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 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. 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.
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 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

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 men⁵ ⁶ ⁷ and a distinct patellar track.
Anterior Flange Thickness

<table>
<thead>
<tr>
<th></th>
<th>Male resection</th>
<th>Female resection</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral condyle height (mm)</td>
<td>10.9</td>
<td>10.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Medial condyle height (mm)</td>
<td>6.4</td>
<td>5.1</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Asymmetric Tibial Trays

- 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

Asymmetrical tibial insert shape corresponds to the shape of natural tibia.
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 resemble human cancellous bone and fine micro-roughness provides enhanced fixation

Magnified 100:1

Human Cancellous Bone
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 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

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

4-in-1 Femoral Finishing Guide

Natural-Knee Flex Sizing Guide

Ultracongruent Articular Surface

Congruent Articular Surface
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\(^{18}\)

**Zimmer Prolong Highly Crosslinked Polyethylene**

*Prolong Highly Crosslinked Polyethylene* is specifically designed to provide:

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

![Greater Contact Area](image)

\[Conventional Poly\]

<table>
<thead>
<tr>
<th>Wear Rate mm/Mc</th>
<th>Prolong Poly</th>
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<tbody>
<tr>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>10</td>
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</table>

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.

**Samples**

![Samples](image)

![Rigorous laboratory delamination testing conducted at Zimmer demonstrated no delamination in Prolong samples up to 8 million cycles.](image)

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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3. Data on file at Zimmer

Contact your Zimmer representative or visit us at www.zimmer.com