Key Concepts of Body Mechanics

Ehrlich 10th edition Pg.128-131 and 211-217

Topics:

- Body Mechanics
- Transferring Devices
- Supports/Padding
- Side Rails

The **principles** of proper body mechanics include **alignment**, **movement** and **balance**. Use of proper body mechanics can help you reduce risk of injury, conserve energy and avoid unnecessary stress and strain on the body.

The three **concepts** of body mechanics are:

1. **Base of support** – stability for body position/movement
2. **Center of gravity** – center of body weight
3. **Line of gravity** – vertical line passing through center of gravity

Common Body Positions in Healthcare

- Sim's or Lateral Recumbent (recovery)
- Trendelenburg (head approximately 15 degrees lower than feet)
- Fowler's (upper body inclined close to 90 degrees)
- Semi-Fowler's (head elevated 30-45 degrees)
- Prone or Supine

Devices Used for Transferring Patients

- Sheets
- Slider boards
- Lifts/Surgilifts
- Walkers
- Transfer belts (gait belts)

Typical Patients Requiring Transfers in the Diagnostic Imaging Department

- Stroke patients
- Patients with injuries of a lower extremity
- Patients with knee or hip replacements
    - ***Note***: There are different precautions for patients who have had an **anterior** vs. **posterior** hip replacement (Ehrlich & Coakes, 2017, pg. 219, Box 12-1)
- Trauma patients, especially those with spinal injury
- Post-operative (surgery) patients
- Paralyzed/immobile patients

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Supports and Padding

These are used for two primary reasons:

1. **Patient comfort** in order to maintain *correct position* during diagnostic imaging.
    - Using radiolucent positioning sponges provides comfort during an exam. These supports do not cause artifacts, unlike other types of supports.
    - Additionally, elevating the patient's head (when possible) allows them to see what's going on and can decrease apprehension and increase cooperation.

2. **Prevent development of ulcers** (bed sores) in debilitated and elderly patients that remain in one position for long periods of time.
    - Bolsters relieve lumbosacral stress by straightening the lordosis (lumbar curve). Patients who require a bolster include those that are arthritic, kyphotic, and post-operative (abdominal and spinal surgery).
    - Ulcers commonly form on the sacrum, heels of the feet, elbows and trochanters (if a patient is in a lateral position too long).
    - The use of bolsters and other forms of padding reduces the possibility of skin breakdown, which can lead to ulcers. The two phases of skin breakdown are:
        i. *Ischemia* – blanching of the skin/coldness from lack of circulation
        ii. *Reactive Hyperemia* – heat and redness as blood returns to that area.

Side Rails

These are used when a patient's **state of consciousness** is impaired due to:

- Sedation
- Intoxication
- Shock
- Senility/reduced awareness of surroundings

Note: Side rails must be used when any of these patients are left unattended.

Reference

Ehrlich, R. A., & Coakes, D. M. (2017) *Patient care in radiography: With an introduction to medical imaging* (9th ed.). St. Louis, MO: Mosby Elsevier.

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