



Zimmer®  
NexGen®  
Trabecular  
Metal™  
Tibial Tray

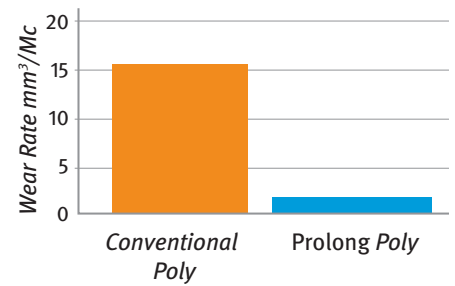
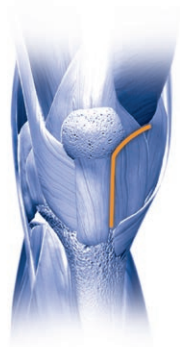


The Best Thing Next to Bone™



## A New Joint Venture—Trabecular Metal Technology Plus Modularity

The *Trabecular Metal* Tibial Tray unites stable fixation with modular components to meet a growing demand for knees implanted through mini-arthrotomies. With physical and mechanical properties similar to bone, *Trabecular Metal* Technology achieves stable initial fixation and helps prevent stress shielding and lift-off. The separate articulating surface is available in *Prolong*<sup>™</sup> Highly Crosslinked Polyethylene, which substantially increases delamination and wear resistance.<sup>1</sup> And the modular components work with the *Zimmer*<sup>®</sup> *Minimally Invasive Solutions*<sup>™</sup> procedures.



### ADAPTABLE MODULAR DESIGN

- Provides a choice of fully compatible *NexGen* CR or LPS-Flex fixed-bearing articular surfaces in sizes ranging from 10mm to 17mm.
- Allows replacement of just the articular surface, if necessary, when revising a well-fixed tibial tray.
- A broad range of sizes allows better coverage of the proximal tibia by the tibial tray, thus improving the likelihood for long-term stability.

### MINIMALLY INVASIVE SOLUTIONS PROCEDURES

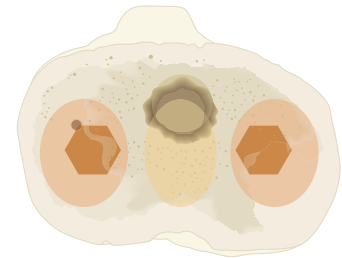
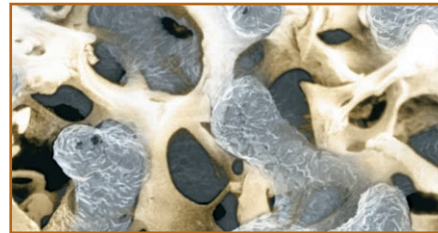
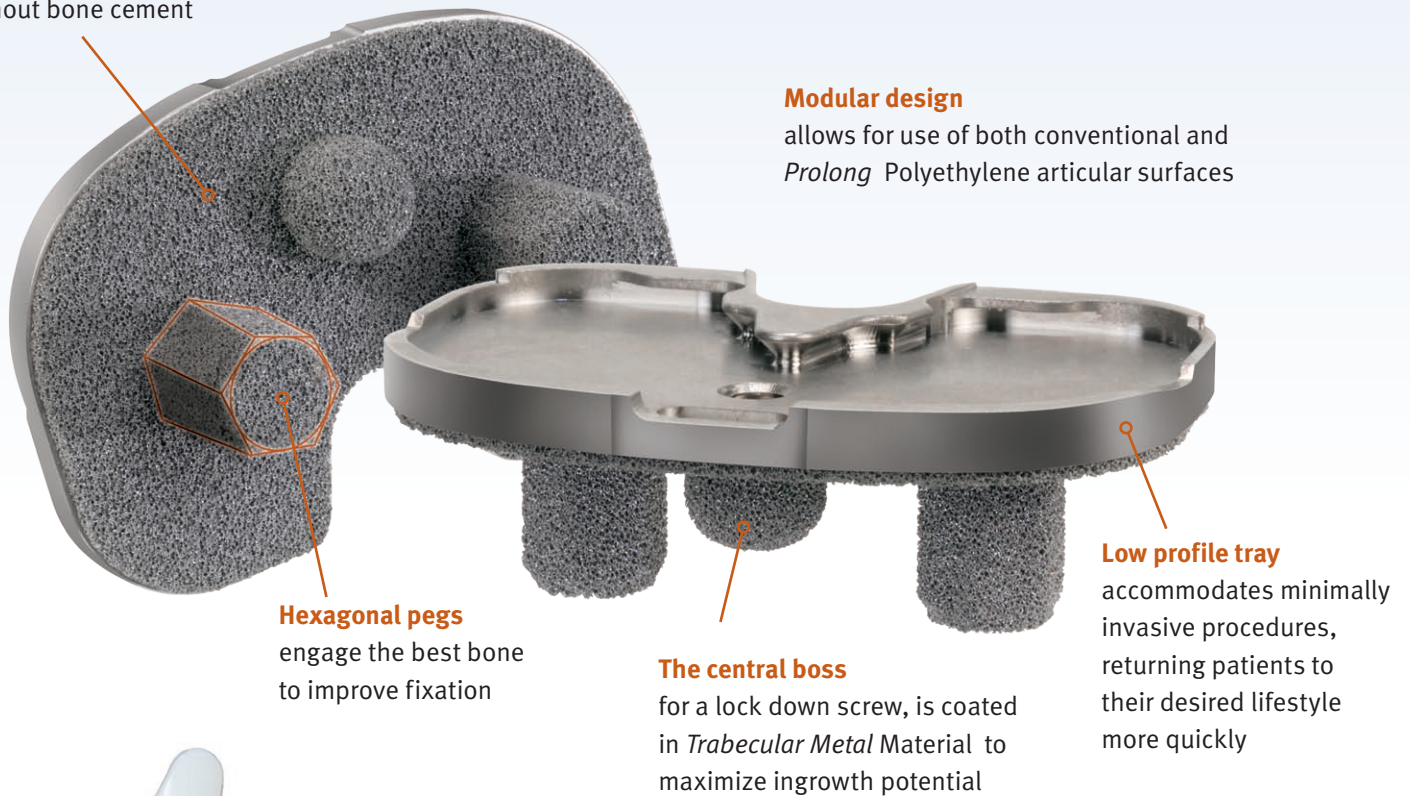
- Low profile tray accommodates *Minimally Invasive Solutions* procedures.
- Smaller incisions result in less blood loss and less pain.
- Instrumentation facilitates accurate, repeatable bone cuts.

### TRABECULAR METAL TECHNOLOGY AND PROLONG POLYETHYLENE USED TOGETHER FOR THE FIRST TIME

- *Prolong* Polyethylene can now be used with a *Trabecular Metal* Material Tibial Tray.
- Free radicals coupled with air exposure can lead to oxidation. *Prolong* Polyethylene is melt annealed, quenching most free radicals and increasing resistance to oxidative degradation.<sup>2</sup>
- *Prolong* Polyethylene has been shown to be delamination-resistant after multiple aggressive wear tests.<sup>3</sup>

## Trabecular Metal Technology

enhances key fixation interfaces, with or without bone cement



## HIGH-FLEXION

- A locking screw anchors the 17mm flex articulating surfaces to the tibial tray.
- Helps restore natural knee kinematics and active flexion up to 155° based on the patient's willingness and ability to achieve high-flexion.

## TRABECULAR METAL COVERAGE AND CEMENTLESS FIXATION

- Full *Trabecular Metal* Material at bone interfaces enables rapid and extensive tissue ingrowth and ongrowth which helps prevent stress shielding and lift-off.<sup>4,5</sup>
- *Trabecular Metal* Technology helps establish initial stability with press-fit pegs at a higher coefficient of friction on bone than other implant materials.<sup>6</sup>

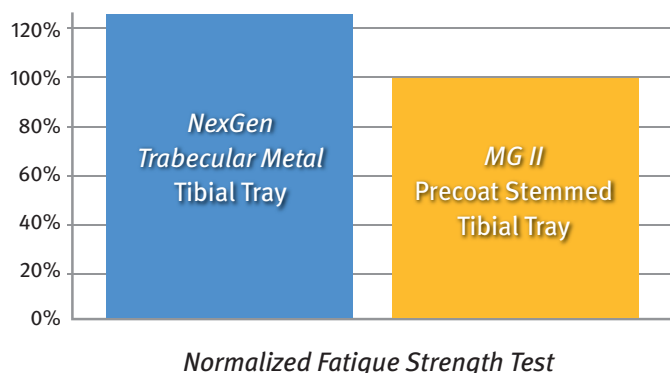
## DESIGNED TO ENGAGE BEST BONE

- Hexagonal pegs engage the area of highest tibial bone density, in line with condylar loading.<sup>1</sup>
- Once holes are drilled into the bone, the hex-shaped pegs are interference fit for secure fixation.

## Testing Data<sup>1</sup>

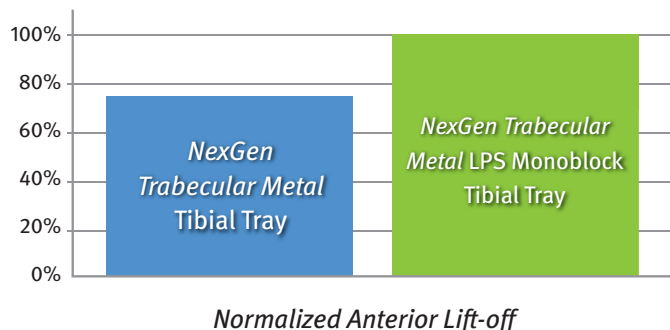
### CANTILEVER FATIGUE STRENGTH TEST

The fatigue strength of this device is approximately 25% higher than the design requirement established by the *MG II*<sup>®</sup> precoat stemmed tibial tray which has been in use since 1989.



### LIFT-OFF TEST

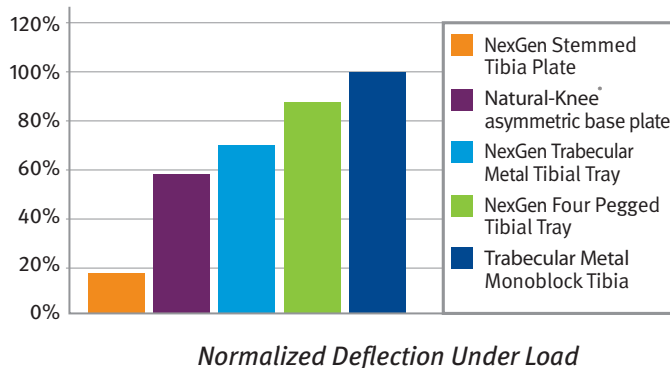
The results showed that the average maximum lift-off for the *NexGen Trabecular Metal Tibial Tray* is statistically significantly less (23%;  $p=0.003$ ) than that of the *NexGen Trabecular Metal LPS Monoblock Tibial Component* which has been in use since 2003. Less lift-off provides a greater opportunity for bony ingrowth.



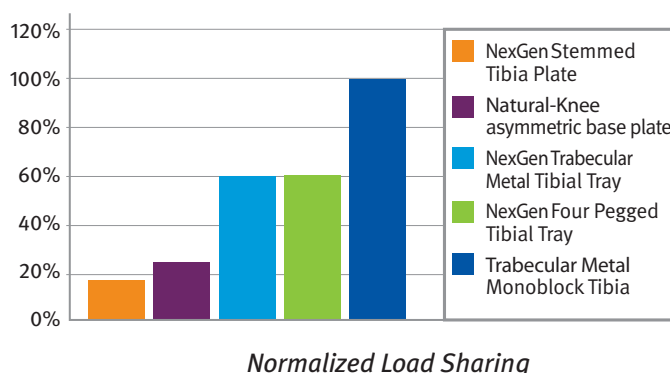
### REFERENCES

1. Data on file at Zimmer
2. Gsell R, Yao JQ, Laurent MP, Crowninshield RD. Improved oxidation resistance of highly crosslinked UHMWPE for total knee arthroplasty. Society for Biomaterials 27th Annual Meeting Transactions. 2001:84.
3. Yao JQ, Blanchard CR, Lu X, et al. Improved resistance to wear, delamination and posterior loading fatigue damage of electron beam irradiated, melt-annealed, highly crosslinked UHMWPE knee inserts. Standard Technical Publication 1445, ASTM International. 2004.
4. Bohn JD, Stackpool G, Toh K-K, et al. Bone ingrowth characteristics and interface mechanics of a new porous tantalum biomaterial. *J Bone Joint Surg.* 1999;81-B:907-914.

### LOAD SHARING TEST



This study utilized a standard cantilever test in order to measure the stiffness along with a Finite Element modeling method to quantitatively evaluate the stresses passed through the implant to the bone. The results show a strong correlation between the load sharing and implant stiffness.



The load sharing characteristics of *NexGen Trabecular Metal Tibial Tray* are expected to be similar to those of the *NexGen Four Pegged Tibial Tray* which has been in use since 1995.



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