

MSK CT Extremities: Positioning and Reformations

Hand:

Patient Position: Patient lying in prone position, with affected arm extended above head. Place body off centered in effort to set affected hand in isocenter. Hand is positioned pronated with fingers straight and close together (unlike in this picture). Emphasis is acquiring area of interest in true axial position.



Alternative: If patient unable to lie in prone position, place in lateral decubitus with affected arm above head. Hand in supination to avoid crossing of the ulna and radius.



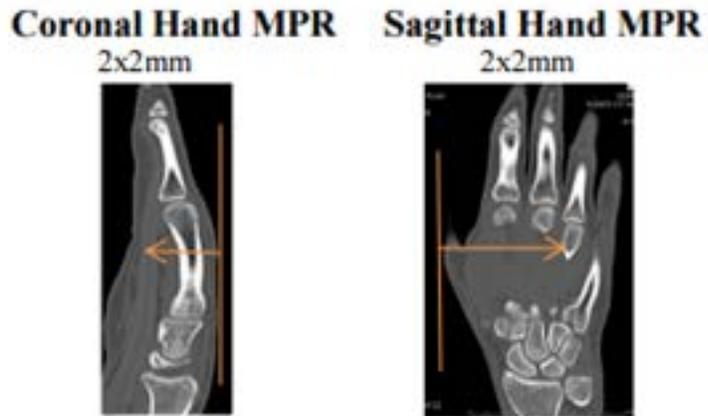
Scan Range: From distal radioulnar joint through fingertips if no specific anatomy requested. Whenever possible, tailor exam to a smaller FOV of area of interest. e.g. If the question is injury to 1st MCP joint, generate images and reformats of just the thumb, excluding most of the rest of the hand.

Image Display:

Images should be displayed with fingers at top on sagittal and coronals. Dorsum of the hand on top for axial images. Use smallest FOV possible to show area of interest.

Reformations:

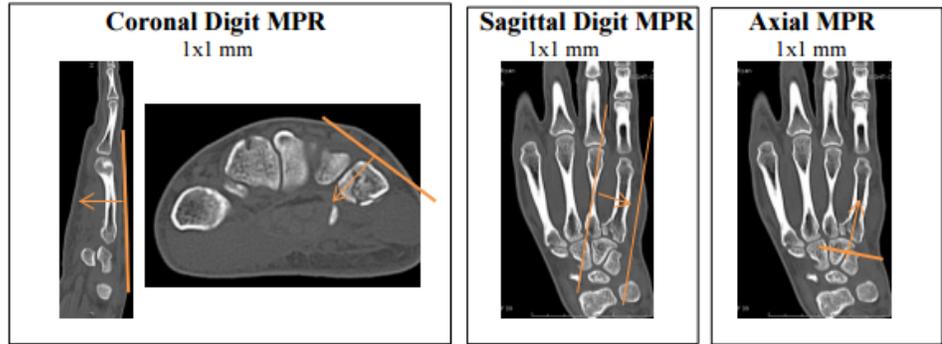
First, align all viewport lines to be orthogonal to hand. Next, make coronal and sagittal MPRs along the long axis of the hand. Use smallest FOV possible to show area of interest. Minimize surrounding space on reformatted images.



If patient is not in ideal position, create an axial MPR data set perpendicular to the long axis of the hand.



If specific digit or metacarpals is the area of interest, align reformations along that axis. (Below is an example of 5th metacarpal reformations)



3D Reformations: If formally requested by ordering provider and then document this request in notes.

Wrist:

Patient Position: Patient lying in prone position, with affected arm extended above head. Body will be slightly off-centered in effort to place affected wrist in isocenter.



Alternative: If patient unable to lie in prone position, place in lateral decubitus with affected arm above head. Hand in supination to avoid crossing of the ulna and radius.



Scan Range:

Base of the metacarpals through the distal radioulnar joint.

Image Display:

Images should be displayed with fingers at top on sagittal and coronals. Dorsum of the wrist on top for axial images. Use smallest FOV possible to show area of interest.

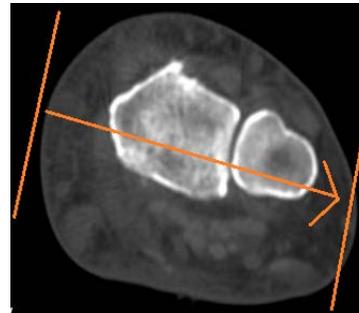
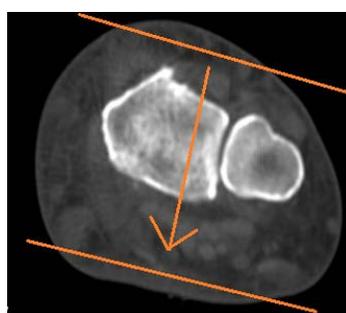
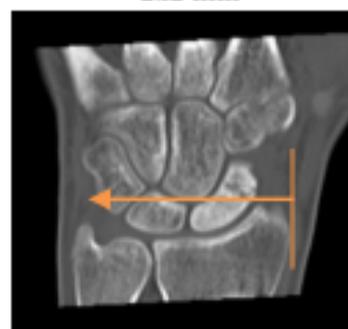
Reformations:

First, align all viewport lines to be orthogonal to wrist. Next, make coronal and sagittal MPRs along the long axis of the wrist. Use smallest FOV possible to show area of interest. Minimize surrounding space on reformatted images.

Coronal MPR
2x2 mm



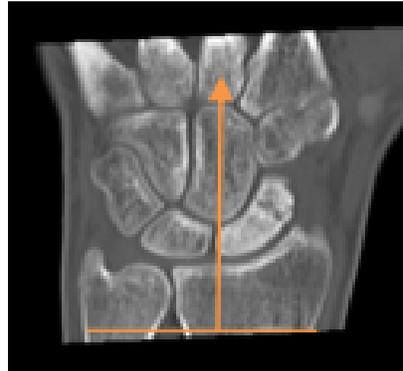
Sagittal MPR
2x2 mm



If patient is not in ideal position, create an axial MPR data set perpendicular to the long axis of the wrist.



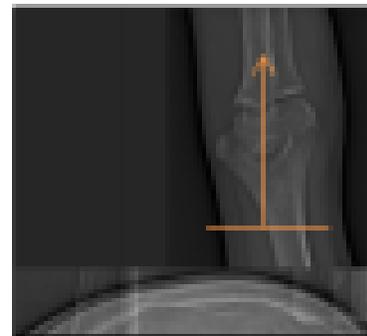
Axial MPR
2x2 mm



3D Reformations: If formally requested by ordering provider and then document this request in notes.

Elbow:

Patient Position: Place patient in a lateral decubitus position, with affected arm extended above head and hand supinated.

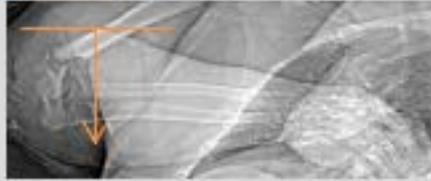


Alternative Position #1 due to limited mobility: Place patient in supine head first position with arm above head.



Alternative Position #2 due to limited mobility: Place patient supine with arm preferably at side (not on abdomen) or on body if patient unable to place by

side. Secure with straps and sponges as necessary. Instruct patient there will be a breath hold.

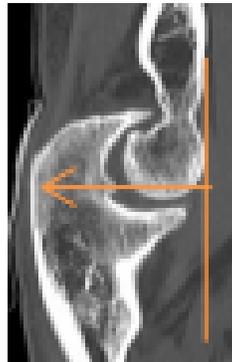


Scan Range: Distal humerus through proximal radius and ulna.

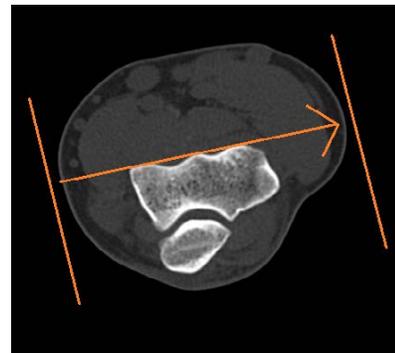
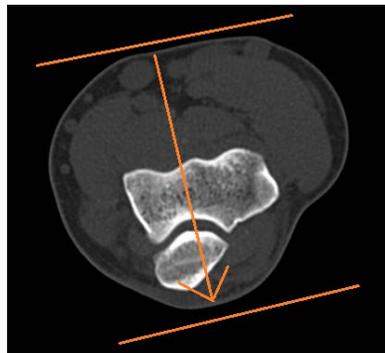
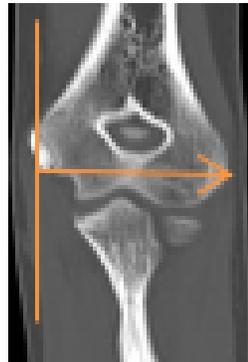
Image Display: Anatomical position

Reformations: Align all viewport lines to be orthogonal to elbow and make coronal and sagittal 2x2 MPRs. If patient is unable to place elbow in ideal position, create axial MPR, 2x2mm.

COR MPR



SAG MPR



3D Reformations: If formally requested by ordering provider and then document this request in notes.

Shoulder:

Patient Position: Patient lying in supine position, head first, shoulders square with affected shoulder slightly toward isocenter.

Scan Range: Proximal humerus to above soft tissue of shoulder. If for scapula, include entire scapula in scan range.

Axial MPR

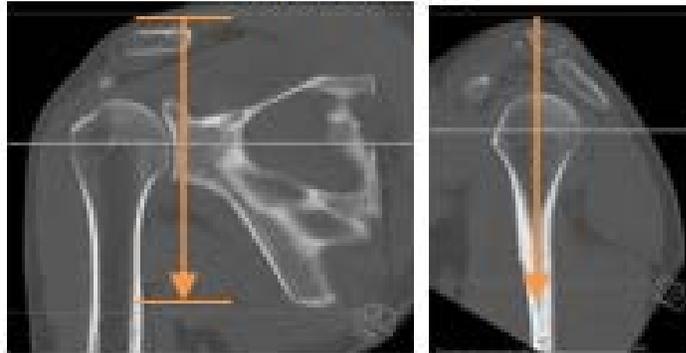
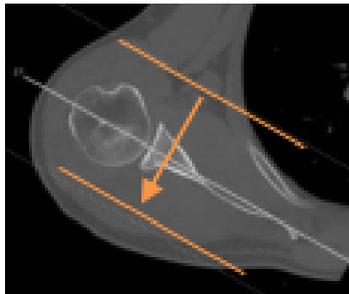


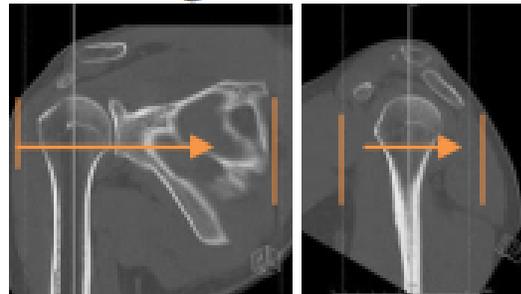
Image Display: Anatomical position

Reformations: Coronal, sagittal and axial MPRs should be made in true orthogonal planes to glenohumeral joint.

Coronal MPR



Sagittal MPR



3D Reformations: If formally requested by ordering provider and then document this request in notes.

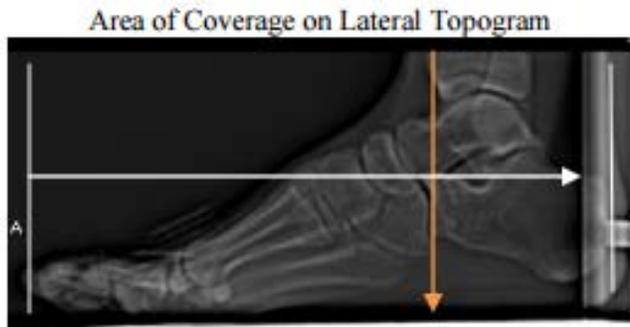
Foot:

Patient Position: Patient lying in supine position, feet first. Lower extremity of interest extended on foot holder (or box) with foot perpendicular to table. Opposite leg should be bent at knee and placed out of scan range.

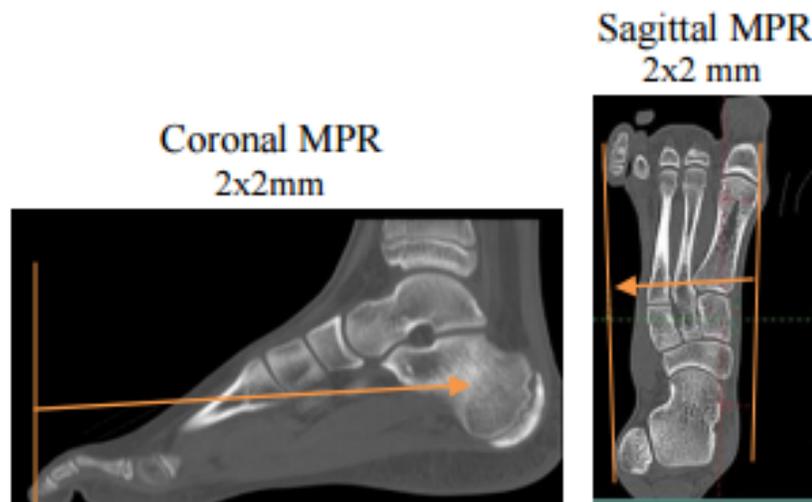


Scan Range: Above tibia/fibula joint through entire foot.

Image Display: Anatomical position



Reformations: Make coronal and sagittal MPRs as depicted below using thin data set with sharp kernel.





If specific digit or metatarsals is the area of interest, align reformations along that axis. Include oblique axial reformations if needed.



3D Reformations: If formally requested by ordering provider and then document this request in notes.

Ankle:

Patient Position: Patient lying in supine position, feet first. Lower extremity of interest extended on foot holder (or box) with foot perpendicular to table. Opposite leg should be bent at knee and placed out of scan range.



Scan Range: Above tibia/fibula joint through hind foot.

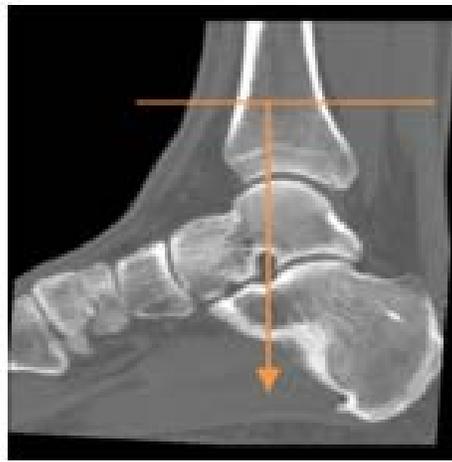
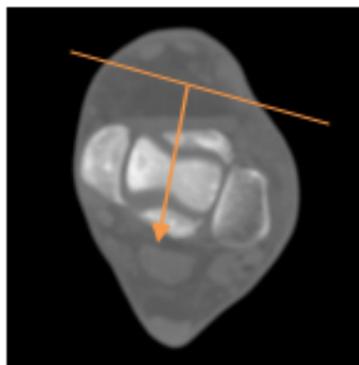


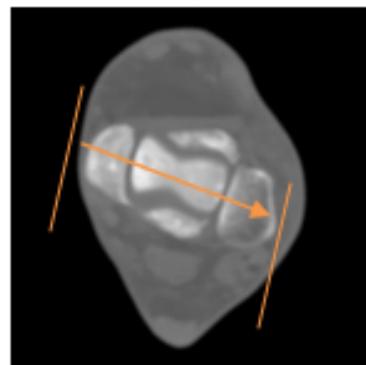
Image Display: Anatomical position

Reformations: Make mortise coronal and sagittal MPRs as depicted below using thin data set with sharp kernel. If unable to acquire data orthogonal to ankle, make a true axial MPR series, 2x2mm.

Coronal



Sagittal



3D Reformations: If formally requested by ordering provider and then document this request in notes.

Knee:

Patient Position: Patient supine, feet first with legs flat on the table (no cushions or wedges).

Scan Range: Distal Femur to proximal tibia/fibula.



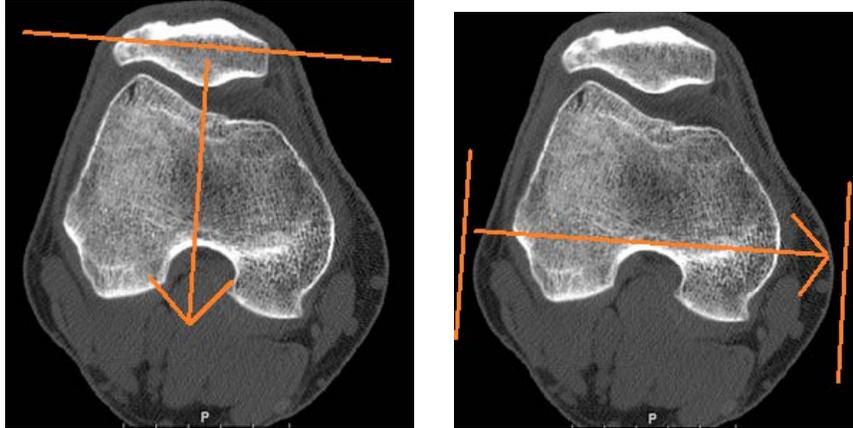
Image Display: Anatomical position

Reformations: Align all viewport lines orthogonal to affected knee before creating coronal and sagittal MPRs.



Coronal

Sagittal



3D Reformations: If formally requested by ordering provider and then document this request in notes.

Hip/Pelvis: When RT or LT hip ordered, *SCAN THE WHOLE PELVIS.*

Patient Position: Patient supine, feet first with legs flat on the table (no cushions or wedges).

Scan Range: Scan from above iliac crests (IC) through the ischial tuberosities.

Image Display: Anatomical position

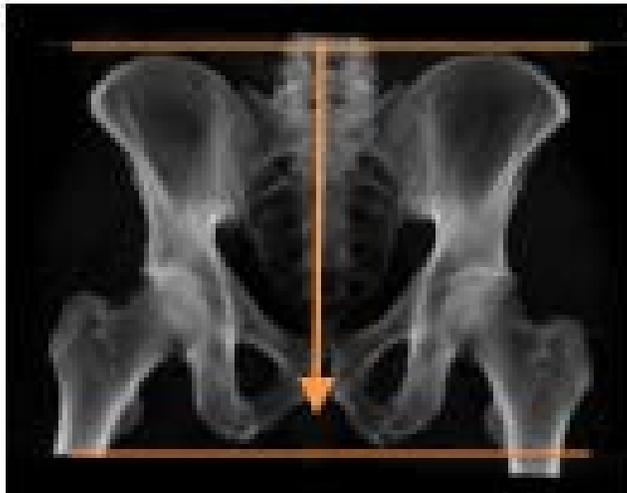
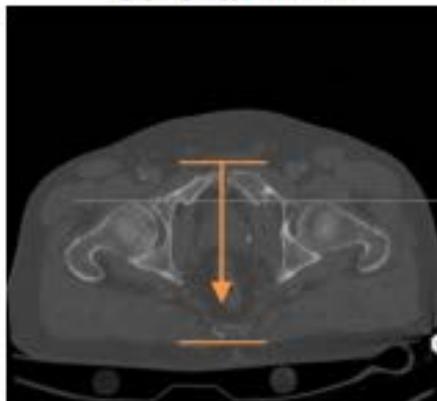


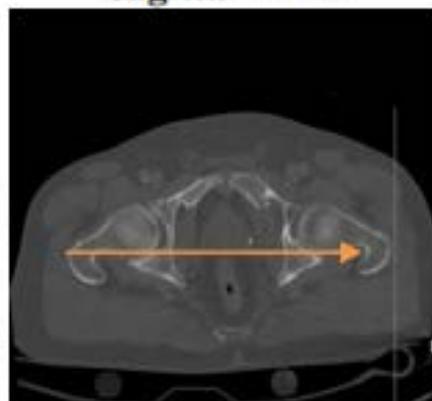
Image Display: Anatomical position

Reformations: Align all three viewports in true orthogonal planes before making reformations. Coronal and sagittal MPRs as depicted below. If patient is not in ideal position, create a true axial MPR data set.

Coronal MPR



Sagittal MPR



3D Reformations: If formally requested by ordering provider and then document this request in notes.

References: Information adapted from www.gundersenhealth.org

Images: World Journal of Nuclear Medicine, Google images, www.gundersenhealth.org, <http://suren634634.blogspot.com/>

Reviewed 8/17/2016 AMR