



Zimmer®
Gender Solutions™
Natural-Knee®
Flex System

Because Men and Women
are Different



Two distinct shapes for men and women.





Two distinct shapes for men and women.

Industry-leading *Gender Solutions* technology. The proven success of the *Natural-Knee System*. Innovative high-flex designs. We're putting it all together.

Zimmer was the first to recognize that when it comes to knees, men and women are different. Our groundbreaking research demonstrated that the differences are less about size—and more about shape. Now, Zimmer is applying industry-leading *Gender Solutions* technology to the clinically successful *Natural-Knee System*.¹ The future of total knee arthroplasty is here: the all new *Gender Solutions Natural-Knee Flex System*.

The *Gender Solutions Natural-Knee Flex System* is an ideal choice for the growing number of patients who wish to return to an active lifestyle. The system is compatible with muscle-sparing *Zimmer® Minimally Invasive Solutions™* procedures and offers high-flexion capability up to 155 degrees and delamination-resistant *Prolong®* Highly Crosslinked Polyethylene tibial and patellar articular surfaces. The system features the proven clinical success of Zimmer's asymmetric tibial component, *CST™* porous coating and the Ultracongruent articular surface.

For surgeons, the *Gender Solutions Natural-Knee Flex System* is a flexible, comprehensive solution. For patients—both male and female—it offers the opportunity for an active and independent future.



Two distinct shapes for men and women.



Gender Solutions Male (GSM)

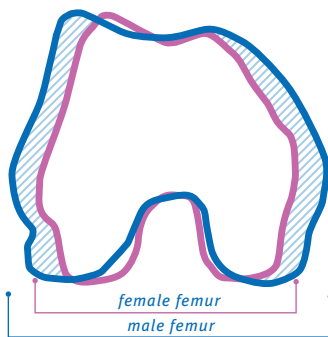


Gender Solutions Female (GSF)

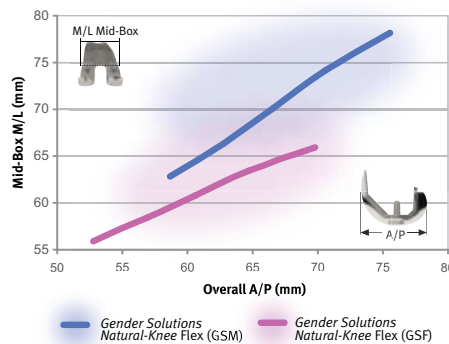
Two distinct populations. Two distinctive implant shapes.

Zimmer's groundbreaking research using three-dimensional CT data revealed two distinct populations with different anatomies. Data revealed that female femurs are more trapezoidal in shape and are narrower in the M/L dimension when compared to male femurs of the same A/P dimension.^{2,3}

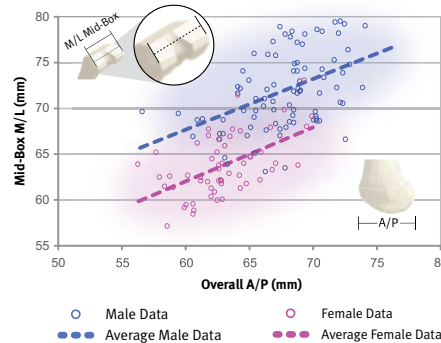
Gender Solutions Natural-Knee Flex System male and female implants differ mediolaterally to allow for improved implant fit and fewer intraoperative adjustments.



Female and Male Aspect Ratios



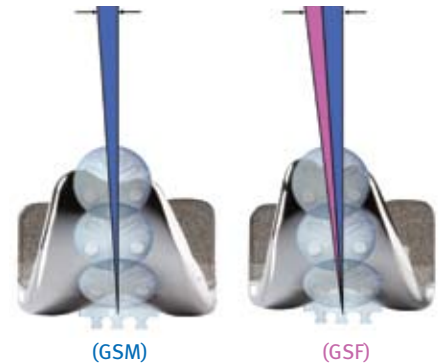
Mid-Box M/L vs. Overall A/P



Two distinct populations. Two distinct patellar tracks.

Patellar maltracking has long been a concern following total knee arthroplasty—particularly in female patients.⁴ Research has documented that women have a statistically higher Q-angle than men^{5,6,7} and a distinct patellar track.

Gender Solutions Natural-Knee Flex System male and female implants have a three degree difference in the trochlear groove angle.

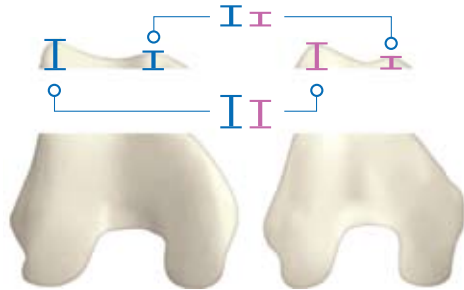


Two distinct populations. Two distinct anterior flange designs.

Male/female differences in the anterior condyles result in bone resections that differ in both thickness and width.^{3,8}

Gender Solutions Natural-Knee Flex System implants are designed to replace the bone resection with an implant of corresponding size and shape to avoid overstuffing and overhang that may increase pain.^{9,10}

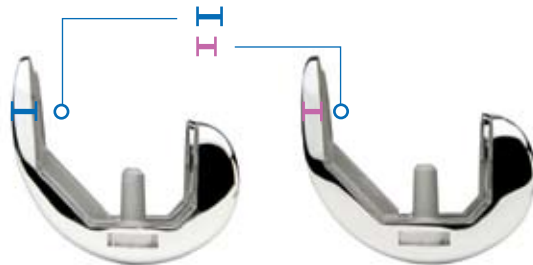
Anterior Flange Thickness



Male resection

Female resection

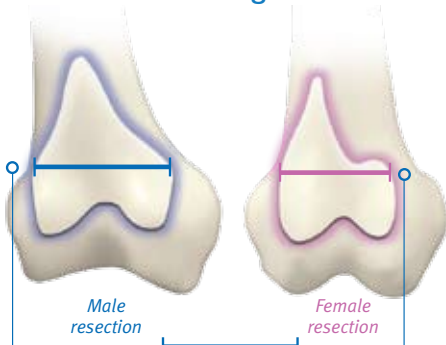
	Male	Female	Difference
Lateral condyle height (mm)	10.9	10.1	0.8
Medial condyle height (mm)	6.4	5.1	1.3



Gender Solutions
Natural-Knee Flex (GSM)

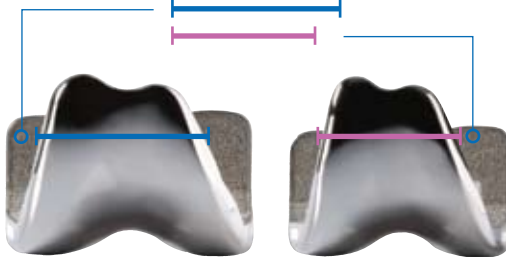
Gender Solutions
Natural-Knee Flex (GSF)

Anterior Flange Width



Male resection

Female resection



Gender Solutions
Natural-Knee Flex (GSM)

Gender Solutions
Natural-Knee Flex (GSF)



Asymmetric Tibial Trays



Asymmetrical tibial insert shape corresponds to the shape of natural tibia.



- Zimmer was first to market the innovative asymmetric baseplate design
- Matching the asymmetric tibial shape provides cortical coverage and helps avoid overhang and soft tissue impingement
- Deep, beveled posterior notch helps to prevent impingement of the PCL
- Spiked keel design provides bone-sparing fixation; smooth pegs offer rotational stability



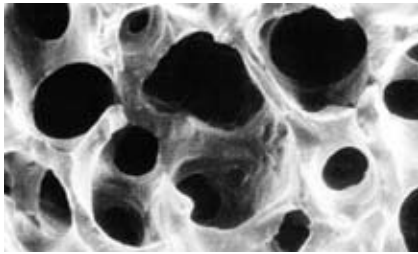
Proven Performance Backed by Years of Clinical Success.

Cancellous-Structured Titanium™ (CSTi™) Porous Coating

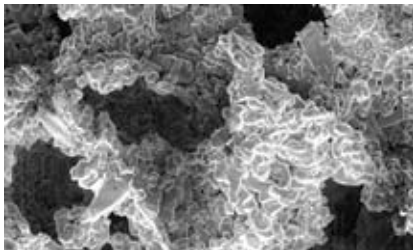
- CSTi porous coating option for stable fixation in active patients
- Combines the excellent biocompatibility of titanium with an optimal structure for bone ingrowth
- Interconnected pores¹¹ resemble human cancellous bone and fine micro-roughness provides enhanced fixation

Magnified 100:1

Human Cancellous Bone¹²
 Pore size: 400-500 µm. Pore volume: 60-77%.



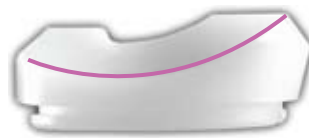
CSTi Coating
 Pore size: 480-560 µm. Pore volume 52-58%.



Ultracongruent Tibial Articular Surface



- *Gender Solutions Natural-Knee Flex System* includes an Ultracongruent tibial articular surface
- Ultracongruent's published long-term clinical results¹³ demonstrate its viability as an alternative to traditional posterior stabilizing designs
- Allows for easy intraoperative conversion from a PCL retaining to a PCL sacrificing solution
- Maximum intraoperative flexibility with minimized bone loss



Ultracongruent Articular Surface



Congruent Articular Surface

Zimmer Minimally Invasive Solutions (MIS) Posterior Referencing Procedure

- *Gender Solutions Natural-Knee Flex System* is compatible with the *Zimmer MIS* procedures
- MIS procedures are less invasive with smaller incisions, reduced blood loss, less pain and shorter hospital stays¹⁴



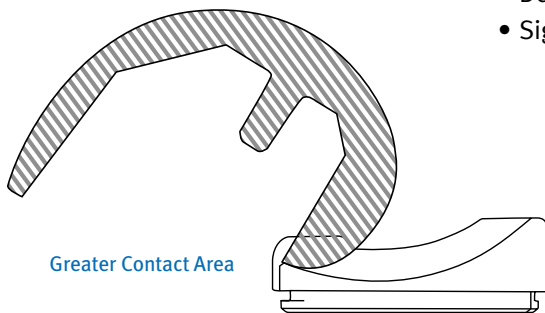
4-in-1 Femoral Finishing Guide

Natural-Knee Flex Sizing Guide

Advanced Technologies for Today's More Demanding Patients.

High-Flexion Design

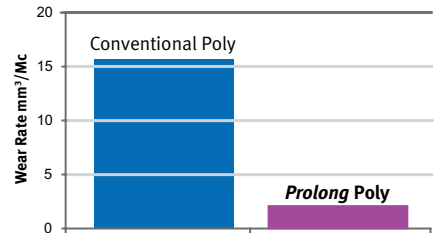
- Accommodates activities requiring up to 155 degrees flexion^{15,16,17}
- Allows contact area to remain high in deep flexion
- Reduces the potential for impingement of the femoral shaft on the tibial articular surface¹⁸



Zimmer Prolong Highly Crosslinked Polyethylene

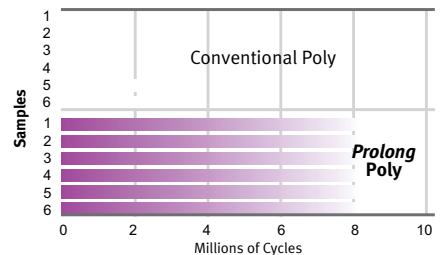
Prolong Highly Crosslinked Polyethylene is specifically designed to provide:

- Minimization of free radicals
- Oxidation resistance²²
- Delamination resistance^{19, 21}
- Significant wear reduction^{20, 23}



Joint simulation wear rates measured during testing for non-crosslinked and crosslinked tibial components.

In laboratory testing, conventional polyethylene components exhibited almost 8x more wear than the Prolong polyethylene samples.



Rigorous laboratory delamination testing conducted at Zimmer demonstrated no delamination in any Prolong samples up to 8 million cycles.

In head-to-head testing specifically designed to result in early onset of delamination, conventional polyethylene inserts repeatedly showed signs of delamination, while Prolong polyethylene showed no evidence of delamination²⁴

The results of in vitro wear testing have not been shown to correlate with clinical wear mechanisms.

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