Ergonomics Risk Assessment & Is there justification for the implementation of Ergonomics?

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Development of slides and content
Ergonomics Risk Assessment: An Introduction

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What is Ergonomics/Human Factors?
What is Ergonomics?

ERGONOMICS

- Chair design
- Lifting Technique
- Carpal Tunnel Syndrome
- Manual materials handling
- Office furniture
- Low back pain
- Musculoskeletal Disorders
“Ergonomics is the scientific discipline concerned with the fundamental understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.”

(International Ergonomics Association)
What is Ergonomics?

**Human Capabilities**
- Safety
- Efficiency
- Comfort
- Reliability
- Productivity & Worker well-being

**Task/System Demands**
- Fatigue
- Injuries
- Errors
- Accidents
- Productivity & Worker well-being

**MATCH**
- Safety
- Efficiency
- Comfort
- Reliability
- Productivity & Worker well-being

**MISMATCH**
- Fatigue
- Injuries
- Errors
- Accidents
- Productivity & Worker well-being
Ergonomics takes a Systems Theory Approach

System: “any collection of elements that are organized to achieve a purposeful result” (Nemeth, 2004),

- What needs to happen?
  - Who (what) performs tasks?
  - How does it happen (actions performed)?
  - What resources are required?
  - What interactions must occur and in what sequence?

Purpose, Goal & Objectives → design → Personnel → Activities → Hardware/Software → performance → Result
The Work System

Environment (physical, organizational, social)
The Work System
The Work System
The Work System
Complex Interactions: Hierarchical System Structure

- Financial
- Technical
- Legal
- Social

Work organisation and job design
Physical environment
Wider workspace
Personal workspace
Equipment and machines
Tasks
People

Complex Interactions: Hierarchical System Structure

- Financial
- Technical
- Legal
- Social

Micro $\rightarrow$ Meso $\rightarrow$ Macro

Tools
- Equipment/Products
- Task design
- Workstation
- Environment
- Training/education
- Job design
- Facility design
- Organisational design

Wilson & Corlett, p.7, Ergonomics in the Electronic Retail Environment (Slough, UK: ICL (UK) Ltd.)
Work System Outcomes

Matter  →  Energy  →  Information

BY-PRODUCTS

Waste Products

Reacts

Accidents

Products

Energy (transformation)

Knowledge

Injuries

Heat

Absenteeism

Adapted from Bridger, 2009
Understanding Human Capabilities

- Biophysical
- Physiological
- Psychological
- Conceptual

Analysis
The Challenge

Homo Sapiens
... and its complexity and variability

Physical Ergonomics
- Anatomy
- Anthropometry
- Biomechanics
- Physiology

Cognitive Ergonomics
- Sensation
- Perception
- Memory
- Decision-making
- Motor responses

Organizational Ergonomics
- Shiftwork
- Training & Education
- Remuneration system
- Quality management
Risk

(Model by Claudon & Cnockaert, 1994, cited in Aptel et al., 2002)
Load-tolerance Relationship

Proposed by McGill (1999)

Pictures taken from: Bridger (2009)
Load-tolerance Relationship

Changing (usually decreasing) tolerance over time \((\text{Marras, 2012})\)
General Adaptation Syndrome

Phase I: Alarm Response

Phase II: Stage of Resistance

Phase III: Stage of Exhaustion

'Stressor'

First reaction to stressor; diminished resistance

If the body / individual adapts to the stressor(s), resistance increases and alarm reactions increase

Long-continued exposure to stressor wears down body's resistance; adaption energy is exhausted; alarm responses reappear

[Selye, ≈1939]
More Challenges

- Infinite number of jobs and tasks
- Infinite number of individual workers
- Complex system interactions

The Risk Assessment Cycle
Ergonomics Maturity Ladder (Johnson & Johnson)

Six-step process that defines the development path towards achieving an ergonomics culture.

Step 1: Commit & Plan
- Initiate the process

Step 2: Easy Fixes/Prevent
- Make easy fixes & train professionals

Step 3: Assess Risk
- Identify highest ergo. risk

Step 4: Solve Problems
- Seek solutions & train all

Step 5: Audit
- Audit facility & support systems

Step 6: Maintain
- Maintain ERGO culture

Taken from: Worldwide Ergonomics: The Johnson & Johnson Approach to Injury Prevention
The Risk Assessment Approach

Identify and intervene for all “red flagged” workstations (reactive)

Identify and intervene for all “orange & yellow” workstations (reactive)

Develop proactive / preventive approach to ergonomics
The Risk Assessment Approach

Level 1: General Walk-through

Level 2: Risk Screening (e.g. RULA, JSI)

Level 3: Risk Screening (e.g. OCRA, OWAS)

Level 4: Microanalysis (e.g. LMM, Biodex)
The Risk Assessment Cycle

1. Familiarization

2. Problem Identification

3. Problem Assessment → Data Collection, Analysis & Evaluation

4. Intervention Development

5. Intervention Implementation

6. Follow-up / Re-evaluation
1. Familiarization and 2. Problem identification

Worker Characteristics
- Age, Sex, Morphology, General Health & Fitness, Socio-economic & Cultural Background

Task Demands
- Physical Demands (loads, repetitions, effort, vibration)
- Cognitive Demands (sensory, memory, decision-making)

Organizational Set-up
- Shift Durations & Times, Structure, Pay scheme,

Physical Environment
- Heat/Cold, Dust, Noise, Lighting, Vibration, (Toxins / Pollutants)
The Risk Assessment Cycle

1. Familiarization

2. Problem Identification

3. Problem Assessment
   → Data Collection, Analysis & Evaluation

4. Intervention Development

5. Intervention Implementation

6. Follow-up / Re-evaluation
The Risk Assessment Approach

Level 1: General Walk-through

Level 2: Risk Screening (e.g. RULA, JSI)

→ **Quantitative confirmation** of problem areas
→ Development of *first level interventions*
→ Identification of areas needing further (Level 3 / CPE) assessment
The Risk Assessment Cycle

1. Familiarization
2. Problem Identification
3. Problem Assessment
   - Data Collection, Analysis & Evaluation
4. Intervention Development
5. Intervention Implementation
6. Follow-up / Re-evaluation

3. Problem Assessment
   → Data Collection, Analysis & Evaluation
The Risk Assessment Cycle

1. Familiarization
2. Problem Identification
3. Problem Assessment → Data Collection, Analysis & Evaluation
4. Intervention Development
5. Intervention Implementation
6. Follow-up / Re-evaluation
The Risk Assessment Cycle

1. Familiarization

2. Problem Identification

3. Problem Assessment → Data Collection, Analysis & Evaluation

4. Intervention Development

5. Intervention Implementation

6. Follow-up / Re-evaluation
How do we do it?

ERGONOMIST

Management

Workers

Trade Unions

Occupational Hygienist

Supervisors

Engineers

Occupational Health Personnel

Industrial psychologist

Co-operative Co-responsibility
An Ergonomics Culture …

… is one where everyone understands and bears some responsibility for ergonomics → all members of a work organization are informed and empowered to make improvements appropriate to their level of assigned responsibility (Smith, 2003).

… includes the following (Johnson & Johnson Ergo Programme):

1. Ergonomics problems are recognized before they cause serious harm
2. Ergonomics problems are resolved quickly, and at the lowest level in the organization
3. Ergonomically related medical cases are treated conservatively and effectively
4. All employees have appropriate skills in ergonomics
5. The ergonomics program is routinely reviewed and continuously improved
Questions …?

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Economics and Ergonomics – is there justification for its implementation?

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Starting point:

Establishing a need
Wouldn’t it be nice if work environments......

- promoted worker health and safety and didn’t result in WRMDs
- promoted exceptional productivity rates
- were sustainable economically and environmentally

And imagine if all this could be achieved through low cost/no cost Ergonomics interventions
The Reality?
The Reality?

- Number of occupational injuries per region (regions are defined here as per the World Health Organization)

<table>
<thead>
<tr>
<th>Region</th>
<th>Labour force</th>
<th>Total employment</th>
<th>Occupational injuries reported to ILO</th>
<th>Global estimates of occupational accidents</th>
<th>Non-fatal (at least four days absence)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fatal</td>
<td>Non-fatal</td>
<td>Fatal</td>
</tr>
<tr>
<td>High</td>
<td>498,833,289</td>
<td>446,194,700</td>
<td>4,092</td>
<td>4,120,618</td>
<td>11,396</td>
</tr>
<tr>
<td>AFRO</td>
<td>341,142,486</td>
<td>106,677,471</td>
<td>263</td>
<td>24,024</td>
<td>59,301</td>
</tr>
<tr>
<td>AMRO</td>
<td>279,490,780</td>
<td>248,755,700</td>
<td>3,096</td>
<td>1,184,336</td>
<td>18,433</td>
</tr>
<tr>
<td>EMRO</td>
<td>173,814,953</td>
<td>141,569,900</td>
<td>0</td>
<td>0</td>
<td>19,229</td>
</tr>
<tr>
<td>EURO</td>
<td>224,441,282</td>
<td>197,595,200</td>
<td>5,893</td>
<td>257,348</td>
<td>14,609</td>
</tr>
<tr>
<td>SEARO</td>
<td>759,562,909</td>
<td>201,728,000</td>
<td>683</td>
<td>147,348</td>
<td>114,732</td>
</tr>
<tr>
<td>Total</td>
<td>3,200,509,548</td>
<td>2,221,629,916</td>
<td>14,222</td>
<td>5,737,433</td>
<td>352,769</td>
</tr>
</tbody>
</table>
The Reality?

- Cost of occupational health and safety problems remain substantial:

Figure 1: Distribution of the work-related injuries and diseases in the various regions defined by the WHO.
# The Reality?

The financial implications:

### Number and Cost for Job-Related Injuries and Illnesses in US ($Billions) 2005, Preliminary Estimates (Leigh, 2008)

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Costs, billions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Injuries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Deaths</td>
<td>5,876</td>
<td>$5.0070</td>
</tr>
<tr>
<td>B. Nonfatal</td>
<td>8,180,916</td>
<td>$110.0706</td>
</tr>
<tr>
<td><strong>II. Illnesses</strong></td>
<td></td>
<td>$49.1266</td>
</tr>
<tr>
<td>A. Deaths</td>
<td>66,239</td>
<td>$28.0862</td>
</tr>
<tr>
<td>B. Nonfatal injuries</td>
<td>726,325</td>
<td>$6.5752</td>
</tr>
<tr>
<td>C. Job-related arthritis</td>
<td></td>
<td>$14.4652</td>
</tr>
<tr>
<td><strong>III. Grand total</strong></td>
<td></td>
<td>$163.2042</td>
</tr>
</tbody>
</table>
Bottom Line:

Injuries/accidents:

• Reduce productivity

• Cause loss of life and income

Undesirable
Is ONE of the solutions, ERGONOMICS?
What we know about Ergonomics:

- Optimizes the user-interface,

- Optimizes work organization and

- Optimizes the work environment to achieve optimum human-machine integration.

(Hendrick, 1996)
Quality Ergonomics Expectations

- Devices which are easier and safer to use
- Fewer accidents, injuries and errors in the workplace
- Minimization of unnecessary effort
  - Mental
  - Physical
- Intrinsically happier, desirable workplace
We believe that Ergonomics is a Solution

That there is a need for Ergonomics in South Africa
The Big Question?

• If ergonomists can provide so much to industry and people in general, why does every firm in the world not have at least one Ergonomist working for them?

• Why does the demand not match the need?
Why are ergonomists often considered as an added expense which increase cost of production and hinder bottom line, reducing global competitiveness?
Reasons for Limited Success

- Bad ergonomics or “Voodoo Ergonomics” – Chong (1996).
Reasons for Limited Success

• Many people been exposed to bad ergonomics or “Voodoo Ergonomics” – Chong (1996).

• Many believe that Ergonomics is no more than common sense.

• Ergonomists believe that since it is the “right thing to do” why isn’t the technology/discipline accepted as a matter of fact!

• Failure to co-create
Failure to not only document but also to advertise the cost–benefits of good ergonomics.
Direct costs of ignoring ergonomic problems:

- Lost production
- Material loss
- Absenteeism
  - employee replacement costs
  - medical costs to the company
  - lower quality of work of less skilled, novice labour
- Cost of repairs to equipment
- Cost of preventative measures that have to be taken
- Problems with technology transfer
- Penalties
- Legal costs
Indirect costs of ignoring ergonomic problems:

Lash out at Murray And Roberts for Bridge Collapse

On Wednesday, the tragic bridge collapse on the M1 Freeway in Johannesburg shocked the Nation.

It is reported that 2 people died and 23 were injured due to the accident. Construction group, Murray & Roberts (who is behind the project) yesterday issued a statement that read "Murray & Roberts can confirm that this afternoon, a support structure that was erected to enable construction of a pedestrian bridge collapsed.". In the statement, the firm said the exact cause of the incident was not known.

Twitter users have taken to social media to call on Murray & Roberts to be held accountable for the accident.
Hidden Costs:

- management time to keep production going
- overtime payments
- penalties for late delivery
Economic Issues

Stanton and Baber (2003):

“we need to be able to present a strong business case first, and then underpin this with an appeal to the broader issues with which Ergonomics is more familiar.”

Economic costs and benefits are key to convincing managers of the efficacy of ergonomics!
Cost-Benefit Models
Measuring the Costs

Four key cost areas:

• Personnel costs
• Equipment and materials
• Reduced productivity and/or sales
• Overhead costs
Measuring the Benefits

Three economic benefits:

- Personnel benefits
- Materials and equipment benefits
- Increased sales (product design projects)
Less Tangible Benefits:

- Effective Ergonomic interventions convey a genuine concern for employees by management.

- Greater employee loyalty, commitment and “good citizenship” behaviour.

- Improved corporate image: Less governmental scrutiny, better community relations.
Cost-Benefit models

Business case model (Slade and Beevis, 1970):

<table>
<thead>
<tr>
<th>Ergonomics intervention</th>
<th>Costs saved</th>
<th>Costs avoided</th>
<th>New opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify user requirements</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Define operational, support, and maintenance concepts</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Identify and control factors that limit operator performance</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Identify user functions and tasks</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Identify and control excessive operator workload</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Provide an acceptable working environment</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Identify and control excessive operator stress</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Identify and implement user population stereotypes</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Design for full range of potential users (gender, size, strength, vision, clothing, etc.)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop for user acceptability</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop for flexibility of use</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce opportunity for operator error</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Reduce need for user manuals</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Reduce requirements for new skills</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Reduce likelihood of skill decay</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Reduce personnel requirements</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Develop lowest-cost training system (capital and/or operational costs)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Improve personnel selection system</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Contribute to personnel retention</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Reduce time lost through accidents or injuries</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Cost-Benefit models

Productivity assessment tool (Oxenburgh and Marlow, 2005):

The *Productivity Assessment Tool*: Computer-based cost benefit analysis model for the economic assessment of occupational health and safety interventions in the workplace

Maurice Oxenburgh\textsuperscript{a,1}, Pepe Marlow\textsuperscript{a,b,*}

\textsuperscript{a}Occupational Health and Ergonomics Consultant, 77 Ryan Street, Lilyfield, NSW, 2040, Australia

\textsuperscript{b}PO Box 43, North Strathfield, NSW, 2137, Australia
Cost-Benefit models

Net Cost model (Lahiri et al., 2005):
Cost-Benefit models

Calculation model (Flack and Rosenqvist, 2012):

\[ C = W(N_{on} \times T_{a_{on}} + N_{off} \times T_{a_{off}} + N_{au} \times T_{a_{off}} + N_{yard} \times T_{ty}) + N_{scrap} \times C_{scrap} + C_{fb} + WRSL + C_{fcomp} + C_{rec} + C_{bw} \]

**Number of errors:**
- \( N_{on} \) = number of quality errors online
- \( N_{off} \) = number of quality errors offline
- \( N_{au} \) = number of audit quality remarks
- \( N_{scrap} \) = number of scrapped items
- \( N_{yard} \) = number of cars with errors in the yard
- \( N_{fb} \) = number of factory blocked cars

**Action time (minutes):**
- \( T_{a_{on}} \) = action time online
- \( T_{a_{off}} \) = action time offline
- \( T_{ty} \) = Transfer time of cars in the yard

- Ann-Christine Falck, Mikael Rosenqvist, 2012
## Cost-Benefit models

Washington State ergonomics cost-benefit calculator (Rick Goggins):

<table>
<thead>
<tr>
<th>Number of employees in this job/ dept./ org.:</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average hourly salary for these employees:</td>
<td>$12.00 per hour</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of WMSD claims for this job/ dept./ org. per year:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>This past year:</strong></td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Total costs for year:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The year before:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Back injury w/ s</td>
</tr>
<tr>
<td>Type Shoulder strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Total costs for year:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 years before:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Type Back strain</td>
</tr>
<tr>
<td>Total costs for year:</td>
</tr>
</tbody>
</table>

Average annual WMSD claim costs: $28,900
Estimated annual indirect costs: $31,790
How effective are these models in IDCs?
Evidence of cost/benefit in Ergonomics?

Investigation of the literature
Evidence of cost/benefit


<table>
<thead>
<tr>
<th>Effectiveness Measure</th>
<th>Number of Studies</th>
<th>Average</th>
<th>Median</th>
<th>95% CI</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of WMSDs</td>
<td>90</td>
<td>59% ↓</td>
<td>56% ↓</td>
<td>54%–64%</td>
<td>8%–100% ↓</td>
</tr>
<tr>
<td>Incidence rate*</td>
<td>53</td>
<td>65% ↓</td>
<td>67% ↓</td>
<td>57%–73%</td>
<td>9%–100% ↓</td>
</tr>
<tr>
<td>Lost workdays*</td>
<td>78</td>
<td>75% ↓</td>
<td>80% ↓</td>
<td>70%–80%</td>
<td>3%–100% ↓</td>
</tr>
<tr>
<td>Restricted days*</td>
<td>30</td>
<td>53% ↓</td>
<td>58% ↓</td>
<td>42%–64%</td>
<td>5%–100% ↓</td>
</tr>
<tr>
<td>Workers’ comp costs*</td>
<td>52</td>
<td>68% ↓</td>
<td>70% ↓</td>
<td>62%–74%</td>
<td>15%–100% ↓</td>
</tr>
<tr>
<td>Cost per claim*</td>
<td>7</td>
<td>39% ↓</td>
<td>50% ↓</td>
<td>11%–67%</td>
<td>−20%–81% ↓</td>
</tr>
<tr>
<td>Productivity</td>
<td>61</td>
<td>25% ↑</td>
<td>20% ↑</td>
<td>20%–30%</td>
<td>−0.2%–80% ↑</td>
</tr>
<tr>
<td>Labor costs</td>
<td>6</td>
<td>43% ↓</td>
<td>32% ↓</td>
<td>17%–69%</td>
<td>10%–85% ↓</td>
</tr>
<tr>
<td>Scrap/errors</td>
<td>8</td>
<td>67% ↓</td>
<td>75% ↓</td>
<td>59%–85%</td>
<td>8%–100% ↓</td>
</tr>
<tr>
<td>Turnover</td>
<td>34</td>
<td>48% ↓</td>
<td>48% ↓</td>
<td>40%–56%</td>
<td>3%–100% ↓</td>
</tr>
<tr>
<td>Absenteeism</td>
<td>11</td>
<td>58% ↓</td>
<td>60% ↓</td>
<td>43%–63%</td>
<td>14%–98% ↓</td>
</tr>
<tr>
<td>Payback period</td>
<td>36</td>
<td>0.7 years</td>
<td>0.4 years</td>
<td>0.4–1 year</td>
<td>0.03–4.4 years</td>
</tr>
<tr>
<td>Cost:Benefit ratio</td>
<td>5</td>
<td>1:18.7</td>
<td>1:6</td>
<td>1:−7.6–1:45</td>
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Evidence of cost/benefit

Goggins et al: Injuries?

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Evidence of cost/benefit

Goggins et al: Productivity?

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Goggins et al: Return on investment?

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• Ensuring success – Type of intervention:

Evidence of cost/benefit

- Ensuring success – Type of intervention:

Evidence of cost/benefit in ergonomics?

• Investigation of the literature:
  
  Employee benefits?
  • Improved physical, psychological and social well being
  • Higher motivation and job satisfaction
  • Improved performance

  What about for product users?
  • Better experience
  • Better fitting of products
  • Fewer mistakes
  • Greater efficiency
Evidence of cost/benefit in ergonomics?

- Investigation of the literature:
  - System experts?
    - Better user acceptance of design
    - Better performance
    - Better fit with legal standards
    - Improved development process
  - System decision makers?
    - Better productivity
    - Better quality and reliability
    - Greater productivity
    - More innovation
Good Ergonomics IS Good Economics
Questions …?

Prof. Candice Christie
Department of Human Kinetics and Ergonomics
Rhodes University

c.christie@ru.ac.za
046-603 8468

http://www.ru.ac.za/humankineticsandergonomics/
ERGONOMICS RISK MANAGEMENT PROCESS FLOW

ANTICIPATION AND RECOGNITION
- Gather and review background information and documentation
- Inspections and task observations
- Interview employees
- Review incident history
- Literature review
- Design specifications

ASSESS THE RISK
- Hazard identification
- Estimate the likelihood of exposure/contact
- Identify measures required to eliminate or reduce risk and control exposures
- Keep records

ANY ERGONOMICS HAZARDS PRESENT?
- NO
- YES

ERGONOMICS ASSESSMENT

ERGONOMICS POLICY
- MANAGEMENT COMMITMENT AND UNDERTAKING
- ERGONOMICS COMMITTEE

ERGONOMICS ASSESSOR / OCC HYGIENIST

ERGONOMIST

TRANSPORT

ERGONOMICS ASSESSOR / OCC HYGIENIST

ERGONOMIST

ERGONOMICS ASSESSMENT

PROTECT EMPLOYEES
- Eliminate or control ergonomic risks
- Eliminate or reduce risks using good practices and known controls
- Manage use of control procedure
- Apply administrative controls

INFORMATION AND TRAINING
- Develop information and training plan
- Allow employees participation
- Provide information and training about the signs and symptoms, risk factors and control measures

MAINTENANCE AND USE OF EQUIPMENT
- Maintain any equipment and device used
- Monitor use of equipment and devices provided
- Employees use controls provided and report defects

MEDICAL MANAGEMENT
- A mechanism for early reporting of signs and symptoms of MSDs
- Early assessment of reports
- Access to prompt medical treatment and follow-up
- Modify or alternate work if recommended by the medical provider

ERGONOMICS ASSESSMENT

REVIEW PROGRAMME EVERY TWO YEARS OR, REVIEW WHEN:
- Changes in work practices
- Changes in noise exposures
- New methods to eliminate/reduce ergonomic hazards
- Incidents
- Employee complaints
Ergonomics Risk Assessment

ERGONOMICS RISK
MANAGEMENT PROCESS FLOW

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ERGONOMICS POLICY

MANAGEMENT COMMITMENT AND UNDERTAKING

ERGONOMICS COMMITTEE

RHODES UNIVERSITY
Where leaders learn