My grandmother, Mina Seeger: 1920’s Boston court reporter on Sacco & Vanzetti case.

Somewhere, somehow, something went terribly wrong...

We assume people will adapt to technologies

Discomfort rates at the end of work
(Only moderate to severe discomfort is shown below)

Notice anything about this picture?
Lifespan Ergonomics: Introduction

Nobody is leaning back

X-rays: Same person 20 years apart

Not only are people different, they change over their lives

“There are more things in heaven and Earth, Horatio, than are dreamt of in your philosophy”

Shakespeare’s Hamlet (Act 1, Scene 5)

Women sit differently

Photos courtesy of Cindy Burt, OTR/L, CPE

Centers of gravity


... than men

Courtesy of Cindy Burt, OTR, CPE
Centers of gravity

Pelvic tilt relates to gender, aging and obesity

Comfort ≠ what’s best

If posture is not supported, people usually sit and stand in ways that will minimize the amount of muscle work.

Centers of gravity

Healthy ligament

Damaged ligament (below)


Comfortable ≠ best

Static postures → demineralization

Keegan (1953)

Keegan performed repeated x-rays of a single person lying on their side.

Neutral postures?

- Balance muscle loads
- Reduce physical demands
- Relieve physical stress

**Keegan’s repeated x-rays of a single person**


**Intradiscal pressures**


**Lumbar support**


**Dynamic back support**

**Shifts in posture changes the dynamics**


Movement promotes circulation and elimination of waste products.

Symptoms are complicated and unpredictable.
Lifespan Ergonomics: Introduction

- JFK's rocking chair
- SwingChair.com
- Variable Balans
- Seat pan tilt
- Postural support
- Multi Balans

Rani Lueder, CPE / Humanics ErgoSystems, Inc.
Lifespan Ergonomics: Introduction

- **Open postures**
- **Risk factors**
  - Screw up one thing, screw up everything!
- **Avoid constrained postures**
- **Fit?**
- **Fit?**
- **Fit?**
**Physical risk factors**

1. Awkward postures
2. Constrained postures
3. Force (e.g., impact sharp edges)
4. Repetition

*Secondary factors*
- Environment (vibration and cold)
- Personal risk factors (e.g., small carpal tunnel)

**What risk factors do you see?**

**Good postures are...**

- Centered
- Symmetrical
- Provide support
- Promote free movement (but not repetition)

**Motions and Postures**

*Design for movement*
- Avoid twisted positions, esp. trunk and neck
- Avoid forward bending of trunk and neck
- Avoid static postures, esp. at extremes
- Avoid holding arms raised
What you can do:

1. Support your back while driving.
2. Readjust your seat positions regularly.
3. On long trips, take rest breaks.
4. If your car seat isn’t comfortable, consider seat and neck supports for driving.
5. Avoid cell phones while driving.

Pay attention to warning signs!

Don’t take discomfort for granted!
It’s easy to prevent injuries, but hard to recover.

If it hurts, stop:
• Give yourself a chance to recover before it gets serious.
• Use ice packs − reduce swelling.
• Avoid loading affected joints.
• If pain continues − talk to your physician.

To download handouts / copy of slides...

www.humanicsergosystems.com/cocra.htm

Work and health

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