

HUMAN FACTORS MSI PREVENTION TRAINING FOR CONSTRUCTION WORKERS



Ergonomics & Ability, Optimized.

FINAL REPORT
DECEMBER 31, 2017

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Supported by a grant from the Research and Workplace
Innovation Program of the Workers' Compensation Board of
Manitoba.

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EXECUTIVE SUMMARY

In section (i) **Acknowledgement**, key people and organizations are recognized for their contributions and involvement, and special thanks are given to those whose efforts made this project possible.

In section (ii) **Project Introduction and Overview**, presented is the context for Enabling Access' project *Human Factors MSI Prevention Training for Construction Workers* and outlined are some of the industry trends and training challenges which motivated it, while also providing an overview of the project's core objectives. Specifically, an overview of the training objectives is provided for the delivery of on-site worker level training and the objectives of the transfer of knowledge deliverable added here as Appendix C -*Creating and Leading Customized Toolbox Talks Guidelines* and Appendix D - *Sample Toolbox Talk (Shovelling Aggregate)*

In section (iii) **Training Completed**, the approach and method is described for carrying out the core project objectives. In this section, described are:

- The project initiation phase, staffing and formation of our Project Advisory Committee;
- The content development for the worker level *Human Factors MSI Prevention Training for Construction Workers*;
- The content development for *Creating and Leading Customized Toolbox Talk Guidelines*;
- The content development for the Training Evaluation Forms, and Participant Survey;
- The training phase, including critical information concerning participant selection, engagement and communications with representation of the construction sector;
- The knowledge transfer efforts outlined in *Creating and Leading Customized Toolbox Talks* and the Sample Toolbox Talk (Shovelling Aggregate)

In section (iv) **Training Evaluation Results**, provided is a summary of the Participant Survey results and the Participant Course Evaluation Forms. Described are the participating safety professional's perceived training impact on worker skills, knowledge, and change in behaviour. Finally, discussed are the challenges faced with providing task-specific MSI prevention training at the worker level, limitations of impact on behaviour change through traditional safety professional or supervisor level training.

In section (v) **Proposed Recommendations**, conclusions and recommended worker level training and supervisor level training methods are presented based on review of available training, and teaching methods, observations made throughout the course of the project, interviews with workers, supervisors and safety professionals and our

program evaluation findings. Materials developed over the course of the project are appended in Appendices A-E.

(i) ACKNOWLEDGEMENTS

The following individuals and organizations were involved during the course of this project and are recognized, and appreciated for their contributions:

From Enabling Access Inc:

- Jeannine Bourrier, (Office Manager) Project Administrator
- Bree Gillis, (Occupational Therapist) Job Evaluator and Trainer
- Lindsay Edwards, (Occupational Therapist) Job Evaluator and Trainer
- Ruth Meltzer, (Physiotherapist) Office Ergonomics Trainer
- Marnie Courage (Occupational Therapist and Director of Enabling Access)
Project Director

Project Advisory Committee:

Members of the Project Advisory Committee participated in this project by assisting the Project Director in reviewing and providing feedback on the training content, participant surveys, transfer of knowledge deliverables and in the recruitment of participating companies. Committee members included:

- Mike Jones, Executive Director, Construction Safety Association of Manitoba (CSAM)
- Jackie Jones, WORKSAFELY/COR Program Education and Training Advisor, Manitoba Heavy Construction Association (MHCA)
- Alex Stuart, Workplace Safety and Health (WPSH)
- Ihor Barwinski, Safety Manger, Gypsum Drywall Interiors Ltd.
- John Reczek, Manitoba Regional Manager P.A.R.C.
- Peter Malegus, Portfolio Leader – Infrastructure (Construction, Transportation, Communication & Storage) SAFE Work Manitoba

Special Thanks are extended to:

Bruce M. Cielen, Manager, Research and Workplace Innovation Program, and Joanne Machado, Project Coordinator for the Research and Workplace Innovation Program, for their valuable support and input.

Barry Warrack, PhD, Data Scientist, Business Intelligence Unit, Workers Compensation Board of Manitoba.

Mike Jones, Executive Director of CSAM, who offered and hosted his boardroom for our Advisory Committee Meetings and shared their organization's Toolbox Talks resource

The participating construction companies, their safety professionals, supervisors and workers who provided industry insight, shared their lived experience with traditional training effectiveness, challenges and gaps in available training.

Enabling Access Inc. acknowledges the financial support of the Workers Compensation Board of Manitoba through the Research and Workplace Innovation Program in the preparation of this Project. However, the content of the report is the sole responsibility of Enabling Access Inc. and the views expressed in it are those of the author.

(ii) PROJECT INTRODUCTION, OVERVIEW & PARTICIPANT SURVEY SUMMARY

Introduction:

Musculoskeletal Injuries (MSI's) account for 63% of workplace injuries, with 40% of those being ergonomic related MSI's. In 2015, 246, 366 days were lost to MSI's and these time-loss claims cost \$37.8 million. (WCB Manitoba 2015) These costs do not include the costs workers or employers paid to treat these injuries that didn't result in lost days at work and doesn't include personal costs to workers and families. (SAFE Work Manitoba Musculoskeletal Injury Prevention Strategy 2017)

The Construction sector reported 11% of Manitoba's MSI lost-time claims in 2015 behind Healthcare at 23%, Trade at 17%, and Manufacturing at 17%. (WCB 2015)

Workers who hold occupations such as construction trades, helpers and labourers are ranked 5th in the largest number of MSI's resulting in lost days listed by occupations, across all industry sectors. The physical demands of the work require manual material handling and present ergonomic risk factors involving forceful exertions (lifting, pushing, pulling, carrying), awkward postures (bending, twisting reaching, squatting, etc.), repetition, contact stress (body leaning/pressing on hard surfaces), vibration exposure, and working in extreme environmental conditions.

The top 3 causes of MSI's are Forceful Exertions (46%), Awkward and Sustained Postures (38%), and Repetitive Motions (16%) (WCB 2015). The presence of these ergonomic risk factors result in sprain, strain and tear injuries which have functional, productivity and financial implications for the worker and the companies who employ/contract them.

Prevention efforts including traditional ergonomic and MSI training within the construction sector has focused largely at the Safety Professional level with a train-the-trainer approach. Statistics are demonstrating that these methods are not having

a significant impact on changing in worker behaviours. Although MSI Training is now more readily available to Safety Professionals, it is still not commonly being offered at the worker level. Few construction companies are offering foundational task-specific MSI Prevention Training at the worker level due to the productivity demands of the work in this industry and difficulty pulling workers together for anything longer than a 10 minute safety meeting. Due to these productivity demands 10 minute Toolbox Talks are the most common method for delivering job-specific MSI hazard identification and prevention tips.

Toolbox Talks that provide snapshot safety training to workers are the leading method of information transfer in this industry. According to the 17 construction companies surveyed, 94% are currently using Tool-box talks to relay their corporate safety messaging, teach Safe Work Procedures, and provide some ergonomics and MSI Prevention Training. (Appendix A - Participant Survey Summary).

After reviewing the publically available Toolbox Talks content specific to the construction industry, job and task-specific ergonomic risk factor identification and mitigation are minimal, as are Situational Awareness tips, both important safety elements that could help reduce or prevent MSI's and should be built in to most safety talks. Often, these Toolbox Talks are taught in lecture format, one-way information sharing, without physical demonstration or practical participation by the workers and are led by Supervisors, Safety Professionals and Foreman who have varying degrees of experience identifying and mitigating MSI risk factors. While most Safety Professionals are comfortable preparing and delivering these talks, it is often the Supervisors and Foreman who are asked to deliver the talks (due to increasing workloads of the Safety Professional). Some Supervisors and Foreman have not had formal MSI prevention training and may not have experience or be comfortable with teaching to groups and therefore the delivery of the these Toolbox Talks is left to the varying skill level and teaching style of each person asked to deliver the content. Although safety associations and private enterprises may offer Train-the-Trainer courses that include a component on how to create and deliver Toolbox Talks, there continues to be a lack of standardized methods of teaching/leading these Toolbox Talks and therefore may not be reaching their potential impact on improving safe working behaviours.

Enabling Access Inc. routinely provides ergonomic job evaluations, customized training and consultation to companies within the construction sector and it is through these relationships and discussions that the above described training gaps were identified. This project was initiated to provide the construction industry with professional and standardized training directed at the worker level, covering foundational ergonomic and MSI prevention principles, Situational Awareness and Manual Material Handling techniques, allowing for customization using ergonomic job evaluations and practical participation. The content can be segmented into job task-specific Toolbox Talks to be used for future in-house training. It is in good alignment with the SAFE Work Manitoba's recent *Musculoskeletal Injury Prevention Strategy* made public in 2017, which aims to address these pervasive workplace injuries. That

Strategy outlines the demand for targeted prevention resources and practical training, which is the focus of this project. Ultimately, This project aims to provide training solutions that will reduce time-loss MSI injuries and their associated costs to the worker, the workplace and to the construction industry.

Project Overview:

a) Participant Selection

With the assistance of our Advisory Committee and the Safety Associations they represent, we offered sign-up opportunities at both the Construction Safety Association of Manitoba (CSAM) and Manitoba Heavy Construction Association (MHCA) membership events. We were looking for representation from small, mid-size and large construction companies. We were also looking for representation from both the Building and Heavy Construction sub-sectors. The target was for 20 companies to participate and we originally had more than 30 companies sign up with interest. Of those, only 17 companies completed the Participant Survey, and ultimately, 10 companies participated through to the end of the project completion and received certification of participation.

Feedback from the companies who opted out prior to the job task evaluation phase or after the job task evaluation phase of the project, all commented that the productivity demands of their work at the time of engagement prevented them from moving further with either arranging for the job tasks to be evaluated on site, or for arranging to get the workers together for the training delivery. Several other companies were removed from the project due to ongoing lack of response to communications (phone and email) from the Project Director and Job Evaluator.

Some of the companies who participated received multiple training sessions to reach all of their workers. 480 construction workers and office staff were trained over the duration of this project (March 2015- December 2017). Of the participating companies, 6 represented small enterprises, (fewer than 100 employees), 2 were midsize (100-499 employees), 2 large companies (500 or more).

Each of the 10 participants were motivated to participate in the project and self selected to in need of ergonomic and MSI prevention program consultation and training.

b) Project Objectives:

The following core objectives were established to guide the training content development, delivery, evaluation and transfer of knowledge within the Construction Sector and potentially across other sectors of industry:

1. To develop, deliver and evaluate consistent training aimed at preventing

MSIs (sprains, strains and tears) in the Construction sector, including both Building and Heavy Construction sub-sectors.

2. To produce training that is easily customized for each workplace and for their specific job tasks.
3. To produce training targeting the worker level of the construction sector (includes both construction workers and office staff)
4. To produce training that focuses on the human factors (physical and cognitive) that contribute to MSI's in the workplace.
5. To make this training accessible to all new employees (new to the industry and new to Canada) as well as to shift workers and remote workers through flexible training scheduling, and video training where applicable.
6. To produce training that does not add to the training responsibilities of Safety Officers, Health and Safety Coordinators or other workplace safety representative, by offering training designed and conducted by external professional health and safety trainer.
7. To ensure the training reaches small businesses that may not have the budget allowance for this important and innovative training.
8. To ensure the training is easily transferrable within sub-sectors of the construction sector and potentially across other sectors of industry in Manitoba.

Participant Survey Summary:

At the onset of the project's initiation, the participating companies agreed to sign an agreement form and submit an online survey to assist the Project Director in creating participant profiles including company size, perceived causes of MSIs, current MSI training methods, MSI training challenges, and top 3 job-tasks that would then be the focus of the customized component of the training deliverables. The survey was conducted electronically through Survey Monkey's Professional Analytics service. (See Appendix A for a detailed Participant Survey Response Summary.)

17 construction companies who signed up with interest in participating in the project completed the Participant Survey. Of the 17 companies who submitted this survey, 16 held positions of Safety Officer/Coordinator/Advisor and 3 of those also held positions of Manager/Supervisor or Foreman. 1 respondent was a Human Resource Manager. Most of these companies hire employees, only 2 hire subcontractors. 8 respondents conduct work year-round, while the remaining work seasonally. 12 companies are CSAM members and 3 are MHCA members. 2 did not respond.

In terms of type of work conducted, 3 do road work, 9 concrete/asphalt work, 5 piping work, 4 framing work, 4 drywall/painting, 4 electrical work, 3 roofing work, 1 transportation, 4 mechanical work, 11 chose "other" and listed: "concrete cutting and repair", "scaffold erection, dismantle and scaffold equipment rentals", "restoration", "site supervision" and "masonry/bricklaying".

When asked which ergonomic risk factor they think are contributing to their worker's MSI's, we offered multiple choice answers (allowing for multiple selections), 13 responders chose all of the following as contributors: "working below knees with flexed back", "working above shoulder height", "twisting the spine while lifting", "sustained positions (sitting, standing, crouching, kneeling, squatting)", "forceful exertions" and "repetitive movements". 8 respondents chose "working in confined spaces".

When asked what MSI prevention tools they are currently using, 16 respondents chose "Toolbox Talks or pre-shift meetings", 9 chose "Teaching Safe Work procedures routinely to workers", 9 chose "Providing support and encouragement of on-site stretching and movement breaks", 5 chose "Providing seasonal workers and new workers with MSI Prevention Training at orientation", 3 chose "Providing discounts for fitness facility memberships", 2 chose "Providing incentives for reporting near misses and injuries", 2 chose "providing discounts for PPE purchases". 1 responded submitted the comment "We need help in this area".

When asked to describe current MSI prevention challenges we offered multiple-choice answers (allowing for multiple selections):

- "Scheduling MSI Prevention training for workers is difficult due to productivity demands." (11 responses)
- "Workers not complying with Safe Work MSI Prevention procedures or wearing appropriate PPE." (10 responses)
- "Safety Personal receive training and only some of that transfer of knowledge gets to the workers." (7 responses)
- 4 chose "Not enough money in budget for MSI Prevention training at the worker level." 5 chose "Difficulty getting workers together during the off season to attend training." and 3 chose "Supervisors, Managers or others are not supportive of taking time away from work demands to attend MSI prevention training."
- 4 chose "other" and commented:
 - "Consistent repetition is required to make a good habit. We are vigilant however we are always looking for more training."
 - "Enforcing good MSI work habits and behaviour"
 - "Lack of awareness of MSI legislative requirements"
 - "Nature of the work, heavy lifting and awkward positioning requirements"

We asked respondents to choose 3 job tasks that are causing their workers discomfort or injury and informed them that we would focus the job evaluation

component of their customized training on these tasks, their responses are outlined in in section (iii) Training with the following tasks:

- Overhead drywall, sheathing, painting
- Turning Valves and Gates
- Concrete work - Shovelling/ Trawling
- Lifting heavy objects (>50lbs), specifically blocks of concrete.
- Hitting hand with hammer (miss-swing) also pinches and scrapes to hands are fairly frequent
- Concrete removal (jackhammering) & clean-up
- Coating Application
- Framers lifting of heavy sheets
- Mixing mortar
- Overhead welding
- Finishing concrete
- Grinding - rep. motion, vibration
- Lifting planks
- Lifting objects or materials off of the floor
- Drilling holes above the head with large drill
- Digging, trenching, basement work
- Lifting Manhole Covers
- Underground - Pipe Installation
- Working overhead with jackhammers for prolonged periods of time.

Other issues respondents added to include in the training included:

- Unloading trucks/trailers: carrying and passing materials, also sorting materials when returned to the yard
- Coatings applications - repetitive movements
- Mixing multi component products
- Over stretching when using equipment
- Building scaffold
- Manual shotcreting
- Lifting blocks
- Transferring heavy objects or materials from side to side
- Kneeling to do multiple plugs
- Holding Materials in Place
- Demo work, up and down stairs hauling materials
- Using Pushrods
- Operator - Driving equipment (Extended periods)
- Shovelling concrete debris
- Carrying, climbing, passing and pulling when installing scaffold
- Proper Lifting and Loading Procedures – Material Handling
- Administrative repetitive movements at desk work tasks
- Laying block
- Same position for extend time
- Moving finished shotcrete panels

- Pulling rink pipe
- Lifting bags of concrete
- Shovelling, raking and wheelbarrow use
- Fitting tall ladder into small spaces
- Carrying materials
- Desk /computer work
- Improper postures, importance of breaks
- Enforcement of safe working behaviour and practices
- Entering and exiting vehicles, trailers and forklifts
- Manual lifting, stacking and storing
- Working within the shoulder to knee safe range
- Warehousing and material/equipment tips
- 2-person lifts
- Proper lifting, awkward positions, climbing, exiting vehicles
- Awkward spaces - kneeling, crouching. Overhauls - rep. motion (wrenches, turning valves etc.)
- Crouching, on knees, reaching
- Trenching, repetitive light installs above the head, light assembly on knees, weight of tool belt, squeezing into small spaces, twisting on ladders

(iii) TRAINING COMPLETED

Advisory Committee Role:

The members of the Advisory Committee are a volunteer group representing various safety professional interests from within the construction industry, as well as representation from WCB's Safe Work Manitoba and from Workplace Safety and Health. This diverse group was created to provide advise to the Project Director and to review training content, objectives, evaluation and transfer of knowledge deliverables. The Advisory Committee met with the Project Director at CSAM quarterly, throughout the duration of this project offering feedback, industry experience, insight and recommendations for the Project Director to consider in all phases of the project.

Staffing and Project Initiation:

Marnie Courage, Director of Enabling Access Inc. held the position of Project Director, is trained in Matheson Ergonomics and has more than 15 years of ergonomic job analysis, consultation and training experience working with industrial companies in Manitoba. The Project Director assigned essential duties to the Project Administrator and to the Job Evaluators and Trainers involved throughout all phases of the Project. The Project Director created all training content, training materials, evaluation methods, transfer of knowledge deliverables, and authored all progress and financial reports throughout the duration of the project. Both Job Evaluators are Matheson Trained in Ergonomics with over 15 years of experience between them analyzing job

tasks for ergonomic risks and offering risk mitigation solutions for industrial companies in Manitoba. The Job Evaluators conducted all of the on-site job evaluations that identified the ergonomic risk factors and worked with the participating companies to determine appropriate and practical MSI prevention solutions. These Job Evaluators also conducted the worker training for the 10 participating companies as well as 4 of the Office Ergonomics Preventing MSI's training sessions. There was a change in Job Evaluators approximately three quarters of the way through the project due to an anticipated Maternity Leave of Absence. Lindsay Edwards, Occupational Therapist with Enabling Access Inc. went on Maternity Leave in August, 2017 and Bree Gillis, Occupational Therapist with Enabling Access Inc. transitioned into her role. Ruth Meltzer, Physiotherapist, was temporarily contracted to conduct 6 of the 10 Office Ergonomics MSI Prevention training sessions during this transition between Job Evaluators.

At the onset of this project, participating companies signed an agreement and were provided with the responsibilities and time commitment that the project would require. Agreed upon events and responsibilities included an initial meeting, submitting the survey, arranging the on-site job evaluations for the target job tasks and the arranging of the training delivery by way scheduling the training for the workers and office staff and ensuring as many workers as possible would be in attendance. Assistance with finding the training venue and choosing the target job tasks were provided based on a review of their injury statistics, nature of work and mechanisms of past injuries.

Training Content Development:

A review of available on-line training content related to ergonomics and MSI prevention was conducted. In addition, a construction industry specific WCB statistical review was conducted to examine accepted MSI Time Loss Injury Demographics (WCB 2014) by Gender, Age, Top 5 injuries by Body Part, Top 5 Injuries By Nature of Injury.

The training content was developed by the Project Director prior to the initiation of this project and was adapted to meet best practice ergonomics and MSI prevention training specific to the construction sector follow the review of current available training and ergonomic standards. The following courses are designed to address the Human Factors that contribute to MSI injuries involving sprains, strains and tears and are customized for each workplace, using on-site job task analysis (including photos, video and interviews). The value added feature of customization of content (specific to the job tasks, mechanisms of injury and risk factor mitigation possibilities) is agreed upon between each participating company and the Project Director. Supervisors and the company Safety Professionals were encouraged to attend so they could answer any process questions and fully support of all content shared.

Human Factor MSI Prevention Training for Construction Workers:

- A. SPRAINS, STRAINS AND TEARS (MSI's)
 - Signs and symptoms
 - Nature of Injuries
 - Human Factors (stress, health, age-related physical and cognitive changes)
 - Preventing MSI's with health and fitness conditioning
- B. CUSTOMIZED MANUAL MATERIAL HANDLING
 - Introduction to Human Factors and Ergonomics
 - Identification Ergonomic Risk Factors
 - Manual Material Handling
 - Best Practices for Lifting Pushing, Pulling and Carrying
 - Practical Lifting Activity and Task Specific Demonstration/Participation
- C. SITUATIONAL AWARENESS
 - Definition of Situational Awareness
 - Human Error as contributor to injuries
 - Theory of experience and perspective
 - Loss of SA
 - How to recover SA and prevent injuries

Office Worker Level Training:

- D. OFFICE ERGONOMICS PREVENTING MSIs
 - Introduction to Human Factors and Ergonomics
 - Common conditions, RSIs and other MSIs
 - Identification of Ergonomics Risk Factors in the Office
 - How to set up your workstation, and stretch to prevent injuries
 - Administrative, Behavioural and Engineering Solutions

Job Evaluation and Task-specific Training:

In the Participant Survey, the respondents submitted their top 3 job tasks that they perceive have been causing worker MSIs or discomfort. The Job Evaluator, (Occupational Therapists at Enabling Access) discussed these tasks with the participating company contact to understand their perceived risk factors and solutions, and arranged on-site job task evaluations to formally identify the ergonomic risk factors and determine possible administrative, behavioural and engineering solutions. A variety of methods were used to collect the job analysis information including, both worker and Safety Professional interviews, observations, video and photo image analysis. Collaboration with the participating company contacts revealed the final training content to include in the training. This task-specific training was referenced throughout the all the Worker Training content and was the focus of the task-specific demonstration/participation portion. Participating companies were provided with the task-specific identified risk factors and possible solutions to

investigate further in-house and to re-evaluate once control measures were implemented.

Training Delivery:

Worker Training was delivered on-site for 9 of the 10 participating companies, in their training rooms, shops or other indoor locations identified by the participants. 1 of the participating companies arranged to hold their Worker Training at a community centre close to their workplace, as they did not have sufficient room within their building. The Office Ergonomics Preventing MSI's training for office staff was offered at separate times and scheduled with the office staff directly, often in a lunch and learn format. Participants were also offered training space at the Construction Safety Association classrooms if they didn't feel they had space.

To increase access to this training, sessions were offered any time in the day or evening to accommodate all shifts of workers. Some participating companies held their training prior to starting their day shifts, some in the evening after day shifts had ended and some held the training at the beginning of their workday. Although the 3 Worker Training modules were originally designed to be taught together in 3-hours, most companies requested that the content be contained to 2 hours, so the content was compressed with focus remaining on the task-specific demonstration and participation component. To further increase access to this worker level training, we offered to break down the training content to be delivered into 2 separate sessions so workers were required to attend for 1 hour on each day.

The Worker Training was delivered in a combination of Power Point presentation, discussion, and participatory task-specific activities including a standard lifting activity of 5 common types of lifting techniques. Where possible the actual equipment, tools and materials from the target job tasks were to demonstrate and practice safe working behaviours. In most cases, the Participating Companies grouped together workers who performed similar physical demands to help keep the content relevant and specific to the work they do. Other Participating Companies chose departments with the high-risk physical demands. The smaller companies included all their workers and the larger ones had multiple training sessions to reach more workers.

All Participating Companies were provided with the electronic Power Point training slides for the worker training that included photos and safe work practices for the targeted job tasks.

(iv) TRAINING EVALUATION AND CHALLENGES

According to WCB, "Measuring the impact of injury and illness prevention efforts is essential to gauge whether resources are effective and that workplaces are in fact getting safer." By conducting evaluation surveys after each training was conducted, and by assigning MSI data collection to each workplace where training is applied,

were able to collect valuable and measurable data that will assist in the evaluation of the training and its success in meeting project objectives.

Training Evaluation Forms:

Training Evaluation Forms were distributed to the workers present at each training session, then collected and responses summarized electronically. The summary and response details are presented in Appendix B– Training Evaluation Forms Response Summary.

Overall, the respondents provided positive evaluations and offered feedback for improvement at the end of the evaluation form. One respondent recommended a translator be present which is a good consideration for workplaces where many workers do not have English as a first language.

Participate Company Contact Feedback:

Since the duration of this project spanned over 2 years, the companies who participated in the first phase of project and completed the project job evaluations and training sessions were contacted to provide feedback on their experience with the process and the training. The following is feedback provided by those Participating Companies who responded to our request to provide feedback on the training and perceived impact on their workers:

“The job evaluation and training provided by Enabling Access was fairly thorough. There is no possible way to observe every circumstance on every job. What they did observe were our main jobs and the training provided on those alone was accurate and precise. Our employees did learn something from the training. If they are applying it on a daily basis that cannot be policed, but we have come across situations where reminders are giving regarding the MSI training, and I have found they do remember. With that being said, it would tell me that the presentation was done well as it was memorable.” (Safety Professional of small company)

“Enabling Access did a superb job from start to finish. They addressed the relevant tasks and brought a wealth of information to our managers and the office staff. Marnie and her staff were a pleasure to work with.” (Safety Professional from mid-size company)

“Your MSI prevention training presentation was excellent. It helps us know how to keep our health, prevent injuries during work. (Worker/Supervisor from small company)

“The training that Enabling Access did for us had different reactions from all workers that were trained. There were those who thought it was a waste of time but there were also those who thought it was educational. Most really enjoyed the power point

lesson and seeing their co-workers used as ‘models’. The workers also enjoyed and learnt from the interactive training where they got to use tools and materials they work with every day. The instructor showed them how to use these items properly and corrected them if they were doing something that could cause them to become injured. If only a couple of the workers remembered the training and prevented an injury then the training was a success.” (Safety Professional from Large Company)

WCB Statistical Review:

To evaluate the possible impact of this training on MSI injuries for the Participating Companies, WCB Statistical department has advised that more time will need to pass from each company’s training date as the time frame within this project is not long enough to observe any impact of training, and be statistically valid.

Job Evaluation and Training Delivery Challenges:

The following are typical challenges encountered during each phase of the project:

1. **Recruitment-** Although we had over 30 companies sign-up with interest in participating in the project, several companies opted out at various stages in the project. Either they did not respond to communication after submitting the online survey, or after the initial meeting with the Project Manager. A few companies even had their job evaluations conducted and did not respond to repeated efforts from Job Evaluators or Project Director to schedule the training. Significant effort was required to recruit more Participating Companies throughout the entire project. The Advisory Committee was very helpful in assisting with the recruitment of companies they thought might be interested and might benefit from the training and forwarded the Project Director these leads. CSAM and MHCA were instrumental in recruitment of their membership, even if many of these companies did not end up participating.
2. **Communication-** There was significant lack of communication from the Participating Company contacts, even after they signed the agreement to participate, submitted the online survey and were set up have their job tasks evaluated. Although some of the Participating Companies who completed the training to its end were for the most part responsive, the norm was for the Job Evaluators to spend significant time chasing the contacts down to arrange the job evaluations and schedule the training. This challenge was unexpected as most of the contacts were Safety Professionals who are experienced in managing their work demands and communication priorities. Unanswered phone calls and emails meant repetitive efforts to connect with these contacts, some of whom shared that their plates were just too full to make this project a priority, confirming that the interest from the industry for more accessible training that doesn’t add to the Safety Professional’s growing list of

responsibilities is needed. It also validated the need for smaller snippets of training to be available to Safety Professionals to deliver as their productivity demands allow.

3. **Job Evaluation-** Due to most of the work being conducted outdoors and environmental risk factors being present on most job sites; the weather played a large role in cancelling or rescheduling job evaluations, especially for job tasks that can't be scheduled ahead of time. Our Job Evaluators were sometimes "on-call" waiting for the target job task to be scheduled and therefore would have minimal notice to attend job site task evaluations. Moreover, the Safety Professionals needed to be in the know of the work tasks to predict when the target job tasks would be conducted and often would ask that our Job Evaluators connect with them at a later date due to heavy productivity demands and lack of availability by them to coordinate the on-site job evaluations.
4. **Scheduling Training-** This was one of the expected challenges prior to the initiation of the project as the productivity demands of construction work makes gathering crews of workers especially difficult and contributes to the gap in worker level training being conducted. Safety Professionals often have to wrestle with the productivity pressures of getting the work done and have few windows to pull workers off the site for training. This challenge was present throughout the project, even with offers to deliver training early mornings and evenings, and to split the content up into 30-minute components.
5. **Supervisors Attending Training-** Another unexpected challenge was the unexplained absence of construction worker Supervisors attending the training, even though they were encouraged to attend the training so they could reinforce safe behaviour being taught and demonstrate their support for the training objectives and outcomes.

(v) RECOMMENDATIONS AND KNOWLEDGE TRANSFER

Training Level Recommendations:

The following recommendations are based on review of current training available at the worker level within the construction sector, review of WCB MSI statistical data, discussions with the Participating Employers, interview with workers on-site and at the training sessions and finally our experience in creating, planning and delivering training with the focus of reducing MSI's:

1. Worker Level Training:
 - Should be job-task and site specific, relevant to the participants
 - Should include ergonomics and MSI risk identification and mitigation strategies

- Should include Situational Awareness as they relate to MSI prevention
- Should be offered in Toolbox talk format delivered in at least 20-minute sessions allowing for demonstration and physical participation.
- Should be updated regularly to reflect changes in job task demands
- Should be taught by Supervisors and Safety Professionals trained in ergonomics and MSI prevention.

2. Supervisor Level Training:

- Should include ergonomics and MSI risk factor identification and mitigation strategies
- Should include Situational Awareness as it relates to MSI prevention
- Ergo-Eye Job Coach Training (Industrial Ergonomics Training)
- Creating and Leading Customized Toolbox Talks (Appendix C and D)
- Leadership Training

Transfer of Knowledge:

As described above, the challenges experienced during the customized job evaluations and training delivery phases of this project, validated the need for accessible worker level training, with content that is created to address task-specific MSI prevention. Following the review of publically available Toolbox Talks or Safety Talks, it became clear that MSI messaging is more available as a general topic and less available in task-specific Toolbox Talks. Additionally, the variation of Toolbox Talk delivery sparked the need for the creation of our Transfer of Knowledge deliverables:

Creating and Leading Customized Tool Box Talks is a resource that was developed by this Project Director to address the above gaps in training content and delivery as it relates to the prevention of MSIs in the Construction Industry. It outlines the current Toolbox Talk “Pitfalls” and provides Toolbox Talk “Tips” for leaders to include in their own customized Toolbox talks. The resource outlines the gaps in training described above at the Supervisor Level and encourages Toolbox Talk leaders to be trained in Situational Awareness, Ergonomics and MSI prevention so they can better identify hazards, demonstrate the techniques they teach and engage their workers in safer working behaviours. (See Appendix C - Creating and Leading Customized Toolbox Talks)

Sample Toolbox Talk (Shovelling Aggregate) is a resource that was also developed by this Project Director to improve upon current Toolbox Talk content and illustrate how to create task-specific content that incorporate Ergonomics, and Situational Awareness in the prevention of MSI’s. The use of photos, “Leader Tips”, and concise language help to convey messaging. An attached “Toolbox Talk Form” is part of this resource to provide an example of what information to collect at the conclusion of the talk to meet legislative, auditing or organizational standards. (See Appendix D – Sample Toolbox Talk (Shovelling Aggregate)).

DISCLAIMER: This Sample Toolbox Talk is meant to serve as a sample only and the goal is to show how these talks can be customized, made task-specific, and used by Toolbox Talk leaders to improve their practices and teaching methods to have more impact on changing worker behaviour and preventing injuries. It may not cover all elements of safety and should be used only as a resource, as each company is responsible for meeting legislative requirements with respect to establishing Safe Work Practices and teaching safety information to their workers.

Office and Industrial Stretching Posters have also been included here to offer construction companies with an example of a resource that is available for customization. The posters can be printed and posted to assist safety leaders in their efforts to introduce warm-up and stretching programs in their workplace. These posters can be customized with their company logo and colours to maintain corporate brand by visiting www.enablingaccess.ca . Please note that these posters will be updated to include a couple more stretches in the Spring of 2018.

A handwritten signature in black ink that reads "Marnie Courage OT Reg MB". The signature is written in a cursive style and is positioned above a light grey rectangular background.

Marnie Courage, OT Reg. (MB)
Project Director

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