

# Intraoperatív lehetőségek az instabilitás elkerülésére primer TEP beültetés esetén

Intraoperatív lehetőségek

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Semmelweis Egyetem Ortopédiai Klinika



**SEMMELWEIS**  
EGYETEM 1769

# Bevezetés

- Incidencia: 0,2-1,7 % primer csípőprotézis beültetés után
- 10x revízió után
- Számos faktor befolyásolja



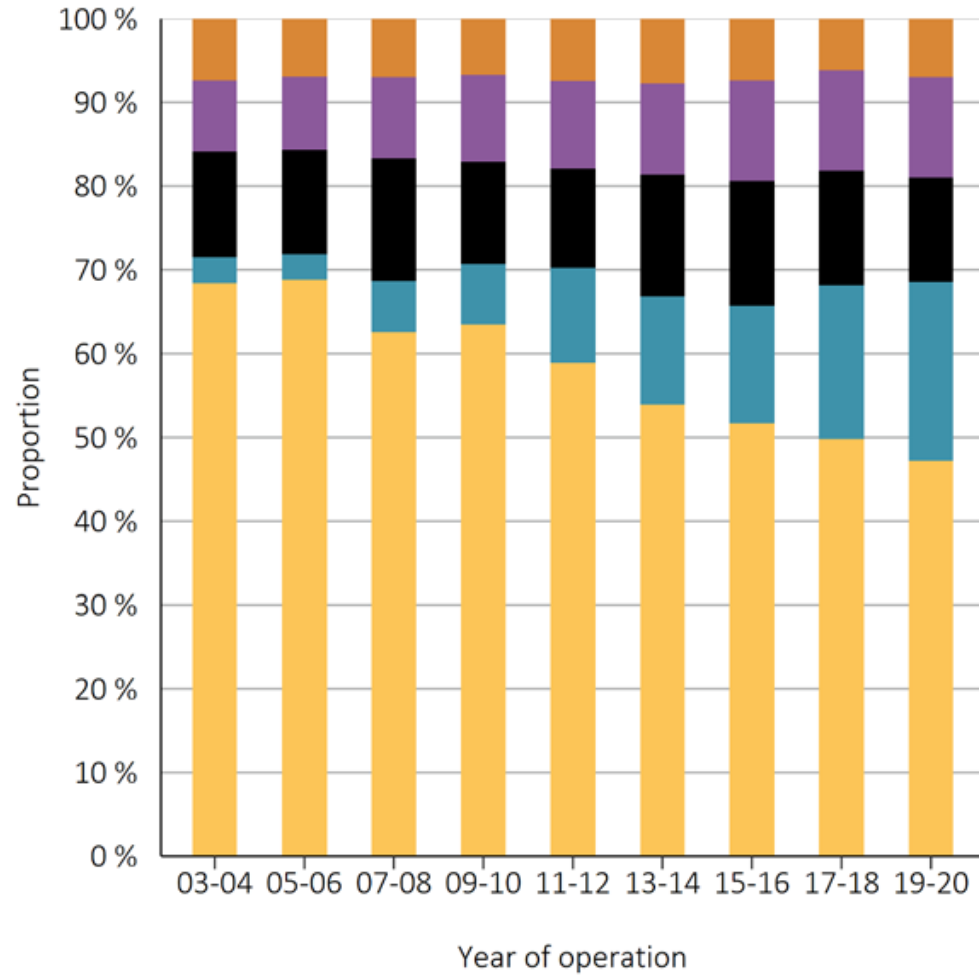
# Bevezetés

- 2. leggyakoribb korai szövődmény primer csípőprotézis után
- 3. leggyakoribb szövődmény az összes szövődmény közül

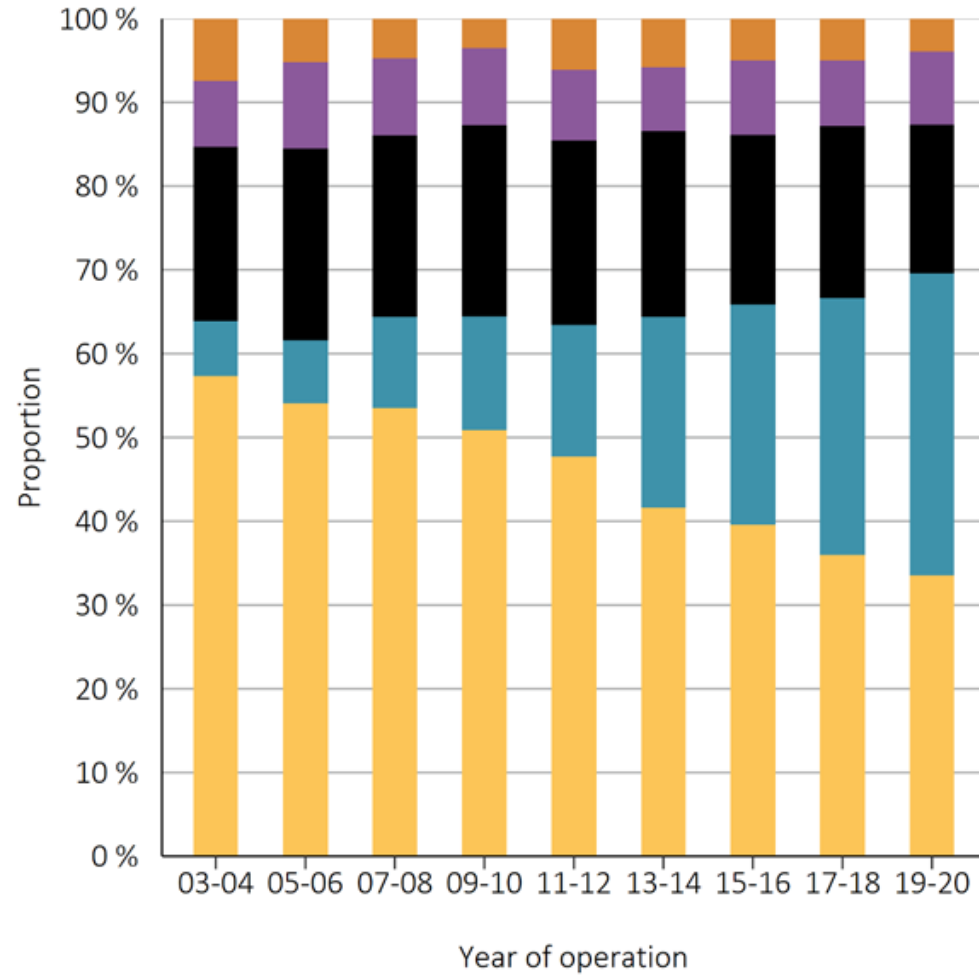
Detailed main reason for reoperation in the last ten-year periods

Reason	2001–2010				2011–2020			
	First reoperation		A least one previous reoperation		First reoperation		A least one previous reoperation	
	Number	Proportion, %	Number	Proportion, %	Number	Proportion, %	Number	Proportion, %
<b>Total</b>	<b>14,434</b>	<b>100</b>	<b>6,253</b>	<b>100</b>	<b>14,925</b>	<b>100</b>	<b>6,872</b>	<b>100</b>
Loosening (regardless of time after op)	7,411	51.3	1,943	31.1	6,385	42.8	1,57	22.8
Fracture femur	2,106	14.6	719	11.5	2,297	15.4	660	9.6
Dislocation, instability, subdislocation	1,779	12.3	1,049	16.8	1,775	11.9	855	12.4

# Bevezetés



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- Loosening
- Periprosthetic fracture
- Infection
- Other reasons
- Dislocation/instability

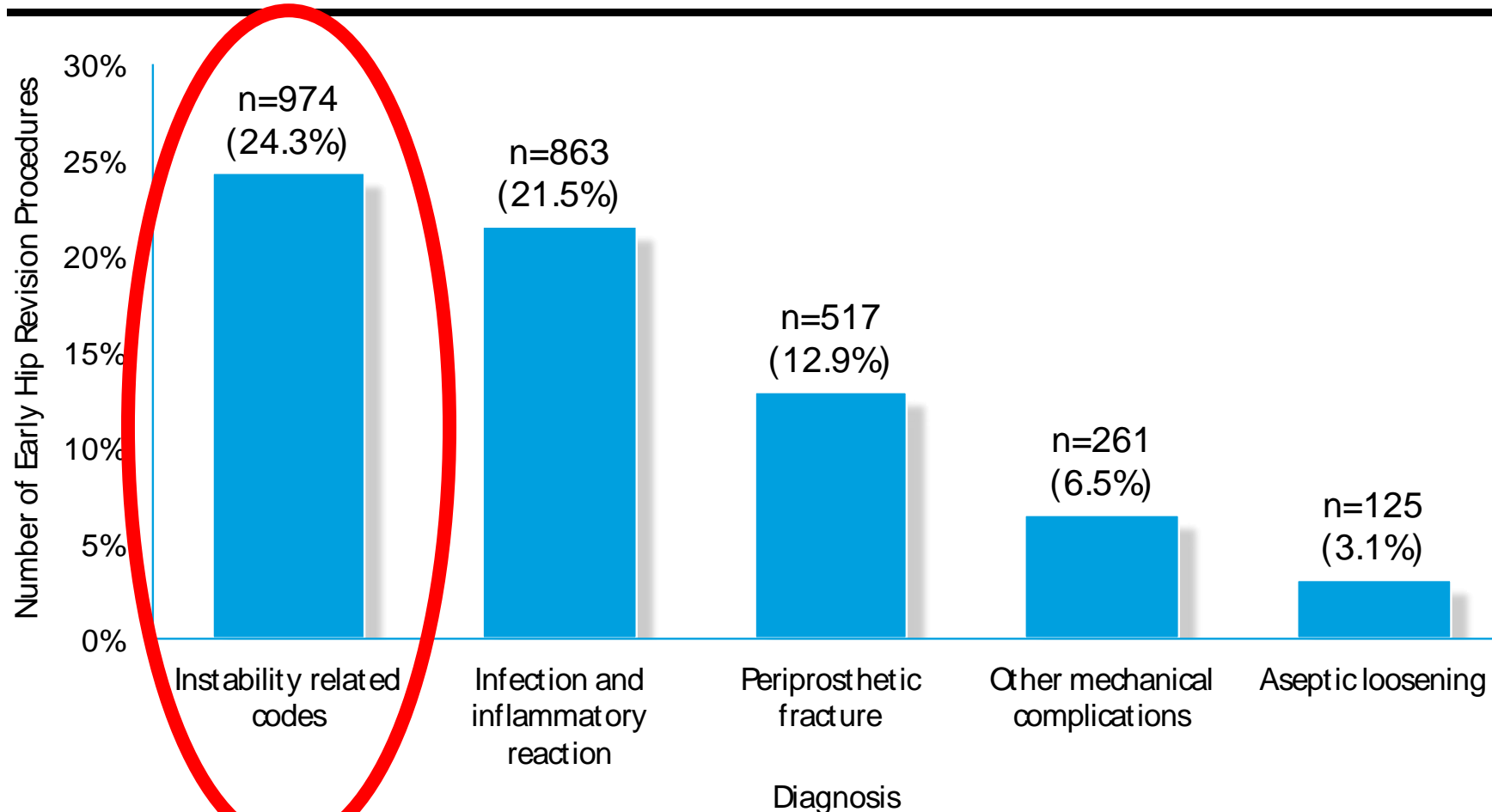
- Loosening
- Periprosthetic fracture
- Infection
- Other reasons
- Dislocation/instability

# Bevezetés

- Leggyakoribb korai komplikáció

AJRR, Annual Report, 2019

**Figure 33: Most frequently reported Diagnosis Codes for Hip Revisions (<3 months to Revision)**

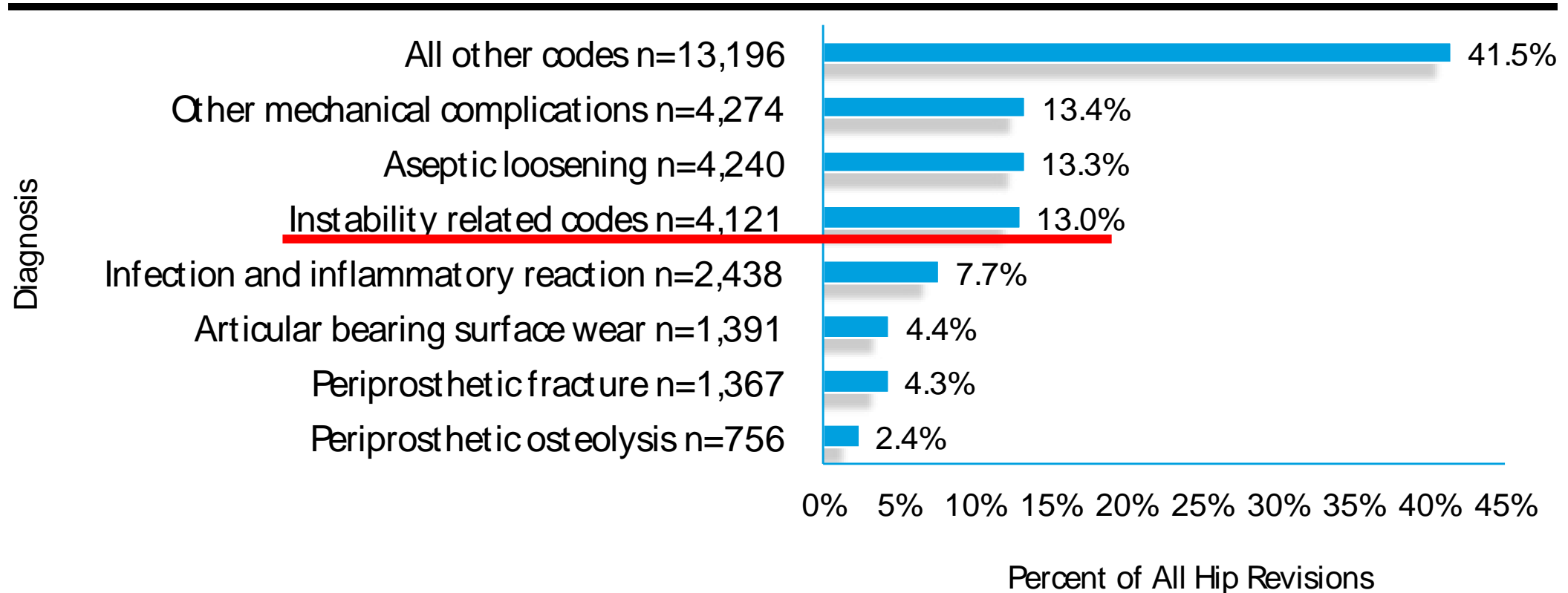


# Bevezetés

- 3. leggyakoribb komplikáció

AJRR, Annual Report, 2019

Figure 31: ICD Diagnosis Codes for All Hip Revisions (N=31,783)



# Bevezetés

- Kb. A ficamok 50-60 %-a az első 3 hónapban történik

## FICAM OKA ELŐFORDULÁS IDEJE SZERINT

- Első 3 hónapban – kellően érett pseudotok kialakulásának hiánya, patient factor...
- 3 hó-5 év: implant malpozíció

No. of revisions due to dislocation over time

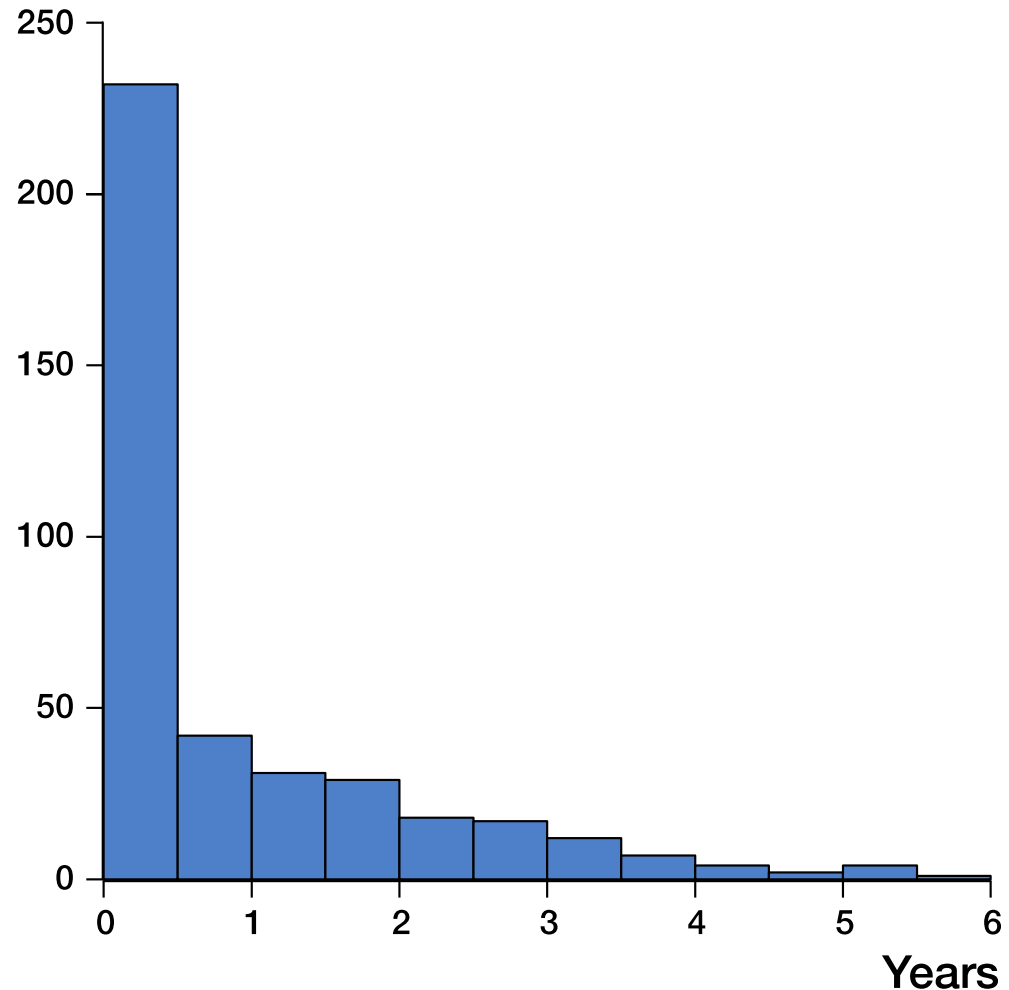


Figure 1. Frequency of revision surgery due to dislocation plotted against time elapsed after the index procedure.

# Miért ficamodik?

- 21.978 csípőprotézis retrospektív vizsgálata
- Luxációt előidéző faktorok elemzése

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A commentary by **Thomas J. Blumenfeld, MD**, is linked to the online version of this article.

## Creation of a Total Hip Arthroplasty Patient-Specific Dislocation Risk Calculator

Cody C. Wyles, MD, Hilal Maradit-Kremers, MD, MSc, Dirk R. Larson, MS, David G. Lewallen, MD, Michael J. Taunton, MD, Robert T. Trousdale, MD, Mark W. Pagnano, MD, Daniel J. Berry, MD, and Rafael J. Sierra, MD

*Investigation performed at the Mayo Clinic, Rochester, Minnesota*



**TABLE III Univariable and Multivariable Analysis of Dislocation Risk Associated with Patient Factors by Procedure\***

Patient Factor	Primary THA			Revision THA		
	Unadjusted HR (95% CI)	Adjusted HR (95% CI)	Adjusted P Value	Unadjusted HR (95% CI)	Adjusted HR (95% CI)	Adjusted P Value
Age, per 10 years	0.91 (0.86-0.97)	0.92 (0.86-0.98)	0.006	0.97 (0.92-1.02)	1.00 (0.94-1.06)	0.984
Sex (ref. = female)						
Male	0.67 (0.57-0.79)	0.73 (0.61-0.87)	<0.001	0.83 (0.72-0.95)	0.80 (0.68-0.95)	0.009
BMI (ref. = normal)						
<18.0 kg/m <sup>2</sup>	1.42 (0.72-2.78)	1.22 (0.58-2.59)	0.606	1.43 (0.85-2.42)	1.36 (0.76-2.44)	0.297
25.0-29.9 kg/m <sup>2</sup>	0.95 (0.77-1.17)	1.07 (0.86-1.32)	0.553	1.03 (0.87-1.22)	1.03 (0.85-1.25)	0.771
30.0-34.4 kg/m <sup>2</sup>	0.77 (0.61-0.97)	0.88 (0.68-1.12)	0.289	0.96 (0.79-1.16)	0.94 (0.75-1.78)	0.601
35.0-39.9 kg/m <sup>2</sup>	0.83 (0.61-1.12)	0.93 (0.68-1.27)	0.642	1.26 (0.99-1.60)	1.37 (1.04-1.79)	0.023
≥40.0 kg/m <sup>2</sup>	1.13 (0.82-1.56)	1.22 (0.87-1.71)	0.241	0.99 (0.73-1.35)	0.92 (0.66-1.29)	0.645
Neurologic disease (ref. = no)						
Yes	1.57 (1.31-1.87)	1.52 (1.26-1.84)	<0.001	1.46 (1.24-1.72)	1.33 (1.10-1.62)	0.004
Spine disease (ref. = none)						
Major†	1.55 (1.17-2.05)	1.52 (1.13-2.05)	0.006	1.32 (1.02-1.71)	1.39 (1.05-1.85)	0.022
Minor	1.10 (0.93-1.30)	1.18 (0.98-1.43)	0.084	1.08 (0.93-1.25)	1.06 (0.89-1.27)	0.523
Prior spine surgery (ref. = none)						
Major‡	1.52 (0.81-2.84)	1.21 (0.63-2.31)	0.571	0.78 (0.35-1.74)	0.61 (0.27-1.38)	0.236
Minor	1.39 (0.99-1.96)	1.28 (0.90-1.81)	0.170	0.79 (0.51-1.23)	0.62 (0.38-1.02)	0.058

Indication for primary THA  
(ref. = osteoarthritis)

Osteonecrosis	1.50 (1.11-2.04)	1.35 (0.99-1.83)	0.055	1.29 (1.03-1.62)	1.31 (1.01-1.69)	0.041
Acute fracture or nonunion	1.65 (1.06-2.59)	1.78 (1.12-2.82)	0.015	1.08 (0.89-1.30)	1.11 (0.89-1.37)	0.355
Inflammatory arthritis	1.00 (0.47-2.12)	0.86 (0.41-1.83)	0.702	1.26 (0.97-1.62)	1.19 (0.88-1.62)	0.244
Other	1.94 (1.32-2.86)	1.71 (1.15-2.54)	0.008	1.32 (0.92-1.88)	1.36 (0.87-2.12)	0.175

Indication for revision THA  
(ref. = aseptic loosening)

Dislocation	—	—	—	2.09 (1.75-2.50)	1.89 (1.49-2.40)	<0.001
Wear/osteolysis	—	—	—	1.12 (0.90-1.38)	0.91 (0.72-1.15)	0.438
Fracture/nonunion	—	—	—	1.43 (1.14-1.79)	1.38 (1.05-1.81)	0.019
Infection	—	—	—	1.30 (1.06-1.59)	1.69 (1.35-2.12)	<0.001

Operative approach

(ref. = posterior)

Lateral	0.62 (0.52-0.74)	0.58 (0.48-0.70)	<0.001	0.89 (0.77-1.02)	0.95 (0.81-1.11)	0.515
Direct anterior	0.26 (0.16-0.43)	0.27 (0.16-0.44)	<0.001	0.47 (0.07-3.38)	0.37 (0.06-2.39)	0.295
Trochanteric osteotomy	1.92 (1.22-3.01)	1.77 (1.11-2.82)	0.016	0.52 (0.41-0.66)	0.56 (0.43-0.74)	<0.001

Acetabular liner configuration

(ref. = standard)

Elevated	0.74 (0.54-1.02)	0.63 (0.45-0.88)	0.006	0.80 (0.64-1.00)	0.74 (0.58-0.93)	0.010
Dual mobility	1.08 (0.48-2.42)	0.59 (0.26-1.33)	0.205	0.59 (0.38-0.91)	0.44 (0.28-0.69)	<0.001
Constrained	—	—	—	1.28 (1.05-1.58)	0.67 (0.52-0.87)	0.003

Femoral head diameter

(ref. = ≤32 mm)

≥36 mm	0.70 (0.59-0.83)	0.69 (0.57-0.85)	<0.001	0.84 (0.73-0.97)	0.82 (0.70-0.97)	0.023
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Acetabular revision (ref. = no)

Yes	—	—	—	0.60 (0.53-0.68)	0.60 (0.51-0.70)	<0.001
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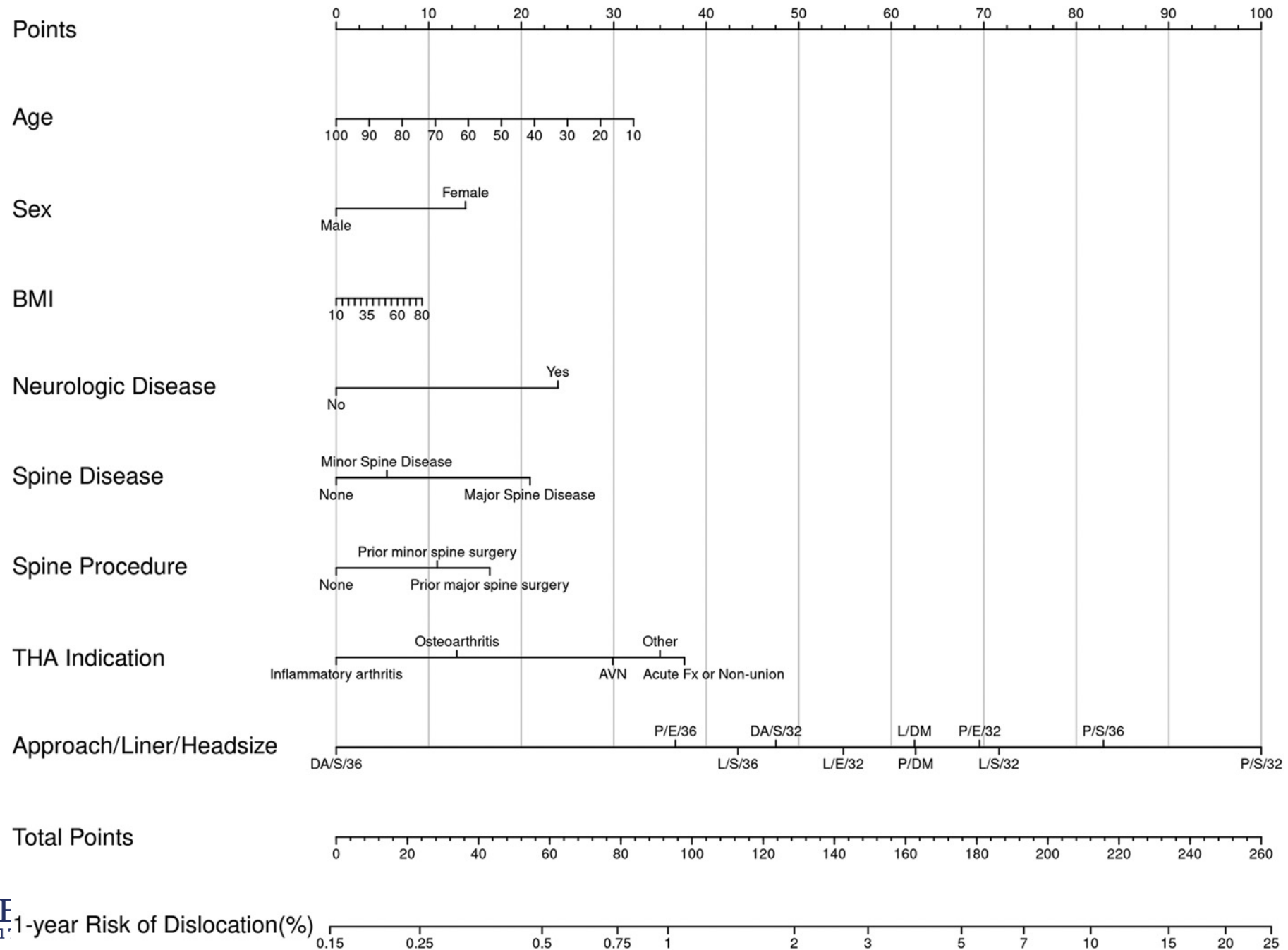


Fig. 1-A

# Miért ficamodik?

## Betegspecifikus rizikófaktorok (általános)

- Idős kor
- Magasabb ASA besorolás
- Neuromuscularis betegségek
- Dementia
- Női nem
- Alkoholizmus
- Rossz compliance (gyengébb a szoftver, mint a hardver...)



# Miért ficamodik?

## Betegspecifikus rizikófaktorok (általános)

Dementia, kognitív zavarok, ICP, izomdisztrófia, alkoholizmus – 13% diszlokáció vs. 2-3 % (Woolson et al, *J Arthroplast*, 1999)

Degeneratív artrózis esetén végzett TEP – 1x diszlokációs ráta

- vs AVFN – 2x diszlokációs ráta
- vs Dysplasia – 3x diszlokációs ráta
- vs combnyaktörés – 4x diszlokációs ráta
- vs álízület + korábbi TEP – 5x diszlokációs ráta
- vs revízió instabilitás miatt – 11x diszlokációs ráta

(Woo et al, JBJS

1982)

# Miért ficamodik?

## Betegspecifikus rizikófaktorkok (Ízület specifikus)

- Gyulladásos ízületi betegségek
- Ellenoldali csípőben jelentős rövidülés, vagy Girdlestone helyzet)
- Korábbi műtétek (Svéd artroplasztika regiszter)
  - revíziót igénylő diszlokáció 1 műtét után – 8,7%
  - revíziót igénylő diszlokáció 2 műtét után – 14,7%
  - revíziót igénylő diszlokáció 3 műtét után – 18,9%
  - revíziót igénylő diszlokáció >3 műtét után – 29,1%
- **Spinopelvicus átmenet hipermobilitás vagy rigiditás**

spinopelvic alignment

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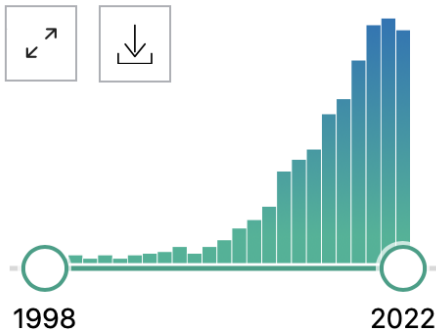


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RESULTS BY YEAR



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- Full text

ARTICLE ATTRIBUTE

**Spinopelvic alignment terminology is not the same!**

1 Lum ZC, Meehan JP, Wegner AM.  
 Hip Int. 2020 Nov;30(6):658-661. doi: 10.1177/1120700020936211. Epub 2020 Jun 23.  
 PMID: 32574089 No abstract available.

Share

**Spinopelvic Alignment and Its Use in Total Hip Replacement Preoperative Planning-Decision Making Guide and Literature Review.**

2 Stępiński P, Stolarczyk A, Maciąg B, Modzelewski K, Szymczak J, Michalczyk W, Zdun J, Grzegorzewski S.

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J Clin Med. 2021 Aug 11;10(16):3528. doi: 10.3390/jcm10163528.

PMID: 34441824 Free PMC article. Review.

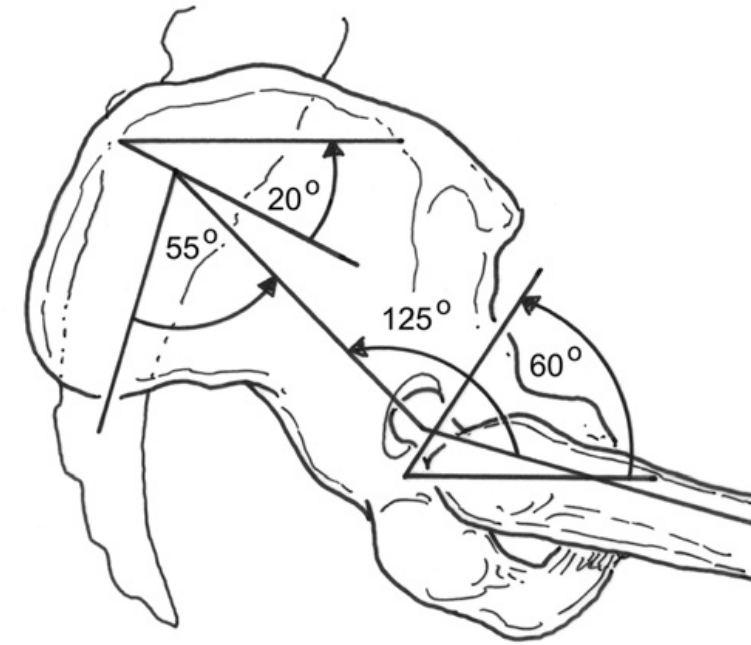
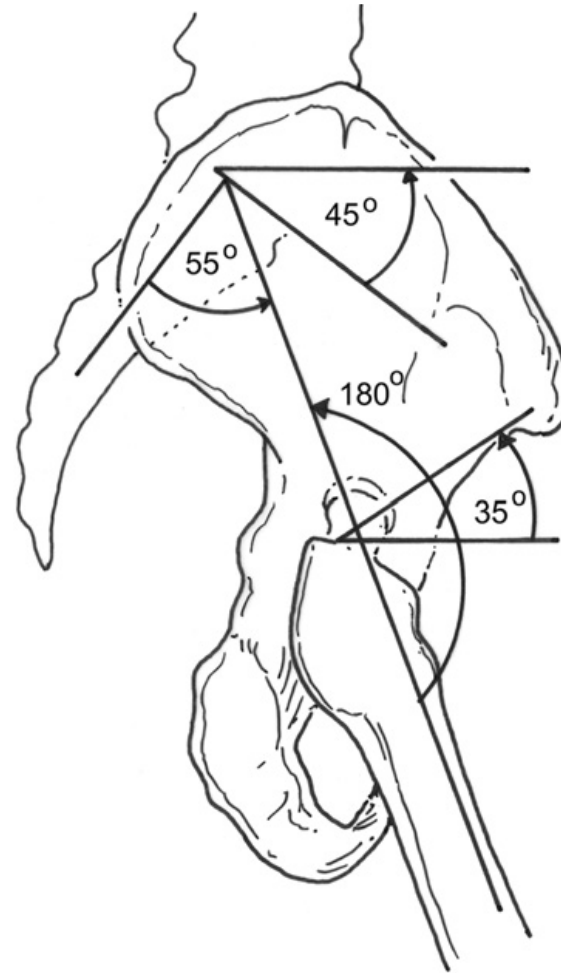
In recent years, a growing interest in this field may be observed, since **spinopelvic alignment** seems to have a significant impact on total hip replacement (THR) results. The aim of this study is to describe relations between spine and pelvic **alignment** and pro ...

# Spinopelvic átmenet jelentősége

**TABLE III Normal Radiographic Spinopelvic Values\***

	Standing†	Sitting†	Change‡
Pelvic incidence	$53^\circ \pm 11^\circ$	$53^\circ \pm 11^\circ$	–
Sacral slope	$40^\circ \pm 10^\circ$	$20^\circ \pm 9^\circ$	$11^\circ\text{-}29^\circ$
Pelvic femoral angle	$180^\circ \pm 15^\circ$	$125^\circ \pm 15^\circ$	$50^\circ\text{-}75^\circ$
Ante-inclination	$35^\circ \pm 10^\circ$	$52^\circ \pm 11^\circ$	–

\*Data are from Stefl et al.<sup>5</sup>. †The values are given as the mean and the standard deviation. ‡Change is the difference between standing and sitting; pelvic incidence is a static anatomic measurement, so it does not differ between standing and sitting. The other 3 measurements are dynamic (positional parameters) so they differ between standing and sitting.





# Spinopelvic átmenet jelentősége

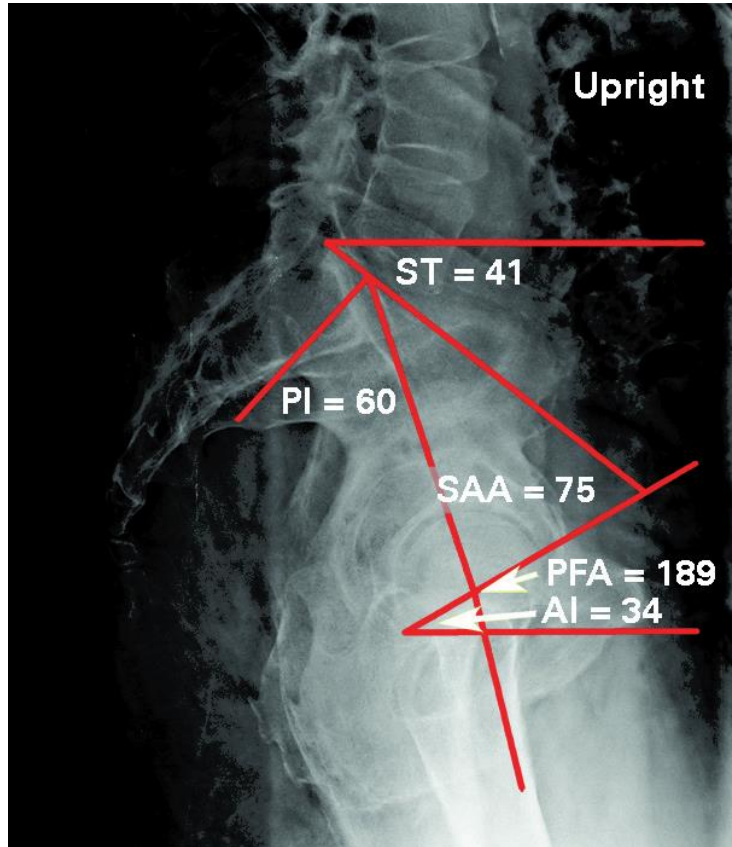


Fig. 1a

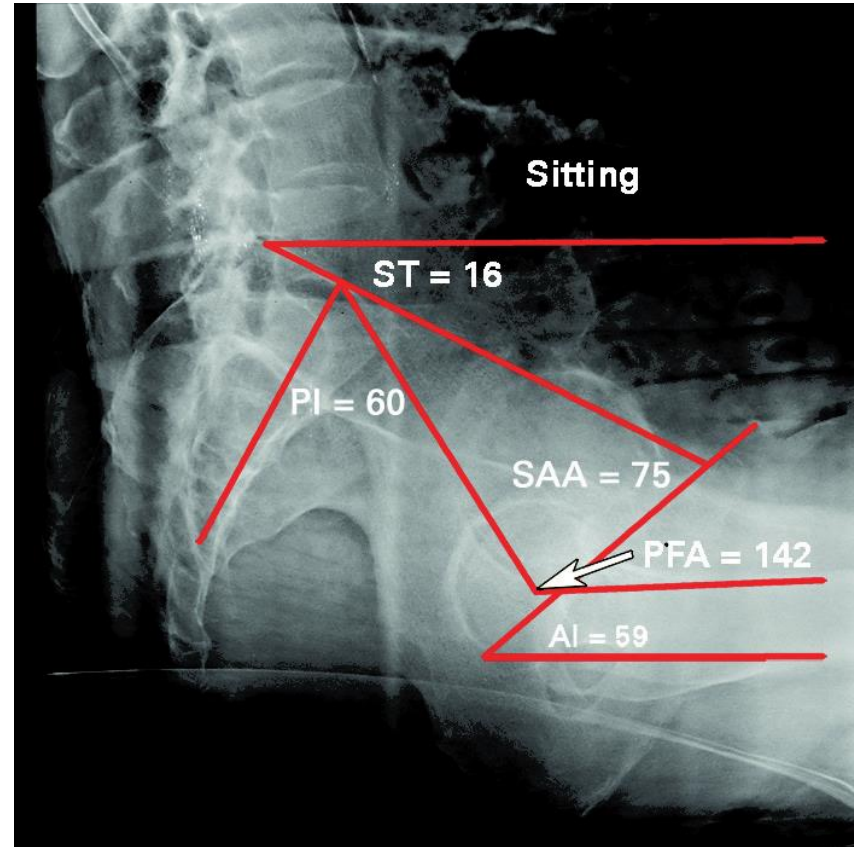


Fig. 1b

a) Standing lateral spinopelvic hip radiograph of construct with normal values marked ( $^{\circ}$ ). The pelvic incidence (PI)  $60^{\circ}$  which is high-normal; the sacral tilt (ST)  $41^{\circ}$ ; the pelvic femoral angle (PFA)  $189^{\circ}$ : ante-inclination (AI) of the pre-operative acetabulum  $34^{\circ}$ ; sacral acetabular angle (SAA)  $75^{\circ}$ . b) Sitting lateral spinopelvic-hip radiograph of normal construct. PI and SAA are static numbers that are the same standing and sitting. Sitting ST  $16^{\circ}$  (so  $\Delta$ ST  $25^{\circ}$ ). AI  $59^{\circ}$ , and PFA  $142^{\circ}$ .

# Spinopelvic átmenet jelentősége

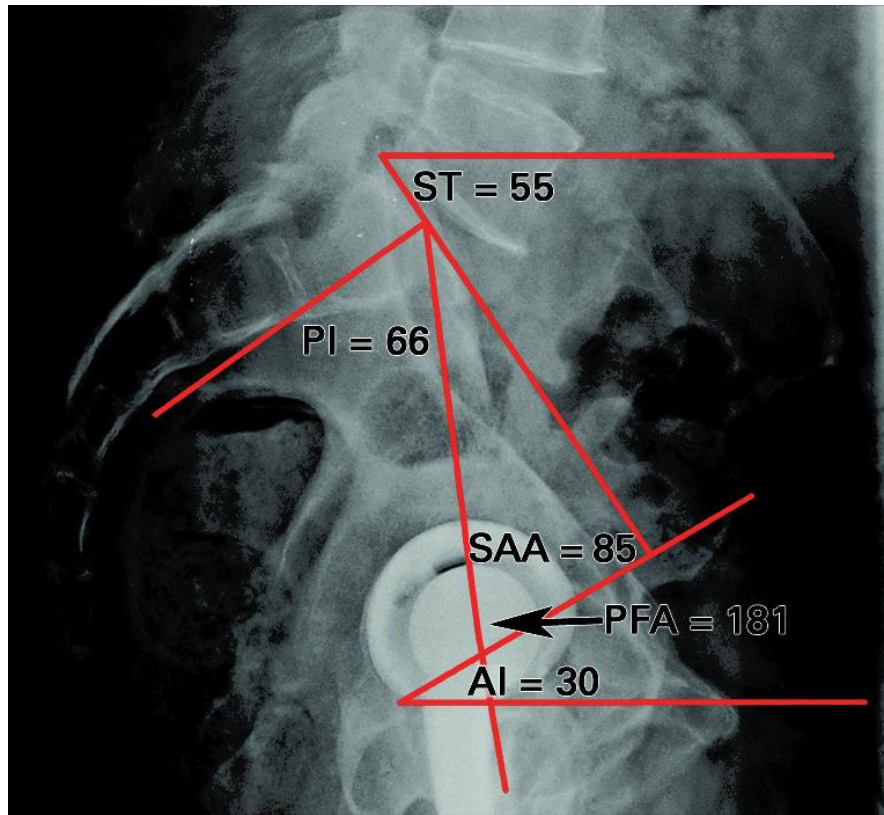


Fig. 2a

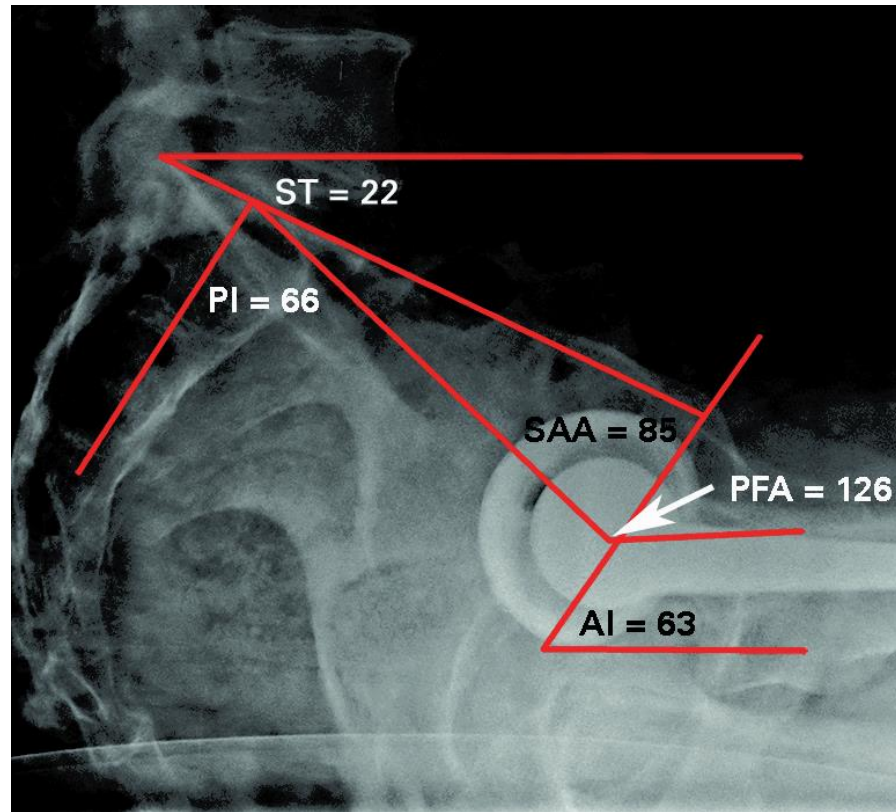
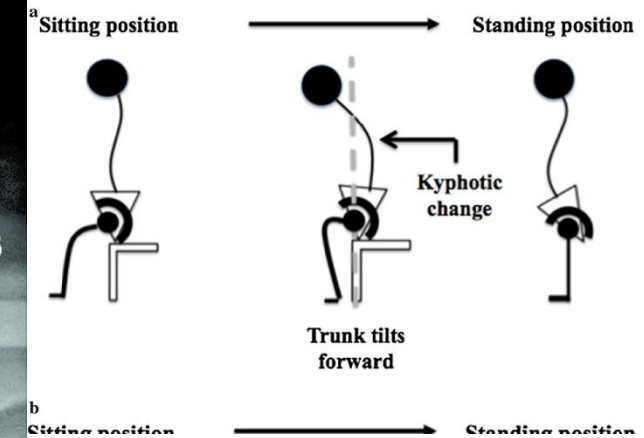


Fig. 2b



a) Post-operative standing lateral spinopelvic-hip radiograph of hypermobile flex construct: pelvic incidence (PI) 66° (high PI). Sacral tilt (ST) 55° (high). Intra-operative computer navigation acetabular component positions: inclination 35°, anteversion 21°, combined anteversion 33° results in normal sagittal component positions: ante-inclination (AI) 30°, sacral acetabular angle (SAA) 85°, pelvic femoral angle (PFA) 181°. b) Post-operative sitting lateral spinopelvic-hip of hypermobile-flex construct: ST 22° so  $\Delta$ ST 33° (high). AI 63°; SAA 85°; PFA 126° (all normal for hypermobile patients).

# Spinopelvic átmenet jelentősége

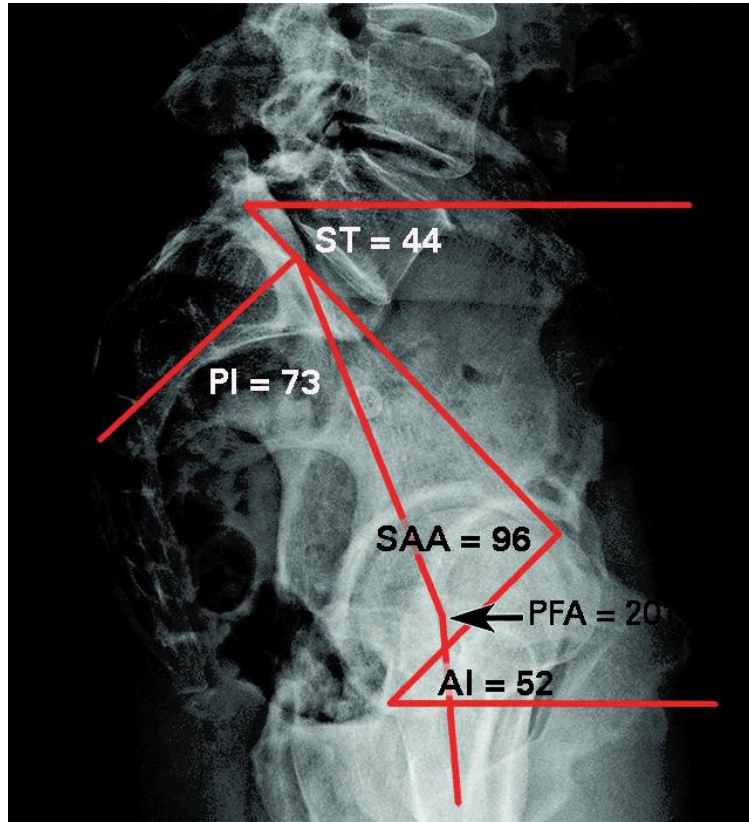


Fig. 3a

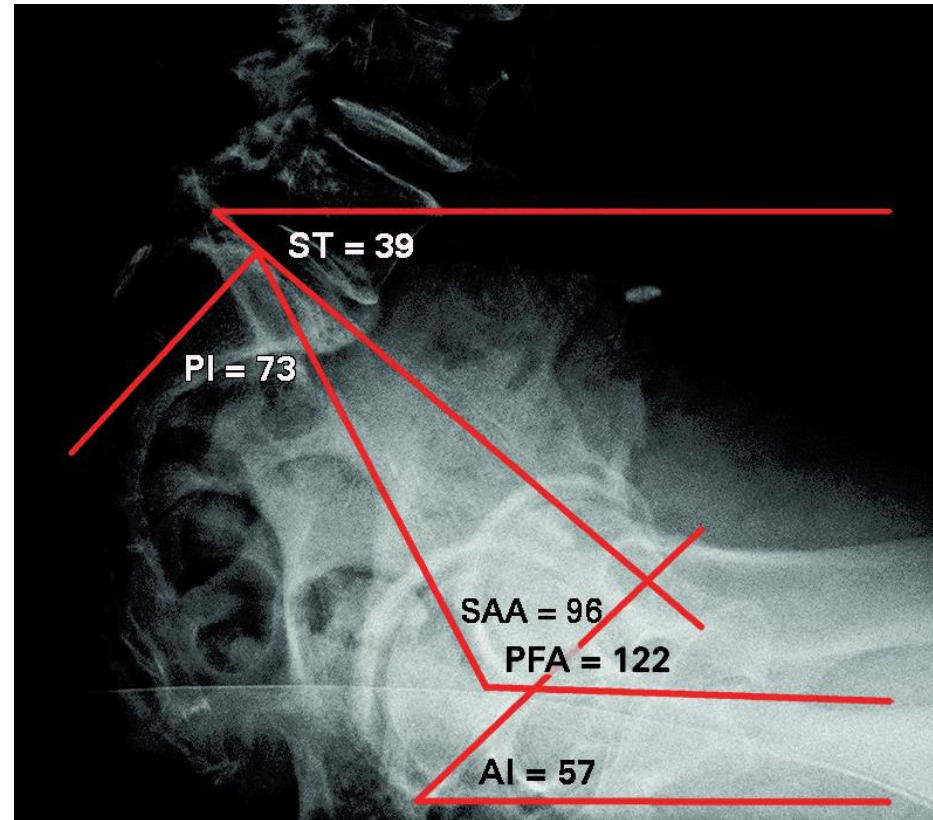


Fig. 3b

a) Standing lateral spinopelvic-hip radiograph fixed with anterior tilt (stuck standing). Pelvic incidence (PI) 73° (high PI); sacral tilt (ST) 44°; sacral acetabular angle (SAA) 96°; ante-inclination (AI) 52°; pelvic femoral angle (PFA) 201° (SAA and PFA are abnormally high). b) Sitting lateral spinopelvic-hip radiograph fixed with anterior tilt: ST 39° so  $\Delta$ ST 5° (biological fusion). AI 57°; PFA 122° (both normal). At surgery the acetabular component was placed at 42° inclination, 20° anteversion with combined anteversion of 40°. With these acetabular component numbers the post-operative AI and SAA were normal for both standing and sitting.

# Spinopelvic átmenet jelentősége

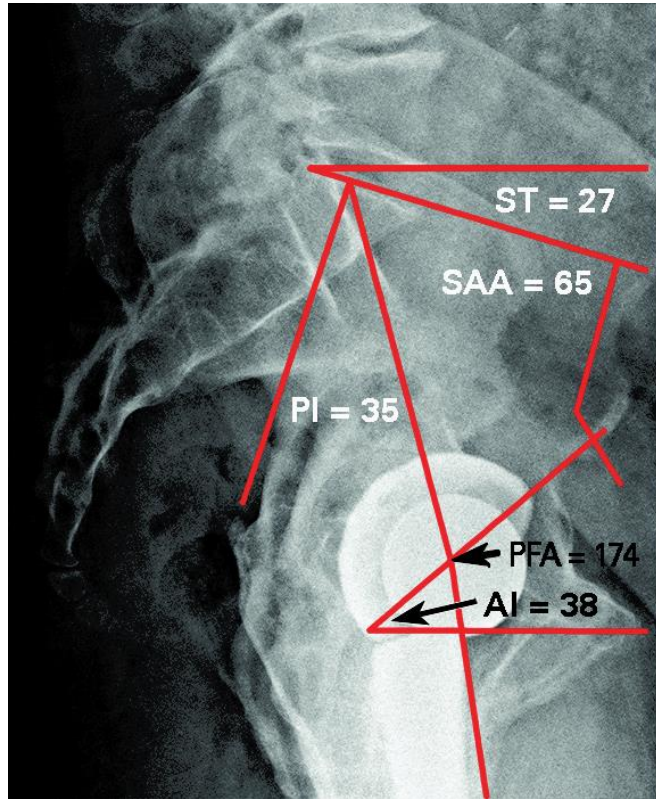


Fig. 4a

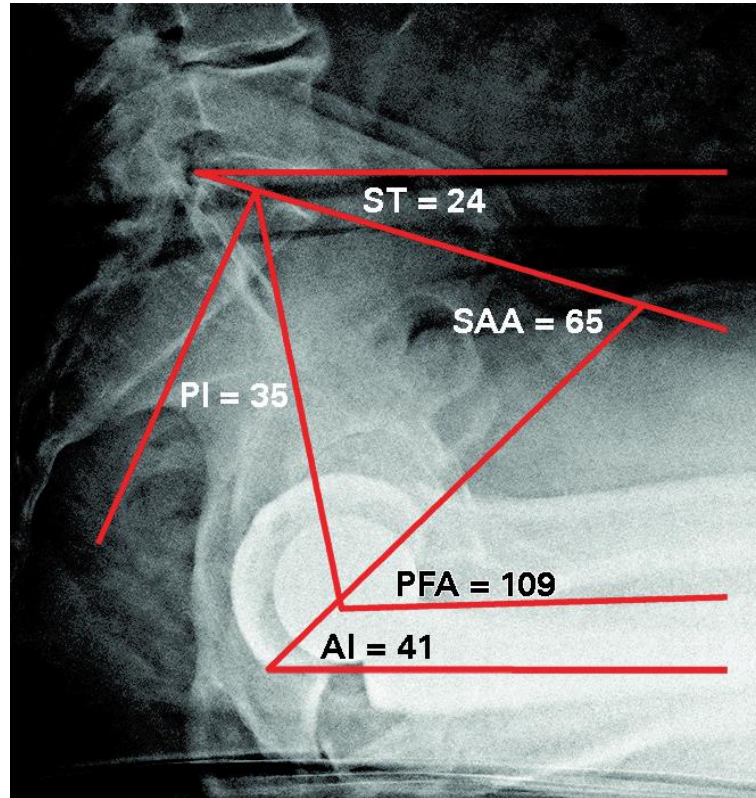
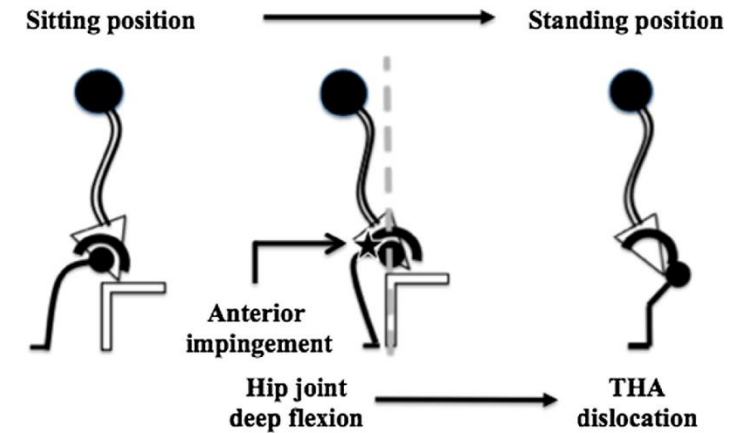


Fig. 4b

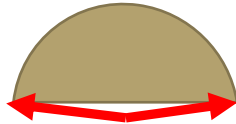


a) Post-operative standing lateral spinopelvic-hip radiograph of construct fixed in posterior tilt and stiff: Pelvic incidence (PI) 35° (low PI); sacral tilt (ST) 27° which means this structure is stuck sitting. Computer navigation intra-operative component position: inclination 45°, anteversion 21° and combined anteversion 33° results in normal sagittal implant position: ante-inclination (AI) 38°, sacral acetabular angle (SAA) 65° and pelvic femoral angle (PFA) 186°. b) Post-operative sitting lateral spinopelvic-hip radiograph of construct fixed in posterior tilt: ST 24° so  $\Delta$ ST 3° (fusion). AI 41° so  $\Delta$ AI 3° (stiff acetabulum). PFA 109° which is more flexion than normal because all movement must occur at the hip. This hip remains at risk for impingement even with correct acetabular component angles.

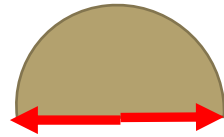
# Implantátummal kapcsolatos rizikófaktork vápa

## Vápa profil

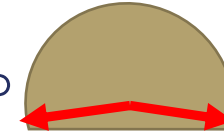
$<180^\circ$



$180^\circ$



$>180^\circ$



Nagyobb ROM

Kisebb esély impingementre

Kisebb fedettség – nagyobb luxációs rizikó

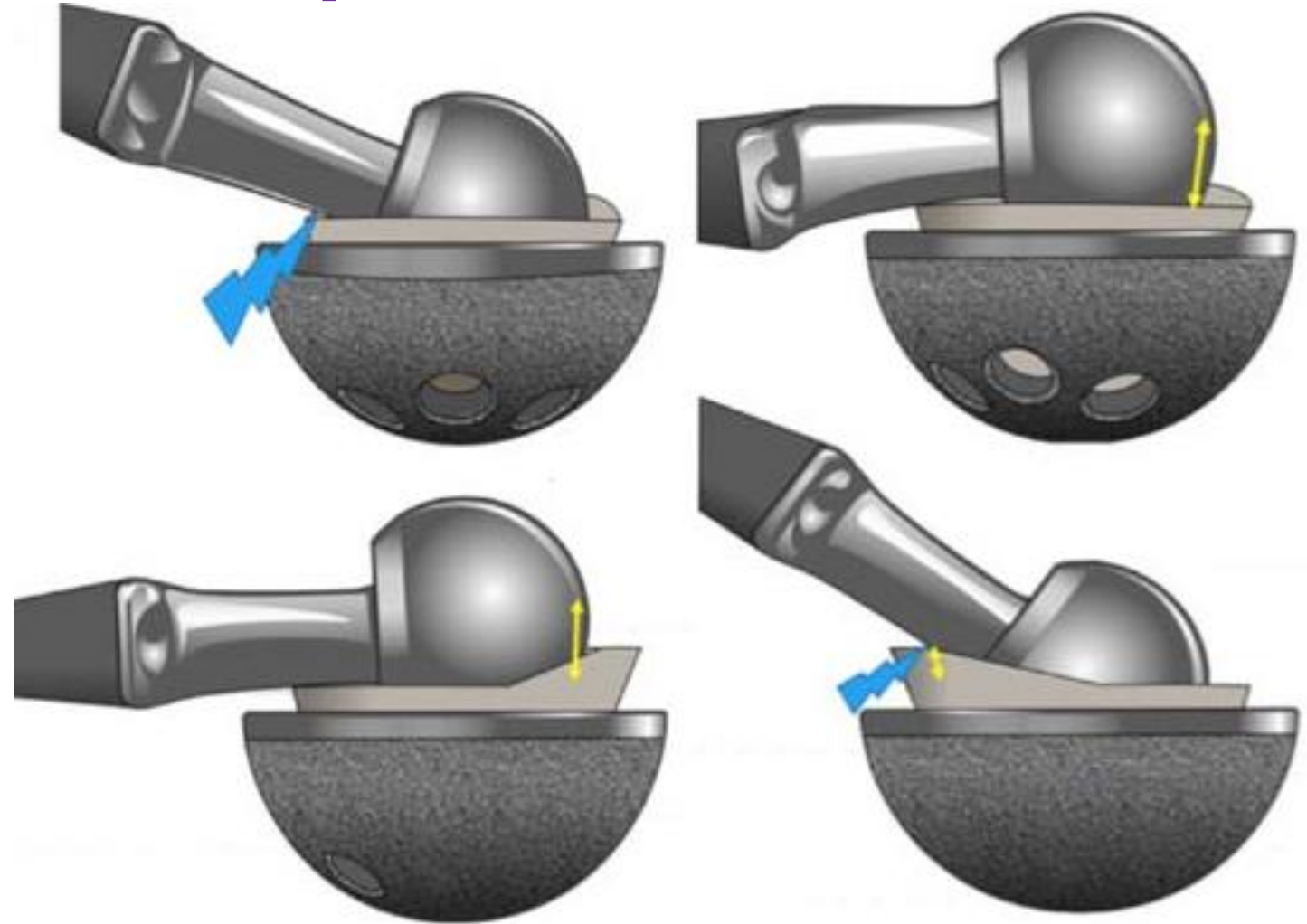
Kisebb ROM

Nagyobb esély impingementre

Nagyobb fedettség – kisebb luxáció

# Implantátummal kapcsolatos rizikófaktorkok vápa

- 3. Generációs vápa
- Szoknyás vápa
- Offset-es vápa



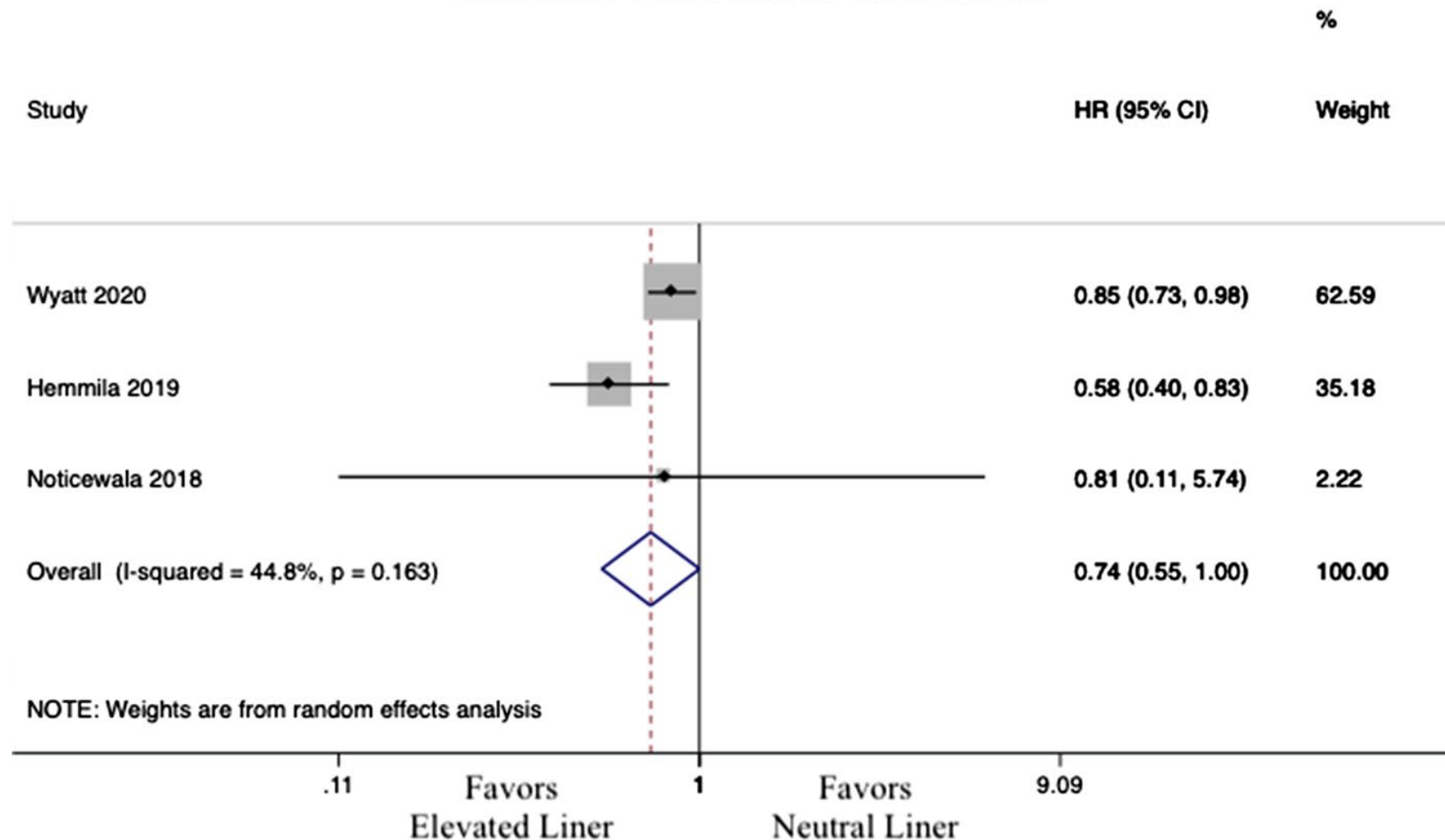
# Implantatummal kapcsolatos rizikófaktork vápa

## Revision THA due to dislocation

### SZOKNYÁS VÁPA

- 26.507 beteg
- Systematic review

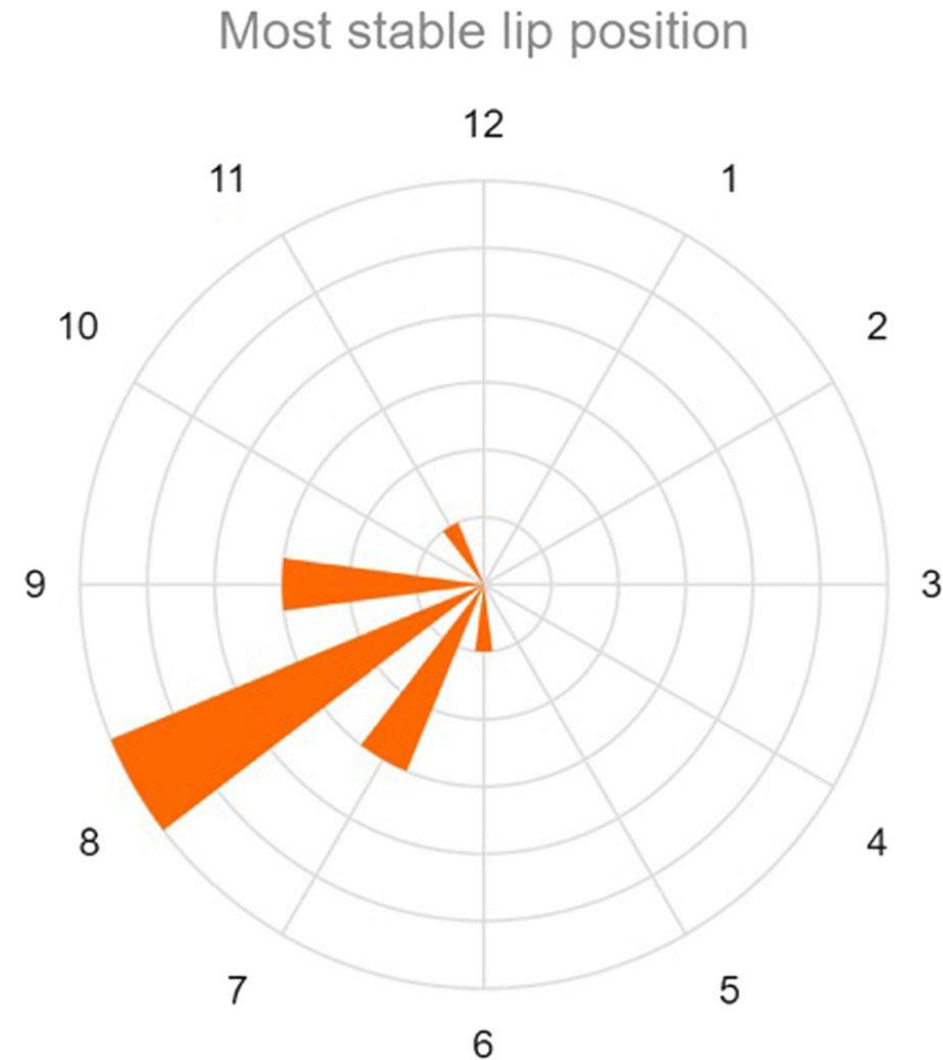
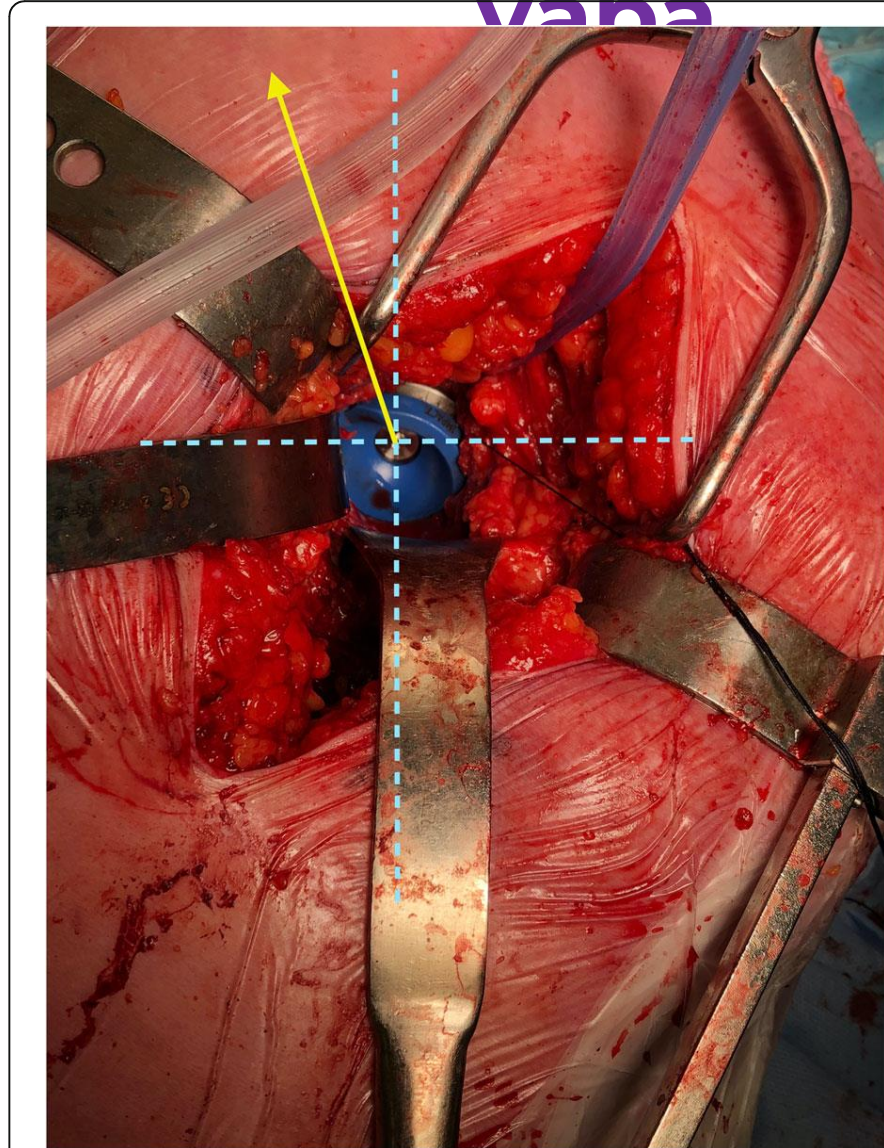
Gkiatas, Eur Journal Orthop Surg Trauma, 2022



# Implantatummal kapcsolatos rizikófaktorok

vána

- Hátsó feltárás
- 8 óra (jobb csípő)
- 4 óra (bal csípő)



Hau, Journal of  
Orthop Surg  
Research, 2018



# Implantátummal kapcsolatos rizikófaktorkok **FEJMÉRET**

Nagyobb fej méretek

jobb fej/nyak méretarány → nagyobb

ROM

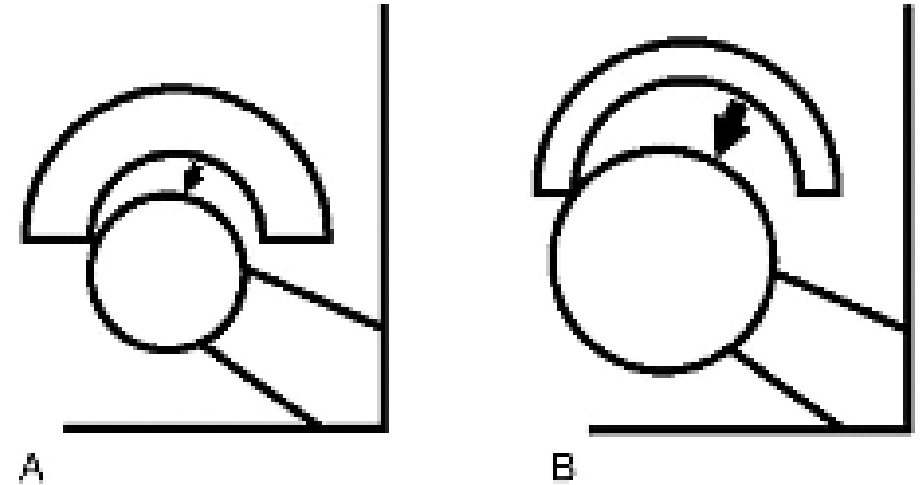
nagyobb jumping distance

„galléros” fej kerülete

Hátrány

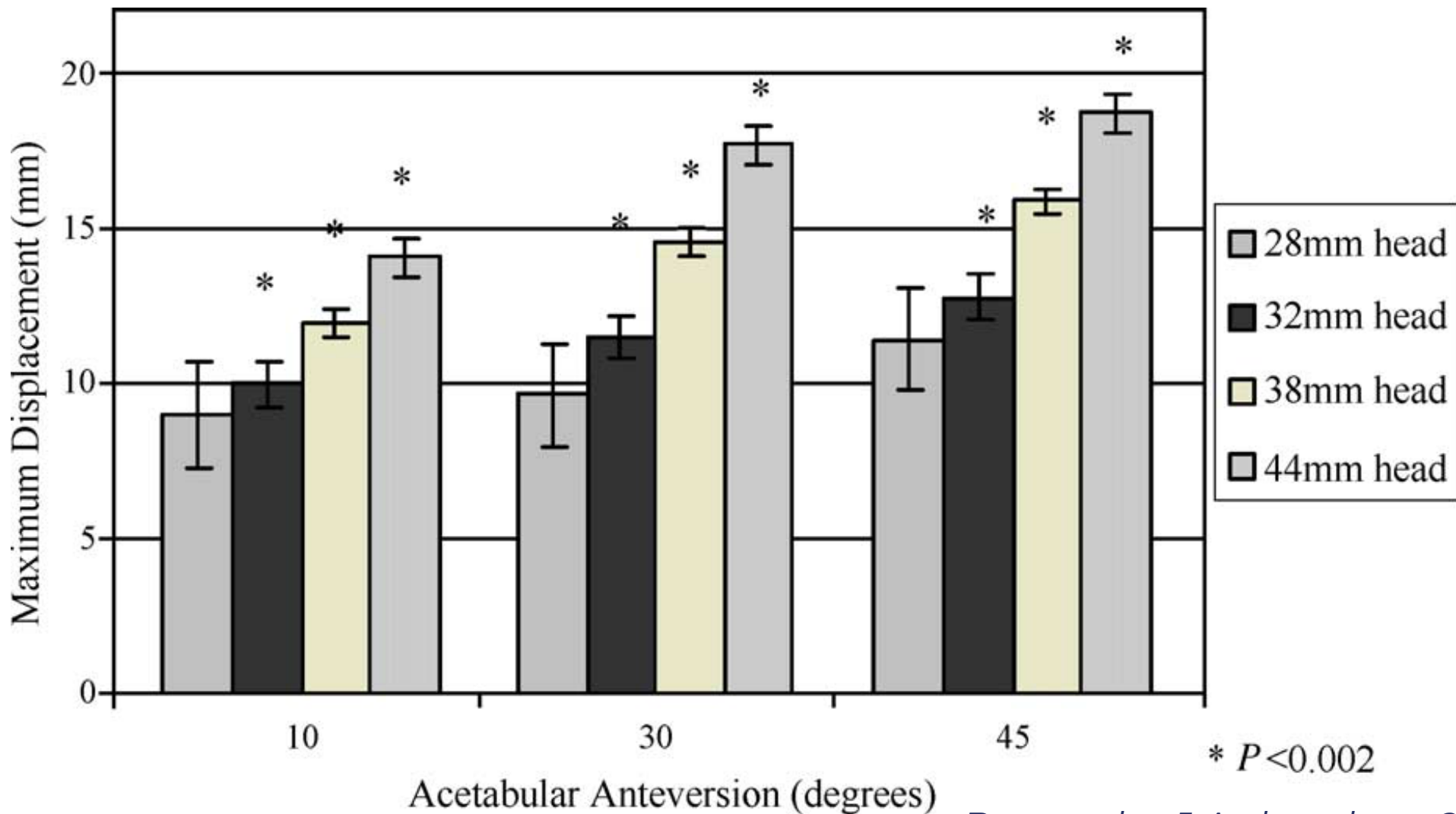
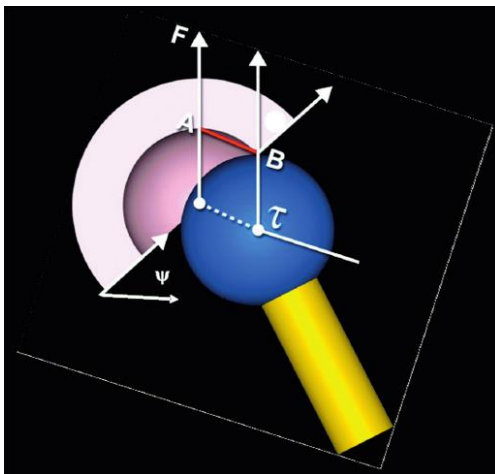
Nagyobb mértékű kopás

Nagyobb megterhelés a fej-nyak határon →  
korrózió



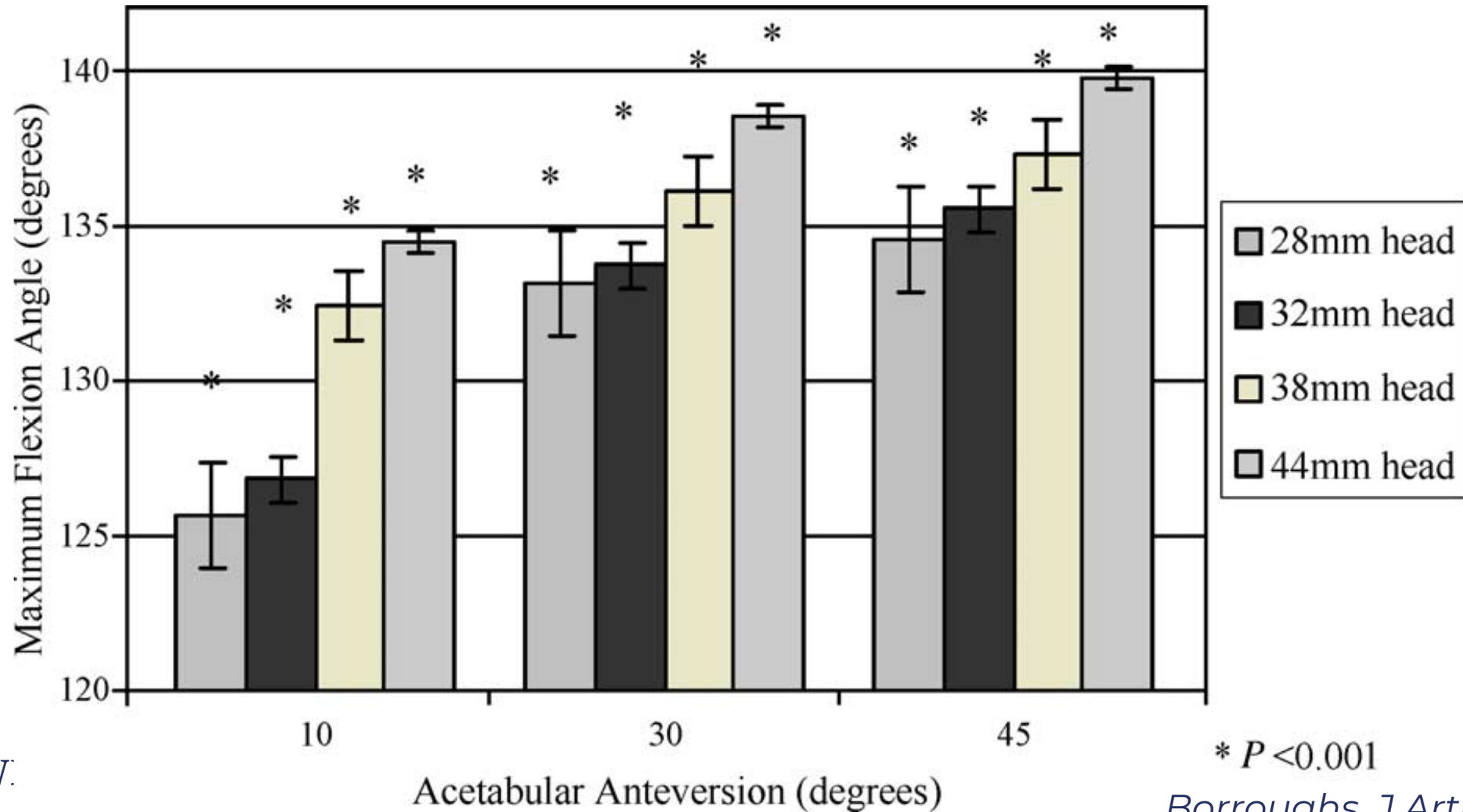
# Implantátummal kapcsolatos rizikófaktorkok

## FEJMÉRET

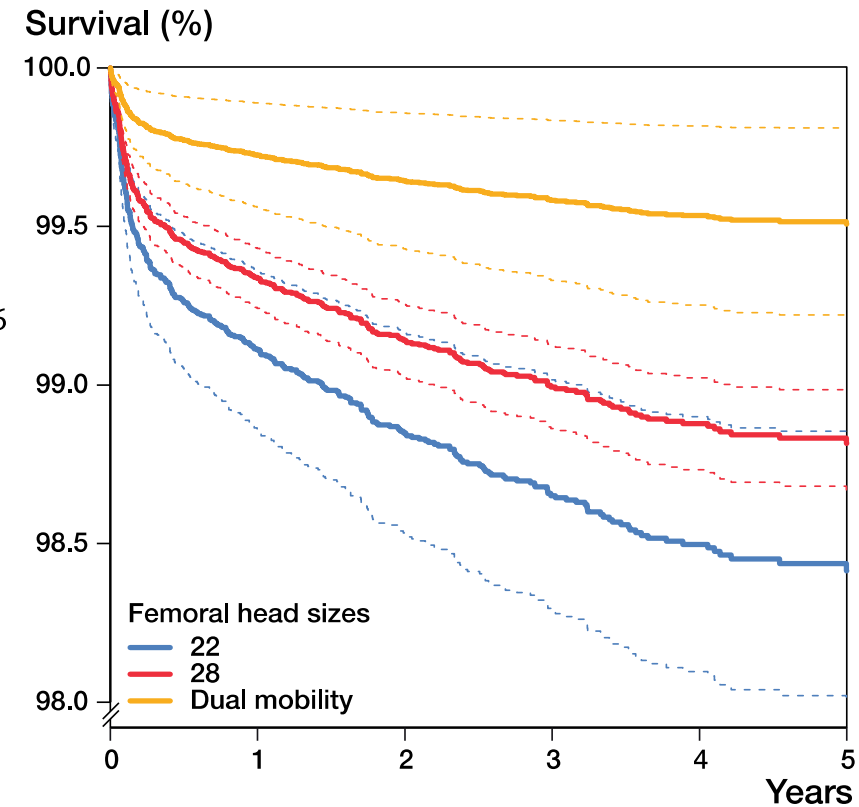
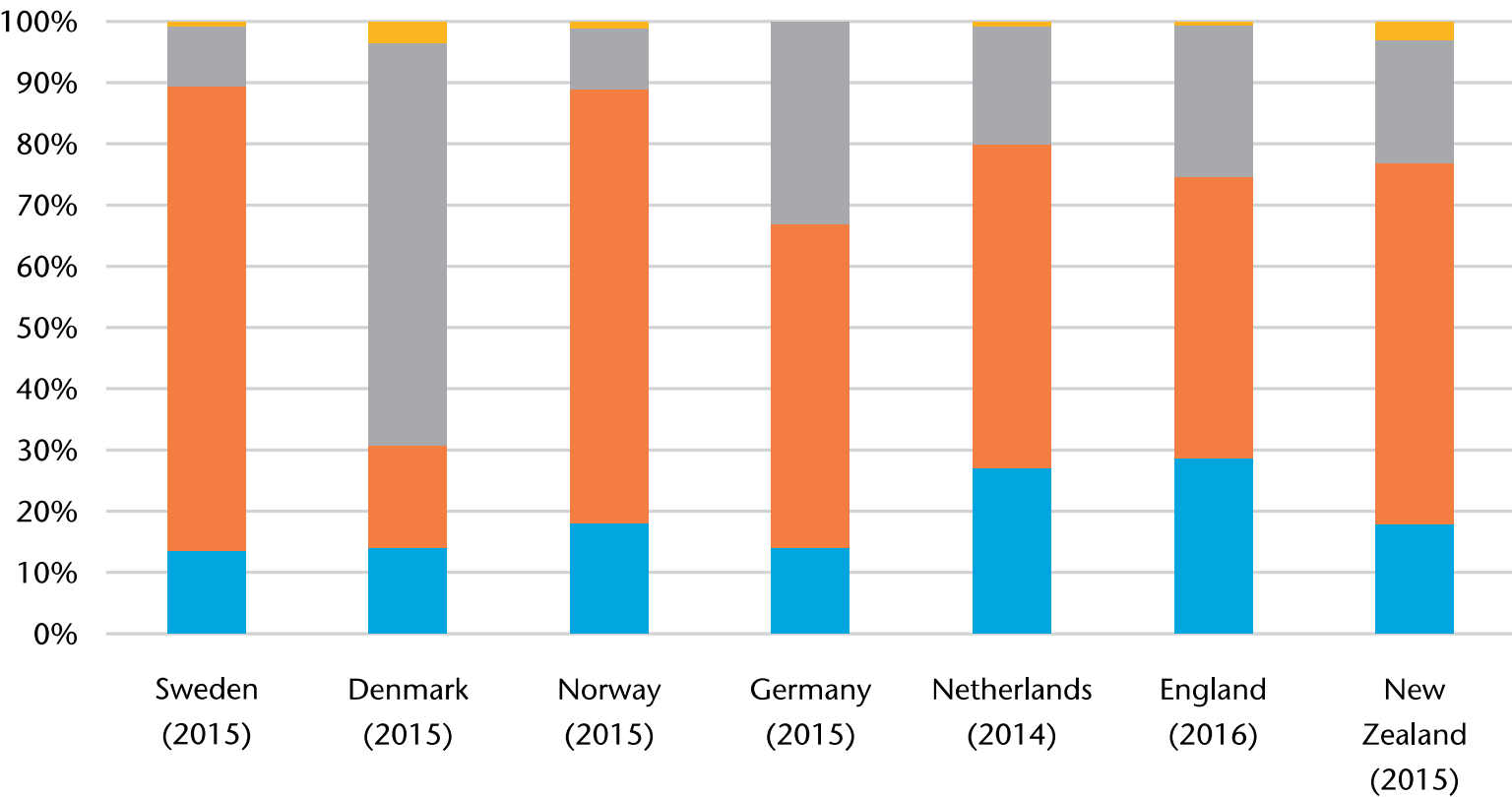


# Implantatummal kapcsolatos rizikófaktork

## FEJMÉRET



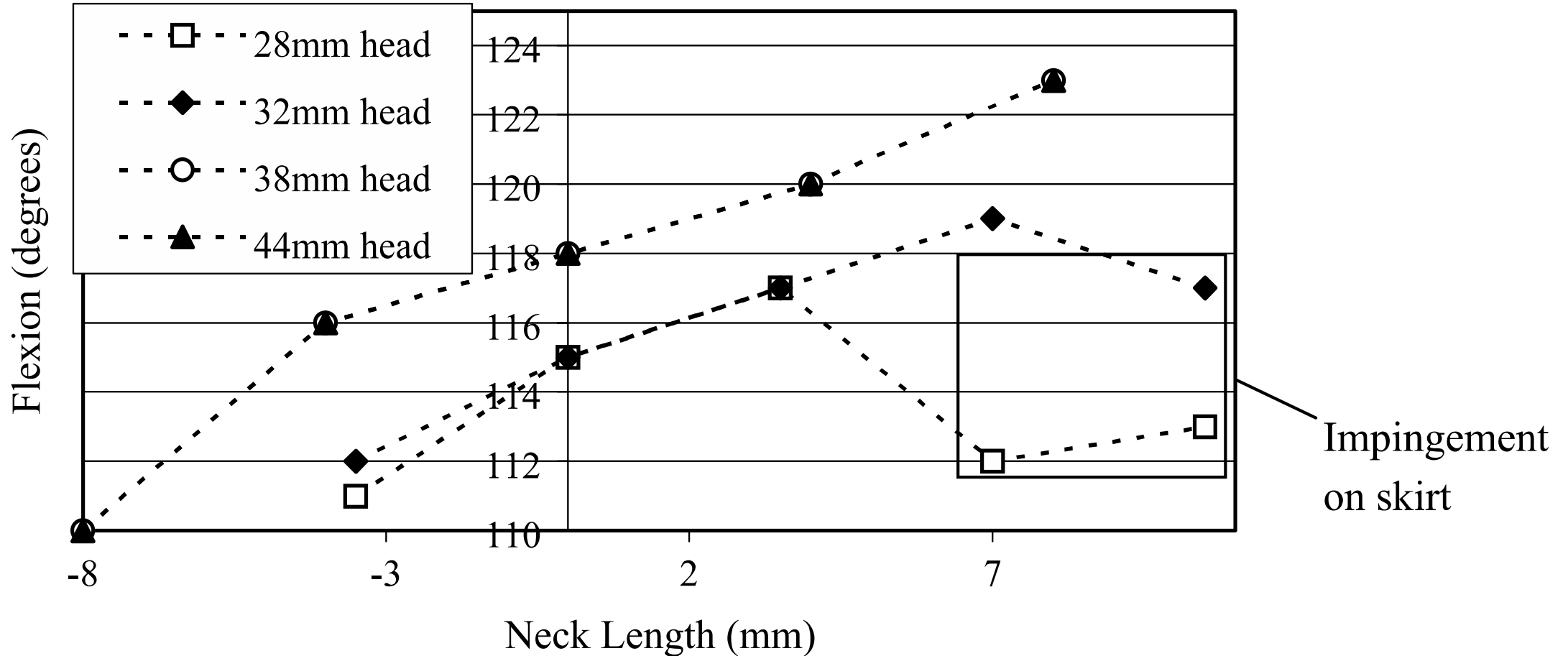
# Implantátummal kapcsolatos rizikófaktorok **FEJMÉRET**



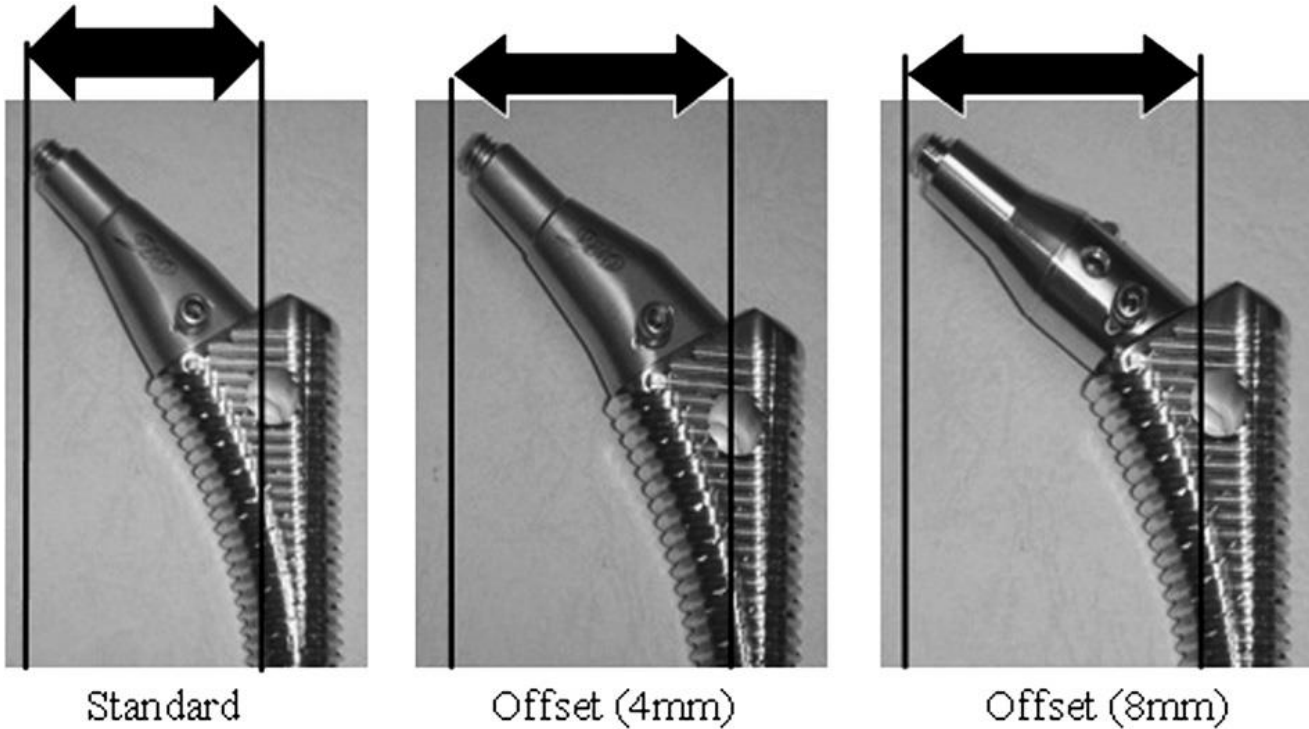
*Tsikadylakis, EFORT Open Reviews, 2018*

*Hailer, Acta Orthop, 2012*

# Implantatummal kapcsolatos rizikófaktorerok **FEJMÉRET**



# Implantatummal kapcsolatos rizikófaktorkok **femorális komponens offset és nyak**

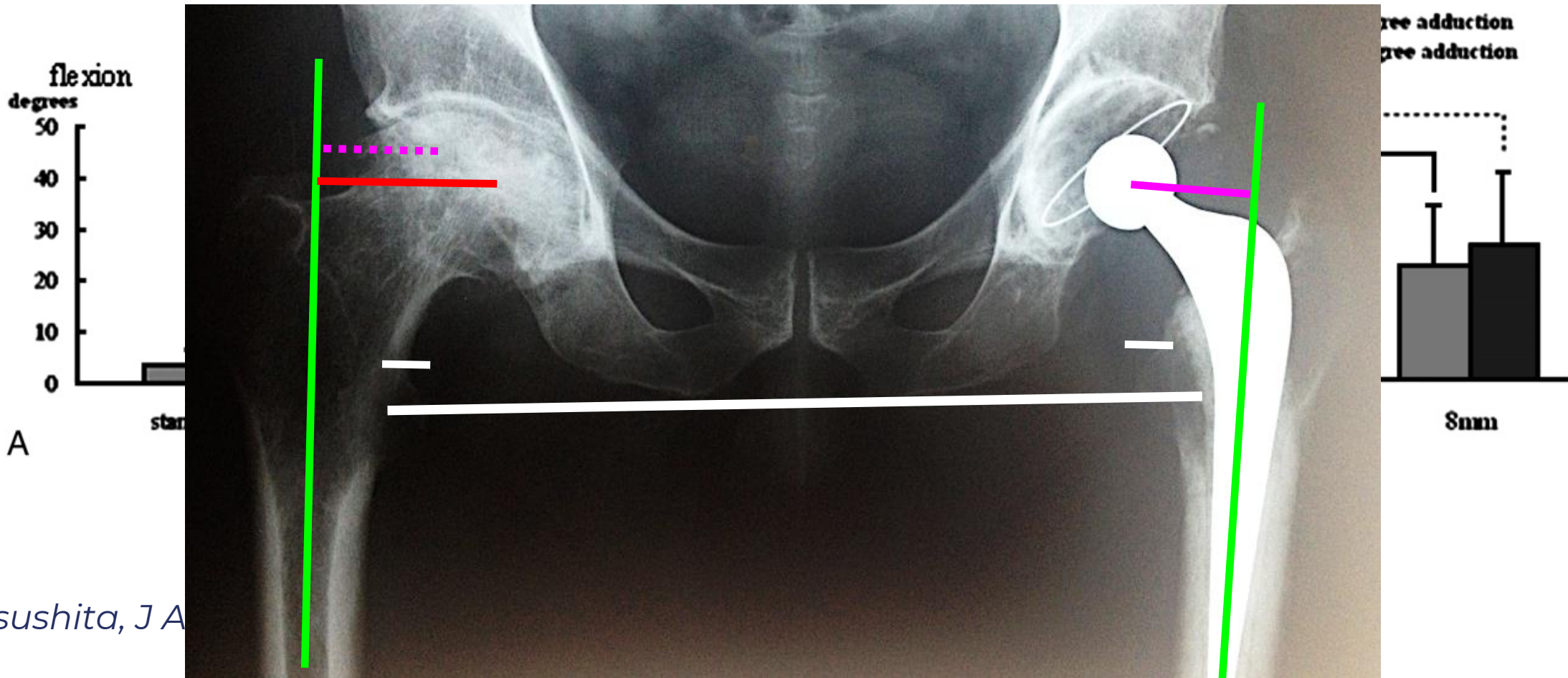


Nyak hossz, nyak átmérő, offset

*Matsushita, J Arthroplast., 2009*

# Implantatummal kapcsolatos rizikófaktorok

## femorális komponens offset és nyak



Matsushita, J A

# Műteti technikával kapcsolatos rizikófaktorkok

## VÁPA POZÍCIÓ

### Vápa pozícionálás

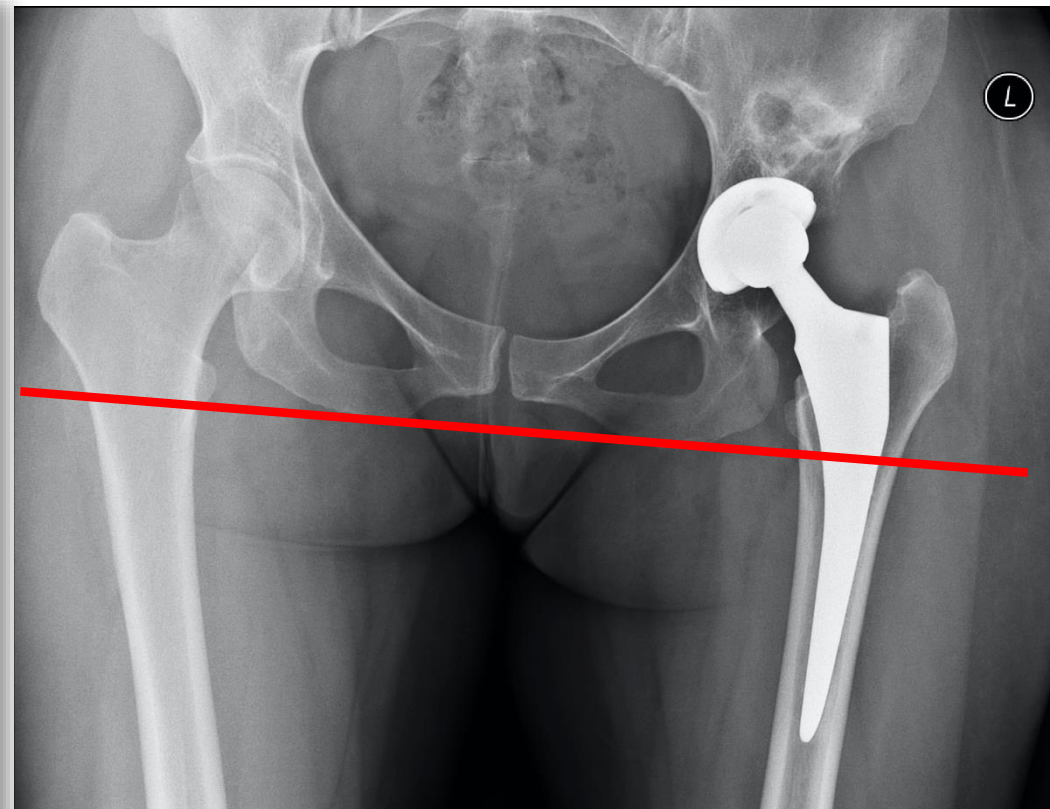
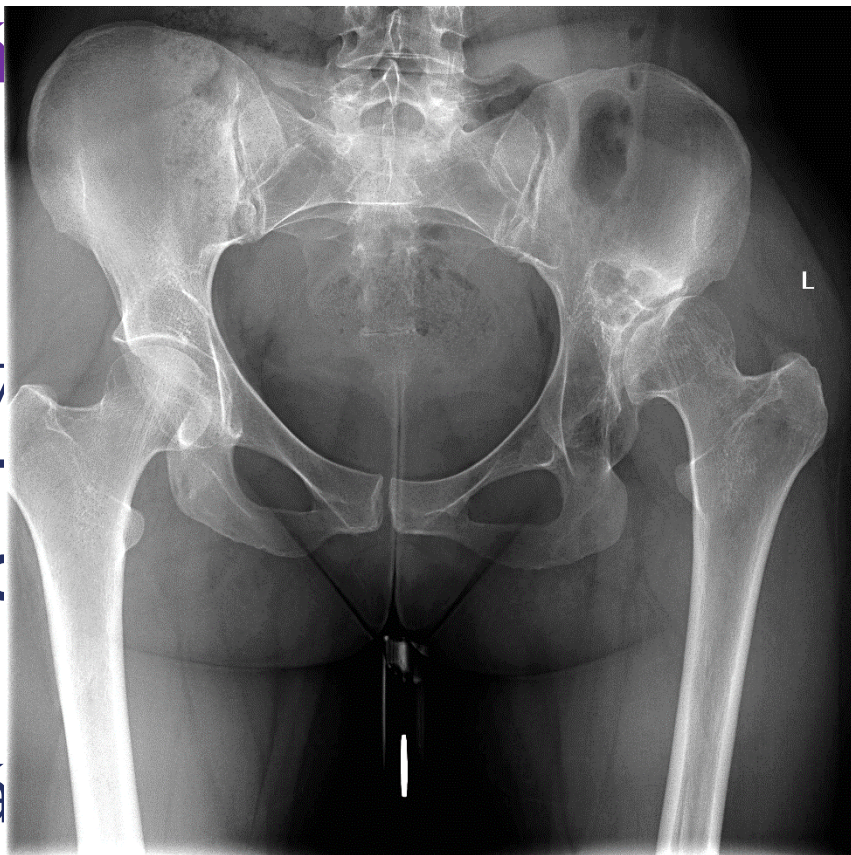
Safe zone

(Lewinnek, *JBJS*, 1977)

**dőlésszög:  $40^{\circ} \pm 10^{\circ}$**

**anteverzión:  $15^{\circ} \pm 10^{\circ}$**

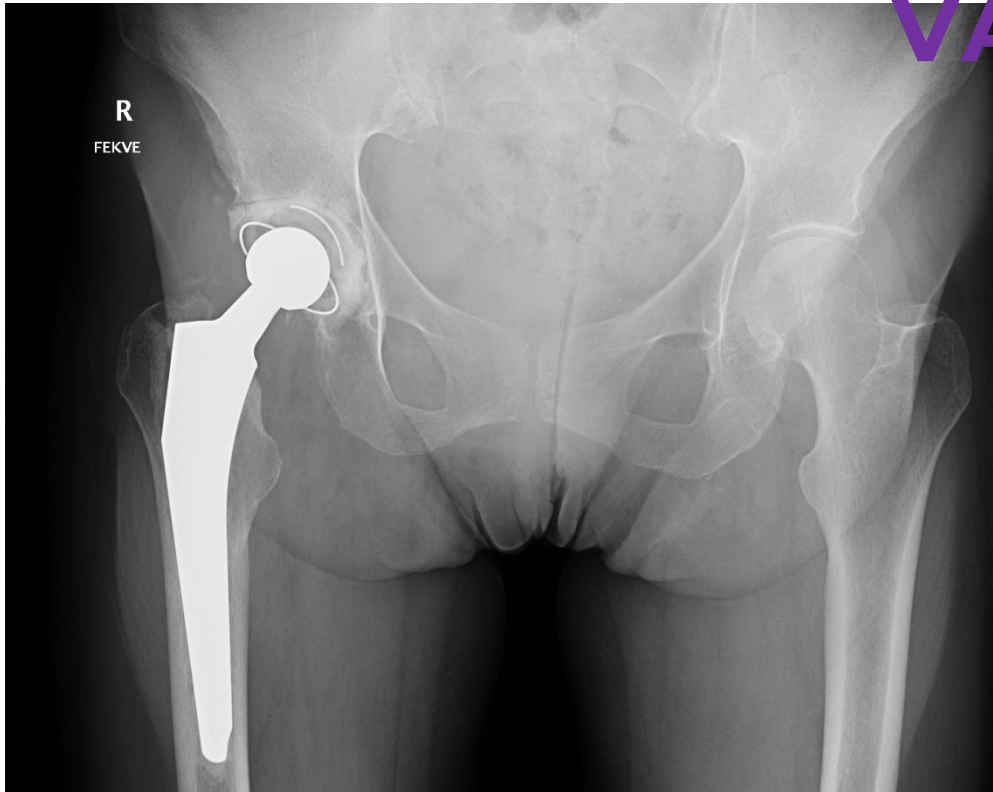
COR helyreállítás





# Műteti technikával kapcsolatos rizikófaktorkok

## VÁPA POZÍCIÓ



### Stiff

**Kyphotic, pelvic incidence >40°**

Reduce (15–20°)

Usual or increase

**Pelvic incidence <40°**

Increase (20–25°)

Increase (45°)

**Normal**

Usual (20°)

Usual (40°)

**Hyper-mobile**

Reduce (15–20°)

Reduce (35–40°)

**Spinopelvic mobility**

Cup anteversion

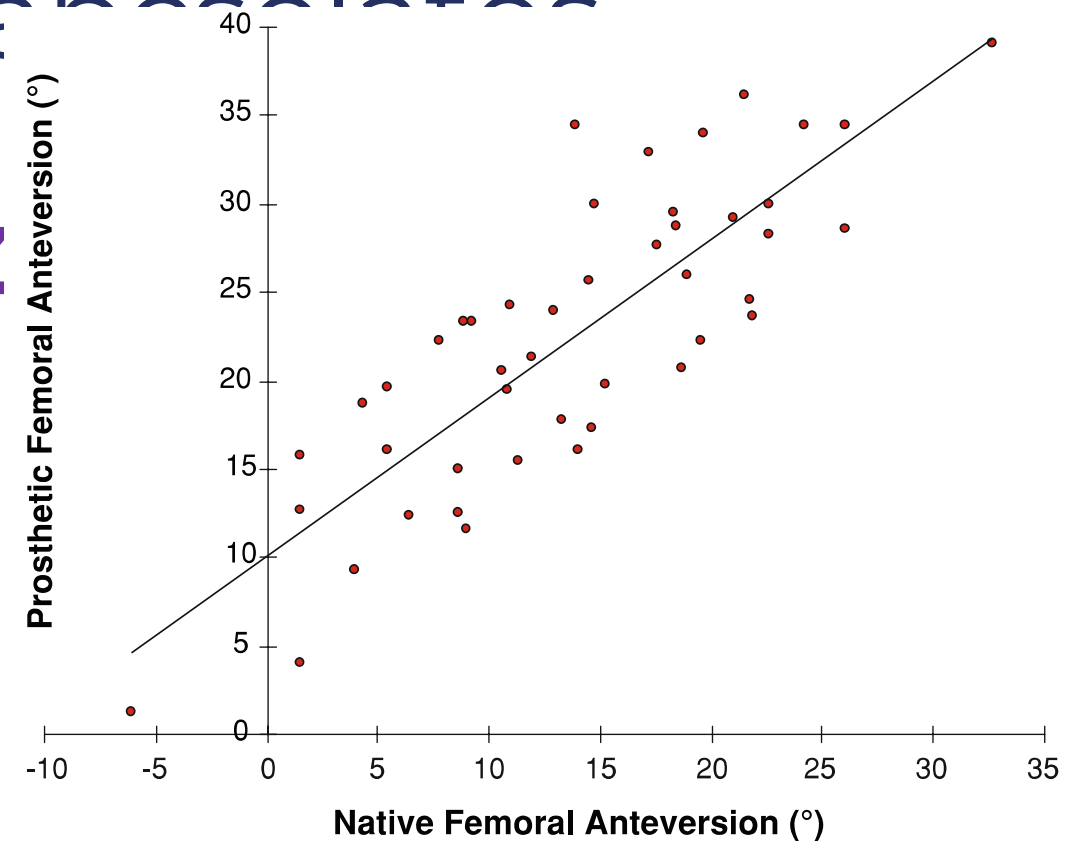
Cup inclination

# Műteti technikával károsított

## rizikófaktork

### SZÁR POZ

- **Megfelelő antetorzió**



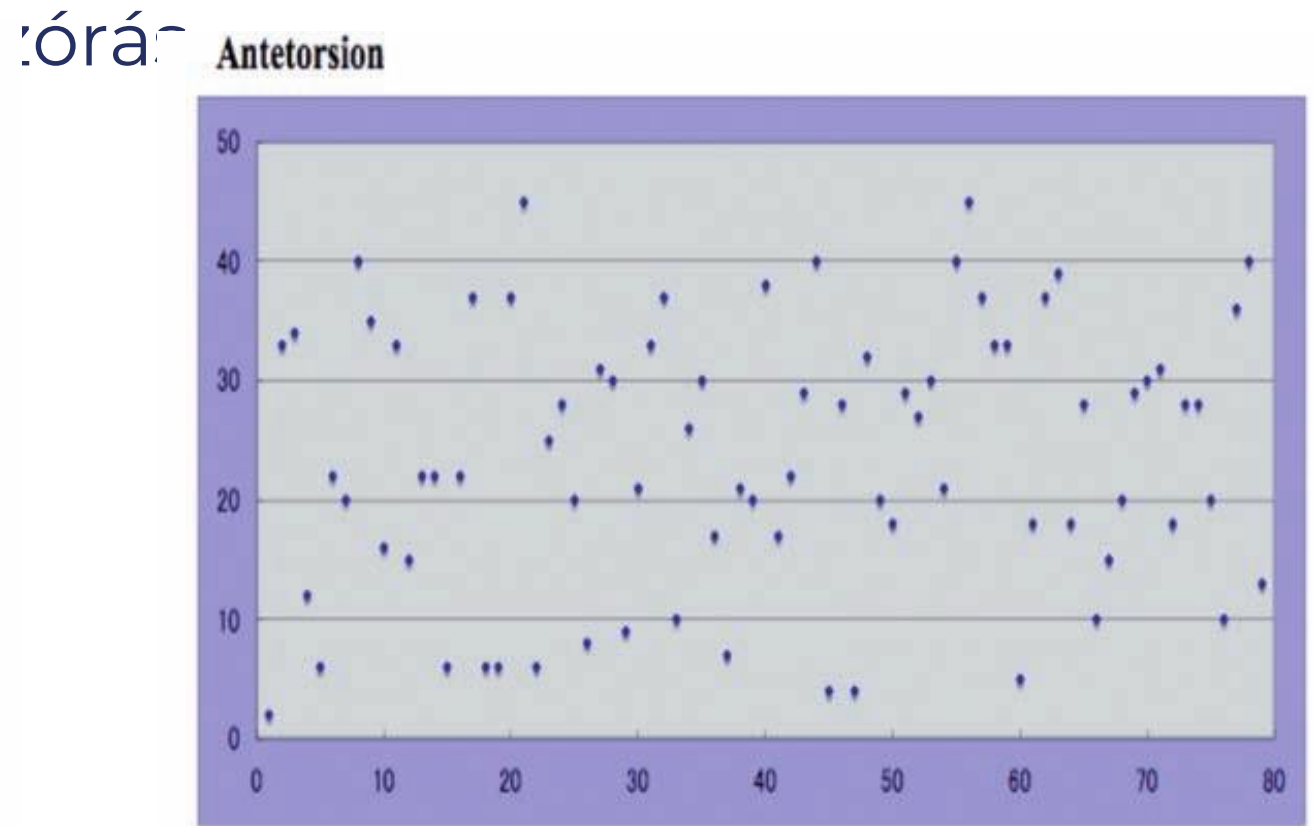
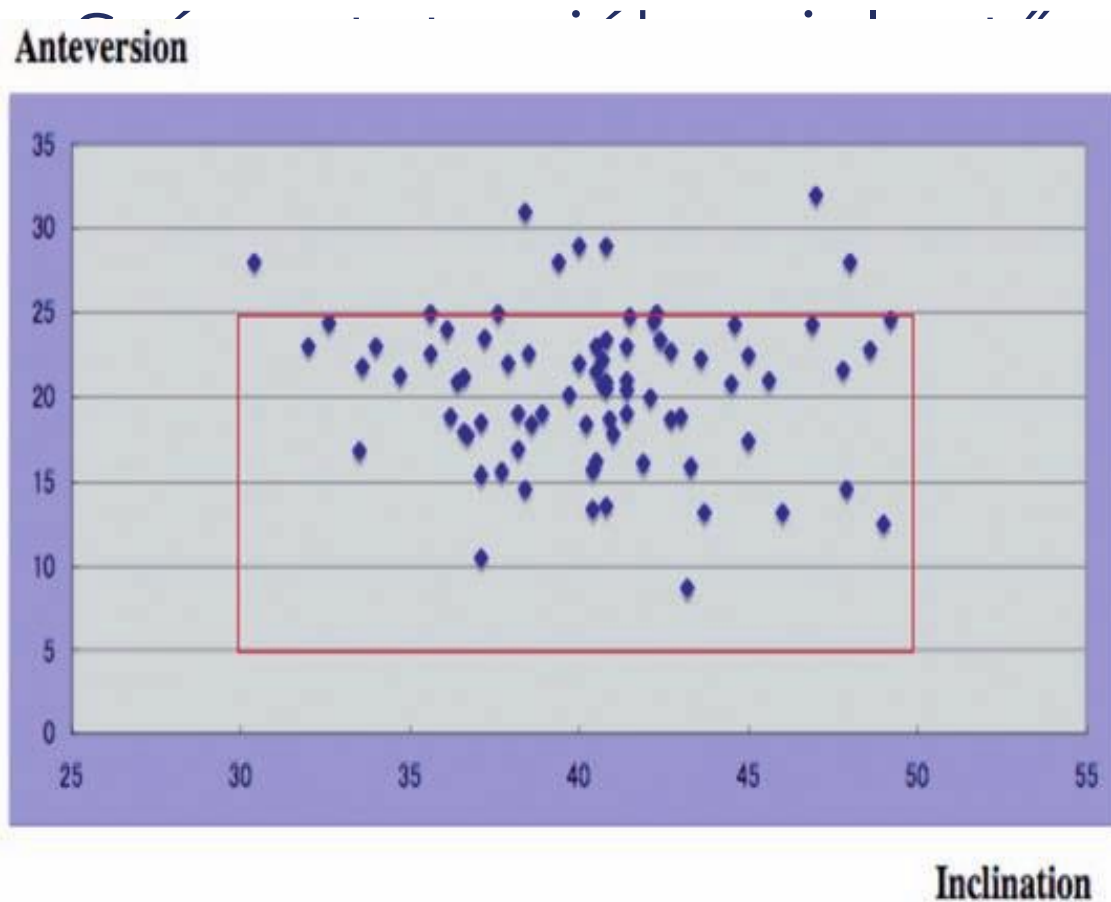
**Table 1.** Descriptive statistics (n = 46)

Measurement (°)	Mean	Minimum	Maximum	Standard deviation
Acetabular anteversion	15.1	0.71	29.4	6.7
Native femoral anteversion	13.8	-6.1	32.7	7.9
<b>Prosthetic femoral anteversion</b>	<b>22.5</b>	<b>1.0</b>	<b>39.0</b>	<b>8.5</b>
Difference between native femoral anteversion and prosthetic femoral anteversion	8.7	1.8	20.5	4.8
Acetabular anteversion + native femoral anteversion	28.9	8.0	47.2	9.8
Acetabular anteversion + prosthetic femoral anteversion	37.5	15.3	57.5	10.0

# Műteti technikával kapcsolatos rizikófaktorok

## KOMBINÁLT POZÍCIÓ

- Vápa pozíció 91 %-ban megfelelő (Lewinek)

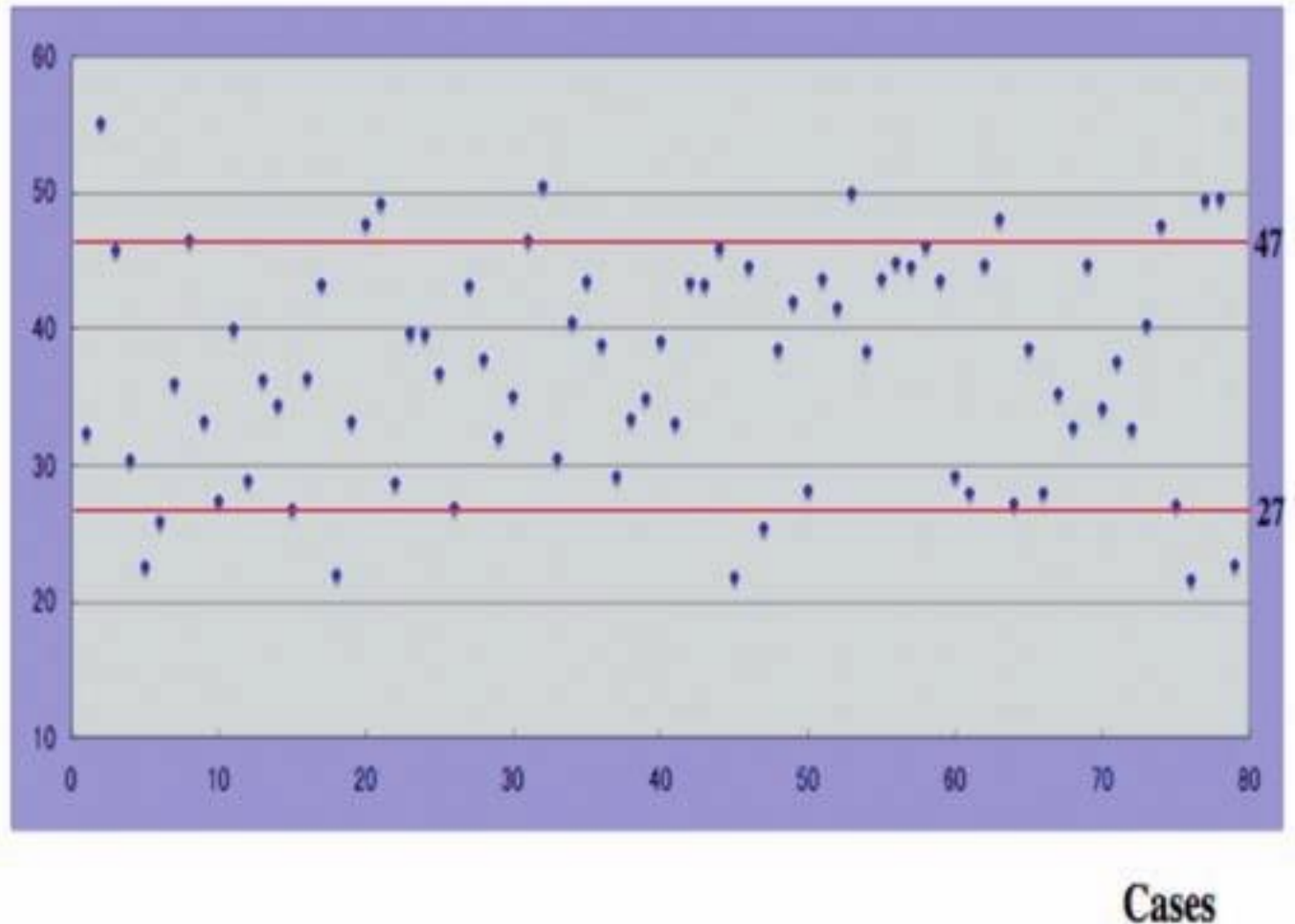


# Műteti technikával kapcsolatos rizikófaktorok

**KON**

- **Kombinált antetorzió 77 %-ban helyes!**
- Egyéni elbírálás
- **dysplasia: kisebb antevertzió**
- **spinipelvicus rigiditás**
- **fektetés (kiemelés)**

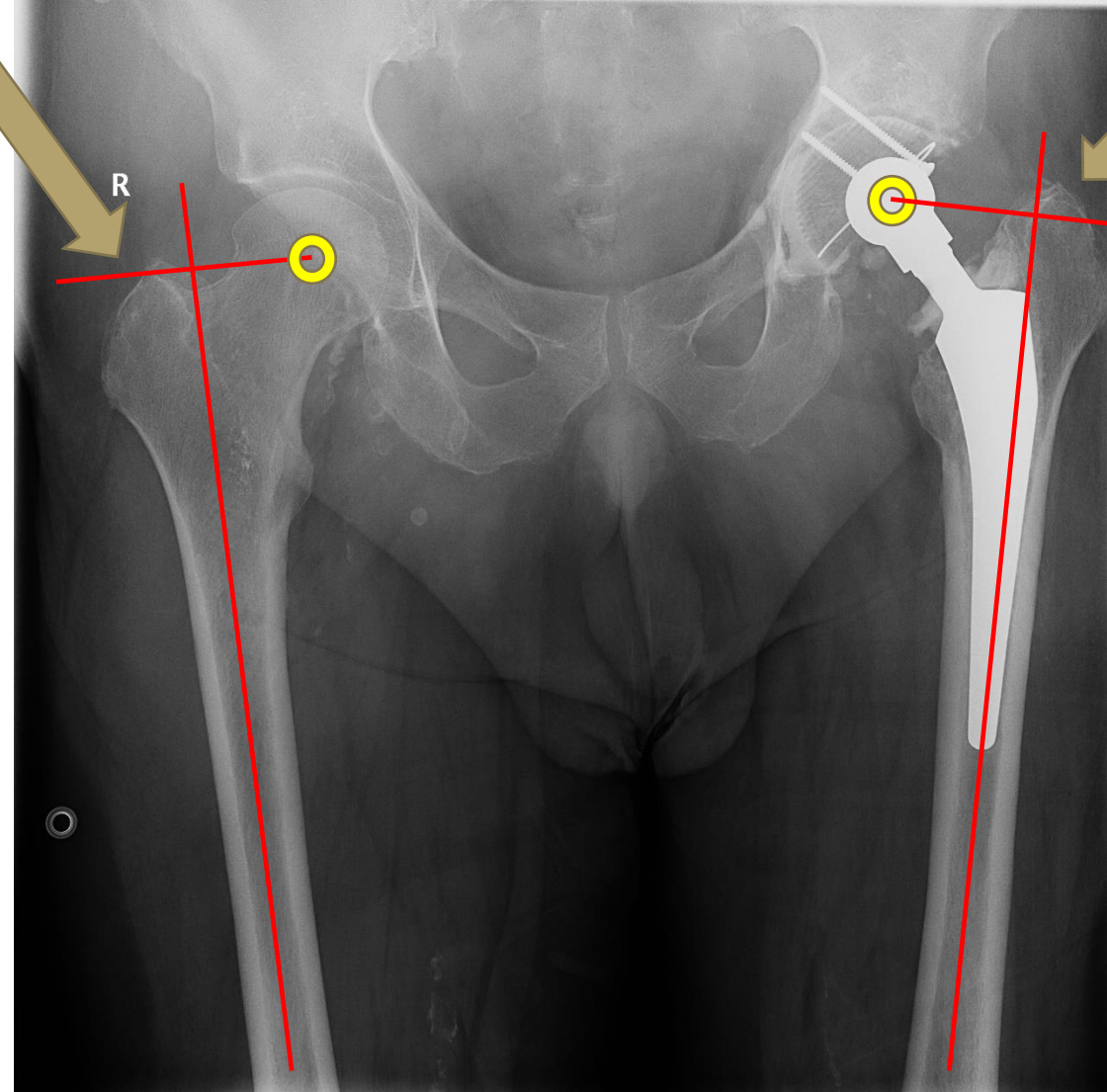
Widmer's Combined Anteversion



# Műteti technikával kapcsolatos rizikófaktorkok

## SZÁR POZÍCIÓ

- **Megfelelő  
vertikális pozíció**



# Műteti technikával kapcsolatos rizikófaktorkok

## FELTÁRÁS

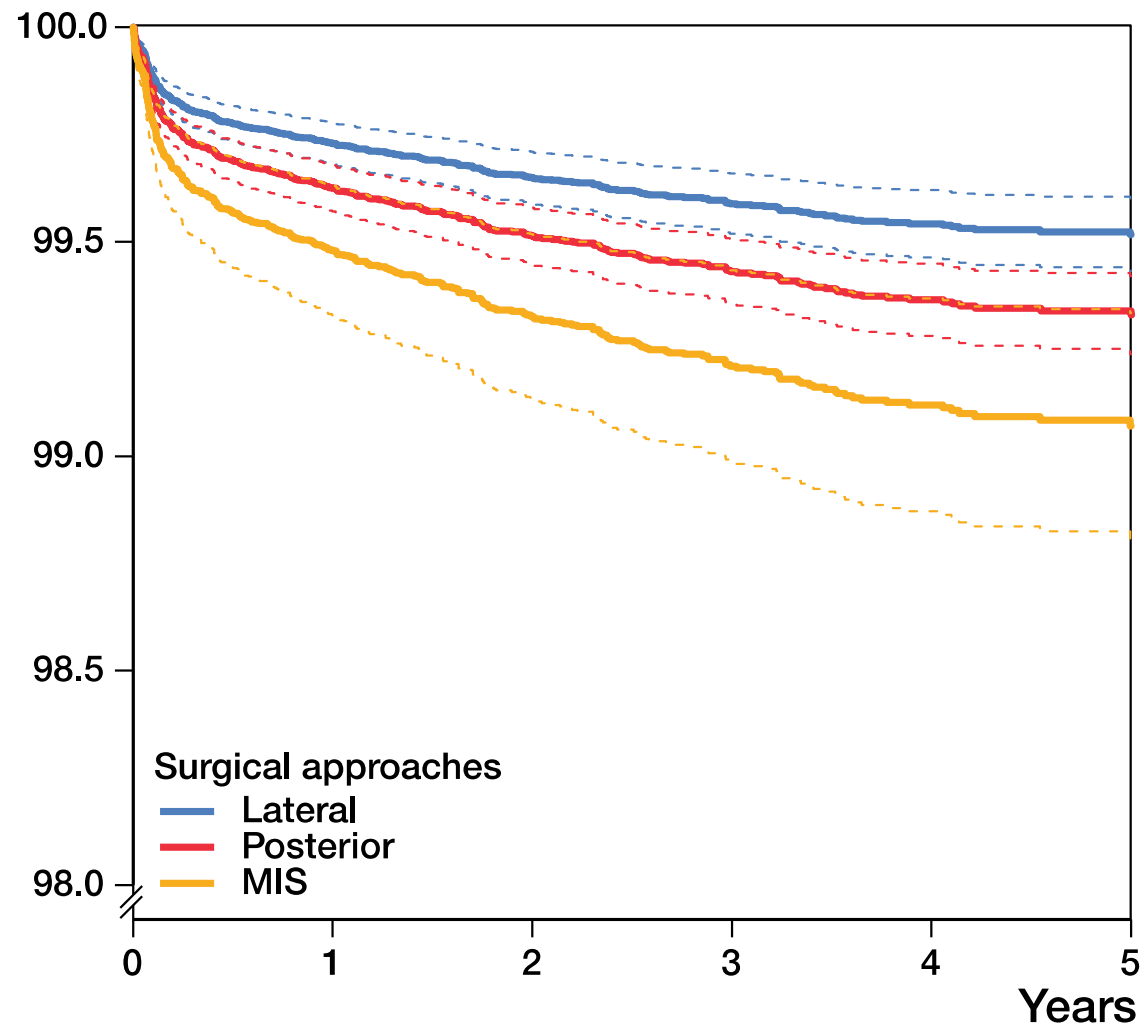
- Összehasonlító vizsgálat DA, AL és PL feltárás között
- Level 3
- 42.438 beteg revízió, 22.237 beteg luxáció szempontjából elemezve

### Eredmény:

- DA és AL után **ritkább a diszlokáció**, mint PL után

Sheth, CORR, 2015

Survival (%)



Hailer, Acta Orthop, 2012

# Műtéti technikával kapcsolatos rizikófaktorkok

Lágyrész  
management

Abductor  
mechanizmus  
megőrzése

Hátsó feltárásnál  
piriformis és tok  
rekonstrukció



Mit tegyünk hogy stabil legyen a protézis?



# Mit tegyünk hogy stabil legyen a protézis?

## INTRAOPERATÍV MEGOLDÁSOK

### Impingement

host – host

probléma	megoldás
Vápaperem osteophyta	Levésés
Meszesedés az abductor állományban	Eltávolítás
Túlméretezett nagytomp	Levésés
Túlságosan mélyre ültetett vápa/szár	Offsetes insert/újra pozicionálás

# Mit tegyünk hogy stabil legyen a protézis?

## INTRAOPERATÍV MEGOLDÁSOK

### Impingement

host – implant

probléma	megoldás
túlméretezett vápa	Csere kisebb vápára
szoknyás vápa	Csere neutrális vápára
vápaperem osteophyta	Levésés
csontcement	Cement eltávolítás

# Mit tegyünk hogy stabil legyen a protézis?

## INTRAOPERATÍV MEGOLDÁSOK

### Impingement

Implant – implant

probléma	megoldás
galléros fej	Csere gallér nélküli típusra
nem megfelelő fej/nyak arány	Nagyobb fej
>180° vápaprofil	Alacsony profilú vápa/nagyobb fej
Csontcement	Cement eltávolítás

# Mit tegyünk hogy stabil legyen a protézis?

## INTRAOPERATÍV MEGOLDÁSOK

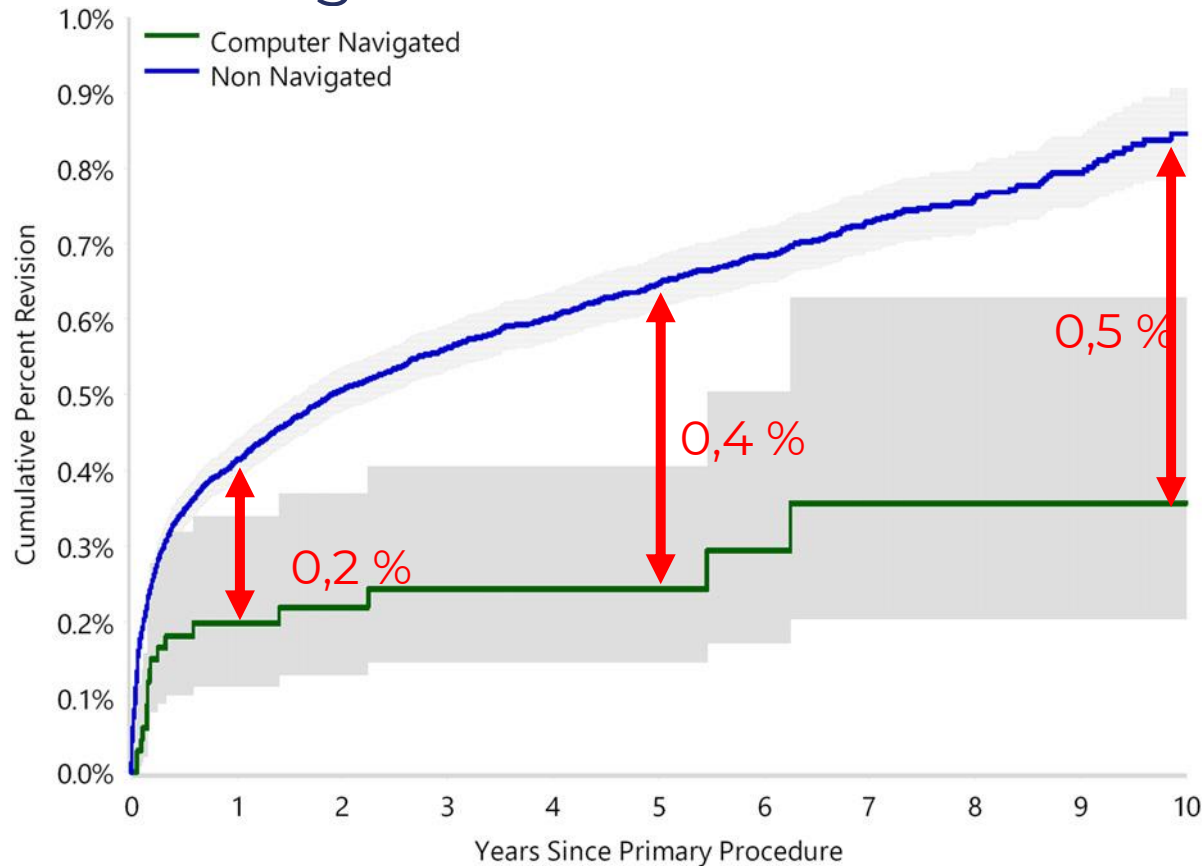
### Lágyrész eredetű instabilitás

probléma	megoldás
Flexiós kontraktúra	Psoas tenotomia
Adductiós kontraktúra	Adductor tenotomia
Abductor izomzat elégtelenség	Nagyobb offset/offsetes vápa/hosszabb fej/dual mobility/constrained

# Navigáció? Robotika?

# Navigáció?

6.912 vs 262.936  
beteg

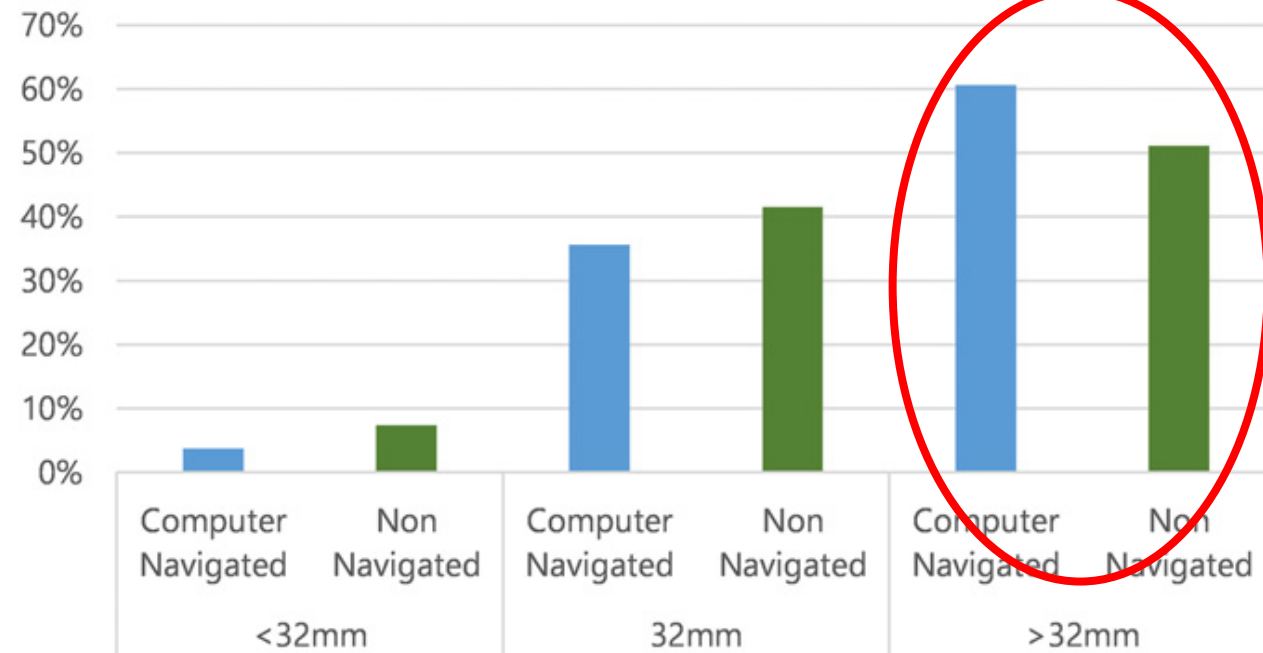


## The Use of Computer Navigation in Total Hip Arthroplasty Is Associated with a Reduced Rate of Revision for Dislocation

A Study of 6,912 Navigated THA Procedures from the Australian Orthopaedic Association National Joint Replacement Registry

Sujit Agarwal, MBBS, MS, FRCS(T&Orth)\*, Lukas Eckhard, MD\*, William L. Walter, MBBS, PhD, FRACS(Orth), Andrea Peng, MMed(Epi&Stats), Alesha Hatton, BMedMath(Hons), Bill Donnelly, MBBS, BMedSci, FRACS(Orth), and Richard de Steiger, MBBS, PhD, FRACS(Orth)

### Distribution of Head Sizes Used



# Navigáció?

14.540 vs 789.192 beteg

1, 2, 5, és kb. 8 éves FU

## Computer-Assisted Navigation Is Associated with Reductions in the Rates of Dislocation and Acetabular Component Revision Following Primary Total Hip Arthroplasty

Daniel D. Bohl, MD, MPH, Michael T. Nolte, MD, Kevin Ong, PhD, Edmund Lau, MS, Tyler E. Calkins, BS, and Craig J. Della Valle, MD

*Investigation performed at Rush University Medical Center, Chicago, Illinois*

**TABLE II Outcomes\***

Outcome (ICD-9 Code)	No Navigation	Navigation	Adjusted HR†	95% CI	P Value
Dislocation (996.42, 718.35, and 835.x)					
1 yr	1.16%	0,5 %	0.61	0.49-0.76	<0.001‡
2 yr	1.37%	0,6 %	0.64	0.53-0.78	<0.001‡
5 yr	1.66%	0,7 %	0.69	0.58-0.83	<0.001‡
Final follow-up	1.70%	0,7 %	0.69	0.58-0.82	<0.001‡

# Robotika?



## Clinical and surgical outcomes of robot-assisted versus conventional total hip arthroplasty: a systematic overview of meta-analyses

Nanne Kort<sup>1</sup>  
Patrick Stirling<sup>2</sup>  
Peter Pilot<sup>3</sup>  
Jacobus Hendrik Müller<sup>2</sup>

- The present overview of meta-analyses suggests that, compared to conventional THA ( $n = 3011$ ), robot-assisted THA ( $n = 1813$ ) **improves component placement and reduces intraoperative complications.**
- The overview also affirms that robot-assisted THA could **extend surgery by 20 minutes, and increases risks of postoperative heterotopic ossification, dislocation, and revision.**
- **None** of the meta-analyses **found significant differences in clinical or functional scores** between robot-assisted and conventional THA.



# Computer-Assisted Surgical Navigation for Musculoskeletal Procedures

Policy Number: 2021T0599D  
Effective Date: October 1, 2021

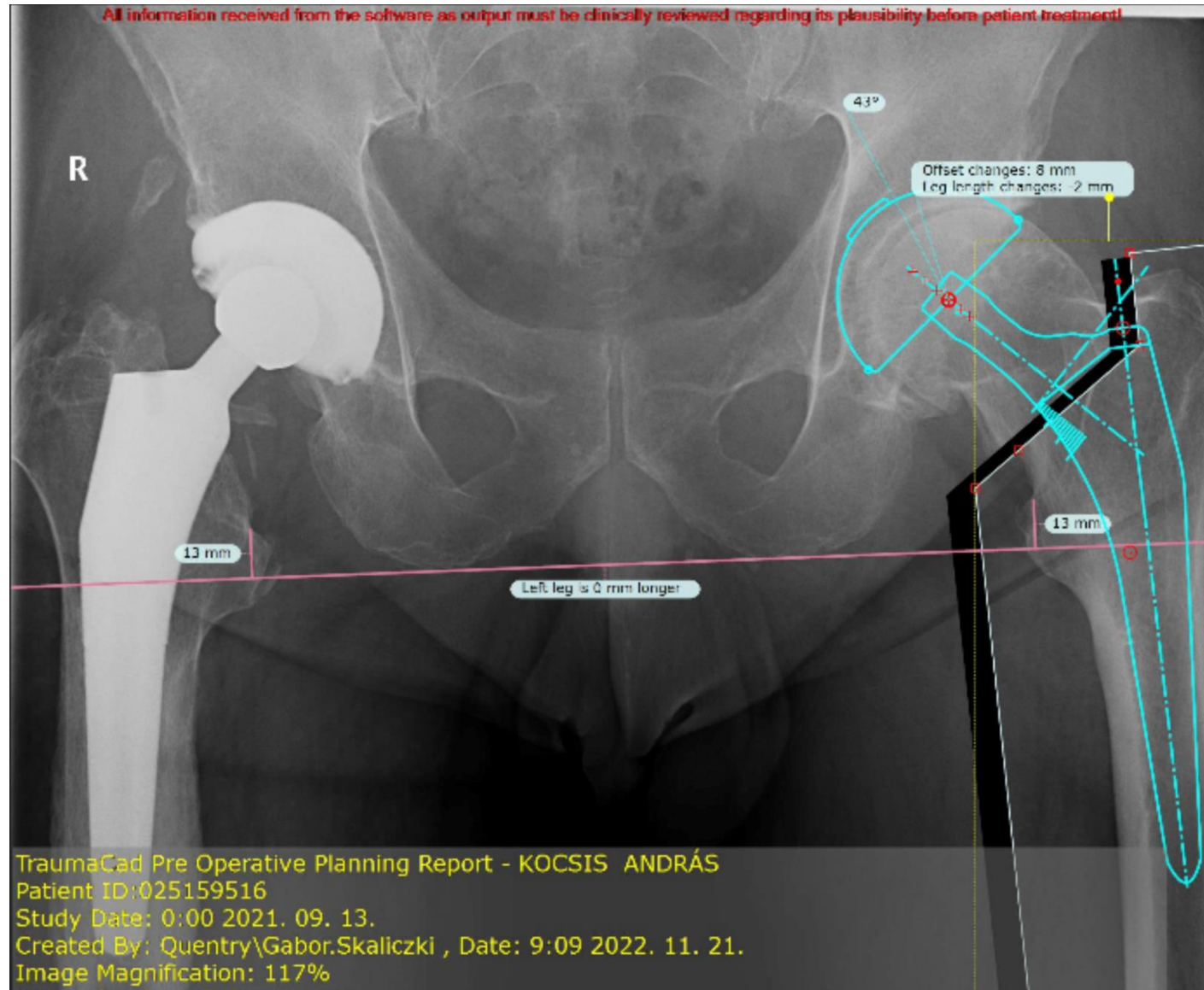
[➔ Instructions for Use](#)

## Coverage Rationale

Computer-assisted surgical navigation for musculoskeletal procedures of the pelvis and appendicular skeleton is unproven and not medically necessary due to insufficient evidence of efficacy.

The use of intra-operative kinetic balance sensor for implant stability during knee replacement arthroplasty is unproven and not medically necessary due to insufficient evidence of efficacy.

# Failing to plan is planning to fail!





**Köszönöm a  
figyelmet!**

# Köszönöm a figyelmet!

Prezentáló János



**SEMMELWEIS**  
EGYETEM 1769