Multi-Level Evaluation of Ergonomic Training

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Presented at AIHC&E
Philadelphia
June 2007
Presentation Objectives

- Participants should be able to:
  - Identify the components of an effective Ergonomic training program.
  - Recognize the value of the Ergonomic Blueprint for Success.
  - Identify and discuss the value of the evaluation methods employed in the training.
Susan Harwood
Ergonomics Training Grant

- University of Findlay was awarded the annual grant - October 2004
- Susan Harwood Training Grant
  OSHA Technical Target Area - Ergonomics
Susan Harwood
Ergonomics Training Grant

- Target Companies – Automotive Parts Supply Manufacturers (Tier I and II suppliers)

NAICS – 3363 Motor Vehicle Parts Manufacturing
SIC – 346 Automotive Parts & Accessories
Ergonomics Training

- 5 – one day sessions (~ 6 hours of training time per day (9am-4pm)
- One session a week for 5 weeks.
- New material covered every week.
Expectations of Eligible Companies

- Agree to send 3-5 representatives from company to attend the 5 sessions
- Representatives should have authority to return to company and implement learned strategies
- Allow U of F to visit company prior to training for data collection
- Agree to let U of F evaluate effectiveness of training by monitoring company ergonomic activities upon completion of training
Cost of Training

- The only cost is that associated with getting the company representatives away from work and to/from the 5 sessions.

- Sessions held at U of F’s School for Environmental and Emergency Management (SEEM)
6 Ergonomic Training Modules

- **Module 1** - Ergonomics overview, contributing ergonomic risk factors, financial and legal issues, process development (covered Day 1)  
  (Bill Carter, Ph.D.)

- **Module 2** - Physiology and analysis of work including kinesiology and biomechanics (covered Day 1)  
  (Jenna Encheff, P.T., M.S.)
Module 3 - Analysis of adverse health effects from poor ergonomics (covered Day 2) (Laura Schmelzer, M.O.T, OTR/L)

Module 4 – Survey methods and assessment techniques (covered Days 2 and 3) (Laura Hoehne, M.S., C.S.P – Modules 4 and 5)
6 Ergonomic Training Modules (cont.)

- **Module 5** – Job design/re-design guidelines for controlling WMSDs (covered Days 3 and 4) (Laura Hoehne)

- **Module 6** – Rehabilitation and return to work (covered Day 5) (Jean Weaver, P.T., M.B.A.)
Ultimate Goal of Training

- Each company should be equipped with the tools and knowledge to implement/enhance an ergonomics process.
- They should be able to identify ergonomic risk factors, generate/implement solutions, improve process of getting workers in rehab and back to work.
- The results should make the company more competitive in the marketplace.
Ergonomic Risk Factors

Workplace Risk Factors
(repetition, awkward postures, forceful exertions, contact stress/direct pressure, inadequate rest/duration, environmental)

Societal Risk Factors
(labor conditions, gender, ethnicity, facility culture)

Personal Risk Factors
(medical conditions, age, congenital deficiencies, mental condition, hobbies)
Workplace Risk Factors

- Repetition
- Awkward Postures
- Static Postures
- Force
- Contact Stress/Direct Pressure
- Inadequate Rest
Workplace Risk Factors (continued)

- Environmental
  - Vibration
  - Extreme Temperatures
  - Noise
  - Lighting
  - Air Quality
  - Work Organization
Identifying Workplace Risk Factors Activity
Ergonomic Control Measures

- 3 Types of Control Measures
  - Engineering – design out the risk
  - Administrative – reduce exposure to the risk
  - Personal Protective Equipment (PPE)
Employ an Ergonomic Blueprint for Success

- **STEP 1:** Mission Statement
- **STEP 2:** Goals
- **STEP 3:** Ergonomics Team Personnel
- **STEP 4:** Team Member Roles/Responsibilities
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- **STEP 5:** Unexcused Absences
- **STEP 6:** Fill Vacant Ergonomic Team Positions
- **STEP 7:** Training and Education
- **STEP 8:** Trend Data Collection and Analysis
Employ an Ergonomic Blueprint for Success

- **STEP 9:** Prioritize Jobs
- **STEP 10:** Ergonomic Worksite Analysis
- **STEP 11:** Solution Development
- **STEP 12:** Approval Process
  *(if applicable)*
Employ an Ergonomic Blueprint for Success

- **STEP 13**: Solution Implementation
- **STEP 14**: Solution Evaluation
- **STEP 15**: Medical Management
- **STEP 16**: Process Monitoring
Make Up of Companies

- Round One June-July 2005
  - 5 Companies
  - Represented 2140 employees
- Round Two January –February 2006
  - 4 Companies
  - Represented 1200 employees
- Round Three April-May 2006
  - 2 Companies
  - Represented 1445 employees
- Round Four July-August 2006
  - 3 Companies
  - Represented 1036 employees
Evaluation Techniques

- Instructor and Course evaluation after each session.
- Pre-delivery test-
  - 18 questions (3 from each module)
- Post-delivery test
  - 18 questions (modified)
- Follow up one month after training
  - Review Blueprint
- Follow up 6 month after training
  - Review OSHA 300 Log and follow up visit
Course Questionnaire
Rating on a 5 point Likert Scale

- Objective of course was clearly stated.
- Material presented was consistent with course objectives.
- Material was appropriate in depth and breadth.
- Learning environment was collaborative and supportive.
- Assignments contributed to developing an effective ergonomics program.
- Handouts and lectures were helpful.
- References were available for developing Ergonomics program.
- Methods of evaluation were effective.
Instructor Evaluation

- Asked at the end of each class session.
- Most evaluations were rated at 4 or 5.
- Early recommendation was to shorten from 6 days to 5 days presentation.
- A clear definition of medical terms is necessary.
Results of Knowledge Evaluation

- Pre- vs. Post Delivery Test
  - First round Post-delivery results
    - 14 people took test average 71.5%
    - Range 89% -39%
  - Second round Pre vs. post-delivery results
    - 15 people took Pre-delivery test ave. 58%
    - Post-delivery ave. 63%
  - Indication there is poor long term retention
Results of Knowledge Evaluation

- Pre- and Post-delivery test third round
  - Reviewed five questions orally at beginning of sessions 2-5
  - Pre-delivery test 64%
  - Post-delivery test 88%
    - Range from 66% - 100%
- Fourth Round
  - Pre-delivery test 66%
  - Post-delivery 90%
Follow Up Evaluation

- Round One
  - Three of Five have submitted Ergonomic Plan.
  - Two of Five have Demonstrated Active Progress of Ergonomics Program.

- Round Two and Three
  - Two Companies have submitted Ergonomic Plans.

- Round Four
  - One Company has submitted Plan and Demonstrated Active Progress.
Follow Up Visits or Contacts

- We continue to have follow up contacts and visits.
- Companies send OSHA 300 logs for evaluation by a Graduate student study
- Regular contact by telephone or email to determine effectiveness
Follow Up
Conclusions

- Quality training involving an interdisciplinary team requires considerably more planning by the instructional team.
- Company personnel involvement must be at all levels.
- Well qualified instructors may not adequately convey information if good review methods are not incorporated into the program.
- For Ergonomic programs to be successful, long term follow up is recommended.
For more information…

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