

Knee radiography procedures

Aim

To determine the severity of osteoarthritis of the knee, based on joint space narrowing, subchondral sclerosis and osteophytes.

Duration of the procedure for the patient

Acquisition of PA radiographs of the index knee will take 5-10 minutes.

1.1 Preparation and prerequisites

- Please follow standard radiation protection practices. Appropriate collimation of the x-ray beam should minimize radiation dose to the patient. Please adhere to institutional policies and procedures for shielding.
- Digital image header should include the patient study identifier not the patient's name or date of birth.
- Explain the examination procedure to the patient
- Do not use any filters
- Place the positioning aid in front of the bucky (see figure below).
- Place the bone density standard against the bucky next to the knee joint (see figure below).

1.2 Patient positioning

- Position the patient in a standing upright position, on the positioning aid facing the bucky.
- Both feet are fixed in external rotation by pressing the inner aspects of the foot and heel against the V-shaped support on the base of the positioning aid.
- Center the knee on the image and center the beam on the knee. Be sure that the bone density standard is visible on the image.
- The great toes of both feet are placed over the positioning aid, MTP joint right below the detector
- Both knees are flexed until they touch the bucky. This fixes the angulation of the tibias.
- Both thighs are also pressed directly against the bucky to fix the angulation of the femurs.
- Gently guide the patient forward with your hand in the small of the back to ensure firm contact of both thighs with the bucky.
- Body weight is distributed equally between the two legs

1.3 Positioning of the X-ray beam

- X-ray beam is horizontal, parallel with the floor, perpendicular to the joint (halfway distance between lower side of the patella and the upper side of the tibia (tuberositas tibiae))
- Collimate to the size of the image. Make sure the bone density standard is included in the image, next to the knee, and that the knee and the bone density standard do not overlap in the radiograph.
- Place a R or L marker close to the knee, but where it will not obscure the knee anatomy.
- Expose each knee separately.

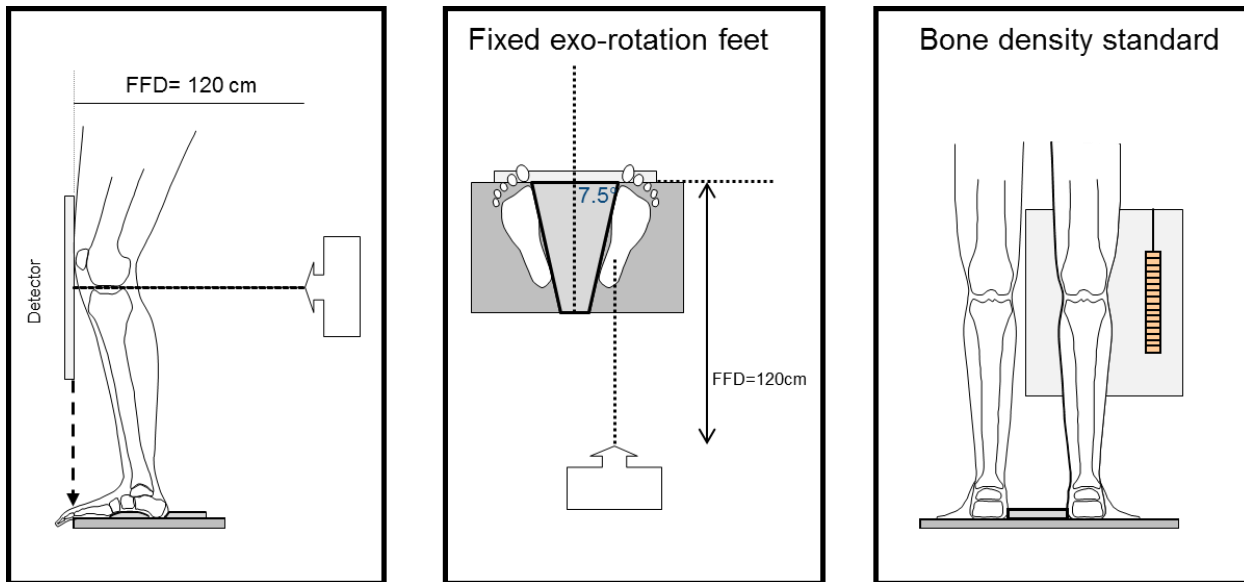


Figure patient and beam positioning

Exposure Technique

Imaging System	Bucky	recommended
Focus-Detector Distance	120 cm	required
mAs	Dependent on screen system	
kVp Range	55 kVp	recommended
Focal Spot	Small	required
Raster/ grid	NO	
Filter	NO	
Beam angle	Horizontal, parallel to floor	required
Other	Use right/ left marker	required

Example of radiograph



1.4 Criteria of good quality knee radiographs

- Complete coverage of the knee anatomy, this includes the femoral and tibial metaphyses as well as the proximal fibula.
- Optimum exposure to visualize the medial and lateral sides of the knee joint, including bone margins, and soft tissue should be clearly visible without the use of a high intensity light.
- The joint space must be open.
- Medial tibial plateau should be flat (horizontal).
- The knee must appear on the middle of the image.
- The bone density standard has to be completely visible on the image without overlap from the knee/soft tissue.
- The applicable left/right marker must be on the image.
- The image should not be underexposed or overexposed