PH-2
Whole Body Phantom
PBU-50

PH-2B
CT Whole Body Phantom
PBU-60

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Head radiography

**Postero anterior (PA) projection of Skull**

- **Point of X-ray Photography: Positioning and Direction of X-ray Radiation**
  - **Positioning**: Prone position (place the face on the film area.)
  - **Direction of X-ray Radiation**: Align the center to the external occipital protuberance. Radiate X-ray parallel to the OM line (the orbito-meatal line that is drawn from the center of orbit (outer canthus) to the external acoustic foramen).
  - **Part of phantom used for this photography**: head

- **Xray image and the name of bone**

![X-ray image and bone labels](image)

- **Outer table**
- **Vault**
- **Inner table**
- **Sphenoidal crest**
- **Petrus ridge**
- **Greater wing of sphenoid bone (innominate line)**
- **Head of mandible**
- **Mandible**
- **Axis**
- **Dens of axis**
- **Orbit**
- **Mastoid process**
- **Nasal septum**
- **Atlas**
Head radiography  Lateral projection of skull

Point of X-ray Photography: Positioning and Direction of X-ray Radiation

<table>
<thead>
<tr>
<th>Positioning</th>
<th>Direction of X-ray Radiation</th>
<th>Part of phantom used for this photography</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prone position (align the chest parallel to the film area and keep the facial plane perpendicular to the film.)</td>
<td>Align the center to the point that is shifted by 2.5cm from the external acoustic foramen and by 2.5cm to the vertex. Radiate X-ray perpendicular to the median plane (the perpendicular plane that separates the body into halves on the center of it).</td>
<td>head</td>
</tr>
</tbody>
</table>

X-ray image and the name of bone:

- Anterior clinoid process of Turkish saddle
- Posterior clinoid process of Turkish saddle
- Back of Turkish saddle
- Petrous ridge
- External occipital protuberance
- Clivus
- Jaw joint
- External acoustic foramen
- Head of mandible
- Mastoid process
- Atlas
- Dens of axis
- Greater wing of sphenoid bone
- Nasal bone
- Frontal process of zygomatic bone
- Anterior nasal spine
- Hard palate
- Mandible
Head radiography

Townes

**Point of X-ray Photography: Positioning and Direction of X-ray Radiation**

<table>
<thead>
<tr>
<th>Positioning</th>
<th>Direction of X-ray Radiation</th>
<th>Part of phantom used for this photography</th>
</tr>
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<tbody>
<tr>
<td>Supine position (place the back of the head on the film area.)</td>
<td>Align the center to the midpoint of the line connecting both the external acoustic foramina. Radiate X-ray towards the center 20 - 40 degrees from the face plane.</td>
<td>head</td>
</tr>
</tbody>
</table>

- X-ray image and the name of bone

- Keep the Frankfurt line 80 degrees to the film plane.
### Head radiography

#### Axial projection of skull

- **Point of X-ray Photography: Positioning and Direction of X-ray Radiation**

  - **Positioning**
    - Supine position (place the parietal region on the film area.)
  
  - **Direction of X-ray Radiation**
    - Align the center to a point around the intersection of the neck and the submaxillary. Radiate X-ray perpendicular to the OM line or in the direction 10 degrees inclined from the foot.
  
  - **Part of phantom used for this photography**
    - head

- **X-ray image and the name of bone**

  ![X-ray image with bone names](image-url)
**Caldwell**

Radiate X-ray to the root of nose (nasal point).

Align the OM line perpendicular to the film.

**Waters**

Radiate X-ray to the lower end of the nasal cavity.

Keep the Frankfurt line 45 degrees to the film plane.

**Schuller**

Radiate X-ray to the external acoustic foramen of the detector side at a 20 - 30 degrees inclination to the head from the Frankfurt line.
Chest radiography

Frontal chest radiography

- **Point of X-ray Photography: Positioning and Direction of X-ray Radiation**

  - **Positioning**
    - Supine position
  
  - **Direction of X-ray Radiation**
    - Align the center to a point approximately 3cm from the center of the sternum. Radiate X-ray to the center along median plane.

  - **Part of phantom used for this photography**
    - trunk

- **X-ray image and the name of bone**

  * Not represented when using PBU-50.
Point of X-ray Photography: Positioning and Direction of X-ray Radiation

Positioning
Spine position (place the targeted shoulder on the film area and leave the body at an angle.)

Direction of X-ray Radiation
Radiate X-ray to a point around the coracoid process at a 15 - 20 degrees inclination to the head.

Part of phantom used for this photography
trunk

X-ray image and the name of bone

--- The connection part of the shoulder
Point of X-ray Photography: Positioning and Direction of X-ray Radiation

**Positioning**

Supine position

**Direction of X-ray Radiation**

Align the center to the center of the 5th or 6th rib for the superior ribs; and the center of the 8th or 9th rib for the inferior ribs. Radiate X-ray to the center in the perpendicular direction.

**Part of phantom used for this photography**

trunk

**X-ray image and the name of bone**

- Superior ribs
- Inferior ribs
- Clavicle
- Acromion
- Coracoid process
- Scapula
- Rib
- Diaphragm
### Point of X-ray Photography: Positioning and Direction of X-ray Radiation

#### Positioning
- Supine position (tilt the OM line 30 degrees from the perpendicular position.)

#### Direction of X-ray Radiation
- Align the center to a point slightly shifted to the head from the connection part along the center line of the phantom. Radiate X-ray along median plane.

#### Part of phantom used for this photography
- head • trunk

### X-ray image and the name of bone

- Lower surface of mandible jaw and occipital bone

- Mandible
- Superior articular process
- Inferior articular process
- Uncinate process
- Transverse process
- Spinous process
- Pedicle
- Vertebral body
- Intervertebral space
Point of X-ray Photography: Positioning and Direction of X-ray Radiation

- **Positioning**
  - Supine position

- **Direction of X-ray Radiation**
  - Align the center to the center of the sternum. Radiate X-ray along median plane.

- **Part of phantom used for this photography**
  - Trunk

- **X-ray image and the name of bone**
  - Clavicle
  - Spinous process
  - Head of rib
  - Aorta
  - Paraspinal line
  - Diaphragm
  - Pedicle
  - Transverse process
  - Intervertebral space
  - Vertebral body

Chest radiography

Frontal projection of thoracic spine
Abdomen radiography

Frontal projection of abdomen in supine position

- **Point of X-ray Photography: Positioning and Direction of X-ray Radiation**

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<tr>
<td>Supine position</td>
<td>Align the center to the midpoint between the line connecting the center of the Jacoby's line (which connects the iliac crests) and the xiphoid process. Radiate X-ray along median plane.</td>
<td>trunk • thigh</td>
</tr>
</tbody>
</table>

- **X-ray image and the name of bone**

* Not represented when using PBU-50.

![Diagram showing bone names](image)
Abdomen radiography

Frontal projection of lumbar spine

### Point of X-ray Photography: Positioning and Direction of X-ray Radiation

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<tbody>
<tr>
<td>Supine position</td>
<td>Align the center to the midpoint between the line connecting the lower edges of the ribs of the both sides and the Jacoby's line. Radiate X-ray along median plane.</td>
<td>trunk</td>
</tr>
</tbody>
</table>

### X-ray image and the name of bone

- **Costal process** (transverse process)
- **Pedicle**
- **Intervertebral space**
- **Zygapophyseal joint**
- **Spinous process**
- **Superior articular process**
- **Inferior articular process**
- **Vertebral arch**
- **Petrosa**
- **Sacroiliac joint**
- **Ilium**
- **Sacroiliac joint**
- **Distance between pedicles**
Abdomen radiography

Frontal projection of pelvis

Point of X-ray Photography: Positioning and Direction of X-ray Radiation

Positioning
Supine position

Direction of X-ray Radiation
Align the center to the midpoint of the line connecting the anterior superior iliac spine and the superior end of the pubic symphysis. Radiate X-ray along median plane.

Part of phantom used for this photography
trunk • thigh

X-ray image and the name of bone

* Not represented when using PBU-50.
### Frontal projection of hip joint

#### Point of X-ray Photography: Positioning and Direction of X-ray Radiation

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<tbody>
<tr>
<td>Supine position (bring both the big toes nearer to each other as possible.)</td>
<td>Align the center to the point at 1/3 from the pubis side on the line connecting the anterior superior iliac spine and the superior end of the pubic symphysis. Radiate X-ray along median plane.</td>
<td>trunk • thigh</td>
</tr>
</tbody>
</table>

#### X-ray image and the name of bone

*Not represented when using PBU-50.*
### Lauenstein Projection

| Point of X-ray Photography: Positioning and Direction of X-ray Radiation |
|---|---|---|
| **Positioning** | **Direction of X-ray Radiation** | **Part of phantom used for this photography** |
| Lift the side of the joint that is not targeted from the film to a 45 degree oblique position from the supine position. Flex the hip and knee joints. | Align the center to the point that is approximately the width of three fingers away from the midpoint of the line connecting the anterior superior iliac sine and the superior end of the pubic symphysis on the targeted side. Radiate X-ray to the center in the perpendicular direction. | trunk • thigh |

| X-ray image and the name of bone |

![](image)
### Point of X-ray Photography: Positioning and Direction of X-ray Radiation

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<tbody>
<tr>
<td>Turn the palm down.</td>
<td>Align the center to the midpoint of the line connecting the styloid processes of the ulna and the radius. Radiate X-ray to the center in the perpendicular direction.</td>
<td>forearm-hand</td>
</tr>
</tbody>
</table>

---

### X-ray image and the name of bone

- 21. Radius
- 22. Ulna
- 27. Styloid process of radius
- 28. Styloid process of ulna
- 29. Lunate articular surface of radius
- 30. Scaphoid
- 31. Lunate
- 32. Triquetrum
- 33. Pisiform
- 34. Trapezium
- 35. Trapezoid
- 36. Capitate
- 37. Hamate
- 38. Bases of metacarpal
- 39. Heads of metacarpal
Arms radiography

Lateral projection of hand and finger joints

- **Point of X-ray Photography: Positioning and Direction of X-ray Radiation**

  - **Positioning**
    - Place the hand with the thumb facing upwards.

  - **Direction of X-ray Radiation**
    - Align the center to the styloid process of radius. Radiate X-ray to the center in the perpendicular direction.

  - **Part of phantom used for this photography**
    - forearm-hand

- **X-ray image and the name of bone**

  - 27. Styloid process of radius
  - 28. Styloid process of ulna
  - 30. Scaphoid
  - 31. Lunate
  - 32. Triquetrum
  - 33. Pisiform
  - 34. Trapezium
  - 36. Capitate
  - 38. Bases of metacarpal
## Point of X-ray Photography: Positioning and Direction of X-ray Radiation

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<tr>
<td>Turn the palm down.</td>
<td>Align the center to the 3rd metacarpophalangeal (MCP) joint. Radiate X-ray to the center in the perpendicular direction.</td>
<td>forearm-hand</td>
</tr>
</tbody>
</table>

### X-ray image and the name of bone

- Distal interphalangeal joint (DIP) of 2nd finger
- Proximal interphalangeal joint (PIP) of 2nd finger
- 2nd metacarpophalangeal joint (MCPJ)
- First distal phalanx
- First proximal phalanx
- Trapezoid
- Carpometacarpal joint (CMJ)
- Trapezium
- Scaphoid
- Lunate
- Fifth distal phalanx
- Fifth middle phalanx
- Fifth proximal phalanx
- Fifth metacarpal
- Capitate
- Hamate
- Pisiform
- Triquetrum
- Styloid process of ulna
Arms radiography  Oblique projection of fingers

- **Point of X-ray Photography: Positioning and Direction of X-ray Radiation**

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<tr>
<td>Adjust the angle by inserting assistance tool (The phantom restricts the angle to 30 degrees instead of 45 degrees.)</td>
<td>Align the center to the 3rd metacarpophalangeal (MCP) joint. Radiate X-ray in the perpendicular direction to the center. (In the case of the inclination of 30 degrees)</td>
<td>forearm-hand</td>
</tr>
</tbody>
</table>

- **X-ray image and the name of bone**

![X-ray image and bone labels]
Frontal projection of forearm

Turn the palm up (right hand)
Radius and ulna are represented distinguishably.

Frontal projection of elbow joint

Turn the palm up and extend the elbow.
## Point of X-ray Photography: Positioning and Direction of X-ray Radiation

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<tr>
<td>Supine position (Place the phantom as the patella is directed to the top.)</td>
<td>Align the center to the lower edge of the patella. Radiate X-ray to the center in the perpendicular direction.</td>
<td>Thigh • lower thigh-foot</td>
</tr>
</tbody>
</table>

### X-ray image and the name of bone

- Patella
- Femur
- Lateral epicondyle
- Lateral condyle
- Medial epicondyle
- Medial condyle
- Intercondylar notch
- Intercondylar eminence
- Tibial plateau
- Head of fibula
- Fibula
- Tibia
### Point of X-ray Photography: Positioning and Direction of X-ray Radiation

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</tr>
</thead>
<tbody>
<tr>
<td>Decubitus position (Direct the knee joint to the side and flex it to approximately 130 degrees.)</td>
<td>Align the center at a position slightly shifted to the back from the lower edge of the patella. Radiate X-ray to the center in the perpendicular direction.</td>
<td>Thigh • lower thigh-foot</td>
</tr>
</tbody>
</table>

### Point of X-ray Photography: X-ray image and the name of bone

![X-ray image of knee joint with labeled bones](image)

- **Femur**
- **Patella**
- **Intercondylar eminence**
- **Medial condyle**
- **Lateral condyle**
- **Fibula**
- **Tibial tuberosity**
- **Tibial plateau**

Place the phantom on the bed with the small toe facing down with the patella directed to the side and the heel suspended. Insert tool to assist alignment of the heights of the thigh and the foot. Align the center at a position slightly shifted to the back from the lower edge of the patella. Radiate X-ray to the center in the perpendicular direction. Insert tool to assist alignment of the heights of the thigh and the foot.
## Point of X-ray Photography: Positioning and Direction of X-ray Radiation

### Positioning

Supine position
(Tilt the line connecting the second toe and the heel 20 - 30 degrees from the perpendicular position.)

### Direction of X-ray Radiation

Align the center to the midpoint of the line connecting the medial malleolus and the lateral malleolus. Radiate X-ray to the center in the perpendicular direction.

### Part of phantom used for this photography

lower thigh - foot

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### X-ray image and the name of bone

- Tibia
- Tibia incisura
- Talocrural joint
- Medial malleolus
- Talus
- Scaphoid
- Metatarsal
- Fibula
- Lateral malleolus
- Talocalcaneal joint
- Calcaneal sulcus
- Calcaneus

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### Diagrams

1. [Diagram showing bone structures and X-ray images of lower limb and foot joint.](image_url)
Point of X-ray Photography: Positioning and Direction of X-ray Radiation

- **Positioning**
  
  Decubitus position
  (Attach the outer side of the foot to the film side and direct the second toe to 10 degrees from the film plane.)

- **Direction of X-ray Radiation**
  
  Align the center to the medial malleolus. Radiate X-ray to the center in the perpendicular direction.

- **Part of phantom used for this photography**
  
  lower thigh - foot

X-ray image and the name of bone:

Foot joint - lateral position:

- 37. Fibula
- 38. Tibia
- 39. Lateral malleolus
- 40. Medial malleolus
- 41. Anterior margin of joint
- 42. Posterior margin of joint
- 43. Talus
- 44. Calcaneus
- 45. Talocalcaneal joint
- 46. Scaphoid
- 47. Talonavicular joint
- 48. Cuneonavicular joint
- 49. Cuneiform
Caution

Don’t mark on the phantom with pen or leave printed materials contacted on its surface. Ink marks on the phantom will be irremovable.