



# La ripresa dello sport dopo intervento di protesi monocompartimentale di ginocchio

*Dr. Fabrizio Di Feo*  
Policlinico Luigi Di Liegro-Roma

# Sport e protesi monocompartimentali di ginocchio ...ovvero ... la sindrome di highlander !!!



# Sport master



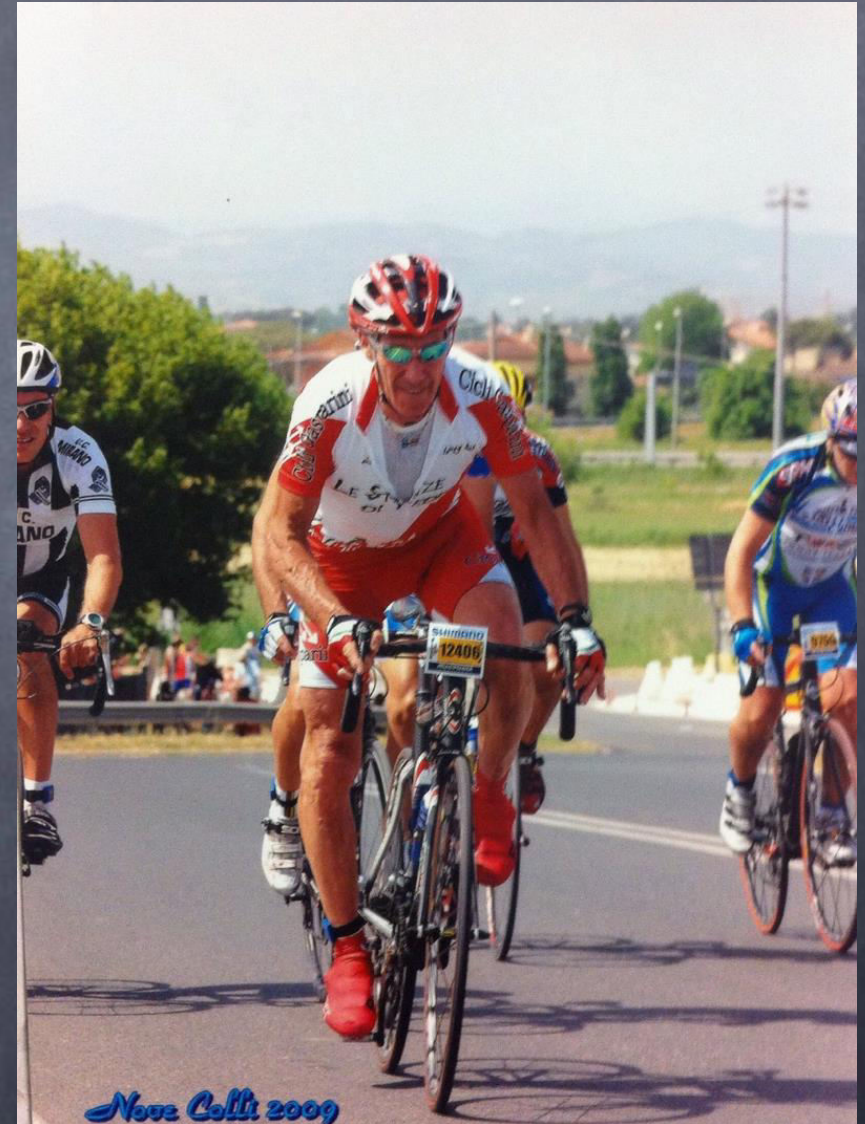
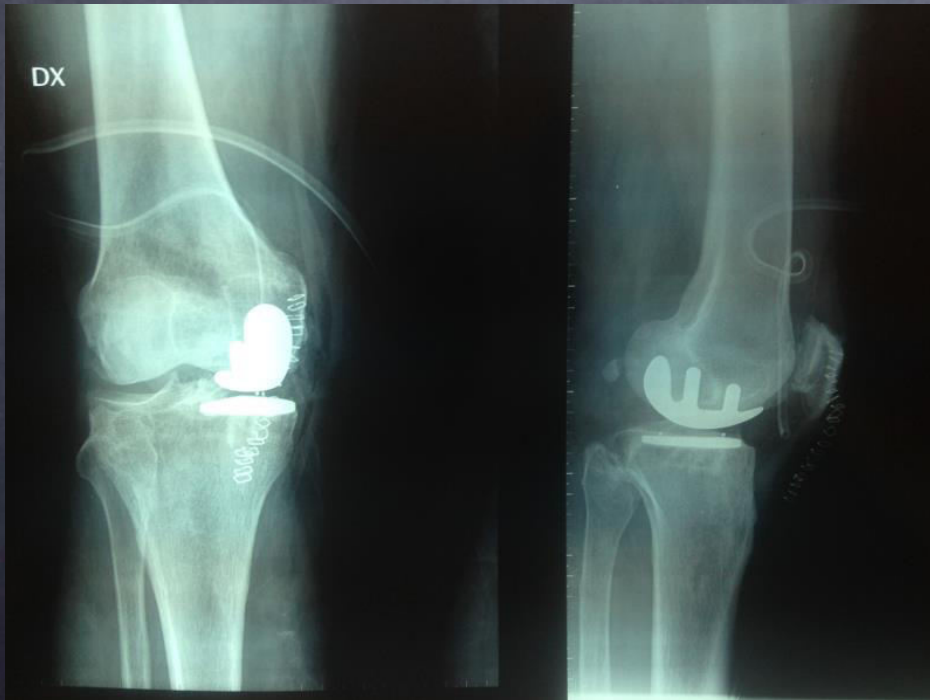
# Sport e protesi monocompartimentale

- D.I. Donna, 53 aa
- Insegnante di educazione fisica, appassionata di sci
- 3 pregresse artroscopie
- Rifiuta la protesi totale



# Sport e protesi monocompartimentale

- M.T. , 72 aa, Maschio
- Operaio, ciclista
- 1 pregressa artroscopia
- 300 km/settimana



# *Sport e protesi monocompartimentale*



- C.M. 70 aa, maschio
- 1,65 \* 100 kg
- Gioca a tennis 2h / 3 vv sett.

# *Sport e protesi monocompartimentale*



- S.G. 73 aa, femmina
- Ex insegnante di tennis
- Gioca a tennis 2h al giorno

# Analisi del passo

- Studio retrospettivo, caso controllo
- 10 pazienti sottoposti a UKA valutati a un anno e comparati mediante analisi del passo a 20 giovani adulti sani

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Knee Surg Sports Traumatol Arthrosc. 2012 Jun;20(6):1042-8. doi: 10.1007/s00167-011-1620-z. Epub 2011 Aug 10.

**Muscle activity around the knee and gait performance in unicompartmental knee arthroplasty patients: a comparative study on fixed- and mobile-bearing designs.**

Catani F<sup>1</sup>, Benedetti MG, Bianchi L, Marchionni V, Giannini S, Leardini A.

⊕ Author information

**Abstract**

**PURPOSE:** Unicompartmental knee arthroplasty (UKA) offers clinical and functional advantages over total knee arthroplasty. The aim of this study was to compare the functional recovery of patients with mobile UKA versus fixed-bearing designs by state-of-the-art gait analysis and, in particular, by assessing muscular activity.

**METHODS:** Ten patients with the Oxford (mobile bearing) and ten patients with Optetrak (fixed bearing) UKA were evaluated at a minimum follow-up of 1 year post-operatively by gait analysis, which includes the main time-distance parameters, kinematics and kinetics of the replaced knee, and muscular activity of the main relevant muscles. Twenty healthy young subjects were used as controls.

**RESULTS:** The mean International Knee Society score was  $92.7 \pm 11.2$  for all 20 UKA knees; for the Oxford UKA, it was  $94.1 \pm 9.5$ ; and for the Optetrak UKA, it was  $91.5 \pm 12.9$ , although follow-up was significantly lower for the latter. Time-distance parameters showed a slower gait in both groups compared with that of controls, and the Oxford group had values closer to the controls. Knee joint flexion was similar to that of controls at initial contact and loading response with no differences between groups. In all patients, the joint moments were smaller to that of controls. Residual abnormalities such as the prolonged rectus femoris activity were present in both designs, and the only difference distinguishing the Optetrak group from the others was the combined co-contraction of the hamstrings.

**CONCLUSIONS:** A good restoration of gait was achieved by most unicompartmental knee patients independently of the UKA design, although some abnormalities persisted in muscle activity around the knee.

**LEVEL OF EVIDENCE:** Retrospective comparative study, Level III.

..... buon recupero del passo raggiunto dalla maggior parte dei pazienti sottoposti a UKA indipendentemente dal tipo di protesi .....



# Analisi del passo

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THE JOURNAL OF ARTHROPLASTY

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J Arthroplasty. 2013 Oct; 28(9): 176–178.

PMCID: PMC3809509

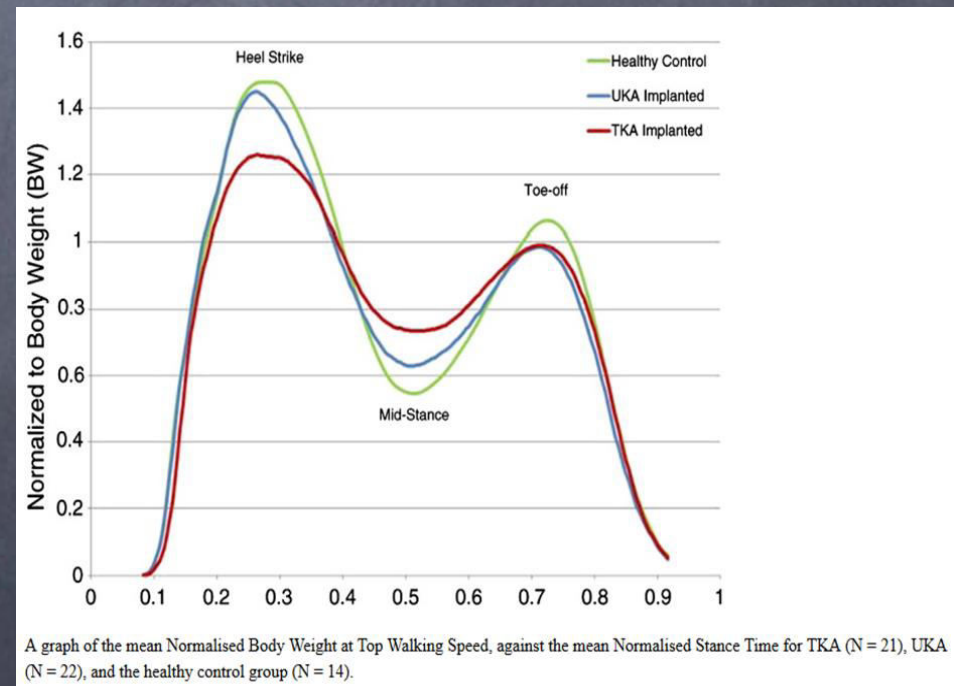
doi: [10.1016/j.arth.2013.07.036](https://doi.org/10.1016/j.arth.2013.07.036)

## Unicompartmental Knee Arthroplasty Enables Near Normal Gait at Higher Speeds, Unlike Total Knee Arthroplasty

[Anatole V. Wiik](#), MB BS,<sup>a</sup> [Victoria Manning](#), PhD,<sup>a</sup> [Robin K. Strachan](#), FRCS,<sup>b</sup> [Andrew A. Amis](#), PhD,<sup>c</sup> and [Justin Peter Cobb](#), MCh, FRCS<sup>a,\*</sup>

Top walking speed (TWS) was used to compare UKA with TKA. Two groups of 23 patients, well matched for age, gender, height and weight and radiological severity were recruited based on high functional scores, more than twelve months post UKA or TKA.

TKA patients walked substantially faster than any previously reported series of knee arthroplasties. **UKA patients walked 10% faster than TKA**, although not as fast as the normal controls..... Unlike TKA, **UKA enables a near normal gait one year after surgery.**



# UKA vs TKA vs HTO: what's best?

ANZ J Surg. 2007 Apr;77(4):214-21.

## Unicompartmental knee arthroplasty for the treatment of unicompartmental osteoarthritis: a systematic study.

Griffin T<sup>1</sup>, Rowden N, Morqan D, Atkinson R, Woodruff P, Maddern G.

### Author information

#### Abstract

Unicompartmental knee arthroplasty (UKA), total knee arthroplasty (TKA) and high tibial osteotomy (HTO) may all be used to treat unicompartmental osteoarthritis, but they are often used for different patient groups. However, there is considerable overlap in indications for all three options. The aim of this review was to assess the safety and efficacy of UKA compared with TKA and HTO in unicompartmental osteoarthritis. Studies that compared UKA with either TKA or HTO were identified and included for review. For knee function and postoperative pain, UKA appeared similar to TKA and HTO at 5 years follow up. Range of motion was better in UKA compared with TKA. Complication rates after UKA and TKA appeared similar, although deep vein thrombosis was reported more often after TKA. There were more complications after HTO than UKA. Survival of UKA prostheses was approximately 85-95%, compared with at least 90% for TKA at 10 years follow up. Survivorship for HTO appeared to be less than 85%. It was not clear whether there were more revisions after UKA than TKA, but there appeared to be fewer revisions in UKA compared with HTO. UKA is considered at least as safe as TKA and HTO. For function, UKA appears to be at least as efficacious as TKA and HTO. The survival of UKA compared with TKA and HTO cannot be determined based on the available evidence.

	UKA	TKA	HTO
Postoperative pain	similar	similar	similar
Range of motion	Better than TKA	-----	Not mentioned
Complication	Similar	Similar ( but more DVT)	More DVT
Survival at 10 years follow up	85-95%	90%	< 85%

# UKA vs HTO

Knee Surg Sports Traumatol Arthrosc (2013) 21:96–112  
DOI 10.1007/s00167-011-1751-2

KNEE

## **The impact of a high tibial valgus osteotomy and unicondylar medial arthroplasty on the treatment for knee osteoarthritis: a meta-analysis**

Gunter Spahn · Gunther O. Hofmann ·  
Lars Victor von Engelhardt · Mengxia Li ·  
Henning Neubauer · Hans Michael Klinger

- ❑ Mean survival time to TKA was 9.7 years after valgus HTO and 9.2 years after medial UKA
- ❑ Clinical outcome was significantly better after medial UKA in a 5- to 12-year follow-up.
- ❑ After more than 12 years, results were comparable in both groups. No significant differences were seen in the complication rates

Valgus HTO is more appropriate for younger patients who accept a slight decrease in their physical activity. Medial UKA is appropriate for older patients obtaining sufficient pain relief but with reduced physical activity

# *Qual'è la tenuta delle protesi mono ?*

- Posizione favorevole all'interfaccia osso/ spina tibiale
- Resistenza dell'osso inferiore alla protesi
- Cementazione solo per aumentare la tenuta in compressione
- Ottima esperienza su pazienti obesi

# *Resistenza protesica*

- Secondo diversi autori la resistenza delle protesi mono sarebbe inferiore ai carichi di rottura del polietilene
- I nuovi polietileni sembrerebbero più robusti  
...ma forse è una questione di elasticità...

# Sport dopo chirurgia: UKA o TKA?

Original Article

## Return to Sports Activity following UKA and TKA

Jason C. Ho, MD<sup>1</sup> Russell N. Stitzlein, MD<sup>2</sup> Charles J. Green, MD<sup>3</sup> Travis Stoner, MD<sup>4</sup>  
Mark I. Froimson, MD<sup>5</sup>

<sup>1</sup> Department of Orthopaedic Surgery, Cleveland Clinic, Cleveland, Ohio

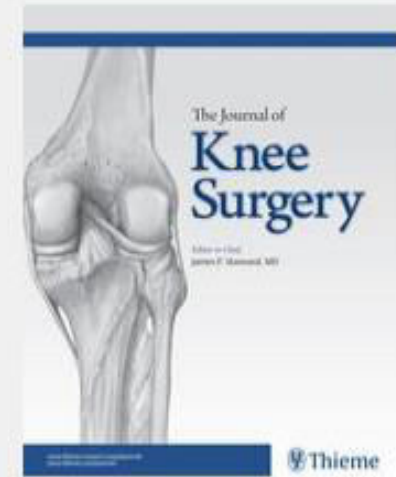
<sup>2</sup> Department of Orthopaedic Surgery, Hospital of University of Pennsylvania, Philadelphia, Pennsylvania

<sup>3</sup> Department of Orthopaedic Surgery, Aurora Healthcare, Sheboygan, Wisconsin

<sup>4</sup> Department of Orthopaedic Surgery, Fillmore County Hospital, Geneva, Nebraska, Switzerland

<sup>5</sup> Trinity Health, Livonia, Michigan

Address for correspondence: Jason C. Ho, MD, Department of Orthopaedic Surgery, Cleveland Clinic, 9500 Euclid Ave, A40, Cleveland, Ohio 44113 (e-mail: hoj@ccf.org).



Clinical evaluation revealed no difference in the number of patients who returned to sports or their satisfaction, but **patients with UKA returned to sports more quickly and exhibited better postoperative knee scores** than TKA patients.

Knee Surg Sports Traumatol Arthrosc (2008) 16:973–979  
DOI 10.1007/s00167-008-0596-9

SPORTS MEDICINE

## Participation in sporting activities following knee replacement: total versus unicompartmental

Graeme Philip Hopper · William Joseph Leach



A large proportion of patients in the TKA group did not return to sport which their surgeon would have expected them to including golf and bowls. Patients in the UKA group also took part in more sporting sessions and for a longer period of time than patients in the TKA group. Moreover, patients undergoing UKA also returned to sport more quickly than patients undergoing TKA.

# Sport dopo chirurgia: UKA o TKA?

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Naal FD1, Fischer M, Preuss A, Goldhahn J, von Knoch F, Preiss S, Munzinger U, Drobny T

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The American Orthopaedic  
Society for Sports Medicine

## The American Journal of Sports Medicine

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*Am J Sports Med.* 2007 Oct;35(10):1688-95. Epub 2007 Jun 8.

### Return to sports and recreational activity after unicompartmental knee arthroplasty.

Naal FD<sup>1</sup>, Fischer M, Preuss A, Goldhahn J, von Knoch F, Preiss S, Munzinger U, Drobny T.

#### ⊕ Author information

#### Abstract

**BACKGROUND:** There is a lack of detailed information concerning patients' sports and recreational activities after unicompartmental knee arthroplasty.

**HYPOTHESIS:** Patients treated by unicompartmental knee arthroplasty will be able to return to sports and activity.

**STUDY DESIGN:** Case series; Level of evidence, 4.

**METHODS:** The authors surveyed 83 patients by postal questionnaires to determine their sporting and recreational activities at a mean follow-up of 18 +/- 4.6 months (range, 12-28) after unicompartmental knee arthroplasty. For data analysis, patients were divided into groups of women and men, and older and younger patients (those above and below the median age of the group). The authors also assessed the state of general health (SF-36) of the patients at the time of the survey and compared the results with those of a matched (for age and side-diagnoses) reference population.

**RESULTS:** Before surgery, 77 of 83 patients were engaged in an average of 5.0 sports and recreational disciplines; postoperatively, 73 (88%) participated in an average of 3.1 different sports disciplines, resulting in a return to activity rate of 95%. The frequency of activities (sessions per week) was 2.9 preoperatively and remained constant at the time of survey (2.8). The group of older patients (mean age 73.0 y) revealed a significantly higher frequency than the group of younger patients (mean age 57.8 y). The minimum session length decreased from 66 minutes before surgery to 55 minutes after surgery. The most common activities after surgery were hiking, cycling, and swimming. Several high-impact activities, as well as the winter disciplines of downhill- and cross-country skiing had a significant decrease in participating patients. The majority of the patients (90.3%) stated that surgery had maintained or improved their ability to participate in sports or recreational activities. The patients generally scored very high on the SF-36 compared with the matched reference population. Higher SF-36 values in the physical-related domains correlated with an increased level of activity ( $r = 0.425$ ). The preoperative body mass index showed a weak, negative correlation with the postoperative extent of activities ( $r = -0.282$ ).

**CONCLUSION:** The majority of patients returned to sports and recreational activity after unicompartmental knee arthroplasty. However, the numbers of different disciplines patients were engaged in decreased as well as the extent of activities. The activities in which most patients participated were primarily low- or midimpact. The patients scored higher on the SF-36 than age-related norms, which might be due to the patient-selection process for unicompartmental knee arthroplasty and geographical differences.

## *Sport dopo chirurgia: UKA o TKA?*

- Pazienti sottoposti a UKA tornano a praticare sport più velocemente dei pazienti sottoposti a TKA
- La maggior parte dei pazienti sottoposti a TKA non riescono a praticare sport come promesso dal chirurgo prima dell'intervento, inclusi il golf e il bowling
- Molti pazienti sottoposti a UKA hanno mantenuto o addirittura migliorato la propria capacità sportiva o di partecipazione a attività ricreative, come emerso dalla somministrazione del SF-36

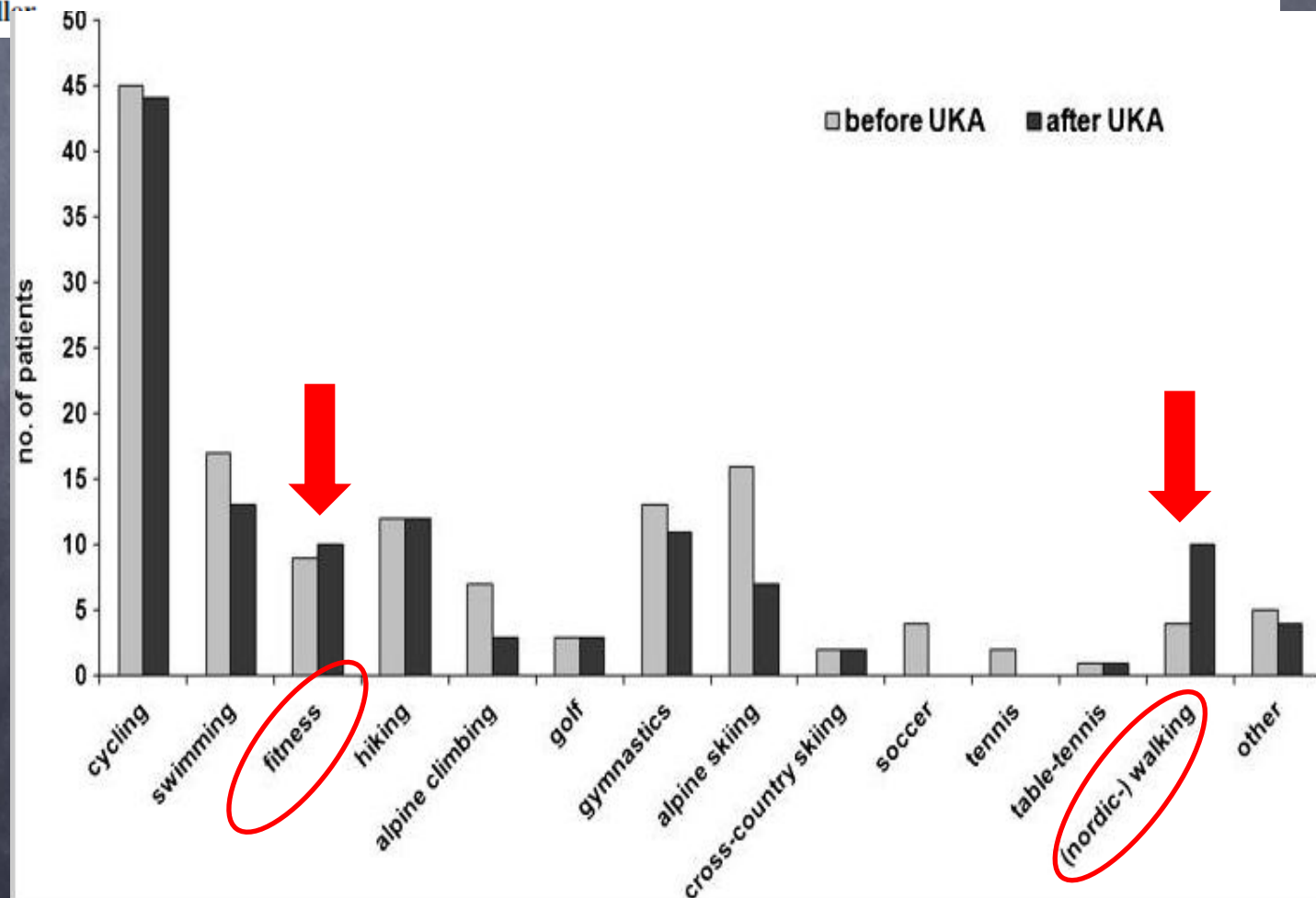


## Sports activities after medial unicompartmental knee arthroplasty Oxford III—What can we expect?

Matthias F. Pietschmann • Lisa Wohlleb • Patrick Weber •  
Florian Schmidutz • Andreas Ficklscherer •  
Mehmet F. Gülecyüz • Elem Safi • Thomas R. Niethammer •  
Volkmar Jansson • Peter E. Müller

L'intervento UKA Oxford III è associato a un elevato grado di soddisfazione in termini di attività sportiva.

Tra i pazienti «attivi» è risultato un maggiore shift da sport ad elevato impatto a sport low- impact



# Uka /sports /psi

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Patient-specific instrumentation and return to activities after unicondylar knee arthroplasty.

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[Clin Sports Med](#). 2014 Jan;33(1):133-48. doi: 10.1016/j.csm.2013.08.003.

**Patient-specific instrumentation and return to activities after unicondylar knee arthroplasty.**

[Boyd JL](#)<sup>1</sup>, [Kurtenbach CA](#), [Sikka RS](#).

Author information

## Abstract

In the past decade, there has been a major increase in the use of unicompartmental knee arthroplasty (UKA) as surgical techniques have been refined and patient selection has improved. UKAs now account for 8% to 10% of knee arthroplasty procedures. Recent studies have suggested excellent medium- and long-term results of UKA. Overall, results have shown 85% to 90% survivorship at 10 years, with 90% of patients reporting good to excellent subjective and objective outcomes. Recent studies suggest that unicompartmental arthroplasty allows a high percentage of patients to return to presurgical sport and activity participation.

# *La nostra esperienza*

- Dal 2008 al 2015: controllo delle ultime 250 protesi monocompartimentali impiantate

## **MATERIALI E METODI**

Sono stati selezionati 30 pazienti (21M, 9F), età media 68 aa

Sport praticato: ciclismo, tennis, sci, ballo agonistico marcia, con un ritmo di 3-5 sessioni settimana

# *MATERIALI E METODI: artroscopia.....?*

- 12 pazienti erano stati sottoposti ad artroscopia nei 24 mesi precedenti con risultati deludenti ,3 pazienti avevano subito più di una artroscopia prima dell'interventi
- 8 pazienti erano stati sottoposti ad artroscopia diagnostica/interlocutoria nei 90 gg precedenti (di cui 4 pazienti erano candidati a OTA, ma è stata esclusa la possibilità dopo artroscopia)

# *Protesi utilizzate*

- 22 allegretto (2 esterne)
- 3 oxford
- 5 journey uni
- 28 mediali / 2 laterali

*RISULTATI:  
incovenienti/insuccessi*

- 1 lussazione di menisco mobile

# *RISULTATI: ripresa dello sport*

- Tutti i pazienti hanno ripreso l'attività sportiva con durata delle sessioni nettamente aumentata e risultati agonistici migliori
- Nello sci in particolare ripresa dell'attività sportiva quando dismessa (8 casi)

# *RISULTATI: ripresa dello sport*

- La maggior parte dei pazienti ha ripreso lo sport prima delle indicazioni del chirurgo e ad un livello più alto che nei 24 mesi precedenti all'intervento



Questo perchè gli sportivi master tendono a diminuire l'attività all'aumentare dei sintomi...



# *RISULTATI: cedimenti*

- non abbiamo ad oggi notizie di cedimenti o fratture protesiche (max 60 mesi dall'impianto)
- non segni di scollamento nè maggior radiolucenza
- riorganizzazione dell'osso metafisario sotto l'emipiatto tibiale
- iniziali dolori metafisarii tibiali nelle "magre"

# *RISULTATI: Stress osseo*

- Nelle persone che hanno ripreso l'attività con troppa intensità a 45 / 60 gg è comparso un dolore metafisario tibiale regredito con il tempo (Secondo noi sintomo di una riorganizzazione progressiva delle linee di carico dell'osso come già osservato precedentemente da Romagnoli)
- Tale sintomatologia ha avuto una conferma radiografica

grazie ed attenti agli  
esagerati !!!

