Department of Radiology Techniques

Radiological Position

The Second Stage

Foot

Lecture 10

Assist. Lecturer

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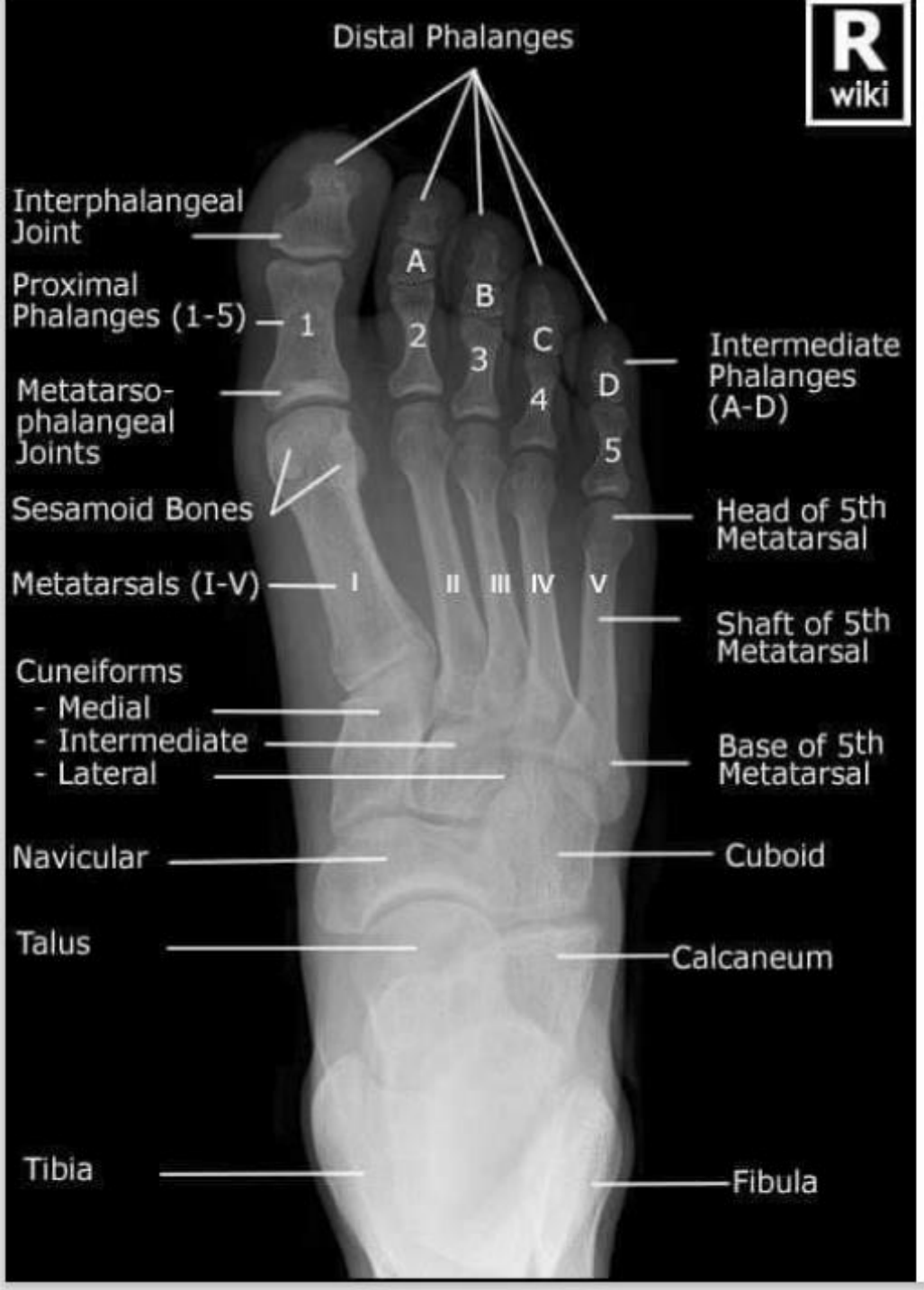
Basic Positions of Foot

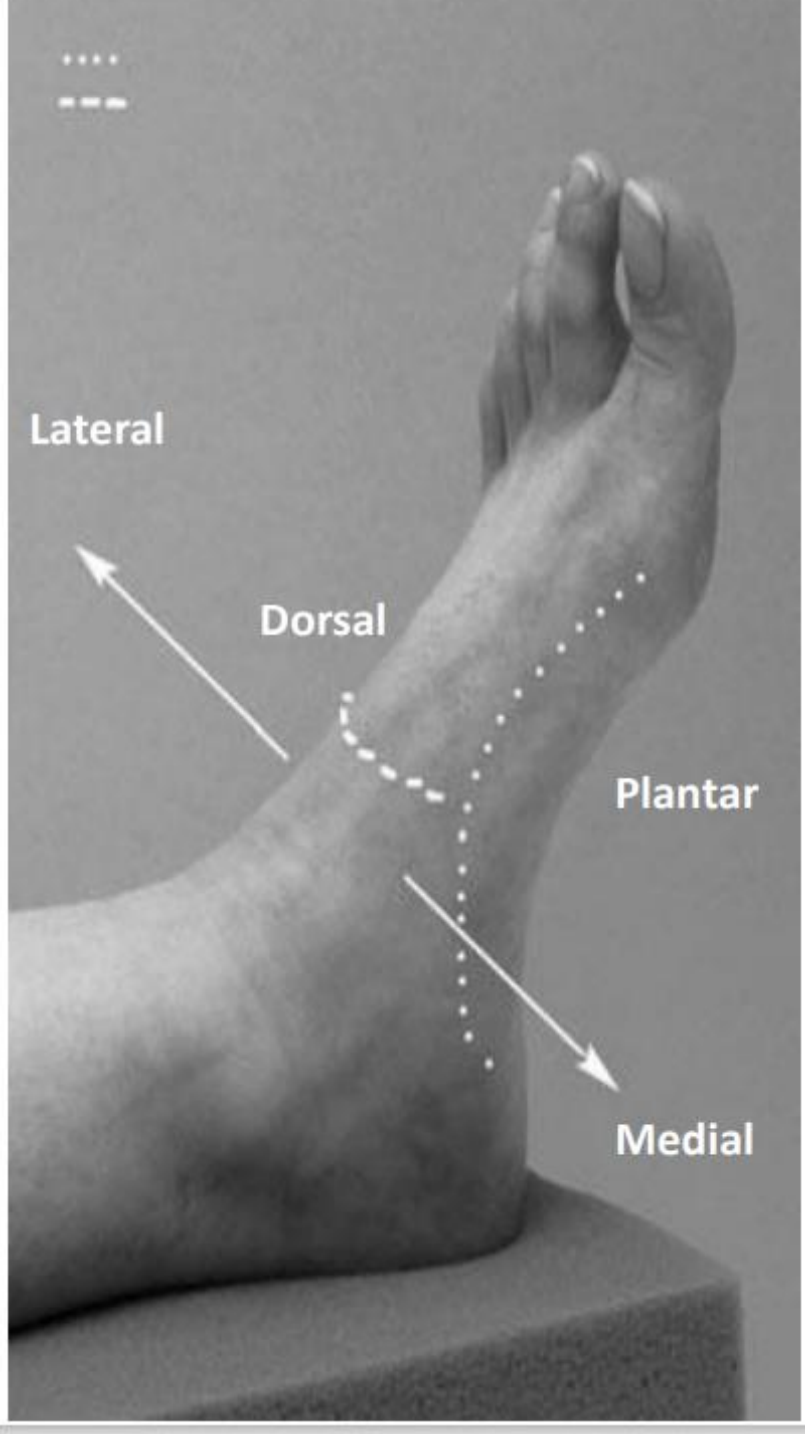
1- Anterior – Posterior (Dorsi-plantar)

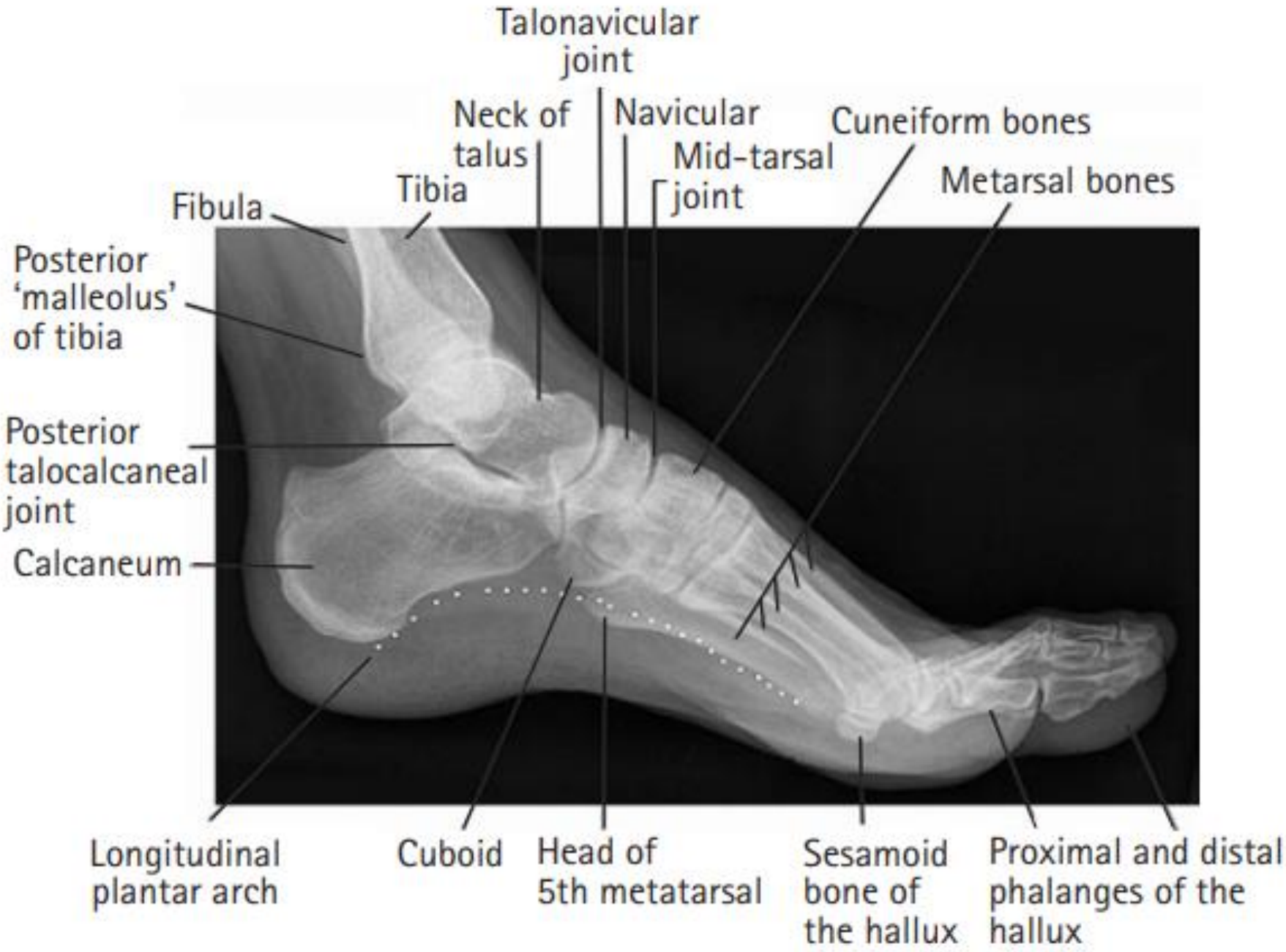
2- Oblique

3- Lateral

Cassette out – Bucky (12x10 Inch)


Distal Phalanges
R
wiki
Interphalangeal Joint
Proximal Phalanges (1-5)
Metatarso-phalangeal Joints
Sesamoid Bones
Metatarsals (I-V)
Cuneiforms
- Medial
- Intermediate
- Lateral
Navicular
Talus
Tibia
A
B
C
D
1
2
3
4
5
I
II
III
IV
V
Intermediate Phalanges (A-D)
Head of 5th Metatarsal
Shaft of 5th Metatarsal
Base of 5th Metatarsal
Cuboid
Calcaneum
Fibula


Lateral
Dorsal
Plantar
Medial


Talonavicular joint
Neck of talus
Navicular
Cuneiform bones
Mid-tarsal joint
Tibia
Metarsal bones
Fibula
Posterior 'malleolus' of tibia
Posterior talocalcaneal joint
Calcaneum
Longitudinal plantar arch
Cuboid
Head of 5th metatarsal
Sesamoid bone of the hallux
Proximal and distal phalanges of the hallux

1- Anterior – Posterior (Dorsi-plantar)

Position of Patient

• The patient is seated on the X-ray table, supported if necessary with the affected and hip , knee flexed on the same affected side.

• The plantar aspect of the affected foot is placed on the cassette out Bucky and the lower leg is supported in the vertical position by the other knee .

• Alternatively, the cassette can be raised on a 15-degrees foam pad for ease of positioning.

Direction and centering of the X-ray beam

• The central ray is directed to metatarsals, The X-ray tube is angled 10° or 15 degrees cranially (toward heel), centered to base of third metatarsal.

• The X-ray tube is angled 15 degrees cranially when cassette is flat on table.

• The X-ray tube is vertical when the cassette is raised on a 15-degree pad.

Essential image characteristics

• The tarsal and taros-metatarsal joints should be demonstrated when whole foot is examined.

• The kVp selected should reduce the difference in subject contrast between the thickness of

the toes and the tarsus to give uniform radiographic contrast over the range of foot densities.

Note

A wedge filter can be used to compensate for the difference in tissue thickness.

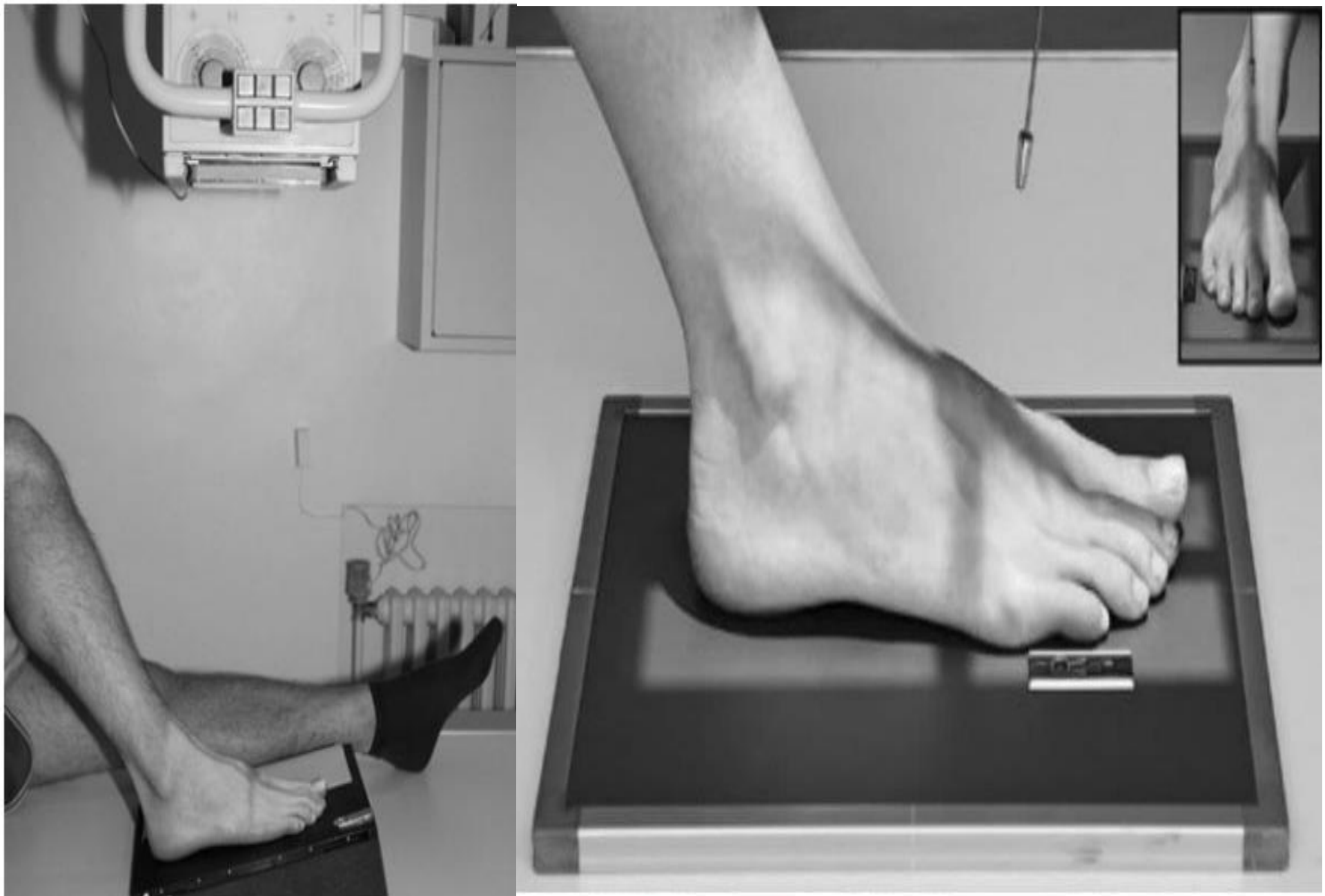
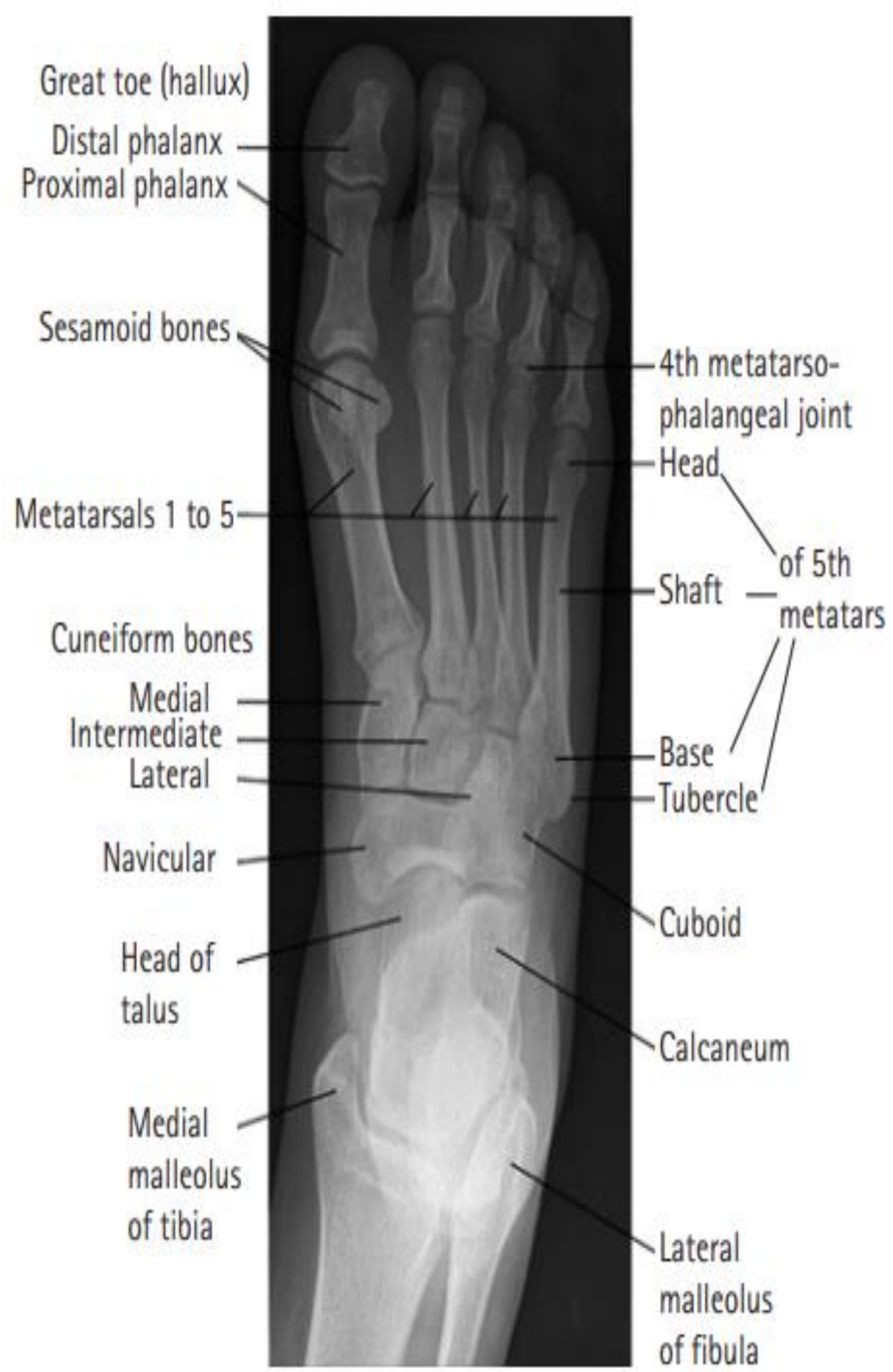
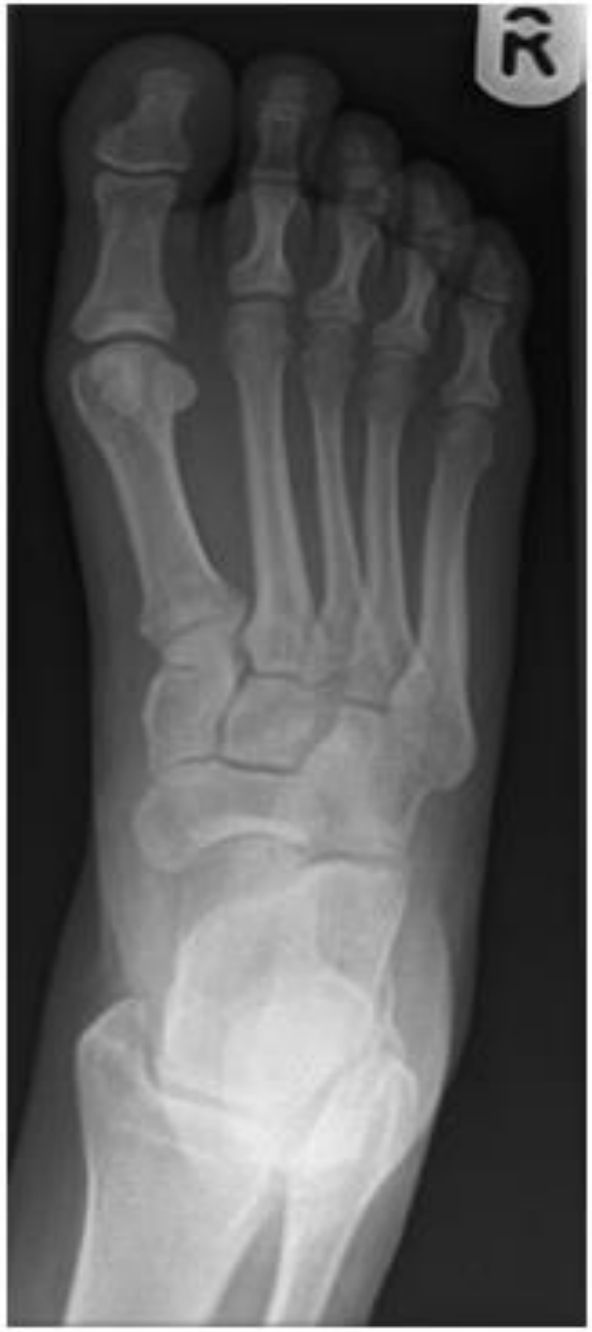


Fig. 4.12 AP foot, CR 10° posteriorly.





Normal dorsi-plantar radiograph of foot

2- Oblique

Position of Patient

• From the basic dorsi-plantar position, the affected limb is allowed to lean medially to bring the plantar surface of the foot approximately 30–45 degrees to the cassette.

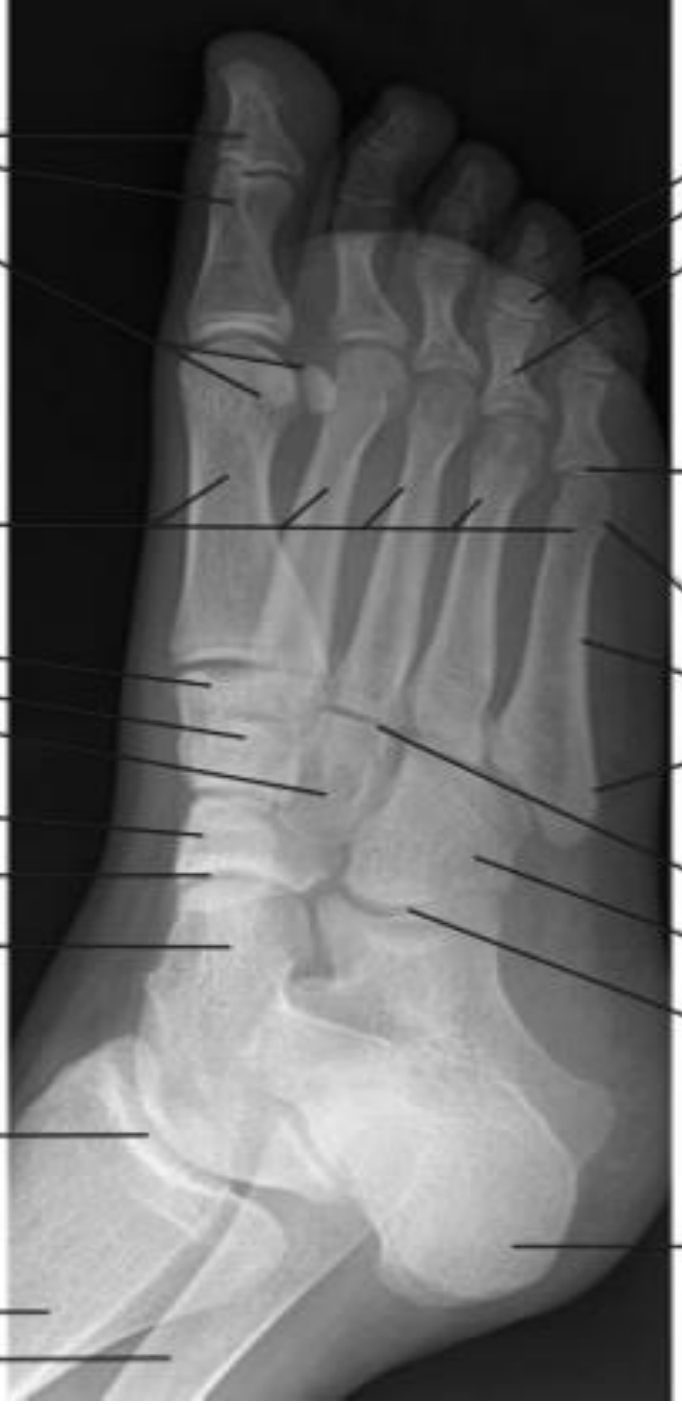
• A non-opaque angled pad is placed under the foot to maintain the position, with the opposite limb acting as a support

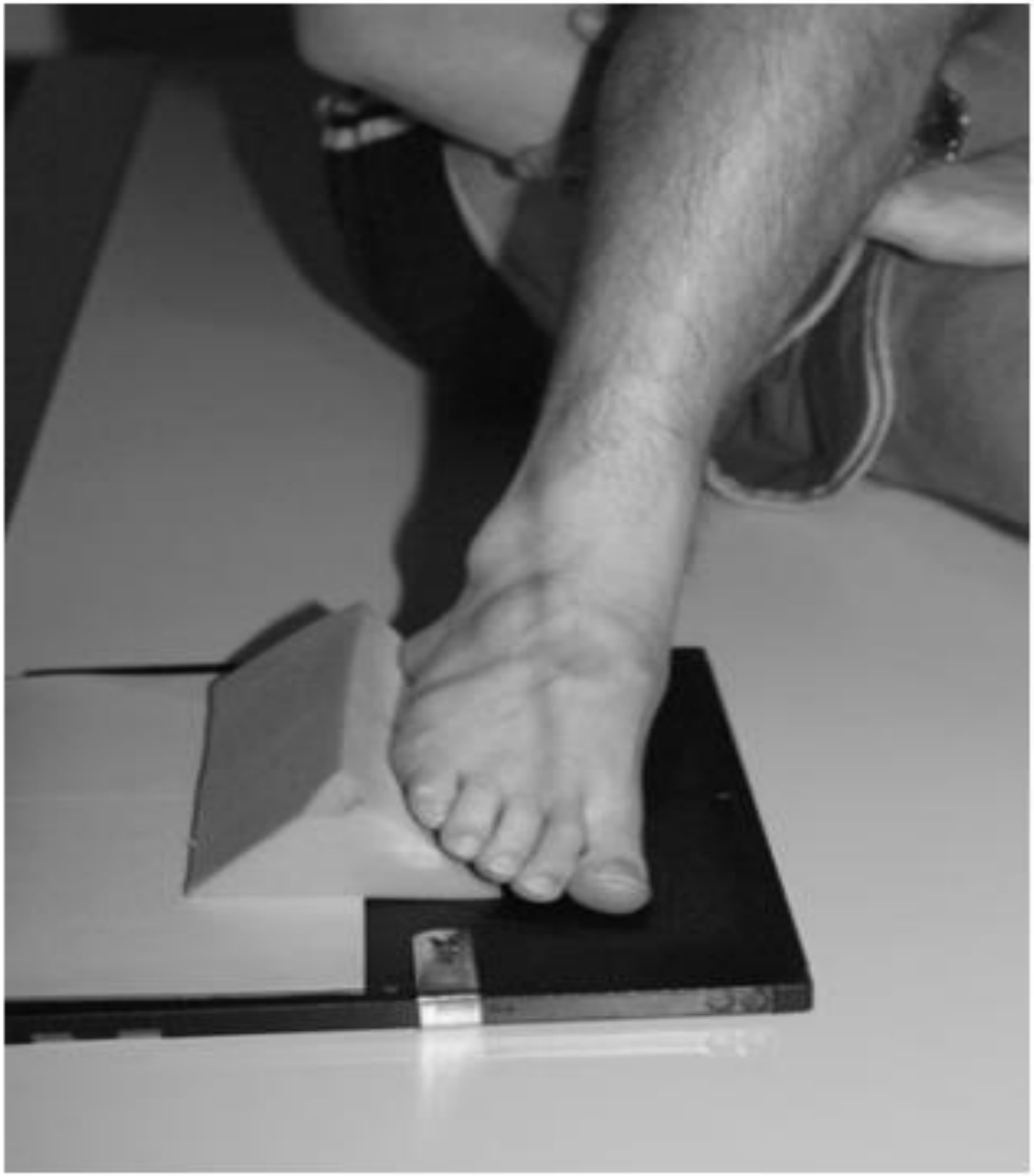
Direction and centering of the X-ray beam

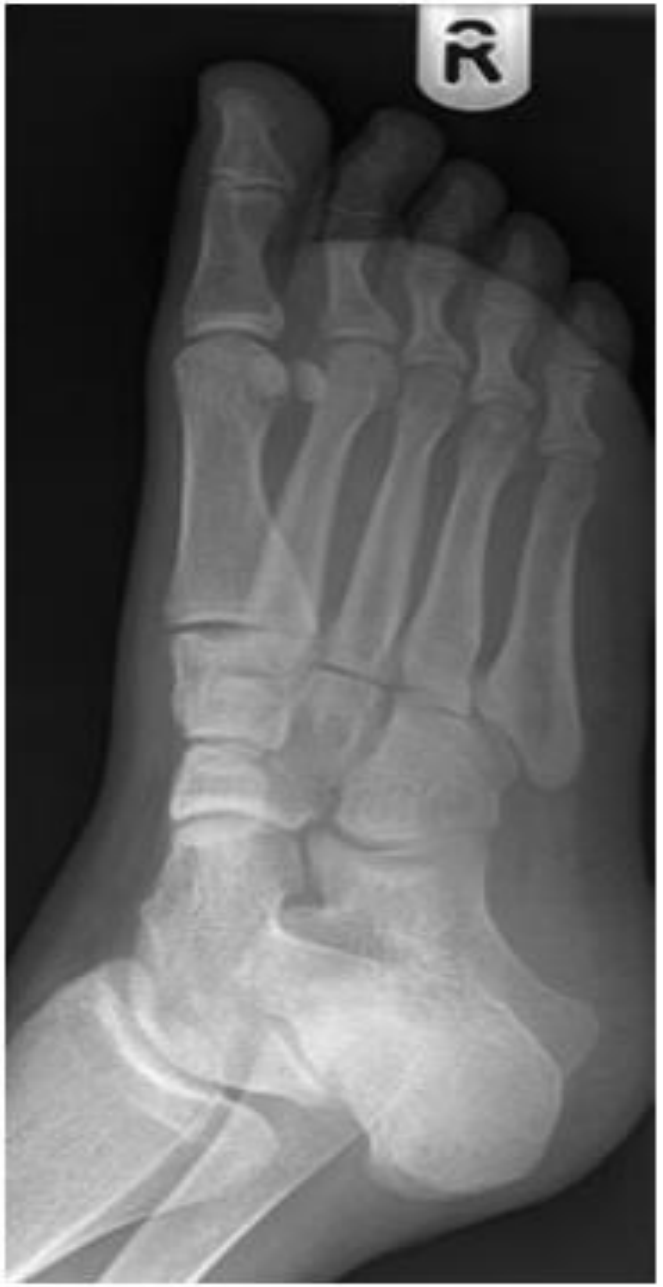
• The vertical central ray is directed over the cuboid-navicular joint.

Image Characteristics

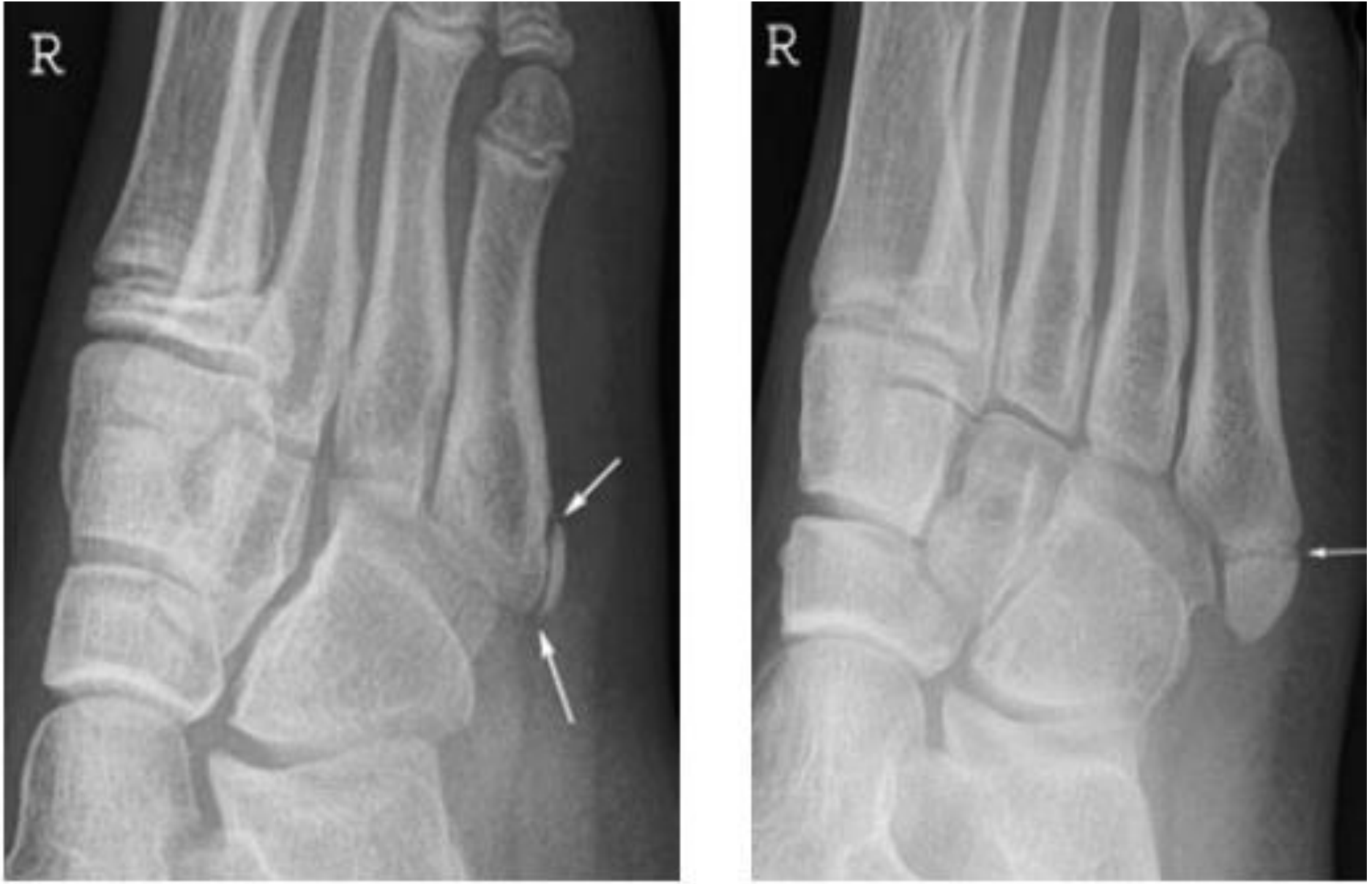
- The kVp selected should reduce the difference in subject contrast between the thickness of the toes and the tarsus to give a uniform radiographic contrast over the range of foot densities.
- A wedge filter may also be used to give a uniform range of densities.
- The dorsi-plantar oblique should demonstrate the inter-tarsal and torso-metatarsal joints.


Great toe (hallux)
Distal phalanx
Proximal phalanx
Sesamoid bones
Metatarsals 1 to 5
Cuneiform bones
Medial
Intermediate
Lateral
Navicular
Talonavicular joint
Head of talus
Ankle joint
Tibia
Fibula
Phalanges of 4th toe
Distal
Middle
Proximal
5th metatarso-phalangeal joint
5th metatarsal
Head
Shaft
Base
3rd tarso-metarsal joint
Cuboid
Calcaneo-cuboid joint
Calcaneum





Normal dorsi-plantar oblique radiograph of foot



Radiographs showing normal fifth metatarsal ossification centre on the left, and fracture base fifth metatarsal on right (arrow)

3- Lateral

This is used in addition to the routine dorsi-planter projection to locate a foreign body. It may also be used to demonstrate a fracture or dislocation of the tarsal bones, or base of metatarsal fractures or dislocation.

Position of Patient

• From the dorsi-plantar position, the leg is rotated outwards to bring the lateral aspect of the foot in contact with the cassette.

• A pad is placed under the knee for support.

• The position of the foot is adjusted slightly to bring the plantar aspect perpendicular to the cassette.

Direction and centering of the X-ray beam

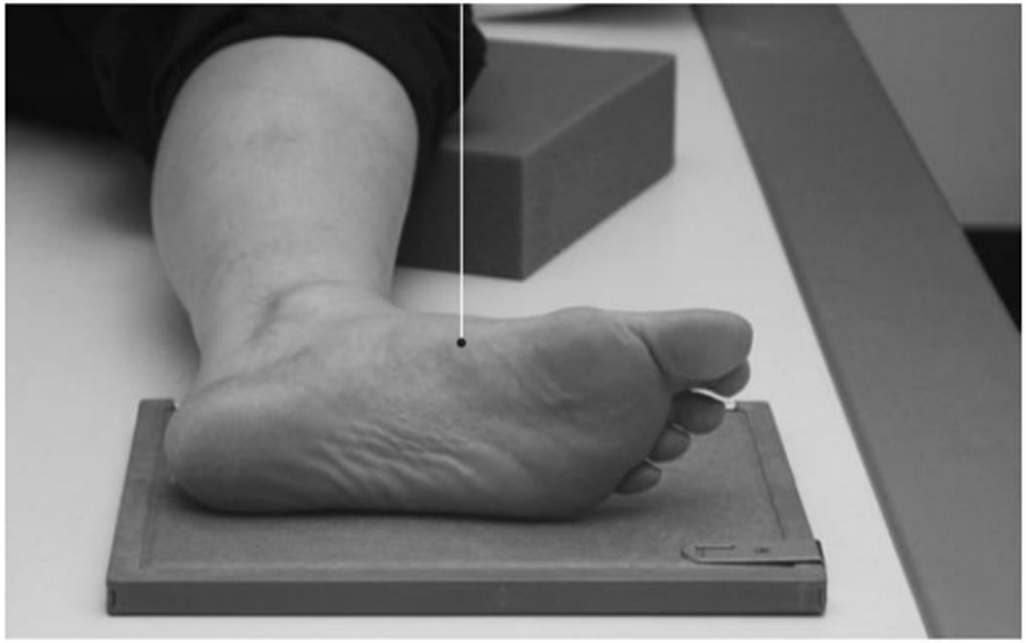
• The vertical central ray is centered over the navicular cuneiform joint.

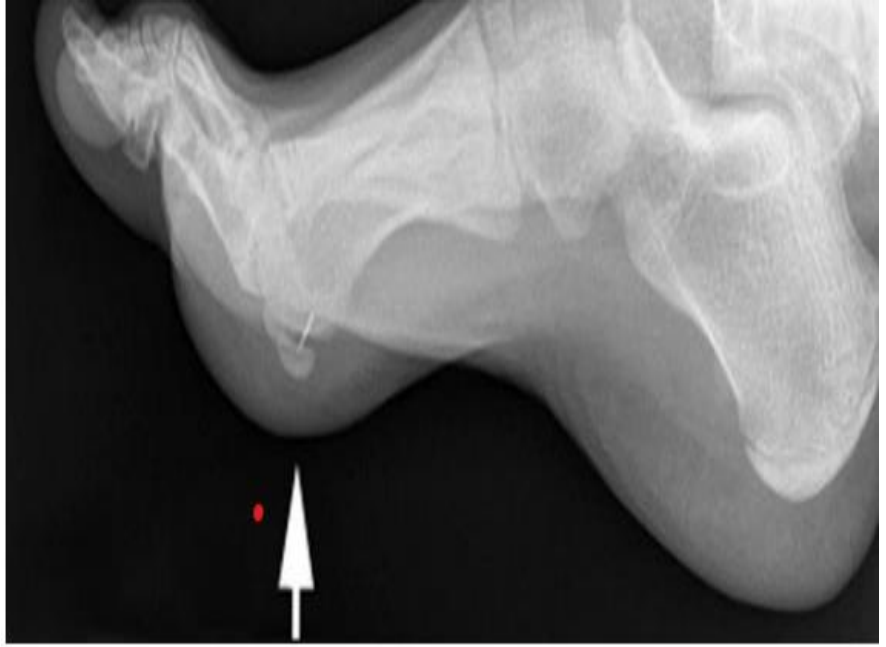
Image Characteristics

• If examining for a suspected foreign body, the kVp selected should be adequate to show the foreign body against the soft -tissue structures.

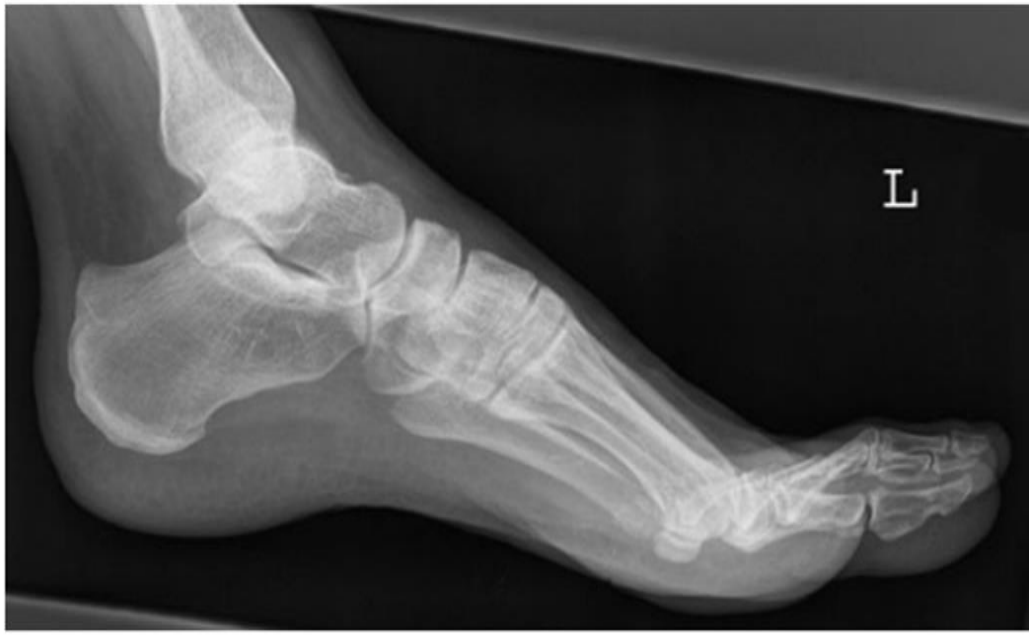
Note

A metal marker placed over the puncture site is commonly used to aid localization of the foreign body.





Lateral radiograph of foot showing metallic foreign body



Normal lateral radiograph of foot

Lateral Foot – Erect Position

This projection is used to demonstrate the condition of the longitudinal arches of the foot, usually in pes planus (flat feet).both feet are examined for comparison.

Position of patient and cassette

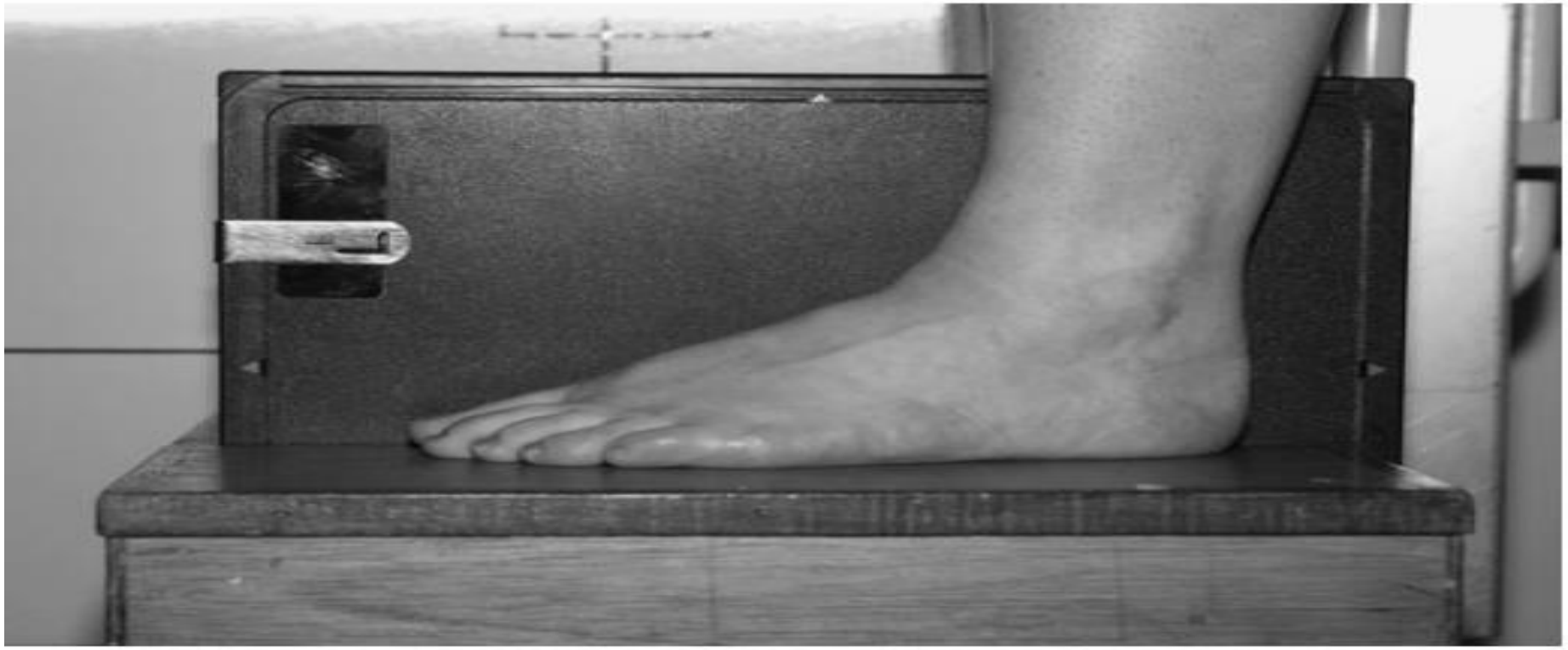
• The patient stands on a low platform with a cassette placed vertically between the feet.

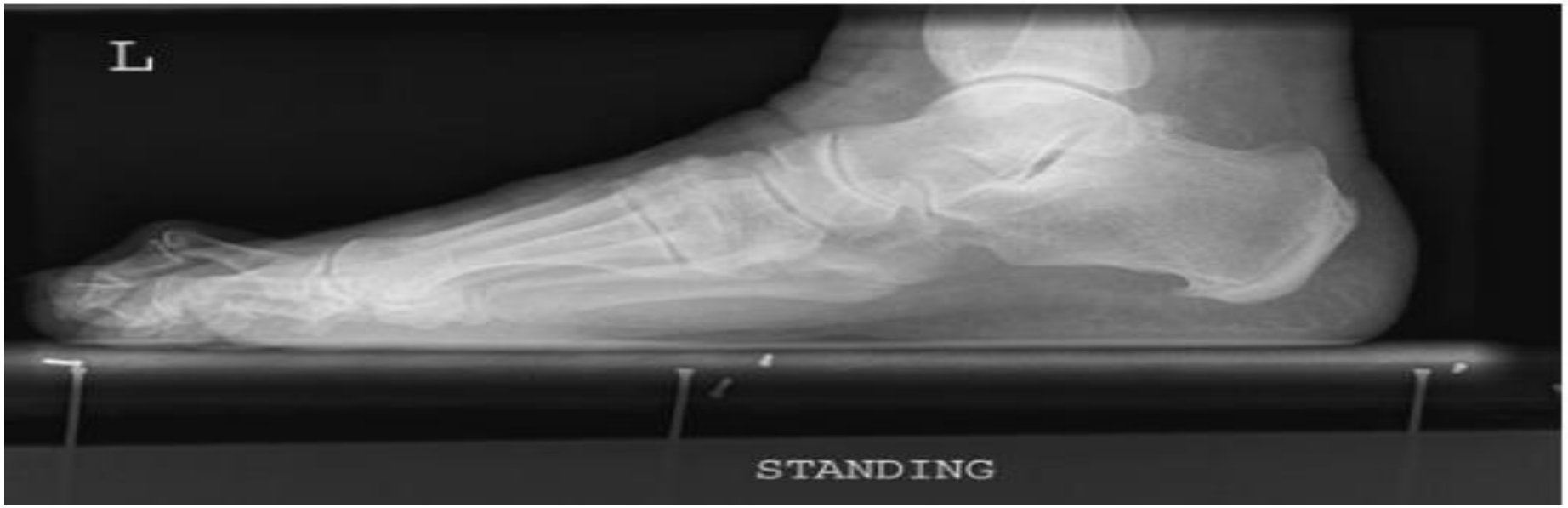
• The feet are brought close together The weight of the patient's body is distributed equally.

• To help maintain the position, the patient should rest their forearms on a convenient vertical support, e.g. the vertical Bucky.

Direction and centering of the X-ray beam

• The horizontal central ray is directed towards the tubercle of the fifth metatarsal.

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Dorsi-Plantar – Erect

This projection can be used to show the alignment of the metatarsals and phalanges in cases of hallux valgus. Both forefeet are taken for comparison.

Position of patient and cassette

• The patient stands with both feet on the cassette.

• The cassette is positioned to include all the metatarsals and phalanges.

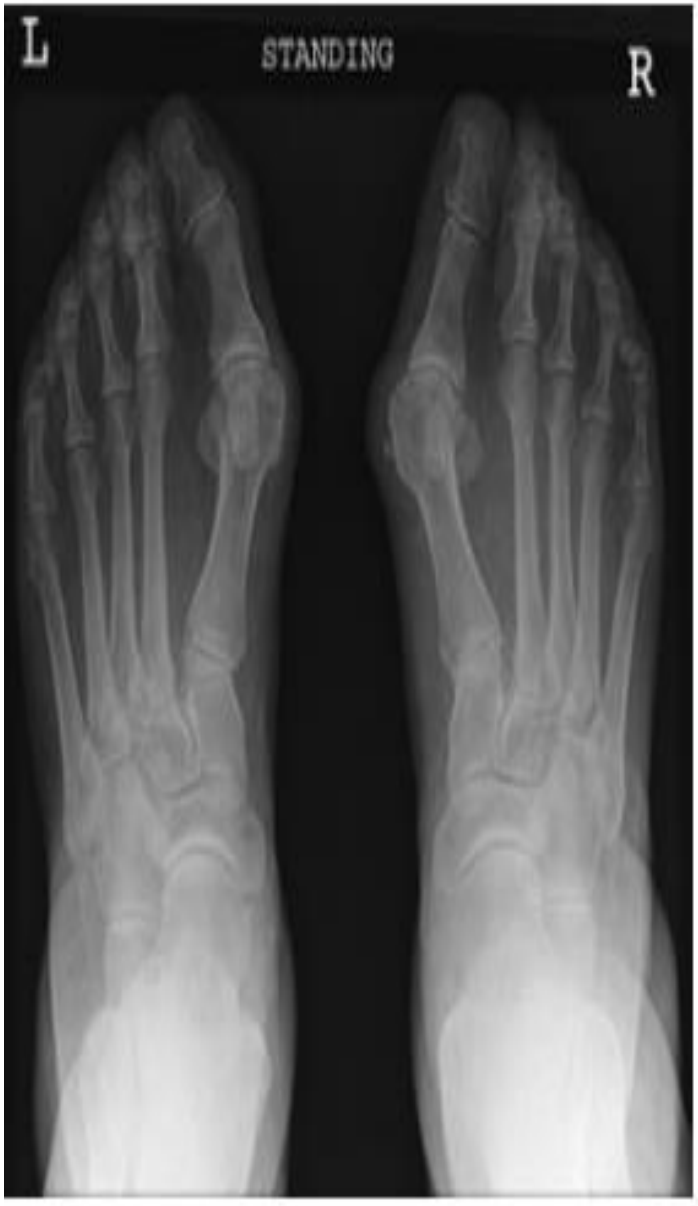
• The weight of the patient's body is distributed equally.

To help maintain the position, the patient should rest the fore •

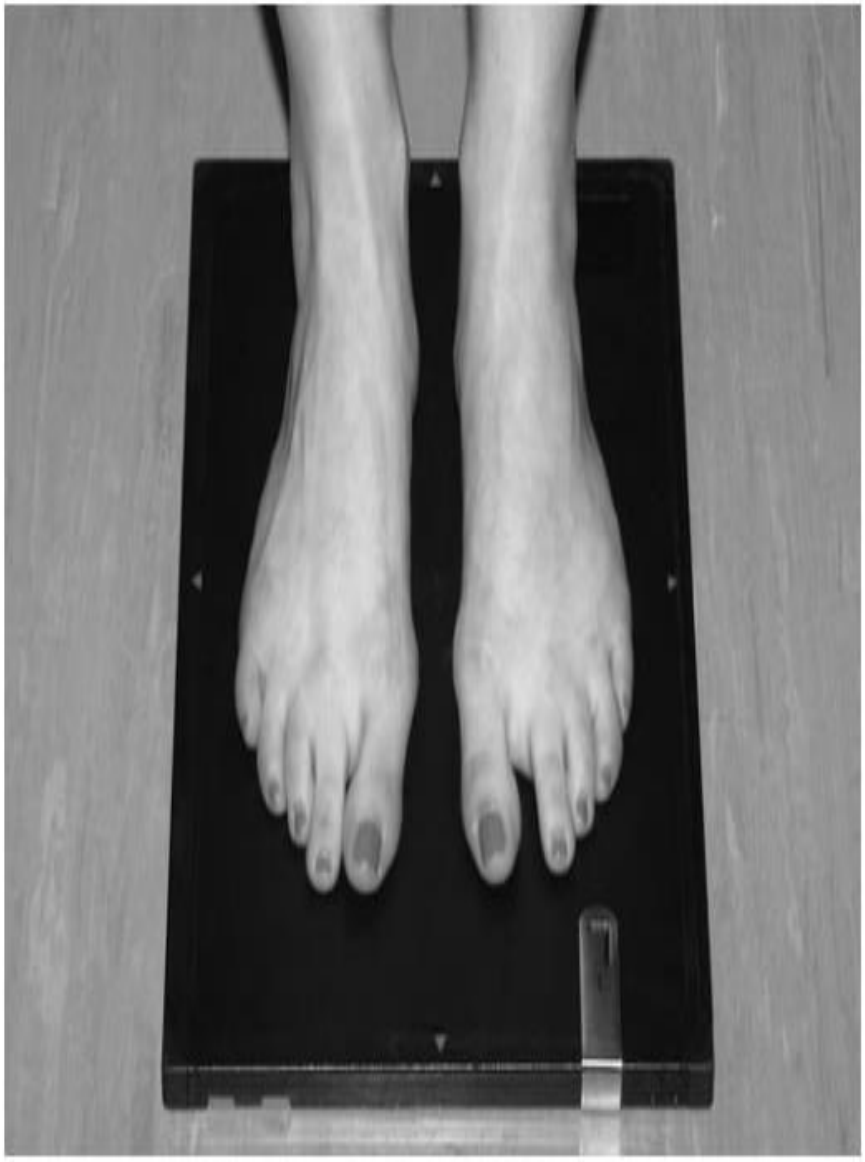
arms on a convenient vertical support, e.g. the vertical Bucky.

Direction and centering of the X-ray beam

• The vertical ray is centered midway between the feet at the level of the first metatarsal-phalangeal joint.



Dorsi-plantar erect projection of both feet showing hallux valgus



Normal erect lateral projection of foot


Thanks