The Impact of Work on Older Adults

David H. Wegman, M.D., M.Sc.
Dean, School of Health and Environment
University of Massachusetts Lowell
World Trends in Population Aging
Percentage aged 60 or older

2050

- Yellow: 0-9
- Brown: 10-19
- Pink: 20-24
- Purple: 25-29
- Teal: 30+
- Gray: No data

UN Population Aging, 1999
Age Structure
Most Developed Regions

UN Population
Aging, 1999
Age Structure
Less Developed Regions

UN Population
Aging, 1999
Demographics for LAC
Age ≥60 yrs

- 60% are women.
- Majority of older people
  - live in urban areas.
  - only primary education.
- Still working
  - men 40%
  - women 8%
Percent Employment in Informal Sector (Female)

ILO – based on country household surveys
Percent Employment in Informal Sector (Male)

ILO – based on country household surveys
Trends in Workplace Physical Stressors
Exposure to Physical Stressors
EU - 1990-2000

Working Conditions in the EU – Euro. Fnd.
Exposure to Physical Hazards (EU)
By Type of Work Contract (1995)

- Repetitive Tasks
- Repetitive Movement
- Painful/Tiring Work Postures

- Permanent Employment
- Fixed-term
- Temporary
Work Capacity and Age
Types of Evidence

- Physical Capacity
- Mental Capacity
- Individual Capacities
- Chronic Conditions
- Performance/Experience
Physical Capacity
Physical Capacity

• Maximal strength at 20-30 years
  – Decreases greater in lower limbs
• Maximum O$_2$ uptake
  – Reduced to 70% of maximum by 65 years
• Explosive physical efforts most affected
  – Large muscle groups
• Older adults work closer to capacity
Physical Capacity
Relevance to Working

• Can be matched to job
  – Uncommon to consider changes in person or job over time or age

• Work uncommonly demands maximal effort
Mental Capacity
Mental Capacity

• Laboratory-based Findings
  – Reaction time
    • stable up to 60 yrs
  – Information retrieval
    • slower unless information is familiar
  – Learning and recall rate
    • slower but equally successful
  – Perceptual information
    • Slower processing under complex conditions or with confusing stimuli
    • Problems allocating attention to task-relevant information
Mental Capacity
Relevance to Working

• Lab tests don’t translate well to work
• Factors other than *psychometric* cognitive abilities appear important
• Individual measures are quite sensitive to occupational class
Aging and System Changes

- Eye changes
  - Accommodation
  - Poor light/dark adaptation
  - Problems with glare

- Ear changes
  - Presbycusis
  - Decreased pitch discrimination

- Heat and cold intolerance

- Bone fragility and structural change

- Skin aging and permeability (sun)

- Metabolism enzyme changes

- Immune response changes
Age and Chronic Conditions in the Workforce
Health - LAC Age ≥60 yrs

- Self report “excellent or good health”
  - Men 49%
  - Women 42%

- Mental health
  - Self report “excellent or good health”
    - 23% report ≥6 depressive symptoms
  - Self report “fair or poor health”
    - 77% report ≥6 depressive symptoms
Prevalence of Select Chronic Conditions - Age $\geq 60$ yrs
(SABE Estimates)
Prevalence of Disability

(SABE Estimates for LAC)

The State of Aging and Health in Latin America and the Caribbean – PAHO & MIAH 2004
Performance
Capacity vs. Experience
## Impact of Age on Work Performance
(adapted from P. Warr)

<table>
<thead>
<tr>
<th>Age-related Task type</th>
<th>Changes with Age</th>
<th>Relationship with Age</th>
<th>Illustrative Job Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capacities Exceeded</td>
<td>Experience Matters</td>
<td></td>
</tr>
<tr>
<td>Age Enhanced</td>
<td>No</td>
<td>Yes</td>
<td>Positive</td>
</tr>
<tr>
<td>Age Neutral</td>
<td>No</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td>Age Counteracted</td>
<td>Yes</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Age Impaired</td>
<td>Yes</td>
<td>No</td>
<td>Negative</td>
</tr>
</tbody>
</table>
## Task Type and Aging-Related Injury Risks
(adapted from Laflamme & Menckel)

<table>
<thead>
<tr>
<th>Age-related Task type</th>
<th>Relationship with Age</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Performance</td>
<td>Injuries</td>
</tr>
<tr>
<td>Age Enhanced</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Age Neutral</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Age Counteracted</td>
<td>None</td>
<td>None or Inverted U</td>
</tr>
<tr>
<td>Age Impaired</td>
<td>Negative</td>
<td>Positive or U-shaped</td>
</tr>
</tbody>
</table>
Workplace Interventions

• Hierarchy of Controls
  – Job design and redesign
  – Training and retraining
  – Health promotion and disease prevention
Job Design and Redesign

- Response to Normal Changes
  - Vision
    - Sufficient lighting
    - Signage with adequate contrast
    - VDU positioning and corrective lenses
  - Hearing
    - Noise reduction engineering
    - Use of redundant channels
      - Flashing lights
      - Vibrating cell phones
Job Design and Redesign

- **Design interventions**
  - Engineering
    - Ergonomic engineering changes coupled with work organization changes
    - Reduce aerobic demand
  - Effective warnings for new workers
  - Psychological climate
    - Reduce insecurity
    - Increase empowerment of teams
Job Training and Retraining

- Older workers are further away from early education and job training
- Training approaches
  - Discovery (“hands on”) learning
  - Self pacing vs. forced pacing
    - Better for all ages
  - Physical fitness and posture training as well as skills and knowledge training
Job Training and Retraining

• Barriers to effective training
  – Programs not offered
  – Motivational barriers
    • Workers assessment
      – Training doesn’t affect re-employment or salary
      – Self-assessment – poor learning capacity
    • Managers believe older workers can’t learn
Job Training and Retraining

• Advantages to training older workers
  – Fewer voluntary absences
  – Lower likelihood of leaving workplace
  – Greater experience levels
  – Training costs are recovered because workers stay
“The factors which make advancing age into a handicap are mostly connected with two areas:

working conditions which impose disproportionate constraints in relation to the actual capabilities of human beings;

types of work organization which deny employees any possibility of making a significant contribution to the development of their jobs.”

Devezies 1991