CT SCAN PROTOCOL

Pelvis and Femurs

Overview

Replasia uses patient CT scans to develop accurate models of a patient's anatomy for analysis and design of personalized implants, instruments and anatomical models. High-quality CT scans are critical to ensure the precision of these analyses and designs, requiring clear visualization of bone structures. Image quality should meet the standards for radiological evaluations of bone. Apply dose reduction techniques and optimize scan parameters to limit patient exposure.

This CT scanning protocol contains several requirements for obtaining suitable patient CT images. Please apply these guidelines as appropriate to your patients.

Scan Preparations

Patient preparations:

- Eliminate any non-fixed metal (e.g. prosthetics, jewelry, zippers, or similar items) that could disrupt the imaging region.

- Instruct the patient <u>not to move</u> during the procedure. If patient motion occurs, the scan must be restarted. Image distortion from patient motion can severely compromise the image accuracy.

Contraindications:

- Pregnancy

Patient positioning:

- Feet first in supine position, maintaining a level pelvis without tilting or lifting.

- Legs extended flat on the table in a side-by-side position.

- Arms either raised above the head or folded upward away from the pelvis.

Scan Requirements

Scan Range:

- **Preferred scan range:** complete pelvis including sacrum, and full left and right femurs including condyles

- **Acceptable scan range:** complete pelvis including sacrum, proximal femurs to at least 10 cm below lesser trochanter, and distal left and right femurs minimum 10 cm height.
  Important: hips and knees should be scanned during one single acquisition <u>without patient movement</u>. Hip and knee scans can be provided as one DICOM set or as separate DICOM sets.

- **Minimal scan range:** complete pelvis including sacrum, and left and right proximal femurs to at least 10 cm below the lesser trochanter.
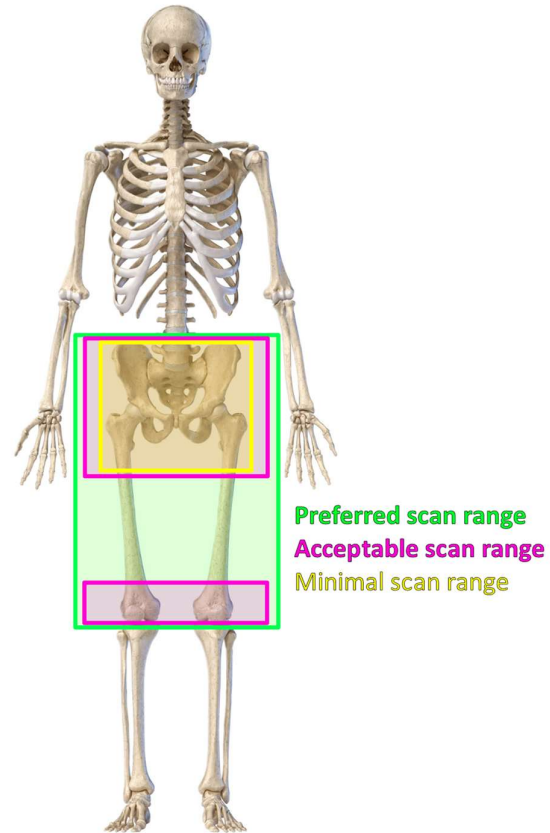
Gantry tilt:

- No gantry tilt

Reconstruction algorithm(s):

- Axial images must be provided: no reformatting, no oblique reconstructions, no Multiplanar Reconstructions (MPRs).

- Always provide a reconstruction without metal artifact reduction applied. If metal is present, provide an <u>additional</u> reconstruction with metal artifact reduction applied.

- **Kernel/Window:** Moderate, STANDARD or SOFT TISSUE (do not use edge enhancement or bone algorithm).

Scan Parameters

Scanner type	Multi-detector row CT with number of detector rows ≥ 16
Scan Mode	Helical
kVp	100-140 kVP (use automatic voltage selection if available)
mA(s)	Automatic tube current modulation
Rotation Time	≤ 1s
Pitch	≤ 1
Detector Configuration	Single collimation ≤ slice thickness

Slice Thickness	Preferred: 1.00 – 1.50 mm	Acceptable: ≤ 3 mm
Slice Increment	Preferred: 0.50 – 0.75 mm (50% overlap)	Acceptable: ≤ slice thickness
Matrix	512 x 512
Field of View (FOV)	Smallest FOV that includes the complete pelvis and femurs
File Format	Uncompressed original DICOM

Patient Information

DICOM image data will be pseudonymized automatically when uploading to Replasia using the link below, and Replasia has no access to the full patient's name.
It is preferred not to erase patient name, patient ID, birth date and sex from the DICOM images.

Data Transfer

CT images can be transferred to Replasia via our portal: https://replasia.3d-customize.com/upload.

Additional images such as MRI or diagnostic X-ray images can be provided as well during the same upload.

For any questions, please contact Replasia.

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