Knee replacement patients report lower levels of satisfaction versus hip replacement patients.

Total Knees are not performing as well as Total Hips:
- 20 – 30% Dissatisfied
- Poorer return to sports
- Lower Patient Reported Outcomes (PRO)

You, the surgeon, are left tempering your patients’ expectations and the limited capabilities of traditional knee replacements.
PHYSIOLOGICAL MATCHING° is the pioneering technology powering JOURNEY° II TKA to provide anatomic restoration.

- Conventional total knee designs are symmetric and unanatomic in shape and motion.
- The result of this is an unnatural ligament strain and conflicting kinematics.*
- The anatomic restoration of JOURNEY II TKA is designed to provide higher level of patient satisfaction and activity.
The design of modern knee replacements results in the femur positioned posterior relative to the tibia. The result of this design is an unnatural starting position that results in mid-flexion instability (paradoxical sliding).
Anatomic AP positioning of the femur in extension virtually eliminates mid-flexion instability (paradoxical sliding).

- Conventional total knee replacements are designed to rest in an unanatomic posterior position at full extension.
- This results in an unnatural (mechanical) feeling for the patient at full extension, over-reliance of quadriceps for stability and biomechanical inefficiencies throughout the range of motion.
- The JOURNEY™ II TKA is designed to reproduce the normal A/P position at full extension while reaching rotational screw-home. The result is the virtual elimination of paradoxical motion and mid-flexion instability.

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*Reference: 03557 VI JOURNEY II TKS Can you make your knees more hip 05.15

Smith & Nephew, Inc., 1450 Brooks Road, Memphis, TN 38116, USA
Phone: 1-901-396-2121, Information: 1-800-821-5700, Orders/inquiries: 1-800-238-7538
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The challenge

Conventional total knees are not designed to provide stability throughout the entire range of motion.

Anatomic mid-line sulcus
ACL substituting anterior cam*
Posterior medial lip/horn
Asymmetrical posterior cam*
PCL allowance

*Patented
The unique and patented features allow for full, anatomic stability throughout a range of motion.

- Conventional total knees have inherent design limitations and oversights.
- This results in distinct ranges of instability for patients.
- The JOURNEY™ II TKA is designed to replicate the ACL function early in the gait cycle, return of normal quadriceps activity and a kinematically correct range of motion.
The challenge

Patients with a conventional total knee report increased levels of fatigue versus the non-replaced side.

Muscular Function EMG Data*
3X Increase Quad Activity

Restores Normal Quad Function

Patient A

Patient B

EMG Data:

<table>
<thead>
<tr>
<th>Millivolts</th>
<th>Patient A</th>
<th>Patient B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>Conventional TKA</td>
<td>JOURNEY BCS TKA</td>
</tr>
<tr>
<td>27.5</td>
<td>Normal Knee</td>
<td>Normal Knee</td>
</tr>
<tr>
<td>55.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>82.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Restoring the normal kinematic patterns of the knee produces more normal muscular firing patterns throughout the range of motion – as demonstrated in the original JOURNEY™ BCS design.*

- Conventional total knees are symmetrical and unanatomic resulting in unnatural knee kinematics.
- The result is a 3x increase in the activity required by the quadriceps muscle to provide the needed stability.
- The JOURNEY II TKA is designed to restore more normal muscle firing patterns and eliminate unnatural muscle fatigue as demonstrated in the original JOURNEY BCS design.

*Reference: 03557 V1 JOURNEY II TKS Can you make your knees more hip 05.15

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The challenge

Can a total knee replacement move like a normal knee?

0° – Screw-home, anterior AP position

0° – 90° – Rollback medial pivot

90° – 155° – Posterior translation
The JOURNEY™ II BCS Knee System has a virtually identical kinematic pattern as the normal knee throughout its range of motion with the goal of improving patient satisfaction.*

- The design of conventional total knee replacements results in abnormal kinematic patterns of motion.
- The results of this are well documented deficits in patient reported outcome measures post-total knee replacement.
- The JOURNEY II TKA is designed to mimic the unique anatomic knee kinematics with the goal of restoring patients back to normal levels of satisfaction and activity.
  - 0°: Native anterior A/P position reaching screw-home.
  - 0° – 90°: Medial pivot, lateral translation, femoral axial rotation increased
  - 90° – 120°: Axial femoral rotation retained and posterior femoral translation to clear tibia

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*Reference: 03557 V1 JOURNEY II TKS Can you make your knees more hip 05.15
Can a total knee replacement be designed to meet the wear demands of today’s active patients?

Volumetric wear rate (mm³/Mcycle)

- CoCr and CPE
- CoCr and XLPE
- VERILAST Technology

<table>
<thead>
<tr>
<th>Material</th>
<th>Volumetric Wear Rate (mm³/Mcycle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC Sigma™</td>
<td>23.00</td>
</tr>
<tr>
<td>GENESIS™ II</td>
<td>23.45</td>
</tr>
<tr>
<td>Scorpio™</td>
<td>34.60</td>
</tr>
<tr>
<td>Triathlon™</td>
<td>20.20</td>
</tr>
<tr>
<td>NexGen™</td>
<td>24.40</td>
</tr>
<tr>
<td>Vanguard™</td>
<td>43.40</td>
</tr>
<tr>
<td>Attune™</td>
<td>5.40</td>
</tr>
<tr>
<td>PFC Sigmata</td>
<td>13.00</td>
</tr>
<tr>
<td>GENESIS II</td>
<td>6.41</td>
</tr>
<tr>
<td>Scorpio™</td>
<td>7.30</td>
</tr>
<tr>
<td>Triathlon™</td>
<td>6.50</td>
</tr>
<tr>
<td>NexGen™</td>
<td>4.10</td>
</tr>
<tr>
<td>Vanguard™</td>
<td>6.10</td>
</tr>
<tr>
<td>LEGION TKS™</td>
<td>0.58</td>
</tr>
<tr>
<td>JOURNEY BCS™</td>
<td>0.97</td>
</tr>
<tr>
<td>JOURNEY II TKA®</td>
<td>Not-detectible*</td>
</tr>
</tbody>
</table>

VERILAST™
Oxidized Zirconium with XLPE
Polyethylene wear related pathologies have significantly reduced with the release of cross-linked polyethylene (Parvizi, et al. 2014).

With VERILAST Technology, both sides of the joint articulation that contribute to wear are addressed with the use of OXINIUM. Retrieval studies have found a 92% reduction in femoral component wear and a 31% reduction in polyethylene wear in a matched cohort of OXINIUM versus CoCr retrievals (Heyse 2011).

When comparing Smith & Nephew’s XLPE technology to VERILAST Technology, there is a significant reduction in wear rates. Understanding these tests were conducted using pristine components, the differences in these wear rates would be even more pronounced with roughened components due to the resistance to micro-scratches of the VERILAST couple.

The implants identified on the front were tested by their manufacturers using different testing protocols and, therefore, the results are not directly comparable.

<table>
<thead>
<tr>
<th>Function</th>
<th>Motion</th>
<th>Durability</th>
</tr>
</thead>
<tbody>
<tr>
<td>When comparing Smith &amp; Nephew conventional technology, CoCr on CPE, to its VERILAST° technology, OXINIUM° on XLPE, VERILAST demonstrates a significant reduction in wear rates.</td>
<td></td>
<td></td>
</tr>
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<td></td>
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</tbody>
</table>

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www.rediscoveryourgo.com

ISO 14243-1 testing protocol used. Other results obtained using ISO 14243-3 protocol
References can be found in the 00394 V2 VERILAST Technology Messaging Brochure 11/14.
Heyse et al., The Knee 18 (2011) 448–452

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The challenge

Metal sensitivity

Recent clinical studies have documented the increased prevalence of metal sensitivities in patients with conventional total knees.

Metal content of implants

<table>
<thead>
<tr>
<th>Metal Content</th>
<th>Ni content % by weight</th>
<th>Cr content % by weight</th>
<th>Co content % by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>OXINUM</td>
<td>&lt;0.0035%</td>
<td>&lt;0.02%</td>
<td>&lt;0.002%</td>
</tr>
<tr>
<td>Titanium</td>
<td>0.1%</td>
<td>0.5%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Cobalt Chrome</td>
<td>0.2%</td>
<td>27-30%</td>
<td>58-68%</td>
</tr>
</tbody>
</table>

Prevalence of patients exhibiting metal sensitivity

- General population: 10%
- Patients with well-functioning implants: 25%
- Patients with poorly functioning implants: 60%
Cobalt, chromium and nickel are commonly cited allergens for knee replacement patients. In several cases, sensitivity to one or more of the allergens has resulted in revisions for these patients.

Surgeons should be aware that all metal implants contain varying amounts of cobalt, chromium, and nickel. When selecting the appropriate implant, surgeons should consider the composition of each implant before use.

For orthopaedic surgeons looking for alternatives to CoCr and Ti implants, the JOURNEY™ II Active Knee Solutions portfolio utilizes Smith & Nephew’s proprietary OXINIUM™ alloy with XLPE to create the exclusive VERILAST bearing combination.

OXINIUM° Oxidized Zirconium, exclusively from Smith & Nephew, has less than 0.0035% nickel content, compared to a maximum content of 0.5% in cobalt chrome and 0.1% in titanium.