvic stability (core)



- Neuromuscular control



What do we need to exercise?

- Plyometrics/Agility



(Hill et al. 2011 Curr Sports Med Rep)



- Dynamic stretching



(Witvrouw et al. 2007 BJSM)



Failure in primary prevention

- Most patient with ADD-related groin pain continue their sport until pain prevents them from running
- Early warning signs may prevent the development of the full syndrome:

Tightness or stiffness during or after activity with no or temporary relief from stretching

Loss of acceleration and maximal sprinting speed

Loss of distance with long kick on run

Discomfort with deceleration



Secondary prevention

- Active rehabilitation 10 x better results at painfree return to sports, compared with rest and passive electrotherapy
(Hölmich; *The Lancet* 1999)
- 5 basic principles:
 - Exercise without pain
 - Reduce load on the pelvis
 - Improve lumbopelvic stability
 - Progressive strengthening
 - Regular clinical assessments



(Brukner and Khan, *Clinical Sports Medicine* 3E)



Rehabilitation program for groin pain in athletes

- Static and dynamic exercises
- Improving muscles stabilizing pelvis and hip joint

Module 1 (first 2 weeks)

- 1 Static adduction against wall; each adduction; five series
- 2 Static adduction against wall; when lying supine; each adduction; five series
- 3 Abdominal sit-ups both directions; five series
- 4 Combined abdominal sit-ups in position and with soccer ball (knife exercise); five series
- 5 Balance training on wall; five series
- 6 One-foot exercises on wall with 90° angle between legs with each leg, and in lunge



Module 2

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8



Module 3

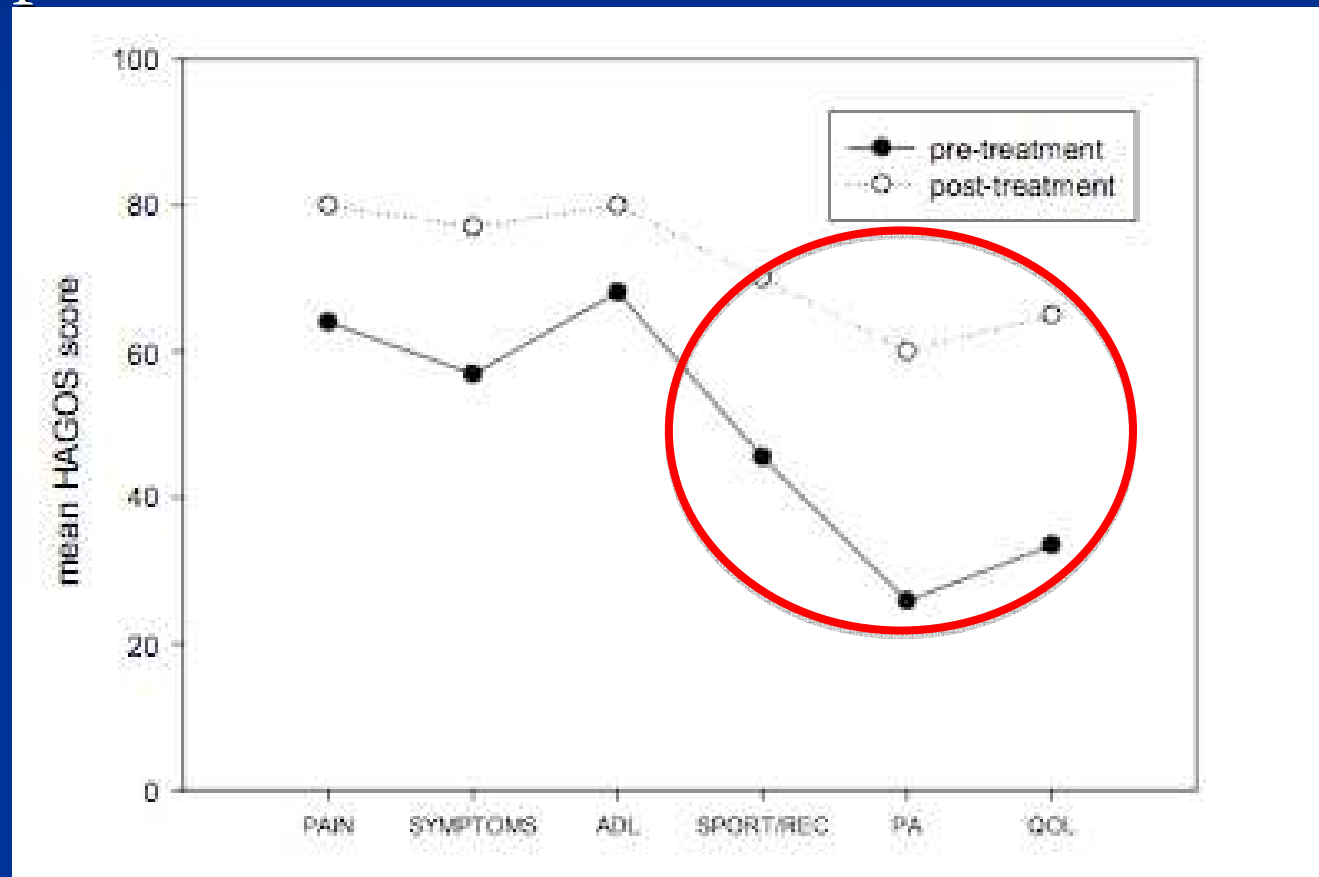
- 1 five series
- 2 five series
- 3 five series
- 4 five series
- 5 five series
- 6 five series
- 7 five series
- 8 five series



(Hölmich; The Lancet 1999)

Hagos score

■ Hip And Groin Outcome Score



(Thorborg et al. Br J Sports Med. 2011)



Conclusion

- Importance of primary/secondary prevention
- Role of risk factors – conflicting evidence
- Active rehabilitation show better results vs. passive treatment in secondary prevention



Workshop

- 2 stations à 35'
- Station 1: Core Stability and Strengthening with Redcord (Radrizzi Laurent, Pauls Jerome)
- Station 2: On court Prevention and Return to Sports Training (Wennig Louis)