BRAINLAB

KNEE ARTHROPLASTY

CAS - THE SOLUTION FOR A STABLE KNEE

Software is changing the world of medicine. One of the most critical aspects of knee replacement surgery is proper positioning of the joint replacement implants. Incorrectly aligned implants can lead to increased wear and loosening of the joint replacement.

In Computer-Assisted Surgery (CAS), a computerized model of the joint is used to ensure correct joint alignment, based on the bone anatomy and the intra-operative ligament situation. By tracking surgical instruments and components in relation to patient anatomy, Brainlab® total knee navigation software is proven to improve long-leg alignment and accuracy[1].

BRAINLAB KNEE NAVIGATION AT A GLANCE:

- Improves accuracy in knee replacement surgery[1]
- Superior soft-tissue management
- Truly open platform provides flexibility
- Reliable “helping hand“ for various surgical procedures

With Brainlab’s CAS solution for Knee Arthroplasty, you have flexibility and the freedom of choice. We have integrated implant geometries for all major implant families and support all surgical philosophies from measured resection to ligament balancing; from femur first to tibia first, and various more.

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ALIGNMENT VERIFICATION

NEVER BEEN SO EASY

The positioning of the cutting block is one of the most important factors for a successful knee replacement surgery. With the innovative Alignment Verification Workflow, Brainlab has developed a software that allows you to verify your cutting block position without any additional pin fixation. This means you can easily change the position after verification and ensure a straight alignment of the tibial and femoral cuts. Even the final cut results can be verified with the same fast and easy method.

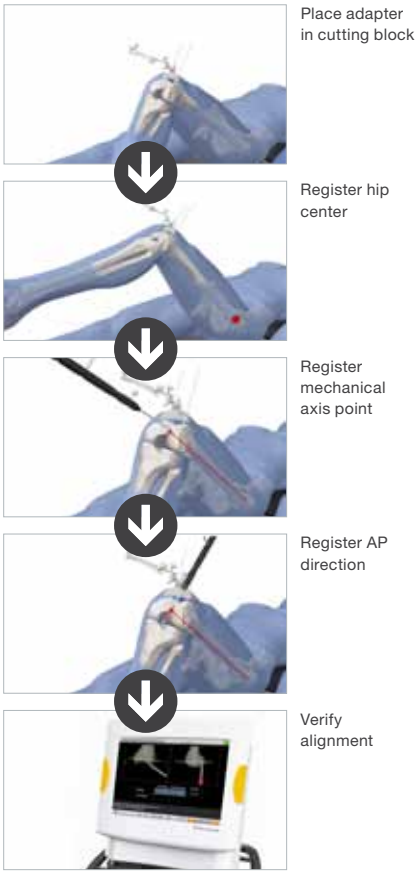
The Knee Express software is also a perfect “helping hand” for unicondylar knee replacement procedures and revision surgery.

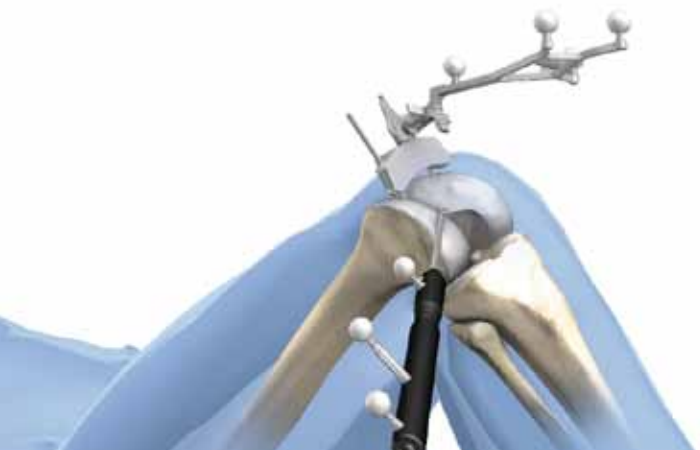
The Knee Express software for Alignment Verification is completely compatible to existing conventional instruments which allows you to use your standard equipment. Any implant family can also be verified with the Knee Express application – there are no limitations!

FAST AND EASY APPLICATION WITH A HUGE BENEFIT:

- No reference arrays ➔ completely pinless “navigation”
- Accurate 3D position information of cutting block
- Minimal impact on surgical procedure
- Final verification of cut results
- Registration in just a few steps

VERIFICATION IN JUST A FEW STEPS





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ACCURATE ALIGNMENT

EVOLVING PATIENT CARE

Well-aligned resections are crucial for successful knee replacement surgeries. With Brainlab® knee navigation software you can improve implant alignment and reduce outliers. This leading navigation software provides customizable steps for the measured resection approach with or without the respect of implant data.

HOW CAS HELPS TO ACHIEVE BETTER MECHANICAL ALIGNMENT:

- CAS helps to restore stability and function with the delivery of accurate alignment
- Straight alignment is hard to see in surgery, manual alignment guides fail to deliver 3D measurements
- Applicable for all implants
- Perfect solution for the measured resection approach
- Stability analysis aids in functional joint assessment

CAS FOR TOTAL KNEE REPLACEMENT – PROVEN VALUES

Several independent studies over the years have shown that using computer navigation for knee replacement surgery reduces the number of outliers and improves overall alignment, leading to better performance and longer life of the implants.

Knee Alignment [1]

- CAS navigation in TKA offers significant improvement in accuracy and reproducibility of component orientation.
- Significantly less mechanical axis malalignment with CAS.

1. Mason et al., J Arthroplasty, 2007; 22(8); Meta-Analysis
   - 91% inside ±3° range with CAS vs 68, 2% with conventional technique

Functional Outcome [2, 3]

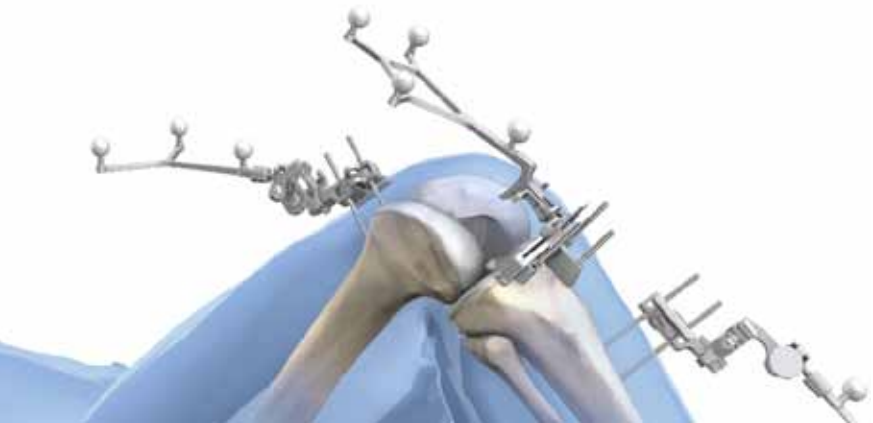
- Using a navigated ligament balanced technique, patient outcome after TKA improves significantly.

2. Lehnen et al., Knee Surg Sports Traumatol Arthrosc. 2010
3. Choong et al., J Arthroplasty, 2009; 24(4)

Blood Loss [4, 5]

- Significant reduction in mean blood loss when using CAS.

4. Schnurr et al., Orthopedics. 2010; 33(7)
   - 14% less blood loss with using CAS
5. Conteduca et al., Int Orthop. 2009; 33(6)
   - 15% less blood loss with using CAS



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STABLE KNEES

BALANCE IS FUNCTION

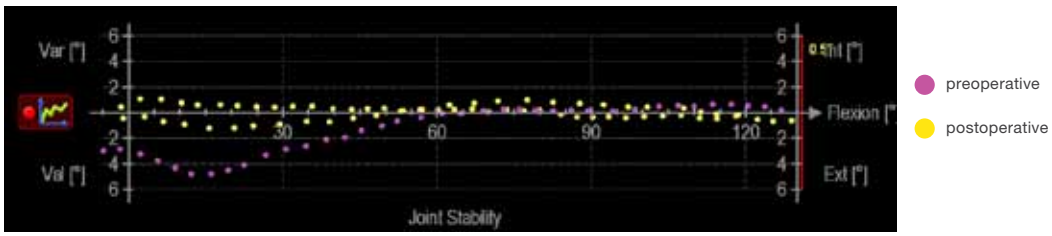
Today's active patients are demanding a natural-feeling knee, so attention to soft tissue is increasingly important in total knee arthroplasty. Brainlab® knee navigation application is designed to assess and quantify the soft tissue envelope, including gap balancing and balance information through the entire range of motion. Brainlab supports the majority of available implants with implant-specific and universal workflow options. This maintains the freedom of choice and flexibility for any surgeon.

The kinematic analysis supports the surgeon in achieving optimal leg alignment balance. For added confidence this feature can be used at anytime during the procedure, whenever the surgeon decides it is necessary. The software provides varus and valgus values, supports gap optimization and shows flexion and extension positions. The Brainlab Ligament Balancing functionality allows an analysis of the initial and final biomechanical situation during a knee replacement surgery.

Initial Leg Alignment before implant insertion

Final Leg Alignment after implant insertion

Ligament balancing can be quantified over full range of motion for assessment of functional performance.



Enhanced Joint Stability Graph