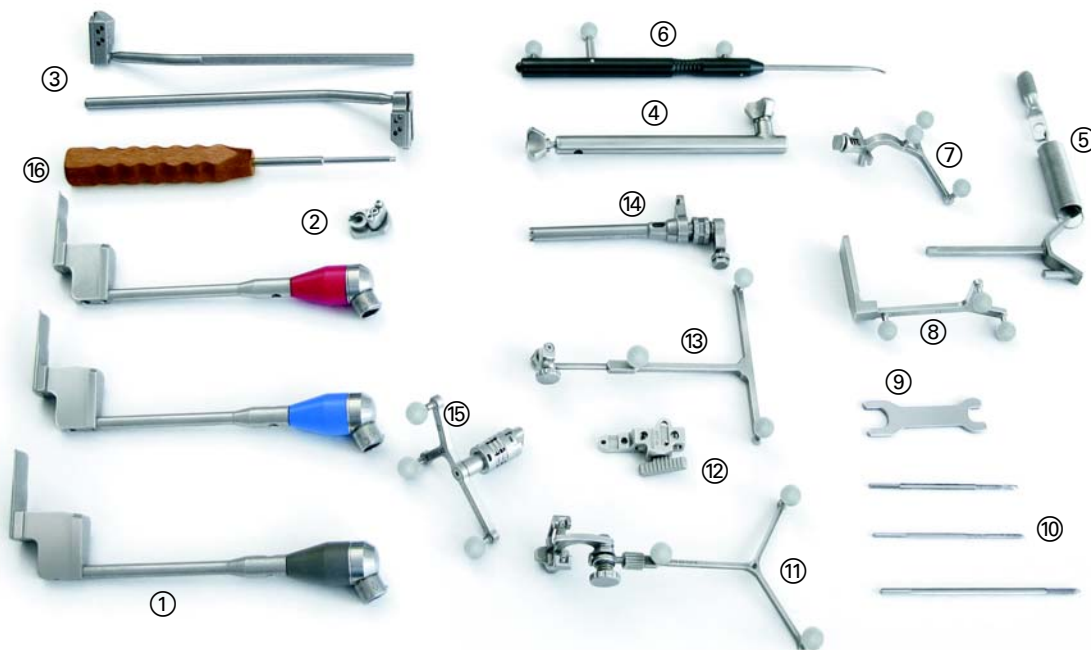


# INSTRUMENTS

Software Versions: BrainLAB uni-knee 2.x, Biomet® Oxford® Partial Knee



No.	Component	Manufacturer
①	Femoral Drill Guides	Biomet
②	Vertical Tibia Cutting Block	
③	Tibial Saw Guide Assembly: Upper shaft left and right	
④	Tibial Saw Guide Assembly: Lower shaft	
⑤	Tibial Saw Guide Assembly: Ankle yoke, spring and spring catch	
⑥	BrainLAB Pointer, Angled	BrainLAB
⑦	Tibial Cutting Block Adapter "Biomet Oxford"	
⑧	Cut Verification Tool "Biomet Oxford"	
⑨	Wrench (secures the Bone Fixator "1-Pin", X-Press)	
⑩	Schanz screws for Bone Fixators (2-4 screws per procedure)	
⑪	Reference Array Express, Y-Geometry	
⑫	Bone Fixator "2-Pin", X-Press	
⑬	Reference Array Express, T-Geometry	
⑭	Bone Fixator "1-Pin", X-Press (available in S, M or L)	
⑮	Instrument Adapter, StarLock Interface (to adapt femoral drill guide)	
⑯	Screwdriver (2.5 mm internal hexagon)	External

**NOTE:** The procedure also requires **Disposable Reflective Marker Spheres** available from BrainLAB (minimum 18).

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Note: This guide does not replace reading the user manuals. For Oxford® Partial Knee information, including indications, contraindications, warnings, precautions and potential adverse effects, see the precautionary statement on Biomet's website.

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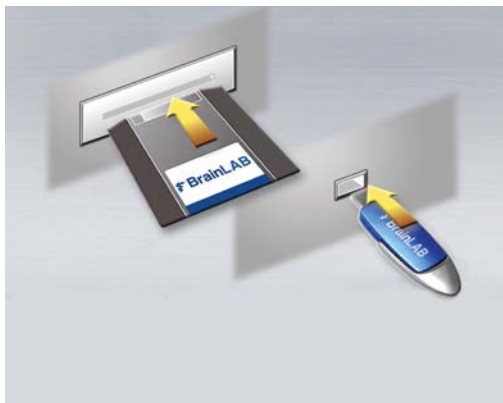
# OR SETUP

Software Versions: BrainLAB uni-knee 2.x, Biomet® Oxford® Partial Knee



## PREPARE SYSTEM

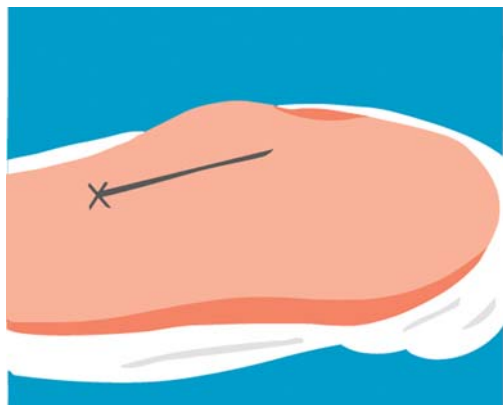
- Bring system into OR
- Plug in system
- Turn system on and start **BrainLAB uni-knee** software



## 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



## SOFTWARE SETTINGS

- Enter patient name, define treatment side and select implants

In the **Navigation** dialog, select the reference for the tibial resection:

- **Tibia Resection from Femur:** Tibial cut is calculated from posterior point on the femoral condyle
- **Tibia Resection from Plateau:** Tibial cut is calculated from point on the tibial plateau

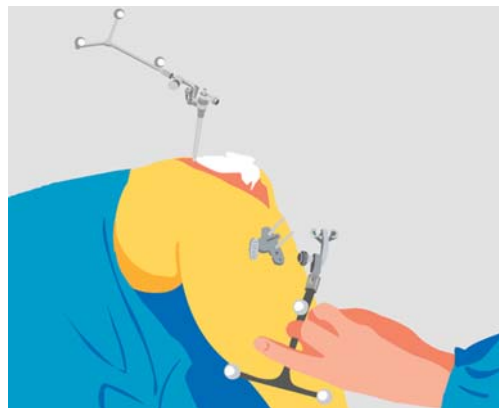
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### ATTACH FEMORAL REFERENCE ARRAY

- 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.



### ATTACH TIBIAL REFERENCE ARRAY

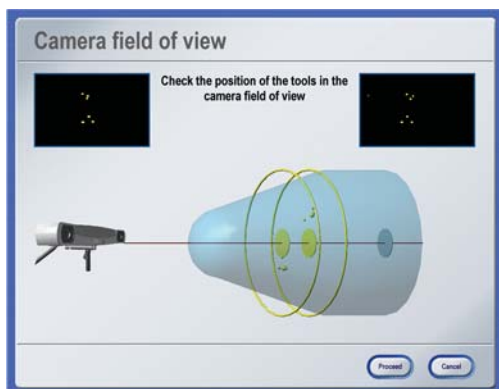
- Attach the Schanz screw to medial aspect of tibia
- Attach the bone fixator and T geometry reference array
- Allow sufficient space for the rod of the horizontal tibial cutting block

**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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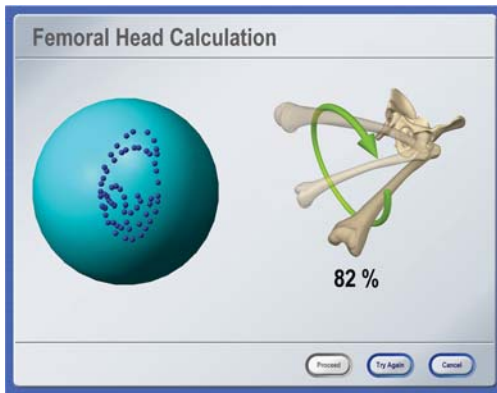
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# TIBIA REGISTRATION

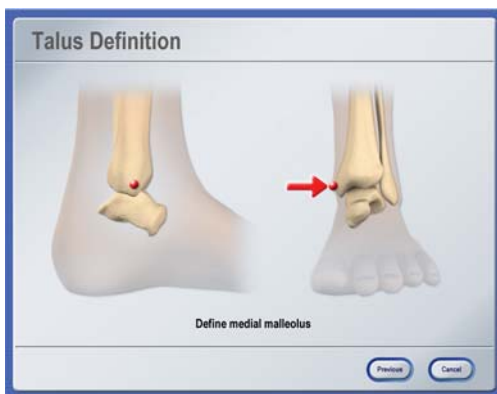
Software Versions: BrainLAB uni-knee 2.x, Biomet® Oxford® Partial Knee



## FEMORAL HEAD CALCULATION

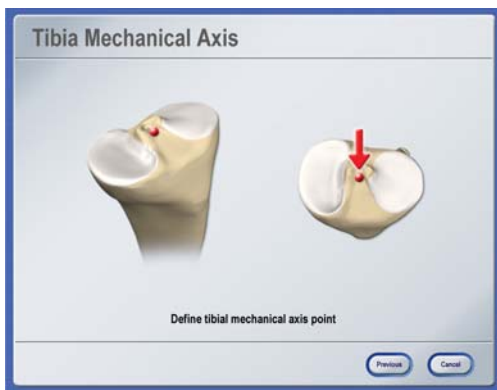
- Pivot the leg within the hip joint
- Begin with smaller circles and gradually increase to larger circles
- Make sure to avoid too much hip movement

**NOTE:** Do not move the camera during this step.



## TALUS DEFINITION

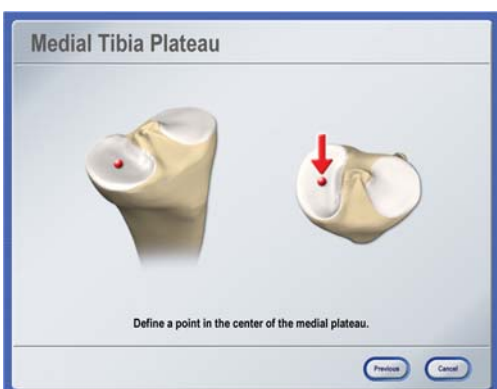
- Hold the pointer tip to the prominent medial malleolar structure and pivot the pointer
- When prompted, acquire the lateral side



## 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.



## MEDIAL TIBIAL PLATEAU

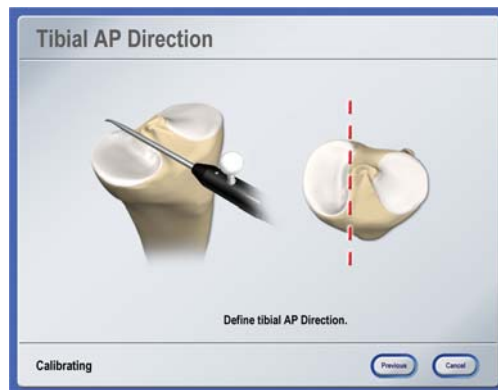
- Hold the pointer tip in the center of the medial tibial plateau and pivot the pointer



## HEALTHY TIBIAL PLATEAU POINT

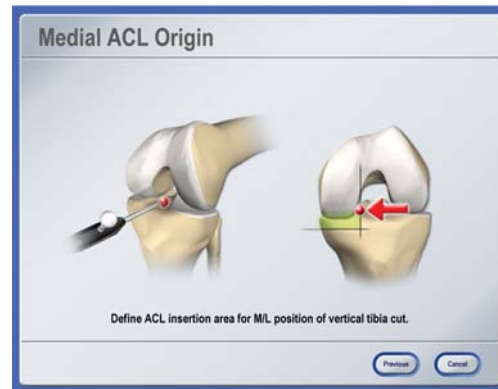
- Place the pointer tip in the healthy region of the medial tibial plateau and pivot the pointer

**NOTE:** This point calculates the tibial resection level if you selected **Tibia Resection from Plateau** in the **Navigation** dialog. If you skip this step, the tibial resection is calculated from the medial tibial plateau point.



## TIBIAL AP DIRECTION

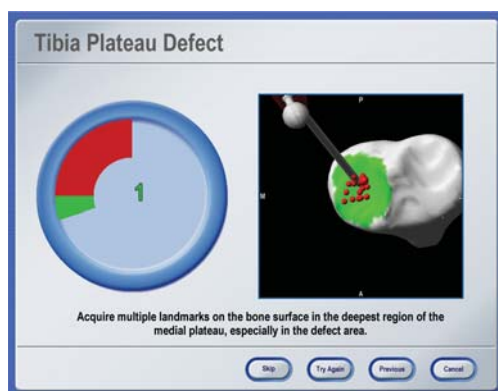
- Hold the pointer parallel to the tuberculum intercondylare without any internal/external rotation
- Hold the pointer completely still for three seconds during acquisition



## 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 DEFECT

- Hold the pointer tip to the center of the plateau and pivot the pointer
- Acquire the remaining points by sliding the pointer tip on the plateau

**NOTE:** These points determine the most distal point on the tibia (most damaged area on tibial plateau).

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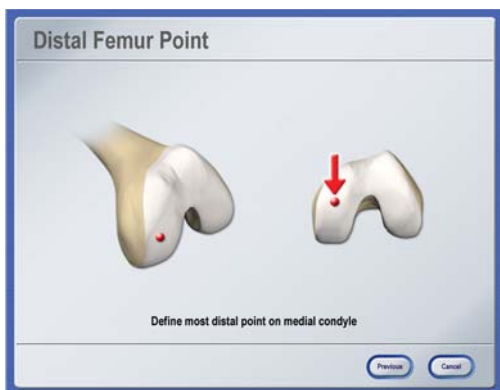
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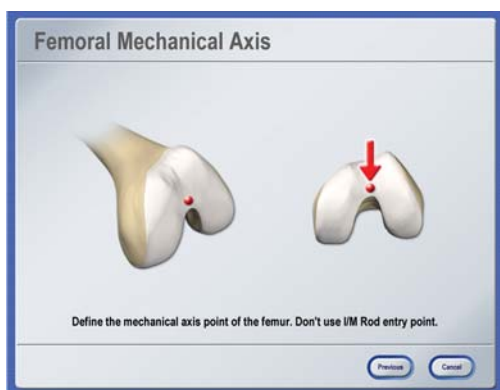
# FEMUR REGISTRATION

Software Versions: BrainLAB uni-knee 2.x, Biomet® Oxford® Partial Knee



## DISTAL FEMORAL POINT

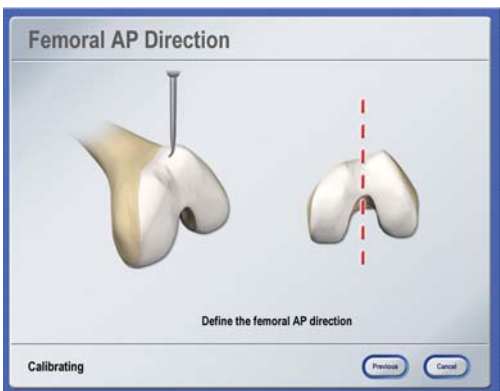
- Hold the pointer to the most distal point on the medial condyle and pivot the pointer



## FEMORAL MECHANICAL AXIS

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

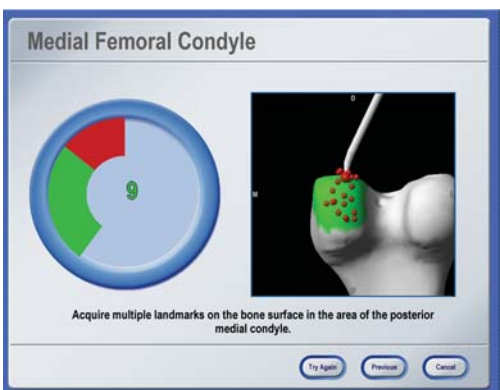
**NOTE:** Make sure to not define the IM rod entry point used for the conventional surgical technique.



## 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

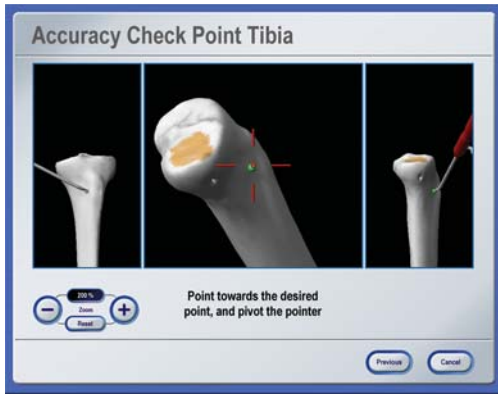
**NOTE:** Alternatively, you can define the Whiteside line. Your BrainLAB support specialist can define this setting.



## 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:** These points calculate the tibial resection level if you selected **Tibia Resection from Femur** in the **Navigation** dialog.



## 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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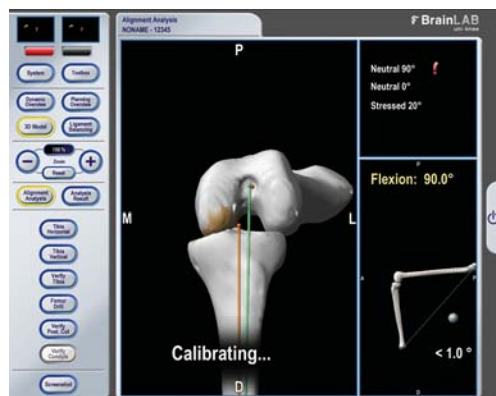
# ALIGNMENT ANALYSIS

Software Versions: BrainLAB uni-knee 2.x, Biomet® Oxford® Partial Knee



## ALIGNMENT ANALYSIS OVERVIEW

- During preoperative alignment analysis, the software calibrates and stores leg alignment in 0°, 20° and 90° of flexion
- The values can then be compared to intraoperative alignment values you acquire later in the procedure

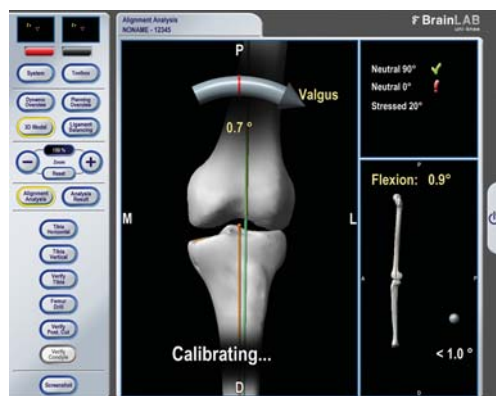


## 90° FLEXION POSITION

The 90° flexion position calculates the tibial resection level from the most posterior point on the femur (if **Tibia Resection from Femur** is selected) and aligns the tibial vertical cut in the direction of the femoral head.

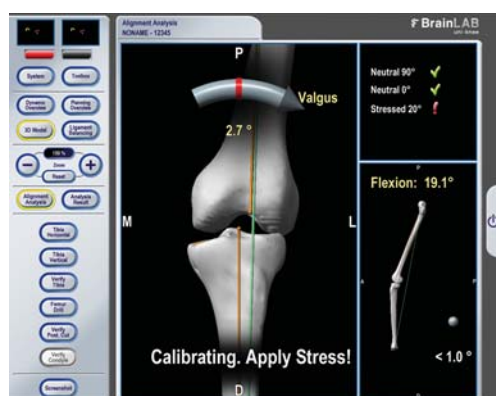
- Bring the leg into a neutral 90° flexion position and hold the leg still to calibrate the position

**NOTE:** Avoid any internal/external tibia rotation.



## 0° FLEXION POSITION

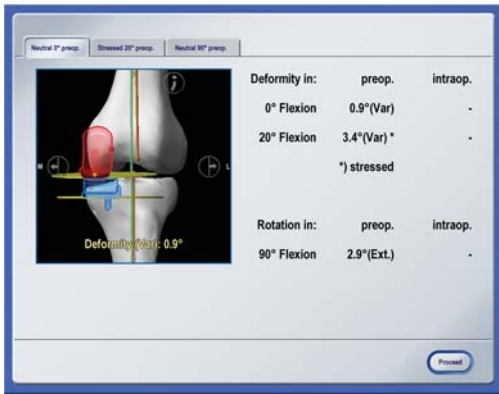
- Bring the leg into a neutral 0° flexion position and hold the leg still to calibrate the position



## 20° STRESSED FLEXION POSITION

- Bring the leg into a stressed 20° flexion position and balance the collateral ligaments by holding the leg in valgus
- Hold the leg still to calibrate the position

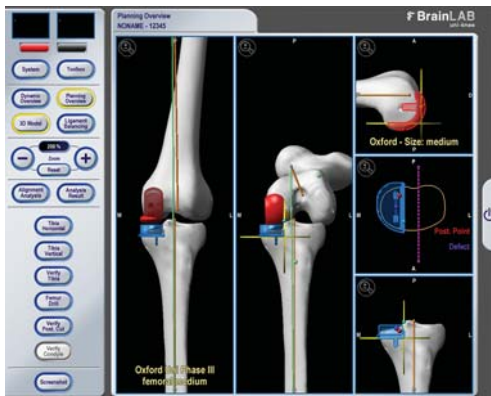
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## STORED ALIGNMENT RESULTS

The software displays the stored values and yellow planes representing planned resections.

- For **Tibia Resection from Femur**, the tibial resection is 7.5 mm from the most posterior femoral point
- For **Tibia Resection from Plateau**, the tibial resection is 7.5 mm from the healthy tibial plateau point
- The distal femoral plane is adjusted to the point on the distal femur



## PLANNING OVERVIEW

After alignment analysis, 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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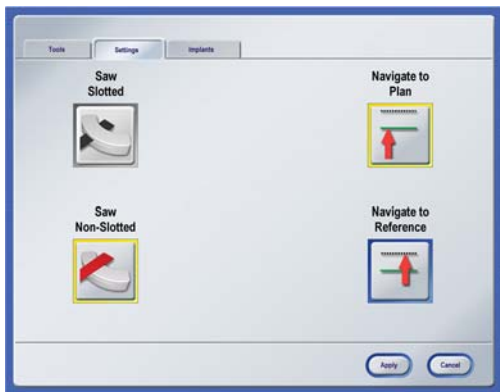
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# NAVIGATION

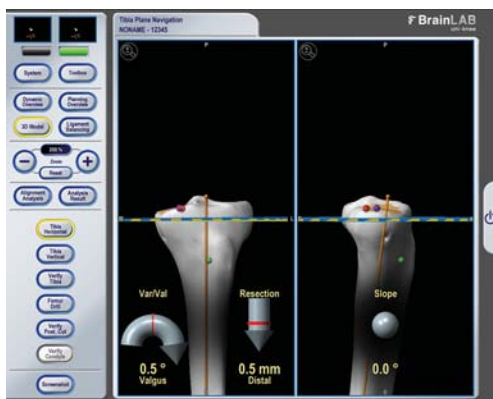
Software Versions: BrainLAB uni-knee 2.x, Biomet® Oxford® Partial Knee



## NAVIGATION SETTINGS

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

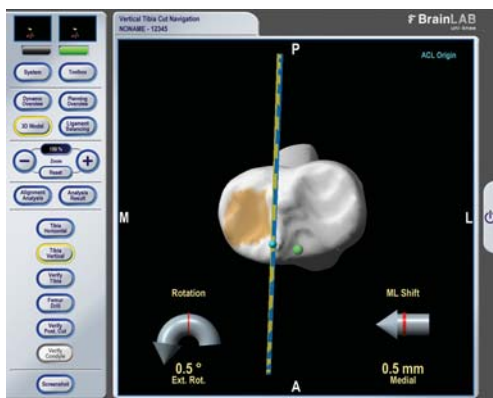
- **Navigate to Plan** (default setting): The arrows on the screen show the distance between the actual and planned cutting block position
- **Navigate to Reference**: The arrows on the screen show the distance from the actual cutting block position to anatomical landmarks



## HORIZONTAL TIBIA NAVIGATION

This cut is calculated 7.5 mm from the healthy tibial plateau point or most posterior femoral condyle point.

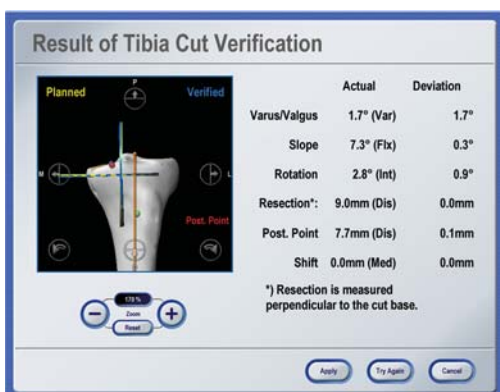
- Press **Tibia Horizontal** in the menu bar
- Mount the tibial cutting block adapter onto the tibial cutting block
- Match the actual plane (blue) to the planned plane (yellow)
- Proceed to navigation of the vertical tibial plane before performing any cuts



## VERTICAL TIBIA NAVIGATION

This cut is shifted to the medial ACL origin point.

- Press **Tibia Vertical** in the menu bar
- Match the actual plane (blue) to the planned plane (yellow)
- Perform vertical resection followed by horizontal resection according to standard procedure

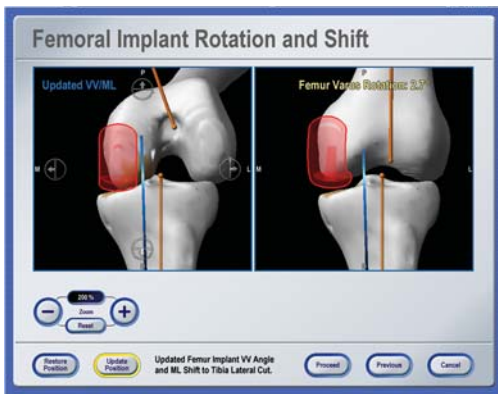


## TIBIA VERIFICATION

In this step, you must verify the resected horizontal and vertical tibial planes.

- Press **Verify Tibia** in the menu bar
- Place the cut verification tool flat on the resected bone for two seconds

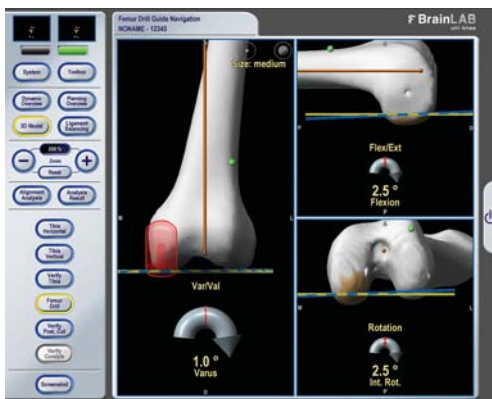
The software calculates the planes and displays the actual values and the deviation to the plan.



## REVIEW FEMORAL IMPLANT

Based on the verified tibia, the software shows the updated femoral implant (now aligned with the tibial implant in the medial-lateral direction), and the updated femoral varus-valgus rotation angle.

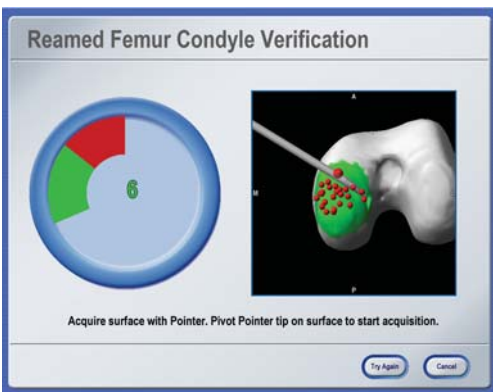
- To show the initial implant position, press **Restore Position**
- To apply the implant position (updated or restored), press **Proceed**



## FEMORAL DRILL GUIDE NAVIGATION

- Press **Femur Drill** in the menu bar
- Insert the feeler gauge with tibial template
- Navigate the rotational alignment of the drill guide to match the current position (blue plane) to the planned position (yellow plane)
- Press **Verify Post. Cut** to update the posterior femur

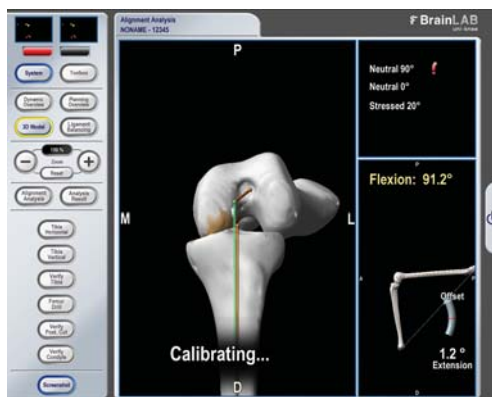
**NOTE:** If the femoral implant size shown on the screen is not the same as the implant you are using, use the sphere buttons to adjust the size.



## 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.



## INTRAOPERATIVE ALIGNMENT ANALYSIS

- Press **Alignment Analysis** in the menu bar
- As prompted by the software, bring the leg into 90°, 0° and 20° neutral flexion

The software stores the values and displays intraoperative as well as the preoperative results.

**NOTE:** Details on performing alignment analysis are provided on the [Alignment Analysis](#) page.

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