Promises I can make to athletes

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PRACTICAL COURSE ORTHOPEDICS

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Risks of sport practice on THA

Repeated loading in charge: early wear

- Risk of wear for PE
- Risk of fracture ceramic
- Risk of excessive stress: aseptic loosening

Significant trauma lead to risk of:

- Dislocation
- Femoral or acetabular fracture

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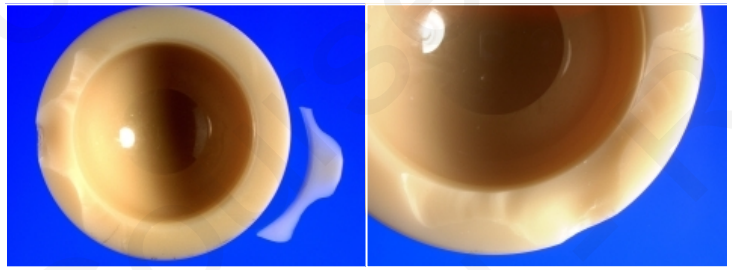
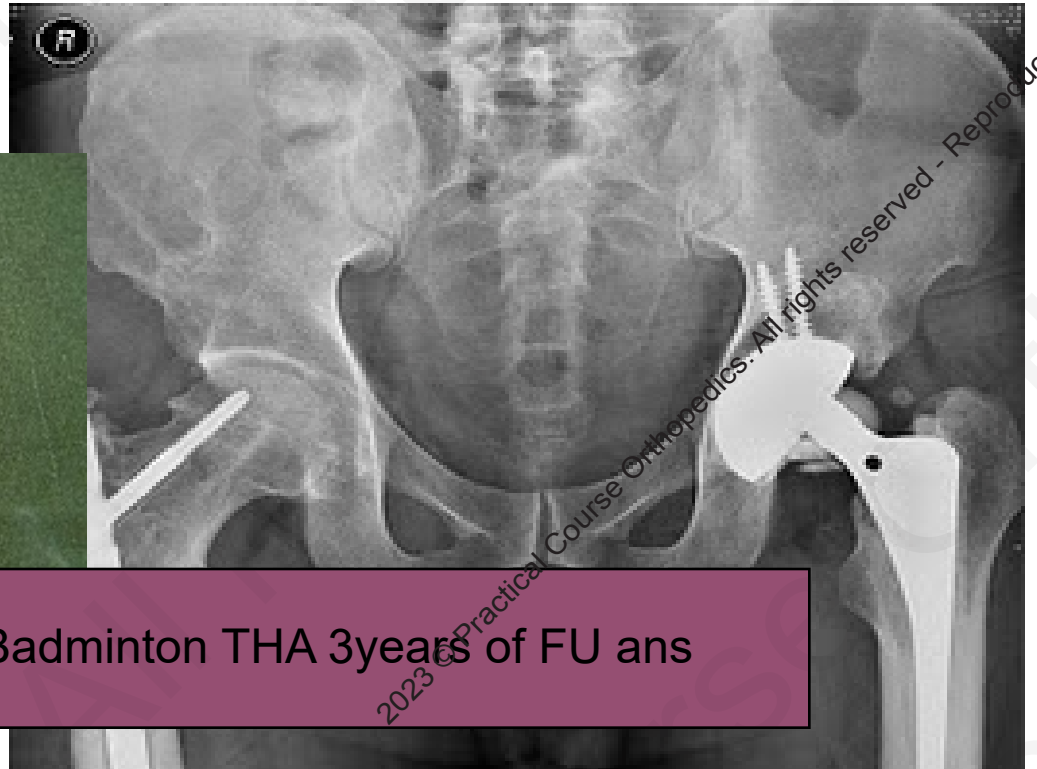
Bearing fracture CoC



- Risk of fracture if high impact (See et al. JoA 2003, Koo et al. JBJS Br 2008…)
- Risk of « chipping » by cam effect with great RoM (Stewert et al. JoA 2009)



Badminton THA 3years of FU ans

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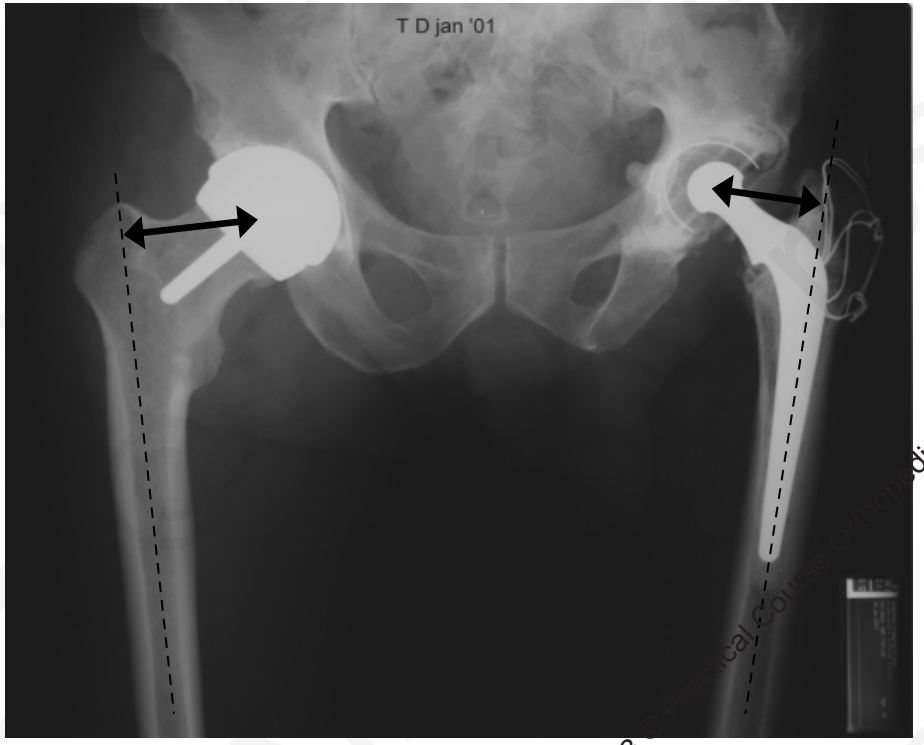
THA problem with sport

Stem (yes or no?)



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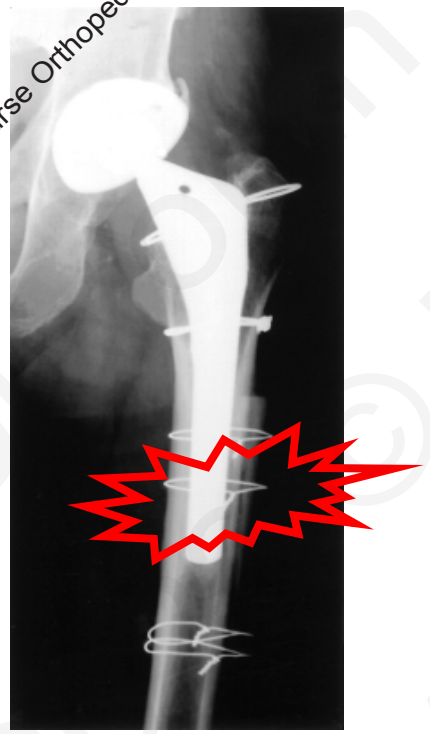
What is the main pb observed with a femoral stem for active patient?

- Thigh pain
- Risk of femoral fracture around the stem



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Head diameter: how is important ????

DISLOCATION….

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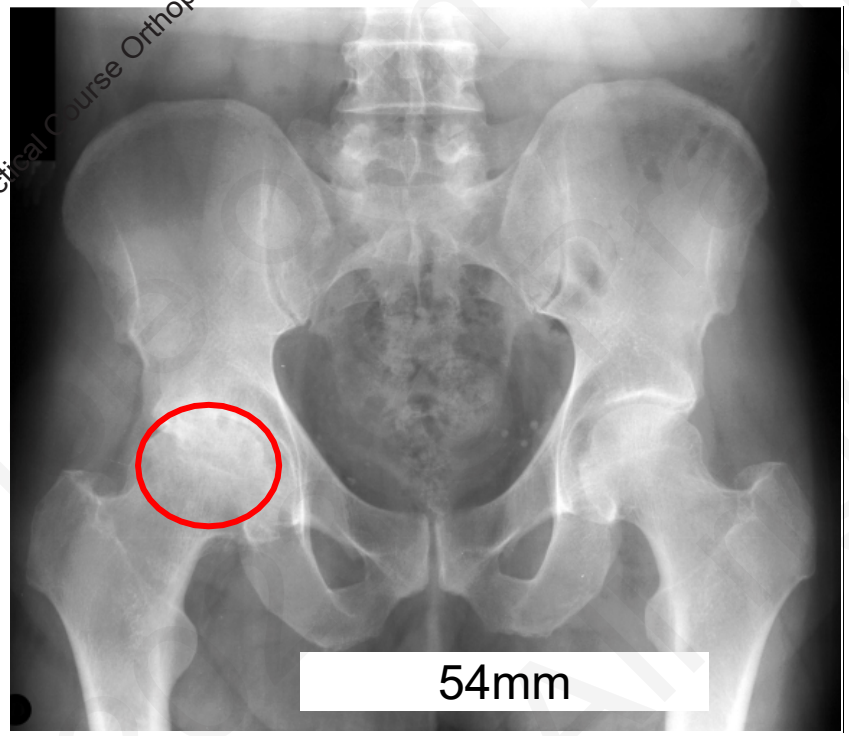
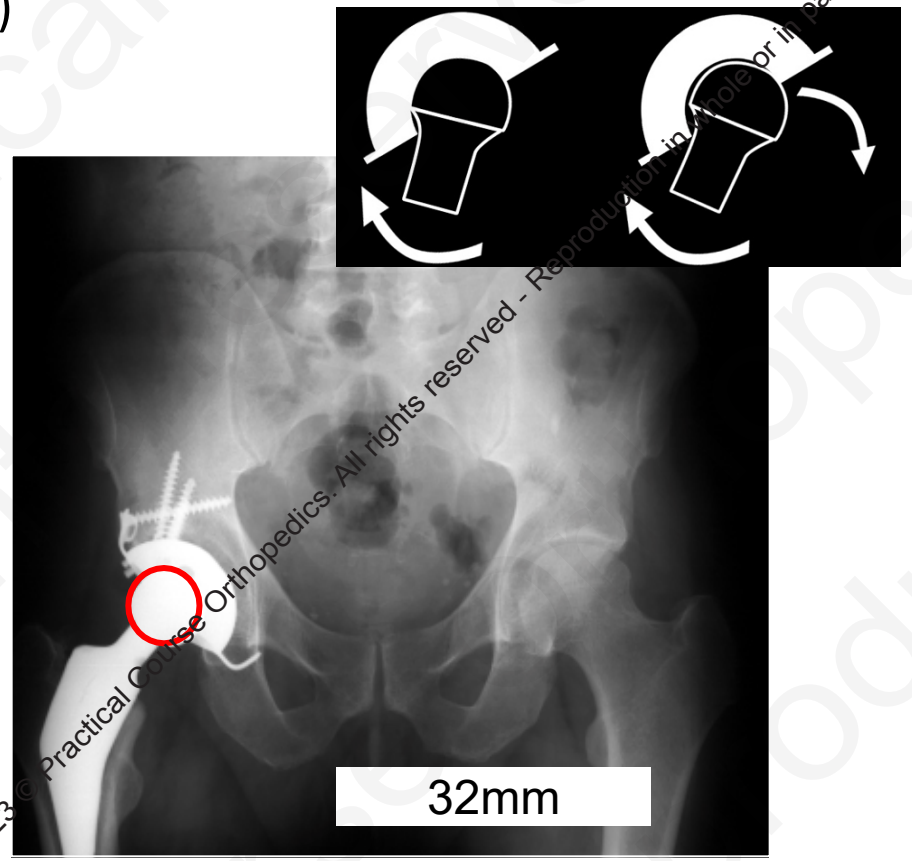
THA problem with sport

Dislocation

Impossible to obtain anatomical head diameter…

Femoral head diameter (52mm male and 46mm female)





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Life-threatening depending on the type of sport activity

Sport activity in isolated and hard to reach locations: climbing, trail running, hiking, skiing, sailing ... : A HOSTILE ENVIRONMENT

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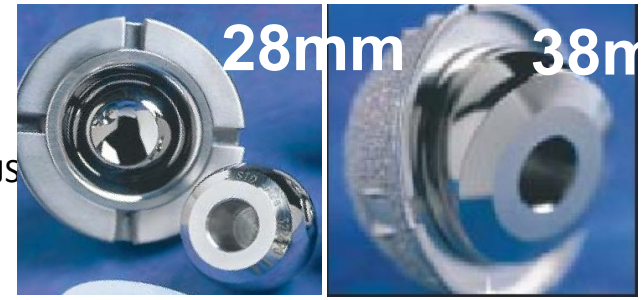
LITERATURE

Correlated to:

- Surgical approach (Woo et al. JBJS Am 1982)
- Components orientation
- Learning curve (Hedlundh et al. JBJS Br 1996)
- Head diameter ++++

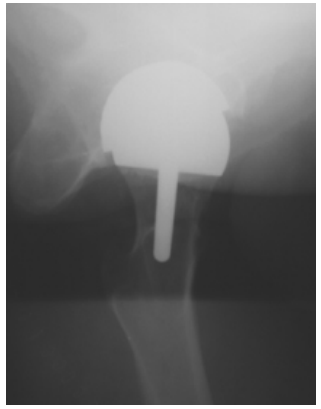
Head 22mm :	2,1%	(Hedlun et al. Corr 2007)
Head 28mm :	2%	(Coventry et al. JBJS Br 1974)
Head 32 mm :	1,8%	(Garcia et al. JoA 1992)
Head 36mm :	0,9%	(Back et al. JoA 2009)
Resurf :	0%	(Girard et al. Clin Biomech 2011, Amstutz et al. JBJS



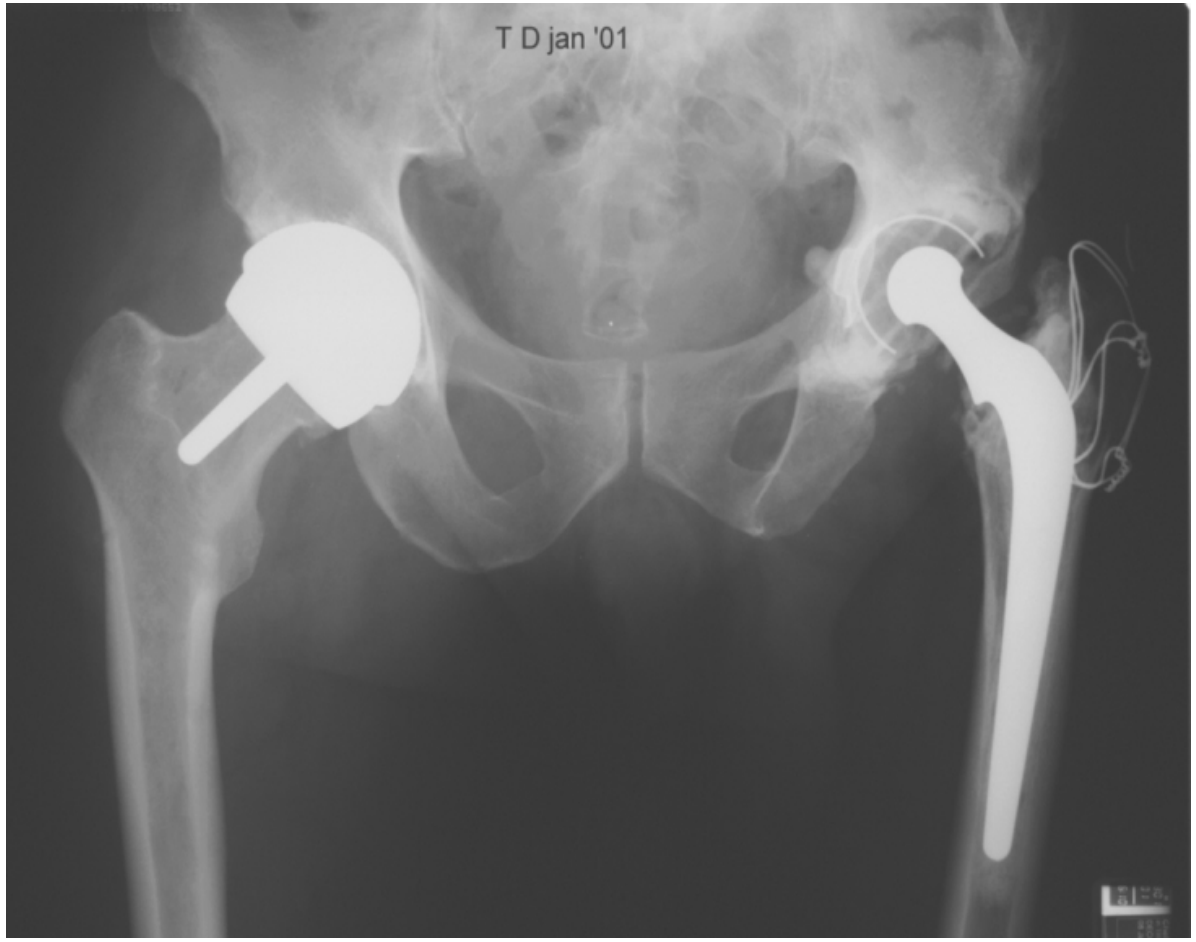
What is the ideal hip arthroplasty for sports patients?

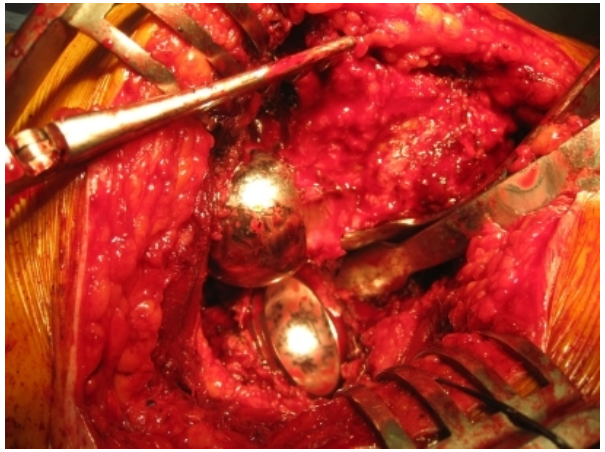
Specifications

- No bearing fracture: no CoC
- No dislocation: big femoral head concept
- No stem fracture: no stem
- Preservation of proprioception: retain the femoral neck (proprioceptors)



RESURFACING





***RSA* suitable and attractive option for young and active patient**

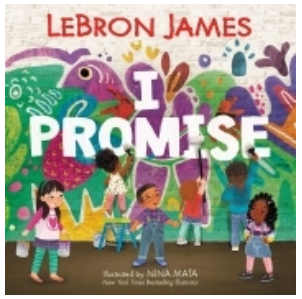
Ideal indication…

Degenerative hip joint disease in:

- Young patient (less 55 yo)
- High level of activity
- Optimal clinical and medical condition

Solid bone in femoral head

Promises I can make to athletes



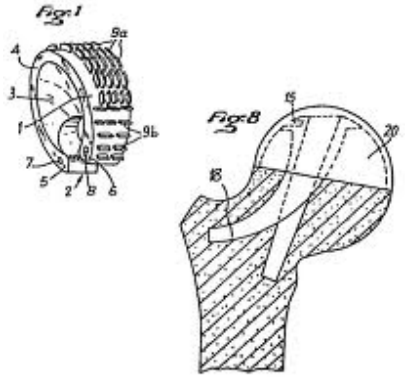
I PROMISE …no tigh pain

Better femoral stress transfert

Melbourne Orthopedic Group

- Thigh pain rate = 0 %

- Femoral bone stock preservation (DMO)



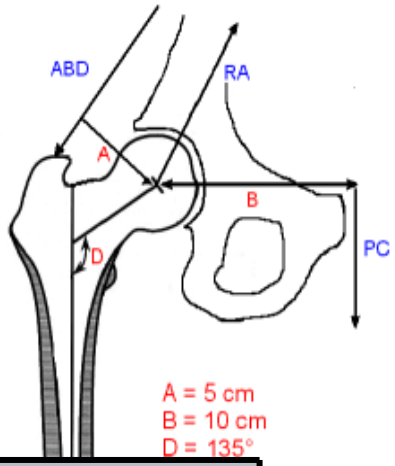
PCA 4 - 41%

Hungerford, 2000

I Promise!

no instability

to respect hip anatomy



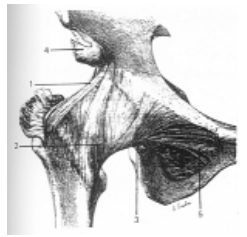
	THA	RESURF	
Offset (mm) operated vs non-operated	**+ 3.1**	**-0.8**	**Girard et al.** *JBJS Br.* 2006 Jun;88(6):721-6
	+ 3.6	**+ 0.5**	**Loughead et al.** *JBJS Br.* 2006;88-B:31-4
	+ 2.2	**- 0.4**	**Silva et al.** *JBJS Am.* 2004;86-A:40-6

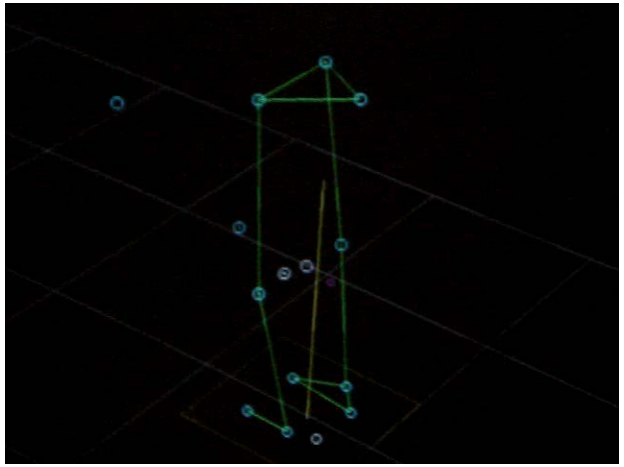
no LLD

	THA	RESURF	
LLD (mm) operated vs non-operated	**+ 2.6**	**- 0.2**	**Girard et al.** *JBJS Br.* 2006 Jun;88(6):721-6
	+ 2.9	**- 0.3**	**Loughead et al.** *JBJS Br.* 2006;88-B:31-4
	+ 3.1	**- 0.2**	**Silva et al.** *JBJS Am.* 2004;86-A:40-6

I PROMISE

to respect hip proprioception and motor control





Proprioceptors:

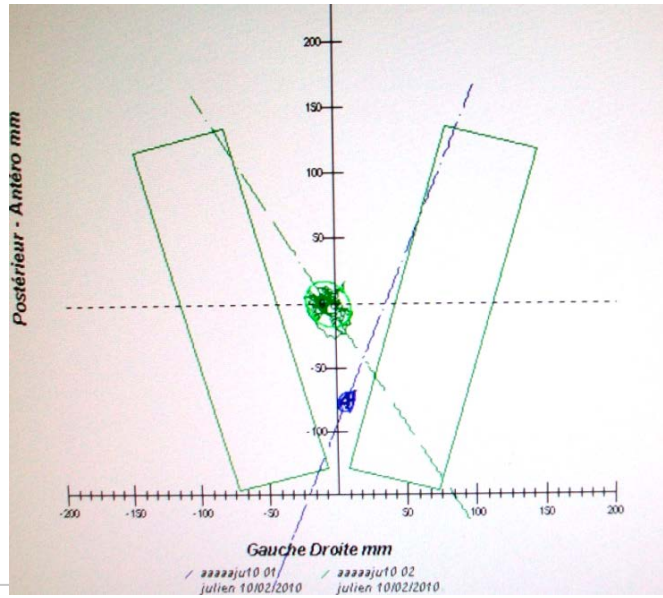
- Articular proprioceptors (Ruffini): head-neck jonction
- Mecano-receptors: on the neck

Proprioception test (Szymanski et al. Clin Biomec 2014) :

- Proprioception id control
- Motor control id

Gait lab (Nali et al. Clin Biomec 2021):

- No diff between non operated hip and resurfaced hip
- Same spatio temporal parameters



no sports restriction

<u>Can patients return to high-impact physical activities after hip resurfacing? A prospective study.</u> Girard et al. Int Orthop 2013

55 RSA (50 patients)

All engaged regularly in high-impact activity before their operation

Running, football, judo, basketball

Mean age 51.5 years - Mean FU 4 years

<u>Return to sport M4</u>

The resumption rate was 98 % for all high impact sports

No revision +++

Running activity after hip resurfacing arthroplasty: a prospective study.

Girard et al. Am J Sport Med 2012

40 patients (43 resurfacings)

All marathoners before surgery

More than 4h/week

Mean FU 6 years

No revision +++

	All patients			Before 50 years old			After 50 years old		
	Before	After	p value	Before	After	p value	Before	After	p value
Time (hours)	5.2	5.1	0.536	5.2	5.1	0.317	5.1	5.1	1
Mileage (km)	48.9	48.4	0.009	50.7	52.1	0.25	48.1	46.5	0.009

TENNIS

Mont et al. 1999. Am J Sports Med.

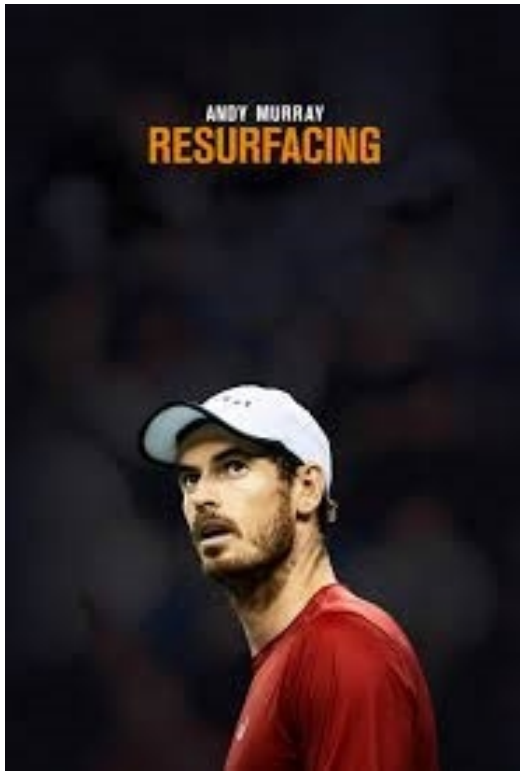
58 tennis players (65 resurf)

Mean age: 50 yo (38-58)

Return to tennis: M6

Same tennis level

96% survivorship at 8 y FU (95-98% for sedentary population)



TRIATHLON IRONMAN

Girard et al. OTSR 2018

48 patients (51 resurf, 43 men/5 women)
All Ironmen before osteoarthritis (swim 3,8/bike 180/ run 42,2)

Mean FU= 6,7 ans
Age = 48 yo (24-58)

No dislocation or revision

Return to sport activities 45/48 (94%)

Delay

Swim	M2
Bike	M2
Run	M5

Same performances before/after surgery +++

JUDO

Girard et al. Am J Sport Med 2020

Judokas high level (« expert level » ≥ black belt more than 3th Dan)

60 patients (67 RH)

FU 7 ans

53 return to judo (90.5%)

Rate of return to competition: 72%

Pratice 6h30/week

Niveau de pratique	
International	38%
National	13%
Régional	18%
Loisir	31%
Rang	
3e Dan	30%
4e Dan	20%
5e Dan	16%
6e Dan	10%
7e Dan	24%

Lefevre N et al. (2013)
Return to judo after joint replacement.
Knee Surg Sports Traumatol Arthrosc 21:2889-94

Lefevre et al.

27 judoka after THA

Return to sport: No return to competition…

Practice 2h30/week

No dislocation

2 revision for aseptic femoral loosening

CONCLUSION

- *Anatomic head diameter*
- *No dislocation*
- *No anatomy modification (offset, LL)*

- Return to low or moderate impact sport activities M2
- High sport impact M6
- No restriction (ultra trail, judo, rugby…)