

Project Descriptive Title: Participatory Ergonomics to Prevent Musculoskeletal Disorders in the Grocery Industry

Assigned SHIP grant #: 2008XH00097
Funding Period: 03/16/09-03/15/10
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Applicant Organization/Partners/Collaborators: Inland Northwest Health Services and Eastern Washington University

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Inland Northwest Health Services and Eastern Washington University are solely responsible for the content of and views expressed in this report and related materials unless they have been formally endorsed by the Washington State Department of Labor and Industries.

PART I

❖ Organization Profile

Inland Northwest Health Services

Inland Northwest Health Services (INHS) is a non-profit 503(c) corporation formed in 1994 when the major Spokane hospital corporations had the vision to cast aside the prevailing competition each faced and identify areas of collaboration. Providence Services of Eastern Washington and Empire Health Services linked specific lines of health care to begin the partnership. The mission of INHS is to provide unique, effective, affordable services using collaborative and innovative approaches for the benefit of the entire health care continuum. Today, INHS oversees a variety of health care companies and services that work together to improve outcomes, lead the way in health care innovation, and create healthier communities. These business lines include: Northwest MedStar, a critical care transport service; Information Resource Management, which manages one of the nation's most advanced health information technology networks, allowing thousands of health care professionals in hospitals, clinics and physician offices to access their patients' health records; Community Health Education & Resources (CHER) a regional health education resource that offers health screenings, rural outreach programs, wellness classes, and health education programs for health care providers and the community; and St. Luke's Rehabilitation Institute, the region's largest freestanding medical rehabilitation facility.

Center of Occupational Health & Education

St. Luke's is also the home of the Eastern Washington Center of Occupational Health & Education (COHE). As an asset of L&I, the mission of COHE is to improve communication between providers, employers and injured workers to get people back to work. The COHE program is projected to save the state's worker's compensation system more than \$8 million annually.

Eastern Washington University

Eastern Washington University (EWU) is a regional comprehensive university that serves rural Eastern Washington and Northern Idaho as well as the City of Spokane, the largest city between Minneapolis and Seattle. EWU began as a normal school for educating teachers in 1882, the greatest educational need in the region. As the school has grown into a university, it has continued to meet the educational needs of the area. EWU now serves over 10,000 students and offers 100 fields of study, 55 graduate programs, and an applied doctorate of Physical Therapy.

Eastern's mission is to prepare broadly educated, technologically proficient, and highly productive citizens to attain meaningful careers, to enjoy enriched lives, and to make contributions to a culturally diverse society. The university's reputation is as a university of access and opportunity and as such it serves a high percentage of students who are at-risk for not completing college. Over 50% of entering freshmen are the first in their families to attend college and 22% are from underrepresented groups. Seventy-six percent of students receive financial aid, and 29% receive Pell grants.

Yoke's Fresh Markets

Yoke's primary business is the retail sale of quality grocery store products and customer conveniences. Rich with history, the company has enjoyed growth, positive change, and is looking forward to accomplishing the goal of becoming the preeminent independent retail grocer in the Inland Northwest. The history of Yoke's Foods begins in 1946, when Harriet and Marshall Yoke purchased a small store on Main Street in Deer Park, Washington. Their son, Charles M. (Chuck) Yoke, worked in the business with his father, until his father's retirement in 1960. In 1965, Chuck incorporated the business into what is known today as Yoke's Washington Foods, Inc.

The mission of Yoke's Foods is to be an independent, employee-owned regional grocery chain that provides genuine customer service in a welcoming environment. We are large enough to offer a broad variety of quality products and services at competitive prices. We are small enough to care about the specific needs of our customers and communities, and we empower our employees to quickly meet those needs.

❖ Abstract

Work-related musculoskeletal disorders (MSDs), such as rotator cuff strain, carpal tunnel syndrome, and low back pain, are potentially disabling conditions affecting workers. In Washington State, the grocery industry ranked 5th in compensable upper extremity MSDs of all industries (Silverstein & Adams, 2007). Grocery work was ranked in the top 25 for injuries including neck, rotator cuff, wrist tendonitis, carpal tunnel syndrome, and back disorders including sciatica.

Participatory ergonomics programs are one method of reducing MSDs in industry, but these programs are not typically used in the grocery industry. The purpose of the proposed project was to implement certain educational components of a participatory ergonomics program for medium-sized grocery stores and test the effectiveness of the program.

The safety committee at one store in a medium-sized grocery store chain was the “intervention” store. Committee members received training in ergonomics and the ergonomics process. Another store served as the “control” store and used its regular workplace safety program. At both stores, three sources of data were collected at baseline and approximately six months after the intervention was implemented: 1) individual questionnaires about musculoskeletal symptoms and general health, 2) workplace exposure assessment, and 3) company injury data.

As a result of this project, an Ergonomics Process Plan has been developed, which can be used to implement the participatory ergonomics process in medium to small-sized grocery stores.

❖ Purpose of Project

The primary purpose of this project was to implement a participatory ergonomics process in a medium-sized grocery store. The primary output of this project is the *Ergonomics Process Plan*, which describes the steps necessary to implement the participatory ergonomics process.

❖ Statement of the Results Evidence of the results

The *Ergonomics Process Plan* has been developed. Additionally, two manuscripts are in preparation. The first manuscript (Goldrick et al., “Ergonomic exposure assessment provides insight for musculoskeletal disorder risk in the workplace”) describes the ergonomic exposure

assessment methods used in the project. This manuscript will be submitted July 2011 to *Orthopaedic Physical Therapy Practice*, a clinical practice journal. The second manuscript (Anton et al., "Prevalence of musculoskeletal symptoms among grocery workers") will report the prevalence of musculoskeletal symptoms and associated factors among grocery workers who participated in the project. Since this manuscript will report survey data from the current SHIP grant, as well as our second grant (2009XH00128), the expected submission date is late summer 2011. We plan to submit this manuscript to the *American Journal of Industrial Medicine*.

❖ Measures to judge success

NA

❖ Relevant processes and Lessons Learned

The most important lessons learned have been described in our previous Programmatic Reports and are reiterated here. Key lessons focus on the importance of adopting a formal process for implementing participatory ergonomics, development of educational materials that are meaningful to employees, and identification of a point-person.

First, a formal process to implement ergonomics appears to be necessary. Safety committee members commented that ergonomics was, in a way, "common sense," and many intuitively knew that certain tasks could be harmful. However, members stated that ergonomic solutions had not been implemented at the store until the training provided a step-by-step method of assessing risk factors and developing solutions. A process was especially important to keep ergonomics from becoming a "program of the month."

Second, ergonomic training appears to be an important initial step in motivating workers to participate in the ergonomics process. After training, safety committee members were excited about assessing and implementing ergonomic solutions. Additionally, after the training, some committee members had either implemented an ergonomic solution or recommended a safer way to perform a task to a coworker. However, committee members felt all employees should receive some type of training in ergonomics, which was beyond the scope of the proposed project. Additionally, the training needed to be relevant, interesting, and personalized for the store. Store management described previous training as being too generic to be relevant.

Training was made more interesting by including pictures of actual grocery workers in the training program.

Third, facilitation of the ergonomics process appears to be an important step towards maintaining the ergonomics process. Two types of facilitation were thought to be needed: 1) a point-person at the store and 2) an “ergonomics expert” not employed at the store.

An “ergonomics champion” appears necessary for success of an ergonomics program. This person could be a manager or another employee interested in ergonomics. Since no point-person existed at the intervention store, solutions were not implemented. Regardless if a point-person exists, facilitation is also necessary by someone with advanced training in ergonomics. For example, project team members attended one safety committee meeting after the training intervention, and we were able to make suggestions and coach the ergonomics process during the meeting. Additionally, we were able to give “homework” to keep the process moving.

Fourth, support at all levels of an organization, from management to the individual worker, is critical to the success of the program. Management may initially implement an ergonomic program, but all employees need to “buy-in” to the program for it to be effective. Management can accomplish this by sincerely asking employees for suggestions for change and then acting on these recommendations. As previously mentioned, employees also gain ownership in the program by learning about ergonomics.

❖ Product Dissemination

The *Ergonomics Process Plan* has been provided to the administrators of the SHIP Program. It is unknown what steps will be taken by Labor and Industries to disseminate the plan further. The plan is actively being used by the project grocery chain to implement their ergonomics program.

Project results have been presented at the following venues:

- Modderman S, Anton D, Weeks D, Hansen D, Goldrick S. Method for implementing a participatory ergonomics program to reduce risk of musculoskeletal disorders in the grocery industry. 13th Annual Graduate & Undergraduate Eastern Washington University Student Research and Creative Works Symposium. 2010. Cheney, WA
- Modderman S, Anton D, Weeks D, Hansen D, Goldrick S. Implementing participatory ergonomics in the grocery industry.

Proceedings of the 14th Annual Applied Ergonomics Conference. 2011. Orlando, FL.

- Anton D. Lift Training for Grocery Stores – “Lift With Your Legs, Not Your Back”... or not? Washington Food Industry. 2010. WFI Association Safety Committee Webinar.

Additionally, we submitted a proposal to present at the National Grocers Association 2011 annual conference, but our proposal was not accepted.

❖ Feedback

The primary feedback has been from management at the project store and related to the need for ergonomic educational materials specific to the grocery industry. These materials are being developed as part of the expected outcome of a second SHIP grant (2009XH00128).

❖ Project's Promotion of Prevention

Participatory ergonomics programs have been found to be an effective way of decreasing work-related musculoskeletal disorders in numerous industries. To our knowledge, this project is the first time participatory ergonomics has been used in the grocery industry. Thus, the long term effect of these programs on the grocery industry has not been established. Regardless, the *Ergonomics Process Plan* is considered “primary prevention” according to public health models.

❖ Uses

The intended ‘end-user’ of the *Ergonomics Process Plan* is safety managers and committees in small, medium, and large grocery stores in Washington State, as well as their vendors (for example, food warehouses, janitorial staff, refuse handlers). Since these end-users are not safety experts, they usually rely on products such as the OSHA publication, “Ergonomics for the Prevention of Musculoskeletal Disorders. Guidelines for Retail Grocery Stores.” Although this is an excellent publication, it does not provide a structured process for implementing an ergonomics program. The *Ergonomics Process Plan* was developed to fill this void.

The *Ergonomics Process Plan* is also applicable to other industries in Washington State. Initially, we would recommend the development of ergonomics programs for the ‘supply chain’ industries associated with

grocery stores (e.g., grocery warehouses), which is one of the focuses of our second SHIP project.

Additional Information

Project Type <input type="checkbox"/> Best Practice <input type="checkbox"/> Technical Innovation <input checked="" type="checkbox"/> Training and Education Development <input type="checkbox"/> Event <input checked="" type="checkbox"/> Intervention <input type="checkbox"/> Research <input type="checkbox"/> Other (Explain):		Industry Classification (check industry(s) this project reached directly) <input type="checkbox"/> 11 Agriculture, Forestry, Fishing and Hunting <input type="checkbox"/> 21 Mining <input type="checkbox"/> 22 Utilities <input type="checkbox"/> 23 Construction <input type="checkbox"/> 31-33 Manufacturing <input type="checkbox"/> 42 Wholesale Trade <input checked="" type="checkbox"/> 44-45 Retail Trade <input type="checkbox"/> 48-49 Transportation and Warehousing <input type="checkbox"/> 51 Information <input type="checkbox"/> 52 Finance and Insurance <input type="checkbox"/> 53 Real Estate and Rental and Leasing <input type="checkbox"/> 54 Professional, Scientific, and Technical Services <input type="checkbox"/> 55 Management of Companies and Enterprises <input type="checkbox"/> 56 Administrative and Support and Waste Management and Remediation Services <input type="checkbox"/> 61 Educational Services <input type="checkbox"/> 62 Health Care and Social Assistance <input type="checkbox"/> 71 Arts, Entertainment, and Recreation <input type="checkbox"/> 72 Accommodation and Food Services <input type="checkbox"/> 81 Other Services (except Public Administration) <input type="checkbox"/> 92 Public Administration
Target Audience: <i>Small-Medium Sized Grocers</i>		
Languages: <i>English</i>		
Please provide the following information - - <i>(information may not apply to all projects)</i>		List, by number above, industries that project products could potentially be applied to. 42, 48-49 Potential impact (in number of persons or companies) after life of project?
# classes/events:	2	
# hours trained	8	
# companies participating in project	1	
# students under 18	0	
# workers	117	
# companies represented	1	
# reached (if awareness activities)	~75	
Total reached		
Have there been requests for project products from external sources? If Yes, please indicate sources of requests <i>Washington Food Industry</i> <i>Puget Sound Human Factors and Ergonomics Society</i>		

PART II

SAFETY AND HEALTH INVESTMENT PROJECTS ***SHIP Final Expenditure Report*** ***Budget Summary***

Project Title:	Participatory Ergonomics to Prevent Musculoskeletal Disorders in the Grocery Industry		
Project # :	#2008XH00097	Report Date:	06/21/11
Contact Person:	Dan Anton, PT, PhD, ATC	Contact #:	509-828-1375
Start Date:	03/16/09	Project Completion Date:	03/15/11

1.	Total budget for the project		\$87,958
2.	Total SHIP Grant Award		\$87,958
3.	Total of SHIP Funds Used		\$87,958
4.	Budget Modifications (if applicable)		\$ _____
5.	Total In-kind contributions		\$748
6.	Total Expenditures (Lines 3 + 4 + 5)		\$88,706

Instructions:

- Complete the Supplemental Schedule (Budget) form first (on the next page).
- The final report must include all expenditures from date of completion of interim report through termination date of grant
- Indicate period covered by report by specifying the inclusive dates
- Report and itemize all expenditures during specified reporting period per the attached supplemental schedules
- Forms must be signed by authorized persons (see last page)
- Forward one copy of the report to (Name), SHIP Project Manager, PO Box 44612, Olympia, WA 98504-4612.

SAFETY AND HEALTH INVESTMENT PROJECTS
SHIP Final Expenditure Report
Supplemental Schedules (Budget)

Project Title:	Participatory Ergonomics to Prevent Musculoskeletal Disorders in the Grocery Industry		
Project # :	#2008XH00097	Report Date:	06/21/11
Contact Person:	Dan Anton, PT, PhD, ATC	Contact #:	509-828-1375
Total Award \$:	\$87,958		

ITEMIZED BUDGET -- How were SHIP award funds used to achieve the purpose or your project?

	Budgeted for Project	Amount Paid Out	Difference
A. PERSONNEL	\$21,075	\$22,832	-\$1,757

Explanation for Difference and other relevant information: Investigators received raises during project period which affected salary and fringe paid out.

	Budgeted for Project	Amount Paid Out	Difference
B. SUBCONTRACTOR	\$44,401	\$44,434	-\$33

Explanation for Difference and other relevant information: Research assistant costs were higher than expected.

	Budgeted for Project	Amount Paid Out	Difference
C. TRAVEL	\$2,736	\$2,982	-\$246

Explanation for Difference and other relevant information: Costs to attend a national professional conference to present study results were higher than expected.

	Budgeted for Project	Amount Paid Out	Difference
D. SUPPLIES	\$11,750	\$10,179	\$1,571

Explanation for Difference and other relevant information: Equipment costs were lower than anticipated.

	Budgeted for Project	Amount Paid Out	Difference
E. PUBLICATIONS	\$0	\$0	\$0

Explanation for Difference and other relevant information:

	Budgeted for Project	Amount Paid Out	Difference
TOTAL DIRECT COSTS	\$79,962	\$80,427	-\$465

	Budgeted for Project	Amount Paid Out	Difference
INDIRECT COSTS	\$7,996	\$8,279	-\$283

	Budgeted for Project	Amount Paid Out	Difference
TOTAL SHIP BUDGET	\$87,958	\$88,706	-\$748

	Budgeted for Project	Amount Paid Out	Difference
F. IN-KIND	\$0	\$748	-\$748

Explanation for Difference: Costs beyond the grant budget were absorbed by Inland Northwest Health Services.

PART III

Attachments:

Provide resources such as written material, training packages, or video/audio tapes, curriculum information, etc produced under the grant.

Also include copies of publications, papers given at conferences, etc.

This information should also be provided on a **CD or DVD** for inclusion in the file.

Manuscripts will be supplied when published. Files on DVD:

- Modderman 10 - Grocery PE project methods - EWU Symposium Presentation FINAL.pptx
 - Modderman S, Anton D, Weeks D, Hansen D, Goldrick S. Method for implementing a participatory ergonomics program to reduce risk of musculoskeletal disorders in the grocery industry. 13th Annual Graduate & Undergraduate Eastern Washington University Student Research and Creative Works Symposium. 2010. Cheney, WA
- Modderman 10 - Grocery PE - Applied Ergo Conference FINAL.pptx
 - Modderman S, Anton D, Weeks D, Hansen D, Goldrick S. Implementing participatory ergonomics in the grocery industry. Proceedings of the 14th Annual Applied Ergonomics Conference. 2011. Orlando, FL.
- Anton 10 - Lifting in the Grocery Industry.pptx
 - Anton D. Lift Training for Grocery Stores – “Lift With Your Legs, Not Your Back”... or not? Washington Food Industry. 2010. WFI Association Safety Committee Webinar.
- Anton et al. 2011 - Grocery Participatory Ergo - Ergonomics Process Plan.pdf

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