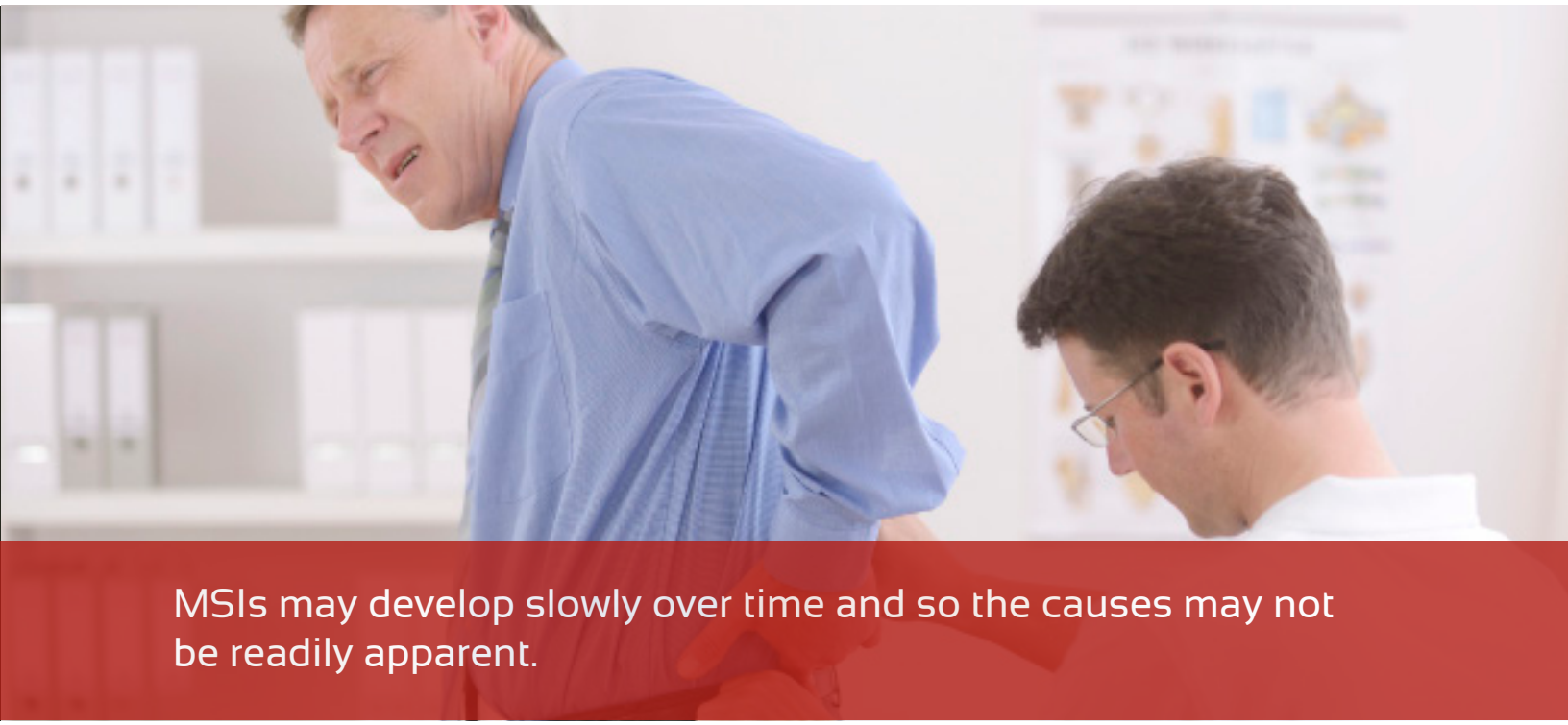
Ergonomics:

Learn How to Effectively Protect Workers from MSIs

OHSInsider



MSIs may develop slowly over time and so the causes may not be readily apparent.

Musculoskeletal Injuries

What MSIs Are and Why You Should Care about Them

Preventing workplace injuries caused by poor design, repetitive motion, improper lifting techniques, excessive force or vibration may not get the same attention as other injuries. Such injuries, which are often called musculoskeletal injuries (MSIs) or repetitive stress injuries, can be defined as injuries or disorders of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue, such as sprains or strains. Carpel tunnel syndrome and "tennis elbow" are good examples of MSIs. (Check your jurisdiction's OHS regulations for its definition of this or related terms.)

MSIs may develop slowly over time and so the causes may not be readily apparent. And the injuries may not be as severe as, say, an amputation or crushing injury. But MSIs account for a high percentage of workplace injuries overall—and of workers' comp claims. And the OHS laws—either expressly or implicitly—require employers to protect workers from ergonomics hazards and the MSIs they can cause.

As a safety coordinator, you need to impress on management the importance of dealing with MSIs and ergonomics-related hazards. Taking steps to make your workplace more ergonomically sound can not only save you money, make your workplace more efficient and protect your workers from unnecessary and avoidable injuries, it can also protect you from OHS violations and other liability.

Musculoskeletal Injuries

What the OHS Laws Say

The Canadian jurisdictions take two general approaches to addressing ergonomics-related hazards and/or protecting workers from MSIs:

Specific requirements. The OHS regulations in six jurisdictions—Fed, AB, BC, MB, NL and SK—specifically require employers to identify and address ergonomics-related hazards and prevent MSIs. (See the chart on p. 6 for these requirements in detail.)

General duty clause. The remaining jurisdictions don't directly require employers to identify and address ergonomics-related hazards and prevent MSIs. (A few do have some ergonomics-related requirements. For example, the OHS regulations in Québec include requirements on the proper height of workbenches, positioning of chairs and location of tools to reduce strain and fatigue.) But remember that the so-called "general duty" clause in each jurisdiction's OHS statute requires employers to take every reasonable precaution to protect workers from foreseeable safety hazards—which includes hazards that could cause MSIs. In fact, some jurisdictions have said in guidelines or other publications that this general duty includes an obligation to protect workers from MSIs. (See the box on the next page for a list of some of those guidelines.)

Bottom line: Whether your jurisdiction imposes specific ergonomics-related requirements or simply relies on the general duty clause, you should take steps to identify ergonomics-related hazards that could causes MSIs and implement measures to eliminate or minimize those hazards.

Ergonomics Guidelines & Other Government Resources

FED: **Process for Implementing Ergonomics Regulatory Requirements**

AB: **How to Use Wrist Rests; New Thinking about Carpal Tunnel Syndrome; Proper Height of Work Surfaces**

BC: **How to Make Your Computer Workstation Fit You**

MB: **Guidelines for Preventing Musculoskeletal Injuries**

NB: **Office Ergonomics: Guidelines for Preventing Musculoskeletal Injuries; Ergonomics and Musculoskeletal Injuries (MSI): Preventing Injuries by Design**

NL: **Guidelines for the Prevention of Soft Tissue Injuries**

NS: **6 Steps to an Ergonomics Mindset; Adjusting Your Computer Workstation; Working with Laptop Computers**

ON: **Ministry of Labour's Musculoskeletal Disorders/Ergonomics Web Page**

SK: **Musculoskeletal Injuries Prevention Guide**

KNOW THE LAWS: Identifying & Addressing Ergonomics-Related Hazards

The OHS regulations in each jurisdiction require employers to do the following to identify and address ergonomics-related hazards:

Jurisdiction	Law(s)
FED	*Canada OHS Regulations:* 1. In consultation with and with the participation of the policy committee, or, if there's no policy committee, the JHSC or health and safety representative, develop, implement and monitor a program for the prevention of hazards, including ergonomics-related hazards, in the workplace that's appropriate to the size of the workplace and the nature of the hazards and contains the designated components [Sec. 19.1(1)]. 2. In implementing the prevention program, ensure that ergonomics-related hazards are identified and assessed, and that they're eliminated or reduced, as required by Sec. 19.5(1), as much as is reasonably possible and that any person assigned to identify and assess ergonomics-related hazards has the necessary instruction and training [Sec. 19.2(2)]. 3. Develop a hazard identification and assessment methodology, including a methodology for ergonomics-related hazards, taking into account designated documents and information, including ergonomics-related information [Sec. 19.3(1)(i)]. 4. Identify and assess the hazards in the workplace, including ergonomics-related hazards, in accordance with the methodology developed under Sec. 19.3 taking into account, in the case of ergonomics-related hazards, all ergonomics-related factors such as: a. the physical demands of the work activities, the work environment, the work procedures, the organization of the work and the circumstances in which the work activities are performed; and b. the characteristics of materials, goods, persons, animals, things and work spaces and the features of tools and equipment [Sec. 19.4(a.1)]. 5. To address identified and assessed hazards, including ergonomics-related hazards, take preventive measures to address the assessed hazard, including steps to address ergonomics-related hazards that are identified when planning implementation of change to the work environment or to work duties, equipment, practices or processes [Sec. 19.5(4)(b)]. 6. Ensure that any person assigned to implement ergonomics-related prevention measures has the necessary instruction and training [Sec. 19.5(5)]. 7. Provide health and safety education, including education relating to ergonomics, to each worker [Sec. 19.6(1)]. 8. Evaluate the effectiveness of the hazard prevention program, including its ergonomics-related components, based on designated documents and information, including records and statistics relating to ergonomics-related first aid and injuries [Sec. 19.7(2)(e)].
AB	*OHS Code 2009:* 1. If the hazard assessment required by Secs. 7 (1) and (2) determines that there's a potential for musculoskeletal injury (MSI), ensure that all reasonably practicable measures are used to eliminate or reduce that potential in accordance with Sec. 9 [Sec. 210(3)]. 2. If a worker reports to the employer what the worker believes to be work-related symptoms of an MSI, promptly: a. review the activities of that worker, and of other workers doing similar tasks, to identify work-related causes of the symptoms, if any; and b. take corrective measures to avoid further injuries if the causes of the symptoms are work-related [Sec. 211]. 3. Ensure that a worker who may be exposed to the possibility of an MSI is trained in specific measures to eliminate or reduce that possibility [Sec. 211.1(1)]. 4. Ensure that the above training includes: a. identification of factors that could lead to an MSI; b. the early signs and symptoms of MSIs and their potential health effects; and c. preventive measures including, where applicable, the use of altered work procedures, mechanical aids and PPE [Sec. 211.1(2)].

BC	*OHS Regulation:* 1. Identify factors in the workplace that may expose workers to a risk of MSI [Sec. 4.47]. 2. When factors that may expose workers to such a risk have been identified, ensure that the risk to workers is assessed [Sec. 4.48]. 3. Consider, where applicable, in the identification and assessment of the risk of MSI: a. the physical demands of work activities, including force required, repetition, duration, work postures and local contact stresses; b. aspects of the layout and condition of the workplace or workstation, including working reaches, working heights, seating and floor surfaces; c. the characteristics of objects handled, including size and shape, load condition and weight distribution, and container, tool and equipment handles; d. the environmental conditions, including cold temperature; and e. the following characteristics of the organization of work: work-recovery cycles; task variability; and work rate [Sec. 4.49]. 4. Eliminate or, if that's not practicable, minimize the risk of MSI to workers [Sec. 4.50(1)]. 5. Ensure that a worker who may be exposed to a risk of MSI is educated in risk identification related to the work, including the recognition of early signs and symptoms of MSIs and their potential health effects [Sec. 4.51(1)]. 6. Ensure that a worker to be assigned to work that requires specific measures to control the risk of MSI is trained in the use of those measures, including, where applicable, work procedures, mechanical aids and PPE [Sec. 4.51(2)]. 7. Monitor the effectiveness of the measures taken to comply with these requirements, ensure they're reviewed at least annually and when the monitoring identifies deficiencies, correct them without undue delay [Sec. 4.52]. 8. Consult with the JHSC or worker health and safety representative, as applicable, with respect to the following when they're required by these requirements: a. risk identification, assessment and control; b. the content and provision of worker education and training; and c. the evaluation of the compliance measures taken [Sec. 4.53(1)]. 9. When performing a risk assessment, consult with workers with signs or symptoms of MSIs, and a representative sample of the workers who are required to carry out the work being assessed [Sec. 4.53(2)].
MB	*Workplace Safety and Health Regulation:* 1. When aware, should reasonably be aware or have been advised that a work activity creates a risk of MSI: a. ensure that the risk is assessed; and b. on the basis of the assessment, implement control measures to eliminate or reduce, so far as is reasonably practicable, the risk of MSI to the worker [Sec. 8.1(1)]. 2. Monitor the effectiveness of any control measure implemented to eliminate or reduce the risk of MSI [Sec. 8.1(3)(a)]. 3. Where the monitoring identifies that a risk of MSI isn't being or hasn't been eliminated or reduced, implement further control measures, where it's reasonably practicable to do so [Sec. 8.1(3)(b)]. 4. Ensure that every worker who may be exposed to a risk of MSI: a. is informed of the risk and of the signs and common symptoms of any MSI associated with the worker's work; and b. receives instruction and training respecting any control measure implemented by the employer [Sec. 8.2].
NB	OHS regulations don't contain specific requirements as to the identification and addressing of ergonomics-related hazards.

NL	*OHS regulations, 2012:* 1. Eliminate, or where elimination isn't practicable, minimize the risk of MSI to a worker through the implementation of a control measure [Sec. 51(1)]. 2. Without delay, implement interim control measures when the introduction of permanent control measures are delayed [Sec. 51(3)]. 3. Ensure that a worker who is or may be exposed to a risk of MSI is: a. educated in risk identification related to work, including the recognition of early signs and symptoms of MSIs and its potential health effects; and b. trained in the use of specific control measures, including, where applicable, work procedures, mechanical aids and PPE [Sec. 52]. 4. Monitor the effectiveness of a control measure implemented to eliminate or reduce the risk of MSI [Sec. 53(a)]. 5. Where the above monitoring identifies a risk of MSI that isn't or hasn't been eliminated or reduced, implement additional control measures, where reasonably practicable [Sec. 53(b)]. 6. Consult with the JHSC, worker health and safety representative or workplace health and safety designate, as applicable [Sec. 54(1)]. 7. When performing a risk assessment, consult with: a. workers with signs or symptoms of MSIs; and b. a representative sample of the workers who are required to carry out the work being assessed [Sec. 54(2)].
NT/NU	Current OHS regulations don't contain specific requirements as to the identification and addressing of ergonomics-related hazards. Proposed new regulations do include such requirements, but such regulations aren't in effect yet.
NS	OHS regulations don't contain specific requirements as to the identification and addressing of ergonomics-related hazards.
ON	OHS regulations don't contain specific requirements as to the identification and addressing of ergonomics-related hazards.
PE	OHS regulations don't contain specific requirements as to the identification and addressing of ergonomics-related hazards.
QC	OHS regulations don't contain specific requirements as to the identification and addressing of ergonomics-related hazards.
SK	*OHS Regulations:* 1. Regularly review the activities at the place of employment that may cause or aggravate MSIs [Sec. 81(2)]. 2. Where a risk of MSI is identified: a. inform each worker who may be at risk of developing MSIs of that risk and of the signs and common symptoms of any MSI associated with that worker's work; and b. provide effective protection for each worker who may be at risk [Sec. 81(3)]. 3. Ensure that workers who may be at risk of developing MSIs are instructed in the safe performance of the worker's work, including the use of appropriate work practices and procedures, equipment and PPE [Sec. 81(4)]. 4. Where a worker has symptoms of MSI: a. advise the worker to consult a physician or a health care professional who's registered or licensed pursuant to an Act to practise any of the healing arts; and b. promptly review the activities of that worker and of other workers doing similar tasks to identify any cause of the symptoms and to take corrective measures to avoid further injuries [Sec. 81(5)].
YT	OHS regulations don't contain specific requirements as to the identification and addressing of ergonomics-related hazards.

You can handle ergonomics-related hazards as you would any other workplace safety hazard and address them through your OHS program.

Ergonomics-Related Hazards

Take 4 Steps to Protect Your Workers

You can handle ergonomics-related hazards as you would any other workplace safety hazard and address them through your OHS program. As an alternative, however, consider establishing a dedicated ergonomics program that's focused on these unique hazards. Although the requirements for protecting workers from MSIs vary to some degree by jurisdiction, compliance generally requires employers to take the following steps

Step #1: Identify and Assess Risk of MSIs

First, evaluate your workplace for MSI risks and ergonomics-related hazards and then assess how serious of a danger they pose to workers. It's a good idea to involve the JHSC in this process and, in fact, you may be required to include the committee or the health and safety representative by the OHS regulations.

You can conduct this assessment by inspecting work areas, considering various ergonomics risk factors, including:

- Physical demands of a work activity, including the force required, repetition, duration, work postures and local contact stresses;
- Aspects of the layout and condition of the workplace or workstation, including working reaches, working heights, seating and floor surfaces;
- Characteristics of objects handled, including size and shape, load condition and weight distribution, and container, tool and equipment handles;
- Environmental conditions, including cold temperatures; and
- Organization of the work, including work-recovery cycles—that is, how frequently workers get

breaks—task variability and work rate.

You should also speak to the workers about any issues they've experienced or problems they've had, including any MSIs they've suffered. And you should look at workers' comp and first aid data to see if workers have suffered MSIs and what kind of MSIs so you can detect any patterns, such as lower back issues that could be connected to uncomfortable desk chairs.

Step #2: Implement Controls to Eliminate or Minimize Risks

After you've identified ergonomics-related hazards in your workplace, implement appropriate controls to eliminate or at least minimize the risk of MSIs. For example:

- Adjust workstations to ensure workers can maintain an ergonomically neutral posture;
- Shorten a workstation so a worker doesn't have to reach for materials or tools;
- Let workers who perform a repetitive task take more frequent breaks; or
- Switch to tools that are ergonomically designed to fit better in workers' hands and require less force to use.

Step #3: Educate and Train Workers

One of the most common and effective ways for an employer to learn about MSIs and risk factors in its workplace is by asking its workers. After all, workers are the ones using the equipment and workstations, and performing the tasks. So they're in the best position to tell you if, say, the position or layout of a workstation is giving them a pain in their neck or elbow. Thus, it's critical that you educate workers on ergonomics-related hazards and MSI risk factors and train them on how to avoid MSIs. This education and training should cover, at a minimum:

- What MSIs are—including relevant examples—identification of factors that could lead to MSIs and the early signs and symptoms of them;
- Preventive measures including, where applicable, the use of altered work procedures, mechanical aids and PPE; and
- What to do if workers believe they're experiencing any signs and symptoms of an MSI, such as telling a supervisor and seeing their doctor.

Step #4: Monitor the Effectiveness of the Control Measures

As with any safety measures, it's a best practice to regularly monitor and assess the effectiveness of the controls you implement to eliminate or minimize ergonomics-related hazards. In addition, the OHS laws may require you to conduct such assessments. For example, the federal OHS regulations require employers to evaluate the effectiveness of the hazard prevention program, including its ergonomics-related components, based on designated documents and information, including records and statistics relating to ergonomics-related first aid and injuries.

Review the effectiveness of your ergonomics-related controls at least once a year. If you identify any deficiencies in these safety measures, such as workers still suffering MSIs despite a change in the layout of a workstation, make sure that you reassess the workstation and take additional measures to address the hazards.

Over 25% of companies surveyed use some form of qualitative tool for conducting ergonomic assessments. But over half didn't use design guideline criteria to define correct ergonomic dimensions and limits for workplace changes.

Ergonomics Management

5 Ergonomics Mistakes to Avoid

More companies are getting serious about addressing ergonomics-related hazards and injuries in the workplace. But in doing so, some are making costly mistakes that may undermine their ergonomics efforts. A report by a researcher at Humantech, workplace ergonomics consultants, boils down the top five mistakes companies of all sizes, industries and locations make in managing workplace ergonomics. Here's a review of these mistakes and the keys to successfully managing ergonomics in your workplace.

Mistake #1: Focus on the Wrong Goal

The main reason most companies try to improve ergonomics in the workplace is to prevent musculoskeletal injuries (MSIs) and reduce the costs associated with them. There's nothing wrong with that motivation. But the problem is that as a result, companies measure the success of their ergonomics efforts based on injury rates, which focuses on the consequence (injury) and not the cause (exposure).

Injury rates are a *lagging* measure, tallying a score after the injury has occurred. And a workplace's injury rate isn't specific to the risk factors associated with MSIs. In contrast, companies successful in managing ergonomics use a *leading* indicator to provide an early warning system of exposure to the causes of MSIs. Such companies proactively measure and track the level of exposure to MSI risk factors, such as awkward postures and infrequent breaks. Then they can take action to prevent injuries from occurring.

Mistake #2: An Unsustainable Approach

Many companies approach ergonomics by establishing an "ergonomics program" with a laundry list of elements that have to be in place, including employee and management involvement, risk assessments, workplace changes, training and injury management. But this dated approach can result in a narrow mindset that ergonomics is:

- Owned by a few (typically the safety department);

- Not well understood by most; and
- Difficult to sustain as staff, leadership and business conditions change.

Instead, companies should manage workplace ergonomics as a continuous improvement process. Aligning key elements of ergonomics management with an existing, active improvement process (such as a quality process or lean manufacturing system) results in more acceptance and widespread support. Managed as a process, ergonomics is:

- Owned by many, mostly those outside of the safety department, such as engineering, operations, managers, workers, etc.;
- Understood and supported by all levels of the organization;
- Familiar in process steps (for example, Plan, Do, Check and Act);
- Measured and tracked as providing value; and
- Sustained over time as people and business focus change.

The best approach to managing workplace ergonomics as a process is to:

- Establish a single, common goal based on reducing MSI risk factors;
- Use quantifiable, valid assessment methods to measure the level of exposure to such factors; and
- Align the elements of the ergonomics process to a system the company is already familiar with and using, such as CSA Z1000 or OHSMS 18001.

Mistake #3: A Narrow View

The researcher says he found that many operations and safety managers saw ergonomics as a safety discipline, with an aim toward preventing injuries. This limited understanding of the application of ergonomics keeps many companies from achieving the full benefit of workplace improvements.

In contrast, companies that expand their view and application of good workplace design can improve many aspects of performance—not just injury prevention. Fitting the workplace and tools to the worker will not only reduce the causes of MSIs, but also:

- Reduce or eliminate non-value-added motions;
- Improve productivity and throughput;
- Reduce barriers to quality;
- Improve worker comfort and acceptance of workplace changes; and
- Improve worker engagement and morale.

Companies successful in ergonomics engage their engineers (including space planners, maintenance and new product designers) as full partners or owners of the ergonomic improvement process. They also integrate MSI risk assessment tools and ergonomic design principles into lean teams, kaizen events, quality teams and other existing resources and tactics for performance improvement. Thus, their results show simultaneous reduction of injuries, increased productivity and improved quality.

Mistake #4: Ineffective, Inconsistent Tools

Over 25% of companies surveyed use some form of qualitative tool for conducting ergonomic assessments. But over half didn't use design guideline criteria to define correct ergonomic dimensions and limits for workplace changes. The problem is that using subjective assessment methods can result in inefficiencies and frustration. Qualitative tools (such as checklists) are good for screening the workplace to determine if an ergonomics issue might exist. But there are many versions of these qualitative tools and so using them may result in an assessment that isn't:

- Repeatable because different assessors measure differently;
- Based on valid data;
- Measurable, that is, it can't be quantified and compared to a threshold;
- Based on MSI risk factors or exposure time; or
- Able to define the root cause of the problem or exposure.

Companies with effective ergonomics processes use a defined set of valid tools for conducting ergonomic assessments. The tool set typically includes qualitative screening for MSI risk factors, a whole-body risk assessment, a quantitative manual lifting risk assessment and a qualitative push/pull/carry assessment. And for a limited

number of industries, whole-body and segmental vibration assessments should also be conducted.

Using a small set of simple, shared tools lets everyone involved (JHSCs, ergonomists and engineers) assess and measure exposures consistently, identify the root-cause exposures to MSI risk factors and rank jobs for improvement. And because quantitative tools provide a number or score, these results can be used to classify jobs as low, moderate or high risk, allowing clear communication to management and a measurable goal.

Mistake #5: A Failure to Check

Whether you manage ergonomics as a program or a process, failing to close the loop—that is, verifying that your workplace changes were effective in reducing MSI risk factors—will prohibit sustained success. Many companies focus on conducting assessments, which lead to solutions. But many organizations (about 40-60% of benchmarked companies) don't conduct follow-up assessments to verify that the solution actually achieved the intended improvement. Verifying that a change to the workplace has been effective is a major step in the continuous improvement process and is also critical to ensuring that the same improvement can be duplicated elsewhere. To do so, you'll need to know the goal for improvement (**Mistake #1**), use the right measures (**Mistake #2)**, engage the right parties (**Mistake #3**) and use valid and repeatable tools (**Mistake #4**).

Companies with successful ergonomics processes look at this "check" phase to ensure their efforts were successful at two levels:

1. The improvement of an individual job task; and
2. The effectiveness of the overall ergonomic improvement process.

The most common indicator used today is the percentage of job tasks at a low/no level of MSI risk exposure. Tracking this metric as a regular business performance measure will ensure you are proactively identifying and reducing exposures that cause MSIs.

INSIDER SOURCE

Five Mistakes Companies Make with Ergonomics, Walt Rostykus, Humantech

5 Keys to Successfully Managing Workplace Ergonomics

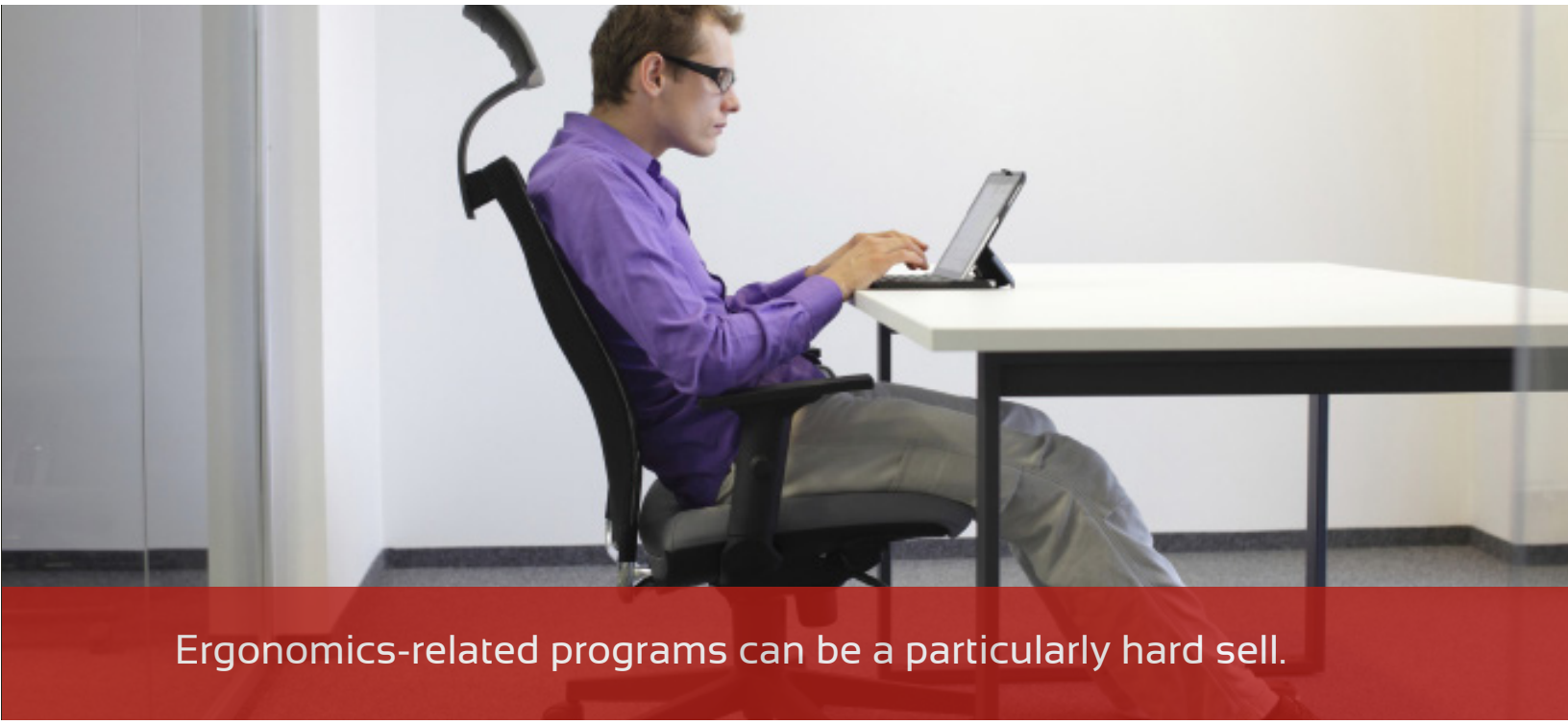
1. Manage the causes of MSIs—exposure to risk factors—not the consequences—injuries.

2. Manage ergonomics as a process, not a program.

3. Expand the ergonomics process to an engineering discipline that addresses additional aspects of performance, beyond just injury reduction.

4. Use a few valid assessment and solution tools appropriate for your workplace conditions and workers.

5. Always verify that the changes you've implemented reduce MSI risk exposure and achieve the intended results.



Ergonomics-related programs can be a particularly hard sell.

Case Study

Financial Benefits of Participatory Ergonomics Programs

Getting funding for safety initiatives, especially those that aren't specifically required by the OHS laws, can be an uphill battle. Ergonomics-related programs can be a particularly hard sell. You're more likely to get senior management's support—financial and otherwise—if you can show that an initiative will improve not only worker health and safety but also the company's bottom line. One effective way to make such an argument is with a case study of a company that took the steps you're proposing and reaped various rewards from doing so. Here's a case study from the IWH that shows how an Ontario textile plant saved almost **$300,000** by implementing a participatory ergonomics program.

What Is Participatory Ergonomics?

The IWH explains that participatory ergonomics programs involve workers, supervisors and other workplace parties jointly identifying and addressing work-related risks that can lead to MSIs. Studies have shown that participatory ergonomics programs can reduce MSIs, workers' comp claims and lost days from work. MSIs such as carpal tunnel syndrome, tendonitis and low-back pain account for approximately 40% of workers' comp claims.

A participatory ergonomics program encourages workers to help identify the hazards or risk factors in their workplace that can cause or aggravate MSIs, such as working in awkward positions, doing repetitive work and having to apply force. Because workers are the ones actually using the equipment and performing the tasks, they're in the perfect position to identify what aspects don't work well for them. Such programs

can be implemented as a part of a company's overall OHS program or as a stand-alone program. And although there are many studies on participatory ergonomics best practices, there are few studies that investigate the costs and benefits of these programs.

The Textile Plant Case Study

The IWH study, which appeared in the May 2013 issue of *Applied Ergonomics*, looked

The textile plant case study is a compelling real-world illustration of how small, inexpensive changes can have big impacts on health and safety and the company's bottom line.

at an Ontario textile plant that implemented a participatory ergonomics program in 2001. To do so, it set up a worksite ergonomics change team, which included management and union representatives from the plant, as well as two outside expert ergonomists. Team members were trained to use participatory ergonomics principles to identify jobs for improvement, assess the ergonomic risk factors of the identified jobs and come up with solutions.

The team ultimately identified and implemented ergonomics changes for 97 workers in 27 different types of jobs. (The plant employed up to 295 workers.) These changes included adjustments to equipment, workstations and processes. Almost all were low-cost and low-tech changes made by the plant's mechanics and maintenance staff, such as adjusting workstation heights.

The IWH researchers calculated the financial outcomes of the program over the four-year period from January 2000 to February 2004. This period included three distinct phases:

- Before the program was implemented (72 weeks);
- During implementation (100 weeks); and
- After implementation (44 weeks).

The participatory ergonomics program cost $65,787, including the time and material costs for 700 hours of ergonomics team training, over 700 hours of ergonomics expertise and about 20 hours of production down-time.

As for savings, the researchers calculated the money saved by comparing before-and-after numbers for:

- Health measures, such as workers' comp claims, first aid only incidents, modified duty cases and durations, casual absence days and long-term sickness claims and durations; and
- Productivity measures, such as percentage of shirts manufactured correctly the first time and percentage of target output produced.

The researchers used complex statistical methods to ensure, as much as possible, that any changes identified were due to the program and not other changes at the plant taking place at the same time. Their calculations suggested that although implementation of the participatory ergonomics program didn't impact workers' comp claims, it did:

- Reduce the number of first aid only cases by 65%, saving $7,675;
- Cut the number of modified duty cases in half, saving $58,230;
- Reduce the number of casual absenteeism days by 23%, saving $10,045; and
- Decrease the number of long-term sickness absences by 75% and reduce their length by 93%, saving $266,645.

As for productivity, both the percentage of shirts manufactured right the first time and the percentage of target output produced improved, resulting in about 135 more shirts being produced right the first time each week—a savings of just over $18,000.

Subtracting the participatory ergonomics program costs ($65,787) from the total savings, the company was ahead **$294,825** over a four-year period—a benefit-to-cost ratio of 5.5. That is, for every $1 the plant spent on the program, it saved $5.50.

BOTTOM LINE

The textile plant case study is a compelling real-world illustration of how small, inexpensive changes can have big impacts on health and safety and the company's bottom line. As the study team leader Dr. Emile Tompa said, "[Participatory ergonomics] programs can be effective and cost beneficial from a company perspective," adding that interventions don't have to be expensive to achieve health and productivity benefits. "Small-scale things - i.e. minor workstation modifications - can yield big returns," he said. "For example, it came to light in the shirt manufacturer that some of the textile racks were too high for workers to reach comfortably. So the racks were lowered and needless strain was avoided. Many simple changes like this seemed to add up to make a big difference."

INSIDER SOURCE

"Manufacturer Learns Participatory Ergonomics Worth the Investment," *At Work*, Issue 72, Spring 2013, Institute for Work & Health, Toronto

Ergonomics Related Resources

At **OHSInsider.com**, we have articles, videos, tools and other resources you can use to prevent MSIs in your workplace, including:

- **Hazards: How to Identify & Assess Ergonomics-Related Hazards**
- **5 Keys to Effective Ergonomics Programs**
- **7 Strategies for Making Your Ergonomics Program a Success**
- **Ergonomic Risk Factor Checklist**
- **Office Ergonomics Risk Factor Checklist**
- **Lifting Hazard Assessment Checklist**
- **Checklist for Evaluating Ergonomics Programs**
- **Model Worker MSI Symptom Survey**
- **Form for Investigating Neck, Shoulder and Upper Back Injuries**
- **Form for Investigating Injuries to the Hips, Knees and Feet**
- **Form for Investigating Elbow, Forearm and Hand Injuries**
- **Lifting Safety Toolbox Talk Handout**

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