

Ergonomics Support for Small Companies: Challenges and Opportunities



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U.S. Private Industry

BLS

Year	Number of Employees at Establishment				
	0-99	100-249	250-499	500-999	1000+
2005	55.5%	16.0%	9.1%	6.5%	10.2%
2006	55.8%	16.2%	9.1%	6.5%	10.2%
2007	56.1%	16.3%	9.1%	6.5%	10.1%
2008	56.9%	16.5%	9.2%	6.5%	10.1%
2009	58.4%	16.2%	9.1%	6.4%	10.1%
2010	57.0%	15.8%	8.8%	6.1%	9.8%
2011	56.6%	15.9%	9.0%	6.1%	10.0%
2012	56.5%	16.0%	8.9%	6.1%	10.0%
2013	56.3%	15.9%	9.0%	6.2%	10.1%
2014	56.1%	15.9%	8.9%	6.2%	10.1%
2015	56.8%	16.2%	9.1%	6.3%	10.3%

U.S. Private Industry

BLS

Year	Number of Employees at Establishment		
	0 - 249	250-499	500+
2005	71.6%	9.1%	16.7%
2006	71.9%	9.1%	16.7%
2007	72.4%	9.1%	16.6%
2008	73.4%	9.2%	16.6%
2009	74.5%	9.1%	16.5%
2010	72.8%	8.8%	15.9%
2011	72.4%	9.0%	16.1%
2012	72.4%	8.9%	16.2%
2013	72.2%	9.0%	16.3%
2014	72.1%	8.9%	16.3%
2015	73.0%	9.1%	16.6%

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Advantages of Small Firms

- Reduced bureaucracy and flexible structure
- Often easy to change process or equipment
- Owners / managers know workers and closely monitor local costs
- Less automation

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Disadvantages of Small Firms

- Lack of in-house safety and health expertise
- Limited capital resources for workplace modifications
- Less automation means more manual work
- Often greater exposure to costs associated with musculoskeletal disorders

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Musculoskeletal Disorders

BLS, November 2016

- MSDs accounted for 31 percent of all injury and illness cases in 2015



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Small Business Observations

- Changes in the last 30+ years
- Out-sourcing – physically demanding jobs
- “Isn’t ergonomics new?”, Human Resources Generalist from a lean supplier of high precision automotive parts, 2015



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Aging Work Force

- Walmart employee
- Age 102
- Wade says he plans to work as long as he can. Although he admits, “These 50 pound bags of dog food are getting pretty heavy.”

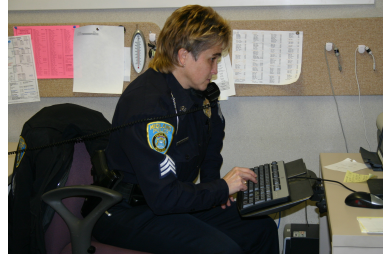


<http://money.cnn.com/gallery/retirement/2014/10/01/americas-oldest-workers/index.html>

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Program Goals

- ✧ Provide people with basic knowledge to identify and reduce occupational risk factors associated with the development of MSDs
- ✧ Provide ergonomic assessments of selected jobs
- ✧ Provide a basic framework for incorporating ergonomic job assessment into their organizational structure



State of Michigan Grant

- ✧ 1992 start date
- ✧ 25 years of funding
- ✧ 207 participating companies
- ✧ 25 open enrollment two-day introductory ergonomics courses
- ✧ > 5600 people attended seminar
- ✧ > 7400 hours of technical assistance





Method

- Visit One
 - ✧ Discuss ergonomics control program
 - ✧ Complete survey on occupational health and safety resources
 - ✧ Workplace walk-through
 - ✧ Videotape and document 2-4 jobs
- Complete job analyses
- Visit Two
 - ✧ Conduct 2.5 hour ergonomics awareness seminar

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Ergonomics Awareness Seminar

- Background information on musculoskeletal disorders
- Key components of an ergonomics program
- Ergonomics risk factors
- Job documentation and job analysis
- Facilitated case studies
- Using iClickers to keep attendees involved

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Seminar Evaluation

Attendee Responses to Seminar Evaluation Questions
Data from seminars conducted during January 2013 – September 2017

	Yes	No	Maybe
This seminar provided me with new ergonomics information (n=597)	97.0%	3.0%	N/A
This seminar provided me with new ergonomics skills (n=603)	93.5%	6.5%	N/A
This seminar motivated me to identify changes in my work (n=609)	90.0%	10.0%	N/A
Because of this seminar, I see areas of improvement needed at my work site (n=608)	92.6%	7.4%	N/A
This seminar will change the way I address ergonomics issues in the workplace (n=595)	88.6%	11.4%	N/A
I expect to make changes to improve ergonomics at my workplace (n=602)	65.9%	3.3%	30.7%

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Workplace Changes



Lift and Spin Table



Pneumatic Trimmers

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Paper Flopping - Original



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Paper Flopping



Original Work Method



Revised Work Method

Cost: Approximately \$75 in material costs and \$712.50 in labor costs to design and test method.

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Paper Flopping - Revised



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Non-Profit Corporations



Employee: Order Select



One Shift Volunteers: Product Sorting



Regular Volunteer: Inspect and Sort

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Volunteer Coordinator



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Angel Chair



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Mirra Chair



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Ikea Furniture



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Workplace Changes



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Workplace Changes



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Workplace Changes



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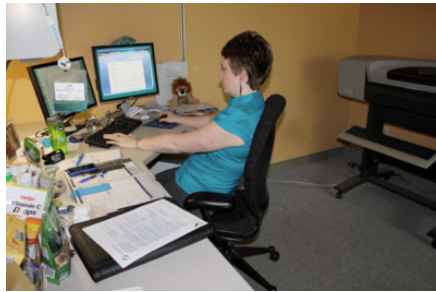
Continued Ergonomics Assistance

0 = not at all important and 10 = extremely important

Statement	Response Mean \pm Std Dev
Additional ergonomics training for their company	9.4 \pm 1.15
Additional technical support for ergonomics activities for their company	8.6 \pm 1.20
Introduction of ergonomics to other small and medium sized companies	9.4 \pm 1.41

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Office Ergonomics Modifications after Ergonomics Training



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Survey Content

- **Demographics**
- **Discomfort survey.** Discomfort at the end of a typical work week was rated using five descriptors (None; Mild; Moderate; Severe; Unbearable).
- **List of 42 potential workplace modifications.** Respondents indicated which changes were made (if any) and had the opportunity to list other changes.
- **Changes in discomfort** after the workplace modifications were implemented.
- **Discussions about ergonomics.** Three questions that asked respondents if they had discussed ergonomics with their co-workers, supervisors, and other management representatives.

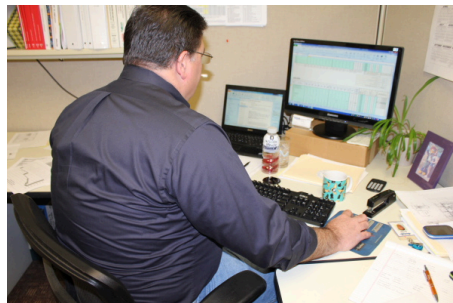
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Company Information

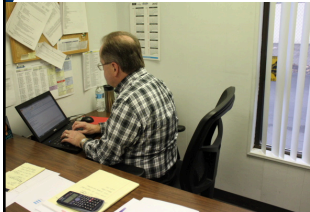
Company	Number of Months Between Seminar and Survey	Product or Service Provided	Number of Employees	Number who attended the seminar	Number who completed the survey
A	9	Journal layout and publication	16	9	7
B	9	Book Manufacturer	240	34	18
C	17	Provides training and transition services	43	25	22
D	6	Develops and manages shopping malls	270	17	8

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Office Computer Workstation



Office Computer Workstation



Shop Floor Computer Workstation



Survey Results

- 55 respondents
 - ✧ 73% attended the seminar
 - ✧ 82% female
- Discomfort Ratings were “mild”
- 46 respondents (84%) reported workplace changes
- Number of changes per respondent was 4.9 ± 4.3
 - ✧ Min=0; Max=16; Median=5
- 270 reported workplace modifications
- 235 (87%) of workplace modifications weren’t “new” equipment

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Survey Results

Workplace Changes

	Number of respondents who reported workplace changes	Number of respondents who did not report workplace changes	Number of workplace changes
Attended ergonomics seminar	35	5	5.45 ± 4.32
Did not attend ergonomics seminar	9	4	3.08 ± 3.7

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Survey Results

Ergonomic Discussions

	Yes	No	No response
Discussed ergonomics with co-workers	35	19	1
Discussed ergonomics with supervisor	14	40	1
Discussed ergonomics with a Human Resources, Safety or other management representative	12	42	1

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Conclusion

- Small companies did not have ergonomics specialists or formal ergonomics programs
- Outside assistance provided companies awareness training that led to workplace changes and a dialogue about ergonomics
- Similar findings by Johansson and Johansson (1992) and Torp and Moen (2005)

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Ergonomics Case Studies
New Channels Coming Soon!

YouTube C4E TV



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