


INCLUSION ERGONOMICS FOR THE DIFFERENTLY-ABLED WORKFORCE




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Workforce Demographics:



- Shift in **AGING** % of workforce
- Shift in **LENGTH OF TIME** workers continue to work

In 16 years, 1 in 5 people will be 65 years and older (20%)


By 2050, 25% of population will be over age 65

GOAL: To retain great knowledge/ skill set AND the body it comes with!

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As Our Workforce Ages:



Productivity requirements for a shifting age demographic, as new technologies continue to evolve.

- **Visual:** Age related, diabetes related
- **Mobility:** Aging knees, injured returning vets, wheelchairs, cardiovascular issues
- **Arthritis:** Osteoarthritis of Hands - keyboarding, holding tablets, books, files, swiping

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As Our Workforce Ages:



INCLUSIVE Ergonomics can benefit ALL workers, including those who are Differently-Abled.

Universal Design – Designing new facilities with all workforce demographics in mind, before problems arise.

(Ron Mace- Center for Universal Design – 1997)



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Inclusion Ergonomics:



To make the work site accessible for the entire workforce, from new hire until retirement.

2013 Workforce (BLS)

- 139 million in US were employed
 - 74.9% full time (35 + hours/week)
 - 25.1 % part time
- Gender
 - Male 53.4%
 - Female 46.6%



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Inclusion Ergonomics:



Definitions:


- Accessible – Universal design
- Assistive – Technologies and devices to help individuals with disabilities perform their job.

Inclusion Ergonomics is making all people feel VALUED.



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Aging Workforce Stats:



Two Body Parts of Concern w/Aging:

- Shoulder
- Lower Back (Less resiliency in ligaments, tendons and muscle)

» Ades & Toth 2005


MSDs in Older Workers:

- More 'severe' for older vs. younger workers
- Recuperation, lost work time, etc.

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Aging Workforce Stats:




- Employers who do not anticipate the physical and cognitive capacities of older workers and who fail to provide the programs and policies needed to support their productive capacities and minimize their vulnerabilities **will experience adverse impacts on quality, productivity, workplace safety, and workers' compensation [Silverstein 2008]**


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General Ergo for Aging Workers:



- Substitute **MECHANICAL** for manual strength
- Reduce the highly repetitive tasks
- Allow adequate recovery time
- Reduce static and stressful postures
- Job rotation



Remember, aging well at work is combination of:

- Ergonomics (Correct work environment)
- Health of the Employee (Health promotion)

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Accommodating All as We Age:



- Look at several conditions common as we age
- Ergonomic recommendations for inclusion

NOTE:

- Session is not intended to be medical advice
- Not to discuss if ailment is real or not



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Accommodating All as We Age:



- Look at several conditions common as we age

Back Conditions	Arthritis	Diabetes
Migraine Headaches	Chronic Fatigue/ Fibromyalgia	PTSD
Gastrointestinal Disorders Crohn's/IBS)	Vision Impairments	Multiple Sclerosis
ALS (Lou Gehrig's)		

- What they are and impact on work
- Ergonomic recommendations for inclusion

NOTE:

- Session is not intended to be medical advice
- Not to discuss if ailment is real or not



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Back Conditions:



Resource: (National Institute for Health)

- Stats are 8 of 10 will have low back pain at some point
- LBP can come on suddenly or gradually
- Pain lasting longer than 3 months is considered chronic

CAUSE:

- Tension, spasms, sprains, ligaments, muscle tears, joint issues, arthritis, obesity, AGING, degeneration of spine


IMPACT

- BLS, 2013 – Back injuries account for nearly one half of all musculoskeletal disorders in the workplace



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Back Conditions:
 Resource: (National Institute for Health)



LIMITATIONS:

- Usually cause difficulty lifting, carrying, moving, sitting, standing, walking, climbing, etc.


Possible Accommodations:

- Ergo evaluation to modify worksite to make accessible
- Parking close to door
- Accessible entrance/automatic door openers

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Back Conditions:
 Resource: (National Institute for Health)




Office:

- Height adjustable desk and ergonomic chair
- Move workstation close to commonly used office equipment
- Low task chair for accessing low files
- Rolling ladder to access high files
- Provide a cart to move mail, files and supplies
- Provide a Lazy Susan carousel or desktop organizer to access frequently used materials.

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Back Conditions:
 Resource: (National Institute for Health)




Industrial (Non-Office)

- Use overhead or vacuum lifting devices
- Modify work area to make adjustable
- Place frequently used tools at WAIST height
- Provide sit/lean stools and anti fatigue mats in standing area
- Make wheelchairs, scooters, golf carts available if walking long distances is required
- Provide compact lifting device to push and pull supplies and tools from storage (ELF cart)

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Back Conditions:
 Resource: (National Institute for Health)




Service Settings:

- Anti fatigue mats and stand/lean stools for long standing job
- Height adjustable desk and ergo chairs
- Provide carts to move supplies and files
- Move workstation close to commonly used office equipment
- Provide compact lifting device to push and pull stock from shelves (ELF cart)

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Back Conditions:
 Resource: (National Institute for Health)




Medical:

- Spring-bottomed linen cart
- Cart tuggers in laundry delivery
- Provide patient lifting/transfer devices (accessible!)
- Powered beds for transporting patients
- Adjustable exam tables
- Height adjustable desk and ergo chairs

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Back Conditions:
 Resource: (National Institute for Health)



Examples:

- Systems Admin required to move, lift, carry computers
 - Solution: Compact, adjustable height lifting device (ELF, scissor) with straps to secure load.
- Maintenance worker required to lift manhole covers
 - Solution: Truck mounted jib and manhole cover lifter
- Clerical worker with scoliosis
 - Solution: Ergo evaluation and Sit/Stand workstation
- Mechanic needs to access engine compartment
 - Solution: Tire lift, mechanics low task chair, specialty creeper


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Arthritis:
 Resource: (Arthritis Foundation, 2011)

Possible Accommodations:

- **Photosensitivity**
 - Install low wattage overhead lights
 - Provide task lighting
 - Replace fluorescent light with full spectrum/natural light
- **Sleep Issues**
 - Allow a flexible work hours and frequent breaks
- **Temperature Sensitivity**
 - Modify work site temp, dress code
 - Allow use of fan, AC, heater (redirect air conditioner vents)
 - Allow work from home in extreme weather


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Arthritis:
 Resource: (Arthritis Foundation, 2011)

Examples:

- **Machine operator w/arthritis, trouble turning control switches**
 - Solution: Small tabs were replaced with larger cushioned knobs and he was given gloves with non-slip dot gripping.
- **Drafter w/knee arthritis has trouble accessing worksite.**
 - Solution: Reserved parking space close to bldg, first floor office, push pad activated power doors.
- **Social worker trouble w/reading case summaries, manipulating paperwork and taking notes.**
 - Solution: Page turner, book holder, writing aids, option to dictate reports to staff


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Arthritis:
 Resource: (Arthritis Foundation, 2011)

Examples:

- **Forklift driver w/rheumatoid- trouble grasping steering wheel**
 - Solution: Forklift was fitted with spinner ball
- **Clerk w/arthritis from lupus with pain in back, neck and hands from sitting for long periods.**
 - Solution: Speech recognition software, ergo eval and chair, easily adjustable sit/stand workstation.
- **Admin Assist w/rheumatoid w/typing limits from pain and stiffness in hands from cold temps.**
 - Solution: Space heater, additional window insulation, speech recognition software.

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Diabetes:  Centers for Disease Control and Prevention
CDC 247: Saving Lives, Protecting People™

Resource: (CDC, 2007)


- Disease where blood glucose levels are above normal
- Type I – Juvenile onset (5 to 10%) – Genetic
- Type II – Adult onset (90 – 95%). Cause can be genetic, AGE, obesity, family history, gestational diabetes, physical inactivity.

Impact:

- Can cause serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations. Diabetes is the sixth leading cause of death in the United States

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Diabetes:  Centers for Disease Control and Prevention
CDC 247: Saving Lives, Protecting People™


Resource: (CDC, 2007)

Possible Accommodations:

- Hypo/Hyper Glycemia
 - Allow for storage of medication (insulin/food)
 - Provide an area to test sugar levels
 - Provide area to administer insulin
 - Provide appropriate container for sharps/needles
- Neuropathy (Nerve Damage)
 - Ergo eval for tasks requiring FINE finger dexterity
 - Eliminate the need to use sharp objects
 - Provide anti-fatigue mats or padded carpeting
 - Allow sit/stand workstation

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Diabetes:  Centers for Disease Control and Prevention
CDC 247: Saving Lives, Protecting People™


Resource: (CDC, 2007)

Possible Accommodations:

- Vision Impairment
 - Magnification – consider external magnification device or computer screen magnification software.
 - More Magnification – consider tactile graphics/keyboard or assistive technologies (screen reading software).
 - Blurring/Haziness – Try high contrast settings and themes
 - Provide digital voice recorder
 - If Photosensitive – consider alternative lighting
 - Lamps or fluorescent light filters

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Diabetes:  Centers for Disease Control and Prevention
CDC 247: Saving Lives, Protecting People™


Resource: (CDC, 2007)

Possible Accommodations:

- **Kidney Disease**
 - Provide easy access to the restroom
- **Other**
 - Avoid temperature extremes
 - Educate coworkers on identification of hypo/hyperglycemia emergencies

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Diabetes:  Centers for Disease Control and Prevention
CDC 247: Saving Lives, Protecting People™


Resource: (CDC, 2007)

Examples:

- **HR specialist having trouble balancing between reading text and computer screen due to diabetic retinopathy**
 - Solution: Task lighting, glare filter for monitor, CCTV with split screen to view text and computer monitor at same time.
- **Cafeteria worker has difficulty standing for long periods.**
 - Solution: Anti fatigue mats, sit/stand/lean stool, freq breaks.
- **Data Entry Clerk having trouble with vision.**
 - Solution: Installed additional lighting in file room and purchased a glare filter for monitor (Cost: \$30)

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Migraine Headaches: 

Resource: (National Headache Foundation, 2005)

- Form of vascular headaches
- Many types, most common: Classic and Common
- Symptoms include aura before, flashing lines, vision loss, speech trouble, weakness, nausea, vomiting.

Impact:

- 28 million Americans have migraine headaches
- 157 million lost workdays/year due to migraines
- More common in women:
 - Estrogen levels, menstrual cycles, pregnancy, menopause

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Migraine Headaches:
Resource: (National Headache Foundation, 2005)

NATIONAL HEADACHE FOUNDATION

Preventing Migraines

- Use computer glare guards for computer monitors
- Replace fluorescent lighting with full spectrum lighting
- Use Air Purification device

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Migraine Headaches:
Resource: (National Headache Foundation, 2005)

NATIONAL HEADACHE FOUNDATION

Possible Accommodations:

- Attendance
 - Modify attendance policies
 - Provide flexible scheduling options or allow work from home
- Concentration
 - Reduce visual and auditory distractions with sound absorption panels or environmental sound machines
 - Move to a work area that's quieter
 - Provide scheduled, uninterrupted time to work

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Migraine Headaches:
Resource: (National Headache Foundation, 2005)


NATIONAL HEADACHE FOUNDATION

Examples:

- Employee in cubicle has migraines triggered by noise level. She was in high traffic area, near copy machine.
 - Solution: Moved her to an area with less traffic. Gave her an environmental sound machine.
- Worker with migraine headaches triggered by heavy perfume fragrance.
 - Solution: Moved worker and asked fellow staff to voluntarily refrain from wearing fragrance. Provided sensitivity training to all staff.

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Chronic Fatigue/Fibromyalgia: 

Resource: (CDC, 2011 and Arthritis Foundation, 2011)


- CFS – Disorder characterized by profound fatigue that is not improved by bed rest.
- Fibromyalgia – Type of arthritis with profound fatigue
- Function at substantially lower level of activity
- Weakness, muscle pain, impaired memory, insomnia

Impact:

- 5 million Americans over 18 have fibromyalgia
- Occurs mostly in women, 80 to 90 % of time

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CFS/Fibromyalgia: 


Resource: (CDC, 2011)

General Accommodations:

- Provide written job instructions when possible
- Prioritize job assignments
- Allow self-paced workloads
- Provide sensitivity training to coworkers
- Ergo eval to minimize stress to the body
- Provide scooter/mobility aid if walking is necessary

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CFS/Fibromyalgia: 


Resource: (CDC, Arthritis Foundation, 2011)

Possible Accommodations:

- Fatigue
 - Ergo eval to reduce/eliminate physical exertion
 - Alternative computer access, telephone access
 - Arm supports, writing and grip aids
 - Page turner and book holder
 - Schedule periodic rest breaks away from workstation
 - Allow flexible work schedule, leave time, work from home
 - Provide parking close to work site
 - Install automatic door openers
 - Move workstation close to other work areas, office equipment, break rooms and restrooms.

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CFS/Fibromyalgia: 


Resource: (CDC, Arthritis Foundation)

Possible Accommodations:

- **Attendance/ Sleep Disorder**
 - Provide flexible scheduling options or allow work from home
- **Concentration**
 - Reduce visual and auditory distractions with sound absorption panels or environmental sound machines
 - Provide scheduled, uninterrupted time to work
- **Temperature Sensitivity**
 - Use of fan/air conditioner or heater at workstation and redirect vents.

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CFS/Fibromyalgia: 


Resource: (CDC, Arthritis Foundation, 2011)

Possible Accommodations:

- **Photosensitivity**
 - Install low wattage overhead lights
 - Provide task lighting
 - Replace fluorescent light with full spectrum/natural light
- **Sleep Issues**
 - Allow a flexible work hours and frequent breaks
- **Temperature Sensitivity**
 - Modify work site temp, dress code
 - Allow use of fan, AC, heater (redirect air conditioner vents)
 - Allow work from home in extreme weather

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CFS/Fibromyalgia: 


Resource: (CDC, Arthritis Foundation)

Examples:

- **Teacher w/CFS was exhausted by early afternoon**
 - Solution: Provided a teacher's aid, prep period moved to afternoon, excused from afternoon yard duty.
- **Risk Manager with severe bouts of irritable bowel syndrome, depression and fatigue as a result of fibromyalgia.**
 - Solution: Moved office closer to restroom, installed automatic entry doors, allowed flex time for counseling appointments
- **School Psychologist with fatigue**
 - Solution: Scheduled all appointments in the morning and allowed to do the paperwork in the afternoon.

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Post Traumatic Stress Disorder:  U.S. Department of Veterans Affairs

Resource: (National Center for Post Traumatic Stress Disorder, 2007)


- Anxiety disorder that occurs after someone experiences a traumatic event that causes intense fear, helplessness or horror.
- Person continually re-experiences event, avoids individuals, thoughts, situations associated with event

Impact:

- 30% of men and women who spent time in war zones
- Women are twice as likely to have PTSD

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Post Traumatic Stress Disorder:  U.S. Department of Veterans Affairs


Resource: (National Center for Post Traumatic Stress Disorder, 2007)

Possible Accommodations:

- **Manage Stress**
 - Flexible work schedule, rest breaks away from desk, EAP
- **Concentration**
 - Arrange office so desk faces the door
 - Allow them to use a headset to listen to music
- **Interaction with Coworkers**
 - Educate all staff on sensitivity
 - Don't mandate employee to attend work related social functions
 - Encourage all employees to move non-work related conversations out of work areas

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Post Traumatic Stress Disorder:  U.S. Department of Veterans Affairs


Resource: (National Center for Post Traumatic Stress Disorder, 2007)

Examples:

- Office worker veteran with PTSD is easily frightened when approached unsuspectingly. Works in a cubicle.
 - Solution: Placement of a monitor-mounted mirror so he could see the entrance behind him. Placement of a sensor mat at the entrance of cubicle which made an audible alert when someone steps on it.
- Office worker who was stalked and harassed by a former employee now has a panic disorder. She is fearful of answering her office phone.
 - Solution: Use of telephone with caller ID function and/or call blocking, a change in ringtone or frequency of telephone ringer to reduce panic reaction, routed calls through a switchboard, and disabled employee's district extension in phone book.

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Gastro/Crohn's/IBS:  American College of Gastroenterology
Advancing gastroenterology, improving patient care

Resource: (American College of Gastroenterology)


- Disorders that affect structures in digestive system.
- Constipation, diarrhea, hemorrhoids, gastroenteritis, colitis and irritable bowel disorders.
- Crohn's Disease, Gastroparesis, Ulcerative Colitis, Irritable Bowel Syndrome, Gluten Allergy, Spastic Colon, Diverticulitis

Impact:

- Affects millions in the workforce
- Symptoms include 'when you got to go...you got to go'

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Gastro/Crohn's/IBS:  American College of Gastroenterology
Advancing gastroenterology, improving patient care

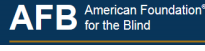
Resource: (American College of Gastroenterology)

Possible Accommodations:

- Allow to use restrooms as needed
 - Move workstation closer to restroom to deal with urgency
 - Change in job assignments to job with better flexibility for breaks
 - Work from home during flare ups
- Meeting physical demands of job
 - Restructure job to remove marginal job functions that are physically demanding

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Vision Impairments:  American Foundation[®]
 for the Blind

Resource: (American Foundation for Blind, 2006)

- Vision impairments result from conditions that range from the presence of some usable vision, low vision, to the absence of any vision, total blindness.
- With AGE:
 - Myopia - Nearsighted
 - Presbyopia - Close objects become blurry
 - Cataracts – Clouding of the eye lens
 - Glaucoma/Diabetes – Damage to optic nerve (Retinopathy)

Impact:

- 10 million Americans are blind or have 'low vision'

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Vision Impairments: **AFB** American Foundation[®]
for the Blind

Resource: (American Foundation for Blind, 2006)

Possible Accommodations:

- **Low Vision**
 - Closed Circuit TV (CCTV), hand/stand/portable magnifier
 - Information in large print (at least 16 Font...18 if possible)
- **Computers**
 - Increased font size for text/emails
 - Screen Magnification software
 - Large print keyboard labels for navigation
 - Flicker free monitor
 - anti-glare guard and use of computer glasses to reduce glare

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Vision Impairments: **AFB** American Foundation[®]
for the Blind

Resource: (American Foundation for Blind, 2006)

Possible Accommodations:

- **Writing**
 - Felt tip pens (BOLD and FAT) or lighted pen
 - Paper with form and guide lines
- **Phone:**
 - Large print/color labels on phone keys
 - Optical magnifier
- **Working with Money**
 - Hand or stand magnifier
 - Task lighting or headlamp

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Vision Impairments: **AFB** American Foundation[®]
for the Blind


Resource: (American Foundation for Blind, 2006)

Examples:

- **Custodian with low vision had trouble seeing carpet when vacuuming.**
 - Solution: Light system installed on industrial vacuum and custodian given a headlamp.
- **Clerical w low vision trouble distinguishing keys on keyboard.**
 - Solution: Glare guard for monitor and large print keyboard labels.
- **Customer Service Rep has trouble reading screen.**
 - Solution: Screen reading software so all information present on screen and inputted information was read back aloud.

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Multiple Sclerosis: 

Resource: (National Multiple Sclerosis Society)


- Chronic disease of central nervous system.
- Symptoms include numbness in limbs, loss of vision, fatigue, loss of coordination, muscle weakness, slurred speech, visual difficulties.

Impact:

- 400,000 people 'know' they have it
- Age of onset is between 20 and 50 years of age
- MS is twice as common in women

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Multiple Sclerosis: 


Resource: (National Multiple Sclerosis Society)

Possible Accommodations:

- Ergonomic Evaluation
 - Provide arm supports
 - Provide writing and grip aids
 - Provide Page turner and book holder
 - Speech amplification, speech enhancement
- Computers
 - Increased font size for text/emails
 - Screen Magnification software
 - Anti-glare guard and use of computer glasses to reduce glare
- Other
 - Move workstation closer to bathroom

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Multiple Sclerosis: 

Resource: (National Multiple Sclerosis Society)


Examples:

- Benefits worker having difficulty reading files from her MS.
 - Solution: Provided a stand magnifier and added task lighting to desk.
- Social Worker having trouble with heat sensitivity.
 - Solution: Provided employee with a private office where temperature could be lower than rest of facility.
- Teacher with MS having difficulty communicating with students because his speech was soft and slurred when tired.
 - Solution: Provided a personal speech amplifier so he would not have to project his voice. Was allowed to schedule his classes so he could take periodic breaks.

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ALS/Lou Gehrig's:
 Resource: (ALS Association)



- Amyotrophic Lateral Sclerosis (ALS)
- Progressive neurodegenerative disease that attacks nerve cells in the brain and spinal cord.


Possible Accommodations:

- Weak Muscles in hands, arms, legs
 - Ergonomic evaluation and workstation design to include ergonomic seating and forearm supports
 - Flexible work schedule
 - Elimination of physical exertion



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ALS/Lou Gehrig's:
 Resource: (ALS Association)



Possible Accommodations:

- Twitching/Cramping of muscles (hands/feet)
 - Ergonomic evaluation and equipment
 - Footrests
 - Speech recognition software
 - Alternative input devices
 - One-handed, alternative or expanded keyboards
- Impairment of Arms/Legs
 - Adjustable workstation for wheelchair or scooter
 - Accessible parking
 - Ramps
 - Stair and chair lift


* Practice evacuation plan



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Goal of Inclusion Ergonomics:

- To recognize the shift in demographics
 - Aging workforce
 - People are staying in the workforce longer
- We want to retain employees' great knowledge and skill set which means accommodating the body it comes with!



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Resources:

- **Job Accommodation Network**
– www.askjan.org
- **US Department of Labor**
– www.PEATworks.org
– Partnership on Employment and Accessible Technology
- **Microsoft Accessibility**
– www.microsoft.com/enable/centers
- **American Disability Association**
– www.ADA.gov
- **MIT Assistive Technology Information Center (ATIC)**
– <http://web.mit.edu.atic.www>

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