From Reactive to Proactive Ergonomics: Creating an Ergonomics Process

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Worksite Ergonomics Program

- Early Reporting System
- Medical Management
- Hazard Identification
- Hazard Control
- Training
- Evaluation Of Program

Ergonomics Committee
Reactive Ergonomics Process

- Employee Injured
- Loss Time and Modified duty
- Ergo Evaluation
- Job redesign Worker RTW
Proactive Ergonomics Process

- Employee input
- Ergo Evaluation
- Job redesign
- Increased productivity, morale, injuries
Creating an Ergonomics Process

- Steps in a Process
- Ergonomics Committee
- Reactive to Proactive Processes
- Proactive Approach to Older Workers
What will you do? (realistically)

Ergo means.......many things to many people

“Get me a new chair!”
“I need a sit-stand”
“Tell them I can’t shovel any more”
Consider...

Computer Evaluations

Annual Back School

Chair or workstation equipment selection
Developing an Ergonomics Process

Step 1: Management support

The Champion
Why Management Commitment: “Walk the talk”

Commit resources

- Worker Release time
- Training
- Injury Data
- Budget
- Consultants
- Develop policy

Commit to policies

- Assign leaders
- Enlist union reps
- Set goals that target specific operations
- Include ergonomics in TQM and design processes
Building Your Case to Management

Show evidence:

• Lost time or discomfort
  ▪ WC Claims
  ▪ OSHA 300 Logs
  ▪ Complaints!!
• Inefficient Processes- errors
• Physical risks
• Mental stressors
• External ROI Evidence
Developing an Ergonomics Process

Step 2: Identify your model: How do you fit?

- Facilities
- EHS
- Operations
- HR
- Health Services
- Public Safety
- Ergonomics
- Safety committee
- Wellness
- Engineering
Developing an Ergonomics Process

Step 3: Form your Ergonomics Team

Start small, 5-6, employees and admin from various departments
Employee input is a valuable business resource respected by any organization interested in a strong market presence: the voice of employees is a primary source for companies to generate new ideas, resolve problems, and find loads of new opportunities...

http://www.taskmanagementguide.com/glossary/what-is-employee-input.php
# Committee Participants and Roles

## Examples

<table>
<thead>
<tr>
<th>Team Lead</th>
<th>Safety</th>
<th>HR</th>
<th>Supervisors/line employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Plan meetings</td>
<td>• Provide injury data</td>
<td>• Report on on w/c</td>
<td>• Brainstorm problems and solutions</td>
</tr>
<tr>
<td>• Create agenda</td>
<td>• Perform ergo evals</td>
<td>• Link to health and wellness activities</td>
<td>• Offer realistic appraisal</td>
</tr>
<tr>
<td>• Coordinate training</td>
<td>• Check that control meets criteria</td>
<td>• Coordinate training</td>
<td>• Share information with workforce</td>
</tr>
<tr>
<td>• Gather input</td>
<td>• Submit funding requests</td>
<td>• Perform work-site evaluations</td>
<td>• Perform work-site evaluations</td>
</tr>
<tr>
<td>• Track progress</td>
<td></td>
<td>• Submit funding requests</td>
<td>• Solicit feedback from workers</td>
</tr>
<tr>
<td>• Follow-up</td>
<td></td>
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</tbody>
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Committee Participants and Roles Examples

- Team Lead: Plan meetings, Create agenda, Coordinate training, Gather input, Track progress, Follow-up
- Safety: Provide injury data, Perform ergo evals, Check that control meets criteria, Submit funding requests
- HR: Report on on w/c, Link to health and wellness activities, Coordinate training, Perform work-site evaluations
- Supervisors/line employees: Brainstorm problems and solutions, Offer realistic appraisal, Share information with workforce, Perform work-site evaluations, Solicit feedback from workers
Employee Participation is Crucial

Employees know the job!
Identify Problems
Identify Realistic Solutions

Buy-in - Accept Change
Enhanced worker morale
Different perspectives on reality!
Communication about Ergonomics is Key

- Engineering/Planning
- Health and Safety
- Procurement
- Ergonomics
Developing an Ergonomics Process

Step 4: Train Your Committee

In-house programs more successful than those headed by outside consultants. Does everyone need to be trained? Consider Levels of training.

Levels of Training

1) Problem/solution Process

2) Specific ergo evaluations
Step 5: Develop System for Problem ID and Solutions: Who, what, when?
Problem and Solution Identification

Problem Identification
• Root Cause
• Ergo Analysis
• Risk factors

Solutions
• Short, Long term
• Resources, cost

Logistics
• Who conducts
• Which evaluations Used
• Timeframe

Implementation
• Who orders,
• Who installs
Healthy Workplace Participatory Program

IDEAS Tool

Problem ID and Solution Process

Problem Identification Process

- Brainstorm health concerns
- Prioritize and Select focus
  - Data from w/c, OSHA…
  - Complaints
- Identify sub issues: What contributes to problem?
  - Equipment
  - Work organization/schedule
  - Personal factors

Measureable Objectives:

- Identify measureable goal
- Achievable

Brainstorm >3 Solutions

- Engineering
- Administrative
- Work practice controls

### Step 2: Set Measureable Objectives & Brainstorm Solution Activities

**Health & Safety Goal/Objective**

Reduce the rate of neck, shoulder, and back pain in office workers.

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**THINK BROAD**

- Further evaluation
- Outside expertise

**THINK BABY STEPS**

- **Short Term**
- **Long Term**

**THINK MULTIPRONGED**

- **Engineering**
- **Administrative**
- **Workpractice**

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**Solution #2**

Establish rest breaks and routines to vary posture throughout the work day to minimize strain from heavy computer use.

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**Engineering**

- Replace non-adjustable furniture; reassign furniture
- Provide workstation ergo training to all employees
- Hire ergonomist to assess current environment and design an ergonomics policy/program
- Lack of access to occupational physician to treat and manage pain from computer overuse

**Administrative**

- Establish new norms for lunch and other breaks to step away from desks
- Place printers away from desks to encourage walking and movement
- Pilot a shared treadmill workstation to encourage movement during work
- Supervisor training on workload coaching and supportive communication with direct reports

**Workpractice**

- Offer core and upper body strength training
- Break room with mats for stretching, yoga DVDs for stretching and stress reduction. Treadmill for cardio warm up, moderate free weights
- Encourage flex time for fitness routines
- Incentives for participation in fitness activities
## Solution Alternatives

Avoid going straight to one solution

### Step 4*: Apply Selection Criteria to Solution Activities & Create 3 Intervention Alternatives

<table>
<thead>
<tr>
<th>Solution Activities</th>
<th>Scope/Impact</th>
<th>Benefits/Outcomes</th>
<th>Resources</th>
<th>Obstacles</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

*Use multiple worksheets to review solution activities, then combine solution activities into intervention alternatives.
### Rank Your Solution

**Rate Each Section:**
- Low
- Medium
- High

**Weight**

#### Step 5A: Rate Intervention(s)

<table>
<thead>
<tr>
<th>Intervention A</th>
<th>Intervention B</th>
<th>Intervention C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Title:</td>
<td>Title:</td>
</tr>
<tr>
<td>Anticipated scope/impact (L/M/H)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticipated benefits (L/M/H)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resources needed (L/M/H)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticipated obstacles (L/M/H)</td>
<td></td>
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</tr>
</tbody>
</table>

**Priority rankings of interventions (optional):**

**Additional notes to the Steering Committees (optional):**
Implement Solution

THINK LOGISTICS

- Task
- Timeframe
- Assign Person (s)
- Choose equipment options
- Ordering (procurement)
- Installation
Developing an Ergonomics Process

Step 6: Evaluate intervention

- Anti-fatigue mats
- Rail or stool for foot
- Stretch reminders
Your Ergonomics Team:
YOUR Roles and YOUR Processes

Structure/Roles/Meeting

1. Mission statement - provides parameters
2. Participants and Roles
3. Structure: Monthly meeting Time; Agenda
4. Define your OWN Process:
   - Identifying problems
   - Evaluation timeframe, Ergo tools
   - Determining solution
   - Recommendations for Equip
   - Who orders?
   - Who installs?
   - Budget?
   - Follow-up
Moving from Proactive to Reactive

Let’s get started!!

Reactive Process
• Investigate ergo Incident
• Analyze job tasks
• Determine RTW Accommodations
• Implement for individual worker
• Follow-up worker

Proactive Process
• Identify ergo risks with workers
• Analyze job tasks
• Develop ergo solutions with workers
• Implement for workforce
• Follow up and ROI
Proactive ergonomic process

- Employee input
- Ergo Evaluation
- Job redesign
- Increased productivity, morale, injuries
Proactive approach to supporting and aging workforce

Benefits of Older Workers

- Tacit knowledge
- Strong work ethic
- Low turnover
- Committed
- Productive

Injuries: Lower incidence
Higher severity

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Days Per Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>5</td>
</tr>
<tr>
<td>35-45</td>
<td>6</td>
</tr>
<tr>
<td>46-54</td>
<td>10</td>
</tr>
<tr>
<td>55 and &gt;</td>
<td>12</td>
</tr>
</tbody>
</table>
Data from BLS 2011 reports……..

Older workers had higher rates:

• falls on the same level
• fractures
• hip injuries
• Higher rates of shoulder and knee injuries
With age, job tasks demand a greater percent of employee capabilities.
Aging and Reserve Capacity

- Reserve capacity
- Essential functional minimum

Healthy (young)  
Healthy (old)  
Sick (young or old)
BMW and Older Workers

https://www.youtube.com/watch?v=dluzaXvvBV0
Changes in Balance

- Changes in vestibular system (body sense, speed, equilibrium, stability)

Which Causes Difficulty
- Balancing on ladders
- Catching self when trip
- Walking on uneven surfaces
Changes in Endurance

VO_{2Max} Declines With Age

Age-Related Changes in Strength

Grip Strength decreases 50% between ages 25 and 80

Thumb Arthritis common

Upper body strength.
Lose 1% per year after age 28. (about 30% by age 60)
Changes in Vertebral Discs

90% have DDD by age 50
Bending Puts Older Adults at Great Risk

770 lbs Action limit for a 30yo; 400 lbs. for a 60 year old!
Visual Changes

- Difficulty reading small print
- **Difficulty seeing in low light**
- Contrast sensitivity
- Changes in depth perception
- **Difficulty refocusing**

(Bonder & Wagner, 2001; Fisk et al., 2004)
Problem: Age-Related changes and Impact on Work

Tooling and assembly

Surface deburring / buffing
Gathering Employee Input/Data for Problem ID

- Listen to workers...
- Symptom surveys
- Complaints…Better ways…
- Workers’ comp stats
- Trends in errors/productivity
- Demographic/injury trends: older workers, manufacturing,
Input from Older Workers

- Symptom survey
- Interview/ workers and co-workers
- Talk to HR/Supervisors- their concerns
- Observed job tasks
- Age-related changes interview
- Productivity standards
Observe Workers

Note Worker Adaptations
Ergo Hazard Analyses for further Problem ID

- Ask workers about discomfort while working
- Risk Factors
- Identify THEIR current adaptations
Brainstorm Solutions

- Outcome Measures:
  - Pain
  - Energy
  - Vision
- Identified multiple solutions
- Presented solutions to supervisors and workers
- Workers chose solutions
- Implemented new equipment
- Follow-up
Age-Related Changes Impacting Work

- **40's**
  - Vision

- **50's**
  - Strength
  - Joint stiffness
  - Endurance
  - Soft tissue healing
  - Skin integrity

- **60's**
  - Hearing
  - Arthritis
  - Fatigue
  - Medical conditions
  - Balance

- **70's**
  - Cataracts
  - Fatigue
## Workers’ adaptations

### Age Related Changes and Adaptations

<table>
<thead>
<tr>
<th>Vision (10)</th>
<th>Endurance (8)</th>
<th>Strength (6)</th>
<th>Grip (4)</th>
<th>Joint Pain (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Glasses</td>
<td>Pace Self</td>
<td>Lift Assists</td>
<td>Modify or maintain tools</td>
<td>Standing Mat</td>
</tr>
<tr>
<td>Magnification helmet</td>
<td>Snack all day</td>
<td>Cranes</td>
<td>Two hands</td>
<td>Sit</td>
</tr>
<tr>
<td>Lighting</td>
<td>Reduce home chores Less leisure</td>
<td>Coworker Assistance/ Buddy</td>
<td>Premade splint</td>
<td>Stand</td>
</tr>
</tbody>
</table>
Jimmy, 73

Changes impacting work
• Vision
• Strength
• Grip

Joint Pain
• Endurance
• Balance

Modifications
• Hand Splint
• Lift restrictions

Changes: Hand Pain ↓ 20%
• Hand pain 5-3
• Endurance “make it through the day”
Stan, 65

Age-Related Changes
• Vision
• Strength
• Grip

Endurance
Joint Pain
Low back pain

Modifications
• Blueprint font size
• Industrial Chair
• Blueprint holder
• Edge protector

Changes - Pain ↓ 20%
• Neck 4-2
• Up Back 5-3
• Dec eye strain
• Shoulder 4-2
• Low Back 5-3
Pablo, 60

Age-Related Changes
- Vision
- Grip
- Endurance
- Knee and Ankle Pain

Modifications
- Padded Wrist splint
- Ergo mat

Changes - Pain ↓ > 50%
- Elbow 6→1
- Wrist 6→3
- Hand 6→2
- Legs 6→3
Art, 56

Age-Related Changes
- Vision
- Grip
- Temperature
- Sensation

Modifications
- Industrial Chair
- Reorder/maintain tools
- Enlarge Tasks
- Edge protector

Changes-
- Pain ↓ 10%- 40%
- Back 5→4
- Wrist 5→1
- Hand 5→1
Jacques, 56

**Age-Related Changes**
- Vision
- Strength
- Endurance
- Joint Pain

**Modifications**
- Arm support
- Wrist rest
- Contrasting mat

**Changes - Pain ↓ 75%**
- Sho 4→1
- UB 4→1
- LB 4→1
- ↓ Eye Fatigue
Other Equipment Options:

- Keyboard Tray and Rest
- Wrist Rest
- Edge Protector
Proactive Process and Summary of Changes

• Problem ID: Age-related problems:
  • Vision, grip, strength, endurance, pain

• Solutions: Low cost equipment:
  • mats, splint, arm support, chair

• Outcome measures:
  • pain reduction: 20%-75%
  • Decrease fatigue
  • Decrease eye fatigue

• Low cost: $500/average

• Scale to other workers
Ergonomic Process

1. Gather input
2. Brainstorm solutions
3. Workers choose
4. Implement equipment
5. Re-Assess
6. ID problems

The process is cyclic, with each step leading back to the previous one.
Multi-pronged Ergonomic Solutions: LBP

- Cranes
- Pallet lift - automatically adjusts

- Break down loads smaller loads
- Carry only what you need

- Lifting Policy
  - Lift assists for loads >20 lbs
  - Decrease max lifts for older workers by 20%
  - Pause breaks to maintain energy
# Process Evaluation

<table>
<thead>
<tr>
<th>Considerations</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Satisfaction</td>
<td>• Workers satisfied with process (4/4)</td>
</tr>
<tr>
<td>• Cost</td>
<td>• $2500 - total cost</td>
</tr>
<tr>
<td>• Acceptance</td>
<td>• Still in use 1 yr later</td>
</tr>
<tr>
<td>• Feasibility</td>
<td>• Available commercially</td>
</tr>
<tr>
<td>• Barriers</td>
<td>• Min Time for installation</td>
</tr>
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</table>
Proactive ergonomic process

- Employee input
- Ergo Evaluation
- Job redesign
- Increased productivity, morale ↓ injuries
Employees Are Miserable at Work!
<30% feel engaged

Can an Ergonomics Process Increase Productivity and Even Morale? Engaging Your Workforce?

According to a Gallup Poll

Employees Are Miserable at Work!
<30% feel engaged

Forbes Countered with ............... 

“6 Things Wise Leaders Do To Engage Their Employees” 

Transforming your Workforce
“6 Things To Do…Right now”

- Detect positive capabilities in people
- Empower them to discover their potential
- Put them in a position of influence
- Be consistent and have their backs
- Share your success to build momentum
- Allow employees to be themselves; embrace another way
WE KNOW THAT GOOD ERGONOMICS IS GOOD ECONOMICS
We also know that ergonomics goes beyond.........Engaging workers to feel part of their organization.....
Contact

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Occupational Therapy
Quinnipiac University
Owner Prevention Works

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Bonus: How to Maintain your Reserve Capacity? (MESH)

• **Move**- your body is meant to move.
• **Eat**-
  - a variety of foods,
  - not too much,
  - mostly plants
  - Share food in good company
• **Sleep**- age changes how we sleep; sleep hygiene; healthy sleep habits
• **Healing**-
  - We do the healing; help YOU heal
  - Healing does not always take you back to where you began
  - Moving forward and find your new normal

Dr. Bill Thomas