

# 5 Steps to MSI Prevention

A Guide for Ergonomics Program Development



## Table of Contents

Definitions	1
Acronyms	1
Introduction	2
MSI Management System (Strategic Framework)	2
Five Steps to MSI Prevention: Process Flow Chart	3
Five Steps to MSI Prevention: Process Details	4
Step 1 Identify the problem and review the current situation	4
Step 2 Identify the resources available and constitute ergonomics team	5
Step 3 Conduct ergonomics assessment with systems approach	6
Step 4 Review recommendations with JHSC/Management and make necessary changes	7
STEP 5 Regular Evaluation of the MSI Prevention Program	8
Conclusion	9
Acknowledgements	9

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## Definitions

“Musculoskeletal injury” (or MSI) means an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work. (WorkSafeBC, 2015).

**Ergonomics** (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance. (International Ergonomics Association, 2015).

## Acronyms

JHSC:	Joint Health and Safety Committee
MSI:	Musculoskeletal Injury (Injuries)
OHS:	Occupational Health and Safety
PE:	Participatory Ergonomics
STENA:	Specific Task Ergonomics Needs Assessment

## Introduction

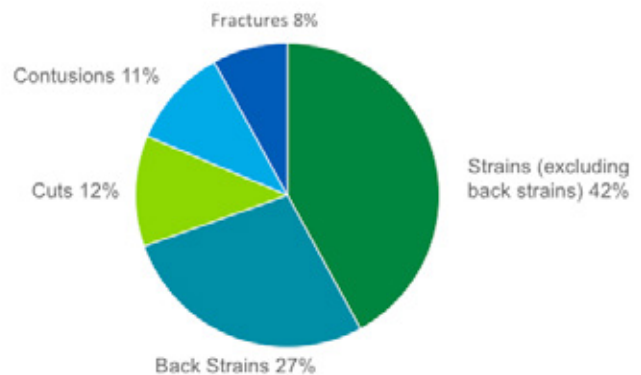
Manufacturing Safety Alliance of BC’s MSI Prevention Guide has been developed to provide guidance to an organization in implementing an ergonomics program at their workplace.

This guidebook was developed taking into consideration WorkSafeBC’s OHS regulations 4.46 to 4.53 which cover the risk factors, identification by assessment, and controls to be put in place. They also state the components of an ergonomics program by discussing the education and training needed and the evaluation of the program.

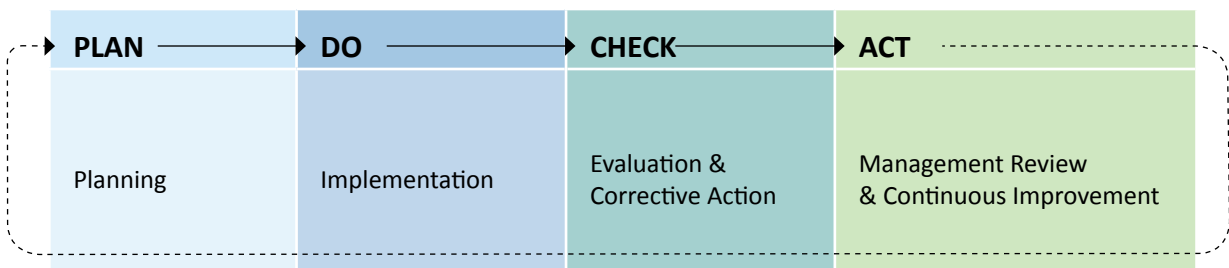
MSIs, including strains and back strains, took up around 69% of the top five injury claims in BC in 2013 (WorkSafeBC). This demonstrates the need to introduce ergonomics programs at workplaces to prevent the occurrence of MSIs.

This guidebook provides simple yet succinct information on how to develop a program while following the Plan-Do-Check-Act Cycle framework.

Top 5 Injury Claims in BCWSBC Statistics 2013

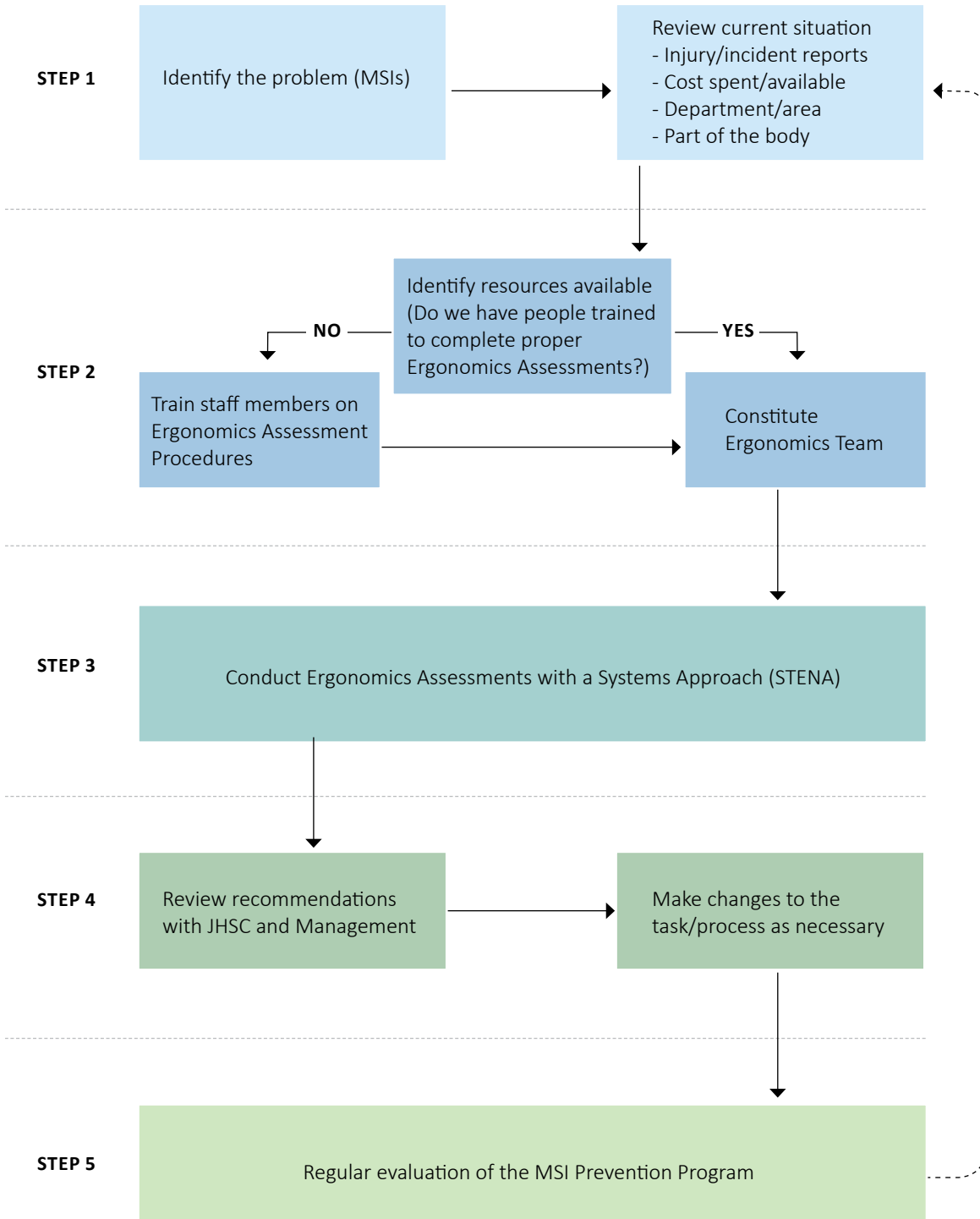


## MSI Management System (Strategic Framework)



Occupational Safety Standard of Excellence (OSSE)—which is BC’s manufacturing sector’s health and safety standard—has, as part of its audit, an element on MSIs. The element C.11 looks into various process and procedures put in place to prevent and mitigate the risk of MSIs.

### Five Steps to MSI Prevention: Process Flow Chart



## Five Steps to MSI Prevention: Process Details

### Step 1 Identify the problem and review the current situation

The first step in the developing of an ergonomics program is to identify the existing problem. This can be done by the following steps:

<b>REVIEW EXISTING RECORDS</b>	<p><b>Incident Reports:</b> Each week, supervisors should review injury and incident reports including near miss and first aid records with management and workers. Use these records to identify the departments, work areas, jobs and tasks implicated in these events. This information should be relayed to the JHSC for intervention.</p>
	<p><b>Injury Statistics:</b> A review of injury statistics should take place every month with supervisors and management.</p>
<b>COMPLETION OF WORKER SYMPTOM SURVEYS</b>	<p>Worker Symptom Surveys should be distributed annually to obtain worker feedback regarding their personal health and potential issues of concern. Results of the surveys should be provided back to the workforce and the JHSC.</p>

Apart from the above, the following lists other triggers for an evaluation.

- A worker reports an MSI sign or symptom
- The identification of jobs, processes, or work activities where work-related ergonomics risk factors may cause or aggravate MSIs.
- Any change of jobs, tasks, equipment, tools, processes, scheduling, or work-shift hours (for example, going from a traditional five-day, eight-hour shift to a compressed four-day, ten-hour shift)
- A safety walk-through or scheduled inspection or survey uncovers potential MSI risks.

## Step 2 Identify the resources available and constitute ergonomics team

The MSI risk assessment process is designed to be both proactive and reactive in nature. The success of the risk assessment process is predicated on the involvement of the employees (participatory ergonomics) through the establishment of an ergonomics team, and the support of management.

A participatory ergonomics (PE) team can be made up of people from within the Joint Health and Safety Committee.

The goals of a PE team are to:

- Provide a streamlined approach to identifying, assessing, and controlling the risk for MSIs in manual tasks following the MSI risk assessment process
- Proactively seek out potential MSI hazards
- React to issues of concern brought forth by workers, supervisors, or managers
- Promote continuous improvement in workplace ergonomics

The ergonomics team should be trained in the MSI risk assessment process as well as the various tools to complete a worksite evaluation. The process is iterative in nature to ensure that risk levels are continually being minimized until such time as a hazard can be fully eliminated.

### Step 3 Conduct ergonomics assessment with systems approach

Using a systems approach of assessing ergonomics hazards—including the various domains of ergonomics: physical, cognitive, organizational and environmental—the trained PE team should be able to conduct an MSI risk assessment.

The process of the risk assessment should constitute the following steps:

MSI RISK ASSESSMENT PROCESS		TOOLS
<b>STEP 1</b>	Hazard Identification	WorkSafeBC Worksheet A: Symptom Survey
<b>STEP 2</b>	Risk Analysis	WorkSafeBC Worksheet B: RULA , REBA , JSI Lift/Lower Calculator Push/Pull/Carry Calculator
<b>STEP 3</b>	Risk Control Selection and Implementation	Elimination/Substitution Engineering Controls Administrative Controls Personal Protective Equipment
<b>STEP 4</b>	Risk Control Evaluation	Employee Interviews/Surveys
<b>STEP 5</b>	Knowledge Management	Record Keeping Statistics

**RULA** Rapid Upper Limb Assessment    **REBA** Rapid Entire Body Assessment    **JSI** Job Strain Index



#### Step 4 Review recommendations with JHSC/Management and make necessary changes

The findings from the risk assessment process should be presented to the JHSC for review along with the various controls. The following risk controls should be considered by PE team and JHSC in order to make necessary changes to the task.

<b>CONSIDERATIONS</b>		
<b>ENGINEERING CONTROLS</b>	Workspace Design	Mobility requirements Workstation height requirements Workstation reach requirements Workstation clearance requirements
	Task Design	Manual handling tasks Tool handling tasks Driving/equipment operation tasks Quality control tasks
	Environmental Design	Temperature controls Lighting controls Noise controls Heating, ventilation and air conditioning (HVAC) controls
<b>ADMINISTRATIVE CONTROLS</b>	Work Schedule Adjustments	Shift design including overtime/on call/extended hours Shift work considerations New worker and return to work adjustment periods
	Work Pacing	Job rotation Job enlargement Break schedule Promotion of micro breaks Worker control
	Work Procedures	Provision of adequate resources Redesign of work methods or communication processes
	Worker Training	Delivery and method of training Evaluation of training
<b>MSI PERSONAL PROTECTIVE EQUIPMENT</b>	Anti-fatigue matting Anti-vibration gloves Boot insoles Kneepads Kneeling boards	

## STEP 5 Regular evaluation of the MSI prevention program

Based on the established objectives and targets, the company should evaluate the MSI prevention program on a quarterly basis.

Key metrics to be reviewed should include:

- Number of changes implemented based on identified MSI hazards and concerns
- Reduced MSIs injury rates
- Improved communications between workers and management
- Improved reporting of hazards
- Improved reporting of MSI signs and symptoms by workers
- Improved work efficiency
- Number of safety initiatives promoting MSI reduction  
(e.g. training, toolbox talks, awareness campaigns)
- Improved participation by workers and supervisors
- Improved understanding and perception of the MSI prevention program and its effectiveness
- Improvement in use of mechanical aids
- Improvement in work methods and behaviours

The management review will include an assessment of opportunities for continual improvement. The organization shall continually improve the effectiveness of the ergonomics program. This may include review of current control strategies, review of best available methods, technologies, and procedures to address residual risks, and implementation strategy to ensure continual improvement.

## Conclusion

Preventing and reducing MSIs is an important aspect of health and safety systems because MSIs develop both acutely and over time. Return to Work programs also get impacted with the prolonged presence of MSIs. Developing a robust ergonomics program has been one of the challenging tasks for most of the organizations. Following '5 Steps to MSI Prevention' will provide organizations with proper guidance on successful implementation of an ergonomics program.

## Acknowledgements

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The Transportation Initiative Committee comprises of:

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