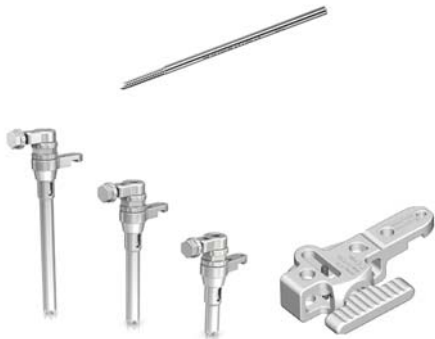


INSTRUMENTS

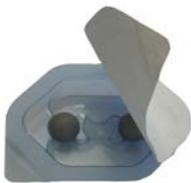
Software Versions: BrainLAB uni-knee 2.x, Smith & Nephew Accuris



Schanz Screws for Bone Fixators: (2-4 screws per procedure)

Bone Fixators, X-Press

- Left: 1-Pin (available in S, M or L)
- Right: 2-Pin



Disposable Reflective Marker Spheres
(Minimum 12 required)



Reference Arrays, X-Press

- Left: T-Geometry (for tibia)
- Right: Y-Geometry (for femur)



BrainLAB Pointer, Angled



Femoral & Tibial Cutting Block Adapter,
“Smith & Nephew Accuris”

Note: This guide does not replace reading the user manuals.

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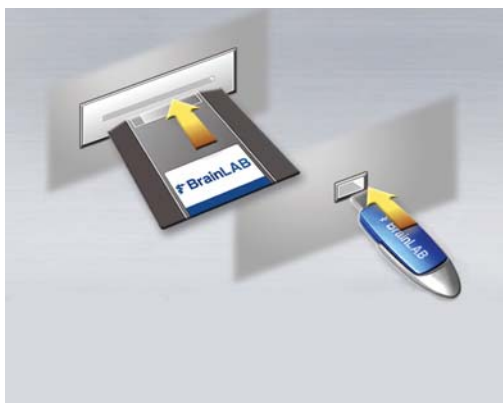
OR SETUP

Software Versions: BrainLAB uni-knee 2.x, Smith & Nephew Accuris



PREPARE SYSTEM

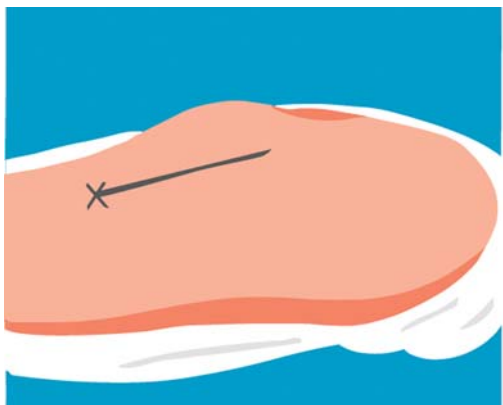
- Bring system into OR
- Plug in system
- Turn system on and start **BrainLAB uni-knee** software



INSERT STORAGE MEDIUM

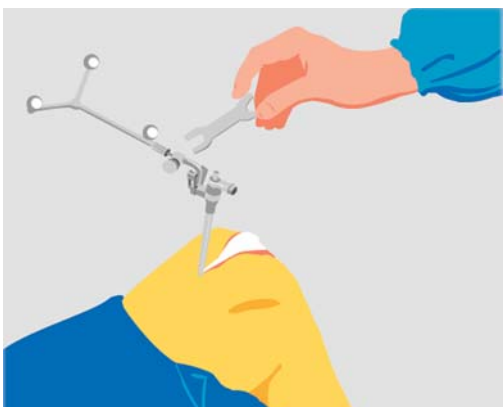
- If you are using a USB flash drive to store patient data collected during the procedure, insert it now
- If you are using a Zip disk to store patient data, we recommend inserting it at the end of surgery as it may slow down the software

NOTE: Do not remove the storage medium until surgery is complete and the system has shut down.



PREPARE PATIENT

- Drape the patient
- Perform the incision
- Prepare the femur and tibia according to standard surgical procedure

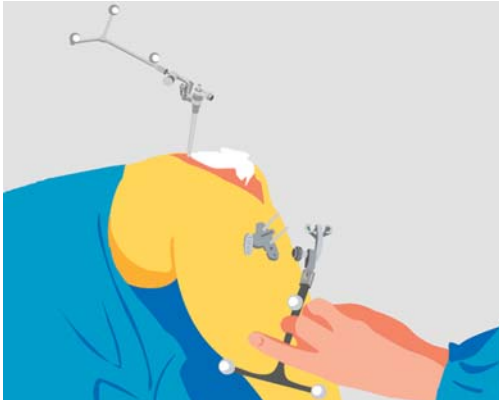


ATTACH FEMORAL REFERENCE ARRAY

- Attach the Schanz screw to medial aspect of femur
- Attach the bone fixator and Y geometry reference array
- Position arrays to allow space for the incision, surgical steps and other instruments

NOTE: Percutaneous attachment is preferred, however the Schanz screw can also be placed in the incision.

Note: This guide does not replace reading the user manuals.



ATTACH TIBIAL REFERENCE ARRAY

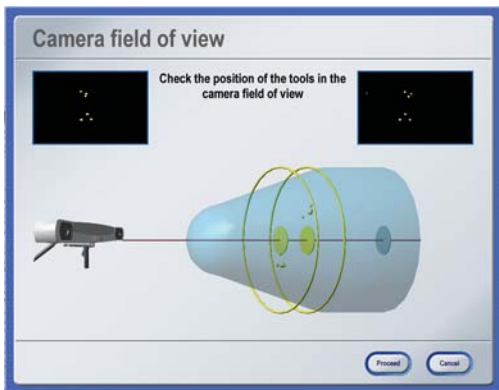
- Attach the Schanz screw to medial aspect of tibia
- Attach the bone fixator and T geometry reference array

NOTE: Do not move the Y and T reference arrays during the procedure. This could result in inaccurate tracking and severe patient injury.



POSITION SYSTEM

- Position system at the foot of the bed, opposite the surgeon
- Adjust the camera so that it faces the surgical site (about 6.5 feet [2 meters] away from the site)
- Ensure that the surgeon can easily view the monitor



BEFORE REGISTRATION

- Remove all osteophytes
- Verify that the reference arrays are visible to both camera lenses with the leg in flexion and extension

NOTE: You can now perform registration.

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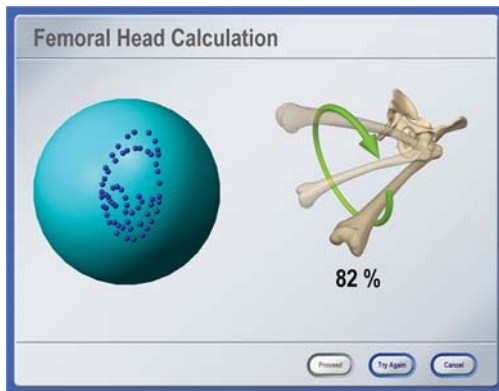
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TIBIA REGISTRATION

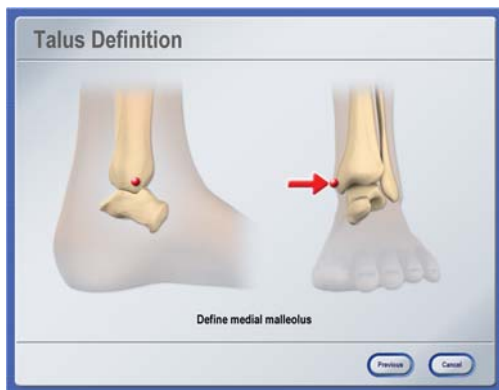
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FEMORAL HEAD CALCULATION

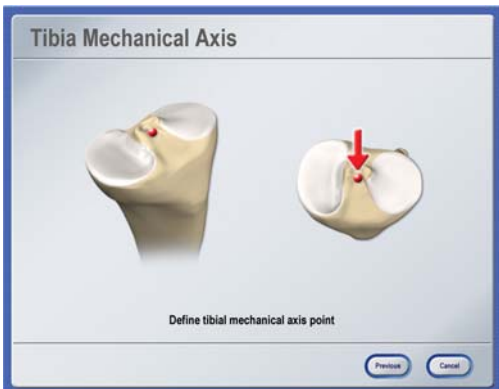
- Pivot the leg within the hip joint
- Begin with smaller circles and gradually increase to larger circles
- Make sure to avoid too much hip movement

NOTE: Do not move the camera during this step.



TALUS DEFINITION

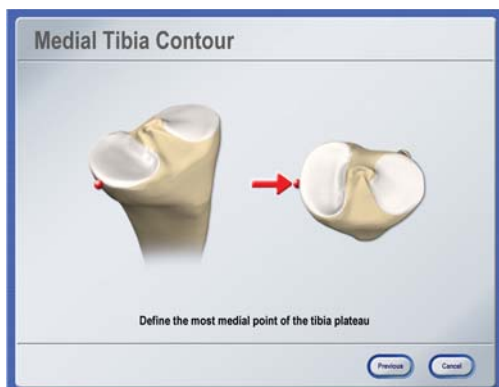
- Hold the pointer tip to the prominent medial malleolar structure and pivot the pointer
- When prompted, acquire the lateral side



TIBIAL MECHANICAL AXIS

- Hold the pointer tip to the insertion point of the anterior cruciate ligament at the anterior part of the eminentia intercondylaris and pivot the pointer

NOTE: Make sure to acquire the point which defines the mechanical axis and not the eminence.

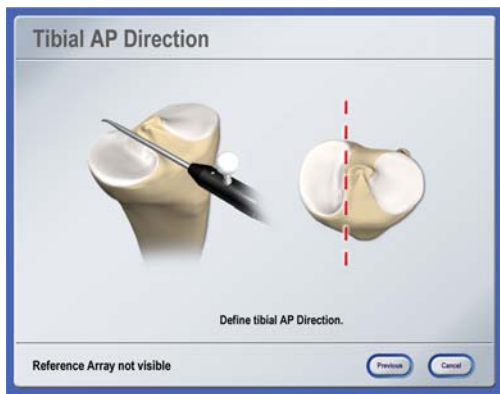


TIBIAL CONTOURS

- Hold the pointer tip to the medial or lateral contour (depending on compartment) at the estimated resection level and pivot the pointer
- When prompted, acquire the anterior contour

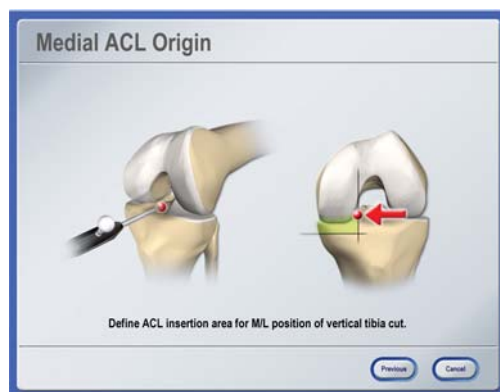
NOTE: During **Optimization**, the anterior point is projected onto the femur and used as the reference (tidemark) for femur implant sizing.

Note: This guide does not replace reading the user manuals.



TIBIAL AP DIRECTION

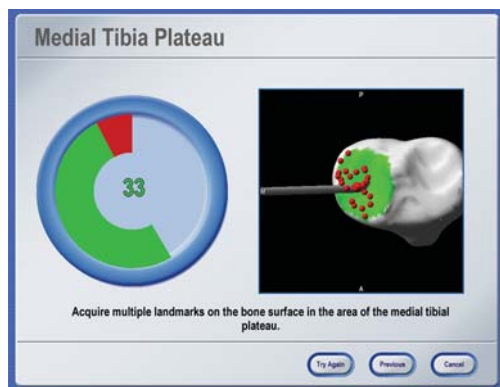
- Hold the pointer parallel to the tuberculum intercondylare without any internal/external rotation
- Hold the pointer completely still for three seconds during acquisition



MEDIAL ACL ORIGIN

- Hold the pointer to the insertion area of the ACL and pivot the pointer
- Make sure to acquire the point medial to the origin of the ACL in order to avoid damaging its fibers

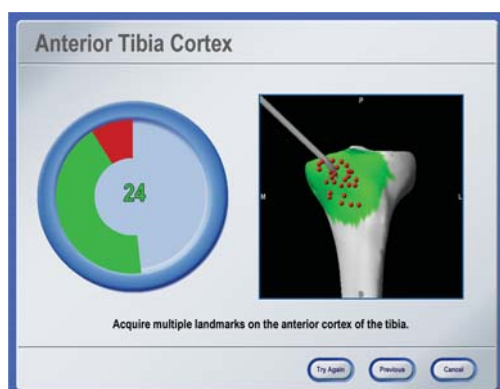
NOTE: This point is used to calculate the medial-lateral position of the vertical tibial cut.



TIBIAL PLATEAU

- Hold the pointer tip to the center of the medial or lateral plateau (depending on compartment) and pivot the pointer
- Acquire the remaining points by sliding the pointer tip on the plateau

NOTE: The deepest point is used as a reference for the tibial resection.



ANTERIOR TIBIAL CORTEX

- Hold the pointer tip to the anterior cortex and pivot the pointer
- Acquire the remaining points by sliding the pointer tip along the anterior cortex

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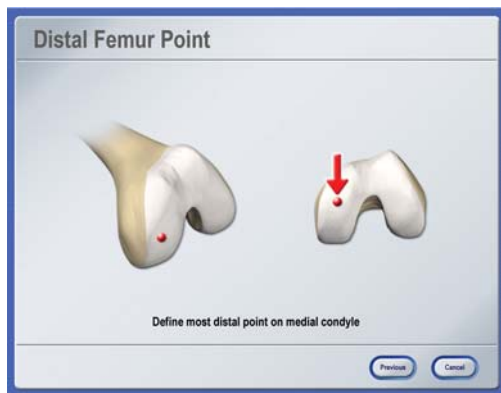
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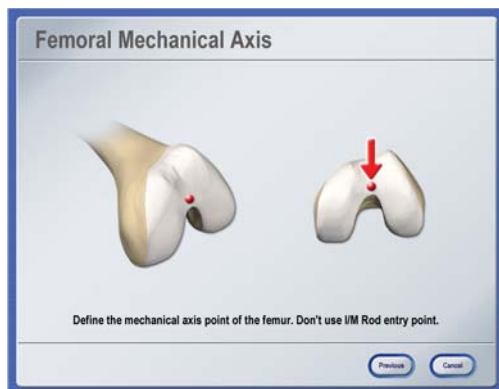
FEMUR REGISTRATION

Software Versions: BrainLAB uni-knee 2.x, Smith & Nephew Accuris



DISTAL FEMORAL POINT

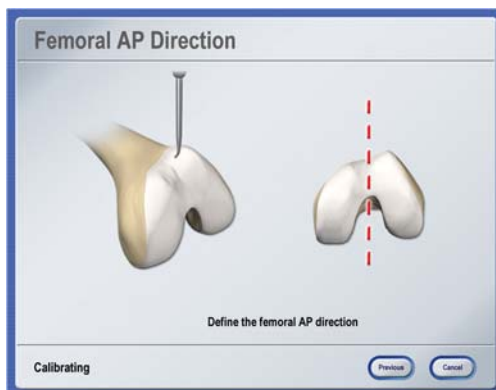
- Hold the pointer to the most distal point on the medial condyle and pivot the pointer



FEMORAL MECHANICAL AXIS

- Hold the pointer tip to the femoral mechanical axis point and pivot the pointer

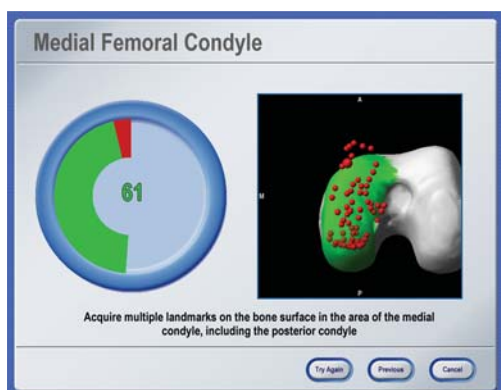
NOTE: Make sure to not define the IM rod entry point used for the conventional surgical technique.



FEMORAL AP DIRECTION

- Hold the pointer still on the anterior femur, in the anterior-posterior direction without any internal or external rotation
- Hold the pointer completely still during acquisition

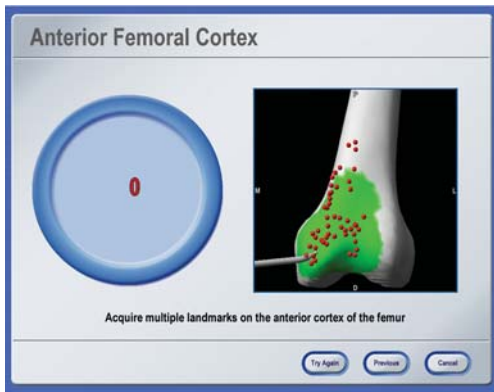
NOTE: Alternatively, you can define the Whiteside line. Your BrainLAB support specialist can define this setting.



MEDIAL FEMORAL CONDYLE

- Hold the pointer tip to the medial condyle and pivot the pointer
- Acquire the remaining points by sliding the pointer tip along the posterior condyle

Note: This guide does not replace reading the user manuals.



ANTERIOR FEMORAL CORTEX

- Hold the pointer tip to the anterior cortex and pivot the pointer
- Acquire the remaining points by sliding the pointer tip along the anterior cortex



ACCURACY CHECK POINTS

Acquire accuracy checkpoints in order to verify navigation accuracy during the procedure.

- Place the pointer on the desired point on the tibia and pivot the pointer
- Place the pointer on the desired point on the femur and pivot the pointer

NOTE: The software prompts you to verify accuracy every thirty minutes.

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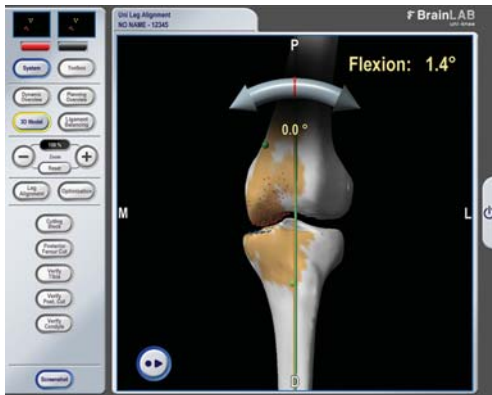
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ALIGNMENT ANALYSIS

Software Versions: BrainLAB uni-knee 2.x, Smith & Nephew Accuris

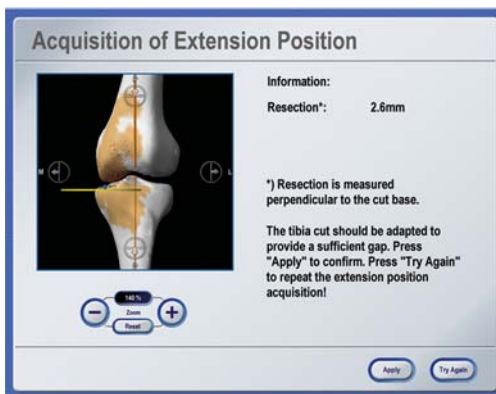


LEG ALIGNMENT, EXTENSION

- Hold the leg in full extension and open the knee joint by inserting the shim (standard surgical procedure)
- Adjust the leg until the required angles are shown on the screen



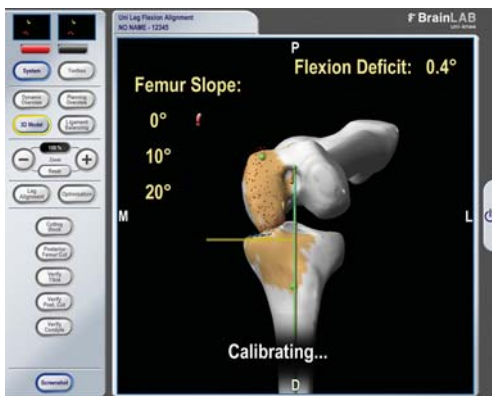
Press the store icon and hold the leg still for 2 seconds to store the extension position.



EXTENSION POSITION

Based on extension, the software displays the:

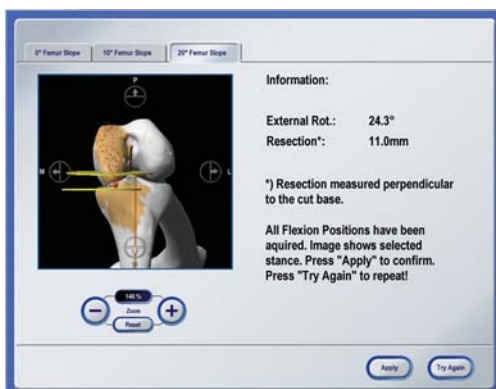
- Tibial resection plane (yellow), calculated from the most distal point on femoral condyle according to the cutting block size (default size = 8 mm)
- Tibial resection level, calculated as the distance from the deepest point on the tibial plateau to the planned tibial resection plane
- Press **Apply** to store the values



LEG ALIGNMENT, FLEXION

In this step, you store three flexion positions: 90°, (0° femoral slope) 100° (10° femoral slope) and 110° (20° femoral slope).

- Bring the leg into 90° flexion and hold it still
- When the position is stored (indicated by a green checkmark), use the same method to store the 100° and 110° flexion positions

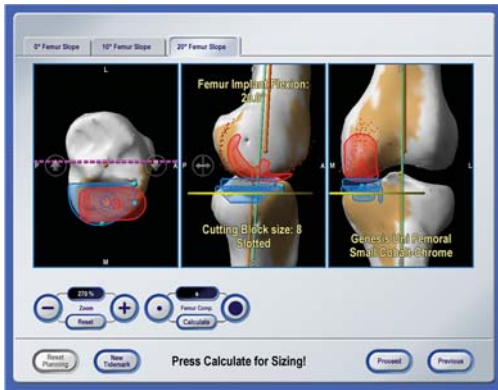


FLEXION POSITION

Tab pages display stored values for each flexion position.

- Posterior femoral resection plane (yellow) is calculated 15 mm up from the tibial resection plane (based on 8 mm cutting block)
- Posterior resection level is calculated as the distance from the most posterior condyle point to the planned posterior resection plane
- Press **Apply** in the desired tab to store the values

Note: This guide does not replace reading the user manuals.

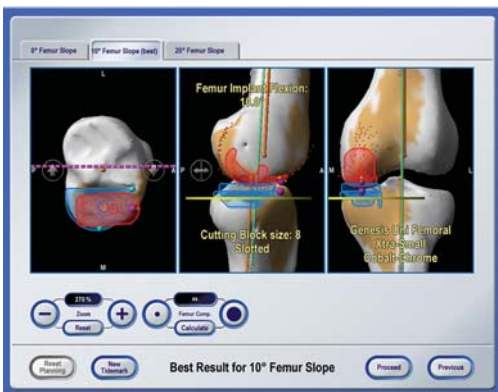


OPTIMIZATION (STEP 1)

- To size the femoral implant based on the tibia anterior contour point (tidemark), press **Calculate** in any of the tab pages

The software:

- Projects the tidemark onto the femur
- Calculates the best femoral implant size for each flexion position (closest proximity from tip of femoral implant to the tidemark)

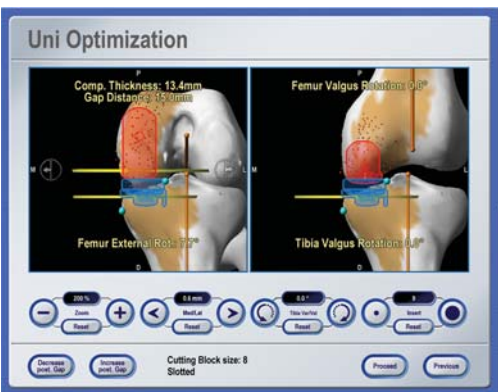


SELECT BEST FIT

The calculated femoral implant size is shown in the right view. The tab pages indicate the femoral slope with the best fitting femoral implant.

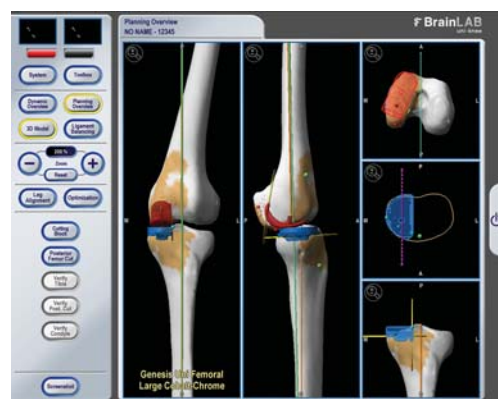
- Select the tab with the desired flexion angle, and implant size and position
- Press **Proceed** to open the **Optimization** dialog

NOTE: If sizing failed, press **New Tidemark** to manually define a new tidemark on the tibia.



OPTIMIZATION (STEP 2)

- The **Med/Lat** arrows adjust the implants in the medial/lateral direction
- The **Tibia Var/Val** arrows adjust the tibial implant varus/valgus angle
- The **Insert** buttons increase/decrease the insert size
- The **Decrease/Increase post. Gap** buttons adjust the posterior femoral gap by adjusting the cutting block size and slotted/non-slotted settings



PLANNING OVERVIEW

After optimization, you can review the implants in the **Planning Overview** screen.

NOTE: The software displays the tibial implant in blue and the femoral implant in red. The color-coding of the implants does not correspond to a particular toolset or implant size.

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NAVIGATION

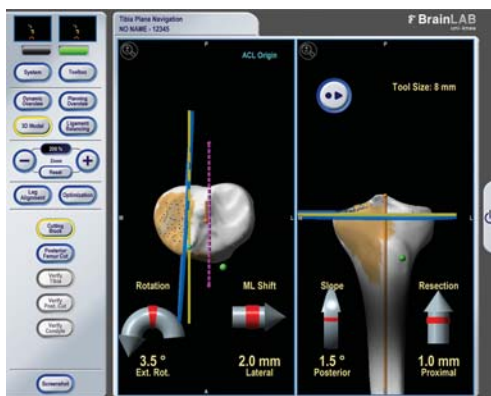
Software Versions: BrainLAB uni-knee 2.x, Smith & Nephew Accuris



NAVIGATION SETTINGS

To adjust navigation settings, open the **Settings** tab in the **Toolbox**.

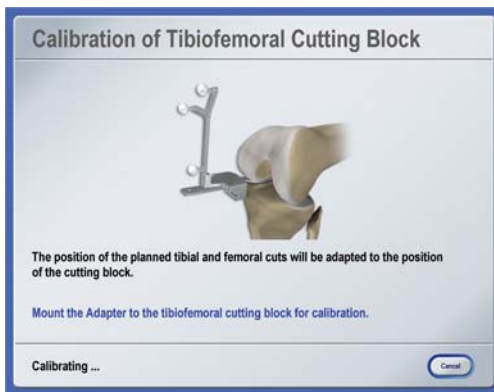
- **Saw Non-Slotted:** During resection, place the sawblade on top of the cutting block
- **Saw Slotted:** During resection, insert the sawblade through the cutting block slot (default)
- **High Cut:** Selects a 9 mm cutting block
- **Low Cut:** Selects an 8 mm cutting block (default)



TIBIO-FEMORAL CUTTING BLOCK NAVIGATION

This step navigates the horizontal and vertical tibio-femoral cutting block position.

- Press **Cutting Block** in the menu bar
- Mount the tibial cutting block adapter onto the tibio-femoral cutting block
- Match the actual plane (blue) to the planned plane (yellow) and pin the cutting block to the bone
- Press the store icon (button in upper right view)



CALIBRATING THE CUTTING BLOCK POSITION

- Mount the cutting block adapter onto the tibio-femoral cutting block
- The software updates the planned tibial and femoral cuts according to the cutting block position

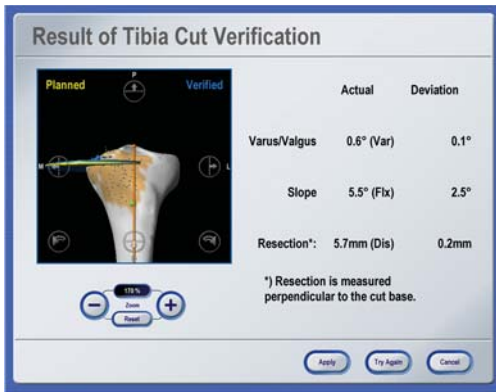


POSTERIOR FEMUR NAVIGATION

This step navigates the flexion/extension position of the femur. The planned position is the angle applied during **Optimization**.

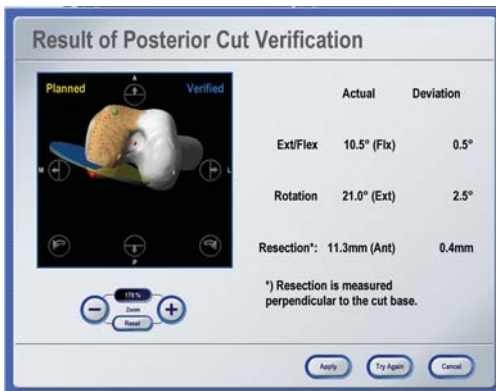
- Press **Posterior Femur Cut** in the menu bar
- Bring the leg into flexion and adjust the angle to match the actual plane (blue) to the planned plane (yellow)
- Perform posterior femoral and tibial resection according to standard procedure

Note: This guide does not replace reading the user manuals.



TIBIA VERIFICATION

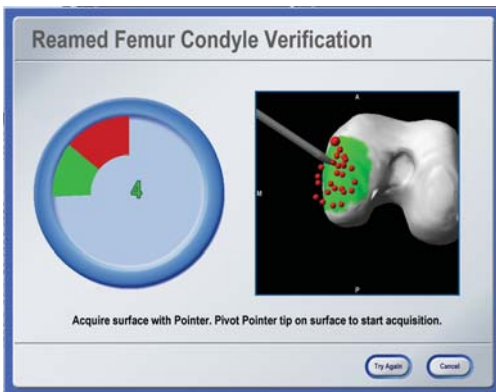
- Press **Verify Tibia** in the menu bar
- Place the cutting block adapter flat on the resected bone for two seconds
- The software calculates the planes and displays the actual values and the deviation to the plan



FEMUR VERIFICATION

- Press **Verify Post. Cut** in the menu bar
- Place the cutting block adapter flat on the resected bone for two seconds
- The software calculates the planes and displays the actual values and the deviation to the plan

NOTE: When verifying this cut, place the bottom surface of the adapter flat on the bone so that the tracking array is pointing down.



FEMUR CONDYLE VERIFICATION

- Press **Verify Condyle** in the menu bar
- Acquire the start point by pivoting the pointer on the reamed surface of the condyle
- Acquire the remaining points by sliding the tip of the pointer across the bone
- In the **Result of Condyle Verification** dialog, the software displays the deviation between the verified condyle surface and the planned distal condyle

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