

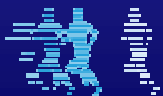
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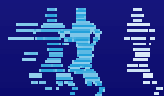
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Dr John Negrine
Adult Foot & Ankle Surgery

Ankle replacement

“The good the bad and the ugly”

John P Negrine FRACS



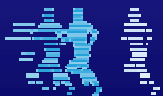
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Approximately how many hip replacements were done in Australia last year?

- A) 10,000
- B) 20,000
- C) 30,000
- C) 40,000
- C) 50,000

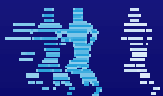


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Approximately how many knee replacements were done in Australia last year?

- A) 10,000
- B) 20,000
- C) 30,000
- C) 40,000
- C) 50,000

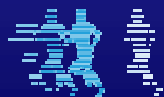


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Approximately how many ankle replacements
were done in Australia last year?

- A) 100
- B) 200
- C) 300
- C) 400
- C) 500

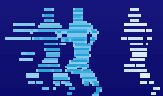


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Causes of ankle arthritis

- Osteoarthritis secondary to trauma &/or abnormal ankle biomechanics (primary osteoarthritis is exceedingly rare)
- Inflammatory arthropathies
- Haemochromatosis
- Infection
- Neuropathic arthropathy
- Tumour



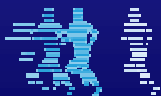
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Incidence

- 0.75% general population (compared with knee 6%)
- Average 14% risk post-trauma, however lesser or greater depending on severity & location of original fracture



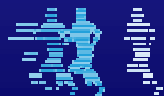
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Ankle Fusion

The traditional time tested
way to treat an end-stage
arthritic ankle



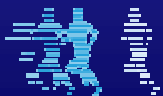
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Gait analysis of patients with a fused ankle has shown

- Decreased knee flexion before heel strike
- Less time in single-limb stance
- Reduced sagittal ground-reaction force, which is important only with barefoot walking



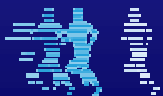
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Complications

- Non-union 5 – 10% incidence
- Factors associated with non-union include infection, smoking (4x greater risk), impaired vascularity, neuropathy, osteonecrosis of the talus, malalignment, poor technique, & post-operative non-compliance
 - Mal-union
 - Pseudoarthrosis
 - Neurovascular injury
 - Stress fracture of the tibia
 - Infection
 - Subsequent arthritis development in joints of hind- & midfoot



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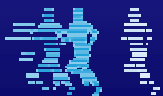
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Longterm follow-up

- Saltzmann et al. JBJS 83A: 219, 2001.
- 23 patients followed for a mean of 22 years
- 100% developed arthritis in the surrounding joints
- More pain, disability and limitation of movement than contralateral limb

??were surrounding joints injured in the first place??



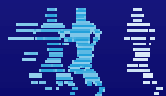
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BUT

None of these patients had
had any further surgery!!!

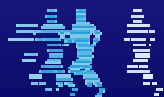


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Fusion 6/2000 M 63

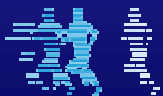
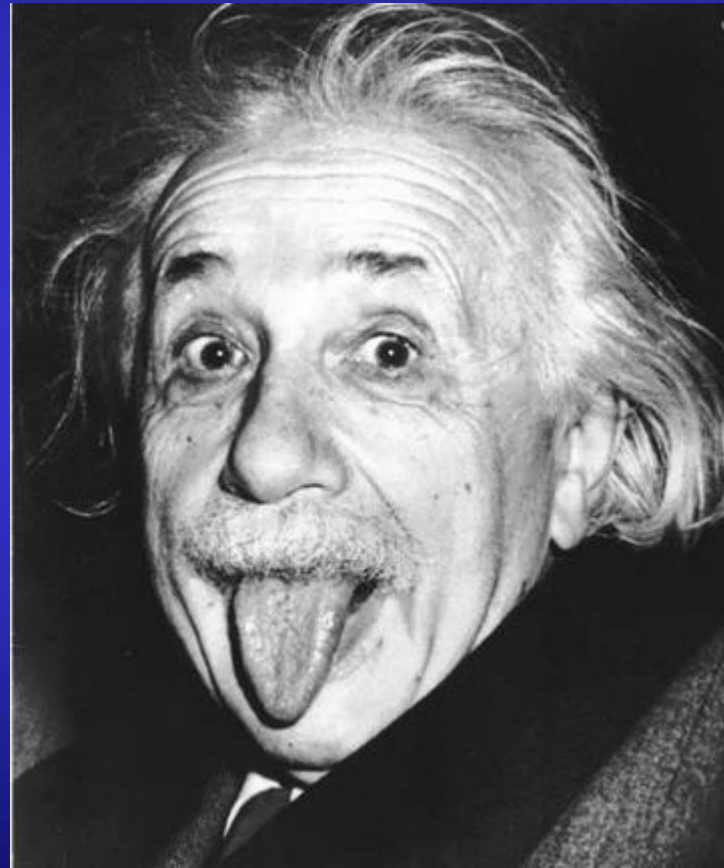


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A wise man once said:

Nothing ruins a
series more
than longterm
follow-up!

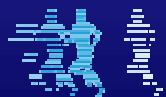


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10 years later



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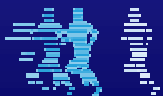
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Case study

61 year old man

- Ankle pain
- Disabling
- Walking distance 100m
- Not responding to NSAIDS

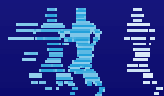


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Case study

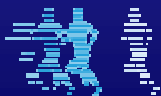
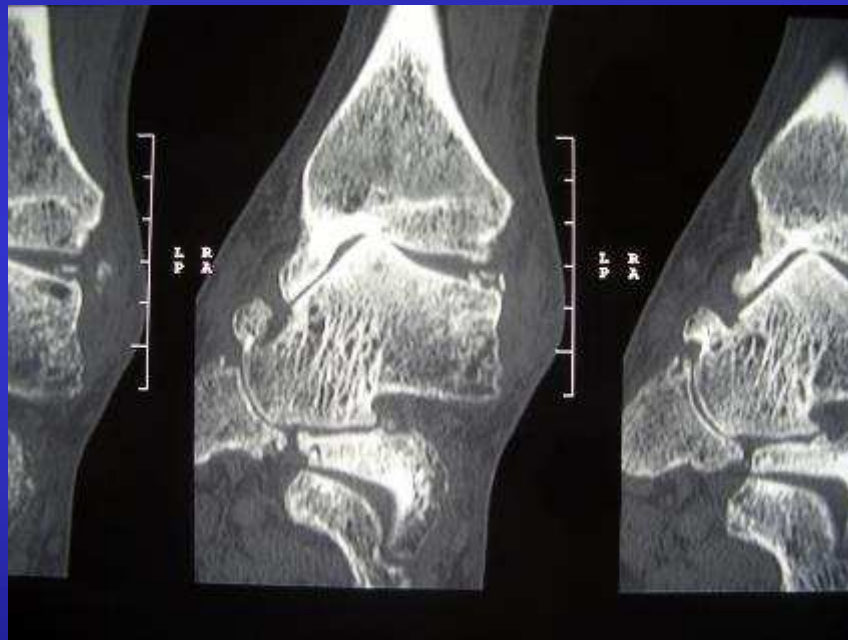


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Ankle and talo-navicular OA



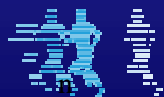
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Fusing the ankle and talonavicular
joints will leave him with no
hindfoot movement

“Function little better than a below
knee amputation”

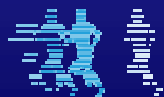


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Ankle replacement and TNJ fusion 2010

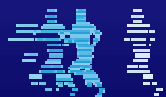


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3 operations later 2016



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Total ankle replacement

- Began in the 1970's
- Mostly disastrous...
- Failure because of poor techniques, poor implants, poor patient selection
- Largely abandoned for 30 years by most surgeons



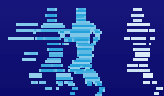
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Ankle replacement renaissance

- Better techniques
- Better implants (3 component)
- Very encouraging results from the Danish (Kofoed) and the Swiss (Hintermann) and the French (Bonnin)

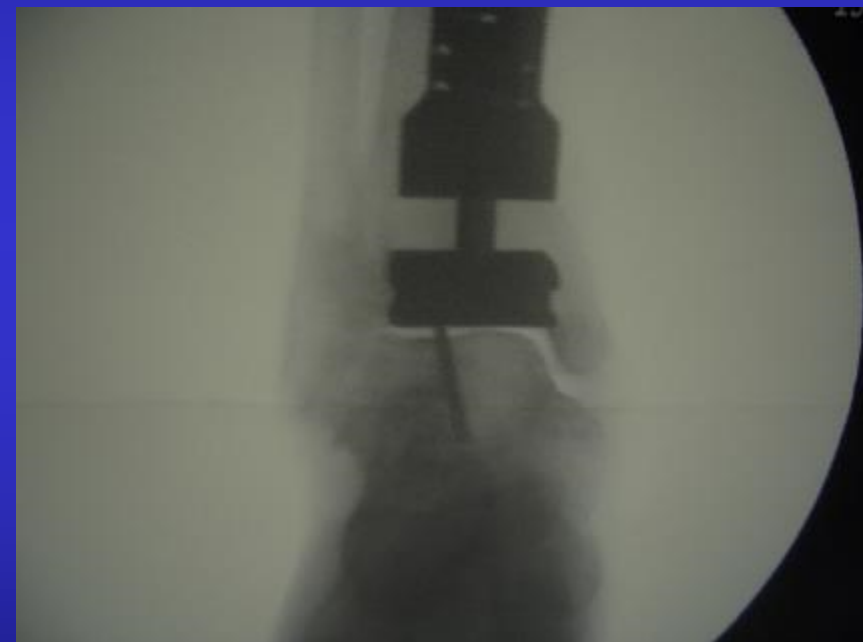


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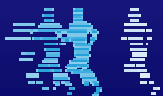
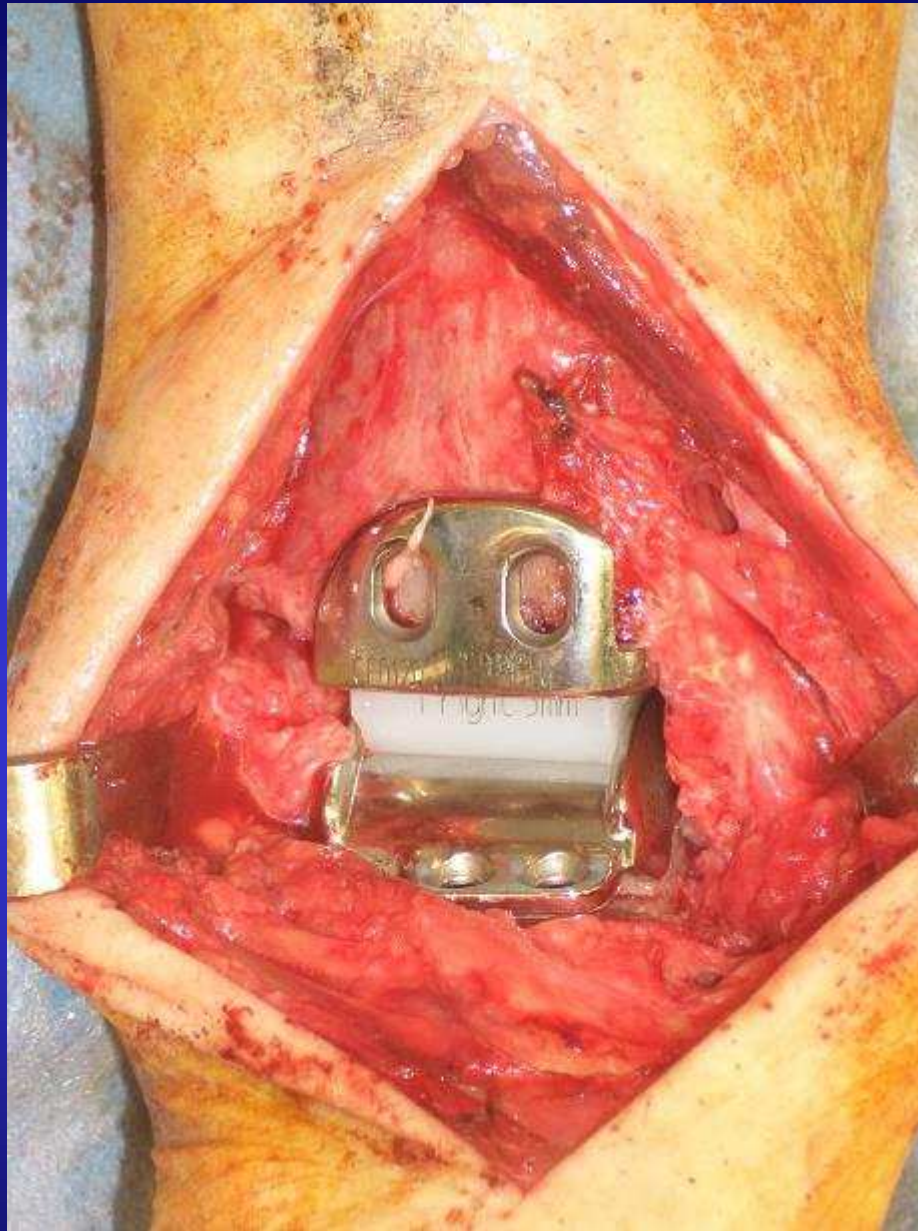
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Ankle arthroplasty



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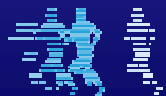


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Ankle arthroplasty



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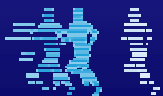
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Hakon Kofoed

58 ankles

- 10 year follow-up
- 80% survivorship
- CORR 424:73-79, 2004



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Published results

- **Total ankle replacement**

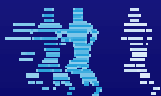
- **THE RESULTS OF 100 MOBILITY TOTAL ANKLE REPLACEMENTS**

- P. L. R. Wood, M. T. Karski, P. Watmough

- DOI: 10.1302/0301-620X.92B7.23852 Published 30 June 2010

- This study suggests that the early outcome of ankle replacement is comparable to that of other total joint replacements.

- The occurrence of pain which defied our attempts at diagnosis is a cause for concern. We explore the ankle when we think there is malleolar impingement, but despite this, one patient in this series in whom we made this diagnosis obtained only temporary benefit



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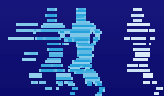
Published results

The outcome of the Mobility total ankle replacement at a mean of four years
Can poor outcomes be predicted from pre- and post-operative analysis?

D. Muir, J. Aoina, T. Hong, R. Mason

DOI: 10.1302/0301-620X.95B10.30204 Published 27 September 2013

- The outcome of the Mobility TAR at a mean of four years is satisfactory in > 85% of patients. However, there is a significant incidence of persistent pain, particularly on the medial side, for which we were unable to establish a cause.



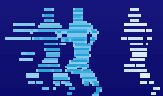
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Published results Hinterman

- 722 ankles
- 94% at 5 years
- 84% at 10 years
- 1% incidence of cysts
- JBJS (Am) 95: 1175 - 1183

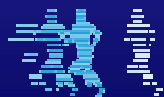


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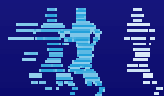


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What's wrong with ankle replacement?



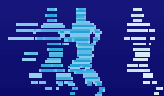
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The problems

- Pain relief unpredictable
- High re-operation rate
- Cysts
- Very unforgiving of deformity
- Young active people are not good candidates

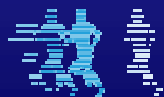


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“I've had the STAR replacement in January 2013 and a revision in October 2013 since the tibial component was tilted. I have had problems with peroneal tendonitis since this surgery and am in constant pain when I walk. I get steroid shots whenever it swells too much but I don't feel that I should be feeling like this after all this time. I thought I was the only one with problems with the STAR”

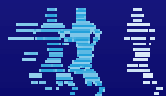


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“If there are any of you still out there... I have a Salto ankle implanted about a year ago. Still in pain, irritable, exhausted, finally a SPEC CT showed huge bone activity under the implant of the talus - revision surgery in three weeks. Terrified now of what next. I had distraction, osteotomy, cleanouts, replacement... if this does not work I AM WORN OUT. Done. Old. Finished. Blech. OMG, what happened to my sense of humor.”



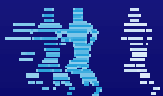
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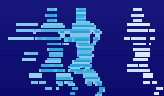
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Re-operation rate Replacement vs Fusion

- 9% at one year (5%)
- 23% at 5 years (11%)
- Based on 480 cases
- JBJS (Am) 89:2143-2149. 2007



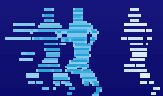
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The problems

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Another example



Cysts



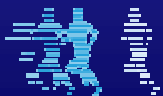
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What causes the cysts?

- Osteolysis from implant wear debris
- Stress shielding
- Continuous high joint fluid pressure
- Pre-existing osteoarthritic cysts



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Talar cut referenced from tibia



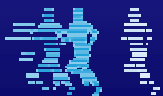
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CALL 508-350-6670

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Peri-prosthetic cysts

- Hintegra ankle prosthesis
- 99 ankles
- 37% incidence of cysts
- “No major association was found between the presence of osteolysis and clinical or radiological outcomes”

Foot. Ankle. Int 35(1) 2014

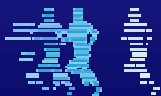


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JC 6 years – “very happy Doc.
Best thing I’ve ever done”

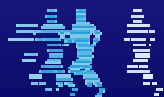


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JM 6 years – no pain, no swelling
no analgaesia



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Interestingly

- All these cysts were found on routine follow-up
- CT scanning is far more revealing than plain x-ray
- Most of the cysts were asymptomatic and worried me far more than the patient!
- A large cyst can obviously lead to catastrophic failure necessitating urgent revision



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Osteolysis in TAR: Take home messages- Murray Penner

1. It's common & typically occurs early
2. The cause(s) is not yet well understood
3. PE wear may be a factor, but other implant design & insertion factors are likely equally or more important
4. When cysts are identified and seen to progress, bone grafting or revision is likely warranted, though evidence is lacking

IFFAS Chicago 2011

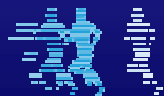


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LC ankle replacement 2010 grafted cyst 2015 – Golf 3x/week



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When a patient has complications

- Make them your friend – Des Bokor
- If you do ankle replacement you will have lots more friends!!



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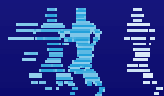


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The problems

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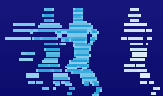
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81 y.o lady progressive deformity



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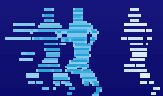
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- Young active people are not good candidates



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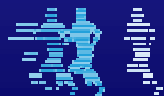
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Dr John Negrine
Adult Foot & Ankle Surgery

The problem with young ankle arthritis

- Fusion not ideal as they will live long enough to get arthritis in the surrounding joints
- You can't replace the ankle in a 30 year old
- Stem cells ??? Well enough said!!!!

In my opinion an unsolved problem



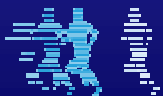
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Total hip replacements in Australia 2015

48,000



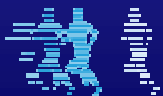
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Total knee replacements in Australia 2015

48,000



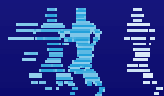
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Total ankle replacements in Australia 2011

274



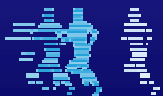
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Total Ankle replacements in Australia 2015

130

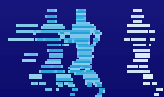


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While hip and knee
replacements continue to be
performed in increasing numbers
ankle replacement in Australia
has been declining since 2011



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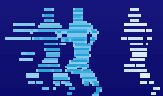
Dr John Negrine
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 Knee and Ankle surgeon



Dr John Negrine
Adult Foot & Ankle Surgery

Remember

- An MRI scan is suggested to help the Cronulla sharks!



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