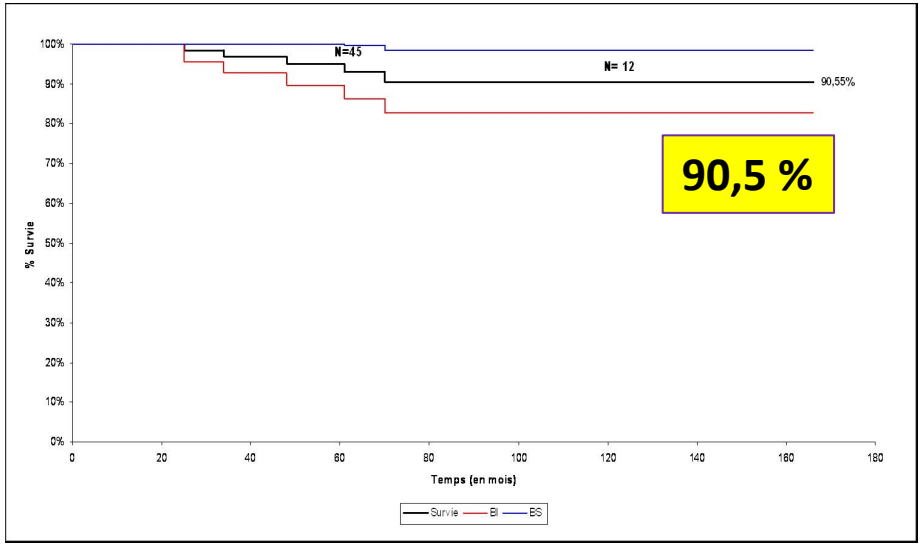
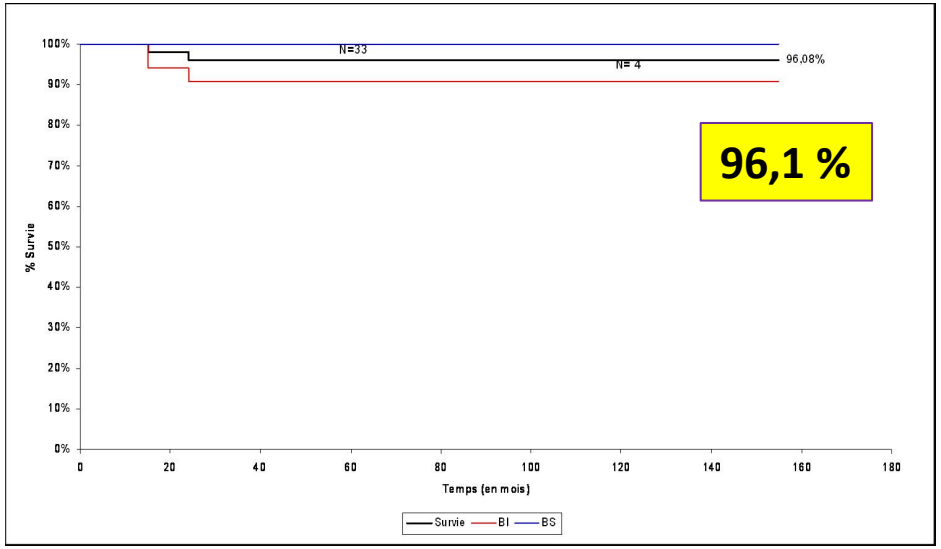
Difficult primary medial UKA: Patient's activity expectations (full PE)

Pr E. Servien MD PhD , G. Delfosse
Orthopaedic surgery and sport medicine department
Lyon University Hospital, France

2012 Full poly survival rate at 10 Y



90,5 %



96,1 %

Medial Uni

Lateral Uni

Literature

Orthopaedics & Traumatology: Surgery & Research (2009) 95, 12–21

Available online at ScienceDirect www.sciencedirect.com

Elsevier Masson France EM|consulte www.em-consulte.com

ORIGINAL ARTICLE

Cemented all polyethylene tibial insert unicompartimental knee arthroplasty: A long term follow-up study

S. Lustig, J.-L. Paillot, E. Servien, J. Henry, T. Ait Si Selmi, P. Neyret*

The Journal of Arthroplasty Vol. 00 No. 0 2011

5- to 16-Year Follow-Up of 54 Consecutive Lateral Unicondylar Knee Arthroplasties With a Fixed-All Polyethylene Bearing

Sebastien Lustig, MD, PhD,*† Ahmed Elguindy, MD,*‡
Elvire Servien, MD, PhD,*‡ Camdon Fary, FRACS,§ Edouard Munini, MD,*
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Guillaume Demey, MD,*† and Philippe Neyret, MD*†

Techniques in Knee Surgery 6(1):51–59, 2007

TECHNIQUE

How to Select Candidates for Lateral Unicompartmental Prosthesis

Elvire Servien, MD, Tarik Aitsiselmi, MD, and Philippe Neyret, MD, PhD

Knee Surg Sports Traumatol Arthrosc
DOI 10.1007/s00167-008-0620-0

KNEE

Lateral versus medial tibial plateau: morphometric analysis and adaptability with current tibial component design

E. Servien · M. Saffarini · S. Lustig ·
S. Chomel · Ph. Neyret

Orthopaedics & Traumatology: Surgery & Research (2011) 97, 272–275

ORIGINAL ARTICLE

Tibial component rotation assessment using CT scan in medial and lateral unicompartmental knee arthroplasty

E. Servien[a,*], C. Fary[d], S. Lustig[a], G. Demey[a], M. Saffarini[b],
S. Chomel[c], P. Neyret[a]

Orthopaedics & Traumatology: Surgery & Research (2009) 95, 12–21

ORIGINAL ARTICLE

Cemented all polyethylene tibial insert unicompartimental knee arthroplasty: A long term follow-up study

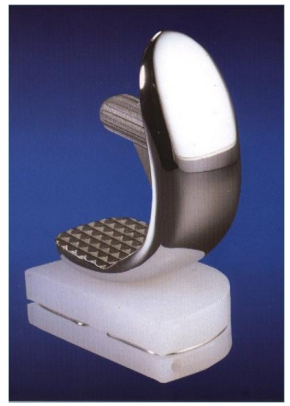
S. Lustig, J.-L. Paillot, E. Servien, J. Henry, T. Ait Si Selmi, P. Neyret*

Knee Surg Sports Traumatol Arthrosc (2010) 18:928–933
DOI 10.1007/s00167-010-1063-y

KNEE

Sagittal flexion angle of the femoral component in unicompartmental knee arthroplasty: is it same for both medial and lateral UKAs?

Elcil Kaya Bicer · Elvire Servien ·
Sebastien Lustig · Guillaume Demey ·
Tarik Ait Si Selmi · Philippe Neyret



Knee Surg Sports Traumatol Arthrosc (2008) 16:1038–1042
DOI 10.1007/s00167-008-0617-8

KNEE

Medial unicompartimental knee arthroplasty for osteonecrosis or osteoarthritis

E. Servien · P. C. M. Verdonk · S. Lustig ·
J. L. Paillot · A. D. Kara · P. Neyret

Medial UKA: where are we now ?

Data from National UK Register (2017):
- 38 % of surgeons perform UKA
- UKA represent 8% of knee joint replacements

Data from national Danish register:
- 2012-2017: UKA represent 13,3 % of knee joint replacements (5.093 cases).

Table 3 Data of national registers regarding total knee arthroplasty and unicompartmental knee arthroplasty

Registry	Country	Total UKA	Revisions UKA	Mean Age UKA (y)	Total TKA	Revisions TKA	Mean age TKA (y)
Portuguese Arthroplasty Register May 2010[119]	Portugal	67			4,018	291	68.4
Swiss National Hip & Knee Joint Registry Report 2022[120]	Switzerland	15,364		64.5	91,129	12,309	69.5
New Zealand Orthopaedic Association Registry [121]	New Zealand	16,891	1,474	66.1	143,501	5,224	68.3
THE SWEDISH KNEE ARTHROPLASTY REGISTER – ANNUAL REPORT 2020 – PART I [122]	Sweden	7,690	1,562		127,060	4,691	
Australian Orthopaedic Association National Joint Replacement Registry[123]	Australia	70,925	4,813	65.4	886,536	26,004	68.4
THE SWEDISH KNEE ARTHROPLASTY REGISTER – ANNUAL REPORT 2020 – PART II[122]	Sweden	1,820	152		14,967	687	
Slovak Arthroplasty Register[124]	Slovakia				10,772	411	

Meta-Analysis > BMJ. 2019 Feb 21:364:l352. doi: 10.1136/bmj.l352.

Patient relevant outcomes of unicompartmental versus total knee replacement: systematic review and meta-analysis

Hannah A Wilson [1], Rob Middleton [2], Simon G F Abram [2], Stephanie Smith [2], Abtin Alvand [2], William F Jackson [3], Nicholas Bottomley [3], Sally Hopewell [4], Andrew J Price [2]

> Acta Orthop. 2022 Apr 6:93:390-396. doi: 10.2340/17453674.2022.2265.

Optimized medial unicompartmental knee arthroplasty outcome: learning from 20 years of propensity score matched registry data

Mette Mikkelsen [1], Andrew Price [2], Alma Becic Pedersen [3], Kirill Gromov [4], Anders Troelsen [5]

Meta-Analysis > Arch Orthop Trauma Surg. 2024 Nov;144(11):4873-4886.
doi: 10.1007/s00402-024-05574-1. Epub 2024 Oct 15.

Correlation of revision rate of unicompartmental knee arthroplasty with total knee arthroplasty: a meta-analysis of clinical studies and worldwide arthroplasty registers

Stephan Obermayr [1], Antonio Klasan [2 3], Laura Rasic [1], Georg Hauer [1], Lukas Leitner [4], Andreas Leithner [1], Patrick Sadoghi [5]

Medial UKA: where are we now ?

To summarize the UKA outcomes:

- Revision occur between 2,92% and 11,04%, depending on studies.
- UKA show shorter length of stay and better PROMs compared to TKA.
- Survivorship is between 89 and 96% at 10 years.
- UKA show higher revision rate than TKA.
- High-volume centers and trained surgeons show better results.

Meta-Analysis > BMJ. 2019 Feb 21:364:l352. doi: 10.1136/bmj.l352.

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Review > Acta Orthop. 2018 Feb;89(1):101-107. doi: 10.1080/17453674.2017.1367577. Epub 2017 Aug 23.

Long-term outcomes of over 8,000 medial Oxford Phase 3 Unicompartmental Knees-a systematic review

Hasan R Mohammad [1], Louise Strickland [1], Thomas W Hamilton [1], David W Murray [1]

UKA implants: All-polyethylene or metal-back

UKA: why (not) All-PE ?

- Cheaper
- Less bone resection ?
- Less interface
- Revision by TKA easier (bone loss ?)

- Increased proximal tibia strain
- Increased peak stress on PE
- No possibility of changing PE easily

UKA: All-PE or metal-back ?

All-PE= higher revision rate ?

Causes of revision in case of All-PE (in order):
- Aseptic loosening
- Progression of OA
- Persistent pain
- Malalignment
- …

Meta-analysis:

- Survivorship:

No significant difference in revision rate (average f-u of 63,5 months).
No difference about the risk of aseptic loosening.

- Function:

No difference in clinical scores or functional outcome up to 14 years of follow-up.

Randomized Controlled Trial > Bone Joint J. 2015 Jun;97-B(6):786-92.
doi: 10.1302/0301-620X.97B6.35433.

A randomised trial of all-polyethylene and metal-backed tibial components in unicompartmental arthroplasty of the knee

J R B Hutt [1], P Farhadnia [1], V Massé [1], M LaVigne [1], P-A Vendittoli [1]

> Knee. 2020 Jun;27(3):1018-1027. doi: 10.1016/j.knee.2020.02.018. Epub 2020 Mar 24.

Minimum 10-year outcomes of a fixed bearing all-polyethylene unicompartmental knee arthroplasty used to treat medial osteoarthritis

David J Bruce [1], Mohammed Hassaballa [2], James R Robinson [2], Andrew J Porteous [3], James R Murray [4], John H Newman [2]

Meta-Analysis > J Knee Surg. 2020 Feb;33(2):180-189. doi: 10.1055/s-0038-1677506.
Epub 2019 Jan 16.

Metal-Backed Tibial Components Do Not Reduce Risk of Early Aseptic Loosening in Unicompartmental Knee Arthroplasty: A Systematic Review and Meta-Analysis

Giuseppe Gianluca Costa [1], Mirco Lo Presti [1], Alberto Grassi [1], Giuseppe Agrò [1], Sergio Cialdella [1], Massimiliano Mosca [1], Silvio Caravelli [1], Stefano Zaffagnini [1]

All-PE medial UKA: what about activity ?

Follow-up	n	OKS	WOMAC pain	WOMAC function	WOMAC total
					Mean (95% CI)
Preop	214	19.6 (18.6–20.6)	15.5 (15.0–15.9)	21.7 (21.1–22.4)	37.2 (36.1–38.2)
8 years	90	33.5 (31.1–36.0)	10.0 (8.9–11.1)	14.4 (12.9–15.9)	24.4 (21.8–26.9)
10 years	70	33.1 (30.5–35.7)	10.3 (9.19–11.5)	14.8 (13.2–16.4)	25.1 (22.4–27.8)
12 years	25	33.7 (28.0–39.4)	7.1 (5.5–8.7)	11.8 (8.88–14.6)	19.5 (15.2–23.9)

84 medial UKA, mean FU: 62 months
- Mean post-op IKS score: 89,5 points
- 92,9% patients satisfied or very satisfied
- Survivorship: 90,4 % at 10 years

70 knees (62 patients) at a mean 20 years FU
- KSS clinical: 91 points
- KSS functional: 88 points

› Knee. 2020 Jun;27(3):1018-1027. doi: 10.1016/j.knee.2020.02.018. Epub 2020 Mar 24.

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David J Bruce [1], Mohammed Hassaballa [2], James R Robinson [2], Andrew J Porteous [3], James R Murray [4], John H Newman [2]

› Orthop Traumatol Surg Res. 2009 Feb;95(1):12-21. doi: 10.1016/j.otsr.2008.04.001. Epub 2009 Feb 4.

Cemented all polyethylene tibial insert unicompartimental knee arthroplasty: a long term follow-up study

S Lustig [1], J-L Paillot, E Servien, J Henry, T Ait Si Selmi, P Neyret

› J Bone Joint Surg Am. 2013 May 15;95(10):905-9. doi: 10.2106/JBJS.L.00963.

Modern unicompartmental knee arthroplasty with cement: a concise follow-up, at a mean of twenty years, of a previous report

Jean-Noel A Argenson [1], Guillaume Blanc, Jean-Manuel Aubaniac, Sebastien Parratte

All-PE medial UKA: what about activity ?

	Medial		
	Pre	Post	Delta (95%CI)
N	74	74	74
VAS	7.61 ± 1.65	2.74 ± 2.26	−4.86 (−5.52; −4.21)
Δ%			−61.4 ± 36.6
OKS	22.5 ± 12.6	36.6 ± 10.6	14.11 (10.05; 18.17)
Δ%			142.1 ± 208.5
TEGNER	2.28 ± 2.02	2.81 ± 1.25	0.53 (0.00; 1.06)
Δ%			77.2 ± 119.6
KOOS (symptoms)	48.6 ± 22.4	78.7 ± 16.8	30.09 (24.31; 35.88)
Δ%			125.1 ± 199.3
KOOS (pain)	42.6 ± 20.6	80.8 ± 15.2	38.23 (32.92; 43.54)
Δ%			184.2 ± 265.5
KOOS (daily)	44.4 ± 22.0	81.2 ± 16.6	36.81 (31.12; 42.50)
Δ%			186.5 ± 348.1
KOOS (sport)	19.9 ± 20.0	54.7 ± 27.8	34.86 (27.75; 41.98)
Δ%			318.2 ± 422.5
KOOS (QoL)	27.6 ± 18.6	60.3 ± 22.6	32.65 (26.76; 38.54)
Δ%			220.4 ± 319.7

99 UKA (74 medial), mean follow-up was 34M
-> Increased OKS and KOOS scores

Multicenter Study > Medicina (Kaunas). 2024 Sep 4;60(9):1451.
doi: 10.3390/medicina60091451.

All-Polyethylene Tibial Component in Unicompartmental Knee Arthroplasty Offers Excellent Survivorship and Clinical Outcomes at Short-Term Follow-Up: A Multicenter Retrospective Clinical Study

Tommaso Bonanzinga [1,2], Federico Maria Adravanti [3], Umberto Vitale [1,2], Giuseppe Anzillotti [1,2], Francesco Iacono [1,2], Maurilio Marcacci [1,2]

> J Arthroplasty. 2022 Sep;37(9):1743-1750. doi: 10.1016/j.arth.2022.03.089. Epub 2022 Apr 6.

Satisfactory Outcomes of All-Poly Fixed Bearing Unicompartmental Knee Arthroplasty for Avascular Osteonecrosis Versus Osteoarthritis: A Comparative Study With 10 to 22 Years of Follow-up

Lyliane Ly [1], Cécile Batailler [2], Jobe Shatrov [3], Elvire Servien [4], Sébastien Lustig [2]

47 medial UKA for SPONK, matched 1:1 with UKA for OA
-> KSS function of 79 and 80,7 respectively (p=0,47)
-> KSS knee of 89,5 and 90 respectively (p= 0,85)

All-PE medial UKA: what about activity ?

Review > Knee. 2014:21 Suppl 1:S20-5. doi: 10.1016/S0968-0160(14)50005-1.

A flat all-polyethylene tibial component in medial unicompartmental knee arthroplasty: a long-term study

Alfonso Manzotti [1], Pietro Cerveri [2], Chris Pullen [3], Norberto Confalonieri [4]

Table 2
Pre-operative and follow-up data including clinical scores, mechanical axes and radiolucency progression

	Pre-operative	5 year follow-up	10 year follow-up	14.7 year follow-up	p-value	
Number of cases	53 knees	50 knees	47 knees	41 knees		
ROM in flexion	115.8° (Range:100–130°) Std: 9.8	123.2° (Range:100–130°) Std: 7.8	121.5° (Range:100–130°) Std: 8.2	120.6° (Range:100–130°) Std: 8.07	ROM pre / ROM 5y ROM pre / ROM 10y ROM pre / ROM 14.7y Non significant differences in ROM post operatively	p=0.0001 p=0.0008 p=0.0053
International Knee Society score	45.5 (Range: 50–40) Std: 3.04	81.3 (Range: 90–73) Std: 4.9	80.3 (Range: 90–73) Std: 4.6	80.1 (Range: 90–50) Std: 6.06	IKS 5 / IKS 10 IKS 5 / IKS 15	p=0.12 p=0.12
Functional score	49.3 (Range: 56 44) Std: 3.5	85.6 (Range: 100 70) Std: 9.07	84.9 (Range: 100 70) Std: 9.1	84.7 (Range: 100 70) Std: 8.7	FUNCT 5 / FUNCT 10 FUNCT 5 / FUNCT 15 FUNCT 10 / FUNCT 15	p=0.5626 p=0.6492 p=0.8945
Hip-knee-ankle angle	173.9° (Range: 180°–170°) Std: 2.4	178.4° (Range: 181°–176°) Std: 1.3	177.9° (Range: 181°–174°) Std: 1.5	177.1° (Range: 182–171°) Std: 2.01	HKA 5 / HKA 10 HKA 5 / HKA 15 HKA 10 / HKA 15	p=0.07 p=0.0001 p=0.01
Percentage of patients with a radiolucency	Nil	18% 7 tibial components 1 femoral component	25% 11 tibial components 1 femoral component	34% 14 tibial components	R 5 / R 10 R 5 / R 15 R 10 / R 15	p=0.32 p=0.07 p=0.56

ROM range of motion, FUNCT Functional score, HKA Hip-knee-ankle angle, IKS International knee score, R percentage of patients with a radiolucency, Std Standard deviation.

UKA: what about sport (all types of UKA)?

- Return to activity: 87 to 98 %.
- Change in sport: increase of low-impact sports, decrease of high-impact sports.
- Level of participation slightly decreases compared to the pre-arthritic level.
- Hiking, cycling and swimming are the most common sports performed after UKA.

Return to sport : 5,2 weeks earlier with UKA (all types of implants) compared with TKA.

J Knee Surg. 2019 Feb;32(2):186-191. doi: 10.1055/s-0038-1635111. Epub 2018 Feb 28.

Return to Sports after Unicompartmental Knee Arthroplasty: Reality or Utopia? A 48-Month Follow-Up Prospective Study

Mirco Lo Presti [1], Giuseppe Gianluca Costa [1], Sergio Cialdella [1], Giuseppe Agrò [1], Alberto Grassi [1], Silvio Caravelli [1], Massimiliano Mosca [1], Giulio Maria Marcheggiani Muccioli [1], Stefano Zaffagnini [1]

Meta-Analysis > BMJ. 2019 Feb 21:364:l352. doi: 10.1136/bmj.l352.

Patient relevant outcomes of unicompartmental versus total knee replacement: systematic review and meta-analysis

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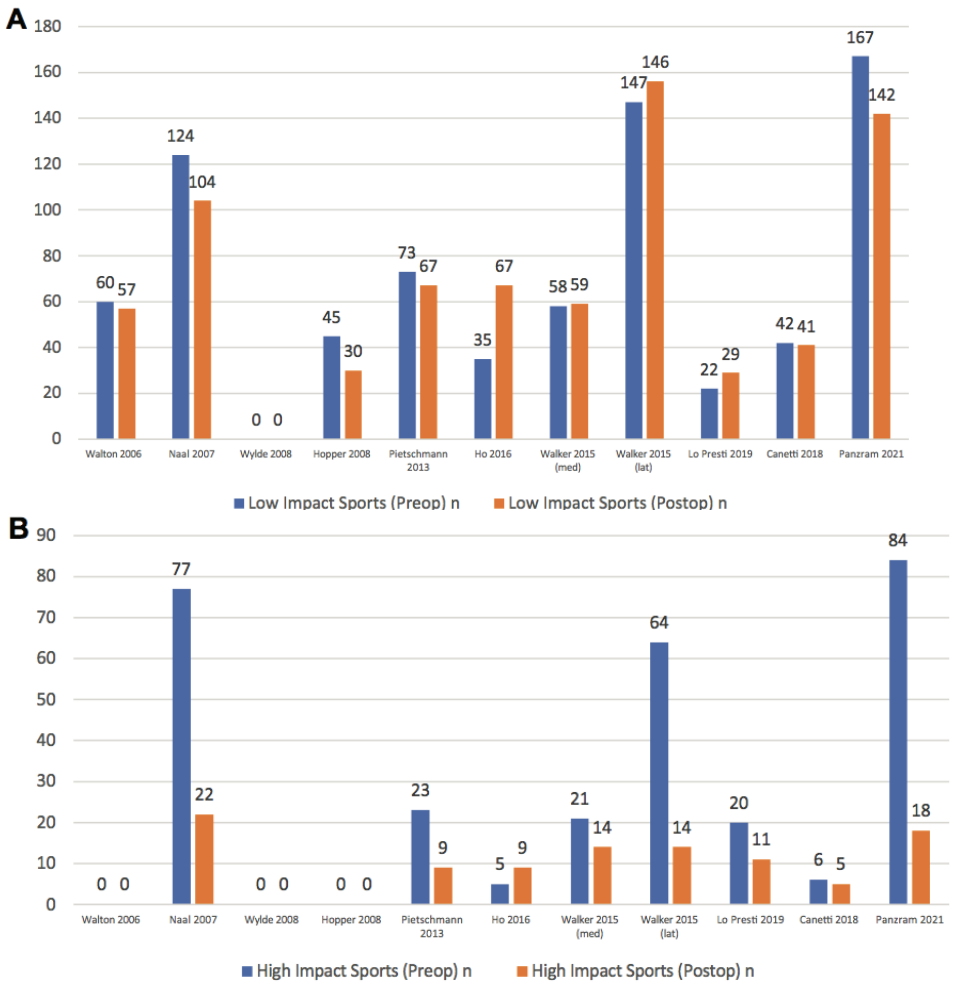
UKA: what about sport (all types ofUKA)?

- Overall RTS: 92,7%
- Timing for RTS: 38% at 3M and 76,5% at 6M
- Decreased high-impact sports attendance



Review > Orthop J Sports Med. 2022 Mar 16;10(3):23259671221079285.
doi: 10.1177/23259671221079285. eCollection 2022 Mar.

Return to Sport After Unicompartmental Knee Arthroplasty: A Systematic Review and Meta-analysis

Ganan T Radhakrishnan [1,2], Ahmed Magan [1,2], Babar Kayani [1,2], Ajay Asokan [1,2], Flaminia Ronca [1,2], Fares S Haddad [2]

TABLE 4
PROM Scores After UKA[a]

Study (Year)	PROM Score, Mean ± SD	
	Preoperative	Postoperative
Walton (2006)[51]	NR	OKS: 22.17 ± 9.03
Naal (2007)[38]	KSS: 129.9 ± 24.8	KSS: 186.9 ± 18.3
Wylde (2008)[54]	NR	WOMAC: 81.6
Hopper (2008)[22]	OKS: 17.9	OKS: 39.4
Pietschmann (2013)[41]	NR	UCLA: 7.1 ± 1, OKS: 40.8 ± 5.2
Ho (2016)[19]	UCLA: 8.1 ± 1.5	ULCA: 7.4 ± 1.6
Walker (lateral) (2015)[49]	UCLA: 5.3 ± 2.3 OKS: 30	UCLA: 6.7 ± 1.5 OKS: 43
Walker (medial) (2015)[50]	UCLA: 3.3 ± 1.5	UCLA: 6.8 ± 1.5
Lo Presti (2019)[33]	HSS: 52	HSS: 88
Canetti (2018)[7]	UCLA (robot-assisted): 6.4 ± 1.6 UCLA (jig-based): 5.8 ± 0.9	UCLA (robot-assisted): 6.6 ± 1.4 UCLA (jig-based): 6.2 ± 1
Panzram (2021)[40]	UCLA: 2.9 ± 1.7	UCLA: 6.3 ± 1.4

UKA: what about sport (All-PE medial UKA) ?

J Knee Surg. 2021 Nov;34(13):1454-1462. doi: 10.1055/s-0040-1710360. Epub 2020 May 25.

All-Polyethylene Tibial Component Does Not Affect Survivorship of Medial Unicompartmental Knee Arthroplasty at Mid-Term Follow-Up

Michele Gagliardi [1], Francesco Zambianchi [1], Alois Franz [2], Vitantonio Digennaro [3], Fabio Catani [1]

142 knees,
mean follow-up :61.1M.
-> Significant improvement for all PROMs.

Parameter	Preoperative	Postoperative	Δ	*p*-Value
Range of motion	99.3 degrees (SD: 12.2, min. 90, max. 125)	128.2 degrees (SD: 10.3, min. 90, max. 135)	28.9 degrees	< 0.0001
VAS (0–10)	5.3 (SD: 1.2, min. 3, max. 8)	1.3 (SD: 1.6, min. 0, max. 6)	4.0	< 0.0001
KOOS				
Pain	39.0 (SD: 17.0)	85.7 (SD: 17.3)	46.7	< 0.001
Symptoms	47.3 (SD: 20.9)	89.5 (SD: 14.3)	42.2	< 0.001
Function in activities of daily living	40.8 (SD: 19.3)	87.2 (SD: 7.4)	46.4	< 0.001
Function in sports and recreation	26.0 (SD: 17.0)	67.0 (SD: 27.0)	41.0	< 0.001
Quality of Life	24.0 (SD: 10.0)	77.6 (SD: 26.0)	53.6	< 0.001
Total	35.4 (SD: 17.3)	81.4 (SD: 19.4)	46.0	< 0.001
KSS				
Knee	51.0 (SD: 8.5)	90.3 (SD: 12.3)	39.3	< 0.00001
Function	41.7 (SD: 12.2)	89.2 (SD: 15.2)	47.5	< 0.00001

CONCLUSION
activity expectations (full PE)

- UKA offer good results in terms of survivorship, function, satisfaction and activity.
- There is **no difference between all-PE and metal-back UKA**.

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