



Zimmer®
Gender Solutions™
NexGen® High-Flex
Implants

Because Women and
Men are Different



Something new is taking *shape*





It's all about *shape*.

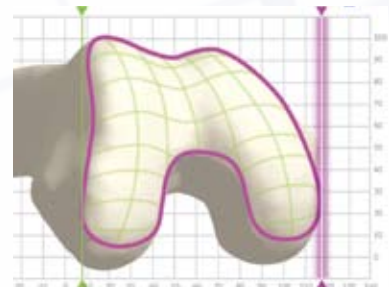
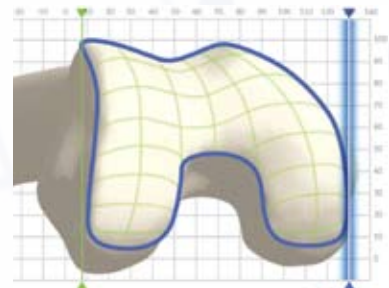
Women and men are different. That's not news to the medical establishment. What is news is that Zimmer is first in the orthopaedic industry to address this fact... with the introduction of the *Zimmer® Gender Solutions™ NexGen® High-Flex Implants*.

What makes them revolutionary is the way in which they compensate for the most important differences between women's and men's knees. It isn't strictly a matter of size; it's a matter of shape.

Why a woman's knee?

A growing body of research has led to breakthroughs in distinctive female and male diagnoses and treatments — for conditions ranging from heart disease to rheumatoid arthritis. The need to account for gender-specific solutions in orthopaedics is apparent.

- Orthopaedic surgeons have reported anatomical differences in women's and men's knees for years.^{1,2,3,4,5,6,7,8}
- Orthopaedic surgeons often have to consider intraoperative adjustments during knee surgery to accommodate women's anatomical differences.⁴
- Women account for nearly two-thirds of knee arthroplasties performed annually in the U.S.^{9,10}
- Women are three times more likely than men to forego knee arthroplasty.¹¹





“Historically we have shaped the patients to fit the implants. Now we have implants shaped to fit the patients.”

Robert E. Booth, Jr., M.D.

Two distinct populations: women and men

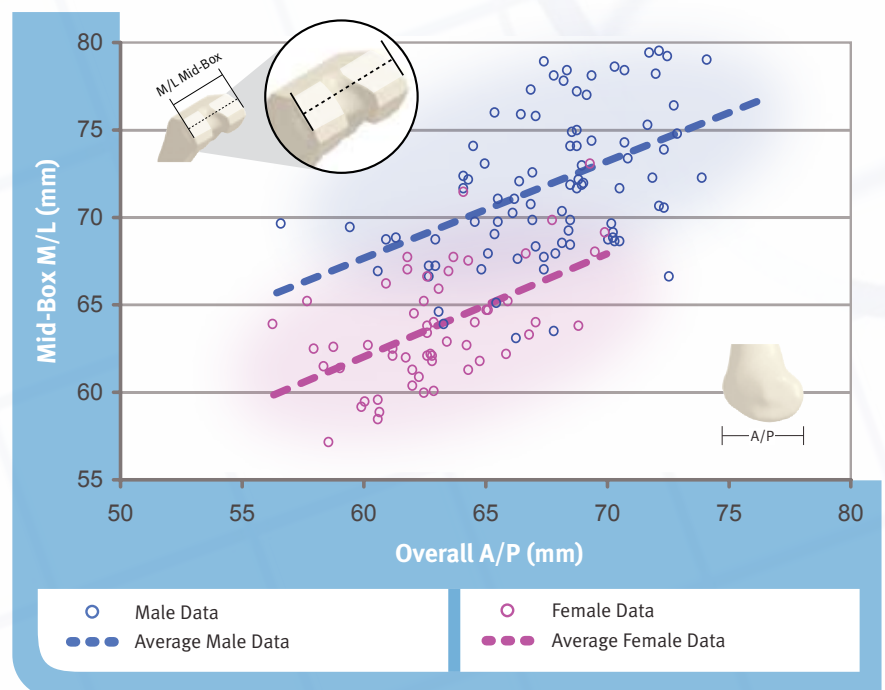
Pioneering research conducted by Zimmer has mapped the anatomical differences between female and male knees,^{12,13} laying the foundation for the design and development of *Gender Solutions* High-Flex Femoral Implants.

- Three-dimensional CT data was collected and analyzed for more than 800 femurs and patellas.
- Significant differences were identified between female and male knee anatomy.
- Plotting M/L and A/P dimensions of the distal femur reveals two distinct populations: female and male.

Implant designs that distinguish between female and male anatomical differences allow for improved implant fit and fewer intraoperative adjustments.

Gender Solutions High-Flex Femoral Implants address the distinctive differences typically found in the female anatomy.

Mid-box M/L vs. overall A/P



It's all about *shape* – Modified Anterior Flange

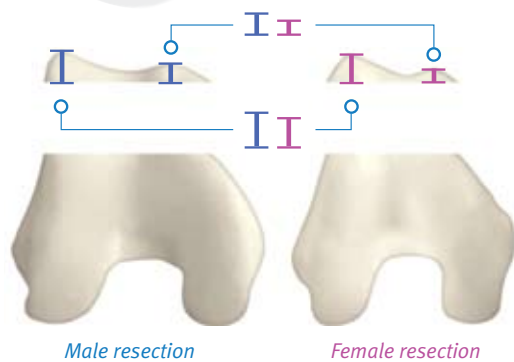
Anterior flange thickness

Research has shown that the female knee has a less-pronounced anterior condyle than males.^{2,13} This less-pronounced anterior condyle results in less bone being resected from the female knee:

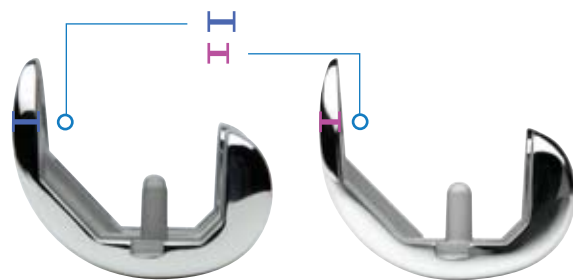
- 0.8mm less on the lateral condyle ($p < 0.02$).¹³
- 1.3mm less on the medial condyle ($p < 0.01$).¹³

Gender Solutions High-Flex Femoral Implants address the distinctive anterior condyle differences by:

- Reducing the anterior flange thickness of the implant.
- Recessing the patellar sulcus.
- Retaining the clinically successful *NexGen* patellar articulation.
- Avoiding overstuffing that may limit postoperative range of motion^{14,15} that can occur when placing a traditional implant on a resected female knee.



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

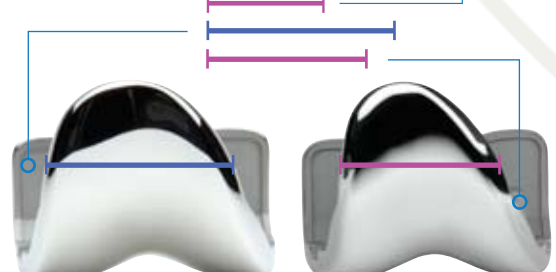
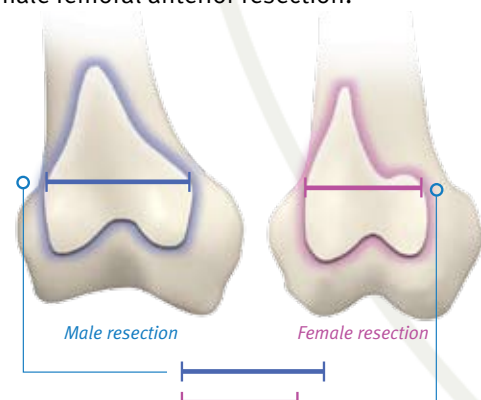


Traditional implant

Gender Solutions High-Flex Femoral Implant

Anterior flange width

The femoral anterior resection of the female bone is narrower than the male femoral anterior resection.



Traditional implant

Gender Solutions High-Flex Femoral Implant

Male



Female



“Twenty-five years ago TKA femoral components were symmetrical. As we recognized the need to improve patellar tracking, industry responded by offering left and right components. Providing an implant that better accommodates the patellar tracking typical of the female patient is just one of the design innovations that the Gender Solutions NexGen High-Flex Femoral Components offers.”

Aaron G. Rosenberg M.D., Professor of Orthopaedic Surgery

Increased Trochlear Groove Angle

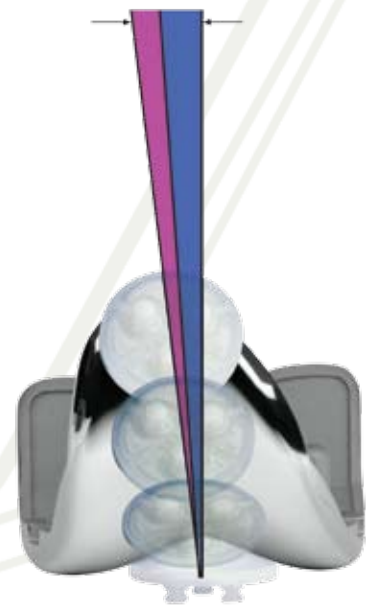
Patellar maltracking remains a concern — particularly with females — following total knee arthroplasty.⁵

Research documents that women have a statistically significant higher Q-angle than men.^{6,7,8}

Gender Solutions High-Flex Femoral Implants replicate the distinct Q-angle difference by increasing the trochlear groove angle of the implant three degrees.



Traditional implant



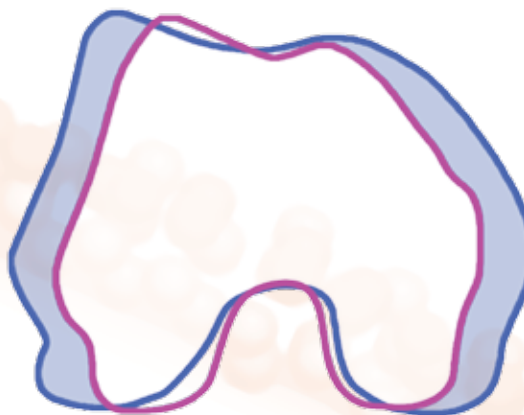
Gender Solutions High-Flex Femoral Implant

It's all about *shape* – Modified ML/AP Aspect Ratio

CT data documents distinctive shape differences in female and male distal femurs.^{12,13}

Female femurs are:

- More trapezoidal-shaped.
- Narrower in the M/L dimension when compared to a male femur of the same A/P dimension.



Female-to-male comparison

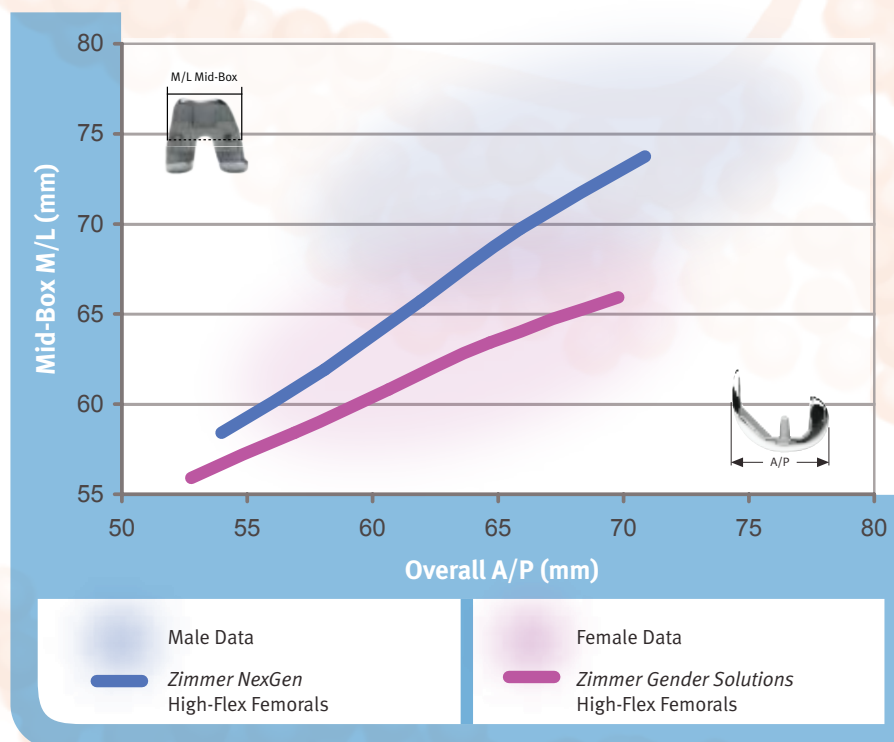
When a traditional implant is placed onto a resected female knee:

- The implant may overhang the bone at the distal, anterior, and posterior M/L interfaces, which may lead to soft-tissue irritation and affect soft-tissue balancing.^{1,3,4}
- The surgeon may be faced with intraoperative adjustments to compensate for the overhang.

Gender Solutions High-Flex Femoral Implants have been narrowed mediolaterally.

This allows surgeons to address the female population with unprecedented accuracy.

Female and male aspect ratio



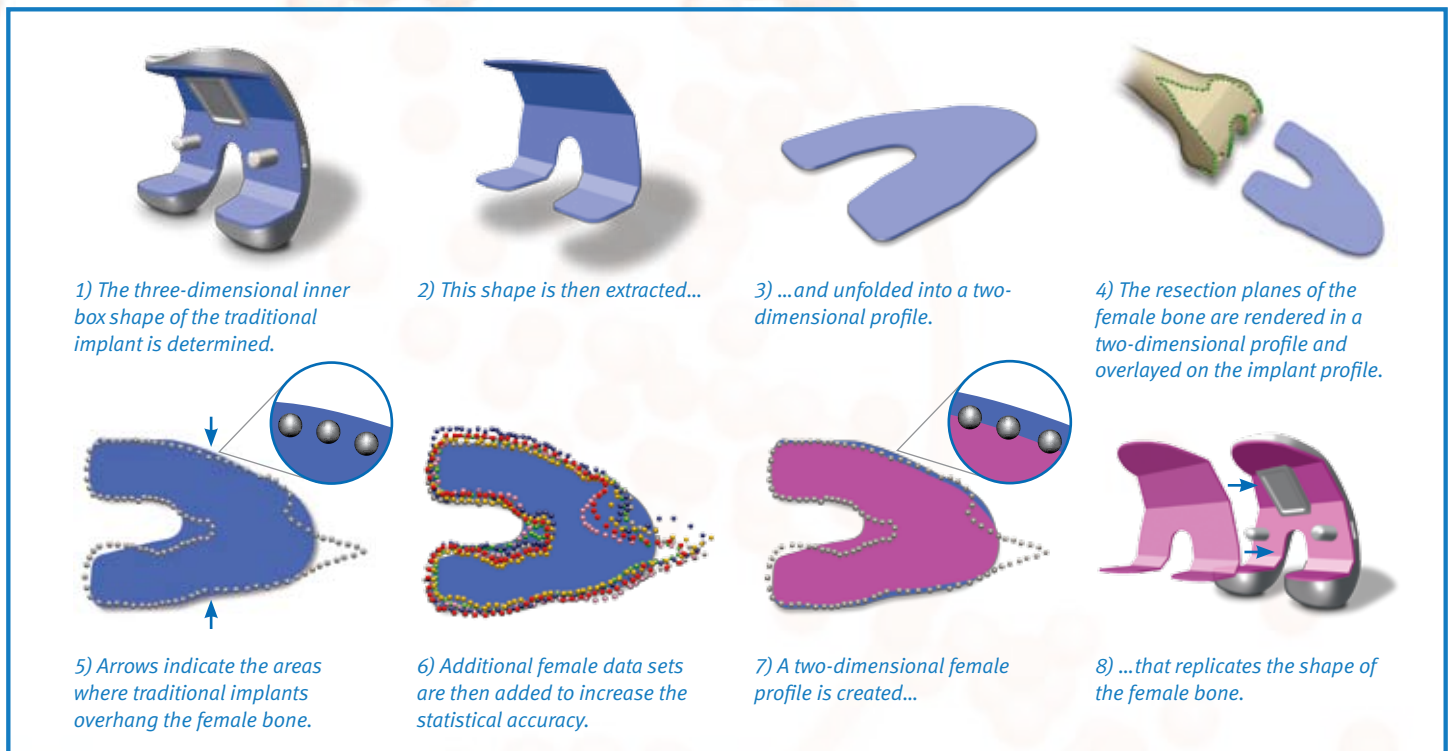


Traditional implant overhangs female bone

Gender Solutions High-Flex Implant on female bone shows little to no overhang

Femoral mapping — applying the science

To address the issue of overhang in female knee arthroplasty, Zimmer has devised a unique patent pending method for predetermining the contour of a resected bone and the fit of an implant on the bone, and applied this novel method in its development of the *Gender Solutions* High-Flex Femoral Implant.



Zimmer Gender Solutions High-Flex Femoral Implants are specifically designed to alleviate knee pain, restore mobility, and offer optimal fit and functionality. To achieve these goals, *Gender Solutions* High-Flex Femoral Implants address the distinctive characteristics typically seen with a woman's knee. **Because women and men are different.**

Gender Solutions NexGen CR-Flex and LPS-Flex

- Built upon Zimmer's 30-years of clinical success with total knee arthroplasty.
- Safely accommodates high flexion — up to 155 degrees — for patients with the ability and desire to do so.
- Can be implanted using any Zimmer surgical technique including *Zimmer® Minimally Invasive Solutions™ (MIST™)* Procedures.



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