

SEATING AND POSITIONING

Lec#13

INTRODUCTION

- ◉ seating equipment for people with physical disabilities is important
- ◉ benefits of adaptive seating; includes improved postural alignment, development of motor skills, helping the prevention of fixed deformity.



BODY SEGMENTS

- referred to as the head, thorax, pelvis, lower limbs and feet, whilst the body 'linkages' are considered as the spinal joints, hips, knees, ankle and shoulder joints



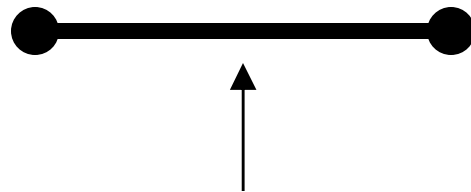
POSTURE

- may be defined as,
- “the position of one or many body segments in relation to one another and their orientation in space”



CENTER-OF-GRAVITY

- ◉ The point about which the mass is evenly distributed
- ◉ The balance point
- ◉ If an object is symmetrically loaded the COG will be at the geometric center



WHAT IS BALANCE?

- Technically defined as the ability to maintain the center-of-gravity (COG) of an object within its base-of-support (BOS)



WHAT IS POSTURE?

- The alignment of body/limb segments
 - Types
 - Standing (static)
 - Walking - running (dynamic)
 - Sitting
 - Lying
 - Lifting

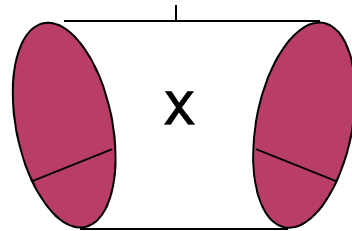


RELATIONSHIP - BALANCE & POSTURE

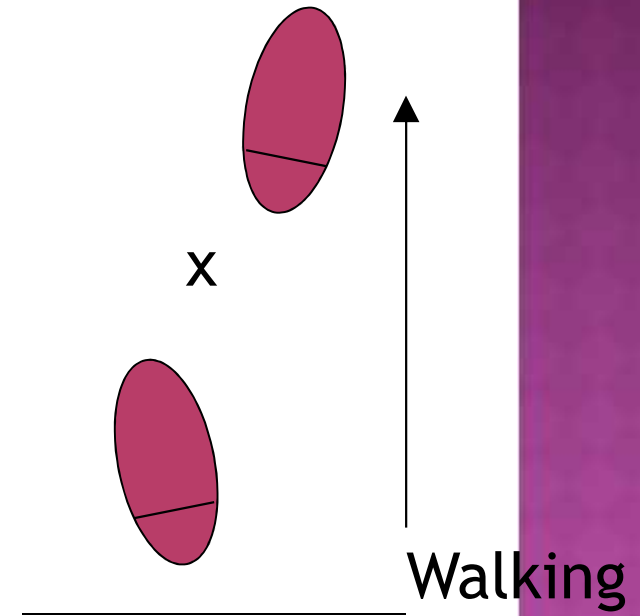
- ◉ Postural alignment is the way balance is maintained
- ◉ Maintaining the COG within the BOS
 - If this relationship isn't maintained then a system will be unbalanced

BASE OF SUPPORT

Static



Dynamic



x - Vertical projection of COG

CHANGES OF POSTURE

- ◉ Standing
- ◉ Sitting
- ◉ Lying



STANDING POSTURE

- ◉ Standing upright is physiologically efficient
- ◉ Anterior superior iliac spines and pubic symphysis are vertical
- ◉ Variation in sacral angle



SITTING POSTURE

- ◉ Frequently adopted
- ◉ 90 degree flexation of knees, hips to bring trunk forward over thighs
- ◉ 60 degree flextion causes discomfort
- ◉ the head is held erect, balanced over the neck, with the head's center of gravity situated slightly anterior to the atlanto-occipital joint.

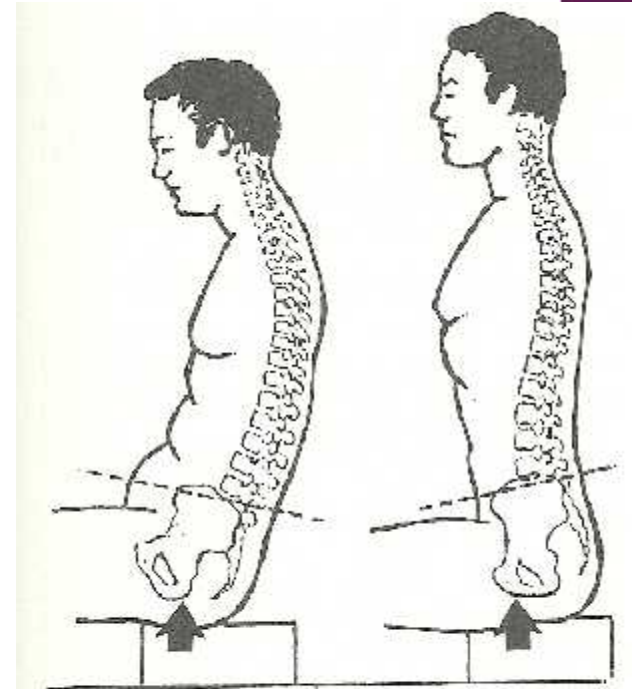


Figure 4.12. Two positions of the pelvis during sitting. Sitting posture essentially depends on the relationship of the body's center of gravity to the ischia. *Left*, it is far posterior; *right*, it is well balanced over the ischial prominences.

DISC PRESSURE

- ◉ Lumbar IVD pressure is increased during sitting as compared to the erect posture.
- ◉ The reason for this is that disc pressure increases with the tendency toward lumbar kyphosis.
- ◉ This increased pressure while sitting can be diminished by arm rests on the chair, back support to maintain the lumbar lordosis, and reclining the back of the chair from 90° - 100° .

LYING POSTURE

- ◉ Comfort and relaxation position
- ◉ May be varied, supine, prone or side lying
- ◉ Least energy consuming
- ◉ Disc pressure in supine is 35%, 75% in lying



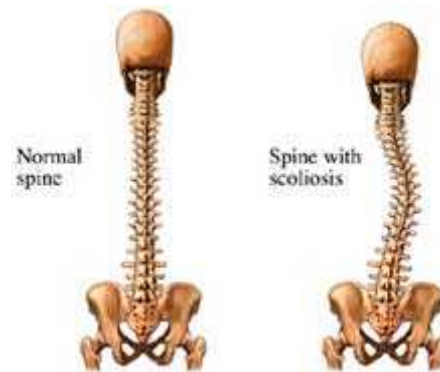
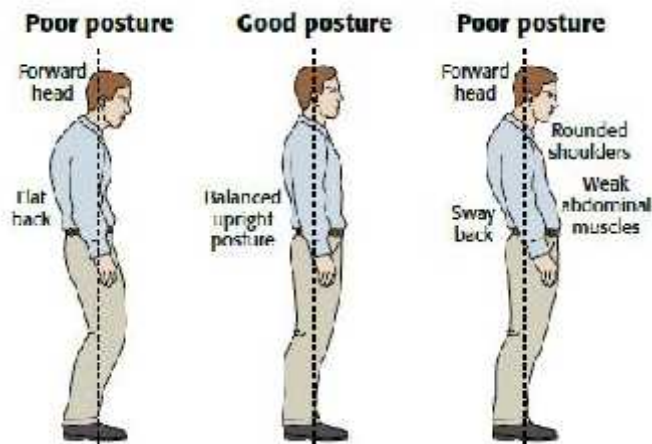
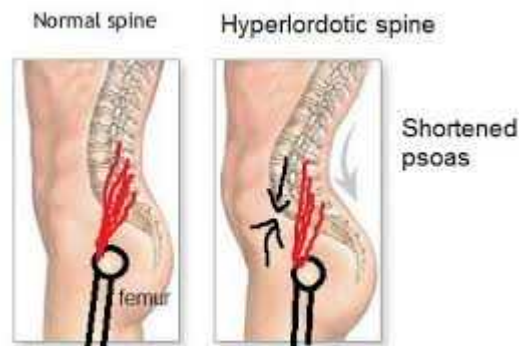
CHARACTERISTICS OF POOR POSTURE

- ⦿ Postural pain syndromes
- ⦿ Postural dysfunctions
- ⦿ Poor postural habits

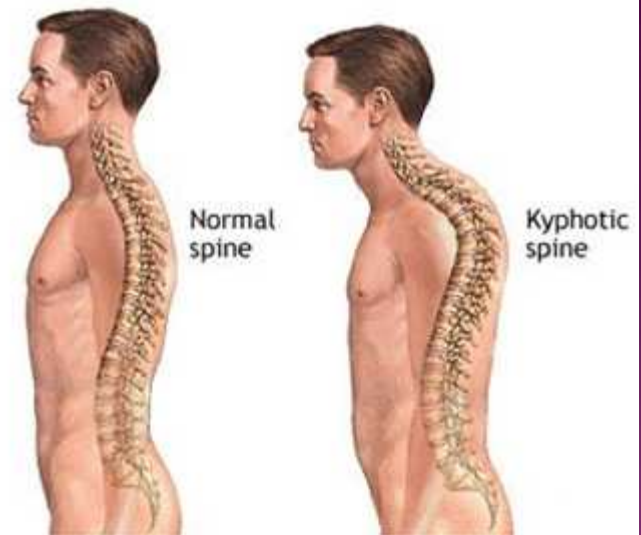


CHARACTERISTICS OF POSTURAL ABNORMALITIES

- Relaxed or swayback posture
- Hyperlordotic posture
- Flatback posture
- Scoliosis



- Increased kyphosis
- Flat upper back
- Forward head
- Flat neck



CAUSES OF POSTURAL PROBLEMS

- ◉ Genetic factors
- ◉ Environment factor
- ◉ Psychosocial factors
- ◉ Physiological factors
- ◉ Idiopathic factors



GENETIC FACTORS

- ◉ Gender
- ◉ Body type
- ◉ Congenital birth defects
- ◉ Intrinsic disability and diseases
- ◉ Joint flexibility



ENVIRNOMENT FACTORS

- ◉ Nutrition
- ◉ Trauma
- ◉ Extrinsic disability and disease
- ◉ Ageing
- ◉ Clothing
- ◉ Physical adaption
- ◉ Occupation
- ◉ Physical exercise
- ◉ climate



PSYCHOSOCIAL FACTORS

- Self-esteem
- Body image
- Mental health
- Learned postural habits
- Lifestyle
- motivation



PHYSIOLOGICAL FACTORS

- ◉ Age
- ◉ Growth
- ◉ Pregnancy
- ◉ Physiological processes
- ◉ Fatigue
- ◉ Body weight
- ◉ Muscle tension
- ◉ Flexibility
- ◉ pain



IDIOPATHIC FACTORS

- Paralysis
- Bone malformation
- Vestibular system function



GENERAL GOALS OF SEATING AND POSITIONING

- Facilitate normal movement patterns or control abnormal movement patterns
- Maintain skeletal alignment
- Prevent, accommodate or correct, skeletal deformity
- Provide stable base of support to promote function



- Promote comfort and relaxation
- Manage pressure or prevent the development of pressure sores
- Decrease fatigue



THERAPY TECHNIQUES FOR POSTURE

- ◉ Alexander technique
- ◉ Feldenkrais method



ALEXANDER TECHNIQUE

- ◉ Developed by Frederick Matthias Alexander (1869-1955)
- ◉ voice loss during his performances
- ◉ works to change (movement) habits in our everyday activities
- ◉ simple and practical method for improving ease and freedom of movement, balance, support and coordination
- ◉ technique teaches the use of the appropriate amount of effort for a particular activity, giving you more energy for all your activities
- ◉ it is not a series of treatments or exercises, but rather a reeducation of the mind and body.

- ⦿ The Alexander Technique is a method which helps a person discover a new balance in the body by releasing unnecessary tension.
- ⦿ It can be applied to sitting, lying down, standing, walking, lifting, and other daily activities.



FELDENKRAIS METHOD

- ◉ Developed by Dr Moshe Feldenkrais
- ◉ Method of self observation and learning
- ◉ Studied his habitual way of moving
- ◉ Explore alternatives in order to minimize his physical disability
- ◉ Worked on methods to teach people how to learn about their bodies
- ◉ remarkable approach to human movement, learning and change



AWARENESS THROUGH MOVEMENT (ATM)

- Verbal instruction given for movements, which lead to heightened sensory awareness
- Lesson based on theme such as crawling or rolling or functional movement such as standing or walking
- Focused on how muscle and joint interact with each other
- Learning through sensory awareness
- Person has to be sensitive to feedback that they receive from their body

FUNCTIONAL INTEGRATION (FI)

- ◉ Functional Integration (FI) is a one-to-one approach
- ◉ Based on same principles but taught on individual basis
- ◉ Replace the verbal instruction
- ◉ Attention drawn to parts touched and as teacher moves the part.

THANKS

