RESEARCH AND WORKPLACE INNOVATION PROGRAM (RWIP)

2023 Report on projects

SAFE WORK MANITOBA
A division of the WCB

WCB
Workers Compensation Board of Manitoba

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OVERVIEW OF REPORT

This Report provides an update on the activities of the Research and Workplace Innovation Program (RWIP) in 2023. The Report is organized into three sections:

- New grants awarded
- Completed projects
- RWIP approved projects 2009 to 2023 (Appendix A)

The RWIP offers grants on an annual and competitive basis to support high-quality projects on the prevention of workplace injury and illness, improving workplace health and safety, and the safe and productive return to work of injured or ill workers. Funding is awarded under two core funding streams:

- Training and education
- Workplace innovation

Established in 2009, the RWIP makes available $600,000 in funding annually, with 91 projects funded over the past 16 years. Appendix A shows approved RWIP Projects from 2009 to 2023.

NEW GRANTS AWARDED IN 2023

TRAINING AND EDUCATION

VIRTUAL REALITY SIMULATION ON CONFINED SPACE ENTRY PROCESS

Nathan Rasmussen,
Made Safe,
Fabio Hofnik,
Bit Space Development XR

$123,900 awarded in 2023

Working within a confined space can be one of the most dangerous jobs in manufacturing facilities. Current legislation has very specific regulations governing the work performed in confined spaces, but most lethal gases are invisible and have poor detection properties, resulting in workplace injuries. Made Safe identified a gap in practical knowledge in confined space entry that could lead to severe issues, including fatalities, during a workday.

This project aims to improve current training by adding a virtual reality component that simulates dangerous situations without the risk. Within the simulator, the trainee is exposed to different scenarios, such as tunnel vision due to low oxygen, dizziness and the multi-gas detector with a sounding alarm. In each training session, the trainee uses a gas detector device to learn how to identify different gases and act accordingly. Each decision leads to a new outcome.

The virtual reality interactive educational tool provides a safe training environment for workers to properly prepare for confined space entry, assess gas hazards, use the gas detector device and act accordingly when emergencies arise in the confined space.

Interactive training with VR technology has been used in different industries in Canada and other countries with proven success, better memory retention and fewer injuries on the worksite after training. This unique training opportunity complements existing safety awareness and aligns with provincial regulatory codes and other non-virtual training programs.

WORKPLACE INNOVATION

NO WORKPLACE INNOVATION PROJECTS WERE AWARDED FUNDING IN 2023.

PROJECTS COMPLETED IN 2023

The following projects were completed during 2023:

WORKPLACE, SUPERVISOR, WORKER AND ACCOMMODATION FACTORS ASSOCIATED WITH WORKER'S COMPENSATION OUTCOMES: AN ECOLOGIC STUDY

Dr. Vicki Kristman,
Lakehead University

$116,757 awarded in 2018

Many workplace factors affect disability and prolonged sickness absence due to physical or mental ill health. These include organizational, supervisory, worker and early intervention or accommodation factors. People with various disorders function well in the workplace when provided with appropriate work accommodations that account for social, organizational and interpersonal issues. Research has also shown that other organizational factors, such as organizational culture and trust in the workplace, are associated with positive disability outcomes.

The objective of the study was to determine which factors at the workplace level are associated with workers' compensation outcomes, specifically the duration of lost-time claims. The project secondary aims included:

- Exploring industry sector and conditions for the claim (e.g., mental health, musculoskeletal disorder, concussion) as effect modifiers of the association.
- Determining associations between workplace-level factors and the incidence of approved, denied, lost-time and no lost-time claims.
- Determining if employer non-participation in the previous study, and hence non-participation in this proposed study, is associated with workers' compensation outcomes (duration of lost-time claims and incidence of approved, denied, lost-time and no lost-time claims) to assess the likelihood of selection bias.

Through data linkage, the study found several factors associated with the duration of lost-time claims, including worker seniority, age and the ability to access healthcare provider support. It also included supervisor-specific factors, including showing concern and respect for workers, expressing appreciation and having a positive attitude toward mental health disorders.

Results from the study further the understanding of associations between workplace factors (organizational, supervisor, worker and mental health accommodation factors) and work disability (incidence and duration of claims), assisting workplaces in prioritizing their work disability prevention efforts.

HEALTHY NAIL SALON WORKER PROJECT

Karen Hamilton,
MFL Occupational Health Centre

$91,560 awarded in 2018

The Occupational Health Centre (OHC) created the "The Healthy Nail Salon Worker Project". This project, modeled after a very successful project for nail salon workers in Toronto, engaged in outreach with nail salons and nail salon workers to deliver a Train the Trainer Program for six nail salon workers, equipping them with a series of training sessions in Vietnamese at 12 nail salons in Winnipeg.

The objective of the project was to:

1. Provide training to nail salon workers in four key health and safety areas for nail salons:
   a. Musculoskeletal injuries
   b. Respiratory issues
   c. Skin disorders
   d. Reproductive health

2. Disseminate health and safety resources to nail salon workers and owners in Winnipeg.

Six trainers were selected from six different nail salons. Pre-pandemic, nail salon trainers delivered six workshops in nail salons on two topics: Healthy Skin and Ergonomics. Public health orders then delayed further progress until the summer of 2021, when a substantial effort was made to deliver as many in-person workshops as possible, following public health guidelines, prior to the completion of the project in December 2021.

The project succeeded in increasing community awareness about nail salon workers' health and safety, as interest grew and people/salons started asking for information and materials.

Along with the training sessions, the project was adapted and translated into four Vietnamese health and safety resource booklets. Topics included:

- Healthy Skin, Healthy Nail Technicians: A Resource for Manitoba Nail Salon Workers
- STRETCH: Preventing Stress & Pain While You Work for Nail Technicians
- Reducing Risks to Respiratory Health: A Resource for Manitoba Nail Technicians
- Reducing Risks to Reproductive Health: A Resource for Manitoba Nail Technicians

These resources were distributed to nail salon trainers and approximately 30 nail salons. They are also posted on the OHC website and shared on the Facebook group.

MANITOBA AGING WORKFORCE HEALTH AND SAFETY INITIATIVE (MAWSHI)

Sudhir Sandhu,
Manitoba Building Trades

$150,500 awarded in 2021

The purpose of the Aging Manitoba Workforce project was to address the issue of a gap in educational resources related to older worker health and safety for employers, workers and other stakeholder groups. This included resources for combating age-based discrimination, or ageism, to create a healthy, inclusive and diverse workplace culture.

A provincial, national and international environmental scan was conducted to examine how the issues of the aging workforce are being addressed in other jurisdictions.

Resources were collected and analyzed, then classified into eight categories from which eight self-learning modules were developed.

1. Are you…. An Employer?
2. Are you…. A Supervisor?
3. Are you…. A Worker?
4. Are you…. A Union?
5. Are you…. An Industry Safety and Health Organization?
6. Are you…. A Safety and Health Committee Representative?
7. Are you…. A Human Resource Professional?
8. Are you…. A Safety and Health Practitioner?

Each learning module contained a quiz, tutorial and additional resource sections tested by users who provided feedback through an evaluation form.

The project met its goal by contributing to the understanding of best practices, including return to work programs and developing educational and awareness resources for the unique safety and health needs of older workers.

Manitoba Building Trades (MBT) has committed to maintaining the AMW E-Learning Centre website on an ongoing basis.

PREDICTORS OF PROLONGED RECOVERY FOLLOWING ACCEPTANCE FOR DISABILITY BENEFITS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF OBSERVATIONAL STUDIES

Jason Busse,
Li Wang,
John Riva,
Rachel Couban,
Gordon Guyatt,
James Paul,
Sonya Caissie,
McMaster University

$160,396 awarded in 2019

In 2012, according to the Canadian Survey on Disability, approximately 3.8 million Canadians reported a disability. Canadian workers who experienced work-related injuries or illnesses could qualify for wage-replacement benefits through their provincial Workers Compensation Board. The study found most individuals who were accepted for wage replacement benefits recover in a timely manner and return to work, however approximately 10 per cent do not. These 10 per cent account for 65 to 75 per cent of resources spent on disability claims.

The project's goal was to conduct a systematic review and meta-analysis to establish predictors of prolonged recovery following receipt of disability benefits across all clinical conditions.

The project identified eligible studies to explore predictors of claim duration, prolonged recovery, or claim resolution after workers had been accepted for wage replacement benefits. At the start of the project, no standardized approach was in place to screen incoming claims for risks associated with prolonged recovery. This system gap complicates effective triaging, resource assignment, and the development and study of strategies for reducing disability duration.

Of all studies explored, a comprehensive literature search identified 19,394 unique citations, of which 1,098 were reviewed in full text. Nearly seven million patients receiving disability benefits were eligible for review. Patients were enrolled from 20 countries, but most studies were conducted in Canada and the USA.

The project identified more than 300 predictors of recovery, of which 54 were amenable to statistical pooling. Of these, 10 factors showed credible, large associations with recovery.

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McMaster University

$160,396 awarded in 2019

The study found claimants who failed to recover after one year showed a list of factors that increased the risk of failure to recover:

- ongoing litigation
- prescription opioid use
- fear-avoidance beliefs
- lack of supportive workplace policies
- low expectations for return to work
- substance use disorder
- lack of workplace accommodation for return to work
- depression
- lack of work supervisor support
- higher pain catastrophizing

The study also found 27 predictors associated with credible recovery, but smaller associations with failure to recover. However, a combination of the more minor risks could still result in a significant risk of failure to recover.

The study review found several important factors that were associated with claim recovery; however, a minority were medical factors (i.e., opioid use, addiction or depression), and most were either work-related or psychological factors.

The findings suggest that a claimant's potential for prolonged recovery can be assessed at baseline to allocate resources according to risk status to optimize prognosis and that attention to non-medical factors is critical to promoting the timely recovery of many high-risk claimants.

VIRTUAL REALITY TO BRING SAFETY AWARENESS ON THE SAFE USE OF CHAINSAWS

Carol Paul,
Manitoba Construction Sector Council Inc.

$75,000 awarded in 2021

The Manitoba Construction Sector Council (MCSC) and its industry/association partners identified an opportunity to provide virtual reality training on the proper and safe use of chainsaws. This would complement existing safety awareness and align with CSA standards, chainsaw manufacturer specifications and other non-virtual training programs.

The training was geared towards Indigenous, Northern and remote communities, safety associations, unions and newcomer agencies. However, the VR training simulations and 360° VR tours appealed to a broad demographic of users, as they allowed individuals to practice frequently and safely. Project participants learned to inspect a chainsaw before, during and after use. They identified hazard scenarios, as well as proper equipment maintenance and safe storage of chainsaws from industry experts.

The "beta version" of the chainsaw VR received positive reviews from safety associations, students, newcomers, instructors and the industry. Every detail was consulted through an advisory group and a working group with subject matter experts validating the training resource.

During virtual presentations and at summer camps, this new resource has been widely promoted as the next piece of safety technology for MCSC.

The impact of the VR training resource is to promote safe procedures for avoiding unsafe or dangerous real-world situations. It complements existing safety awareness training and other non-virtual training programs and is aligned with provincial regulatory codes.

NONVIOLENT CRISIS INTERVENTION

Lindsey Sigvaldason,
Eden Mental
Health Centre

$49,293 awarded in 2021

Eden Mental Health Centre (EMHC) is an accredited Acute Care Psychiatric Hospital whose aim is to ensure all staff are prepared to best support patients needing specialized intervention during expressions of anger and hostility.

For this project, a Nurse Educator took the Nonviolent Crisis Intervention (NCI) course through the Crisis Prevention Institute (CPI). The standardized training prepares staff to identify signs of escalating distress, intervene meaningfully, promote de-escalation and determine when safe physical intervention is necessary. The trainer will continue to train all current staff who engage in patient interaction at EMHC and all new hires and will provide recertification on this five-day program.

Nonviolent Crisis Intervention training has been deemed mandatory across Eden Health Care Services and made available to all affiliates of the Regional Health Authority. Security and police services were also engaged, leading to security involvement and the development of a program with local police services.

As of 2023, eight courses of Nonviolent Crisis Intervention and one refresher course were delivered to 71 participants. Training across different work areas, professions and programs allowed for the growth of collaborative relationships. The team dynamic that has also grown due to the training was not originally anticipated, but has been a valuable result. Staff have reported feeling safer and more effective during interventions. Feedback surveys from all participants reported the training was relevant to their profession and was helpful in their workplace.

FUNCTIONAL MOVEMENT SYSTEM: A PROACTIVE APPROACH TO IDENTIFY MOVEMENT DYSFUNCTION

Ruth Meltzer,
Private Consultant

$47,088 awarded in 2018

The project's objective was to reduce the frequency and severity of musculoskeletal injuries by using a Functional Movement System (FMS) designed to identify functional movement deficits and asymmetries that may be predictive of general musculoskeletal conditions and injuries. The project took place at the Simkin Centre, a 200-bed non-profit personal care home that provides quality care and services to its residents with complex healthcare needs.

There are five basic principles of FMS:

1. Body weight movement should not provoke pain.

2. Limitation of fundamental movement patterns, even if pain-free, leads to compensation and substitution, resulting in poor efficiency and increased risk of injury.

3. Fundamental movement patterns invoking the body's left and right sides should be symmetrical.

4. Fundamental movement capability needs to be addressed first. Sound functional movement must be established to assess performance.

5. Fundamental movement capability must precede complex movement activity.

Although safe work procedures are regularly reviewed and provided in the workplace, MSIs still occur and the recurrence of an MSI is quite common. This would suggest that under certain conditions, a worker's physical movement is either inefficient or mechanically incorrect due to fatigue or the worker not being aware that he or she is executing a movement poorly.

The project provided full FMS screen tests to identify asymmetries with each participant every four to six weeks throughout the project. While a perfect score for the FMS screen test is 21, the initial score of the participants ranged between 7 and 16. Preliminary research has found evidence that FMS scores of 14 or less are at an increased risk of developing injury and limitation of function, as well as indicating movement deficiency.

Each participant in the project received 14 one-on-one visits that focused on the lower FMS test scores. The screen testing was video recorded and reviewed with the participants. Deficiencies were identified and discussed, proper movements were emphasized and corrective exercises were explained.

While the project found that many participants demonstrated more than one movement pattern with deficiency, each was addressed one at a time. Once the deficiency showed improvement, another movement pattern was addressed when applicable. The basic principles of FMS were constantly applied throughout the project and the one-on-one sessions.

At project completion, most final screening scores improved, ranging from 10-18.

WORKPLACE DIESEL EXHAUST EXPOSURE: DEFINING A BIOSIGNATURE TO SUPPORT PREVENTION

Dr. Chris Carlsten,
University of
British Columbia,
Dr. Neeloffer Mookherjee,
University of Manitoba

$198,400 awarded in 2017

Approximately 40,000 employees in Manitoba are inadvertently exposed to diesel exhaust at work because of the wide use of diesel engines in vehicles and machines used in construction, trucking, forestry, transit and resource extraction. The goal of this research project was to find a simple, clinically relevant measure for the impact of diesel exhaust (DE) exposure on workers' lung health that could be translated to the field and utilized for program monitoring. DE is a complex mixture of harmful particles and gases, and the exposure can vary depending on fuel composition, engine technologies, operating and environmental conditions. Using proteomic analysis, the study explored biomarkers of DE exposure to define the relationship between exposure concentrations and the effects on blood, urine and respiration.

Fifteen study participants who met the inclusion criteria experienced four randomized, double-blind exposure conditions throughout approximately four to five months. The exposures included a controlled exposure of filtered air and three other diesel exhaust conditions with varying particulate matter concentrations. Data was collected via questionnaires, blood, urine, nasal and lung function tests and an exhaled nitric oxide test. The methacholine test was administered to test for airway hyperresponsiveness before and after 24 hours of exposure.

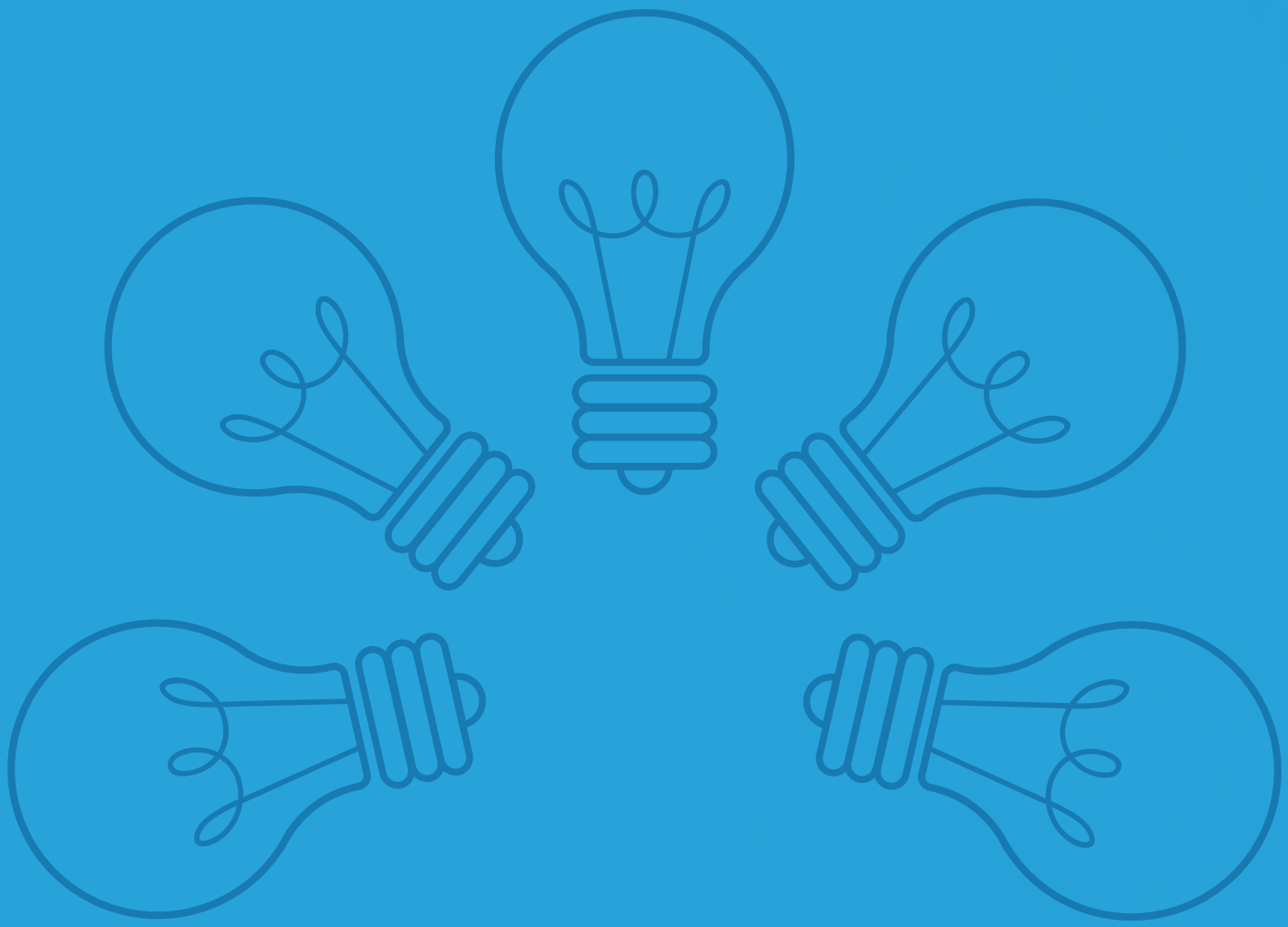
Using minimally invasive methods, the project identified concentration-dependent increases in symptoms of airway inflammation and blood proteins associated with the risk of cardiovascular disease, respiratory infections and exacerbation of lung inflammation. Occupational health practitioners will utilize the findings to draft public health policy and monitor occupational health effects in workers adversely affected by workplace exposures. However, in the young, healthy population included in the study, the project did not see significant effects of exposure on the airway hyper-responsiveness and lung function. This may represent differences in the study population, exposure duration and co-exposures that warrant further study.

APPENDIX A – RWIP APPROVED PROJECTS 2009 TO 2023

FUNDING STREAM	NUMBER OF PROJECTS	ORIGINAL APPROVED FUNDING	COMPLETED	CANCELLED	NEW PROJECTS APPROVED IN 2023	IN PROGRESS	REVISED FUNDING*
Workplace Innovation	25	$2,979,441	22	1	0	2	$2,602,299
Scientific Research	36	$5,362,785	29	3	0	4	$4,832,477
Training and Education	17	$1,858,776	15	0	1	1	$1,830,201
Partnerships	5	$545,605	5	0	0	0	$525,889
Special Funding	3	$568,190	3	0	0	0	$458,563
Request for Proposals	5	$324,875	4	1	0	0	$359,710
Totals:	**91**	**$11,639,671**	**78**	**5**	**1**	**7**	**$10,609,138**

*Revised funding may occur in two ways. Frequently the entire original funding is not required for the successful completion of a project, resulting in a decreased funding amount. Occasionally a grant recipient may request an increase in funding. The Administration may approve increases up to $20,000 as long as the total project cost does not exceed $200,000. Increases in excess of those amounts are subject to Board approval.

Please visit our website's Research and Workplace Innovation Program page to view the list of completed projects and final reports.



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