Ergonomic Issues: Managing Safety & Health of Telecommuting Workers

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Session Objectives

- Review telecommuter (teleworker) exposure
- Discuss some benefits of telecommuting
- Identify safety and health issues associated with telecommuters
- Provide guidelines and possible interventions for managing safety of telecommuters and other distributed workers.
Telework Facts

• More than 44 million US workers reported working as telecommuters in 2004. An increase of over 40% since 2001 (International Telework Association & Council (ITAC)).

• Working long hours at a computer combined with badly designed computer systems and high work demands clearly increase risk of health problems (Aborg et al., 2000 regarding telework)
Benefits of Alternative Worksites

- Reduce office space = real estate $ savings
- Enhance employee retention
- Enhance employee recruitment
- Increase productivity
- Flexibility (flex time)
- Real Estate
- Work/Life balance
- Stress management
- Contribute to meeting “Clean Air standards”
Risk Assessment

• Telecommuting locations include vehicles, hotels, restaurants, airports, etc.

• Determine the degree of risk by qualifying and quantifying operations, tasks, behaviors or processes.

• Consider any complaints / claims

• Focus efforts on recognizing, understanding, and controlling risk in telecommuting operations.

• Risks include personal safety, public safety, fire, data safety, hardware loss, etc.,
Telecommuting Risk Factors

**Physical**
- Workstation ergonomics
- Long work hours
- Insufficient breaks or recovery time
- Lighting
- Environment
- Security

**Psychosocial**
- Isolation
- Limited social support
- Time pressures
- High workload
- “Technostress”
- Health complaints
- Family stress
Risk Assessment

• **Ergonomic Task Analysis**
  - Observation from external
  - Assumptions about device usage
  - Focus on physical risk factors

• **Basic JSA**
  - Personal safety
  - Public safety, e.g. driving

• **Macroergonomics assessment**
  - Isolation
  - Need for supervision
  - Lack of feedback
  - Focus on the work, process and people.
  - Some are systems issues (e.g. support and connection speed)
  - Family expectations
System Analysis

- Workplace Environment
  Furniture
  Location
  Interruptions

- Worker Capability
  No one to turn to

- Worker Motivation
  Few immediate managerial or organizational antecedent and consequences

And their degree of interaction
Macroergonomics
Accident Causation – Multiple Factors

- Accidents are the result of multiple contributing factors.
- Do the stakeholders believe this?
  - Senior Management and Operating Managers
  - Supervisors
  - Workers
  - Medical providers
Physical Workplace Risk Factors

Organizational Factors

Combined Solution to Accident Root Causes

Psychosocial Factors

Corporate Culture

External Conditions

Work System
Macroergonomics Principle: Use a Systems Approach

- Evaluate and control the physical risk factors for the workstation.
- Evaluate and influence the psychosocial risk factors to improve the organization.
- Evaluate and influence the organizational risk factors to improve the whole system.
Organization and Job Design

• Microergonomics leads to standards and best practices for equipment and physical factors.

• Some people are poor candidates for telecommuting – psychosocial risk is too great.

• May also lead to resentment from both the telecommuter and those who cannot telecommute.
Systems Analysis
Telecommuting Readiness

• Is this the right position?
• Is the employee suited for work at home work?
• Is the space sufficient?
• What office furniture does employee need?
• Telephone and equipment (fax, voice, conferencing, broadband etc.) needs identified?
Telecommuting Readiness (continued)

- Computer equipment needs (i.e. laptop versus desktop computer) identified?
- Does employee workstation meet ergonomic standards?
- Keep lines of communication open.
- Personal security at telecommuting space
- Report accidents / musculoskeletal disorders
Integrate Solutions

Design and implement strategies for improving systems. System examinations provide opportunities to correct discrepancies that drive loss.

- Engineering Solutions
- Training & Education
- Behavioral
- Organizational Culture
Office Computer Workstation
Strategies for Improving Computer Workstation Evaluations
Telecommuter Safety Survey

Telecommuter Safety and Health Survey

Instructions to employee: the survey below is the safety and health of your residential office comfort and productivity and request your feed workstations. Please take a few minute to copy up (if any). No visit to your home will result from you to the safety on health. Question below should be discussed with your solution.

Name:

Organization:

Address:

City/State/Zip Code:

Business Telephone:

Briefly describe your designated work area:

A. Workplace Environment

1. Are the following environmental condition to maintain your normal level of job performance:
   A. Temperature,
   B. Illumination,
   C. Noise levels

2. Does the work area have adequate fresh ventilation and is it free of unusual odors?

3. Are the following electrical hazards, such as indoor wiring, bare conductors, sufficient number of permanent outlets, live wires, etc.

4. Are surge protectors available to protect electronic or electrical equipment from overloads?

5. Are aisles and passageways clear of obstructions and tripping hazards? (i.e. boxes, file drawers, papers, books, supplies, wires on floor, frayed or worn carpet, etc.)

6. Does your work area have two exits to the outdoors or one (for residential basements)? A minimum of one (one) exit is required leading to the outside.

7. Are the phone lines, electrical cords, and external wires secured under a desk or adjacent a baseboard?

8. Is the office space neat, clean, and free of an accumulation of combustibles?

9. Are the file cabinets secured from locking and access to avoid tripping or obstructions?

10. Are carpeting secured to the floor and free of tripping hazards?

11. Is the area free from sources of accumulated mold, mildew, or musty smell?

12. Is a smoke detector installed, working, and suitably located near the work area?

13. Is a fire extinguisher suitable for use on an electric equipment located near the work area (with A, B, and C foam extinguishers)?

14. If a fire is an issue, has it been tested (based on offices)?

15. Is the room heating sufficient enough so that a space heater is not used?

16. Are carbon monoxide and gas detectors available and properly maintained?

B. Computer Workstation Ergonomics

17. Is your chair adjustable?

18. Do you know how to adjust your chair?

19. Is your back well supported by a backrest?

20. Are your feet flat on the floor or on a footrest?

21. Are you satisfied with the placement and keyboard?

22. Is it easy to read the text on you document?

23. If you input data from a printed document holder, is it continuously throughout the day?

24. Are file cabinets and book cases need to stand to access them (i.e. continuously throughout the day)

25. Do you have enough leg room while you sit in your chair and read and other equipment without having to lean forward?

26. Is the screen free from noticeable glare?

27. Is the top of the screen at eye level (or lower) or can it be adjusted?

28. Is there space to rest the arms while working?

29. While keying, are your forearms in a straight line with the floor?

30. While keying, are your forearms in a straight line with the floor?

31. Are your wrists straight when keying?

32. Have you received ergonomics training?

C. Overall

18. Are you comfortable while working in your residential office, if yes, please explain.

19. Do you believe your residential office is free from anything unsafe or that puts you at risk for an injury? If no, please explain.

NA = Not Applicable

D. Comments

Please return a copy of this form to your supervisor or manager. Optional: attach photos of your workstation if applicable.

Employee's Signature and Date:

Supervisor or Manager Signature and Date:

Action taken (to be completed by manager or supervisor):
Macroergonomics Applications
Improving Workstation Evaluations

- Develop process for working with supervisors who perform evaluations.
- Email to workers asking for feedback after the surveys.
  - Opportunity for anonymous evaluation.
- Interviews with selected workers for detailed feedback.
- Communication with supervisors on the effectiveness of the interactions.
- Use of the results in the performance review of the supervisor.
Macroergonomics Applications
Improve Training Programs

- Workers involved in design, development, delivery and evaluation of the training.
- Integrated into operational training.
- Includes managers, supervisors and employees.
- Reinforced by management and by the system.
Plan the Workplace

• Need 6’ by 6’ space for your primary work area.

• Book cases and filing cabinets should be placed such that one needs to stand up to access them.

• Avoid placing the computer next to a window. Windows create problems with glare.

• Be careful of extension cords and wiring that passes across travel area, which can produce trip and fall hazards. All cables and extension cords should be fastened up and out of the way.
Selecting Furniture

- Establish furniture criteria, especially the desk and chair.
- A VDT monitor needs at least 30” of depth, less for flat panel.
- Sufficient room to place the keyboard and mouse in front of the display.
- Adjust the workstation and chair to the correct height.
- Know how to adjust the chair (height, seat pan, arm rests, back rest tilt etc).
Laptop Computers

- Provide a docking system and a full-size display.
- Provide a full-size keyboard and mouse or other pointing device.
- Provide a regular size and shape number pad for those who work with numbers on a laptop computer.
- The use of drapes, shades or blinds may help control glare.
**Ergo guide:** tips to maximize your comfort when computing

**CHAIR**
- Make sure your chair allows clearance behind your knees when seated against the backrest.
- Use the backrest of the chair to provide full support to your lower back.

**LIGHTING**
To reduce glare and shadows on your work surface:
- adjust window shades or decrease overhead lighting.
- adjust the monitor screen or add an anti-glare filter.
- add a task light to properly illuminate paper references.

**POSTURE**
- Maintain proper body posture by:
  - sitting with your hips and knees at a **90 degree or greater angle**.
  - keep your feet flat on the floor or on a footrest.
- keep your arms relaxed at your sides; ideally with elbows at 70-135 degrees.

**MONITOR**
- Place the monitor directly in front of you about an arm’s length away.
- Position the top of the monitor screen at or below eye level.

**KEYBOARD/INPUT DEVICES**
- Adjust the keyboard or chair height to keep forearms, wrists and hands in a straight line.
- Place mouse and other input devices near to and at the same height as your keyboard.
- Keep your elbows close to your body.

**WORK AREA**
- Allow ample clearance to move your knees and legs under the keyboard and desk.
- Avoid contact stress with the edge of the desk and keyboard.

**DOCUMENT HOLDER**
Use an adjustable document holder to:
- place reference materials as close to the computer screen as possible.
- keep materials at the same height and distance as your computer screen.

**HEALTHY COMPUTING HABITS**
- Use a softer touch when keying; relax your grip on the mouse.
- Avoid working too long in one position.
- Change body your posture frequently.
- Take frequent breaks. Stretch periodically.
- Give your eyes a visual break.

**ACCESSORIES**
- Use your ergonomic accessories to support body posture (e.g. lumbar support, arm rests, monitor blocks, external keyboard).
- Get a head-set if you regularly talk for extended periods of time on the phone. Use a lowered voice.

References:
- www.libertymutual.com
- www.mmm.com
- www.pc.ibm.com/ww/Healthycomputing
- www.hermanmiller.com
- www.compaq.com/comfortguide/index.html

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Basic Principle: Participation

- Expand participation in the program and processes.
Expand Participation

- Participation can increase commitment to goals, change, and process.
- Often there is no follow up with telecommuters.
- Participation can have many levels:
  - Comment
  - Suggest
  - Influence
  - Guide
  - Decide
- Don’t forget guidelines for handheld (e.g. Blackberry) usage in vehicles or wherever other equipment may be stolen.
Expand Participation

- Training may help expand participation
  - Teamwork and interpersonal skills to establish trust.
  - Decision making processes for the group.
  - Management skills to relate to workers making decisions.
Increase Communication

• Send and Receive
  – Providing more information on risk, causes, and solutions.
  – Asking for more information and participation.
Increase Open Communication

- Use formal and informal communication systems.
- Encourage and reinforce new ideas.
- Increase positive recognition.
- Avoid focusing on negative behaviors and start looking to encourage positive.
Macroergonomics Applications
Manage Change

- Participation in the development and implementation of the changes can lead to more commitment to the change.
- Communication can influence willingness to change.
- Recognize individual differences and the need for a process of change.
Macroergonomic Summary

- Evaluate the process as well as the technical content.
- Recognize importance of psychosocial issues.
- Provide clear communication to the evaluators, workers, and managers on scope, expectations, and process.
- Ask the worker for their perception, understanding, and satisfaction with the process.
Six Characteristics of a Successful Organizational Response

- Effective worker involvement
- Strong project leader
- Organizational flexibility
- Action consistent with stated goals of the organization
- Resource commitment
- Injury management integrated in response

Pransky, Snyder, Himmelstein 1996
Questions?
References and Resources

References and Resources

