

Profemur[®] *Preserve*

Classic Design Rationale



Fast Forward™ to Competitive Advantages

The Profemur® Preserve Classic was developed by a world renowned team of consultants with extensive experience in short stem designs. Rather than replicating Preserve modular, the team approached the design process with a fresh perspective to optimize neck geometries.

Design Goals that Generate Value

- ▶ Minimal technique learning curve.
 - Standard broaching technique.
 - Standard neck resection.
- ▶ For each stem size, necks must...
 - Maximize head center coverage of patient population without using skirted heads.
 - Minimize distance of center of rotation to optimal positions.
- ▶ Improve OR flow and inventory management by minimizing total number of stem sizes and styles.
- ▶ Align with the Simply Versatile™ strategy: one set of instruments for both modular and classic stem options.

A Clinical Starting Point

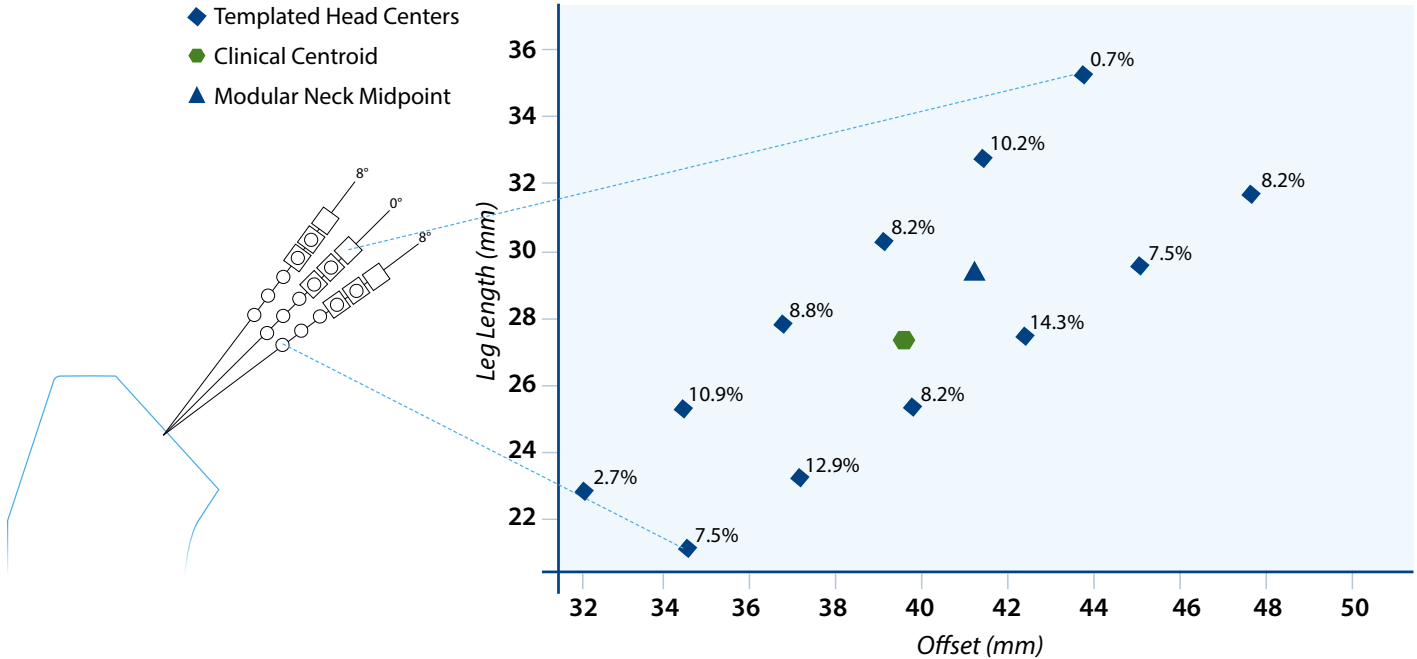
The design team reviewed roughly one thousand implantations to determine Preserve modular stem size, modular neck type, and head size combinations. Cases were sampled globally, and the team's templating methodology captured considerations for both posterior and anterior approaches. This exercise identified the offset and leg length frequency distribution of each implant combination for each stem size. The team learned that each stem size's clinical centroid, a weighted average of head center usage, differed from the modular neck midpoint. The clinical centroid is the gravitating force behind the Preserve classic's design, which maximizes head center coverage with the fewest neck / head combinations for each stem size. The study confirmed that femur size and neck length are positively correlated. That is, larger femurs tend to have longer femoral necks. Additionally, the analysis illustrated the need to maintain both CCD angles; 135° (Straight) and 127° (Varus 8°).

93% Head Center Coverage

Templated neck/head combinations were converted into a frequency distribution to calculate the clinical centroid for each stem size.

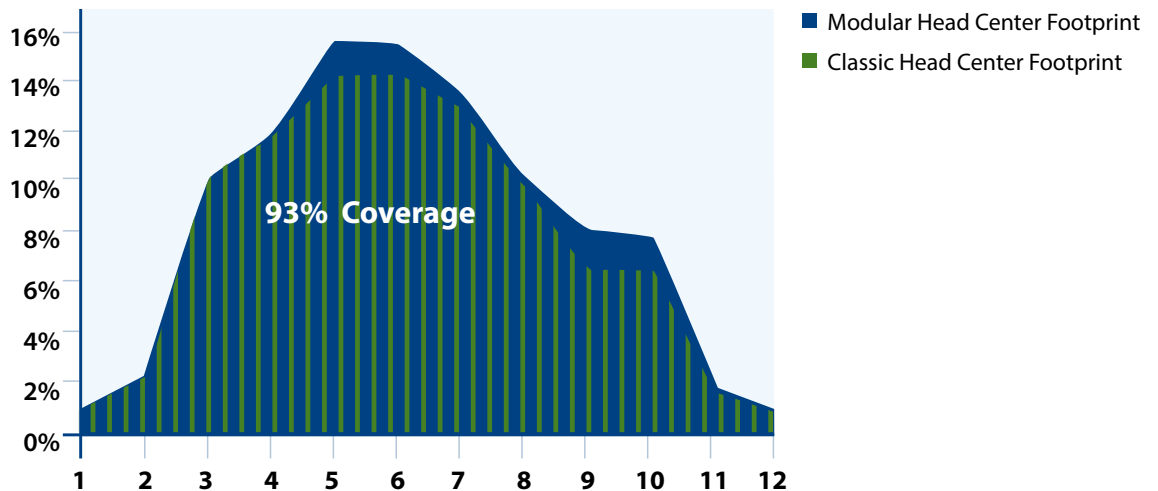
Preserve Modular Distribution (Size / Neck / Head Combinations)

Size 6



For any given size, Preserve classic reconstructs Preserve modular head centers (within 5mm of optimal position), on average, 93% of the time.

Preserve Distribution (Size)

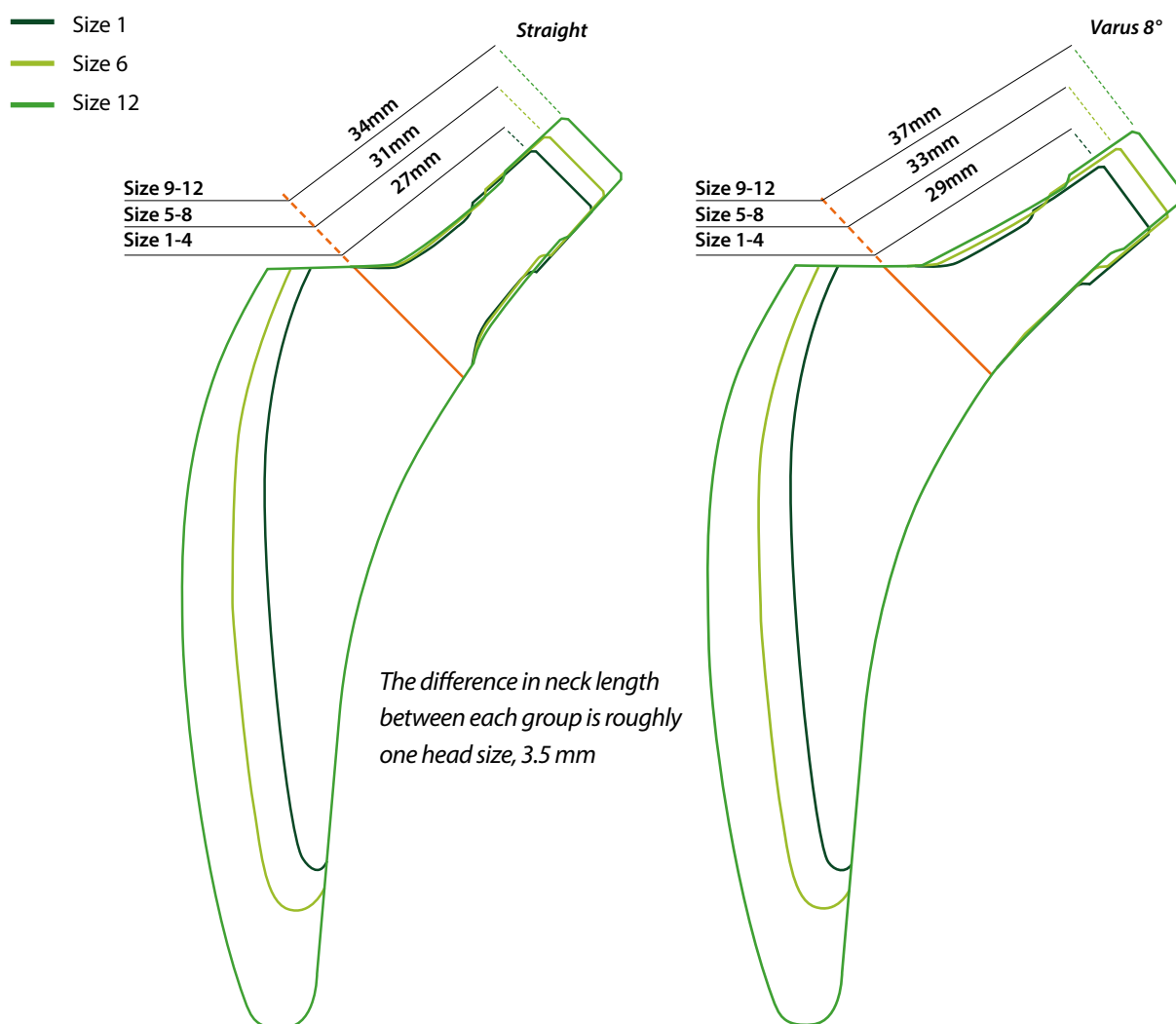


Improving OR Flow Through the Simply Versatile™ Platform

Preserve classic achieves maximum head center coverage with minimal SKUs and only one addition to existing instrumentation. Statistical analysis revealed that the optimal number of neck groups for minimizing SKUs while maximizing head center coverage is three. The design was robustly validated with an additional 150-case randomized templating study.

The *Simply Versatile™* platform allows surgeons to use classic and modular stems with a common set of instruments. Since classic and modular neck lengths differ, a caddy of six trial necks is the only instrumentation addition - virtually all existing instrumentation is utilized by Preserve classic.

Preserve Classic Neck Length by Group

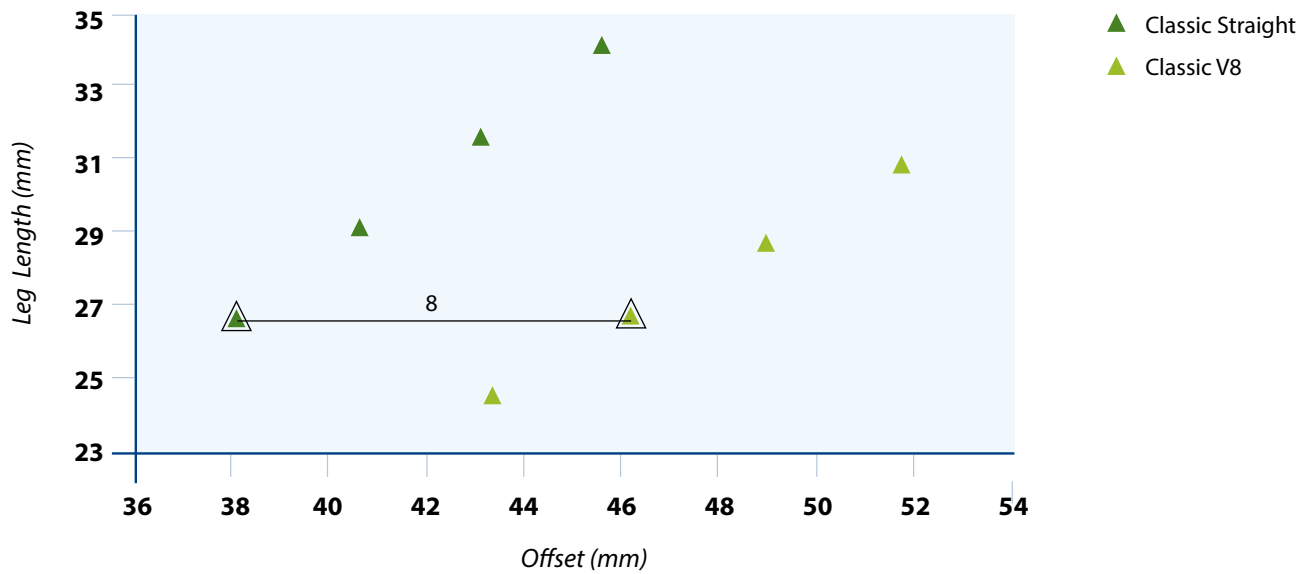


Direct Lateralization

The team required direct lateralization of head centers so that intraoperative offset adjustments could be isolated. This design makes Preserve classic even more user friendly and augments the stem's competitiveness. For every stem size, head centers reside on the same CCD angles as Preserve modular; 135° (Straight) and 127° (Varus 8°). Eight millimeters of direct lateralization can be achieved in every stem size by moving between neck / head combination, Straight / Short and Varus 8° / Medium. When moving between neck / head combination Straight / Medium and Varus 8° / Long, there is difference of 8mm in offset and only 2mm in leg length.

Preserve Classic Head Centers

Size 6

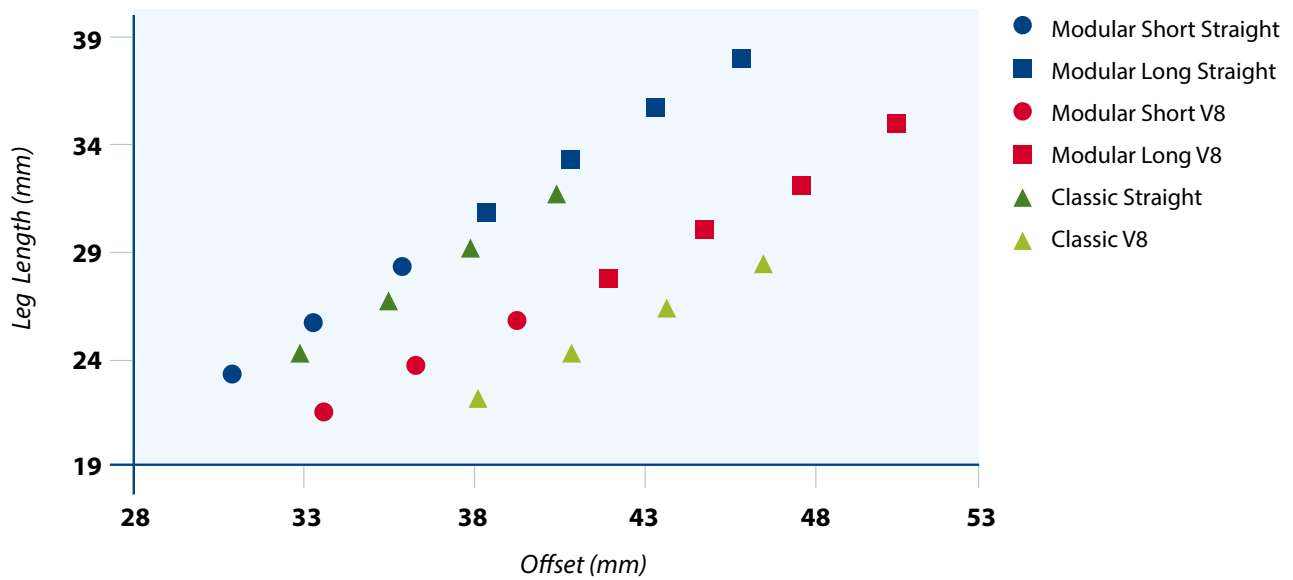


Classic and Modular Comparison

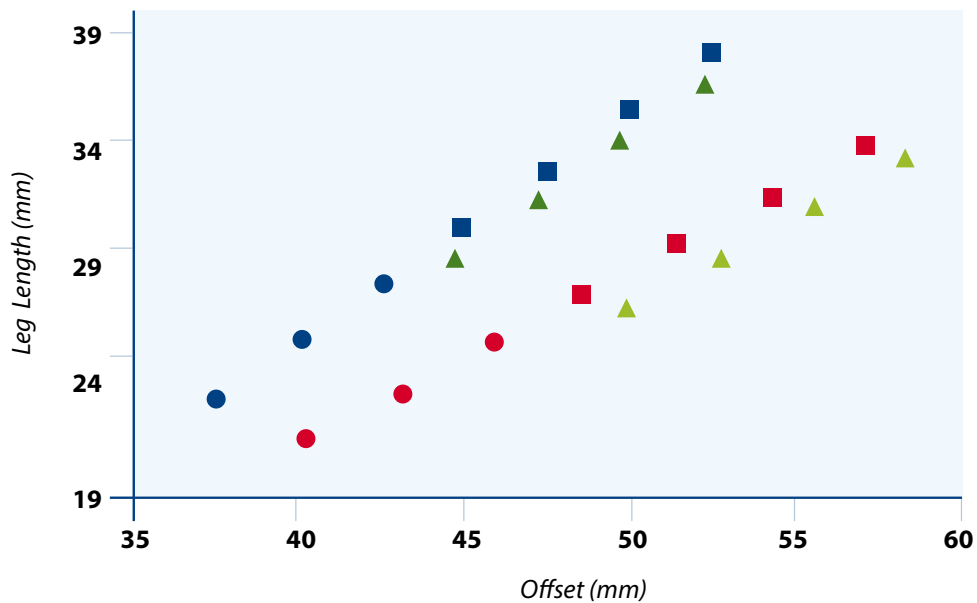
Classic necks are positioned more medial and shorter when compared against those of Preserve modular. The difference between the modular and classic head centers is reflected by the underlying difference between the clinical centroid and the modular neck midpoint.

Head Centers

Size 1

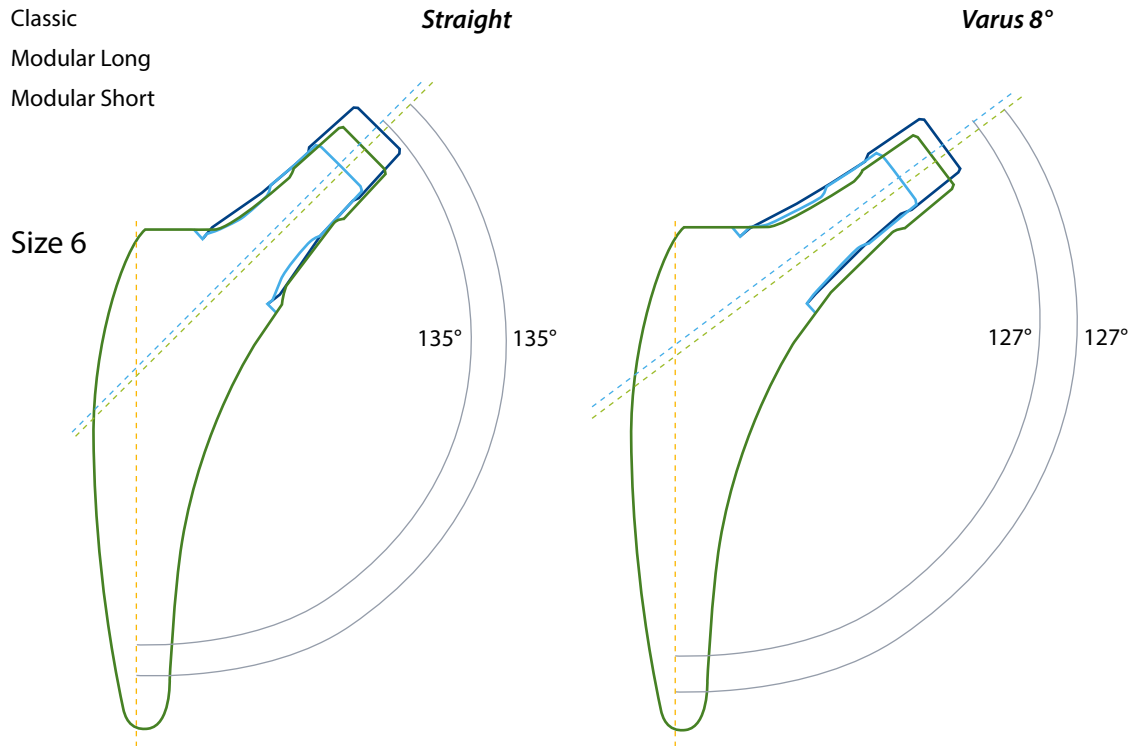


Size 12



Stem Geometry

- Classic
- Modular Long
- Modular Short



Product Summary

- ▶ 24 stem options: sizes 1 to 12 in Straight and Varus 8° angles.
- ▶ Three groups of neck lengths: Size 1-4, Size 5-8, Size 9-12.
- ▶ Classic trial neck caddy: 6 trial necks (two angles for each of the three neck groups) that are unique to Preserve.
 - Metal, with hole for x-ray identification.
 - Group based color coding that matches implant labels.
 - Laser markings to specify group and angle.
 - Dimple below head taper indicates proper insertion position (dimple should always be positioned superiorly, which indicates a varus orientation).



Sizes 1 to 4



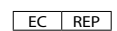
Sizes 5 to 8



Sizes 9 to 12



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