

WCB Community Initiatives and Research Program Safe Work for an Aging Workforce Project

Final Report December 31, 2013

Executive Summary

In 2010 the Workers Compensation Board of Manitoba Community Initiatives Grant Program awarded A. Dolhy Ergonomics Inc. funding for a project that would develop 40 case studies of older worker issues in small businesses along with costs and benefits.

The project was completed in 2013 with 40 case studies conducted in a variety of small workplaces and included a wide range of older worker issues. All case studies had positive results and outcomes for injury risk reduction and economic benefits.

This report details the 4 project objectives, the outcomes and results of the case studies, recommendations for health and safety committees and a final project budget.

In summary

- T the project successfully met its stated objectives
- T the project completed 40 case studies of older work issues
- T the Safe Work for an Aging Workforce resource guide has been well received
- T the project impacted a wide variety of small business directly and will indirectly help all Manitoba workplaces with older worker issues
- T an electronic version is available on the internet for viewing along with a limited number of hard copies
- T other methods of dissemination will include communication with safety associations, business groups, labour unions and health and safety related forums

A. Dolhy Ergonomics Inc. is very pleased to have had the opportunity to undertake this initiative and believes that it was a highly successful endeavour.

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BACKGROUND and PROJECT OBJECTIVES

Manitoba is experiencing an aging workforce and musculoskeletal injuries are increasing in this group. One sector that lacks resources to identify and correct older worker issues is small businesses. The goal of this project is to help small businesses address the needs of older workers with an emphasis on ergonomics. Previous small business, ergonomic and older worker CIRP projects have benefited by focusing efforts in one sector (small businesses), providing prevention services (as opposed to legislative compliance) and involving the community (mainly on the advisory committee), this project strives for the same strategy.

This project aimed to develop 40 case studies of ergonomic interventions for older workers in small businesses. These case studies are documented and published in a case study book. The case study book uses SAFE work as a format and includes problems, solutions, costs and benefits.

The project outcomes included the increased awareness and action on the emerging health and safety issue of an aging workforce and the development of the case studies. Through workplace participation and the dissemination of the case studies, it is believed that workplaces can be shown easy and cost effective solutions for improving jobs for older workers.

Ergonomic case study resources are available, however, there is little information describing case studies for older workers. Furthermore, it is difficult to determine if ergonomic standards and guidelines are developed to account for older worker issues. A secondary outcome of this project was to review ergonomic standards and guidelines as they relate to the

case studies to compare their recommendations with the actual needs of older workers in small businesses.

Project Objectives:

- 1) Develop 40 case studies of ergonomic interventions for older worker issues in small businesses. The case study book will be formatted with the SAFE Work theme showing how the case study issue was identified, assessed, solutions implemented and evaluation..
2. Quantify the risk reduction and job accommodation benefits along with an evaluation through a cost/benefit analysis.
3. To increase the awareness and knowledge of older worker health and safety issues in small businesses.
4. To review and provide recommendations concerning ergonomic standards and guidelines as they relate to older worker issues.

PROJECT WORK

Objectives

1) Develop 40 case studies of ergonomic interventions for older worker issues in small businesses. The case study book will be formatted with the SAFE Work theme showing how the case study issue was identified, assessed, solutions implemented and evaluation.

For this project, a total of 40 case studies were successfully developed that involved 9 different age related issues: vision (5); hearing (2); lifting (5); work capacity (9); work design(8); cognitive issues (2); temperature (2); chemical issues (2); and job accommodations (5).

The case studies were selected by contacting small employers directly through referrals, association contacts and by communications through

various media. The 40 case studies included construction (9); office (9); food processing/agriculture (6); manufacturing (5); and service (11). The service workplaces included: retail; childcare centre; automotive repair shop; moving company; transportation; laboratory; and landscaping. Every task was identified as an issue by the health and safety committee or safety representative. Each case study was determined to be a problem job through the assessment process. Each case study was assessed with a checklist, by worker consultation, the use of technical tools and comparison to standards and guidelines.

The case studies were developed with the WCB's SAFE Work program in mind. The SAFE Work program's goal is to increase awareness and knowledge of all Manitobans when it comes to health and safety in the workplace. It is funded by the Province of Manitoba and the Workers Compensation Board of Manitoba. The program centres around the personal risk management model: **S**pot the Hazard, **A**ssess the Risk, **F**ind a Safer Way, **E**veryday. This format was chosen for the case studies to help reinforce the SAFE Work message as it applies.

Case Study Summaries:

The following case study summaries are presented in order with the corresponding age related issue.

Vision

1) Office Workplace: this task involved computer administration work and the older worker was experiencing aches and pains. The issues related to the position of the monitor and font size. The solution was to increase the font and raise the height of the laptop.

2) Manufacturing Workplace: this business manufactures metal products and the issue involved industrial lighting and slip/trip issues. The lighting was below standard and the solution was to replace old bulbs and clean fixtures.

3) Agriculture Workplace: this farm was located in the Interlake area and employed 5 older workers. The case study involved tractor driving and vision issues. Blind spots were identified in the Useful Field of View. The solution was to develop blind spots maps for each tractor, attached blind spot stickers to problem areas, educate workers and to reposition mirrors.

4) Retail Workplace: this small retail store had lighting and workspace design issues with the front counter. Their older workers complained of trip hazards due to poor lighting and floor tile issues. There is also eye-strain when interacting with customers. The light levels were below standards. The solution was to increase the amount of light and provide anti-fatigue matting.

5) Office Workplace: this business involved a computer workstation. Their issue was the prevention of injury to an older worker that has head and neck discomfort. The issue involved glare and position of the mouse. The Unified Glare rating was above standard and there was no room on the keyboard tray for the mouse. The solution was to change the orientation of the desk and provide a keyboard tray long enough for the keyboard and mouse.

Hearing

6) Office Workplace: this workplace involved several staff that were involved in phone communication with clients. The background noise level was high and it affected their older workforce. The sound levels were above standard for a call centre. The solution was to install acoustic panels to separate the workstations and absorb sound.

7) Service Workplace: this business involved work with powered equipment at a landscaping workplace. Their issue was the prevention of injury to an older worker due to their disuse of hearing protection. Sound readings were taken and recommendations given for custom calibrated hearing protection. This made it more comfortable for the older worker to communicate in a loud environment.

Lifting

8) Construction Workplace: this business involved renovation work and is located outside of Winnipeg. Their issue was the prevention of injury to older workers when handling building materials from the ground. The strain on the back was identified as a high hazard. The solution was to use knee high saw horses to raise the height of materials from the floor to knee height.

9) Moving Company: this case study involved the lifting and carrying of materials in residential housing. The job demands are high with their workforce aging. The tasks were evaluated to be a high risk including the carrying of materials up stairs. The solution was to provide shoulder straps to balance the load and improve posture.

10) Manufacturing Workplace: this business manufactures small metal products and involved the continuous bending into baskets for small parts. The amount of stooping and strain on the back was assessed to be medium risk. The solution was to raise the bins from the floor to waist height by adding longer legs.

11) Construction Workplace – this case study involved the handling of large pieces of building materials. There were awkward body positions and the older workers were finding it stressful. The tasks were assessed as medium to high risk. A special tool was provided to grip the material with an improved body posture and a power grip.

12) Moving Company – during a commercial move, many dollies were used to move heavy bins. The older workers identified pulling heavy dollies over floor edges and the lip of the truck's lift gate as priority issues. The assessment found the length of the strap was too short, resulting in a stooped posture to pull and lift dollies over the edges. The solution was to lengthen the strap to improve posture.

Work Capacity

13) Construction Workplace: this construction workplace uses shovels extensively. The issue for older workers was the heavy wet mud and the precise use of the tool when digging around piping. The risk of injury was medium. A shovel with an 'O' ring for a handle and a smaller spade was provided.

14) Manufacturing Workplace: this business involved continuous standing work with overhead reaching. The ergonomic assessment found this task to be of low risk. The older worker may have a personal issue with continuous standing and overhead reaching due to age. The solution was to provide a foot rail for the workbench and foot support when overhead reaching.

15) Transportation: this task involved the opening of hoppers in a grain hauling truck. The issue for the older worker was the poor posture and force to open the hoppers. The risk of injury was rated a low to moderate. The solution was to provide better leverage through a ratchet system to open the hoppers.

16) Laboratory Workplace: there are older workers who are experiencing musculoskeletal discomfort due to recent increases in job demands. Their work involved microscopes, and pipetting. The risk of injury was rated as moderate. The solution was to provide forearm supports, an ergonomic laboratory chair and a footrest.

17) Construction Workplace: this construction case study involved the use of tools and their use by an older worker who is having hand issues. The solution was to provide an ergonomic tool with a bent handle to improve wrist posture and a pail handle gripper to reduce wrist strain.

18) Food Processing Workplace: this facility used pressure washers to clean equipment. The long duration use of the pressure washer was resulting in hand issues for older workers. The risk of injury was rated as moderate. The solution was to add a 360 degree swivel to

reduce hose twisting and provide education and awareness training to all workers.

19) Housekeeping: this workplace involved sweeping, shovelling and scraping tasks that bothered their older workforce. The tasks were rated a low – moderate. The solution was to install 'D' shaped handles to the brooms, shovels and scrapers to improve posture.

20) Day Care Centre: the older workers at a day care were experiencing musculoskeletal aches and pains in the knees and backs. The assessment found a high strain from pushing a heavy cart and when mopping. The solution was to install larger wheels on the cart and to provide a lighter mop head.

21) Office Workstation: an older worker was developing aches and pains in the forearms and hands when keyboarding. The assessment found a direct pressure hazard from leaning on the edge of the desk. The solution was to provide a wrist rest and install it along the edge of the desk.

22) Transportation– driving trucks long distances was identified as hard on the lower back of older workers. Vibration readings found the largest frequencies that entered into the body was from the steering wheel on rough roads. The solution was to provide anti-vibration gloves.

Work Design

23) Agriculture Workplace: this farm employs numerous older workers. One older worker has knee issues and was having difficulty reaching the first step to enter tractors. The assessment found the first step height to be within standards, however in the field, the ground can be uneven and hence the first step can be higher. The solution was to lower the first step and have the side supports made of a flexible rubber to eliminate obstruction issues.

24) Office Workplace: this office area was used by numerous workers and has storage space that required heavy and awkward lifting above their heads. The risk of injury was low due infrequent lifting, however the posture was poor. The solution was to change the location of heavy binders and educate workers on proper lifting techniques.

25) Office Workplace: this business involved administration work at a computer workstation. Their issue was the accommodation of an older worker with non-work related injuries. The solution was to provide a height adjustable ergonomic keyboard tray.

26) Office Workplace: this business involved a multiple-user workstation located at a construction work site. Their issue was the prevention of injury to older workers due to continuous sitting and standing at large workbenches. The solution was to provide a 3 in 1 sit/stand ergonomic chair.

27) Office Workplace: this task involved web designing at a computer workstation. The issue was the prevention of injury to an older worker that had a history of wrist tendinitis. The issue related to the lack of space to use the mouse. A smaller mini-keyboard was purchased to make more room to move the mouse.

28) Office Workplace: this business involved a computer workstation. The issue was the prevention of injury to an older worker that had multiple whole body strains. There were multiple ergonomic issues with this workstation and required the purchase of an ergonomic chair, footrest, keyboard tray and document holder.

29) Office Workplace: this task involved office administration work by an older worker who was experiencing whole body aches and pains. The workstation was poorly designed and assessed at having a moderate to high risk of injury. A new chair, desk, keyboard tray and monitor was provided.

Cognitive Issues

30) Agriculture Workplace: a grain farm had older workers that were having difficulties using implement controls. There are a variety of implements that can be attached to the hydraulics of farm tractors. These controls are general in design and use. This led to a lack of discernment and memory errors. The solution was to provide labels for the controls to reduce errors.

31) Food Processing Workplace: this facility involved moving hogs, which can result in falls and struck against injuries. The issue was the design of the chase board, a flat, plastic piece of equipment used to help move hogs and protect workers. It's weight and handle shape resulted in arm fatigue and a slower reaction time by the end of the shift. A new chase board was developed to reduce strain on the arm and hence increase reaction time.

Extreme Temperature

32) Construction Workplace: tasks involved outdoor and indoor construction work. Outdoor workers were exposed to heat stress from the sun while indoor workers were exposed to hot and humid conditions. The employer was concerned regarding heat stress and older workers. Control measures implemented included awareness and education regarding signs and symptoms of heat stress, work/rest changes and an evaporative, cooling bandana was provided.

33) Construction Workplace: this task involved older workers repairing sewer and water breaks. The work was outdoors in the cold with muddy water. The workers do not wear gloves because they cannot find ones that provide warm and have a good grip. The good grip on tools and piping parts is essential. The solution was to use a glove initially designed for urban police forces. It is designed for cold-wet weather while providing excellent grip.

Chemicals

34) Landscaping Workplace: this business involved grounds keeping tasks involving the spraying of chemicals. A chemical inventory was conducted, two chemicals were reviewed along with their MSDS sheets. Both of the chemicals lacked research on older individuals and there was a concern about the mixing of chemicals. Therefore, recommendations were provided for changing the type of PPE used and the schedule of application.

35) Automotive Repair Shop: this small business uses many different chemicals with strong odours. The MSDS were collected, reviewed and a risk assessment conducted. An industrial hygienist's recommendation was to change the PPE used for one chemical and to substitute another due to unknown older worker issues.

Job Accommodations

36) Construction Workplace: this task involved the use of heavy equipment for digging. The issue was the accommodation of an older worker with neck and arm pain resulting from the operation of heavy equipment. The solution was to break the long hours up with the use of mini-breaks.

37) Office Workplace: this task involved using a computer workstation. The individual's issue was low back strain and a poorly fitting chair. The chair was too small for the individual worker's stature. A new larger chair was provided with adjustable armrests.

38) Construction Workplace: this task involved plumbing and related trades for commercial construction and renovation. The issue was the accommodation needs of an older worker with a knee injury. The solution was to use a new type of kneepad that reduces side-rocking motion, reduces the angle at the knee and has a longer shin guard.

39) Service Workplace: this task involved landscaping work with power tools and the need to accommodate an older worker with hand issues. Vibration readings were taken and recommendations given

for anti-vibration grip tape and ant-vibration gloves to be used for various tools.

40) Construction Workplace: this construction workplace has an older worker with multiple hand injuries. The use of excavation equipment is a problem especially when digging into hard ground. The solution was to use low-density foam to improve the gripping of controls and reduce shock forces.

Outcomes and Results

- Thirty of the forty case studies involved work related issues where the risk of injury was greater due to the job demands and workplace conditions. The jobs with a higher risk of injury due to their job demands and workplace conditions just happen to have older workers performing those tasks.
- The risk assessment found age/individual related issues to be an issue in only 10 of the 40 problem jobs. These jobs had a low risk of injury.
- Of the 10 age/individual related issues, 5 were job accommodations required due to previous injury/age related issues and 5 that were believed to be solely age related. These could not be 100% teased out due to personal health information privacy and internal disability management issues. The specific job accommodation issues involved a neck injury, low back pain, a knee injury and two hand injuries. The 5 individual/age related issues involved hearing, standing, driving, stepping and sitting.
- The risk assessment involved the use of an ergonomic checklist, comparison to standards and guidelines and a higher-level technical ergonomic assessment. Each case study used different assessment tools and references; however, a common ergonomic checklist was used on all case studies. The Manitoba Labour, Workplace Safety and Health 's ergonomic checklist provides a score for the job and a score over 7 indicates a higher risk of injury. The highest score was 17 and the average was 8.5.

- After solutions were implemented the average score was 6 with the highest reduction being 8 points. Each case study was able to find at least some improvement, i.e., at least a 1-point reduction, except for the hearing case studies which do not have a score for sound levels on the checklist. The average risk reduction was 2.5.
- Worker discomfort surveys were conducted before and after changes were made to the jobs. On a 10-point scale, the average discomfort score was 6.2. After solutions were implemented the average was 3.6. This represents a 36% decrease in discomfort.

In Summary

A high level of risk and poorly designed work accounted for 75% of the problem jobs.

Possible age related factors and specific individual job accommodation needs accounted for the other 25%.

The average risk assessment score was 8.5. Scores greater than 7 indicate a higher risk of injury.

The average risk reduction was 2.5 with every case study having at least a 1-point reduction, except the hearing case studies.

Worker discomfort on a 10-point scale averaged 6.2. After changes were made, the average score decreased by 36%.

2. Quantify the risk reduction and job accommodation benefits along with an evaluation through a cost/benefit analysis.

The cost/benefit analysis chosen for this project was developed by M. Oxenburgh, *Increasing Productivity and Profit through Health and Safety*, (1991). This analysis procedure includes six sections that identify quality and productivity improvements along with health and safety benefits. The final analysis uses the Pay Back Period to determine the costs and benefits of a project. The Pay Back Period is the length of time required to make or save the initial outlay of money and calculated in months or years. A Pay Back Period of less than 2 years is a good project to implement from an accounting/economic perspective.

The solutions required to improve the 40 case studies included:

- 27 Engineering controls were the workplace provided tools, equipment or positioned materials to reduce the risk.
- 10 Personal Protective Equipment items were provided to the worker to reduce the risk of injury and
- 2 Safe Work Procedures/training education and changes to work schedule solutions were implemented.

The benefits seen in the case studies included:

- Reduced overtime and increased time efficiencies
- Reduced absenteeism
- Improved quality of products; less scrap rate and rework
- Reduced time to investigate accidents
- Reduced equipment damage and maintenance
- Improved customer service; less errors and returns
- Improved manufacturing cycle time and less wasted motion
- Less recovery time required for heavy work and fatigue
- Improved tasks led to more return to work opportunities
- Decreased reporting of near misses

Outcomes and Results

- The vast majority of solutions were true ergonomic fixes at the source of the problem. They are more permanent and effective.
- The cost incurred to improve the 40 case studies was \$12,238. The average cost to improve the case studies was \$306 with 20 case studies requiring less than \$100 to fix the problems. The highest cost case study was \$1,849 and the median cost was \$105.
- Direct cost savings and quality/efficiency benefits were found for every task with 25 case studies having a pay back period of less than 1 month. The average for the other 15 case studies was 4.5 months with the longest one being 10 months. These benefits included only quality and process/efficiency improvements. No health and safety or WCB benefits were included.

In Summary

The majority of risk reduction measures were engineering solutions and other changes at the source of the problem.

Half the case studies required less than \$100 to fix the problems.

The highest cost was \$1,850 and the median cost was \$105.

The cost benefit analysis found 25 case studies to have a pay back period of less than 1 month with the others having an average of 4.5 months.

3. To increase the awareness and knowledge of older worker health and safety issues in small businesses.

This project objective was conducted after the case studies had been completed. Thirty-two small businesses filled out an evaluation form and submitted their responses. Table 1 provides a summary of the evaluation results. The questions were rated as to how much of an increase in their knowledge of aging workforce issues occurred after participating in this project. The rating scale was 1 to 5 with 5 having the largest increase in knowledge.

Table 1: Aging Workforce Issues – Your Knowledge

Question	Average Increase	Comments
1) Knowledge of the Health and Safety Issues and Challenges of Older Workers	2 points	Only 5% indicated no additional learning
2) Needs of Workplaces to Address the Issues	3.5 points	2% indicated no additional learning
3) Ergonomic and Job Accommodations Options for Aging Workers	4.0 points	0% indicated no additional learning
4) Role of Health and Safety Committees/Representatives	1.0	90% of responses were 1 point higher.
5) Willingness to develop more actions based on participating in this project	5.0	All workplaces have plans to continue with health and safety actions

The overall evaluation was favourable with all questions showing an average increase in awareness, knowledge and actions to deal with older workforce issues. The largest increases were for the ergonomic options to improve jobs and the willingness of workplaces to take further actions to improve health and safety for older workers. This may be the most beneficial outcome of the project since the

continued actions for improving a workplace's health and safety program will have the greatest impact on the health and safety of workers in the long term.

There were some workplaces with previous health and safety experience which led to smaller increases in knowledge regarding older worker issues and options for improvement. However, they did find reviewing case studies from other workplaces to be a benefit.

The only negative responses involved the need for resources to help with individual job accommodation needs, help in developing solutions and help with financial issues to implement the solutions. Recommendations were provided in the evaluation for WCB to continue to support small businesses with technical expertise and options for financial incentives to implement solutions. These evaluation recommendations came from employers that required higher cost solutions and also required more technical risk assessment expertise.

4. To review and provide recommendations concerning ergonomic standards and guidelines as they relate to older worker issues.

The conducting of the case studies involved the review of 13 standards and guidelines. The standards and guidelines involving older worker issues are reported in Table 2 and Table 3. These standards and guidelines involved specific workplace design issues such as lighting in a call centre and general guidance measures such as static and dynamic working postures. The documentation for the standards and guidelines were reviewed for older worker considerations.

Every standard and guideline reviewed included older workers in their documentation. Therefore, applying these standards and guidelines and their specific design criteria data can be made with confidence that it protects, or is designed to include, older workers.

Outcomes and Results

- Standards and guidelines for ergonomic design principles were not met in 30 of the 40 case studies. Therefore, all but 10 case studies would not meet acceptable ergonomic standards/guidelines and hence would put workers at risk of injury or at least lead to a poor workplace condition for any worker.
- Health and safety professionals would benefit in their health and safety initiatives by obtaining, studying and using applicable ergonomic standards and guidelines in the assessment and design of their workplaces.

Table 2: Safe Work for an Aging Workforce: Ergonomic Standards

	CSA-Z412-00	Draft CSA Z1004	ISO 6385	ISO/IEC Guide 71	ISO/TR 22411:
Title	(2005) Guidelines for Office Workstations	(Draft) Industrial Workplace Ergonomics Program Standard	(2004) Ergonomic Principles in the Design of Work	(2000) Guidelines for Standardization to Address the Needs of Older Persons and People with Disabilities	(2008) Ergonomics Data and Guidelines for the Application of ISO/IEC Guide 71 to products and services to address the needs of older persons and persons with disabilities
Type	Canadian Standard	Canadian Standard	International Standard	International Standard	Technical Data to comply with Standard Guide 71.
Aging Workforce Issues	Does not provide specific aging worker guidelines. It does suggest to take older worker issues into account.	Does not mention specific aging issues.	No specific aging worker guidelines. Yet, take older worker issues into account.	Provides guidance to other standard developers to take into consideration older worker abilities.	There is 159 pages of specific data and knowledge concerning older worker abilities, limitations and applied guidance for accessible design.
Comments	Describes 2 types of older workers. "Primary aging is genetic and unalterable while secondary aging is attributed to personal, social and environmental factors".	Can be used as a process guide for addressing ergonomic issues in the workplace including an aging workforce.	This standard provides general guidance in the design of work systems.	Information to take into account includes the sensory, physical and cognitive abilities of older workers. No specific data.	Provides specific data, however, some data is third party information, i.e, strength of older workers. Some studies have been located. There is a need to review this research in order to comment on the standard.

Table 2: Safe Work for an Aging Workforce: Ergonomic Standards

	ANSI/IESNA RP -7-01, ANSI/IESNA RP-1-04	BS EN 1005- 2:2003 Part 2:	BS EN 1005- 3:2008 Part 3:	BS EN 1005-4:2005 Part 4:	Establishing Occupational Exposure Limits in your Workplace
Title	(2001 and 2004) Industrial and Office Lighting Standards	(2003) Manual handling of machinery and component parts of machinery	(2008) Recommended force limits for machinery operation	(2005) Evaluation of working postures and movements in relation to machinery	(2010) Guidelines for adjusting chemical TLVs in Manitoba workplaces
Type	American Standard	British Standard	British Standard	British Standard	Manitoba Guideline
Aging Workforce Issues	No specific aging worker guidelines. Yet, take older worker issues into account.	References specific older worker population data	References specific older worker population data	References specific older worker population data	Discusses older work issues with chemical exposures and personal factors
Comments	This standard provides general and specific guidance in the design of lighting systems in various workplace conditions	Standard acts as an ergonomic assessment method for lifting, lowering, pushing and pulling	Standard acts as an ergonomic threshold limit value for gripping forces	Standard acts as an ergonomic assessment method for acceptable static and dynamic postures	In some cases, 10% of the stated TLV can be used when older workers present the same symptoms as associated with the chemical exposure.

**Table 3: Safe Work for an Aging Workforce:
Ergonomic Risk Assessment Guidelines**

	NIOSH Lifting Equation	Strain Index	ACGIH - HAL
Title	(1991) National Institute for Occupational Safety and Health: Guideline for Safe Lifting	(1995) Method to Analyze Jobs For Risk of Distal Upper Extremity Disorders	(2001) American Conference of Governmental Industrial Hygienists Threshold Limit Value for Hand Activity Level
Type	Low Back and Lifting Risk Assessment Tool and Guideline	Elbow to Hand Risk Assessment Tool and Guideline	Hand Risk Assessment Tool and Guideline
Aging Workforce Issues	Designed to protect 75% of working women and 99% of working men. Specifically, older women may not be protected.	No research to confirm whether older workers are protected.	Aging workers are not mentioned, however, the studies used to gather strength data involved workers in their 50's and 60's.
Comments	Need to review the original research studies to confirm this finding and provide recommendations for older workers.	Need to review the vast background research that went into the development of this tool.	This risk assessment tool does not require adjustment when observing older workers up to the age of 65.

RECOMMENDATIONS

Recommendations and an Aging Workforce Action Plan, based on the results and outcomes of this project, are provided to Health and Safety Committees and those responsible for the health and safety in their workplace.

- Conduct a risk assessment of problem jobs before any conclusion is made regarding older worker issues.
- Older workers are not a health and safety risk; however, they may require specific job accommodations due to chronic conditions.
- Include a discomfort survey of all workers with your ergonomic risk assessment.
- Focus on engineering solutions and fixes at the source of the problem.
- Most ergonomic solutions are low cost; however, larger cost solutions usually have short pay back periods if you account for quality and process/efficiency benefits.
- There are many benefits to improved jobs beyond WCB and health and safety. Look for all benefits to make your cost benefit analysis even more favourable.
- Incorporate the SAFE Work for an Aging Workforce Action Plan into your overall Health and Safety Program; see next section.

SAFE Work for an Aging Workforce Action Plan

- Develop a Health and Safety Program. Include aging workforce issues in areas such as job hazard analysis, new employee orientation and inspections.
- Review tasks for good ergonomic design. Poorly designed jobs will affect all workers including older workers.

- Conduct a worker survey. Questions may include work discomfort, identifying problem jobs and solution ideas.
- Assess the organization's ability to provide a flexible, respectful and inclusive work environment. Promote work-life balance and reduce rigid working conditions.
- Develop health promotion activities. Investigate health and fitness alternatives for older workers and increase awareness of chronic illnesses.
- Open communication throughout the workplace is required to address older workers reluctance to discuss health issues or work related pain due to perceived negative consequences.
- Provide opportunities for older workers to use and share their knowledge, experience and adaptability to reduce health and safety risks.

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