

# **Mobility and immobility**

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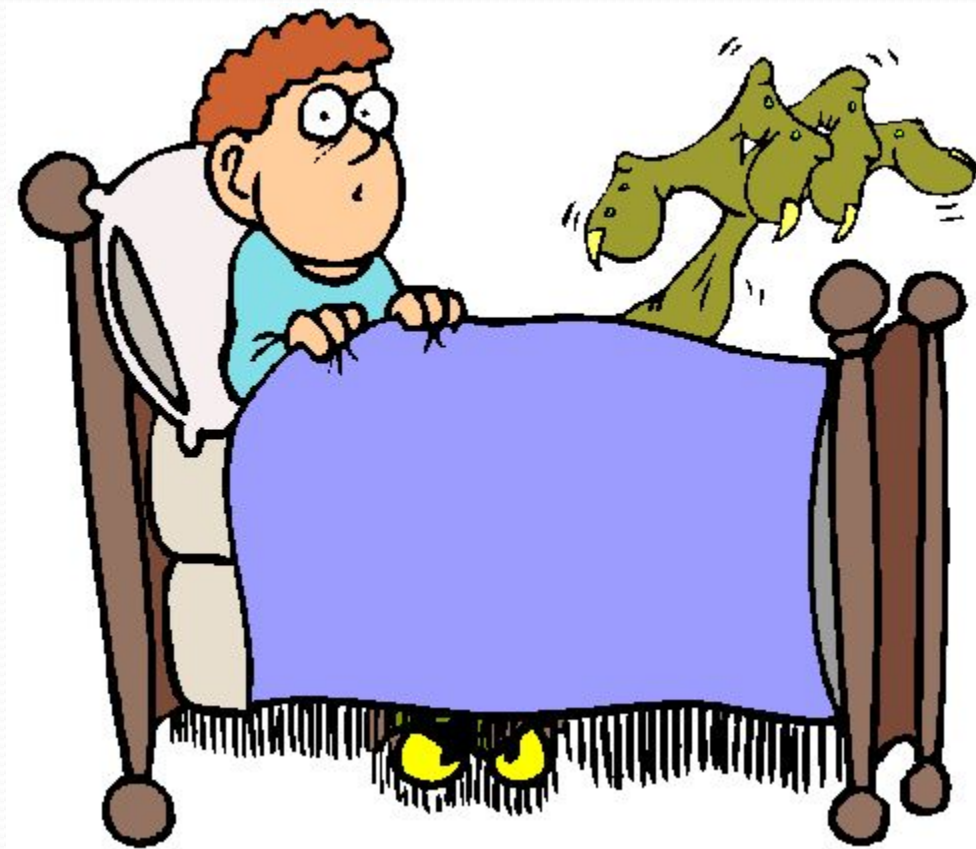
# Objectives

- Describe the functions of the musculoskeletal (skeleton, skeletal muscles) and nervous systems in the regulation of movement.
- Discuss physiological and pathological influences on body alignment and joint mobility.
- Assess for correct and impaired body alignment and mobility.

# Bed rest benefits in acute conditions

- Reduces oxygen needs
- Decreases pain levels
- Helps in regaining of strength
- Uninterrupted rest has psychological and emotional benefits

# “Bed is Bad”



# Unfortunately!!!!!!

- the health-care system tends to promote immobility in patients.
- Patients are frequently restrained by either physical restraints, chemical restraints (sedatives), or treatment restraints (IV, oxygen, catheters).
- Deconditioning occurs at a faster rate than reconditioning



# DEFINITION

- **Mobility** refers to a person's ability to move about freely.
- **Immobility** refers to the inability to move about freely (physical restriction of movement to body or a body segment)
- **Deconditioning** – decreased functional capacity of multiple organ systems

# Mobility

- Ability to engage in activity and free movement
- Walking, running, sitting, standing, lifting, pushing, pulling
- Activities of daily living (ADLs)



# Mobility cont'

- Enhances muscle tone, increases energy levels
- Psychological benefits of independence and freedom

# 3 Basic Elements

- **Body alignment (posture):** geometric arrangement of body parts in relation to each other.
- **Balance (stability):** state of equipoise (equilibrium) in which opposing forces counteract each other.
- **Coordinated body movement:** integrated functioning of the musculoskeletal and nervous system as well as joint mobility.

# Body Alignment (posture)

- Position of body parts in relation to each other
- Center of gravity is evenly distributed.
- Promotes balance, reduces strain and injury.
- Promotes efficient circulatory, renal, pulmonary, and gastrointestinal functions.
- Influences self-esteem and body image.

# Body Alignment

- Client comfort
- Prevention of contractures
- Promotion of circulation
- Reduces stress on muscle, tendons, nerves, and joints
- Prevention of foot drop (plantar flexion)

# Body Alignment cont'

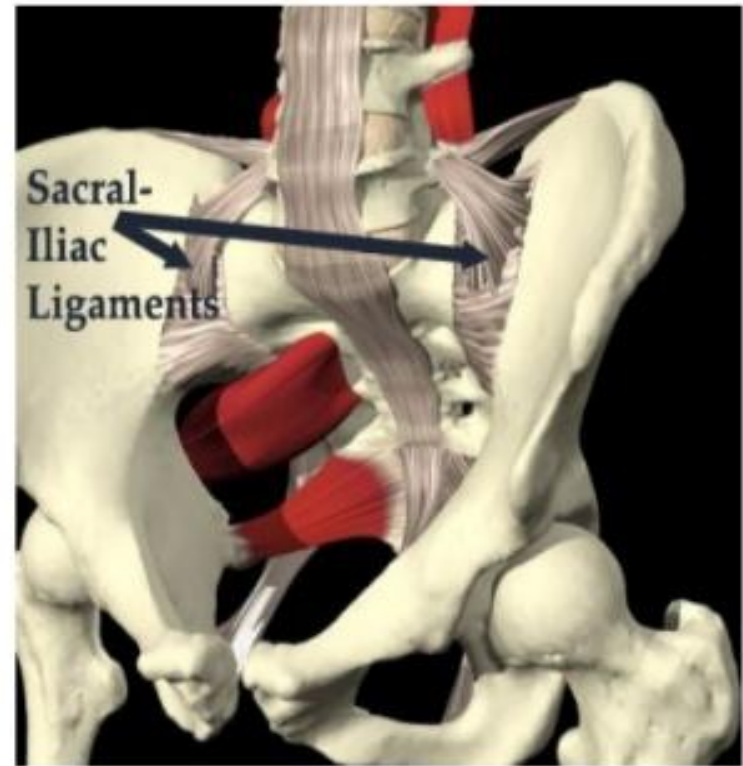
- Muscle Tone
  - Hypotonicity
  - Spasticity
- Muscle Shape
  - Hypertrophy
  - Atrophy

# Physiology of Mobility

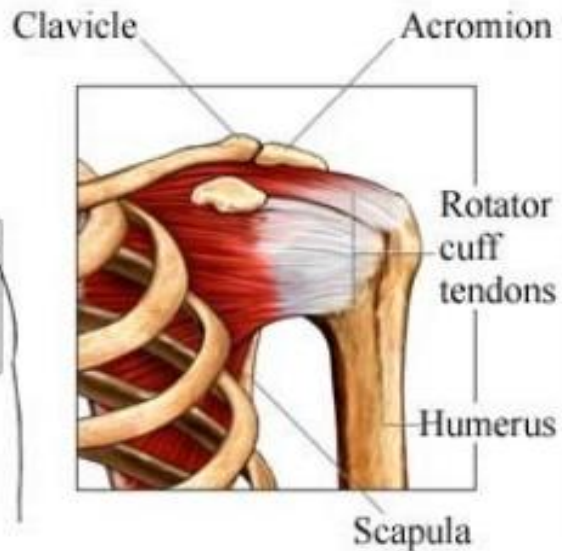
## **Musculoskeletal System**

- Bones
- Joints
- Tendons
- Ligaments
- Bursa
- Cartilage

- **Ligaments;** tough fibrous bands that bind joints together & connect bones & cartilages.



- **Tendon**; strong, flexible, inelastic fibrous band that attach muscle to bone





**Cartilage;** nonvascular connective tissue found in the joints as well as in the nose, ear, thorax, trachea and larynx.



# Physiology of Movement

The following physiology of movement is:

- **Skeletal system**; the bones and cartilage that protect our organ and allow us to move are called skeletal system. The function of this system include:
  - ❖ Maintain body posture by supporting the soft tissue
  - ❖ Protect the delicate structures of the body such as brain, heart and spinal cord
  - ❖ Furnishes surface for attachments of muscles tendons and ligaments
  - ❖ Storage areas of minerals salts and fats.
  - ❖ Produce blood cells

- **Muscular system;** provide functions for the body through
  - contraction
  - Motion
  - Maintenance of posture
  - Heat production

The 3 types of muscles are

1) Skeletal 2) Cardiac 3) Smooth or visceral muscles. Muscles have two different points of attachments:

The attachment of a muscle to the more stationary bone is called the **Point of Origin**. The attachment to the more movable bone is the **Point of Insertion**

# Physiology of Mobility cont'

- **Nervous System**

- Proprioception

- Tells us where our body is in space relative to other objects.

- Postural Reflexes (righting)

- Maintain postural tonus.

# Body Mechanics

The efficient, coordinated, and safe use of the body to produce motion and maintain balance during activity.

**Major purpose:** facilitate safe and efficient use of appropriate groups of muscles

# Principles of Body Mechanics

e. When pushing or pulling an object, use the body's weight to counteract the weight of the object.

f. Avoid twisting the spine by pushing or pulling objects directly away from or toward the body and squarely facing the direction of movement.

g. When lifting objects, distribute the weight between large muscles of the legs and arms.



# Principles of Body Mechanics

a. Spread your feet apart to provide a wide base of support

b. Place your feet appropriately in the direction in which the movement occurs.

c. Keep objects to be moved close to the body

d. Push, pull, roll, or slide objects rather than lifting them, whenever possible.

# Poor Body Mechanics

## Caution



Use the way



Use the way



Use the way



Use the way

## Recommended



Use of a footrest  
relaxes the back



Draw the knees and  
hips, and the trunk



Hold heavy objects  
close to you



Place head over mid-  
out bending the knees





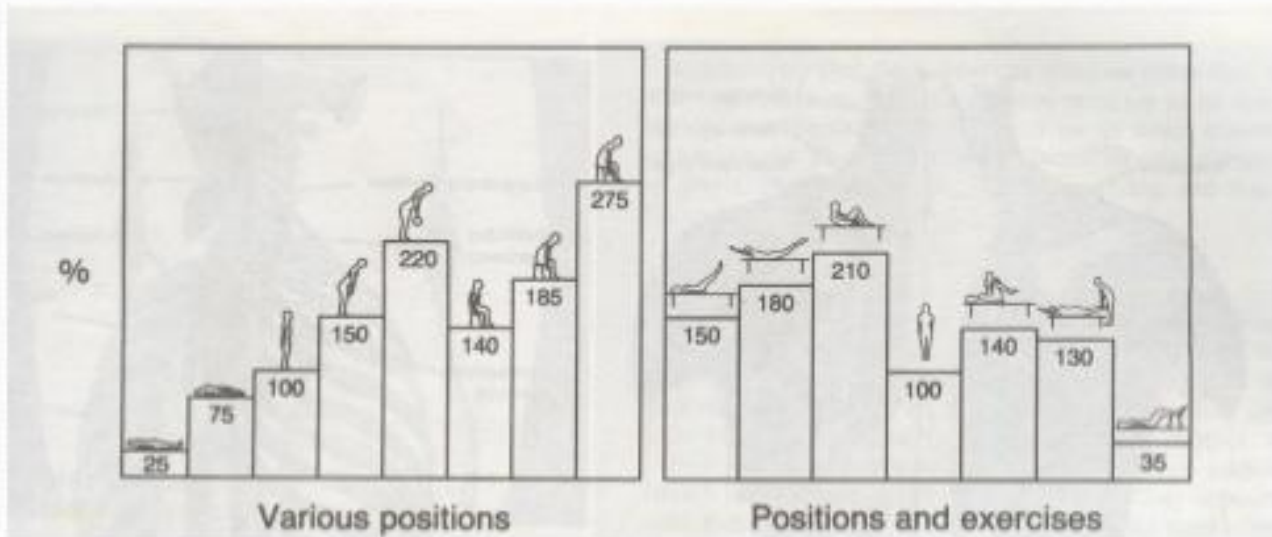
# Complications Related to Poor Body Mechanics

1. Muscle fatigue

2. Joint strain

3. Lower back injuries- most common injury among nurses

4. Repetitive motion injuries





**FIGURE 30-9** A–C, Static and dynamic correct and incorrect postures (developed by M. Szaki). (By permission of Mayo Foundation.)



FIGURE 38-8 Continued

Illustration continued on following page

# FACTORS AFFECTING MOBILITY & IMMOBILITY

1. Growth and Development
2. Physical Health
3. Nutrition
4. Personal Values and Attitudes
5. Prescribed Limitations

# Growth and Development

- As age advances, muscle tone and bone density decrease , joints lose flexibility, and bone mass decreases, particularly in women who have osteoporosis.
- All of these changes affect older adults' posture, gait, and balance

# Physical Health

- Health—Chronic or Acute Disease

Example:

- ❑ Musculoskeletal: Congenital or acquired abnormalities
- ❑ Nervous System: Stroke
- ❑ Cardiovascular: Orthostatic Hypotension
- ❑ Metabolic: Affects Normal Metabolic Functioning



# Nutrition

- ❖ Both under nutrition and over nutrition can influence body alignment and mobility.
- ❖ Poorly nourished people may have muscle weakness and fatigue.
- ❖ Vitamin D deficiency causes bone deformity during growth.
- ❖ Inadequate calcium intake and vitamin D synthesis and intake increase the risk of osteoporosis.
- ❖ Obesity can distort movement and stress joints, adversely affecting mobility.



# Personal Values And Attitudes

- ❖ Whether people value regular exercise is often the result of family influences. In families that incorporate regular exercise in their daily routine or spend time together in activities, children learn to value physical activity.
- ❖ Values about physical appearance also influence some people's participation in regular exercise. People who value a muscular build or physical attractiveness may participate in regular exercise programs to produce the appearance they desire

# Prescribed Limitations

- Limitations to movement may be Medically prescribed for some health problems. Eg: patient with plaster of Paris
- Bed rest is the choice for certain clients, for example to reduce metabolic and oxygen needs, to decrease pain.
- Clients who are short of breath may be advised not to walk-up stairs

# Summary

- ❖ Mobility is ability to engage in activity and free movement.
- ❖ Mobility has three basic elements ; Body alignment (posture),Balance (stability),Coordinated body movement.
- ❖ body alignment promotes balance, reduces strain and injury, promotes efficient circulatory, renal, pulmonary, and gastrointestinal functions ,Influences self-esteem and body image.
- ❖ Skeletal system, Muscular system and nervous system

# Summery cont'

help to function of physiology

- ❖ Body mechanics is the efficient, coordinated, and safe use of the body to produce motion and maintain balance during activity.
- ❖ Factors of mobility and immobility are 1. Growth and Development , Physical Health, Nutrition, Personal Values and Attitudes and Prescribed Limitations .



## 1. What is mobility

1. inability to move about freely.
2. person's ability to move about freely.
3. decreased functional capacity of multiple organ system
4. Position of body parts in relation to each other

## 2. What is non complication related to poor body mechanics

1. Muscle fatigue
2. back injuries
3. headache
4. joint strain



3. Define the ligament

4. Three factors affecting mobility and immobility

5. What is the major purpose of body mechanics



THANK YOU