Body Mechanics: Posture and Care of the Back and Neck

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Back Facts

- 80% of the population will experience some form of back pain at some point during their lifetime.

- Back problems account for 40% of all work days missed due to injury or illness.
Back Facts

- Back pain is the most common cause of inactivity in the $\geq 45$ age group.

- Backache is second only to headache as a common medical complaint.
Potential Causes of Back or Neck Pain

- Muscle Tension
- Arthritis
- Bone spurs
- Degenerated disk
- Herniated disk

There is an increased risk of all of these conditions with age
Functions of Spinal Column

- Load bearing
- Permits movement
- Protects spinal cord
Causes of Back Pain

- With age, the disk degenerates and the space for the nerve roots is reduced.

- Bone spurs and arthritis can impinge on the nerves and cause pain.
Impact from Repeated Use of “Bad Exercises”

- Certain exercises or movements put the back at risk and should be avoided.
Risk Factors for Back Problems

- Non-modifiable:
  - Family history (osteoporosis/joint problems)
  - Age

- Modifiable:
  - Postural: Poor postural habits
  - Physical: Poor fitness in low back area
  - Behavioral: Lifestyle behaviors
    - Dangerous exercises or movements
    - Frequent or improper lifting
    - Extended standing or extended sitting
What is Good Posture?

- Minimal stress on the vertebral joints and supporting ligaments.
- Body segments balanced around the center of gravity.
Elements of Good Standing Posture

- Head centered - chin level
- Chest high - not strained
- Shoulders down and back
- Abdomen flat ("suck and tuck")
- Knees straight and relaxed
- Feet parallel and weight balanced
Causes of Poor Posture

- Hereditary
- Poor fitness
- Lack of knowledge
- Bad habits
Postural Problems:
Scoliosis

- Most severe condition
- Characterized by a curved spine
- Congenital or acquired
- Corrected with braces, exercises or operations
Postural Problems: Lumbar Lordosis

- Most common condition
- Characterized by "sway back" posture
- Results from weak abdominals and short hip flexors
Lumbar Lordosis

Unbalanced muscle strength

- Weak abdominals and short hip flexors tip the pelvis forward and increase back strain.
Proper Posture

Strong abdominals and flexible hip flexors keep the pelvis neutral and the body in alignment.
Strategies for Promoting Back Health

- Postural Influences
- Physical Influences
- Behavioral Influences

Each of these categories is described in subsequent slides.
Back Care Tips - Postural

- When standing, keep the lower back flat (stand with one foot on a stool).
- When sitting, avoid slouching.
- When lying, keep knees and hips bent (avoid lying on stomach).
- When sleeping, use a firm mattress.
Slouching Increases Strain on Low Back

- Slouching in a chair increases the pressure on the vertebral disks and can lead to back pain.

Note: similar position of spine when bending over
Back Care Tips - Physical

- Strengthen abdominal muscles.
- Strengthen hip extensors.
- Stretch hip flexors.
- Stretch hamstrings.
Swiss Ball Exercises
Back Health Tips - Behavioral

- Avoid hazardous exercises.
- Avoid sudden jerky back movements.
- Avoid improper lifting and carrying.
Poor Lifting Technique

- The poor leverage used here to lift a 50 lb box causes extreme forces to be imparted on the spine.
  - 750 pounds of tensile force (pull away) on the muscles of the low back.
  - 850 pounds of compressional force (pull towards) on the lumbar disks.
Back Care Tips: Lifting and Carrying

- Stand close & assume a wide base.
- Maintain normal lordotic curve & bend at the hips and knees.
- Keep object close to the body’s ‘center of gravity’.
- Avoid hyperextending the neck or back when lifting.
Demonstration of Bad and Good Lifting Technique

Incorrect  Correct
Resources

- OSHA
  - http://www.osha.gov/SLTC/healthcarefacilities/training/appendix.html#appendix_a