

## Lower Limb CT Scan Information Osteotomies Around the Knee - ACTIVMOTION®

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This document describes the guidelines for a CT Scan to order a patient specific instrumentation for an Osteotomy around the knee realized with an ACTIVMOTION® plate.

It is the hospital responsibility to define the security protocols as well as the medical imaging protocols depending on the material, the patients and the physician prescription.

Images obtained by following these recommendations allow us to create 3D bone models in order to design the patient specific instrumentation required.

It is important to note that patient specific instrumentation fit the patient anatomy. Images need to be in sufficient quality: bone outlines and details have to be well defined and visible. **Bad quality may lead to the inability to use the images and then delay the surgery.** Newclip Technics is not familiar with the material and methods in each establishment. That is why Newclip Technics decline all responsibility even if the described parameters are respected.

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### **Parameters affecting image quality:**

- Metallic object may interfere with the region to be scanned, it is recommended to remove them or to apply an artifact reduction algorithm.
- An implant in the contralateral leg may prevent from using the images, it is recommended to bend it out the field of view or to apply an artifact reduction algorithm.
- Patient movement between or during acquisition sequences may prevent from using the images.

### **Patient's position**

- lying on his back
  - legs extended, pointing up patellas
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### Settings

#### *General:*

- Retain an archive of the images
- Do not raise or lower the table during the entire process
- Coordinates:
  - Maintain a single coordinates system for all scans
  - Do not alter the X and Y centering between scans
  - Maintain a consistent pixel size

#### *Area of acquisition:*

Acquisition	Hip	Area of interest	Femoral head
		Limits	From 2cm above the most proximal point of the femoral head to 2cm below the little trochanter
	Knee	Anatomical landmarks	Patella and Anterior Tibial Tuberosity
		Limits	From 15 cm above to 15 cm below the articular line
	Ankle	Anatomical landmarks	Malleolus
		Limits	From 5 cm above the distal tibia to the most distal point of the tibia

#### *CT Scan parameters:*

FOV	All images need the same FOV and coordinate system
Tension	120 kV
Rotation time	0.5s
Current	Dose modulation
Matrix	512 x 512
Slice Thickness	Lower than 0.8 mm
Slice Increment	Contiguous

#### *Image sets to provide:*

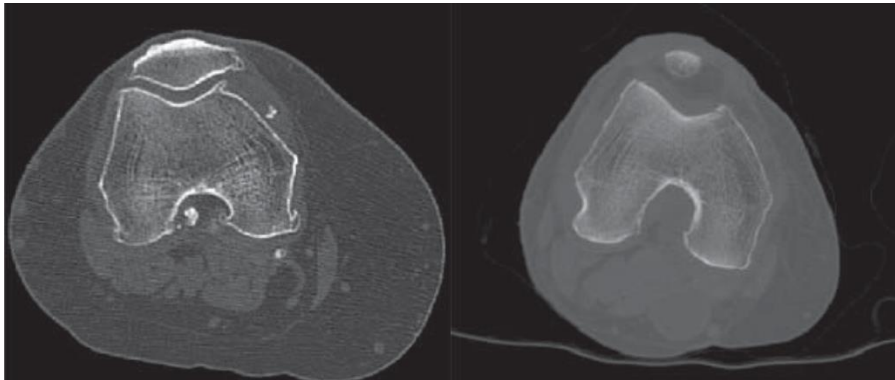
Provide DICOM images of the acquisition and of one reconstruction of the whole acquisition with the following parameters:

1. Acquisition (Bilateral Hip/Knee/Ankle)	Window ("Bone")	Center: 500	Width: 2500
2. Reconstruction (Bilateral Hip/Knee/Ankle)	Window ("Soft Tissue")	Center: 40	Width: 400

*If the CT machine cannot reach these values, please use the closest values to obtain thin slice thickness with a good spatial resolution.*

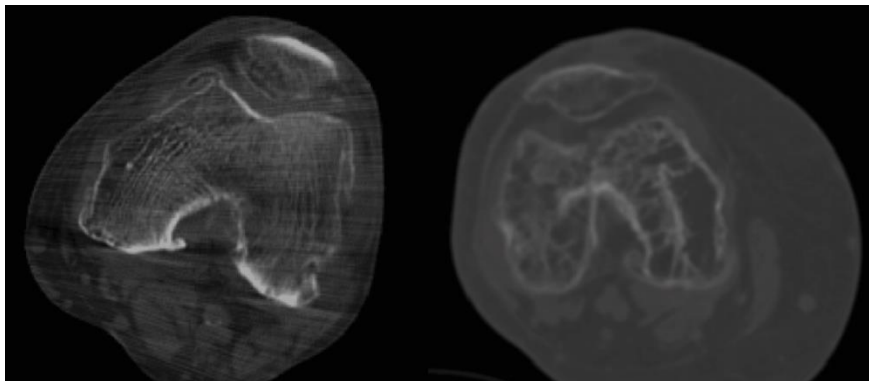
### CT Scan imaging examples

Images have to be clear: boundaries between the bone and the surrounding soft tissues have to be well delimited.



Satisfactory images

Blurred or poor contrast images between the bone and the surrounding soft tissue will lead to imprecisions in the 3D reconstruction, and thus in the design of the final patient specific instrumentation.



Unsatisfactory images

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**NEWCLIP CT SCAN INFORMATION – SUMMARY**

**CAUTION:** This summary does not replace the document “Lower Limb CT Scan Information – Osteotomies Around the Knee ACTIVMOTION®”.

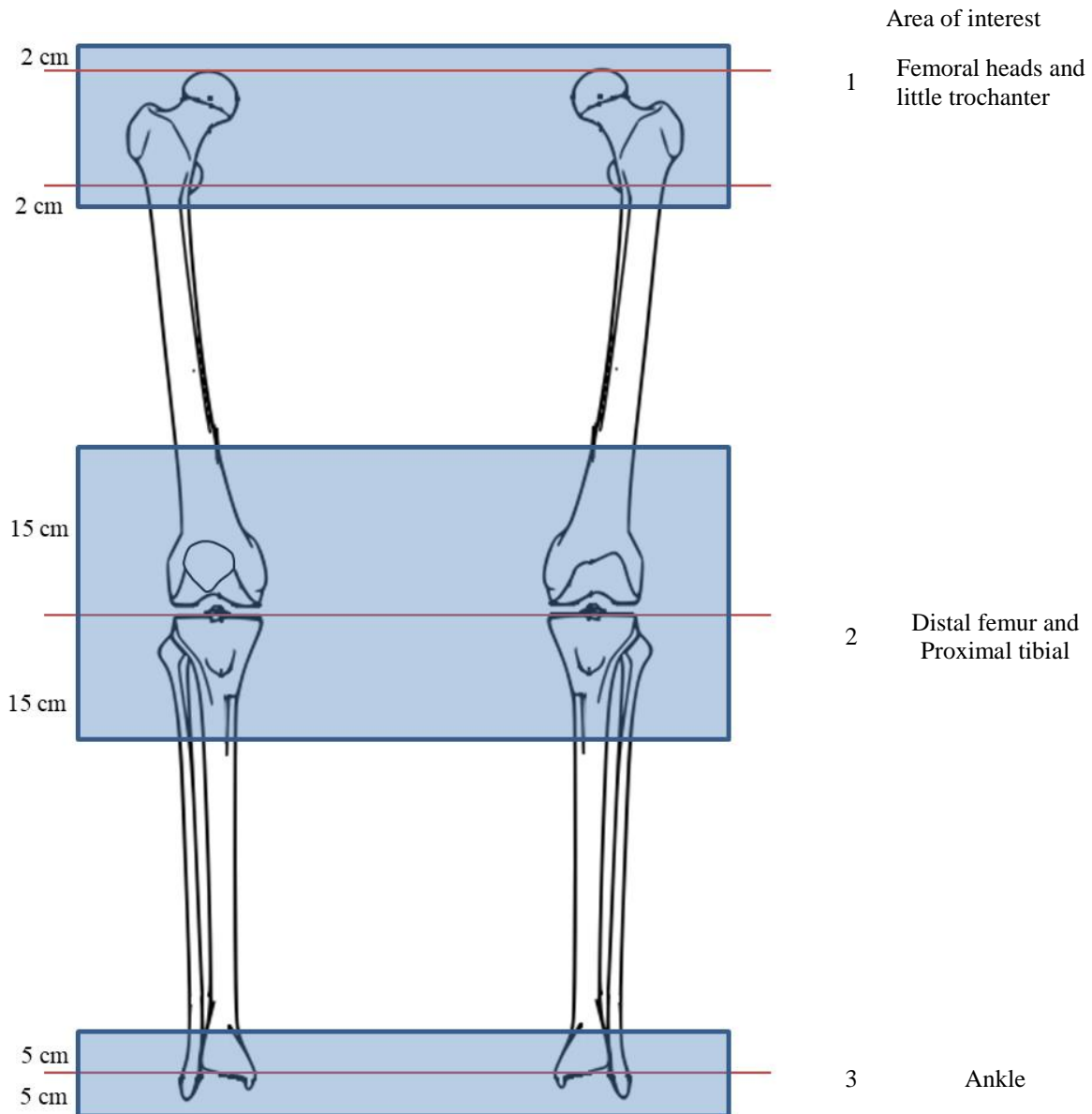


Image sets to provide:

1. Acquisition (Bilateral Hip/Knee/Ankle)	Slice Thickness	Lower than 0.8 mm (contiguous)	
	Window (“Bone”)	Center: 500	Width: 2500
2. Reconstruction (Bilateral Hip/Knee/Ankle)	Slice Thickness	Lower than 0.8 mm (contiguous)	
	Window (“Soft Tissue”)	Center: 40	Width: 400