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27TH & 28TH JUNE 2016

THE NATIONAL FOOTBALL CENTRE, ST GEORGE'S PARK

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COURSE CONVENOR



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PROFESSOR OF TRAUMA & ORTHOPAEDIC SURGERY

UNIVERSITY OF WARWICK

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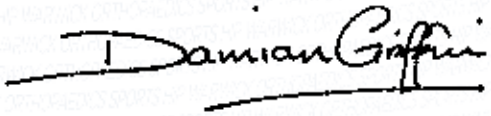
Dear Colleague,

The Sports Hip Conference will run again in 2018 as part of our portfolio of Sports Injury conferences. Some of you may have already attended the Sports Foot & Ankle, Sports Shoulder and and Sports Knee conferences. The dates for the next events will shortly be published on our website
www.sports-surgery.org

The key feature of these Sports Injury conferences is that we explore the latest ideas and most difficult problems in a relatively small group, guided by an expert international faculty.

Please do let us know if you have any thoughts about the meeting or any suggestions as to how we might develop it in the future.

With very best wishes.



PROFESSOR DAMIAN GRIFFIN
PROFESSOR OF TRAUMA & ORTHOPAEDIC SURGERY
UNIVERSITY OF WARWICK

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Kristian Thorborg



Kristian Thorborg is a leading Sports physiotherapist based at the Copenhagen University Hospital, Hvivdore, and an Associate Professor with special interest in hip, groin, hamstring and knee related injuries.

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Session 3

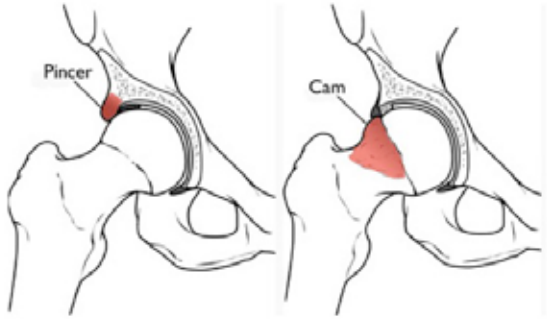
TRAINING AND REHABILITATION

Should we do prehabilitation before surgery?

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CONTACT THE AUTHOR

Should we do prehabilitation before FAI-surgery?



Ass. Prof. Kristian Thorborg
Sports Orthopedic Research Center – Copenhagen (SORC-C)

Should we do prehabilitation before FAI-surgery?

YES or NO

Should we do prehabilitation before FAI-surgery?

If YES.....WHY?

1) To improve post-operative outcome
2) To find out if the patient can do without surgery
3) For a different reason

The HAPI 'Hip Arthroscopy Pre-habilitation Intervention' study

(ISRCTN13779749 DOI 10.1186/ISRCTN13779749)

- **Study design**
  - Prospective randomised controlled comparative pilot study
  - Intervention group: exercises taught eight weeks prior to surgery done at home.
  - Control group: massage
  - Including: 40 adult patients of both gender
- **Primary outcome measures**
  1. The Non-Arthritic Hip Score (NAHS)
  2. The EQ-5D-5L Score
- **Secondary outcome measures**

  Isometric muscle power
- **Time points for outcome measurements**
  - 8 weeks **before** surgery,
  - 1 week **before** surgery,
  - 2 weeks after surgery,
  - 6 weeks after surgery
  - 12 weeks after surgery.

The HAPI 'Hip Arthroscopy Pre-habilitation Intervention' study

(ISRCTN13779749 DOI 10.1186/ISRCTN13779749)

Study aim and hypotheses:

The study aims to provide more information on the subject of exercises before and after keyhole surgery of the hip for hip impingement.

1. **Pre-operative rehabilitation** before hip arthroscopy for femoro-acetabular impingement **improves the Non-Arthritic Hip Score (NAHS) post-operatively**

2. **Pre-operative rehabilitation** before hip arthroscopy for femoro-acetabular impingement **improves the EQ-5D-5L post-operatively**

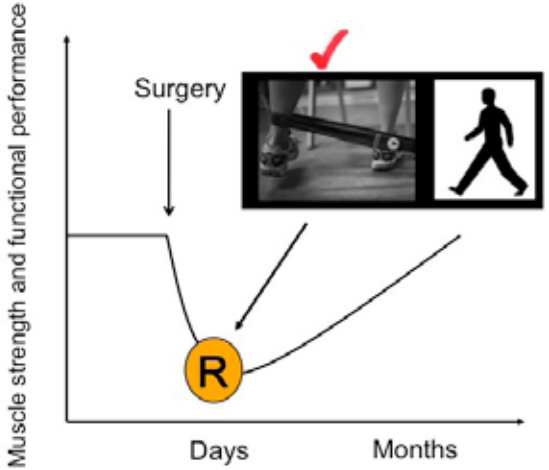
3. **Pre-operative rehabilitation** before hip arthroscopy for femoro-acetabular impingement **improves muscle power post-operatively**





HAPI study

Overall idea: enhancing recovery by physical medicine

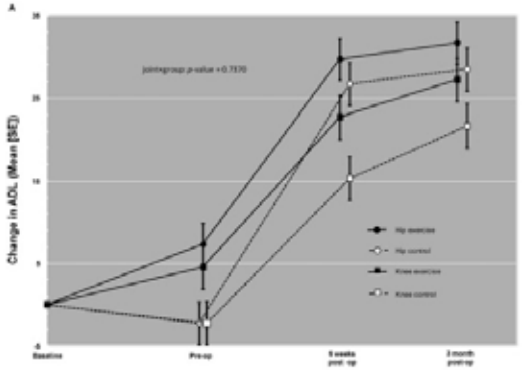


Modified from Bandholm & Kehlet (2012). Arch Phys Med Rehabil 93: 1292-1294.

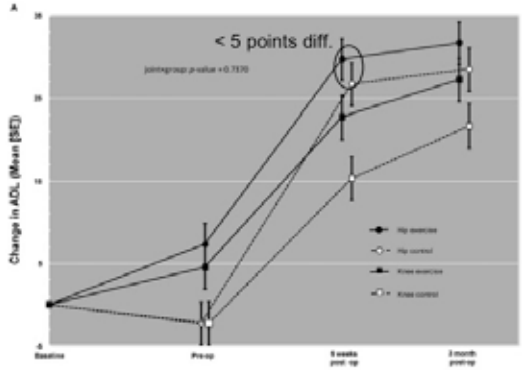
Efficacy of prehabilitation



Joint-replacement (only THA) – Villadsen et al. (ARD, 2014)



Joint-replacement (only THA) – Villadsen et al. (ARD, 2014)



Efficacy of prehabilitation on postoperative outcomes

Open Access Research

BMJ Open **Does preoperative rehabilitation for patients planning to undergo joint replacement surgery improve outcomes? A systematic review and meta-analysis of randomised controlled trials**

Li Wang,[1,2,3] Myeongjong Lee,[4] Zhe Zhang,[5] Jessica Moodie,[1] Davy Cheng,[1,6] Janet Martin[1,6,7]

Efficacy of prehabilitation on postoperative outcomes

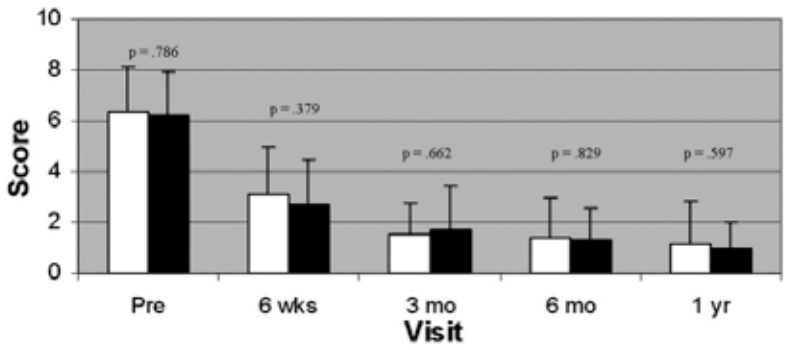
Conclusions: Existing evidence suggests that prehabilitation may slightly improve early postoperative pain and function among patients undergoing joint replacement; however, effects remain too small and short-term to be considered clinically-important, and did not affect key outcomes of interest (ie, length of stay, quality of life, costs).

Wang et al (2016). BMJ Open 6: e009857

How do patients react to hip artroscopy?

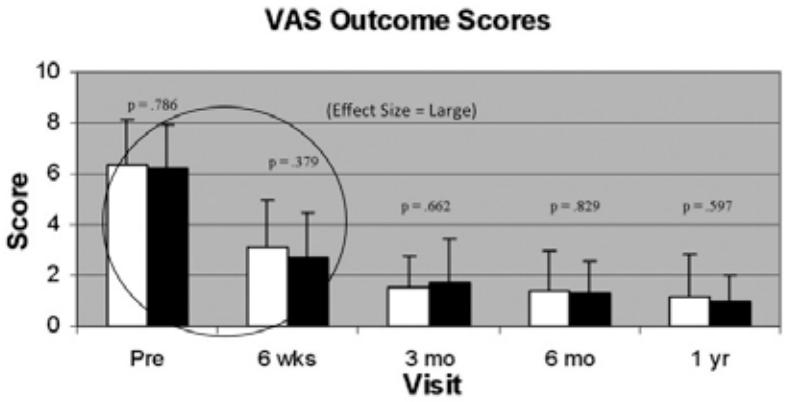
Arthroscopic Debridement Versus Refixation of the Acetabular Labrum Associated With Femoroacetabular Impingement

(Larson et al., 2009)

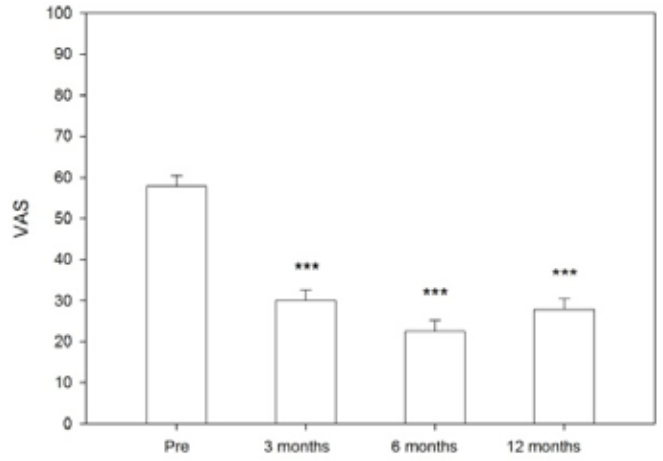


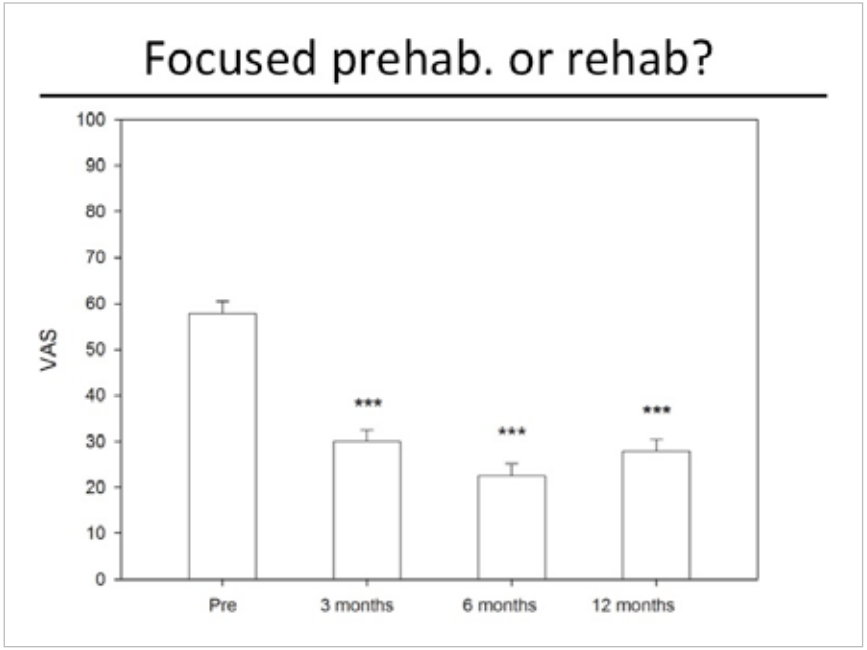
Arthroscopic Debridement Versus Refixation of the Acetabular Labrum Associated With Femoroacetabular Impingement

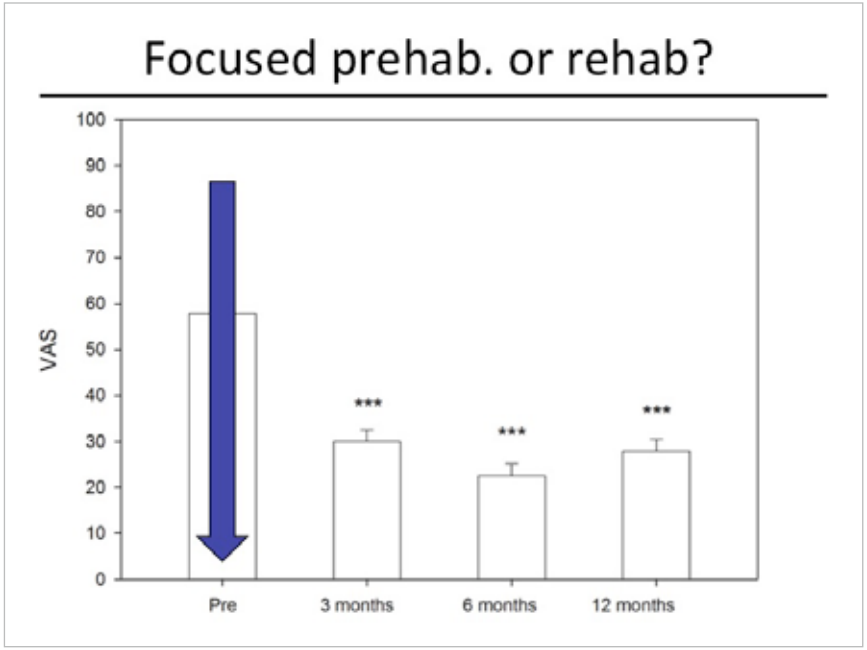
(Larson et al., 2009)

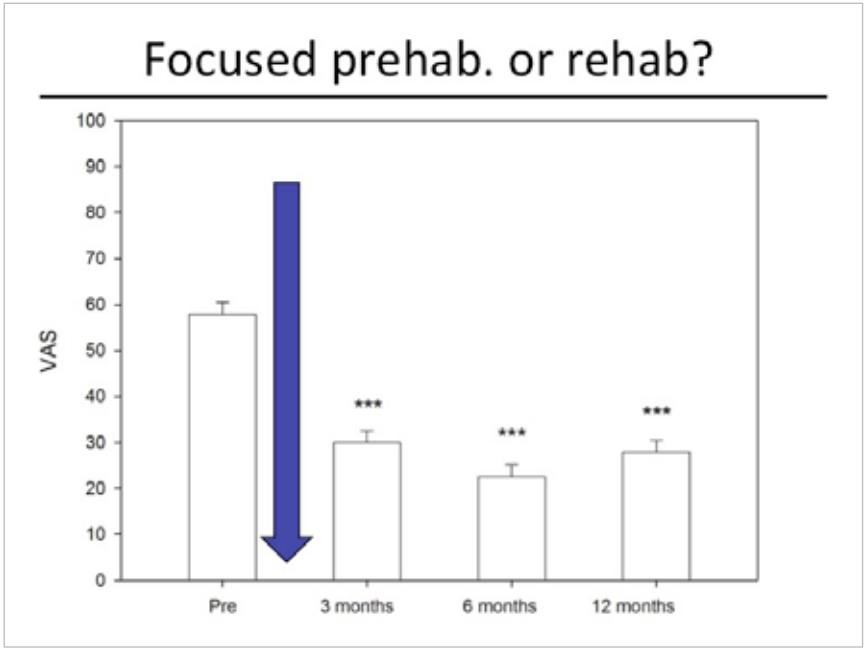


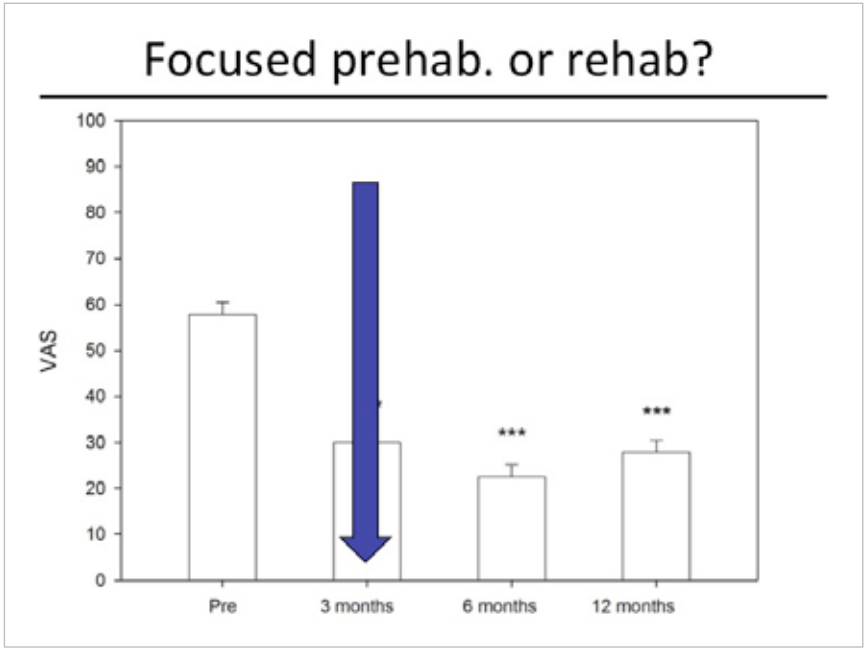
Hip arthroscopy and rehab. results within first year (Dippmann, Thorborg et al. KSSTA)




Focused prehab. or rehab?
VAS
100
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80
70
60
50
40
30
20
10
0
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***
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Pre
3 months
6 months
12 months

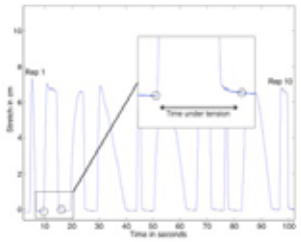

Focused prehab. or rehab?
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Focused prehab. or rehab?
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Pre
3 months
6 months
12 months

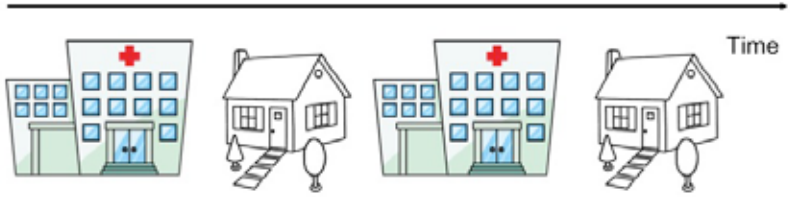

Focused prehab. or rehab?
VAS
100
90
80
70
60
50
40
30
20
10
0
***
***
Pre
3 months
6 months
12 months

Perspectives





Instruction (1 session) | Exercise (6 weeks) | Control (1 session) | Exercise (x weeks)



Should we do prehabilitation before FAI-surgery?

If YES…….WHY?

1) To improve post-operative outcome

Should we do prehabilitation before FAI-surgery?

If YES…….WHY?

1) To improve post-operative outcome
2) To find out if the patient can do without surgery

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3) For a different reason



BIOGRAPHY

Louise Grant MSc (musculoskeletal medicine) is a chartered physiotherapist with a postgraduate certificate in health research. She is an affiliate member of the International Society for Hip Arthroscopy and joint practice principal at Physiocure. physiocure.org.uk



HAPI study



BIOGRAPHY

Louise Grant MSc (musculoskeletal medicine) is a chartered physiotherapist with a postgraduate certificate in health research. She is an affiliate member of the International Society for Hip Arthroscopy and joint practice principal at Physiocure. physiocure.org.uk

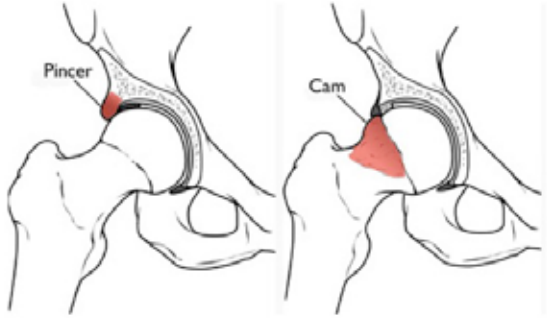


The HAPI study

The HAPI *Hip Arthroscopy Prehabilitation Intervention study: Does prehabilitation affect outcomes in patients undergoing hip arthroscopy for femoroacetabular impingement?* (ISRCTN 13779749) will shortly be published. The purpose of this randomised prospective comparative controlled pilot study was to determine whether specific exercises done by patients before hip arthroscopy surgery for femoroacetabular impingement affect post-operative recovery. The study showed positive trends towards implementing appropriate exercises before surgery.

Effect Size ??????

Should we do prehabilitation before FAI-surgery?



Ass. Prof. Kristian Thorborg

Sports Orthopedic Research Center – Copenhagen (SORC-C)

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Session 5

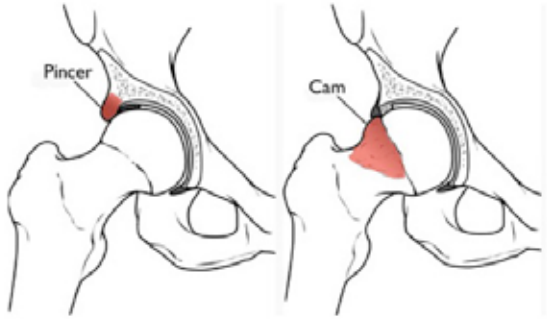
FEMOROACETABULAR IMPINGEMENT 1: DIAGNOSIS

How to diagnose FAI syndrome

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CONTACT THE AUTHOR

How to diagnose FAI syndrome



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Sports Orthopedic Research Center – Copenhagen (SORC-C)

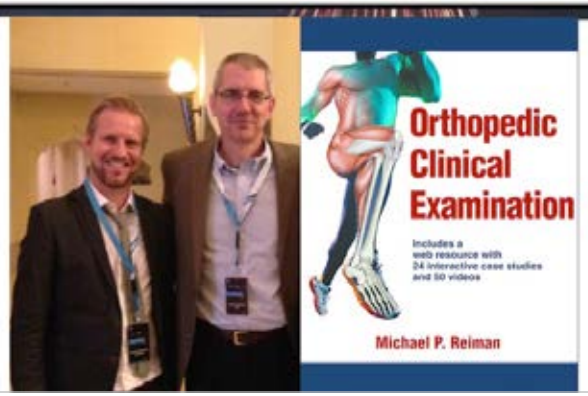
Femoroacetabular impingement surgery: are we moving too fast and too far beyond the evidence?

Michael P Reiman,[1] Kristian Thorborg[2,3]



Femoroacetabular impingement surgery: are we moving too fast and too far beyond the evidence?

Michael P Reiman,[1] Kristian Thorborg[2,3]





[VIEWPOINT]

MICHAEL P. REIMAN, DPT, OCS, SCS, ATC, FAAOMPT, CSCS[1,2]
KRISTIAN THORBORG, PT, PhD[2,3] • PER HÖLMICH, MD, DMSc[2,4]

Femoroacetabular Impingement Surgery Is on the Rise— But What Is the Next Step?

The Medical Subject Headings thesaurus of the US National Library of Medicine defines femoroacetabular impingement as:

A clinical entity in which a pathologic mechanical process causes hip pain when **morphologic abnormalities of the acetabulum and/or femur**, combined with **vigorous hip motion (especially at the extremes),** lead to **repetitive collisions that damage the soft-tissue structures** within the **joint itself.**

MESH definiton (US Library)

(1) abnormal morphology of the femur and/or acetabulum,

(2) abnormal contact between these two structures,

(3) especially vigorous supraphysiological motion that results in such abnormal contact and collision,

(4) repetitive motion resulting in the continuous insult

(5) the presence of soft-tissue damage.

Amager Hospital

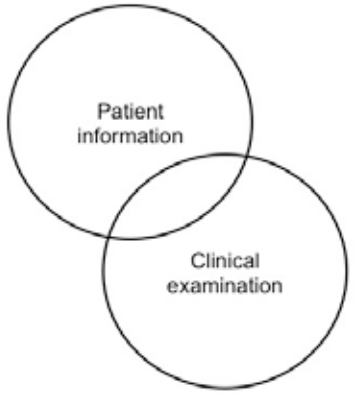
How to diagnose FAI!



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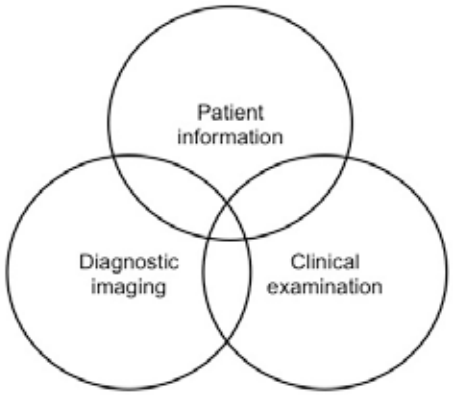
Amager Hospital

How to diagnose FAI!



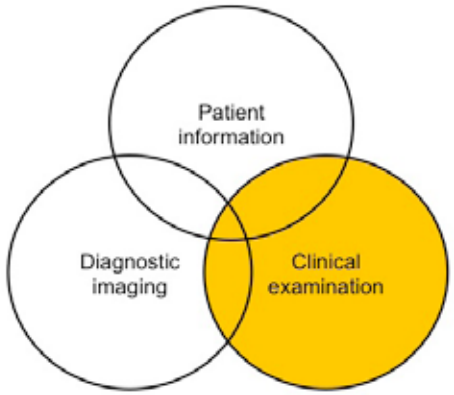
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How to diagnose FAI!



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How to diagnose FAI!



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Orthopedic special tests





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MESH definiton (US Library)

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Diagnostic accuracy of clinical tests for the diagnosis of hip femoroacetabular impingement/labral tear: a systematic review with meta-analysis

M P Reiman,[1,2] A P Goode,[1] C E Cook,[1] P Hölmich,[3,4] K Thorborg[3,5]

Diagnostic accuracy of clinical tests for the diagnosis of hip femoroacetabular impingement/labral tear: a systematic review with meta-analysis

M P Reiman,[1,2] A P Goode,[1] C E Cook,[1] P Hölmich,[3,4] K Thorborg[3,5]

- The most clinically utilised physical examination test for FAI is the flexion-adduction-internal rotation (FADDIR) test.
- This test, along with most of the other currently described tests for FAI, is generally much more sensitive than specific.
- Hence, these tests serve better as screening rather than diagnostic tests due to a high sensitivity (and low likelihood ratio) assisting in ruling out the potential existence of that pathology.
- We need better diagnostic studies to understand how much orthopedic special tests can change the post-test probability of having FAI/labral tear

Diagnostic accuracy of clinical tests for the diagnosis of hip femoroacetabular impingement/labral tear: a systematic review with meta-analysis

M P Reiman,[1,2] A P Goode,[1] C E Cook,[1] P Hölmich,[3,4] K Thorborg[3,5]

Table 4 Pooled diagnostic properties for the diagnosis of FAI/ALT

Measure	# studies (sample size)	SN (95% CI)	SP (95% CI)	+LR (95% CI)	ve−LR (95% CI)
FADDIR (MRA)	4 (65, 68, 79, 81) (n=188)	0.94 (0.90 to 0.97)	0.09 (0.02 to 0.23)	1.02 (0.96 to 1.08)	0.45 (0.19 to 1.09)
FADDIR (surgery)	4 (68, 69, 71, 76) (n=319)	0.99 (0.98 to 1.00)	0.05 (0.01 to 0.18)	1.04 (0.97 to 1.12)	0.14 (0.02 to 0.93)
Flexion IR	2 (63, 74) (n=27)	0.96 (0.81 to 0.99)	0.25 (0.01 to 0.81)	1.28 (0.72 to 2.27)	0.15 (0.01 to 1.99)

DerSimonian-Laird random-effects models used throughout.
DOR, diagnostic OR; FADDIR, flexion, adduction, internal rotation test; +LR, positive likelihood ratio; −LR, negative likelihood ratio; SN, sensitivity; SP, specificity.

Diagnostic accuracy of clinical tests for the diagnosis of hip femoroacetabular impingement/labral tear: a systematic review with meta-analysis

M P Reiman,[1,2] A P Goode,[1] C E Cook,[1] P Hölmich,[3,4] K Thorborg[3,5]

Table 4 Pooled diagnostic properties for the diagnosis of FAI/ALT

Measure	Post-test change	SN (95% CI)	SP (95% CI)	+LR (95% CI)	ve−LR (95% CI)
FADDIR (MRA)	Pretest=84% Post-test=83%	0.94 (0.90 to 0.97)	0.09 (0.02 to 0.23)	1.02 (0.96 to 1.08)	0.45 (0.19 to 1.09)
FADDIR (surgery)	Pretest=90% Post-test= 90%	0.99 (0.98 to 1.00)	0.05 (0.01 to 0.18)	1.04 (0.97 to 1.12)	0.14 (0.02 to 0.93)
Flexion IR	Pretest=87% Post-test=90%	0.96 (0.81 to 0.99)	0.25 (0.01 to 0.81)	1.28 (0.72 to 2.27)	0.15 (0.01 to 1.99)

DerSimonian-Laird
DOR, diagnostic OR;
out.
rotation test; +LR, positive likelihood ratio; −LR, negative likelihood ratio; SN, sensitivity; SP, specificity.

How is the FADDIR conducted?

How is the FADDIR conducted?

A) Conducted in 90 degrees of hip flexion, adduction and internal rotation?

B) Conducted in some other way?



Other descriptions of same FADDIR (Impingement) test

- The patient lies supine on a table/ plinth while the therapist passively brings the patients hip into full flexion, lateral rotation and full abduction as a starting position.
- The therapist then brings the hip into extension while combining a medial rotation with adduction motion. A positive sign is provocation of symptoms with or without a click.





How is a positive FADDIR test defined?

A) Reproduction of known symptoms from hip and groin region elicited by the test

B) Pain in the hip and groin region elicited by the test





How is a positive FADDIR test defined?

A) Reproduction of known symptoms from hip and groin region elicited by the test

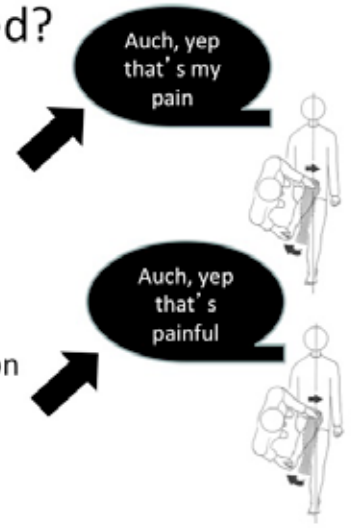
B) Pain in the hip and groin region elicited by the test



How is a positive FADDIR test defined?

A) Reproduction of known symptoms from hip and groin region elicited by the test

B) Pain in the hip and groin region elicited by the test



Prather et al. (KSSTA, 2015)

- A positive provocative test was present in 22 % of all asymptomatic female soccer athletes (n=172) with the highest rate in school athletes (34 %) and PRO athletes (36 %)
- The anterior impingement test was the test most commonly found to be positive in all groups.

White et al. (ACR, 2014)

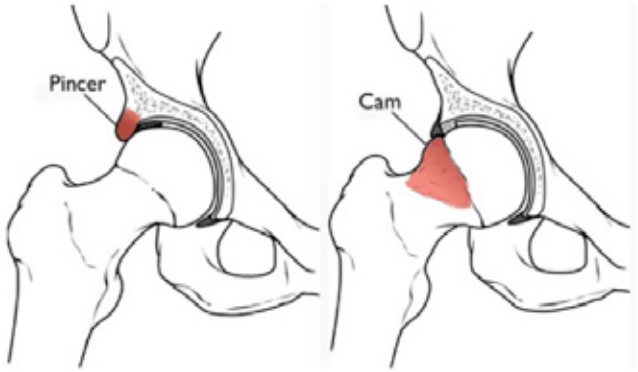
- Pain intensity is highest in the quadrant test compared to other special other orthopedic tests in both patients with and without intraarticular symptoms
- Some tests are more painful than others

White et al. (ACR, 2014)

- Pain intensity is highest in the quadrant test compared to other special other orthopedic tests in both patients with and without intraarticular symptoms
- Some tests are more painful than others

What structures are we provoking?

Base of the labrum/acetabular attachment site?



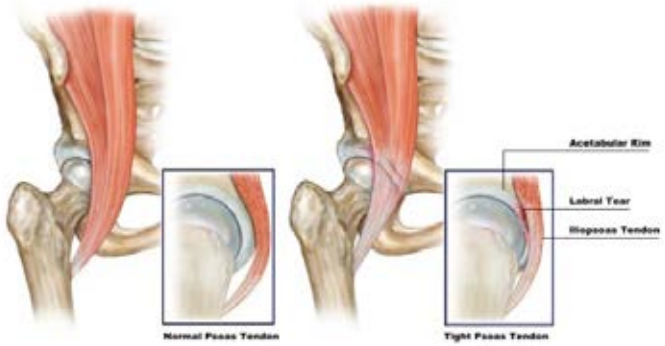
Anterolateral part of capsule?

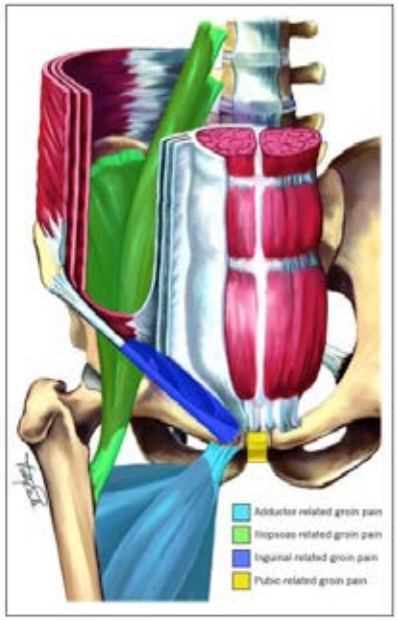


Intracapsular/extrasynovial fat pad?



Iliopsoas tendon?

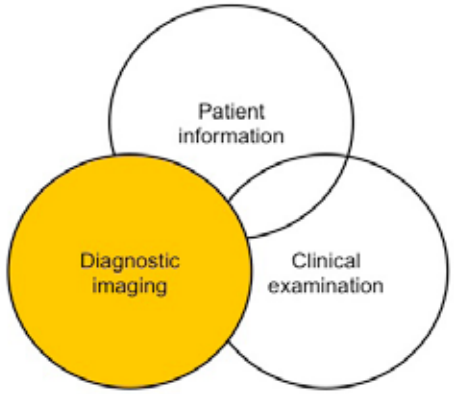




Unpublished data from Denmark

- We have seen a clear and large correlation between the number of clinical soft-tissue entities and HAGOS sports score
- More entities ➡ lower HAGOS score
- Suggesting a more complex interaction of soft tissue structures and symptoms than just joint-derived pain
- Speaks for conducting a comprehensive clinical examination of soft tissue structures in the hip and groin region

How to diagnose FAI!



Sports Orthopedic Research Center – Copenhagen (SORC-C)



MESH definiton (US Library)



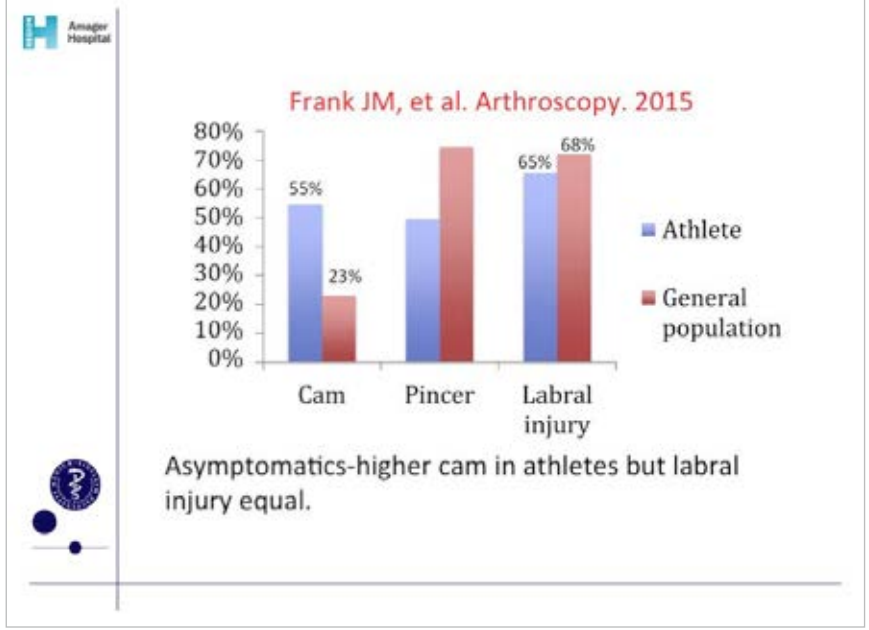
(1) abnormal morphology of the femur and/or acetabulum,

(2) abnormal contact between these two structures,

(3) especially vigorous supraphysiological motion that results in such abnormal contact and collision,

(4) repetitive motion resulting in the continuous insult

(5) the presence of soft-tissue damage.



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So… if you want to make a strong argument for FAI syndrome in need of surgery

1) Use special orthopedic's test as your only test-approach

2) If not positive - modify the orthopedic test into full flexion, and start digging

3) Take an MRI to show that labrum tear is present

4) Recommend immediate surgery and tell patient that results can take up to a year, so that any spontaneous recovery or fluctuations in symptoms during this year can be attributed to surgery (and diagnosis being correct)

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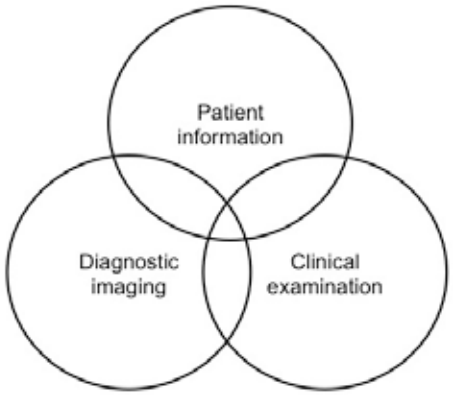






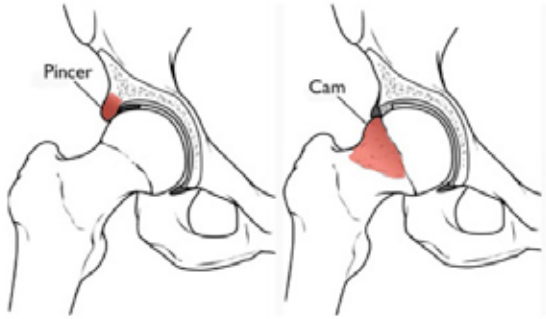
The future challenge:

To combine information that alters the post-probability of having: FAI syndrome; labral tear and/or intraarticular injury



Sports Orthopedic Research Center – Copenhagen (SORC-C

How to diagnose FAI syndrome



Ass. Prof. Kristian Thorborg

Sports Orthopedic Research Center – Copenhagen (SORC-C)