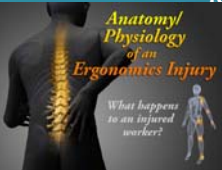



**Ergonomics:  
Bridging the Gap from Treatment to Prevention  
to Wellness**

**AHMP 2013**  
National Conference  
September 16, 2013

Ron Porter  
Physical Therapist, CEAS III  
Director  
The Back School  
[rporter@thebackschool.net](mailto:rporter@thebackschool.net)  
404-355-7756

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**Ergonomics:  
Bridging the Gap from Treatment to Prevention to Wellness  
Objectives/Goals**

- Understand the “Persistent” Injury and the Aging Process of the Brain & Body
- Review **Best Practices** for Decreasing Fatigue and Risk of Injury
- Practice Concepts for “Ergo Leader” training on **Power Zone** & **Workplace Athlete Skills**
- Have FUN !!

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**Boeing Research Study**  
Stanley J. Bigos, Michele Crifes Batti  
May 1988

In the 1980's Stanley Bigos, MD evaluated 31,200 Boeing Company workers and identified that **job dissatisfaction** along with a previous history of MSDs were the two most significant predictive factors for employees reporting work related back injuries.

**Do you know any of today's workers who are dissatisfied?**

**A 2013 Gallup Poll found that 70% of US workers are dissatisfied with their jobs. This results in a \$550 billion loss in productivity.**

**Incidence of MSDs & ERGONOMICS**

- Musculoskeletal Disorders produce 33% of Lost Time Claims in US
  1. Back – 41%
  2. Shoulder – 13%
  3. Legs – 10%
- Average DIRECT cost per MSD in 2010 - **\$20,500**
- Success of Ergonomics
  1. 61% decrease in injury rate
  2. 30% decrease in severity (cost)

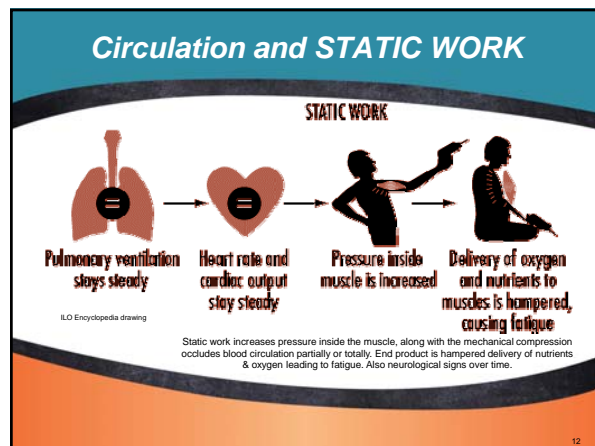
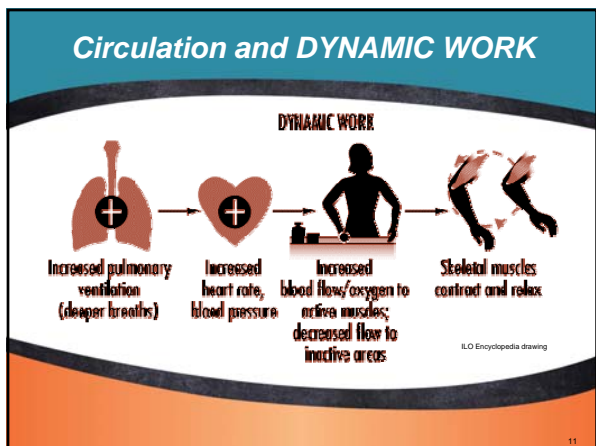
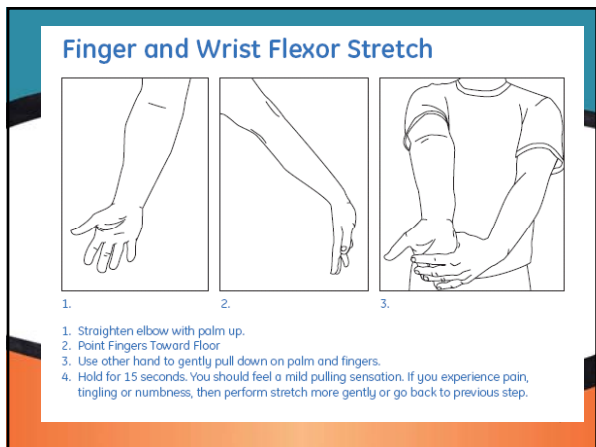
Ergonomics Programs: The Missing Link  
Timothy Pottorff- Zurich Services Corporation-  
2013 Applied Ergonomics Conference- Dallas, TX

**Athletic Activities are performed for a few hours!**



**Work Activities last for 8-12 hours or more !**





### What causes the persistent injury?

- **Aging Workforce**
- Poor Physical Fitness Levels
- Increased Work Load
- More Physical Fatigue
- More Mental Fatigue
- Better Educated on MSDs
- Static Work & Home Postures
- One Size Fits All – Job, Home & Recreational Activities

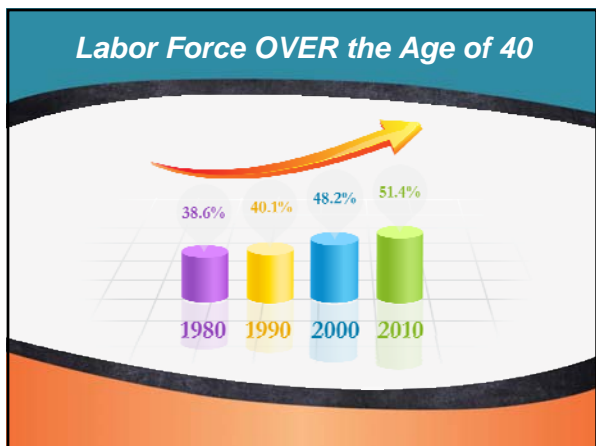
### How do we control or prevent the persistent injury ?

- Apply ergonomics principles to **job design** (proactive NOT reactive ergonomics).
- Match the physical demands of the job to the physical capabilities of the worker (**Employment Testing & FCE**).
- Educate the worker on their **responsibility** in ergonomics principles and self care.
- Train managers and workers to recognize early warning signs & **Aging Workforce** issues for MSDs.
- Understand **FATIGUE!**
- Grow **“Ergo Leaders”**

AND.....

### How Do We Control or Prevent the persistent injury? “ERGO Breaks”

### What is your definition of an “Aging Worker”?



### Our Aging Workforce

- In 1972 the average age of a US worker was **28**
- In 2012 the average age of a US worker was **46**
- Currently **28.2 million** workers are **55** or older
- In 2016 33% of workforce will be **over 50** years old
- How many of you are **OLDER** than you were 5 years ago?

### Connective Tissue Changes

- The chemistry of cartilage, which provides cushioning between bones, changes. With less water content, the cartilage becomes more susceptible to stress. As cartilage degenerates, **arthritis** can develop.
- Ligaments, connective tissues between bones, become less elastic, reducing flexibility. **For Most People.....**

### Hamstring Stretch

1. Place heel on ground in front of you with knee straight. You may wish to stand next to something for balance.
2. Keep your back straight and bend forward at your hips.
3. Hold for 15 seconds. You should feel a mild pulling sensation. If you experience pain, tingling or numbness, then perform stretch more gently or go back to previous step.

### Slowing Down the Aging Process

Feeling scattered brained?

If you are having difficulty focusing on a good book, the nightly news or even your spouse because the kids, pets, phone, TV, flashing email, text messages and more are driving you to distraction, don't blame the interruptions.

### Filter Out Distractions & Interruptions to Improve Memory

- It turns out that the PRIME reason for midlife concentration lapses and late-life memory problems is an increasing inability to filter out clutter- both human and digital distractions.
- A growing stack of studies shows that 30-something brains can focus on a topic with laser-beam precision while ignoring multiple distractions.

### Filter Out Distractions & Interruptions to Improve Memory

- Older brains have frayed mental filters that let other information in, no matter how hard they are trying to concentrate.
- Researchers discovered this concentration issue while using MRIs to scan people's brains as they performed memory related problem solving tasks.



### Filter Out Distractions & Interruptions to Improve Memory

- In the study people over 40 could not concentrate inside the banging MRI machines, even when wearing ear plugs.
- Their brain scans revealed the extra mental effort used as they tried to filter out the distracting noise, tipping off researchers to the mental challenges of concentrating of more MATURE individuals.

### Tips for Minimizing Age-Related Distraction

- **Turn Off Distraction-** You can recapture much of your sharp focus by removing distractions when you have to do mental work. Don't try to multitask.
- **Clear Your Desk, Organize Your Home-** Visual clutter can slow down your mental capacity so that decision making takes more time/effort. Sweep unnecessary stuff from desk, cooking area, closets and car.

### Tips for Using Age-Related Distraction

- **Turn distractibility into a mental asset-** Give "multisensory learning" a whirl. Instead of reading an in depth article, watch an in depth TV show or videos on the internet
- **Enjoy seeing the forest, not just the trees-** Having a more flexible mental filter means you take in more pleasure, too. When walking, biking or people watching you will notice more than you did in your 20s or 30s.

### Slow Down the Aging Process Left Side Mouse

### Workforce issues for OLDER workers that need to be addressed for all.

- **Hearing-loss** (difficulty w/ sound discriminations or speech especially in noisy environments.)
- **Eyesight equity** (diminished depth perception, acuity, glare)
- **Strength** – loss (15-20% b/w 20-60 yrs.)
- **Flexibility** – loss (reach range decreased)
- **Reflexes** – decreased
- **Hand-eye coordination** – (diminished w/ decreased vision)
- **Endurance** – decreased (earlier onset of fatigue)
- **Stamina** – decreased (heat regulation a factor)
- **Balance** – decreased (secondary to posture changes)
- **Sleep patterns** – (difficulty adapting to changes in shifts effects rest)

### Hearing-loss

(difficulty w/ sound discriminations or speech especially in noisy environments.)

- It can cause you to **misunderstand communication**
- It can cause you to **miss important safety warnings**
- It can create unhealthy **stress**
- Noise can result in temporary or permanent **hearing loss**

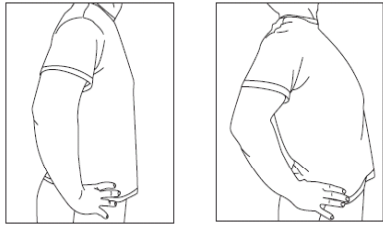
### Hearing-loss

(difficulty w/ sound discriminations or speech especially in noisy environments.)

**Solutions**

- Baseline Hearing Exams
- Use of appropriate hearing protection systems
- Provide important info in multiple forms (Emergency vehicles use flashing lights & sirens)
- Decrease Noisy Work Environment (Machinery, co-workers)
- Decrease Background Noise (heating & A/C, florescent lighting)

### Low Back Flexor Stretch



1. Place hands on hips.
2. Gently lean back.
3. Hold for 15 seconds. You should feel a mild pulling sensation. If you experience pain, tingling or numbness, then perform stretch more gently or go back to previous step.

### Eyesight equity

(diminished depth perception, acuity, glare)



### Vision Loss and the Aging Workforce

According to a September 2008 “Special Report on Aging and Vision Loss” by the National Center for Health Statistics:

**By the year 2030 rates of vision loss will double along with the country’s aging population.**

[www.cdc.gov/nchs.htm](http://www.cdc.gov/nchs.htm)

### Vision Loss and the Aging Workforce

- **Vision Loss** refers to individuals who reported that they have trouble seeing, even when wearing glasses or contact lenses, as well as to individuals who reported that they are blind or unable to see at all.
- **Legally Blind** refers to those with central visual acuity of 20/200 or less in the better eye with the best possible correction.

### Vision and Aging

- Instructions on labels and dials were found to be best when printed with:

Arial 22 vs. Times New Roman 12  
APPROXIMATELY 3X LARGER.

British Journal of Ophthalmology 11-2004

### Eyesight equity (diminished depth perception, acuity, glare)

#### SOLUTIONS

- Baseline eye exams for new workers
- Provide annual exam and glasses for workers that spend more than 2-4 hours at visually stressful jobs
- Larger screens (move screen CLOSER to worker).
- BLACK type on white background
- *Cataract victims may work better with White letters on Black background. Dr. Anshel - The Ergonomic Report 2003*
- **Task lighting** & over head light review & modifications

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### Strength-loss (15-20% b/w 20-60 yrs.)

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### Flexibility-loss (reach range decreased)

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### “Ergo Breaks” for Workplace Athletes

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### Neck Shoulder Stretch

1. Place hands in front of forehead with palms facing out. Take a deep breath in.
2. Pull elbows toward back pockets while rotating palms out.
3. Slowly exhale while squeezing shoulder blades together and drawing head back.
4. Once you have fully exhaled, repeat for 2 repetitions. If you experience pain, tingling or numbness, then perform stretch more gently or go back to previous step.

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### Overview Of ERGO Leader Training

- Intro to Ergonomics
- **POWER ZONE** What is it?
- **Workplace Athlete**
- Best Practices
- Coaching Skills

**WORKPLACE ATHLETE**

## Goals for ERGO Leader Program

- Build a Culture of Ergonomics
- Train participants to develop "Ergonomics Eyes"
- Provide Awareness, Skills and Confidence to evaluate and modify workstations
- Instruct and Practice assessments and Coaching of employees
- Have FUN !

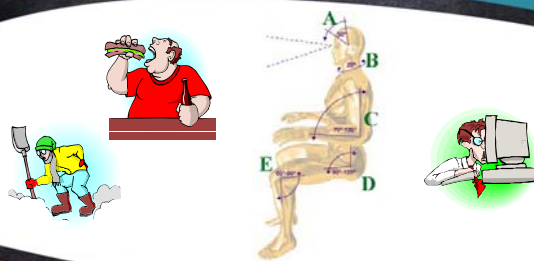
## The Key to a Successful Program

- The employee must be taught to understand that caring for and using their body correctly while avoiding MSD's is **THEIR Responsibility**.
- **It is the responsibility of the employer to provide a safe workplace.**
- **Having both Employer and Employees work together as a TEAM is the best approach.**

## Educate the TEAM

- Train workers in basic human anatomy, physiology and biomechanical function
- Set goals and direction as to what is expected of them in the work environment
- On going training and skill enhancement

## So what do you think of when you hear the word- **ERGONOMICS**?



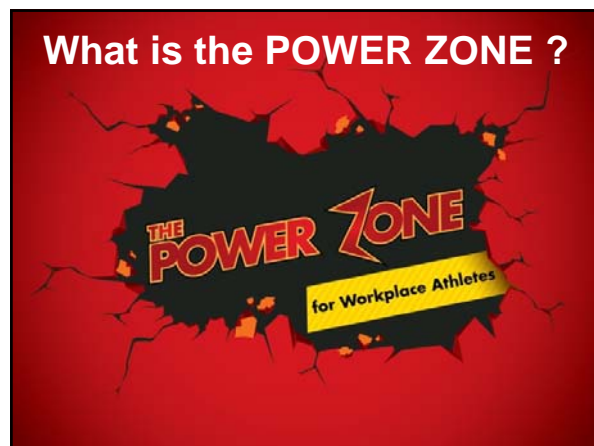
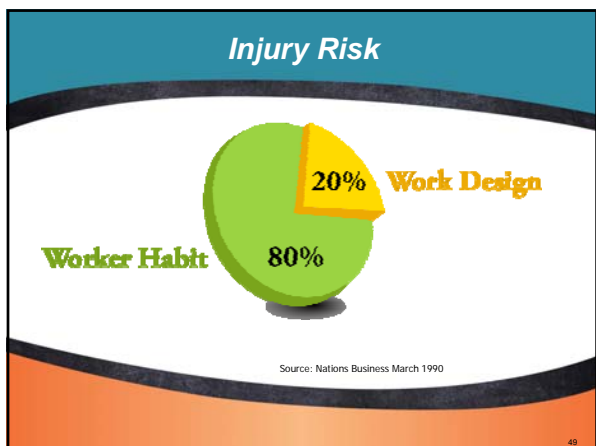
## ERGONOMICS Definition

- Ergonomics considers the match between the **person**, the **equipment** they use, the work **processes** and the work **environment**.
- Ergonomics principles are used to improve the **"fit"** between the worker and the workplace.
- A persons **capabilities**, **physical attributes** and work **habits** must be recognized to improve ergonomics factors in the workplace.

## ERGONOMICS Primary RISK FACTORS

- **Posture** (prolonged awkward & static)
- **Repetition** (without adequate rest periods)
- **Force** (sustained beyond minimum effort)
- **Contract Stress** (compromised circulation)
- **Vibration** (neurovascular shutdown)



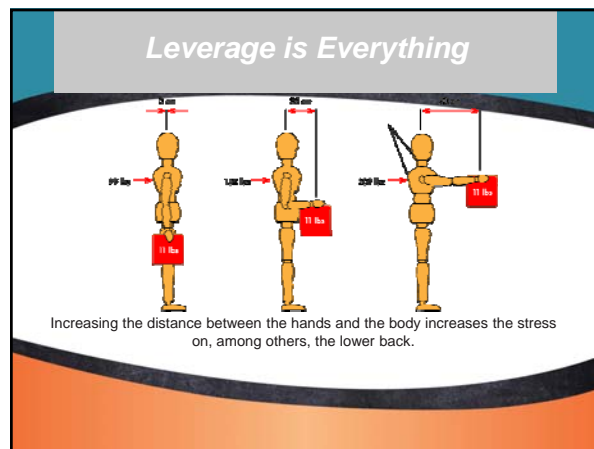
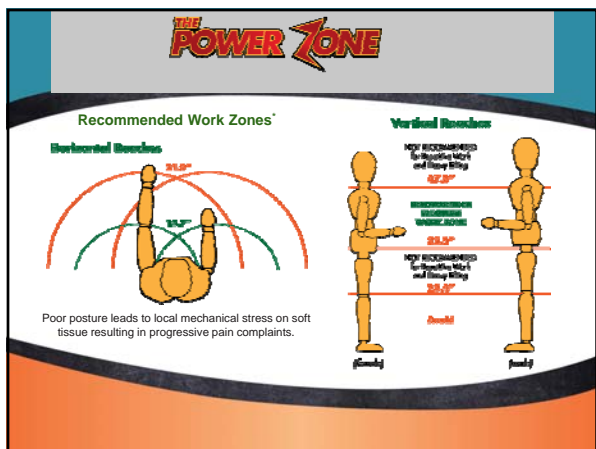


### POWER ZONE Taking Care of YOU !

- Bend your elbow at a 90 degree angle (an L shaped position of the arm) and you are in your primary **POWER ZONE**
- The area up to the shoulders and down to the knees (often called the **Strike Zone** in baseball) is acceptable.
- The more time you can work in your **POWER ZONE** the less **POWER ZONE** fatigue on your body.

### POWER ZONE Taking Care of YOU !

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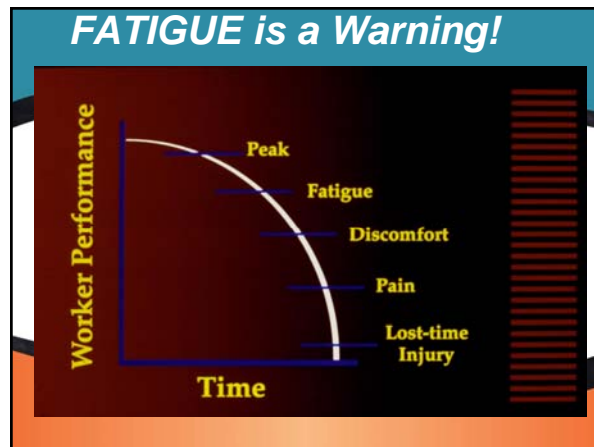




### Finger and Wrist Extensor Stretch

1. Straighten elbow with palm down
2. Bend wrist down and make a gentle fist. If you feel pain in back of hand then just relax fingers.
3. Gently pull down on back of hand.
4. Rotate arm so that hand is pointing away.

Hold for 15 seconds. You should feel a mild pulling sensation. If you experience pain, tingling or numbness, then perform stretch more gently or go back to previous step.



### Sleep as an Ergo Issue

- During the 20th century, the average number of hours people spend asleep per night in more developed countries decreased from 9 hours to 6.8 hours
- The change has been made to accommodate increased demands of work and more leisure activities
- Millions of shift workers average less than 5 hours sleep per day

### 2010 Hours of Sleep for US Adults

• 5 hours or less	13%
• 6 hours	29%
• 7 hours	37%
• 8 or more	24%

### Shift Work "Blue Collar Jet Lag"

20% of adults are shift workers;  
56% fall asleep on the job each week.  
30% report such incidents occur more than three times per week.  
23%-37% increase in injuries w/ extended hrs.

For more than half of all workers sleepiness diminishes:  
Concentration at work  
The amount of work accomplished  
The quality of work

*Sleep deprivation costs \$100 billion annually*

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### Ways to get a Rest Break

- Spontaneous – just **STOP!**
- Administrative - built into the schedule
- Engineered - Pace of the machine or task
- Hidden – Do light duty for a time

• 30-180 seconds = **Ergo Breaks**

### Coaching



### Success of ERGO Leader Programs

#### Large Food Distribution Company

- Developed and Implemented an ERGO Leader program for both warehouse and direct delivery employees in 2012.
- Managers were trained to provide instruction and coaching on **Power Zone** & **Workplace Athlete** programs.
- Provided collateral materials (Power Points & script, Video Clips & personalized Ergo Break Programs & Cards

### Success of ERGO Leader Programs

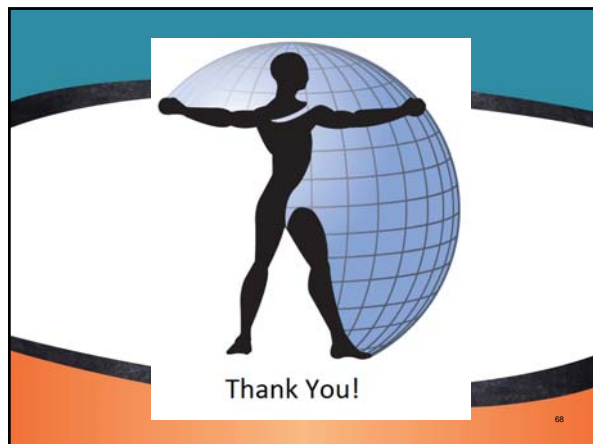
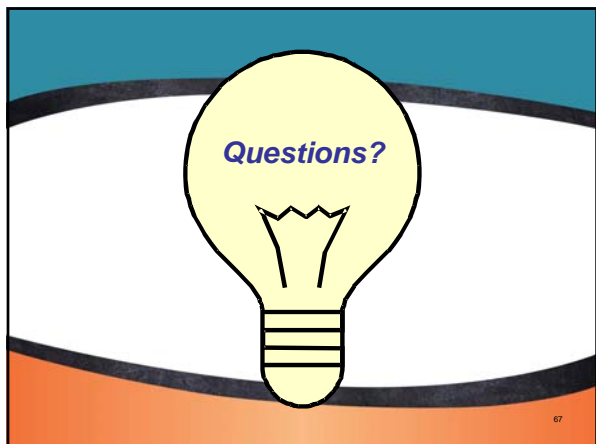
#### Large Food Distribution Company

- In 2012 despite a 4 % increase in headcount, cases handled and hours worked, Strain (soft tissue) **Injuries went down by 10%** in the warehouse! A decrease in severity was seen with almost a **39% decrease in cost associated with strain type injuries.**
- Driver strain injuries remained flat year over year, but that was with a 4% increase in headcount, hrs. and cases handled, **so we also call that win!**

### Ergonomics: Bridging the Gap from Treatment to Prevention to Wellness Objectives/Goals

- Understand the "Persistent" Injury and the Aging Process of the Brain & Body
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**Posture Awareness**

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