To love what you do and feel it matters – how could anything be more fun?  

Katherine Graham

Nancy Larson
Everything that needs to be said has already been said. But since no one was listening, everything must be said again.

Andrew Gide (1869-1951)
Definition

Ergonomics [erg- + -nomics (as in bionomics)] (1949): an applied science concerned with the characteristics of people that need to be considered in designing and arranging things that they use in order that people and things will interact most effectively and safely – called human engineering – ergnomic adj
It is not the strongest of the species that survive nor the most intelligent but the one most responsive to change.

Charles Darwin (1809-1882)
Game CHANGER #1
Impact of Desktop Computers
American Express Financial Advisors

1. The Best Place to Work Culture.
2. The customer service group, consisting of 1,000 employees, decided to reorganize from product-based customer service groups into 8 cross-functional groups, based upon customer location.
3. The Facilities Management VP, Bob Gilbert, was very forward thinking.
4. Existing workstations, furniture, and work environments did not support computers nor computer-based work.
5. MSDs were increasingly becoming a work-related concern.
6. Susan Dray, usability human factors expert worked in the company. I was a consultant ergonomist.
Workplace Improvement Project

• Champion and Coordinator
• Management Commitment
• Cross Functional Initiatives
• Measurement Procedures
• Opportunities
Collaboration

- Facilities & Interior Design
- Business Departments
- HR/Risk Management
- Legal
- Communications

- Medical
- Employees
- Procurement
- Upper Management
- Information Technology
- Ergonomist

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KEEP CALM AND JUMP OUT THE WINDOW
Results

Headache/Neck/Back

Shoulders and Elbows

Hands and Wrists
Game CHANGER #2
OSHA Ergonomics Program Standard 2001

- Applies to: general industry
- Effective dates:
  - Full Standard: October 14, 2001
  - MSD management section: January 16, 2002
- “Grandfather Clause” applies:
  - If programs in place before Nov. 14, 2000
  - If program complies with paragraphs ‘d’ - ‘y’
Focus of the Standard

• The standard is ‘reactive’
  – Trigger = MSD incident and exposure beyond specified action limits

    • MSD must be work-related AND
    • Requires treatment beyond first-aid
    • MSD signs or symptoms that last 7 or more consecutive days
Required Program Components

- Management leadership
- Employee participation
- Job hazard analysis and control *
- Training
- Program evaluation
- MSD management *

*Effective January 16, 2002
Change Management

1. Prepare for Change
2. Plan for Change
3. Implement the Change
4. Sustaining the Change
5. Assess for Change

Success
3M Ergonomic Program

Program Elements
- Internal Standard: GS&HP element
- Job Analysis: standard ergonomic job analysis tool
- Professional Development: knowledgeable and skilled ergonomic resources
- Ergonomic Design Criteria: engineering integration program development

Technical Leadership

Engineering Collaboration

• Professional Development
# 3M Program

<table>
<thead>
<tr>
<th>Program Elements</th>
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</thead>
<tbody>
<tr>
<td><strong>Ergonomics Technical Expertise 1983</strong></td>
</tr>
<tr>
<td><strong>OfficeErgoHelp Website 1998</strong></td>
</tr>
<tr>
<td><strong>Ergonomic Solutions Database 1998</strong></td>
</tr>
<tr>
<td><strong>Ergonomic Website 2003</strong></td>
</tr>
<tr>
<td><strong>Ergonomic Risk Analysis Tool 2003</strong></td>
</tr>
<tr>
<td><strong>Ergonomic Design Criteria Tool 2005</strong></td>
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</tbody>
</table>

**Program Elements**

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<tr>
<td><strong>Ergonomics Team Training 1993 - 1997</strong></td>
</tr>
<tr>
<td><strong>Ergonomic Program Requirements 1996</strong></td>
</tr>
<tr>
<td><strong>Ergonomic Award Process 2000</strong></td>
</tr>
<tr>
<td><strong>Global Ergonomic Program 2001</strong></td>
</tr>
<tr>
<td><strong>Ergonomic Metric 2004 – 2008</strong></td>
</tr>
<tr>
<td><strong>Engineering Design Criteria 2006</strong></td>
</tr>
</tbody>
</table>
3M Performance Expectations

• Ergonomic 2003 – 2008 Five Year Goal
  – Assess and control ergonomic risk exposure for specific jobs
  – Annual metric: milestones to monitor progress

• Oversight and Governance
  – Published quarterly performance summary
  – Trending
3M Ergonomic Improvement Plan

• The Ergonomics Improvement Plan:
  – Global process for continuous, systematic improvement in ergonomic hazard assessment and management
  – Standardized assessments to identify issues, record data and share best management practices
  – Focus is on addressing key jobs.

• Five-year goal with annual achievement targets
US Manufacturing MSD IR

Ergonomic Recordable Incident Rates: 2004 - 2010

2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

Ergo Cases IR Ergo Restricted Time Cases IR Ergo Lost Time IR

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Without data, all you are is another person with an opinion.

Data, without understanding, encourages you to make inappropriate decisions with confidence.

Renae Goldman’s White Board
Not everything that counts can be counted, and not everything that can be counted counts.

Albert Einstein (attributed)
Things that can be measured will be counted and take on more importance than other things more important but unmeasureable.

Machiavelli
# Global Action Metric

<table>
<thead>
<tr>
<th>Initial # of Target Jobs</th>
<th>Number of Target Jobs Completed</th>
<th>% of Target Jobs Completed</th>
<th>Region</th>
<th>Percent of Unacceptable Risk Reduced in Target Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>914</td>
<td>939</td>
<td>103%</td>
<td>United States</td>
<td>78%</td>
</tr>
<tr>
<td>186</td>
<td>222</td>
<td>119%</td>
<td>Latin / South America</td>
<td>56%</td>
</tr>
<tr>
<td>425</td>
<td>466</td>
<td>110%</td>
<td>Europe</td>
<td>60%</td>
</tr>
<tr>
<td>100</td>
<td>105</td>
<td>105%</td>
<td>Canada</td>
<td>88%</td>
</tr>
<tr>
<td>284</td>
<td>288</td>
<td>101%</td>
<td>Asia Pacific</td>
<td>68%</td>
</tr>
<tr>
<td><strong>1909</strong></td>
<td><strong>2020</strong></td>
<td><strong>106%</strong></td>
<td><strong>Average:</strong></td>
<td><strong>73%</strong></td>
</tr>
</tbody>
</table>
There were four significant results of the forward stepwise regression:

1. Job assessment rate was a significant predictor ($p<.001$) of WMSD cases.
2. Predictor of WMSD Cases IR as a function of JAR $p = < 0.001$ *
3. Predictor of WMSD Severity Days IR as a function of the % of identified risk reduced $p = 0.032$ *
4. Predictor of WMSD Lost-time Cases as a function of Job IR $p = 0.049$ *

---

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable(s)</th>
<th>P level</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMSD IR</td>
<td>Target Jobs Reduced IR</td>
<td>$&lt; 0.001$ *</td>
</tr>
<tr>
<td>SR Days IR</td>
<td>% Unacceptable risk Job Reduced</td>
<td>0.032 *</td>
</tr>
<tr>
<td>SR Case IR</td>
<td>---</td>
<td>-</td>
</tr>
<tr>
<td>LT IR</td>
<td>Target Jobs Reduced IR</td>
<td>0.049 *</td>
</tr>
</tbody>
</table>
change the GAME
"Prediction is difficult, especially of the future."

Neils Bohr (1885-1962)
"There is nothing more difficult to plan, more uncertain of success, or more dangerous to manage than the establishment of a new system; for he who introduces it makes enemies of all those who derived advantages from the old order and finds but lukewarm defenders among those who stand to gain from the new one."

Nick Macchiavelli, Managing Partner, Accenture Italia
Disruptive Change
There comes a time in the affairs of man when he must grab the bull by the tail and face the situation.

W.C. Fields
Embrace technology

Streamline processes

Establish open communication

Build a strong team

Efficiency

Redesign your workflow

Prioritize tasks
"Somebody has to do something, and it’s just incredibly pathetic that it has to be us."

Jerry Garcia (1942-1995)
UBUNTU

“I AM WHAT I AM BECAUSE OF WHO WE ALL ARE”

“Ubuntu – the essence of being human. You can’t be human all by yourself, and when you have this quality – Ubuntu – you are connected and what you do affects the whole World. When you do well, it spreads out; it is for the whole of humanity.” -Desmond Tutu
Thank You