Radiographic Positioning of the Foot & Ankle

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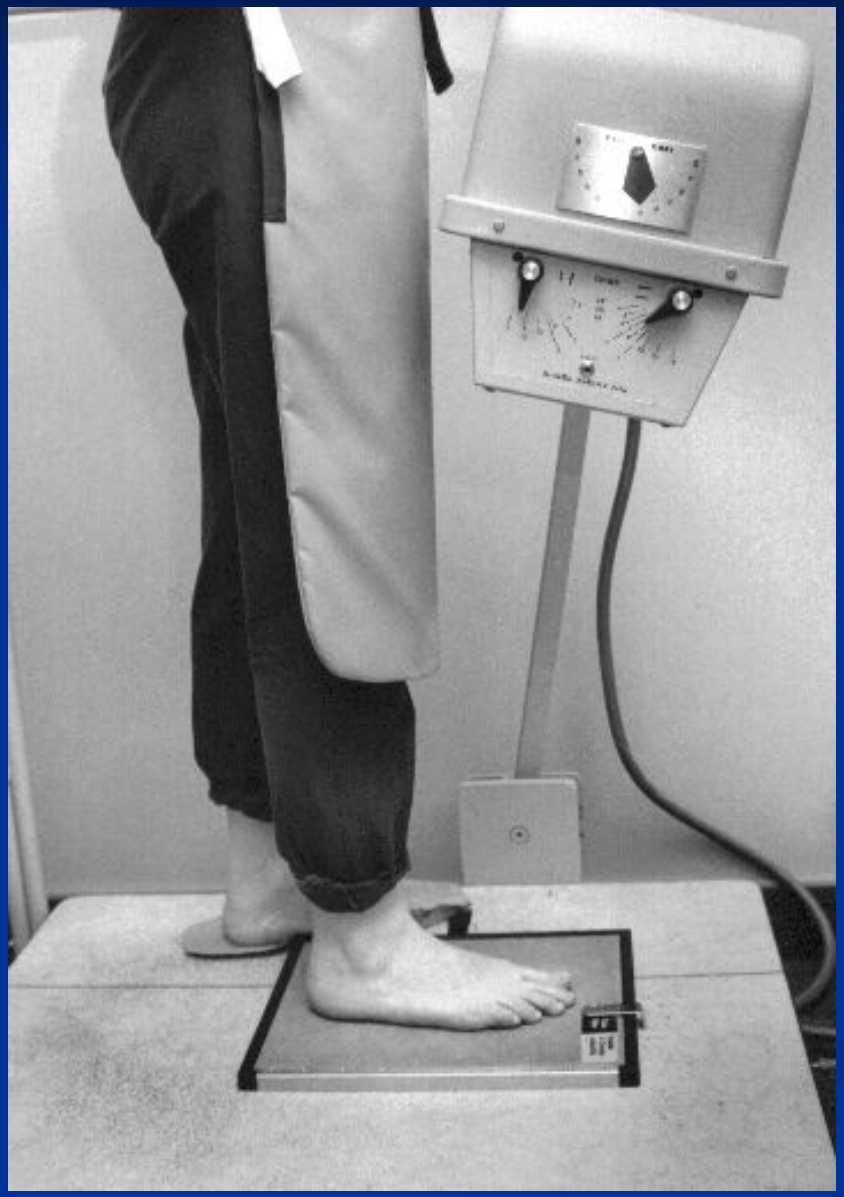
Positioning of the Foot & Ankle

RADIATION SAFETY

- It is your responsibility to limit X-Ray exposure to both the patient as well as yourself.
- Use appropriate lead aprons, lead gloves.
- Appropriately collimate X-ray to limit exposure.
- Stand behind protective barrier when making exposure.
- **Pre-Plan to eliminate the need to re-expose the patient!**

What is your office policy regarding questioning women of child bearing age as to whether or not they might be pregnant?

Dorsal Plantar / DP Foot WB

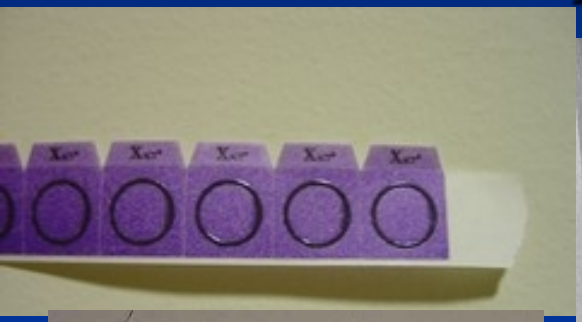


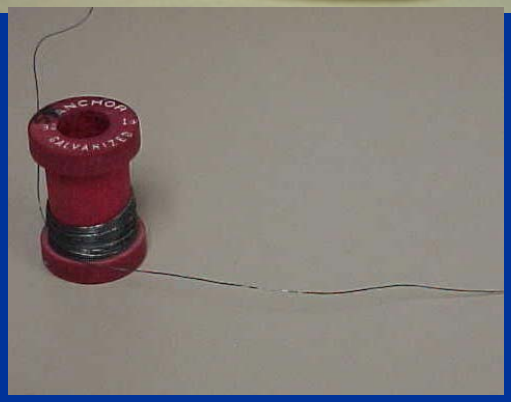
Dorsal plantar/ DP Projection Foot

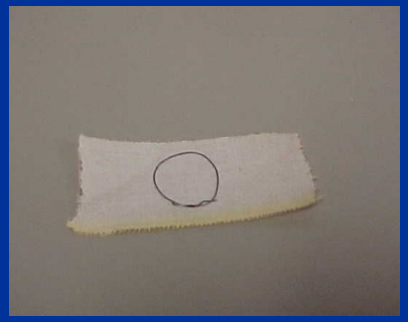
What are some indications for ordering this Projection?

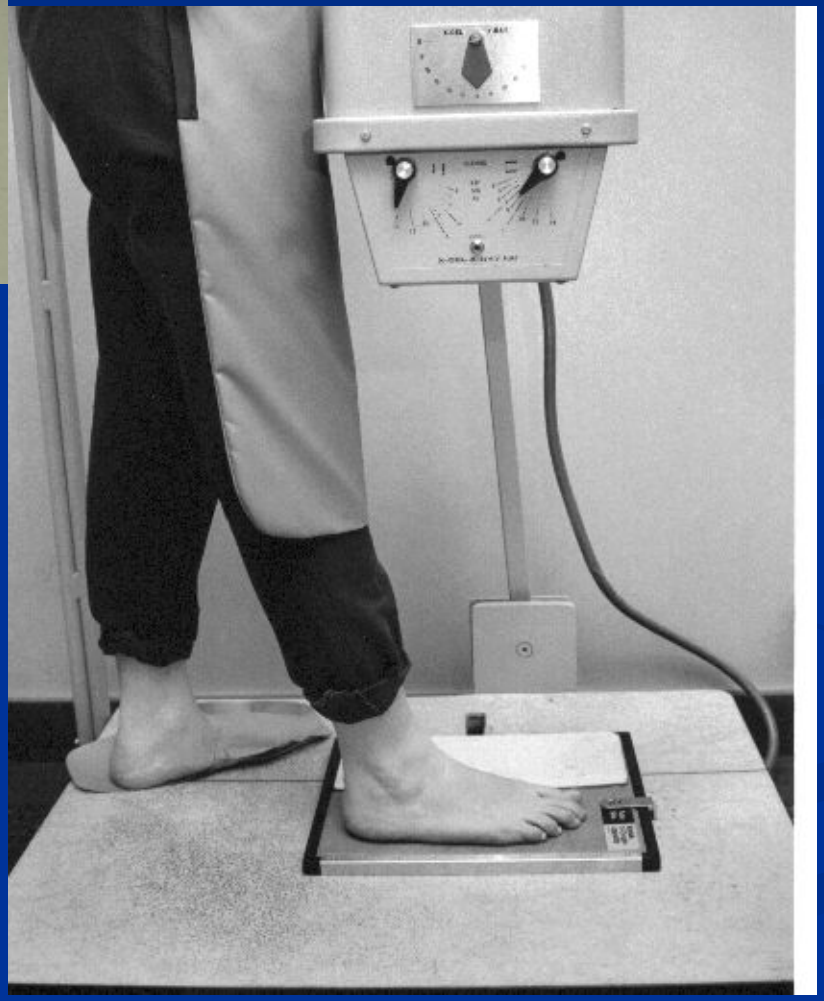
What are some keys to proper positioning for this Projection?

Dorsal Plantar / DP Foot O degrees Marked Lesion









Dorsal plantar/ DP Projection Marked Lesion

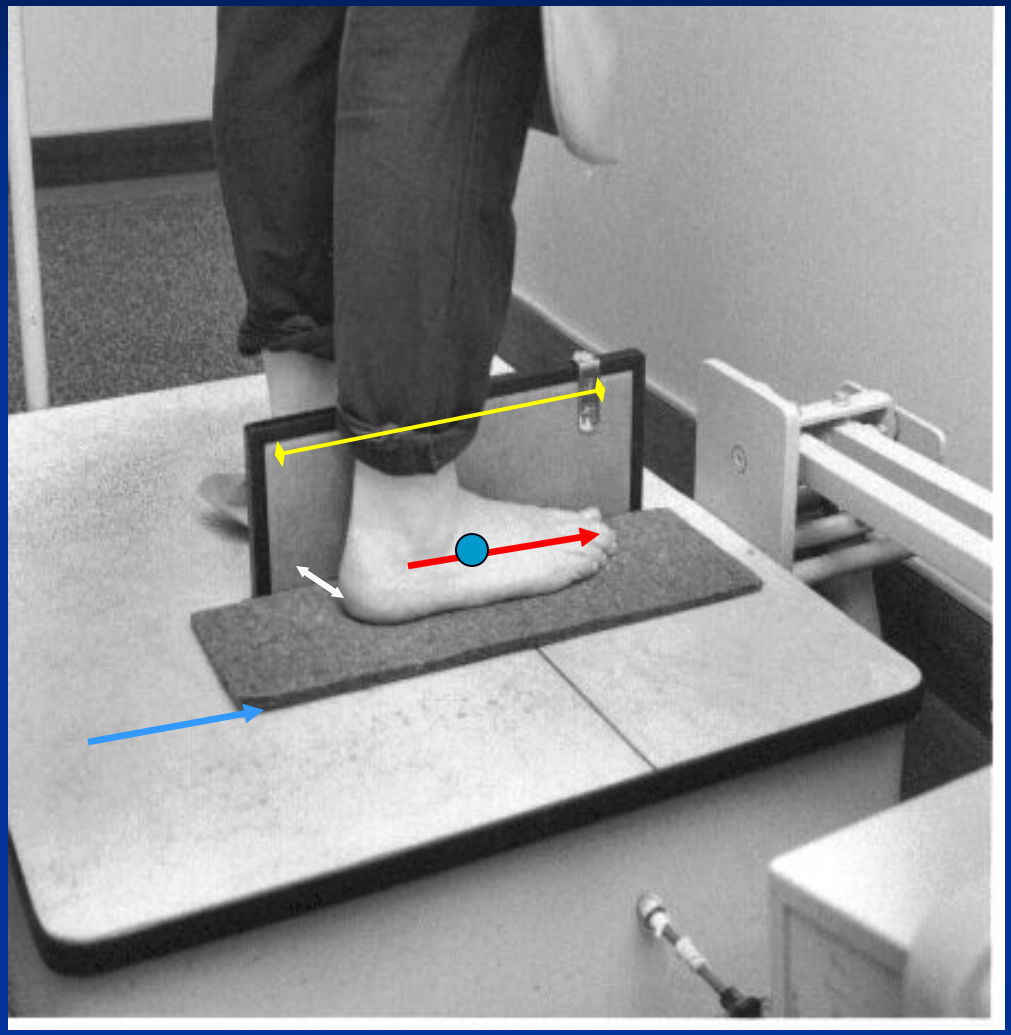
- What might be some indications for taking a marked lesion X-Ray?
  - Foreign Body.
  - Ulcer location to assess for infection.
  - Nucleated hyperkeratotic lesion – Which metatarsal is causing the excessive pressure.

Dorsal plantar/DP Projection

Tube angle = 0°

Tube angle = 15°

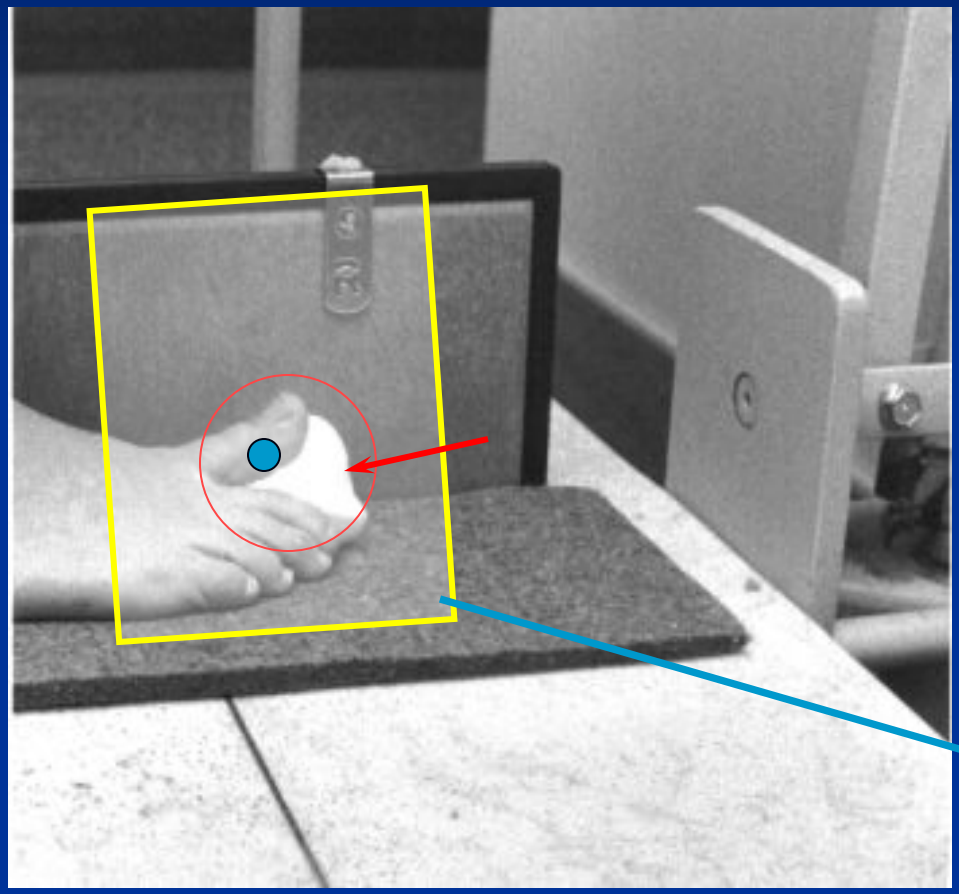
Lateral Foot WB



Lateral Projection Foot

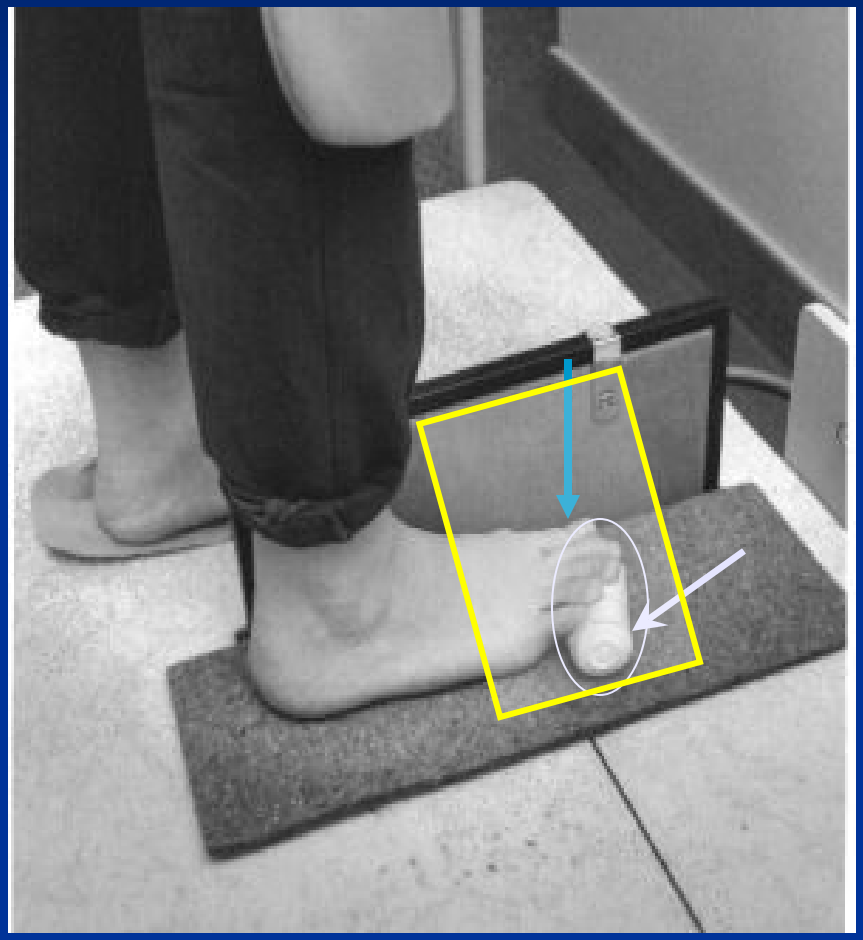
What's wrong
with this
positioning?

Lateral Raised Hallux WB

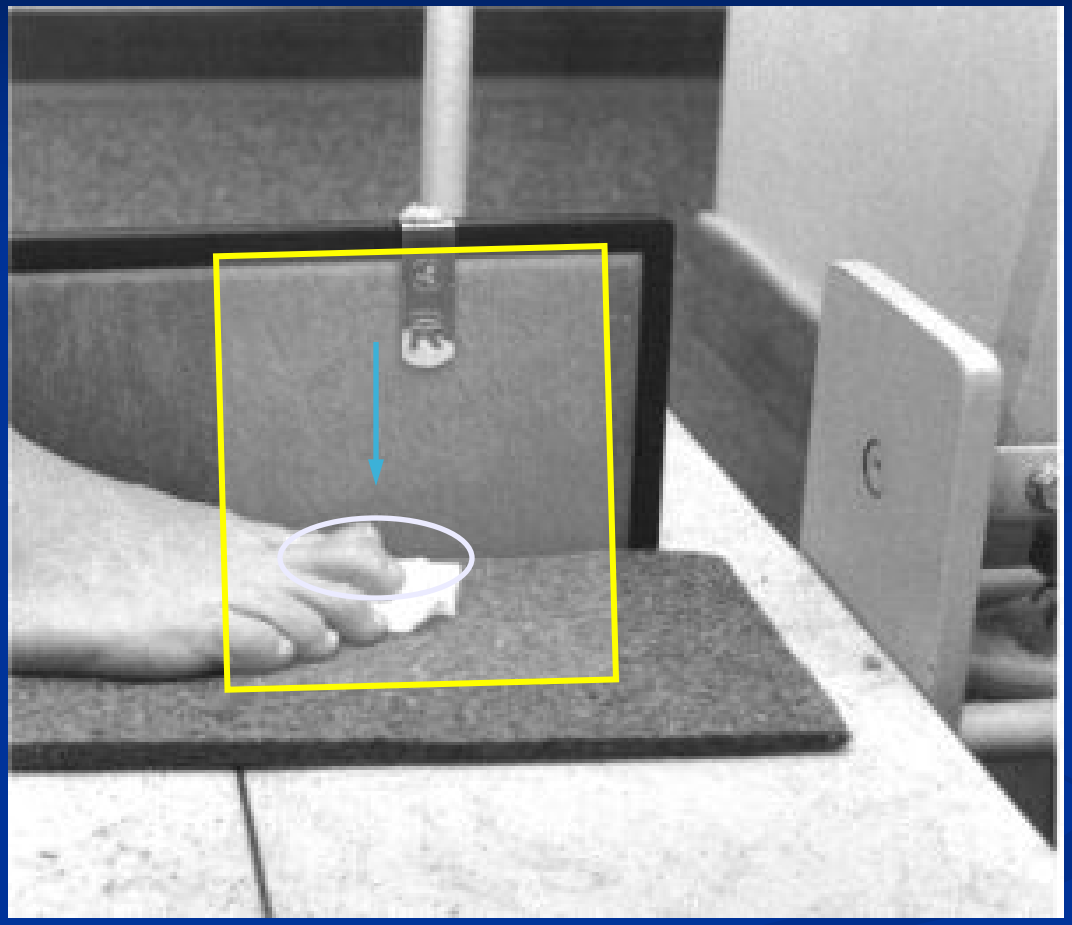


Lateral Raised Hallux

Lateral Hallux Alternate Method



Lateral Raised Digit WB



Lateral 2nd Digit

Lateral Oblique Projection/Medial Oblique View Foot WB

Lateral Oblique Projection

- Third most common film view
- Completes "three views" that most physicians utilize
- Shows the lateral side of the foot well
- Good Visualization
  - Lateral toes, Metatarsals, Lisfranc Joint
- Tailors Bunion, Digital Fractures, Metatarsal Fractures, CN Bar (coalition)

Lateral Oblique Projection

Lateral Oblique Projection

Lateral Oblique Projection (without loading the foot)

Medial Oblique Projection/Lateral oblique view Foot WB

Medial Oblique Projection

Medial Oblique Projection

- Shows medial side of the foot
- Good Visualization
  - 1st Metatarsal
  - Sesamoid Apparatus
  - Arthritis
- Tibial Sesamoid, Foreign bodies, 1st
- Metatarsal, Hallux, Fractures, Arthritis

Medial Oblique Projection Foot
WB alternate sesamoid

Medial Oblique Projection Foot

STANDARD: 25° Tube Angle

Alternative:

40° Tube Angle to Highlight Tibial Sesamoid

Medial Oblique Projection (without the foot loaded.)

The **medial** side of the foot is raised and closer to the X-Ray source.

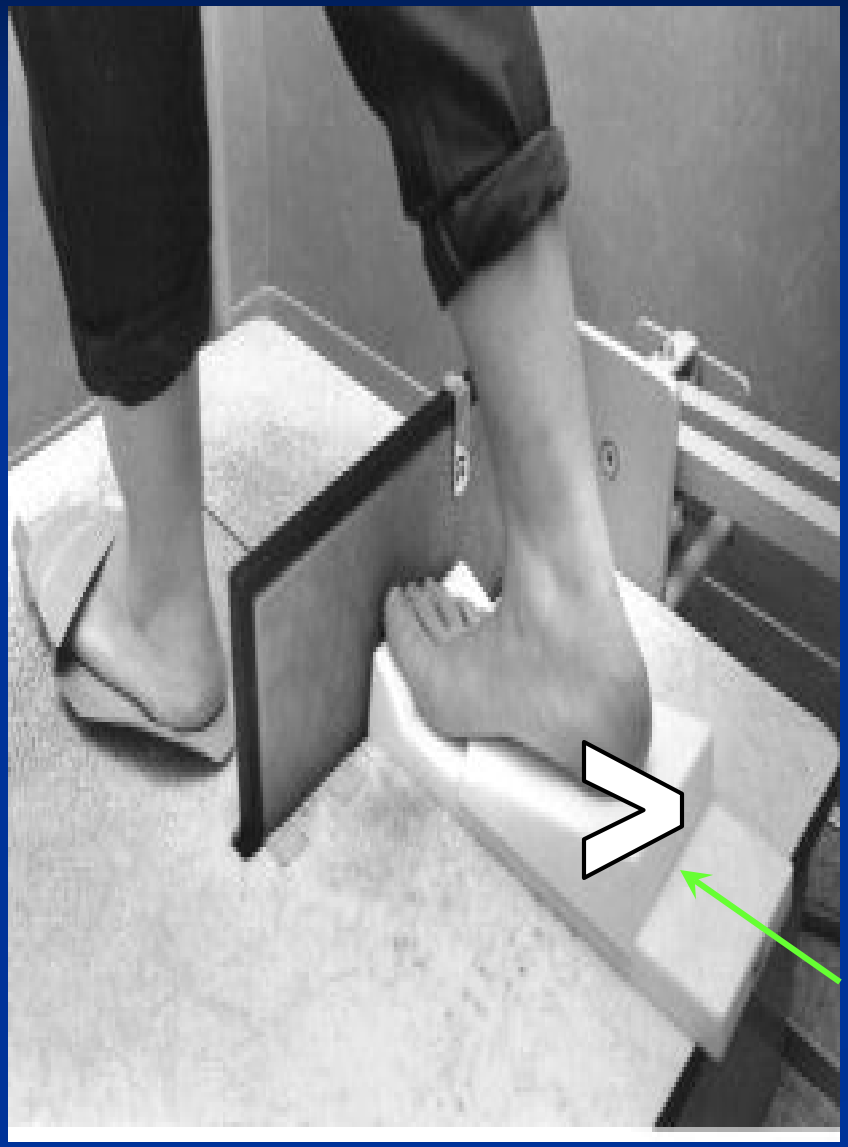
Other colleges refer to this as a Lateral Oblique (view)

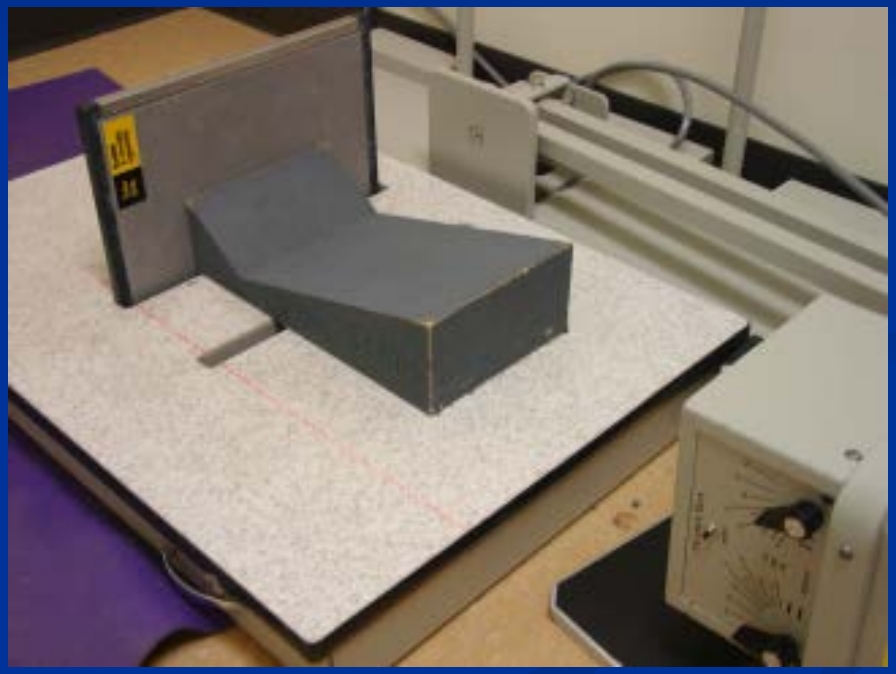
Axial Sesamoid WB

Axial View Sesamoid

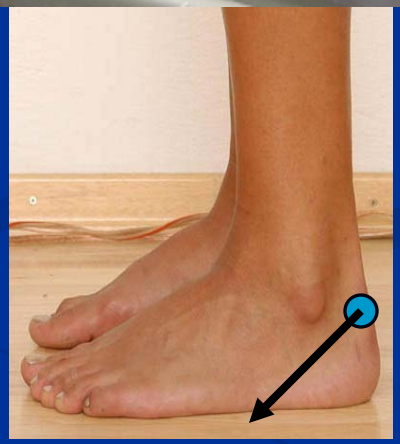
Why would we take an axial sesamoid projection?
What else do you see here that is abnormal?

Axial Sesamoid WB



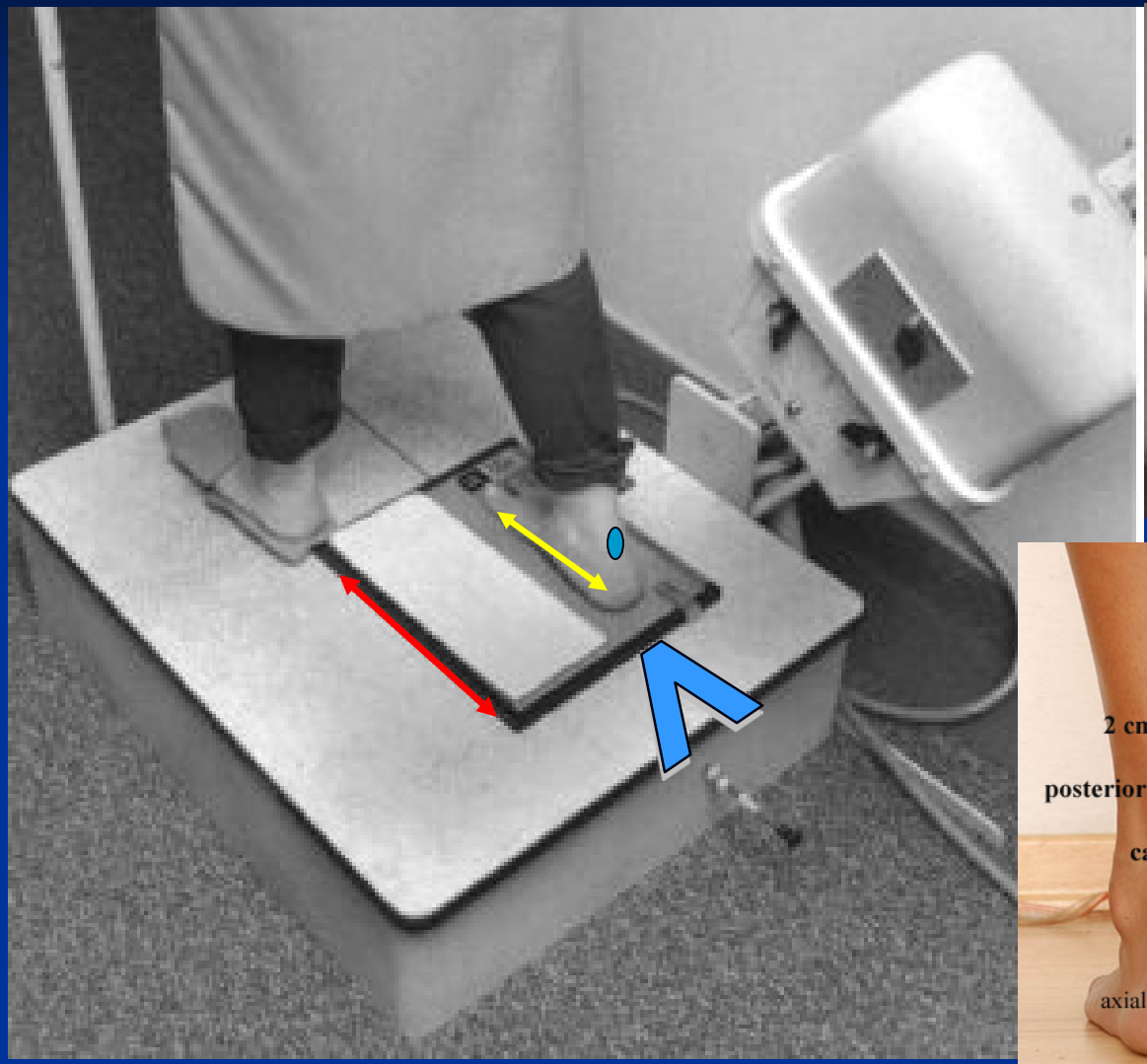


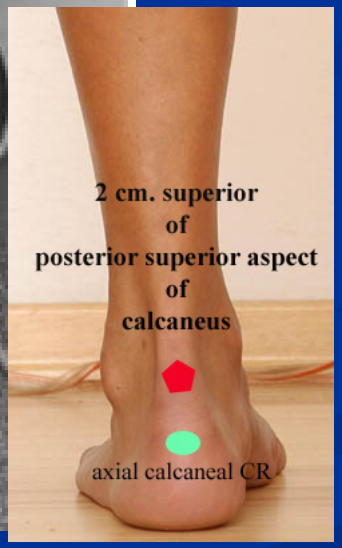
Axial Calcaneal WB

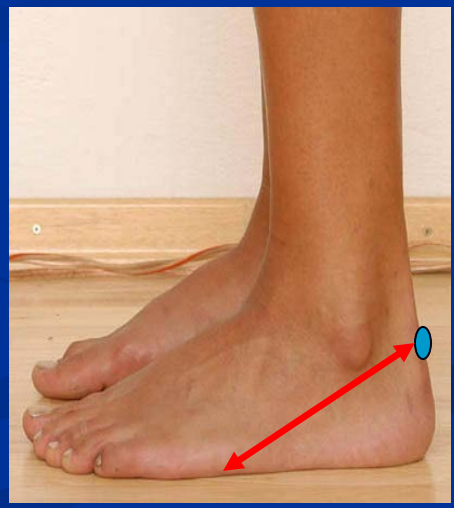


Axial View Calcaneus

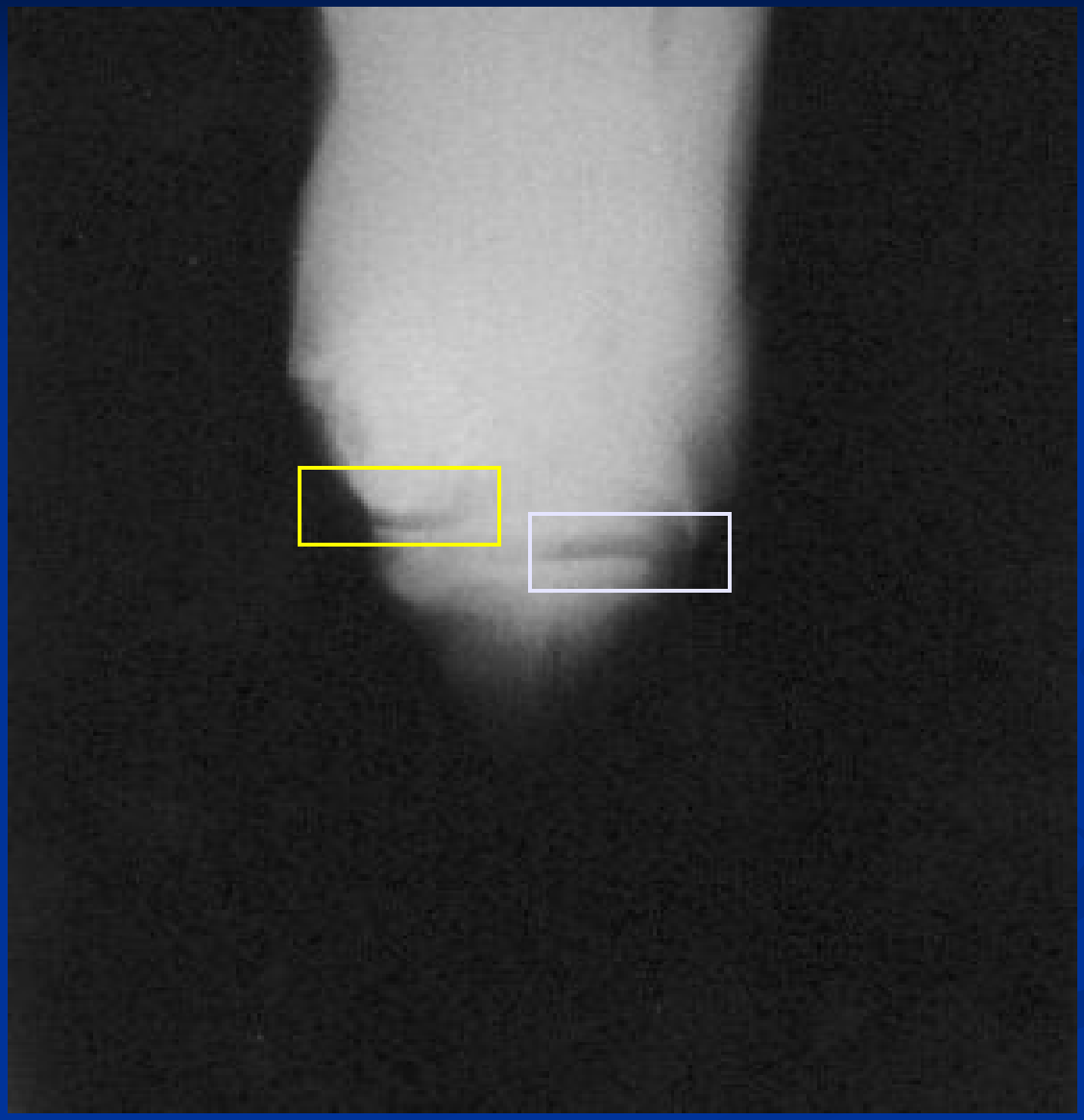
Harris and Beath Method







Harris & Beath View



Harris & Beath

Axial Calcaneal

ANKLE PROJECTIONS

Ankle Projections

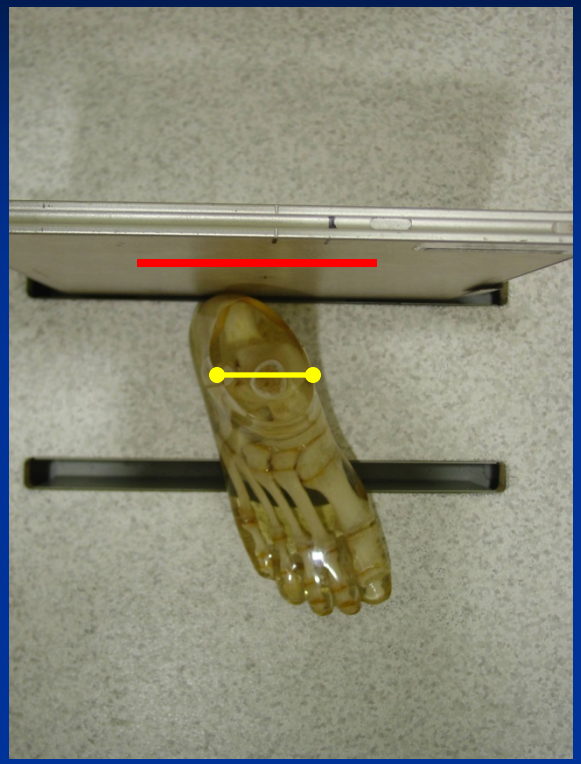
- **For All Ankle Projections:**
- The Cassette is **Vertical**
- The patient is standing on a piece of felt.
- The Tube angulation is **90^0** (parallel to the floor).

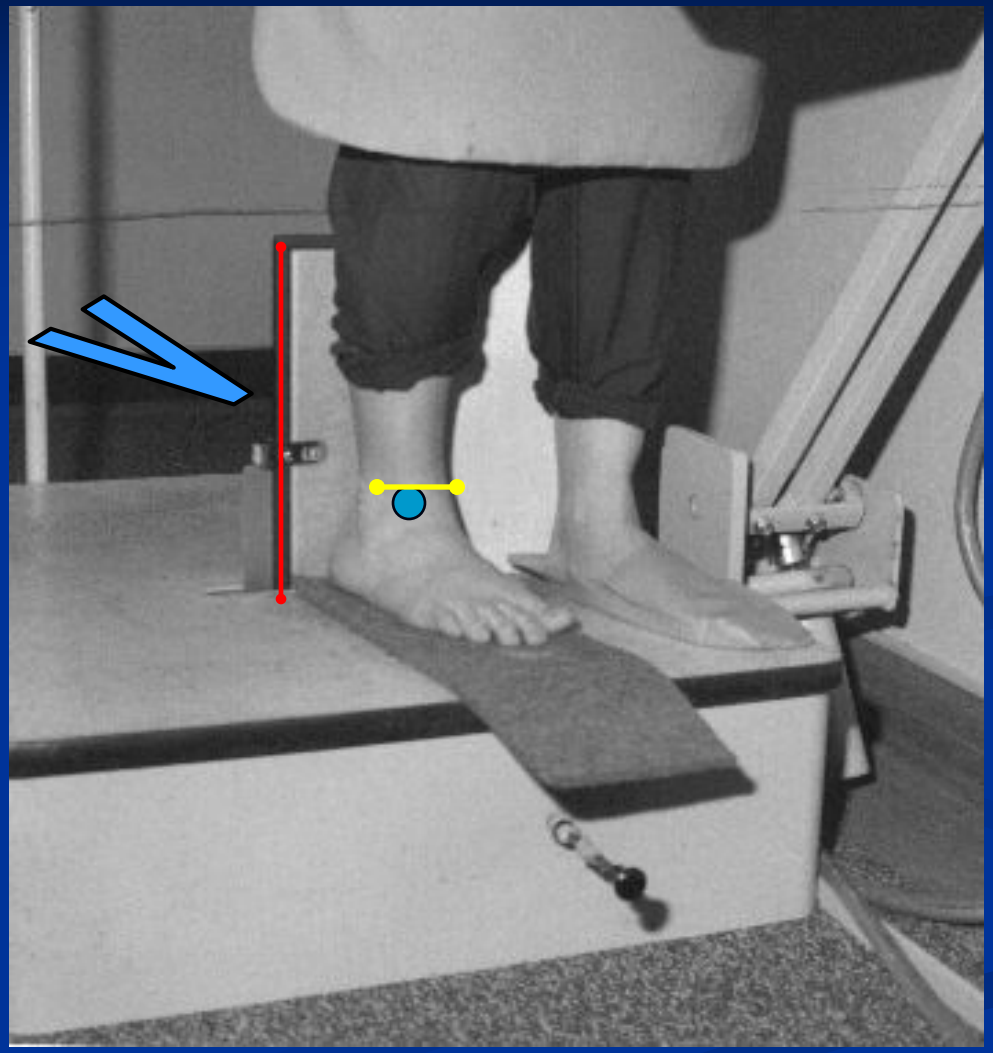
- ***What is changed is the positioning of the foot and ankle!***

Anterior Posterior Ankle WB

Anterior posterior Ankle

Mortise Ankle WB



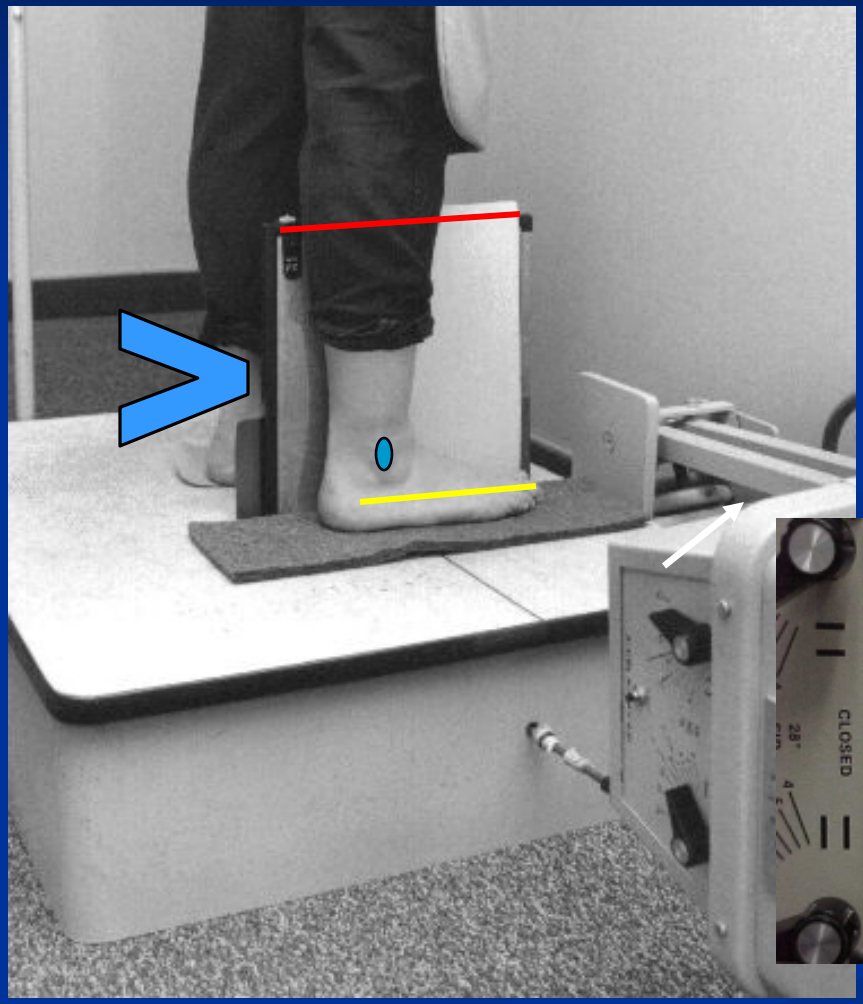


Mortise View Ankle

A-P Projection

Mortise Projection

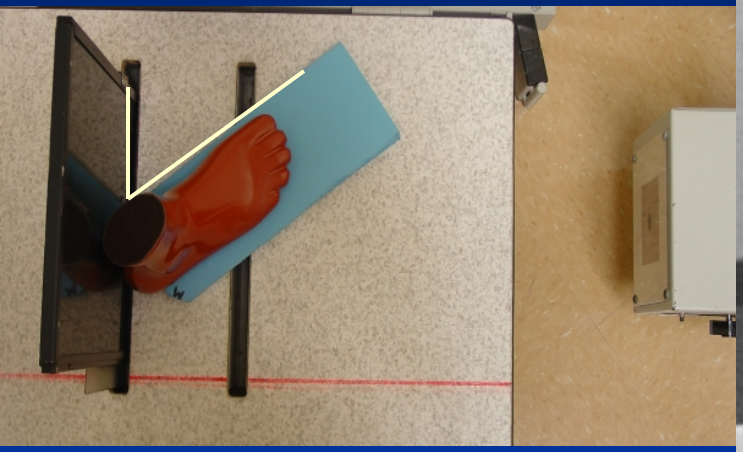
Lateral Ankle WB

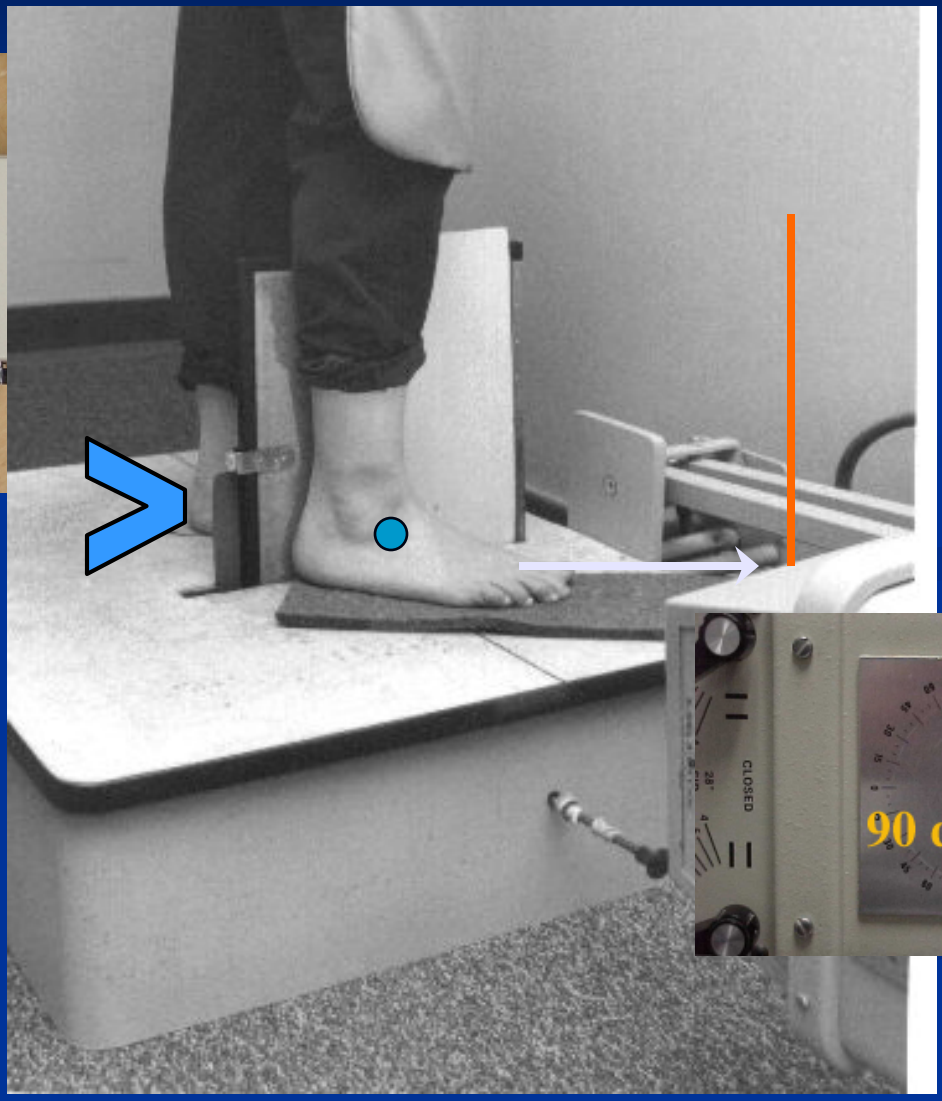


Lateral Ankle

Lateral Foot and Ankle

Lateral Oblique Ankle WB

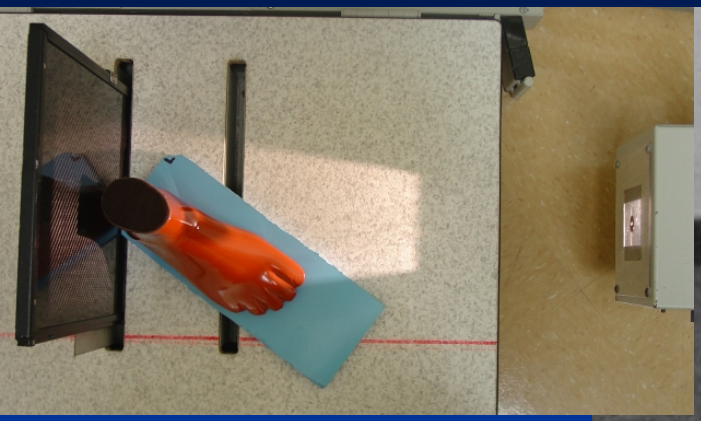


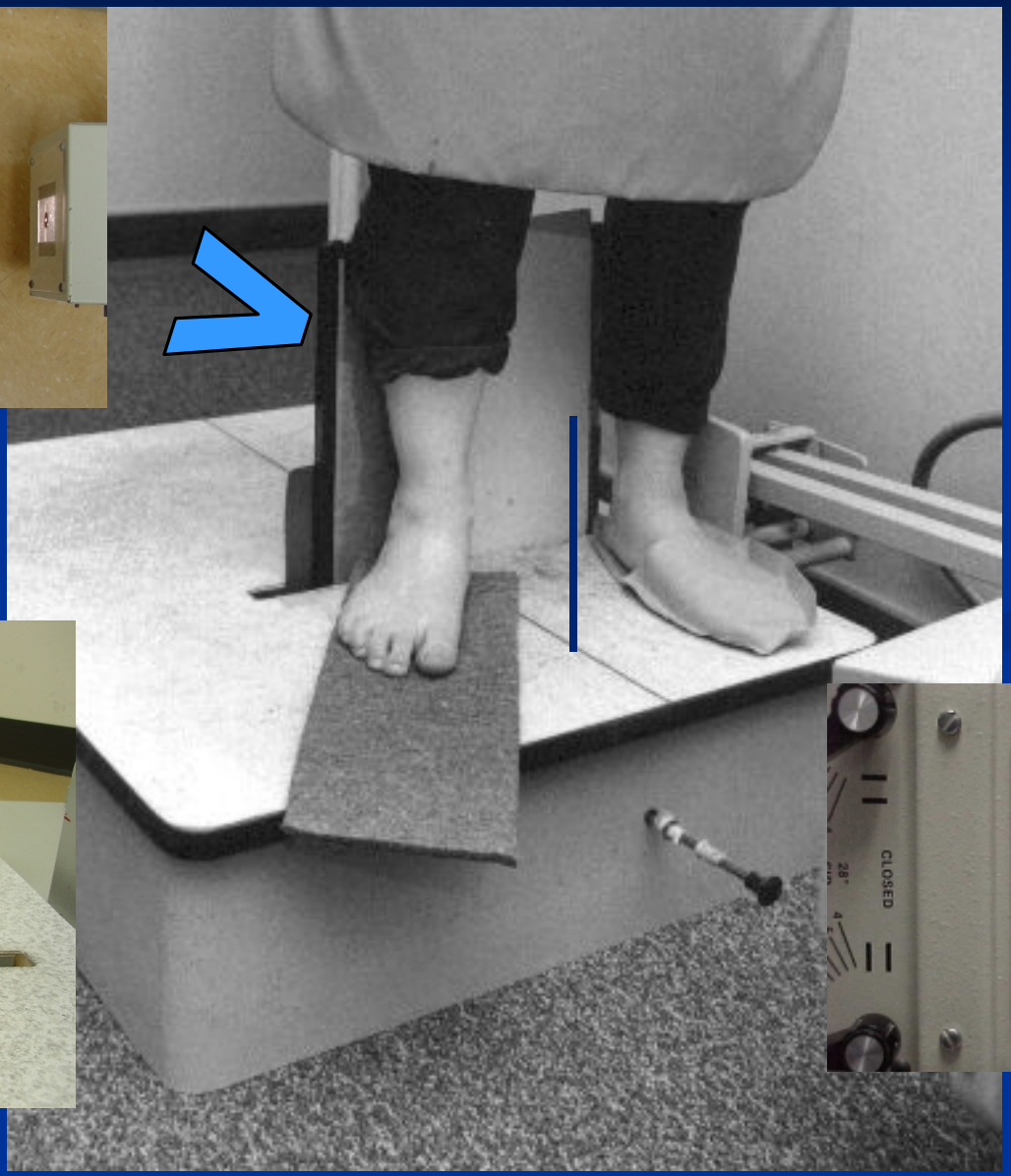


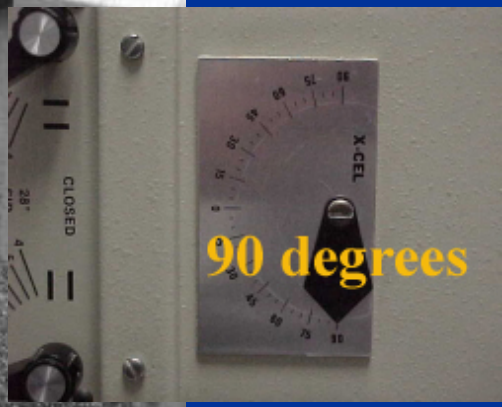
Lateral Oblique Ankle

Lat. Obl. Ankle = Foot Internally Rotated.

Medial Oblique Ankle WB



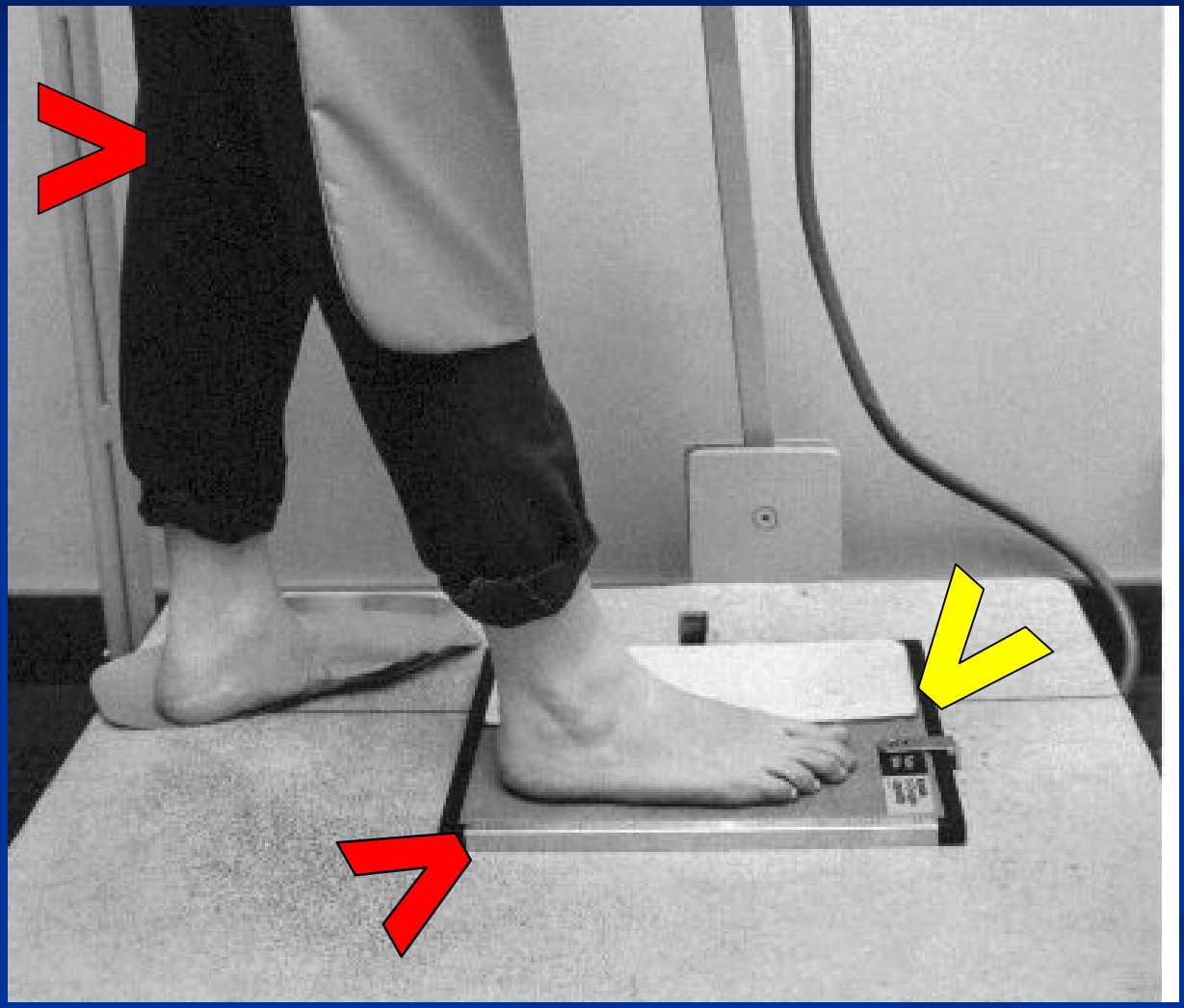




Medial Oblique Ankle

Medial Obl. Of Ankle = Foot Externally Rotated

Partial Weight Bearing



Projection Selection

- **Best demonstrate anatomy**

  (knowledge of radiographic and podiatric anatomy critical)

- **Three projection rule- two at 90^0,third-oblique**

  fractures

  foreign body

  infection

  articular disorders

  masses

Why 3 views???

Why 3 views???

CaT SPEx

Cassette Placement

Tube Position

Set Exposure Time

POSITION THE PATIENT

Expose the image

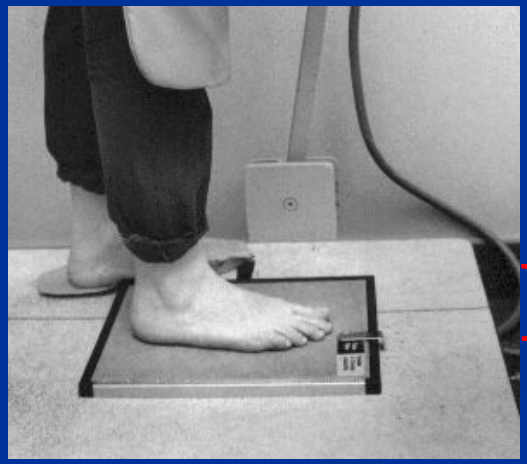
CaT SPEx

Cassette

Tube

PROJECTION	TUBE ANGLE	SIZE (CM)	TIME	mA	KVP
FOOT DP MARKED LESION use metallic wire as marker	15 degrees 0 degrees	S= 3-5 CM. M=6-9 CM L= 10-13 CM			
LATERAL FOOT place film in slot long axis of film parallel to platform	90 degrees	S= 3- 5 CM M= 6-9 CM L= 10-13 CM			
RAISED HALLUX \ DIGIT place as lat. foot elevated part	90 degrees	S= 1- 2 CM M= 3-5 CM L = 5 & ABOVE			
LATERAL OBLIQUE FOOT cassette flat	40 degrees	S= 3-5 CM M=6--9 CM L= 10-13 CM			
MEDIAL OBLIQUE FOOT cassette flat	25 degrees	S= 3-5 CM M=6-9 CM L= 10- 13 CM			
AXIAL CALCANEAL cassette as in DP	25 degrees	S= 4-6 CM M= 7-10 CM L= 11-14 CM			
HARRIS & BEATH cassette as in DP	35 - 45 degrees	S= 4-6 CM M= 7-10 CM L=11- 14 CM			

Set



Position

Expose

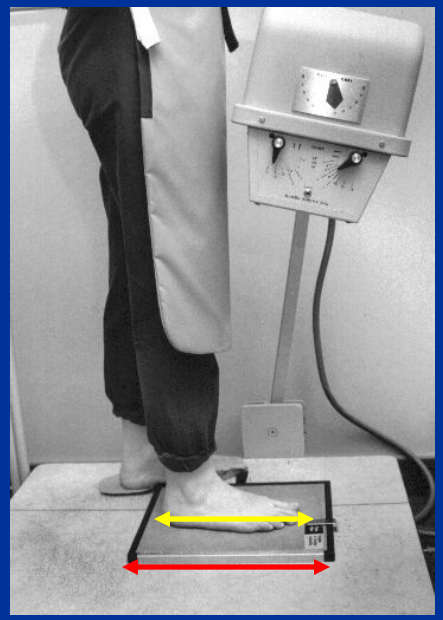
CaT SPEx

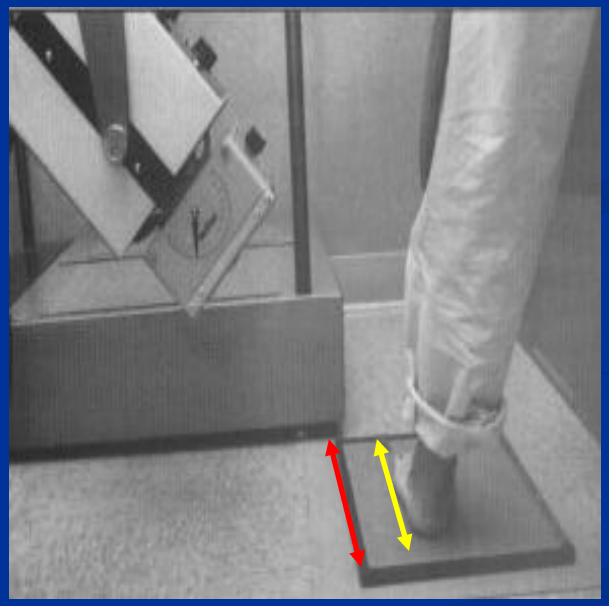
Set

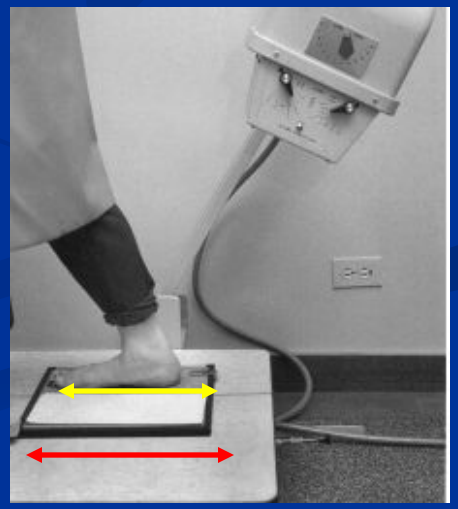
Expose

Helpful Hints

- **Long axis of film** and **long axis of anatomy** should be parallel.



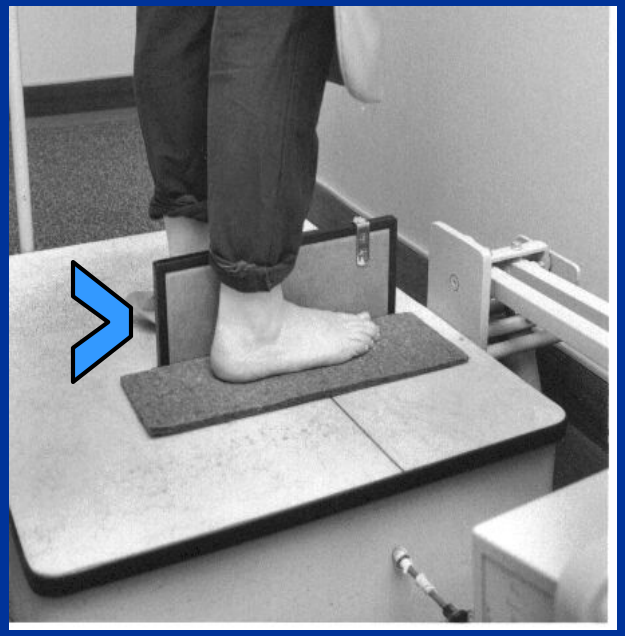




Hints

- **Film placement continued :**

  Lateral foot, hallux, digit and axial sesamoid cassette in slot.

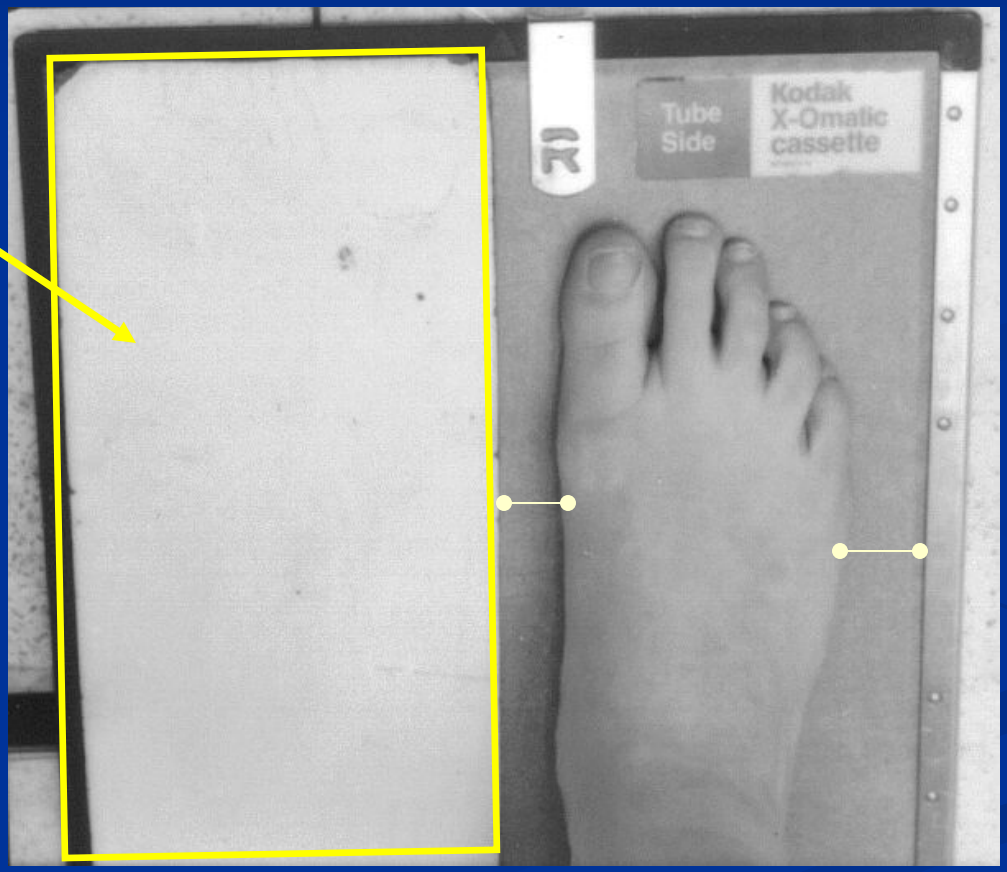


Hints

- All weight bearing ankles 90 degrees
- Vertical position of cassette

Placing Two Images on Single Film

Rectangular Lead Blocker



L
R

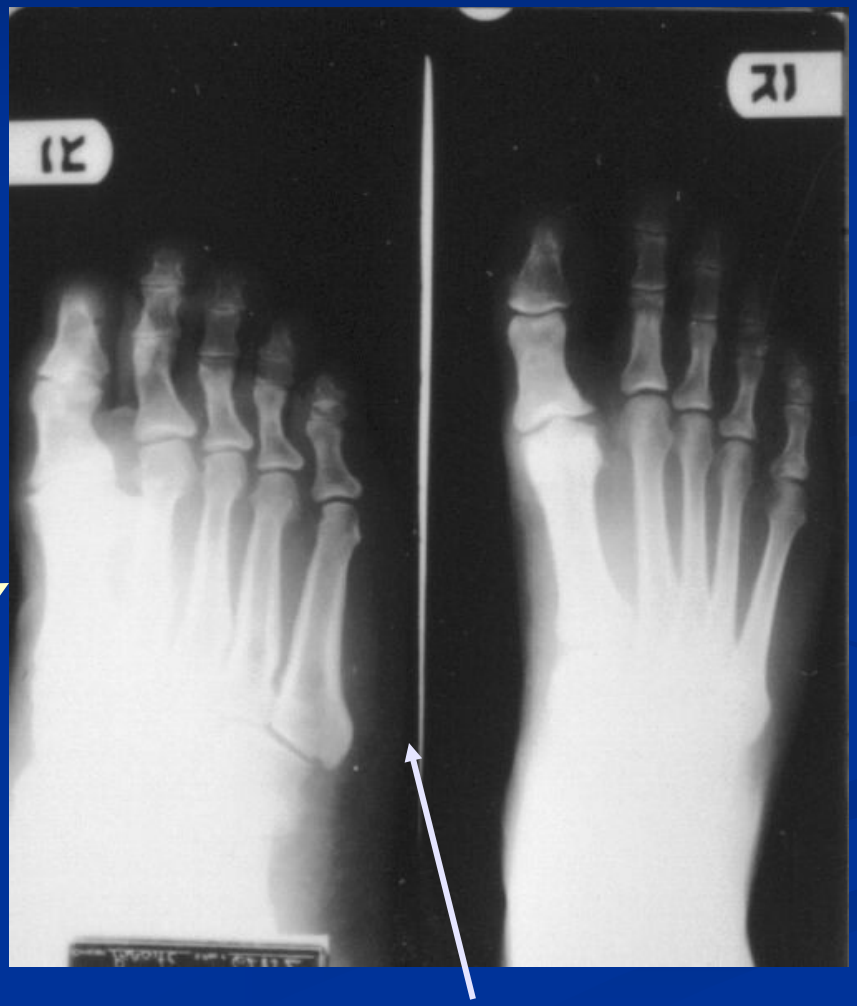
Hints

Two Images – Lateral Oblique

Split Film - Images

Lateral Oblique

Dorsoplantar



loss of soft tissue

Mentally prepare before moving patient:

- Determine how many projections will you be taking on each patient.
- Organize yourself:
  - Do both AP Projections, then do both lateral projections, then both lateral oblique projections.
- Make sure soft tissue margins are easily seen!
- **Always check your light shadow to see what will be found on final image!!!!**

SEQUENCING

- Position Cassette – Flat or Vertical
- Determine Tube Angulation
- Collimate area to be exposed (what is area within lighted field).
- Place Right/Left Marker
- Determine Technical Parameters
- Determine patient positioning (direction, need for felt pad).

SEQUENCING

- **ALL OF THE ABOVE SHOULD BE DONE BEFORE THE PATIENT IS POSITIONED!**

- Now Patient can be positioned and part to be X-Rayed can be placed onto cassette.
- Check light shadow.
- **Exposure can now be made!**

CONCLUSION

- Positioning patients for radiographs can be stressful.
- Organize thoughts as to how many projections will be taken.
- Protect yourself and patient from radiation exposure.
- Set up as much as possible **BEFORE** you position the patient.

Thank you!

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