Human Anatomy: Musculoskeletal High-Yield Mnemonics

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CLINICAL CURRICULUM & STUDY SUMMARY

- High-yield diagnostic protocols, technique factors, and anatomical positioning charts.
- Radiation safety procedures aligned with ALARA standards and dosimetric monitoring.
- Comprehensive solved examination question banks and verified case studies.

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CHAPTER 1: DIAGNOSTIC POSITIONING & CENTRAL RAY PROTOCOLS

1.1 Anatomical Landmarks & Beam Alignment

Precise palpation of bony landmarks ensures accurate Central Ray (CR) perpendicularity.
Technique factors (kVp, mAs) must be calibrated to subject contrast and part thickness.

1.2 Collimation & Scatter Control

Tight 4-sided collimation significantly reduces Compton scattering, improving image definition.
Anti-scatter grids (8:1 to 12:1 ratio) are mandated for body regions exceeding 10 cm.

CHAPTER 2: RADIATION SAFETY, DOSIMETRY & ALARA STANDARDS

2.1 Cardinal Rules of Radiation Protection

1. TIME: Keep exposure durations as short as clinically feasible.
2. DISTANCE: Maximize distance from radiation sources via the Inverse Square Law.
3. SHIELDING: Wear 0.5 mm lead equivalence aprons and thyroid protection.

2.2 Personnel Dosimetric Badges

Thermoluminescent dosimeter (TLD) badges must be monitored on a quarterly cycle.

CHAPTER 3: BOARD EXAMINATION HIGH-YIELD QUESTIONS & ANSWERS

Q1: What is the primary function of an anti-scatter grid?

Answer: To absorb secondary Compton scatter and prevent loss of radiographic contrast.

Q2: State the formula representing the Inverse Square Law.

Answer: Intensity 1 / Intensity 2 = (Distance 2 / Distance 1)^2.

Q3: Which breathing phase is recommended for an AP thoracic spine projection?

Answer: Suspended expiration to ensure uniform lung tissue density across the dorsal field.

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