

# CT Protocol – Knee:

## How to scan knee data for BrainLAB Navigation

<b>Patient orientation</b>	<ul style="list-style-type: none"> <li>• <b>Strict supine position</b></li> <li>• Orientation “<b>Feet First</b>” (otherwise the scan range is not sufficient)</li> </ul>
<b>Fixation of Leg</b>	<ul style="list-style-type: none"> <li>• Leg should be as straight as possible, with no internal or external rotation. Leg <b>must</b> remain still for the duration of the entire scan.</li> </ul>
<p><b>Slice Thickness / Scan Range</b></p> <p><i>Range 1: ca. 50mm</i></p> <p><i>Range 2: ca. 200mm</i></p> <p><i>Range 3: ca. 50mm</i></p> <p><b>Sample Scout View</b></p>	<ul style="list-style-type: none"> <li>• <b>Only entire leg to be treated</b> should be centered in the scout view.</li> <li>• Plan <b>3</b> field of views for the hip joint, knee joint and ankle using <b>one scout view</b>. (If this is <b>not</b> possible, please contact BrainLAB Support!)</li> <li>• Assure that in the lateral view the entire hip joint, knee joint and ankle are included in the fields of view.</li> <li>• Do <b>not</b> include too much tissue, only bone structure should be visible.</li> <li>• The width and height (x,y) of scan ranges must be equal, so that the center points have the same x,y coordinates.</li> <li>• <b>Range 1:</b> Include entire Femoral Head <i>Slice Thickness: maximum 5mm</i> <i>Recommended:</i> helical slices at 5mm reconstructed to 3mm.</li> <li>• <b>Range 2:</b> Include about 100 mm of distal femur and 100mm of proximal tibia. <i>Slice Thickness: 2-3 mm</i> <b>Reconstructions are allowed!</b></li> <li>• <b>Range 3:</b> Include entire talus and malleoli <i>Slice Thickness: maximum 5mm</i> <i>Recommended:</i> helical slices at 5mm reconstructed to 3mm.</li> <li>• <u>Other Ranges:</u> (Optional) When planning with the Intra-medullary Rod (surgical preference), an additional field of view can be created following the above-mentioned protocol to include more anatomy for the planning. Any slice thickness is ok (e.g. 10mm).</li> </ul>
<b>Image /Pixel Size</b>	<ul style="list-style-type: none"> <li>• Pixel size <b>must be the same</b> for all Field of Views!</li> </ul>
<b>Scan Properties</b>	<ul style="list-style-type: none"> <li>• Scan with soft tissue windowing</li> </ul>
<b>Scan Technique</b>	<ul style="list-style-type: none"> <li>• <b>Sequential scans:</b> continuous or overlapping slices. <b>No gap!</b></li> <li>• <b>Helical Scans:</b> pitch (table:scan ratio) =1:1 recommended. <i>Reconstructed images are allowed.</i></li> <li>• Slice thickness can be changed during the scan.</li> </ul>
<b>Gantry tilt</b>	<ul style="list-style-type: none"> <li>• No gantry tilt allowed!</li> </ul>
<b>Table height</b>	<ul style="list-style-type: none"> <li>• Must remain the <b>same</b> during the scan.</li> </ul>
<b>Matrix Size</b>	<ul style="list-style-type: none"> <li>• Any, recommended squared: <b>512x512</b> or <b>256x256</b></li> </ul>
<b>Scan direction</b>	<ul style="list-style-type: none"> <li>• cranial to caudal</li> <li>• caudal to cranial</li> </ul>
<b>Storing</b>	<ul style="list-style-type: none"> <li>• Store the <b>3 scanning sets</b> as <b>one patient file</b>.</li> </ul>

\* Based on PatXfer 4.21 or higher and VV<sup>2</sup> Knee Navigation Software

\* If you need additional information please contact your local BrainLAB Support Engineer