Body Mechanics, Positioning, and Moving

Chapter 23
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Introduction

- The percentage of workplace injuries were 15.9% among health care worker versus 9.8% among construction workers.

Introduction Continue

Chart 2. Percent of nonfatal workplace injuries by industry sector, 2004

Introduction Continue

- ANA estimate that in 2000, more than 33% of nurses experienced work-related musculoskeletal disorders; 52% had chronic low back pain; 20% transferred to a different unit; 38% took leave of absence; and 12% left nursing permanently because of back pain.

Objectives:

- By the end of this lecture students should be able to:
  - Describe signs and symptoms associated with disuse syndrome.
  - Identify characteristics of good posture.
  - Describe three principles of good body mechanics.
  - Explain the purpose of ergonomics.
  - Describe at least 2 examples of ergonomic recommendations in the work place.

Objectives (continue):

- Describe six common client positions.
- Explain the purpose of different positioning devices used for safety and comfort.
- Discuss four types of transfer devices.
INACTIVITY
- Leads to health deterioration
- Disuse syndrome:
  - signs and symptoms that result from inactivity
- Dangers effect of inactivity on body systems:
  - Muscular --- weakness, decreased tone/strength and decreased size (atrophy)
  - Skeletal --- poor posture, contractures and foot drop
  - Cardiovascular --- impaired circulation, thrombus (clot) formation and dependent edema

Dangers effect of inactivity on body systems (continue):
- Respiratory --- pooling of secretions, shallow respirations and atelectasis.
- Urinary --- oliguria, urinary tract infections, calculi formation and incontinence.
- Gastrointestinal --- anorexia, constipation, fecal impaction.
- Integumentary --- pressure sore.
- Endocrine --- decreased metabolic rate and decreased hormonal secretions.
- Central nervous system --- sleep pattern disturbances and psychosocial changes.

Maintaining Good Posture
- POSTURE
  - Position of the body or the way in which it is held
  - Posture affects
    - Appearance
    - Stamina
    - Ability to use the musculoskeletal system
    - Good posture is important to prevent muscle spasms
Maintaining Good Posture

- **STANDING:**
  - Keep the feet parallel, at right angles to the lower legs, and about 4-8 inches apart.
  - Distribute weight equally on both feet.
  - Bend the knees slightly to avoid straining the joints.
  - Maintain the hips at an even level.

- **Standing (continue):**
  - Pull in the buttocks and hold the abdomen up and in.
  - Hold the chest up and slightly forward and extend or stretch the waist.
  - Keep the shoulders even and centered above the hips.
  - Hold the head erect with the face forward and chin tucked.

- **SITTING:**
  - Buttocks and upper thighs become the base of support.
  - Both feet rest on the floor.
  - The knees are bent with the posterior of the knee free from the edge of the chair.

LYING DOWN

- The head and neck muscles are in a neutral position, centered between the shoulders
- The shoulders are level, whereas the arms, hips, and knees are slightly flexed.
- The trunk is straight and the hips are level
- The legs are parallel to each other with the feet at right angles to the leg

BODY MECHANICS

- Efficient use of the musculoskeletal system to help:
  - Reduce fatigue
  - Increase muscle effectiveness
  - Avoid repetitive strain injuries

Principles of Good Body Mechanics

- Use the longest and strongest muscles of the arms and legs
- When lifting heavy load center it over the feet
- Hold objects close to the body to increase balance
- Bend the knees to prepare the spine to accept the weight
- Contract the abdominal muscles
- Push, pull, or roll objects whenever possible rather than lifting
Principles of Good Body Mechanics

- Use the body as a lever to assist with pushing or pulling the object
- Keep feet apart for broad base of support
- Bend the knees and keep the back straight when lifting
- Avoid twisting and stretching muscles during work
- Rest between periods of exertion

ERGONOMICS:

- Is specialty field of engineering science devoted to promoting comfort, performance, and health in the workplace.

Ergonomic Recommendations:

- Use assistive devices to lift or transport heavy items or clients.
- Use alternative equipment for tasks that require repetitive motions.

Ergonomic Recommendations:

- Position equipment no more than 20°-30° away – about an arm length to avoid reaching or twisting the trunk or neck.
- Use a chair with good back support.
- Keep elbows flexed no more than 100-110 degrees.
- Work under non-glare lighting.
POSITIONING CLIENTS

- Purpose:
  - relieve pressure, promote comfort, and maintain functional mobility
- General principles for positioning the client:
  - Change the inactive client’s position every 2 hours
  - Ask for help if needed
  - Raise the bed to an appropriate height
  - Remove pillows and positioning devices
  - Unfasten drainage tubes from bed linen
  - Turn the client as a complete unit (as a log), to avoid twisting the spine

General principles for positioning the client (continue):

- Place the client in good alignment, with joints slightly flexed
- Replace pillows and positioning devices
- Support limbs in a functional position
- Use elevation to relieve swelling or promote comfort
- Provide skin care after repositioning

COMMON POSITIONS

- Supine position
  - The person lies on the back
- Lateral position
  - Side lying shoulder and arm need support to help breathing
  - Lateral oblique position
    - The client lies on side with the top leg 30 degree flexed at the hip and 35 degrees flexion at the knee
- Prone position
  - Client lies on the abdomen
COMMON POSITIONS

- Sims' position
  - The client lies on left side with the right knee drawn up toward the chest
  - Left arm positioned along the client’s back and chest and abdomen are allowed to lean forward
  - Used for rectal and vaginal procedures
- Fowler’s position
  - Semi sitting position. Low 30 degrees, semi fowler’s position 45 degrees, high 60-90 degrees
  - Used for clients with dyspnea, help client eat, talk and look around
  - Cause decrease blood flow to the coccyx increase the risk of pressure ulcer

POSITIONING DEVICES

- Adjustable Bed
- Mattress
- Bed Board
- Pillows
- Turning Sheet
POSITIONING DEVICES

- Trochanter Rolls
- Hand Rolls

POSITIONING DEVICES

- Trapeze
- Foot Boards, Boots, and Foot Splints

PROTECTIVE DEVICES

- Side rails
- Mattress Overlays
  - Foam and Gel Mattresses
  - Static Air Mattress
  - Alternating Air Mattress
    - Used to relieve pressure over bony prominences.
- Water Mattress
PROTECTIVE DEVICES

- Cradle
  - Metal frame used to keep bed linen off the feet exp. Used in clients with burn.
- Specialty Beds:
  - Low-Air-Loss Bed
  - Air-Fluidized Bed
  - Oscillating Support Bed
  - Circular Bed


Specialty Beds

http://www.phc-online.com/Low_Air_Loss_Lateral_Rotation_p/spanamerica-easyair-lr.htm

TRANSFERRING CLIENTS

- Moving a client from place to place.
- Active transfer when the client assists
- Passive transfer when the client is transferred by others or by mechanical means
- TRANSFER DEVICES:
  - Transfer handle
  - Transfer belt
  - Transfer board
  - Mechanical lift
Nursing Guidelines When assisting with client transfer
- Be realistic about how much you can lift and ask for help.
- Always practice good body mechanics
- Put on brace and other supportive devices before getting the client out of bed
- Have client wear shoes or nonskid slippers to provide support and prevent foot injuries
- Plan to transfer the client across the shortest distance
Nursing Guidelines When assisting with client transfer

- Make sure the client’s stronger leg if there is one is nearest the chair to which the client is transferring.
- Stand on the side of bed to which the client will be moving.
- Explain to the client what will be done step by step and ask the client for help as much as possible.

Nursing Implications

A) The nurse assess the client's level of functional status:
- 0 = client completely independent
- 1 = Requires use of assistive device
- 2 = Needs minimal assistance
- 3 = Needs assistance and/or some supervision
- 4 = Need total supervision
- 5 = Needs total assistance or unable to assist

Nursing Implications

B) Prevention of Disuse Syndrome:
- Position client Q 2 hours.
- Keep linens clean, dry, and wrinkle free at all times.
- Use and check incontinence pads on bed q 2hrs.
- Assist client to bedside commode q 4 hrs.
- Use foam mattress.
- Use trochanter rolls for supine positioning.
- Apply footboard to the bed or use foot splints.
- Encourage active exercise and provide assistance as needed.
- Include the client in planning ADL's.
- Provide client and family teaching regarding positioning, exercise and prevention of disuse syndrome.
GERONTOLOGICAL CONSIDERATIONS

- Decrease in muscle strength, endurance, and coordination
- Need to maintain mobility to prevent disability
- Require extra time and assistance during positioning, transferring, and ambulating
- May have a fear of falling
- Bone demineralization increases the risk of fractures for older adults

GERONTOLOGICAL CONSIDERATIONS

- Falls, fractures, and degenerative bone diseases have serious economic effects
- Older adults with cognitive impairment generally have difficulty following directions regarding positioning and transferring
- Disuse syndrome is a serious threat to older adults