The Ergonomics Center

The Aging Workforce:

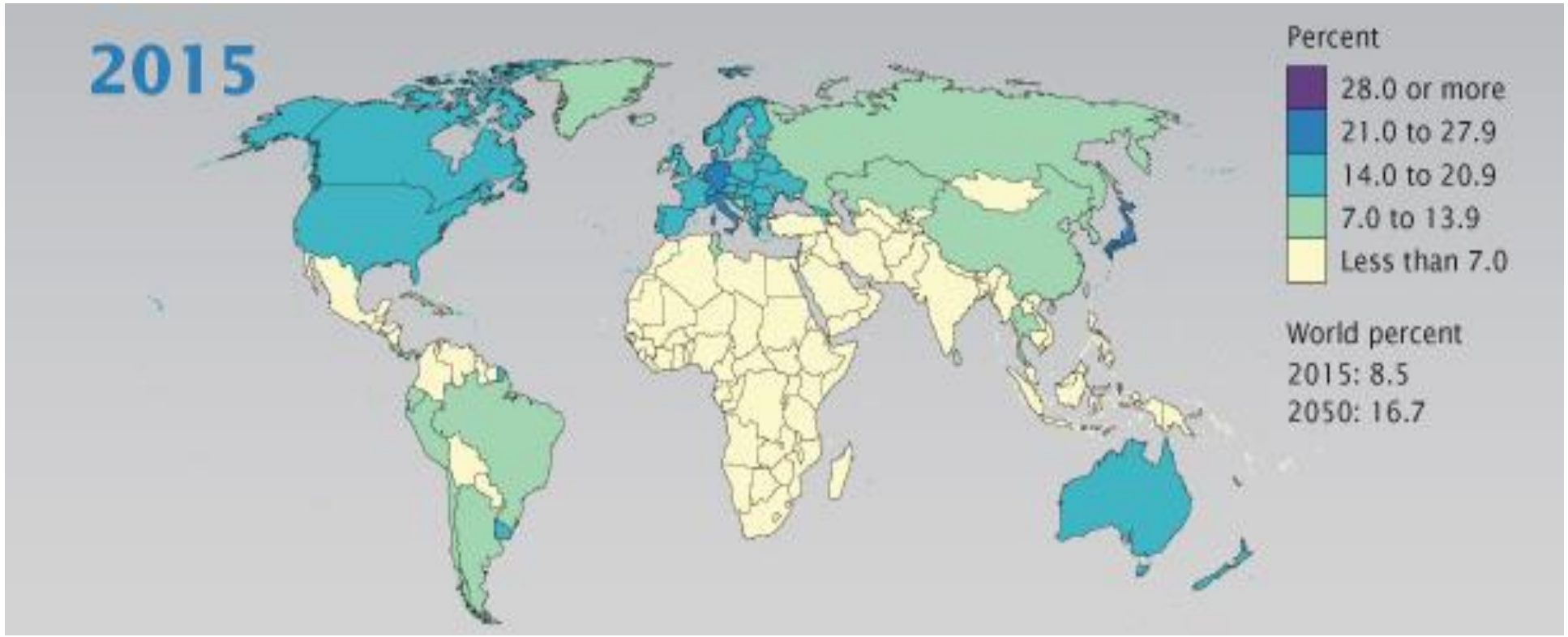
Have you considered the impacts of your aging employees and how to meet their needs?

NC STATE UNIVERSITY

Are you asking yourself these questions?

1. What age is your current workforce?
2. Will older aged individuals enter your workforce in the short term? What about the long term?
3. What are the key physical and cognitive characteristics for successful job / task execution (strength, vision, etc.)?
4. For each characteristic, what performance level is required? Does this match or exceed the expected job task requirements?

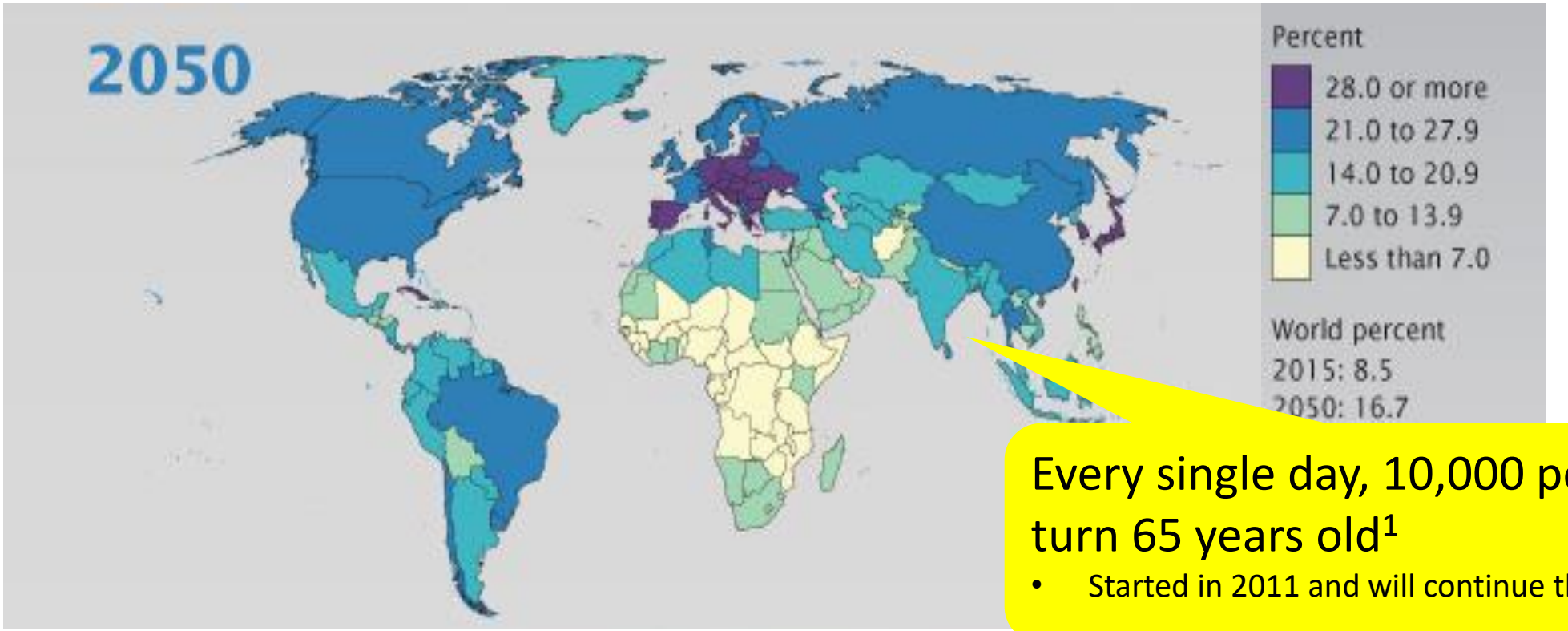
An Aging World…



Percentage of population age 65+

Source: U.S. Census Bureau

An Aging World…



Every single day, 10,000 people turn 65 years old[1]

- Started in 2011 and will continue through 2030

Percentage of population age 65+

Source: U.S. Census Bureau

[1] Pew Research Center: http://www.pewresearch.org/fact-tank/2010/12/29/baby-boomers-retire/

The Aging Workforce

- ✓ In 1972, average age of a US worker was **28**. Today it's **46**.
- ✓ The number of workers aged 45+ has ***doubled*** since 1950.
- ✓ According to the AARP, the number of people 55 years and older in the labor force was about **18.2 million in 2000** – and it is projected to rise to **32 million by 2025 (~76% increase)**.

1. Source Ergonomics ASSE Feb 2009 Vol 2, No2 – Dr. Ronald Porter, PT, CEAS, Director, Back School Atlanta, What Works with the Aging Workforce
2. Gaither, A., (2003). Health and Safety in the Aging Workforce, Retrieved January 20, 2006, from http://www.asse.org/gaitherpdcpaper.htm

Why Do Older Workers Work?

- Studies have shown that the majority (**79%**) of older workers plan to work past 65

- Attributed to:
  - Changes in Social Security retirement age
  - Maintaining healthcare benefits
  - Higher healthcare costs
  - Higher cost of living
  - Desire to stay active
  - Intellectual challenges of work
  - Committed to their jobs

Sources: Administration on Aging, BLS, Pew Research Center

Benefits of Older Workers

- Older workers more motivated to exceed expectations than younger workers (AARP, 2005)
- Older workers less likely to miss work
- Older workers are more productive through their experience quality and learned efficiencies
- Professionalism, loyalty, written communication skills, analytical skills, and business knowledge are higher in older adults (AARP, 2005)
- Much lower rate of injury with days away from work than younger generations (BLS, 2014a)

Health Changes As We Age….

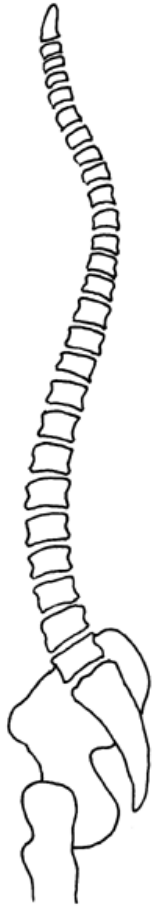
- ✓ Maximal Strength
- ✓ Muscle Mass
- ✓ Bone density
- ✓ Visual and Auditory, Acuity
- ✓ Fitness
- ✓ Aerobic Capacity
- ✓ Cognitive Speed/Function

- ✓ Gain Weight
- ✓ Arthritis
- ✓ High BP
- ✓ Diabetes
- ✓ Depression
- ✓ Heart Disease
- ✓ Menopausal & Post Menopausal Issues

Aging - Strength

- Strength of 65-year-old is 75-80% of that attained between ages of 20-30
- Decline in maximal muscle strength with age parallels the reduction in muscle mass
  - ✓ Review workstation design to minimize force requirements of task
  - ✓ Help control fatigue with job rotation or job enlargement
  - ✓ Encourage participation in wellness programs
  - ✓ Conditioning may improve muscular performance by increasing muscle strength

Aging - Workstation Changes

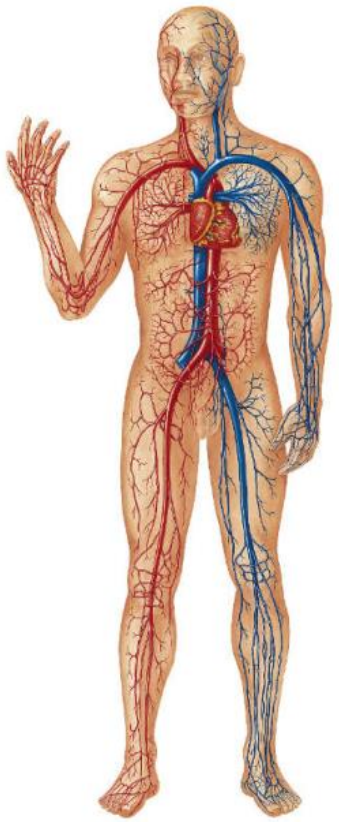


- Discs progressively dehydrate and lose capacity to withstand compressive forces during MMH activities.
  - ✓ Design using NIOSH and Liberty Mutual Guidelines to reduce risk across all ages
- Posture changes in response to aging changes should be minimized
  - ✓ Change text location and size to minimize neck extension due to wearing bifocals
  - ✓ Improve tools if postures are changed due to force required to complete task

Aging - Aerobic/Cardiac Function

- Lungs lose breathing capacity
- Resting heart rate slows and blood pressure increases
- Volume of blood pumped per minute decreases
- Elasticity of arteries & veins decrease

✓ Encourage engagement in wellness programs to maintain conditioning for the job and lower risk of underlying health conditions



Aging - Sensory Perception - Vision

Visual Adaptation – Lens thickens - darkness adaptation (amount) & transient adaptation (time) affected

- ✓Minimize transitions from light to dark

Contrast Sensitivity - Need more light to offset shifts in contrast

- ✓Need 2X the illumination by age 40
- ✓Need 5-6X the illumination by age 60

Chromatic Distortion - Lens yellows reducing blue light transmission

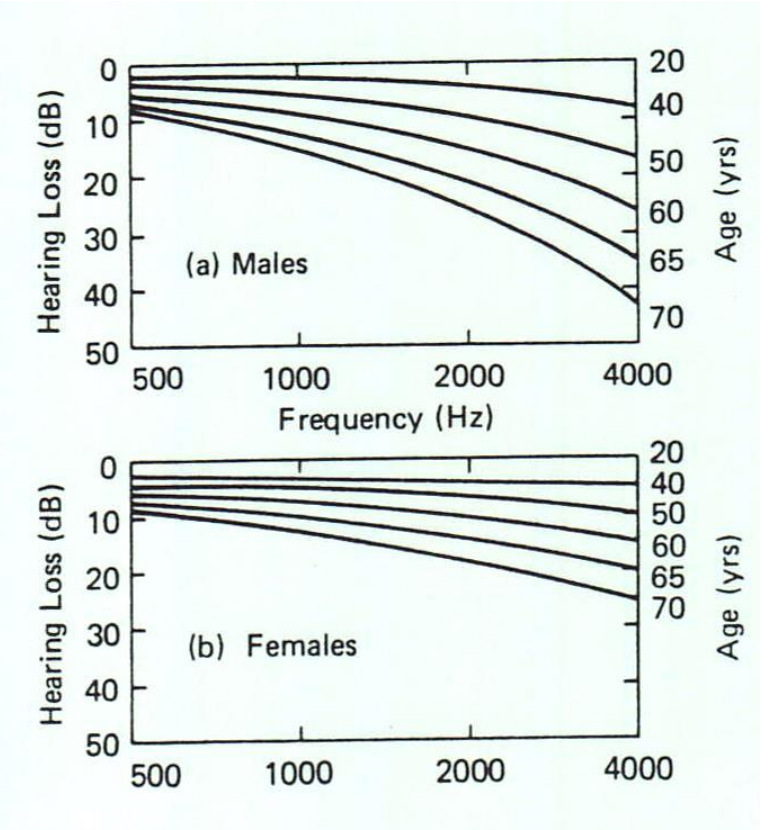
- ✓Use **BRIGHT** colors to compensate

(Verriest, Vandevyvere, and Vanderdonck as cited in Boyce (1981))

Cataracts, Glaucoma, and Macular Degeneration - Glare recovery and night vision worsen

Aging - Sensory Perception – Hearing

- **Presbycusis** is age-related hearing loss
- 33% of people >65 have hearing concerns
  - ✓ Make signals and audible messages LOUDER and add visual signals
  - ✓ Minimize background noise level if possible



Sanders, M.S. and McCormick, E.J. (1993).

Aging - Sensory Perception - Balance

Research shows 40% loss of the vestibular hair and nerve cells by 70 yrs!

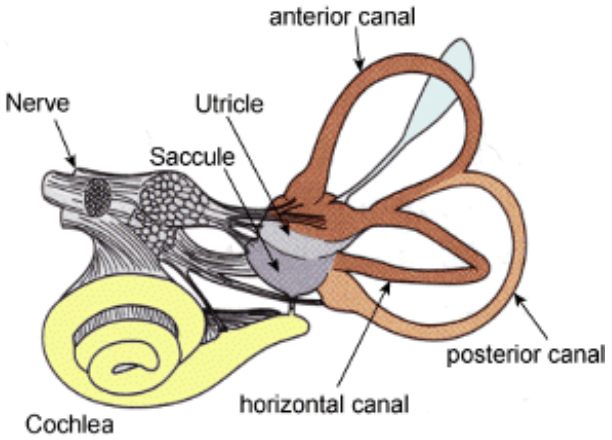
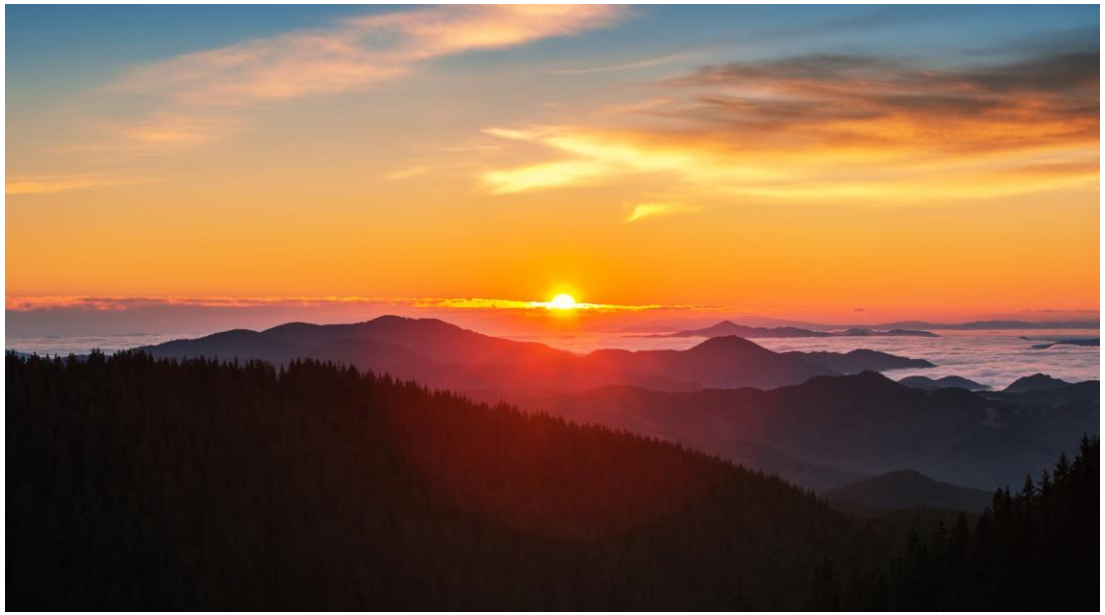


Illustration taken from Wikipedia .

- Balance is affected by inner ear, visual acuity, and muscles
- Reduced motor skills and reaction times
- 25% more time to react at age 40
- Balance contributes to higher rate of slips, trips and falls for older workers (NIH 2003)
  - ✓ Maintain slip-resistant flooring
  - ✓ Eliminate tripping hazards
  - ✓ Ensure proper stairway design
  - ✓ Use appropriate mats

Aging - Psychosocial Changes

- Reduced tolerance to shift work
- Perform better in the morning
- Respond better to structured learning



Aging - We All Benefit

- ✓ Proactively develop sound ergonomics and safety practices
- ✓ Maintain worker productivity and engagement using training and re-training, including injury hazard recognition and communication
- ✓ Provide proper lighting in all work areas
- ✓ Maintain personal contact and aggressively pursue return to work cases
- ✓ Encourage engagement in wellness programs
- ✓ Leverage older workers as mentors

Contact Us!

If you are looking for more ways to **accommodate**, **enable**, and **sustain** your aging workforce…

Call us at (919) 515-2052

OR

Visit our website at

www.ErgoCenter.NCSU.edu