Participatory Ergonomics for the Future

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Overview

1. Work-related musculoskeletal disorders
2. Participatory Ergonomics (PE)
3. Effectiveness and Cost-Effectiveness of PE Programs
4. Basic Elements of a Successful PE Program
5. The Future of PE
   a. PE in return to work
   b. PE as organizational change

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Work-related Musculoskeletal Disorders

...are a group of painful disorders of muscles, tendons, and nerves. Carpal tunnel syndrome, tendonitis, and tension neck syndrome are examples.
Definition of Ergonomics

“the scientific discipline concerned with the 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” (IEA: http://www.iea.cc/whats/)
Definition of Participatory Ergonomics

“the involvement of people in planning and controlling a significant amount of their own work activities, with sufficient knowledge and power to influence both processes and outcomes in order to achieve desirable goals” (Wilson & Haines, 1997)

“practical ergonomics with participation of the necessary actors in problem solving” (Kuorinka, 1997)
PE Program Effectiveness

Programs reduce injuries and workers’ compensation claims
Programs reduce lost days from work or sickness absence

Effectiveness of participatory ergonomic interventions on health outcomes: A systematic review

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PE Program Cost Effectiveness

PE programs are cost effective, with the strongest evidence in manufacturing sector

A textile company realized a net benefit of almost $295,000, representing a benefit-to-cost ratio of 5.5: for every $1 spent on the program, the company saved $5.50
Manufacturer Implemented a PE Program in 2001

- 65% reduction in first-aid only workplace injuries saving $7,675
- 50% reduction in injuries requiring modified duties saving $58,230
- 23% reduction in casual absenteeism days saving $10,045
- 75% reduction in long-term sickness absences with 93% reduction in days away saving $266,645
- Increased quality of weekly production saving just over $18,000

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**Five Elements of PE Program**

1. Ergonomics ‘team’ formed
2. Ergonomics expert trains team in basic ergonomic principles
3. Team uses new knowledge to identify and control hazards
4. Team works together to improve workplace conditions through participation, communication, and group problem solving
5. Workers involved in controlling their own work activities, consequently decreasing work organization or psychosocial risk factors

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Six Elements of Successful PE Program Implementation

1. Management and employee support
2. Sufficient resources committed to the program
3. Appropriate ergonomics training provided to all those involved
4. A team with the right people involved who understand their responsibilities and make decisions in a consultative way
5. Good communication between team members, between the team and management, and between the team and individuals in the workplace
6. Training in how the organization works so the team functions well to identify and make necessary changes

Van Eerd et al., 2010
The Ergonomic Blueprint

Health & Safety Process

1. Participation and Consultation
   Ergonomic Process
   1. Identify opportunities for improvement: Health outcome, risk factor identification and integration
   2. Assess ergonomic risk factors and prioritize jobs for improvement
   3. Build Solutions
   4. Implement Prototype
   5. Evaluate prototype
   6. Adopt solution
   7a. Use feedback from previous designs and plants
   7b. Employ ergonomic design criteria and purchasing guidelines

2. Management Support of Ergonomics and Resources

3. Corporate Ergonomics Policy

4. Education and Training

5. Ergonomic Program Management

6. Evaluation/Audit Process

7. Documentation

8. Ergonomic Tools, Techniques and Skills

9. (Medical Management)

10. (Compliance Assurance)

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(Wells et al., 2003)
PE Guide

• Evidence-based information
• “Vignettes” added to illustrate messages
• Stakeholders involved in development
• Easy to read
• Applicable to practice

Van Eerd, 2010

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PE Examples

Hazards?

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PE Solutions

Wire dispenser for meter technicians

Concern: high pull forces to dispense
PE Solutions

Team Innovation:

Mobile wire stand
Less force
Locking Wheels
Portable
Retracting Arm

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PE Solutions

Simple changes:

Composite handles replace wooden ones
Shock-absorbing material
PE Solutions

Cross arm storage

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PE Solutions

Simple innovation

Tool support

Quick to install
Design allows user to swing saw around total circumference of pole
Requires only light horizontal pressure on saw
Future of PE

Return to work

Don’t be left out of Returning to Work

Organizational change
PE in RTW: The Sherbrooke Model

• Occupational physician exam plus ergonomist assessment of jobsite to give appropriate recommendations for RTW
• Each participating company had a trained PE team including employees and management representatives
• Program participants returned to work 1.9 times faster compared to non-participants
• Results replicated in the Netherlands
Seven Key Organizational Facilitators for Effective PE RTW Programs

- Proper leadership support
- Adequate resources
- Communication
- Workplace access
- Clearly defined responsibilities
- Prior approval for solutions
- Adherence to timelines
Participatory Approach to Organizational Change in Long-Term Care

High Hazard Work

Vulnerable Workers

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Employees Participating In Change Program

Pre-Implementation Process

Innovation & Sustainability

Management Commitment

Program Evaluation

Establish Program Foundation

Program Implementation
EPIC Program Implementation Steps

1. Selection of a Program Champion
2. Formation of a participatory steering committee
3. Formation of a participatory change team
4. Training, mentoring and coaching from program facilitators
5. Development of OHS management systems to build accountability and support change processes
Process Evaluation – Summary

- Strong staff “buy-in”
- Improved communication
- “Win-Win”

- Change process varies across locations
- Intervention process is “front-heavy”
- Awareness about EPIC is quite good
- Improvements in working relationships

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• Shorter garbage bins
• Electric pill crushers
• Re-paved parking lots
• Dishwashing sink lifts in kitchens
• Safer feeding stools in dining rooms – different wheels
• Reduced load capacity laundry machines
• Switch to disposable “Swiffer” type mops
• Practice changes for heavy moving and lifting
• Promotional campaigns and department wide education sessions

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