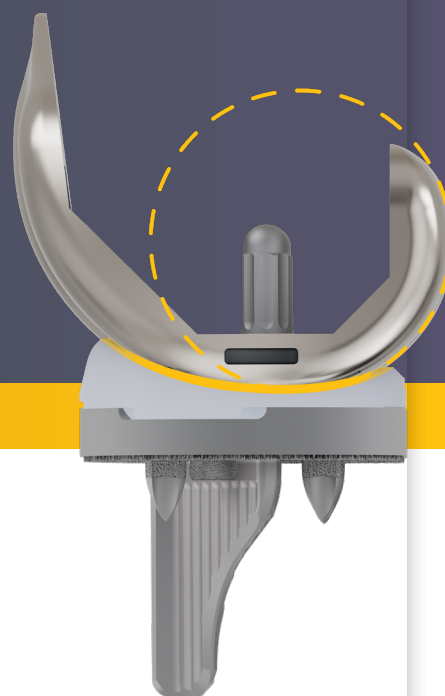


Triathlon[®] Medial Stabilized Insert

Competitive
simulation summary



Medial stabilized design more closely restored native knee kinematics versus a medial pivot design¹

Various medial conforming tibial insert design concepts were considered as the **Triathlon MS Insert** was developed. Medial stabilized (MS) or medial congruent (MC) inserts generally have a highly congruent medial compartment, while medial pivot (MP) inserts create a “ball-and-socket” mechanism with the medial femoral condyle.²

Simulations comparing the stability and kinematics of these differing insert designs supported medial stabilized, rather than medial pivot, as **a favorable design concept for the Triathlon MS Insert.¹**

Overview¹

Previously validated models of two healthy subjects within Stryker's Knee Kinematic Model (KKM) Library - a collection of lower limb, patient-specific, force driven native knee models - were leveraged to compare medial stability achieved with the following inserts virtually implanted:

- **Triathlon MS Insert** with a Triathlon single-radius femur
- **Competitor's MC Insert** with a J-curve femur
- **Competitor's MP Insert** with a medial spherical femur

The following simulations were performed:

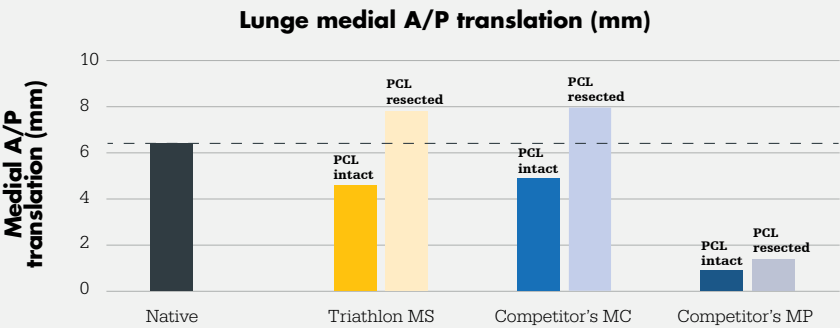
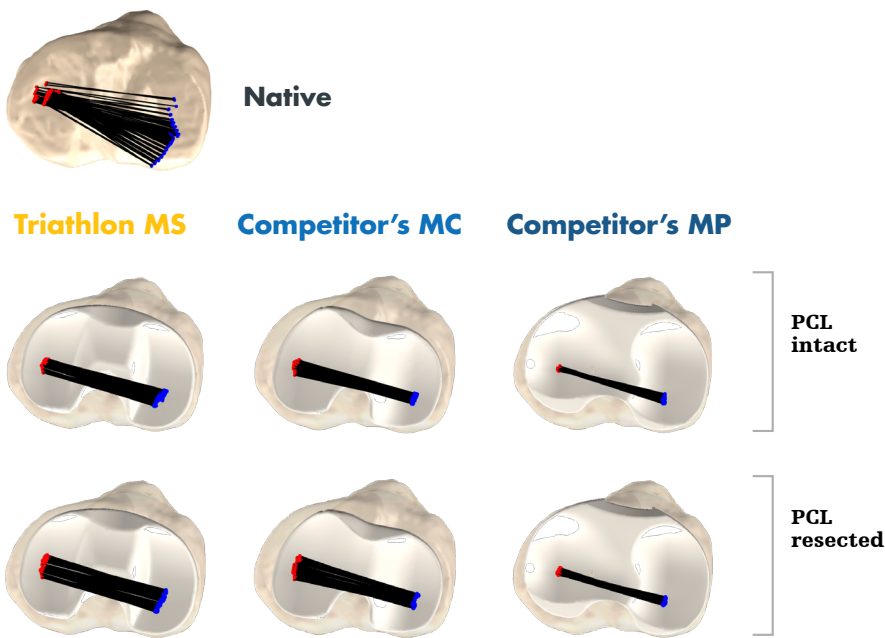
- **Single-leg lunge** (PCL intact and PCL resected)
- **Stair descent** (PCL intact but inactive during the activity)



Click or scan to view further simulation details

Results¹

Lunge low-point kinematics



Difference in medial A/P stability vs. the native condition (mm)

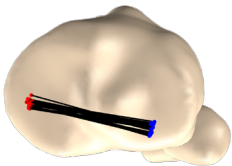
	Triathlon MS	Competitor's MC	Competitor's MP
Lunge (PCL intact)	-1.8	-1.5	-5.5
Lunge (PCL resected)	+1.3	+1.5	-5.0

+ = More translation than native - = Less translation than native

Results summary¹

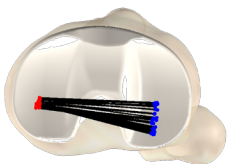
- The competitor's MP insert demonstrated consistent over-constraint, with greatest variance from the native knee across lunge and stair descent
- Among the medial conforming constructs evaluated in these simulations, **Triathlon MS and competitor's MC inserts** produced medial A/P kinematics closest to native in both lunge and stair descent

Stair descent low-point kinematics

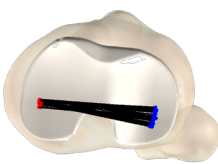


Native

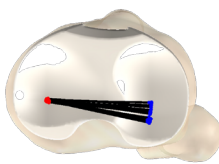
Triathlon MS



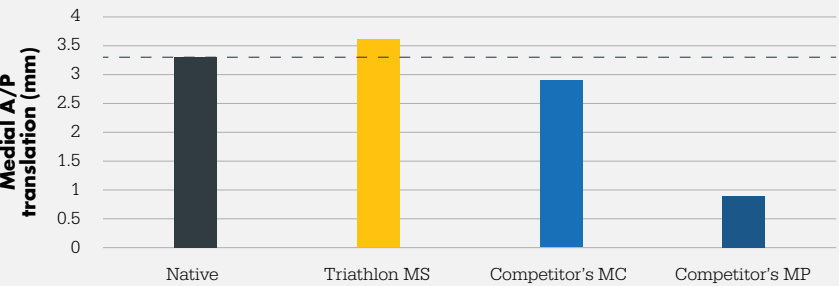
Competitor's MC



Competitor's MP



Stair descent medial A/P translation (mm)



Difference in medial A/P stability vs. the native condition (mm)

	Triathlon MS	Competitor's MC	Competitor's MP
Stair descent (PCL intact)	+0.3	-0.4	-2.4

+ = More translation than native

- = Less translation than native

Key takeaway

The Triathlon MS Insert is designed to provide enhanced sagittal stability and help restore native kinematics.³⁻⁶ The results of these simulations support that its medial stabilized design may be favorable for achieving this goal compared to a ball-and-socket medial pivot design.²

References

1. Ali AA, Szabo N, D'Alessio J, Maloney WJ. Medial stabilized kinematics during simulated lunge and stair descent. Poster presented at: International Society for Technology in Arthroplasty; September 15-18, 2026; Munich, Germany.
2. Romano, Francesco, et al. "Medial Congruent and Medial Pivot Inserts in Total Knee Arthroplasty: A Scoping Review." *Medicina* 61.5 (2025): 844.
3. D0000373518. Virtual Range of Constraint Measurement of Triathlon Medial Stabilized Insert Family in Extension.
4. D0000361177. Virtual Range of Constraint Measurement of Triathlon Medial Stabilized Insert Family in Active Flexion.
5. D0000373525. Virtual Range of Constraint Measurement of Triathlon Medial Stabilized Insert Family in Deep Flexion.
6. D0000367859. Knee Kinematic Model (KKM) Library Verification of the Medial Stabilized Insert.

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