SPRAINS AND STRAINS

Preventing musculoskeletal injury through workplace design

WORK SAFE. FOR LIFE.

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WHAT IS A MUSCULOSKELETAL INJURY?

This booklet is an introduction to musculoskeletal injury. It should help you learn how to prevent these costly injuries in your workplace.

Do people at work suffer from work-related muscle strains, joint inflammation, back pain, tendonitis, ligament sprains, pinched nerves, carpal tunnel syndrome or rotator cuff syndrome? Do they miss time?

These are all examples of musculoskeletal injury. As the name suggests, these are injuries that involve the **muscles** and the **skeleton** – basically the parts of the body that make us move.

More specifically, these work-related injuries affect muscles, tendons, joints, ligaments, bones, nerves and blood vessels. They are caused by certain work tasks that place excessive strain on our bodies over time.

You may have also heard musculoskeletal injury referred to as :

- Sprains and strains
- Overexertion injuries
- Soft tissue injuries
- Repetitive strain injuries

This booklet will help you prevent musculoskeletal injury through four simple steps.

1. RECOGNIZE SIGNS → 2. SPOT HAZARDS → 3. FIX HAZARDS → 4. ELIMINATE FUTURE HAZARDS

MEET THE MOST COMMON WORKPLACE INJURY IN NOVA SCOTIA

Some workplace hazards are easy to spot. A missing guard on a saw. Missing eye protection. A bucket in the middle of a busy shop floor. But it's not always that simple. In fact, most times, it's not.

Most workplace injuries in Nova Scotia are musculoskeletal injuries. And they are caused by hazards associated with the way work is designed and carried out.

Preventing musculoskeletal injuries starts with understanding them. And the key feature to understand is that musculoskeletal injury hazards involve the effect some working tasks have on the body – usually over long periods of time. They include:

1. **Awkward body posture**, or working in the same body posture for long periods
2. **High body force**, such as lifting or carrying heavy loads
3. **High task repetition** for long periods

Once you learn to spot these hazards, often a few simple changes can reduce the likelihood of injury. And correcting these hazards doesn't just reduce injury. It also improves the job, allowing quality work to be completed safely and easily.

It's good for workers, and it's good for business.

DID YOU KNOW?

Musculoskeletal injuries make up 60 per cent of all time-loss injuries. In a typical year they cost Nova Scotia employers $20 million in workers' compensation and direct medical costs.

The real cost of musculoskeletal injuries to Nova Scotia industry is estimated between $100 million and $1 billion per year. This includes direct and indirect costs – things like lost productivity, replacing workers, overtime, training, equipment damage, and so on.

SPOT THE HAZARD:

Awkward body posture

FIX THE HAZARD:

- Position work within easy reach
- Position frequently used tools and materials used within easy reach
- Change work-surface height to improve working posture
- Use height adjustable tables or standing platforms to improve posture

SPOT THE HAZARD:

Back bent and twisted

FIX THE HAZARD:

- Position work at a height to keep the back straight
- Adjust workplace design to reduce manual material handling
- Position material to keep the loading height comfortable

PREVENTING MUSCULOSKELETAL INJURY:
FIT THE WORK TO THE WORKERS

Imagine wearing a pair of shoes every day that were two sizes too small. You'd quickly become uncomfortable, and over time, your feet and ankles would develop more serious injury.

Right now across Nova Scotia, workers are doing work that doesn't fit. Work tables are too high or too low, tools are not easily accessible, the work involves considerable heavy lifting... and dozens of other examples.

Your workers may not say anything at first, but their work may hurt – and at the end of the shift they're going home with stiff backs, sore wrists, or shoulder pain. Their work could be made safer and more efficient with a few simple changes.

On the other hand, over time, and left unaddressed, these aches and pains can develop into injury. Listen to your workforce. Encourage the early reporting of these symptoms, so job set-up can be improved before an injury ever develops. A proactive approach will prevent many injuries, and reduce the severity of injuries that do occur. Your workers will be more comfortable and more productive with less lost time due to injury.

UNCHECKED, HAZARDS LEAD TO INJURY. SPOT WARNING SIGNS AND TAKE ACTION.

By identifying the hazards and recognizing the warning signs action can be taken to prevent musculoskeletal injury before injury ever occurs.

Four simple steps can put you on the road to reducing musculoskeletal injury in your workplace.

1. RECOGNIZE SIGNS → 2. SPOT HAZARDS → 3. FIX HAZARDS → 4. ELIMINATE FUTURE HAZARDS

STEP 1 RECOGNIZE THE SIGNS

Musculoskeletal injury comes with warning signs and symptoms before an injury occurs, and long before any work is missed. Listen to your workforce. Ensure your managers, supervisors and front-line personnel keep an eye out for things like:

- Comments about discomfort or pain
- Swelling of joints and muscles
- Stretching or rubbing muscles while working
- Self-modifying equipment or workstations
- Quality issues, production bottlenecks, work needing to be re-done
- Repetitive similar injuries with particular tasks
- High turnover or absenteeism

SPOT THE HAZARD:

Awkward hand posture and high hand force

FIX THE HAZARD:

- Select tools that improve working posture
- Use jigs and clamps to hold work in place
- Replace heavy tools with lighter ones
- Keep power tools well maintained to reduce vibration
- Keep cutting tools sharp to reduce force
- Install or change handles to improve hand and arm posture
- Use tool balancers to support the weight of heavy tools

SPOT THE HAZARDS STEP 2

Beyond the signs and symptoms, there are some key hazards you should also watch for.

Start with work tasks associated with past injury to identify the hazards. Talk to the workers about the most difficult parts of the job, and together, find a better way. What you learn could bring great returns.

HAZARDS OF MUSCULOSKELETAL INJURY INCLUDE:

POSTURE HAZARDS: Awkward body postures held for extended periods

- Hands above the head or elbows above the shoulders
- Hands below the knees
- Awkward wrist angles with the hands extended backward or flexed forward
- Back and neck bent or twisted
- Kneeling or squatting postures
- Same posture over time, without stretching

FORCE HAZARDS: Applying excessive force with the body

- Lifting, carrying, pushing or pulling heavy or awkward objects
- Using the hand as a hammer to position objects in place
- Pinching or gripping unsupported objects with the hands

REPETITION HAZARDS: Doing highly repetitive work for long periods

- Repetitive tasks that use the same muscles and movements, over a long period of time
- Not enough breaks to allow rest or recovery from task

WHEN HAZARDS GET TOGETHER.

Hazards can combine for increased risk of injury. For example, awkward work posture while lifting something too heavy will make it even more likely someone's going to get hurt.

ENVIRONMENTAL HAZARDS: Where the work is done is as important as the "how."

- Inappropriate lighting for the task can cause eye fatigue and awkward body postures
- Excessive equipment vibration
- Excessive exposure to heat or cold without protection

INDIVIDUAL WORKER HAZARDS

- Worker physical health and fitness
- Differences in strength
- Activities outside the workplace that involve high physical forces, awkward postures or repetitive actions

ORGANIZATIONAL HAZARDS

- Poor communication and organizational cooperation
- Limited worker involvement in decisions that affect working tasks
- Poor corporate culture or low worker morale

SPOT THE HAZARD:

Hands below knees or above head, elbows above shoulders

FIX THE HAZARD:

- Position work to keep hands below head level
- Position work to keep hands above knee level

FIX THE HAZARDS STEP 3

As you read the suggestions below, think about your workplace. Discuss hazards with the workforce and consider what improvements could be made to the way work is done.

IMPROVE WORKING POSTURE. 'How can we...'

- Position work or change workstation layout to eliminate excessive reaching or leaning forward
- Position frequently used tools and equipment within easy reach
- Change table height to accommodate majority, or consider adjustable tables to accommodate everyone

REAL-LIFE EXAMPLE: Frank works on a production line, building flats of raspberries for shipment. Recurring back and shoulder pain has caused him to miss time from work. When asked, he says it hurts most when reaching to remove the flats from the conveyor. Frank's manager arranged for an ergonomist to look at the job, and to suggest changes. It turns out the conveyor was too wide which meant Frank had to frequently lean forward and reach for the flats. Attaching a simple deflector bar pushed the flats closer, eliminating the awkward body posture, and allowing Frank to more easily pick them up. Frank hasn't missed a day since.

REDUCE THE NEED TO LIFT AND MANUALLY MOVE MATERIALS. 'How can we...'

- Use mechanical lifts to support and to move heavy loads
- Try to eliminate the lift by changing how objects are stored

If you must lift, follow these general guidelines:

- Limit one-off lifts (1-2 lifts per shift) to 75 lbs (34 kg)
- Limit infrequent lifts (under 10 lifts per shift) to 55 lbs (25 kg)
- Limit more frequent lifts (up to 25 lifts per shift) to 25 lbs (11 kg)
- Limit frequent lifts (up to 2 times per minute) to 10 lbs (4.5 kg)

DID YOU KNOW?

It's important to build musculoskeletal injury prevention into your overall safety program. For more information on how to get started building or to learn about how you can enhance your safety program, check out the **Preventing Workplace Injuries** guides available from the WCB.

REDUCE PHYSICAL FORCE NEEDED TO DO THE JOB. 'How can we...'

- Use mechanical lifts to support and to move heavy loads
- Use carts, rollers or conveyors to support and move materials
- Install or change handles to improve hand and arm posture
- Replace heavy tools with lighter ones
- Use tool balancers to support the weight of heavy tools
- Use cushioned floor matting to reduce fatigue from standing
- Have workers pick up fewer objects at a time to reduce load weight
- Ensure tools and equipment are maintained in top form
- Keep cutting tools sharp to reduce force needed

REAL-LIFE EXAMPLE: Julie works at a grocery store. She's responsible for collecting shopping carts from the parking lot at the end of the day. Every day, it's a rush to gather up the carts before the end of her shift, so to save trips, she pushes long lines of shopping carts. They're heavy, and lately, she's been noticing back pain. Julie's supervisor lightened the load – by changing shift schedules, he allowed Julie to start collecting the carts earlier so she could take fewer carts per trip. The store is also looking into a motorized shopping cart-pusher to make the job easier and more efficient.

REDUCE TASK REPETITION. 'How can we...'

- Adjust the overall work design to reduce task repetition
- Change tasks to avoid long-term repetitive action

REAL-LIFE EXAMPLE: Will is a shift supervisor at a manufacturing plant. The work is repetitive, and once trained in a specific job, workers always do the same thing. Over the years, the company has been seeing an increase in shoulder injuries. Will suggested a training program to broaden the skills of the workforce so workers could rotate through jobs to vary work movements. Cross-training has also allowed absenteeism coverage for critical work tasks, meaning fewer delays in getting orders out the door.

DON'T SOLVE A PROBLEM WITH A PROBLEM.

No one knows a job better than the people doing it – they are task experts. Think carefully, and talk to the people doing the work before you change it. Discuss potential hazards and possible solutions – and check back regularly after any change. Ensure that any change doesn't create new hazards.

ENVIRONMENTAL CONDITIONS. 'How can we...'

- Protect against excessive heat and cold
- Ensure appropriate lighting
- Reduce vibration from tools and equipment

REAL-LIFE EXAMPLE: Jim works in the freezer of a seafood plant. The lighting is dim. Jim needs to get off his forklift and manually check date imprints and colour codes on inventory – he can't see them while seated. In addition to other hazards, this often means navigating between pallets, bending over, or reaching above. When the lighting was improved, he could quickly and easily see the colour coding. The work now gets done more quickly – and more importantly, more safely.

INDIVIDUAL FACTORS. 'How can we...'

- Promote individual physical fitness through company wellness programs
- Encourage stretching before and during work to warm-up muscles and help relieve strain
- Provide training and coach frequently on how to move material safety using lift equipment and safe postures

REAL-LIFE EXAMPLE: John plays on a hockey team with some of his co-workers in a dairy. He noticed that they never start a game without warming up, but that no one ever warms up before a busy shift on the production floor. He mentions it to the supervisor, and now simple stretches are encouraged as part of the workplace routine.

ORGANIZATIONAL FACTORS. 'How can we...'

- Help all staff understand signs and hazards
- Promote early reporting of symptoms or discomforts
- Gather ideas of potential improvements from everyone
- Share solutions throughout the company

REAL-LIFE EXAMPLE: Every day, Linda's wrists hurt. She's a data-entry clerk in the health care industry. It's been getting worse – but her supervisor has never discussed workplace safety or health. Linda is happy at her job, and eager to please, and she doesn't want to rock the boat by bringing it up. Eventually, she develops carpal tunnel syndrome. Her physiotherapist tells her that a simple change to her workstation could have prevented the injury. Her supervisor misses having Linda at work – she was a productive and fast employee. She says she would have taken action right away, if only she had known. She now encourages her staff to report issues early and seeks their thoughts on how to make difficult parts of the job easier.

SPOT THE HAZARD:

Neck bent and twisted

FIX THE HAZARD:

- Select equipment that improves working posture
- Change how work tasks are completed to improve working posture

SPOT THE HAZARD:

Heavy lifting and carrying

FIX THE HAZARD:

- Use mechanical lifting devices or carts to support and move materials
- Try to eliminate the lift by changing how objects are stored

If you must lift, follow these general guidelines:

- Limit one-off lifts (1-2 lifts per shift) to 75 lbs (34 kg)
- Limit infrequent lifts (under 10 lifts per shift) to 55 lbs (25 kg)
- Limit more frequent lifts (up to 25 lifts per shift) to 25 lbs (11 kg)
- Limit frequent lifts (up to 2 times per minute) to 10 lbs (4.5 kg)

ELIMINATE FUTURE HAZARDS USING ERGONOMICS DESIGN STEP 4

Whether you work for a multi-national or a small business, you can benefit from ergonomics. Ergonomics is about designing for human use. It allows quality work to be completed safely and easily by fitting the job to the worker.

THE 5 W'S: WHAT | WHO | WHERE | WORST-CASE | WHOOPS!

Managers who think from an ergonomics mindset ask themselves five simple questions every time they purchase a piece of equipment, every time they build or modify a workspace or facility, every time they think about how a job will be done, and every time they create a new position.

Ergonomics is a way of thinking about workplace design that maximizes the safety and efficiency of the workplace by getting it right the first time.

QUESTION 1: WHAT ARE THE TASK REQUIREMENTS?

Put yourself in the shoes of your worker. What does the person have to do, step by step, to perform the job? For example, how heavy will handled items be? How frequently will actions be repeated? Will the person have easy physical access to stored items or other parts of the workspace that must be regularly accessed? How long will the person stand or sit at one time?

By thinking this through carefully, you'll have insight to potential risks before anyone actually performs the job.

QUESTION 2: WHO IS DOING THE WORK?

Design jobs so that most people can safely perform all tasks efficiently. Fitting the work to the worker means considering the physical aspects of the job and determining how people of different heights and strengths can do the work. How can the job be set up and what type of equipment will allow people to work safely?

Will the employee need experience, or is this an entry-level task? Will training be required? Consider these issues up front so you can more effectively plan and schedule training and skill development.

Making jobs easier will expand the potential workforce capable of completing the work tasks. This is especially important with worker shortages.

QUESTION 3: WHERE IS THE WORK BEING DONE?

Ergonomic thinking isn't just about how the work gets done – it's also about where it gets done. Are there any concerns with the physical operating environment? Is it too cold, or too hot? Is there enough light, or the right kind of light, for the task at hand? Is the weather a factor? What personal protective equipment is required?

QUESTION 4: WORST-CASE SCENARIO – WHAT IS IT?

What is the worst case scenario? By working through questions 1-3, you have a good opportunity to identify potential safety and injury risk situations. Now think about what could go wrong. Think in worst-case scenarios. Identify all potential hazards. Think about your busiest times of the year – excessive workload can compel employees to take short-cuts, thereby increasing their risk. How likely is it that workers will be injured? How severely? By answering questions like these, you are in a better position to eliminate or reduce those risks.

QUESTION 5: WHOOPS! – WHAT IS THE CONSEQUENCE OF HUMAN ERROR?

People make mistakes. How much room for error is there in the job? In many cases, the consequence may be insignificant – often by sheer luck. However the same 'error' may lead to more severe consequences, depending on a number of factors. Ask yourself: Could an error result in injury to the worker, surrounding co-workers, or those on the next shift? By arming yourself with this knowledge ahead of time, you are in a better position to make changes to either avoid error or reduce its consequences.

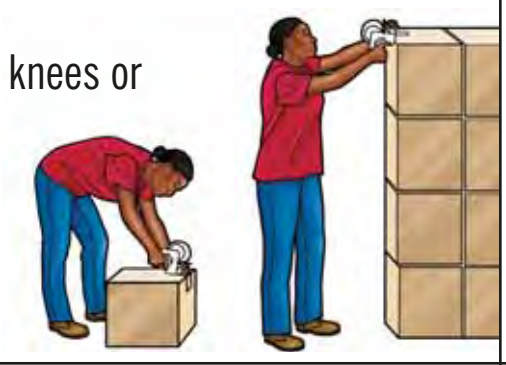
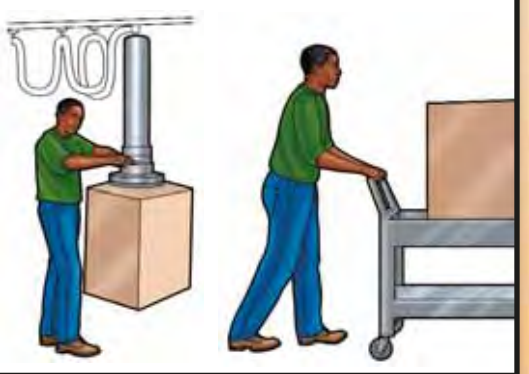
TAKE ACTION TODAY.

This booklet has been a primer on safe work design. Now – what are you going to do about it? Take a walk around your workplace, talk with the workforce and discuss potential hazards and solutions. Then, start the ball rolling to make improvements. You'll end up with a safer workplace, happier workers, and fewer workplace injuries.

For more information visit www.wcb.ns.ca and click on "Prevention."

SPOT THE HAZARDS → FIX THE HAZARDS

PREVENTING MUSCULOSKELETAL INJURY THROUGH WORKPLACE DESIGN

SPOT THE HAZARD	FIX THE HAZARD
Hands below knees or above head, elbows above shoulders 	Position work so hands are above knees and below head. 
Back bent and twisted 	Position work at comfortable heights. Minimize material handling. 
Awkward body posture 	Design work so tools and materials are within easy reach. 
Heavy lifting and carrying 	Reduce the need to lift and carry. Use mechanical lifts or carts. If you must lift manually, follow the guidelines found in the booklet. 
Awkward hand posture and high hand force 	Use the right tool for the job. Design work to improve posture and reduce force. 
Neck bent and twisted 	Use equipment that allows safe posture. 

DON'T SOLVE A PROBLEM WITH A PROBLEM. TALK TO YOUR WORKERS REGULARLY TO DISCUSS HAZARDS AND POTENTIAL SOLUTIONS.

For more tips on fixing hazards in your workplace, consult the booklet **Sprains and strains: Preventing musculoskeletal injury through workplace design.**

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