Zimmer® Gender Solutions™ Natural-Knee® Flex System

Because Men and Women are Different

Two distinct shapes for men and women.

zimmer

ZIMMER GENDER SOLUTIONS™

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 ground-breaking 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, *CSTi*™ 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.

MIS™ minimally invasive solutions

Two distinct shapes for men and women.

Gender Solutions Male (GSM)

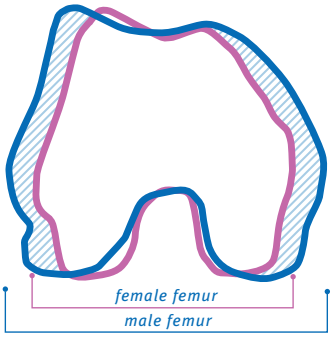
Gender Solutions Female (GSF)

ZIMMER GENDER SOLUTIONS™

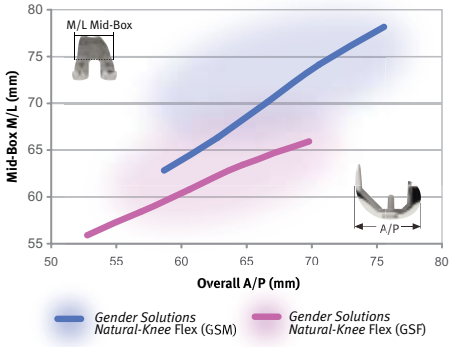
Two distinct populations. Two distinctive implant shapes.

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]

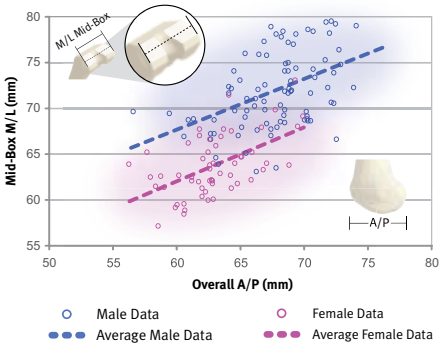
Gender Solutions Natural-Knee Flex System male and female implants differ mediolaterally to allow for improved implant fit and fewer intraoperative adjustments.



Female and Male Aspect Ratios



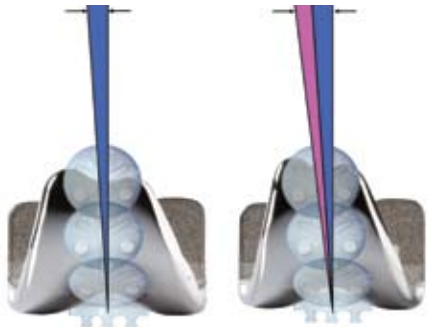
Mid-Box M/L vs. Overall A/P



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.



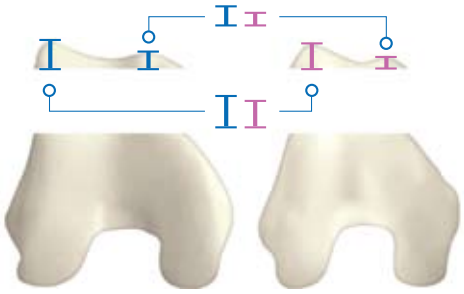
(GSM) (GSF)

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]

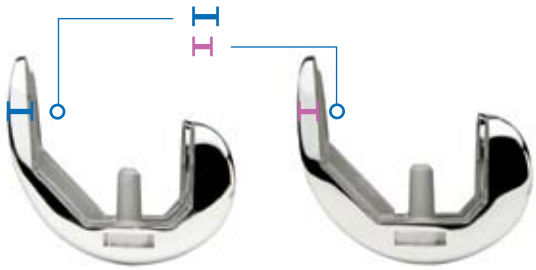
Gender Solutions Natural-Knee Flex System implants are designed to replace the bone resection with an implant of corresponding size and shape to avoid overstuffing and overhang that may increase pain.[9,10]

Anterior Flange Thickness



Male resection *Female resection*

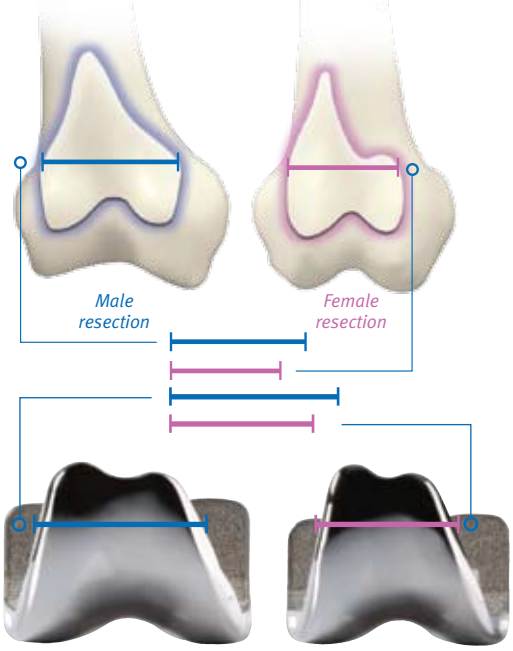
	Male	Female	Difference
Lateral condyle height (mm)	10.9	10.1	0.8
Medial condyle height (mm)	6.4	5.1	1.3



Gender Solutions Natural-Knee Flex (GSM)

Gender Solutions Natural-Knee Flex (GSF)

Anterior Flange Width



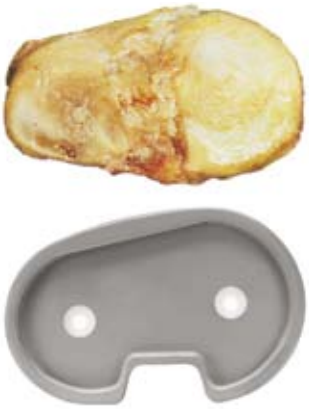
Male resection *Female resection*

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

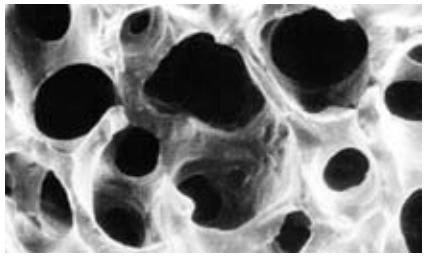
Proven Performance Backed by Years of Clinical Success.

Cancellous-Structured Titanium™ (CSTi™) Porous Coating

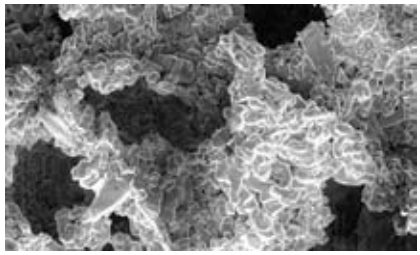
- *CSTi* porous coating option for stable fixation in active patients
- Combines the excellent biocompatibility of titanium with an optimal structure for bone ingrowth
- Interconnected pores[11] resemble human cancellous bone and fine micro-roughness provides enhanced fixation

Magnified 100:1

Human Cancellous Bone[12]
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 results[13] 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 stays[14]

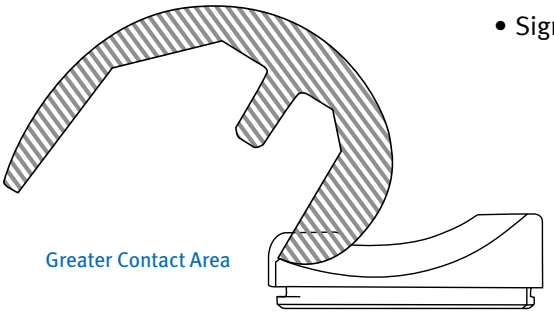
4-in-1 Femoral Finishing Guide

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 surface[18]

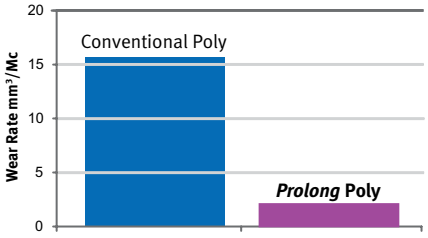


Greater Contact Area

Zimmer Prolong Highly Crosslinked Polyethylene

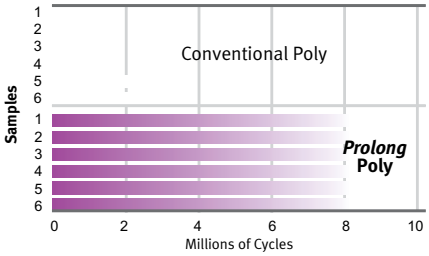
Prolong Highly Crosslinked Polyethylene is specifically designed to provide:

- Minimization of free radicals
- Oxidation resistance[22]
- 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 delamination.[24]

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

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