SAFE Manual Materials Handling in Health Care

Medical Devices Reprocessing (MDR)

Winnipeg Regional Health Authority
Caring for Health

Office régional de la santé de Winnipeg
À l'écoute de notre santé

OBJECTIVE

This SAFE Manual Material Handling (MMH) workshop was developed as part of the SAFE Work Manitoba Musculoskeletal Injury (MSI) Prevention Strategy in collaboration with several Manitoba Industry Based Safety Programs. The objective of the SAFE Manual Material Handling workshop is to provide committee members, supervisors and workers with a better understanding of the risks associated with improper manual material handling. Through theory and practical exercises, participants will learn how to reduce the risk of musculoskeletal injury when performing MMH tasks.

DISCLAIMER

The information in this publication is intended for general use and may not apply to every circumstance. It is not a definitive guide to government regulations and does not release the readers from the responsibilities under the applicable legislation. Winnipeg Regional Health Authority and SAFE Work Manitoba does not guarantee the accuracy of, nor assume liability for, the information accessible here.

MANUAL MATERIALS HANDLING

Manual materials handling refers to activities where workers must lift, lower, grip, hold, carry, push, or pull materials.

Our bodies are made up of hard tissues (bones) and soft tissues (muscles, ligaments, nerves and joints). Bones provide structure for our bodies while the soft tissues connect the bones and allow movement. When we grip, lift, carry, pull or move materials, we put demands on the soft tissues. Muscles, ligaments, intervertebral discs and other connective tissues have limits to how much demand they can tolerate before they start to break down. These limits are referred to as **tissue tolerance**. When the demands of a task exceed the tissue tolerance of the body part being worked, the soft tissue may become injured. This type of soft tissue injury is called a **musculoskeletal injury (MSI).**

MSIs can happen suddenly or develop gradually. A sudden injury, also known as an **acute injury**, occurs when the demands of a task abruptly exceed the tissue tolerance. Signs and symptoms of an acute MSI may appear quickly. A cumulative or **repetitive strain injury** is one that develops gradually from sustained or repetitive tasks that put demands on soft tissue slowly reducing tolerance until the tolerance is eventually exceeded. Signs and symptoms of a cumulative MSI may not appear initially. In fact, these types of MSIs will often develop over days, weeks or months.

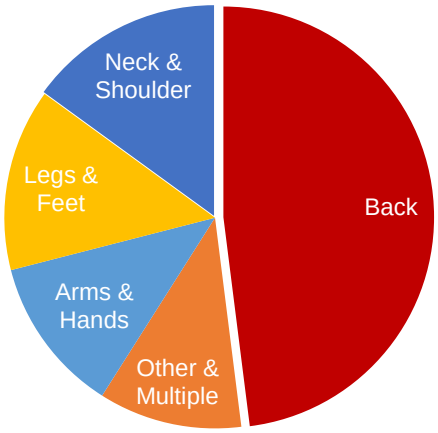
DID YOU KNOW?

The injury processes most commonly associated with Manual Material Handling (MMH) are often caused by handling high loads within a short period of time (trying to lift a heavy box), or by repeatedly handling relatively low loads over a sustained period of time (working an assembly station).

What do the statistics say?

Injuries not only cause pain and suffering to workers, they can be expensive for employers. MSIs are estimated to cause almost 40% of all time loss injuries in Manitoba. Direct costs paid for these injuries was over 43 million dollars in 2017 with over 265,000 lost days by over 5500 workers. Although "manual materials handling is not a common job title, injuries related to MMH tasks contribute significantly to the total number of MSIs in the province.

The back is the most frequently injured area of the body. Estimates are that three of every four Canadians whose job involves MMH suffer back pain due to an injury. In Manitoba, there are almost as many back injuries as the other body areas combined.



DID YOU KNOW?

Employers and workers need to know how to recognize the signs and symptoms of an MSI. The *Manitoba Workplace Safety and Health Act and Regulation* states that if a worker may be exposed to a job that puts them at risk of developing an MSI, they must be informed of the risk, signs and symptoms of the associated MSI.

DID YOU KNOW?

Signs are what we see: swelling, redness, bruising, loss of strength in a body part, and/or decreased movement in a body part.

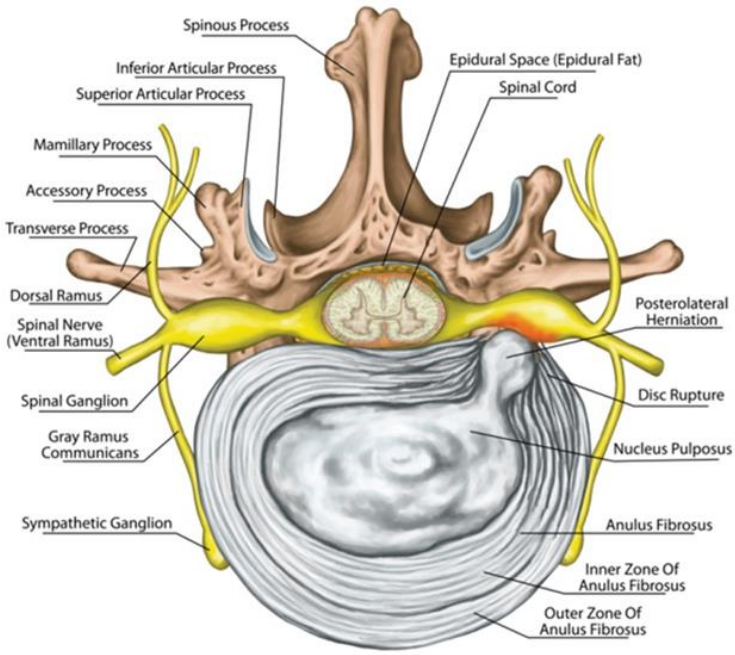
Symptoms are what we feel: aches, pain, burning, numbness, tingling and/or a shooting sensation.

Soft tissues: muscles, ligaments, and discs

Ligaments are like strong, stiff strings that connect bone to bone at joints. These connections are what create stability and strength at joints by allowing bones to move in certain directions but not others (range of motion). If demand exceeds the tolerance of a ligament, the ligament can stretch or tear. This is called a **sprain.**

Muscles are fibrous tissues that shorten and lengthen, causing bones to move. The end of the muscle that connects to the bone is called the **tendon**. **Strains** happen when the demand of a task exceeds the tolerance of a muscle or tendon, causing it to stretch or tear.

Spinal discs or intervertebral discs are flexible rings that sit between the bones (vertebrae) of the spine. The outer wall of the ring is made up of layers of strong fibres while the inside of the ring contains a thick gel-like material. When the back bends or twists the shape of these discs change. With extreme or repeated bending and twisting, the outer wall of the discs can break down allowing some of the jelly-like interior to push through. This is referred to as a bulged or **herniated disc**.

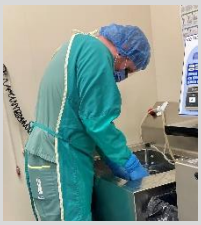


Common MSI hazards

Manitoba workplace safety and health legislation identifies six hazards that most commonly contribute to MSIs. Job tasks involving force, awkward working positions and repetition are the top three causes of MSIs. Other contributing factors are vibration, contact pressure, environmental conditions and work organization. Due to the dynamic nature of MMH tasks, workers may encounter multiple MSI hazards at any given time. Each of these hazards can have a degree of duration or magnitude that can increase the risk of injury. The greater the exposure to a hazard, the greater the risk for injury.

Awkward posture

- refers to the whole body or a joint positioning that performs a task while outside of neutral posture
- increases stress on joints, muscles and/or ligaments.



Forceful Exertion

- refers to an action requiring physical effort that has the potential to overload the soft tissues of the body.

Repetition

- describes actions that use the same parts of the body continually or repeatedly without the chance to rest
- can fatigue soft tissues, causing them to breakdown.

Vibration

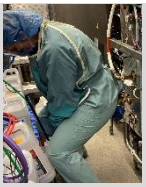
- occurs when forces are transferred to the whole body or body segments from a vibrating tool or heavy machine
- sustained muscle contraction decreases blood circulation.

Mechanical Compression

- refers to hard or sharp surfaces that impact or press into the body during a task
- can disrupt tissues, nerves or blood flow.

Limitation on Motion

- describes the inability to use proper body positions due to the design of the environment.



DID YOU KNOW?

A neutral spine allows the pressure across inter-vertebral discs to be evenly distributed. Each disc is able to tolerate greater loads in this position.

QUICK TIP

After sustained forward bending, stand upright for a couple of minutes before lifting. This helps normalize the pressure in the back discs and will help to reduce the risk of injury.

Body mechanics

Body mechanics or biomechanics refers to how our body moves to perform tasks. **Posture** refers to the way our body is positioned while standing, sitting or performing a task. Working with poor posture and poor lifting techniques can increase the wear and tear on muscles, ligaments, joints and discs, increasing the risk for injury.

Understanding the concepts of safe body mechanics will allow employers and workers to look at job tasks with greater scrutiny and determine better strategies for performing these tasks more safely.

The role of neutral posture

Neutral posture refers to the body's position when the soft tissues around the joints are "balanced" so that they are neither shortened nor lengthened.

A neutral spine maintains the natural "s" curve of the vertebral column so there is equal pressure distributed across the spinal discs. Neutral postures result in the least amount of stress on body structures. In a standing position, a neutral posture is achieved when a person stands tall with their arms down at their sides.

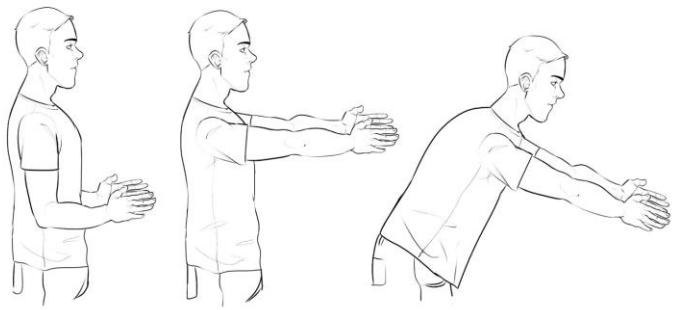
When body parts move out of neutral positions, ligaments and muscles, have to work harder to provide support. Structures may also become crimped or stretched, which increases wear and tear. When the back bends or twists, pressure on the spinal discs increases significantly. Additionally, it can be more difficult to develop force in awkward positions, which increases the demands on the soft tissues and lowers their tolerance to the work. Therefore, whenever possible, tasks should be designed to allow workers to work in positions that are as close as possible to their neutral posture.

One simple way to think of reducing loads on the body is to think of work zones:

Zone 1 (Primary zone)
Standing upright and doing work with elbows bent and by sides such as bench work.

Zone 2 (Secondary zone)
Standing and reaching away with the arms but the back remains straight and upright.

Zone 3 (Tertiary zone)
Standing and reaching with the addition of bending the back.



Zone 1 **Zone 2** **Zone 3**

Loads on the muscles, ligaments and discs increase when reaching or bending away from neutral positions. The risk of overloading the tissues in the back, arms and shoulders increases from zone 1 to 3. When tasks are performed with the arms reached out in front of the body or above the head, the wear and tear on shoulder structures increases. This type of posture also restricts blood flow, as blood must flow through tightened muscles and against gravity.

DID YOU KNOW?

Holding something with the arms outstretched fatigues muscles quickly and can place more than five times the pressure on the spine.

QUICK TIP

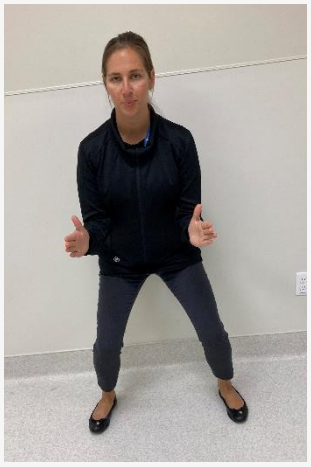
When lifting or carrying, preserve the back curve, avoid extreme twisting and keep the load close.

QUICK TIP

Working with arms down and elbows in (zone 1) reduces injury risk to the shoulders.

DID YOU KNOW?

Don't assume safe lifting happens naturally. Incorporating safe body mechanics into MMH practices is just like training for a new skill in sports. It's essential to learn and practice safe movements until they become a habit.



QUICK TIP

It's important to avoid over-bracing muscles because this can significantly increase blood pressure. For example, contracting the abdominals about ten percent is enough to help support the spine. Practice bracing appropriately while exerting effort during MMH tasks.

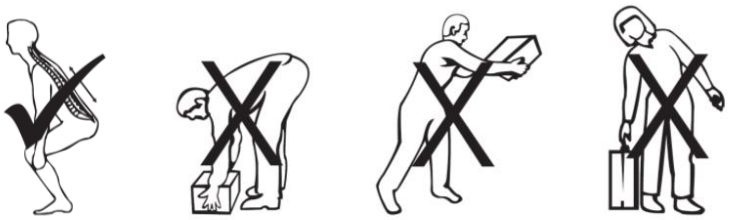
PREVENTION

Protecting the back

The back is safest when the worker is upright and the spine is the neutral position. Practicing safe body mechanics that help to maintain a neutral spine during MMH tasks will help to reduce the risk of a back injury due hazards such as twisting or improper lifting.

Safe body mechanic concepts include:

- preserve the "s" curve of the spine
- knees bent slightly
- feet planted to create a wide base of support
- elbows bent and at the sides
- hold loads close to the body
- wrists straight with thumbs in a "thumbs up" position
- shoulder blades "set" so they are drawn downward toward each other, anchoring the arms to the body
- abdominals contracted slightly to help "brace" the spine
- lift and lower by pushing through the legs
- nose pointed in the same direction as toes
- shift weight with the legs and hips to reduce bending and twisting.



Weight limits

There is no legislation limiting the maximum amount of weight a person can manually lift. However, there are guidelines and best practice standards for safely designing work tasks. One common standard is *ISO Standard 11228* from *NIOSH - Part 1 Lifting*. This standard suggests that in a two-handed lift, the maximum weight of the object

being lifted is 25 kilograms for 95 percent of males and 15 kilograms for 99 percent of females in ideal lifting conditions. Other research suggests all workers above 50 years old should reduce this maximum weight by 25 percent due to the physiological effects of aging (Mital, et al).

Team lifting

If a mechanical assist is not available, team lifting is recommended for *awkward lifts*, *heavy lifts* or *long carries*.

DID YOU KNOW?

The risk of experiencing back pain is three times higher in jobs that require lifting more than 12 kilograms more than 25 times a day.

DID YOU KNOW?

NIOSH gives a lift limit of 23 kilograms or 51 pounds for a two-handed lift in ideal lifting conditions.

QUICK TIP

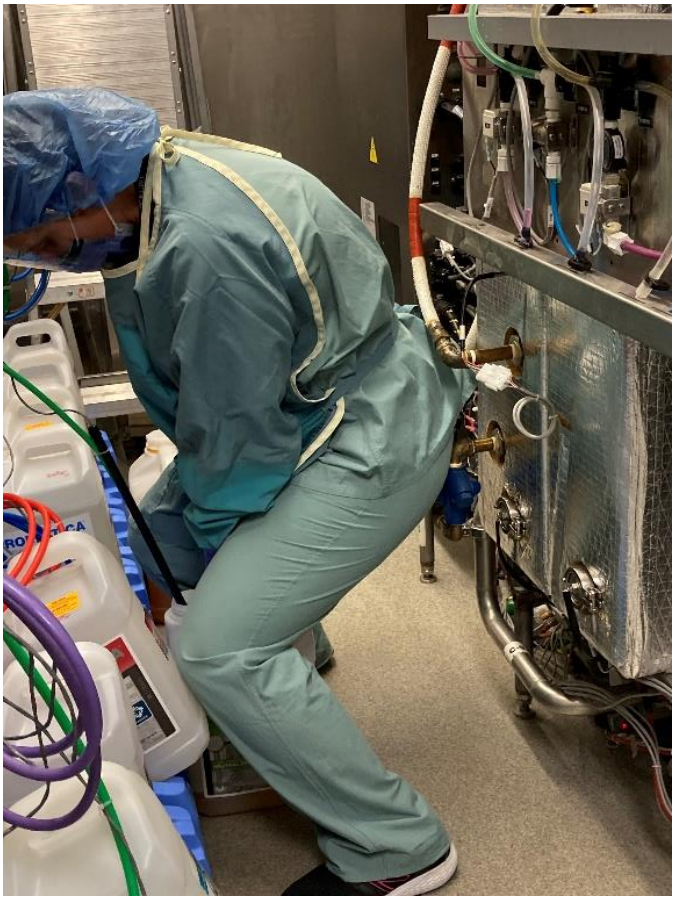
When calculating a team lift, the weight of the object being moved should weigh 25 percent less than the combined maximum load that each lifter can carry individually.

Team lifts can increase the risk for injury if the timing is not coordinated or there is a significant height difference between the workers. Because team lifts require more coordination, do not just combine the maximum individual load of each individual. Instead, when calculating a team lift, the maximum load of each lifter should be reduced to about 25 percent of their maximum load in a single person lift. For example, if two workers were each capable of lifting 25 kilograms individually, they should not attempt to lift 50 kilograms together. A safer team lift would be 37.5 kilograms or 75 percent of the maximum load of each worker.

Tips to help protect the spine

As much as possible, try to:

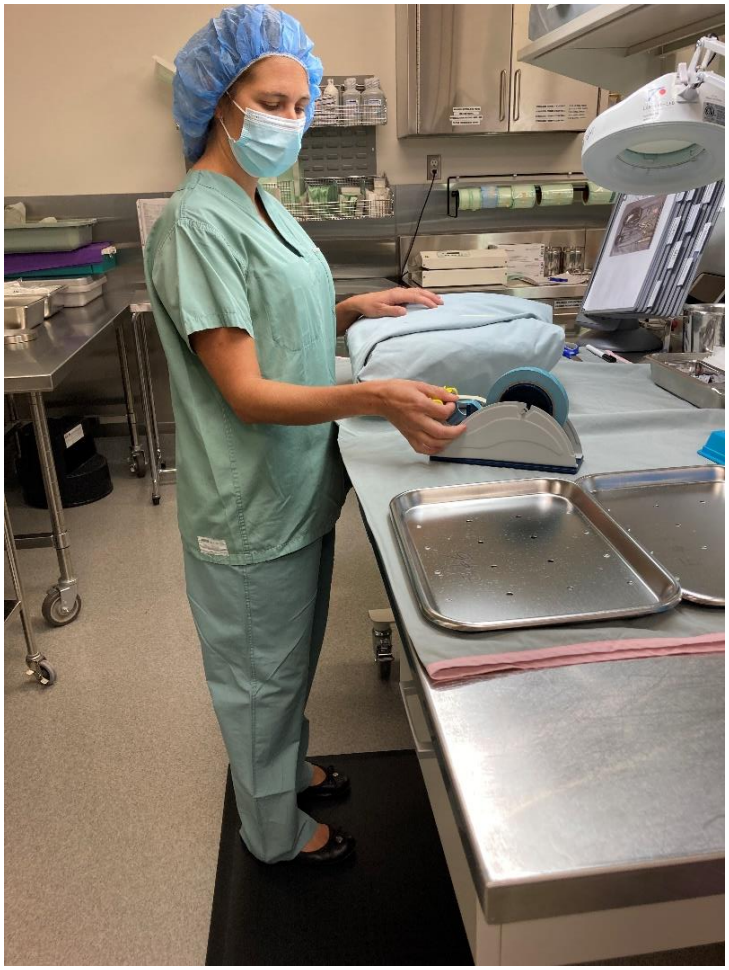
- Lift with a neutral spine, pushing through your legs.
- If you must twist when transferring a load, take small steps, turn slowly and keep materials close to the body.
- Wear protective clothing to reduce fear of dirtying clothes.
- Use techniques that can offset the weight of the load. For example, pivot or slide loads on a stable surface or rest loads on your thigh.
- Use momentum when exerting force rather than always lifting slowly.
- Contract the abdominals to stabilize the spine even during light movements.
- Practice and reinforce safe movement patterns.
- Coordinate team lifting with a leader giving verbal directions when lifting, lowering and turning.
- After prolonged sitting or stooping, spend time standing in a neutral position to help normalize the discs and ligaments.
- Maintain a reasonable level of fitness.



Protecting the shoulders

The shoulder is a ball and socket joints that allows for a large range of motion in the arm and upper torso. This joints allows the arm to reach forward, up, back and across the body. Because the shoulder has a great degree of *mobility,* more muscles and effort are required to provide the joint with *stability*. This means that muscles must work harder to hold the arm up against gravity and provide support and stability while the limb is in motion. Shoulder muscles as well as shoulder blade (girdle) muscles are used for both arm movements and stabilization of the torso.

Working with the arms down, elbows in and shoulder blades “set” can reduce the risk for shoulder injuries. **Setting** the shoulder blades means bringing the shoulders down, drawing the bottom of the shoulder blades toward each other and holding them there. This helps to anchor the arms and stabilize the torso.



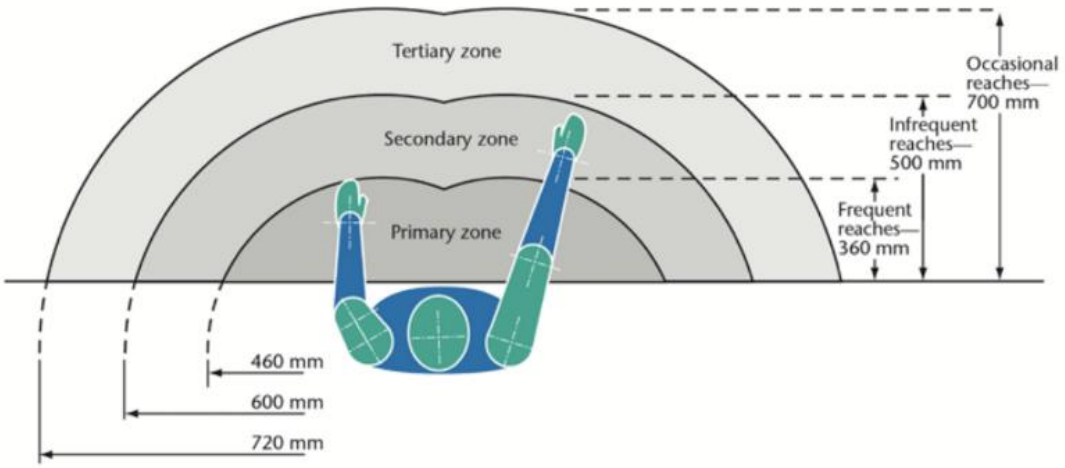
DID YOU KNOW?

The farther the arms reach away from the body the greater the demands on the muscles and other soft tissues in the upper extremities and torso.

DID YOU KNOW?

"Setting" the shoulders means bringing the shoulder down and bringing the bottoms of the shoulder blades toward each other.

When work is performed with the arm down and elbow by the side, the space between the top of the arm (humerus) and the bony joint above it (acromioclavicular joint or AC joint) is maximized. When the arm is lifted up or to the side, the structures in between the bones become compressed, which increases wear and tear. Sustained repetitive work with the arms out or up accelerates fatigue in the shoulder and upper back due to reduced blood flow. The reduced blood flow adds cumulative trauma to the shoulder.



Tips for protecting the shoulders

As much as possible, try to:

- work with arms below shoulder height
- limit far reaches and sustained reaching
- keep elbows close to the body
- hands in the “thumbs up” position will encourage elbows to stay down
- set shoulder blade(s)
- use your hips and legs to assist pushing or pulling rather than using arms alone.

Protecting the arms and hands

Hands are the most actively used body parts. Like the shoulder, the joints in the hand and wrist allow a large range of motion. When combined, the joints in the shoulders, elbows, hands and wrists provide a large variety of working positions.

Many muscles that control the hand start in the hand and attach at the elbow. The hand also has many small muscles oriented in different directions in order to allow dexterity. All of these small muscles can become fatigued with repetitive use and they fatigue more quickly when the hands are used to exert force.

Grip

A **power grip** uses the whole hand to wrap around an object. For a good power grip, the object should be at least 3 cm wide and fit the hand well. Holding a hammer handle is an example of a power grip. A **pinch grip** uses the thumb and finger(s) to pinch small objects such as a pen or small book. Pinch gripping is usually used for more precise tasks. Increased force causes the muscles to fatigue more quickly than power gripping.

The hand is able to generate more force when a grip is performed with the wrist straight. Gripping with a bent wrist reduces the amount of force generated and increase wear and tear on the soft tissues in the hand, wrist and forearm.

DID YOU KNOW?

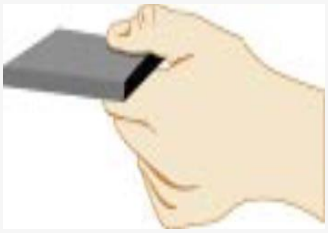
"Tennis elbow" is an injury that can be caused by repetitive and/or forceful work performed with the wrist extended. Pain or injury in the elbow occur when the work exceeds the tissue tolerance of the area.

DID YOU KNOW?

A **power grip** uses the whole hand to wrap around am object

DID YOU KNOW?

A **pinch grip** uses the thumb and finger(s) to hold small objects



Gripping a vibrating tool can also accelerate fatigue because the muscles must remain contracted to control the tool as well as perform the task. Contracted muscles can squeeze blood vessels which decreases blood flow to soft tissues.

Fatigue of forearm and hand can cause in pain in the elbow, where many forearm muscles attach.

Pushing and pulling

Pushing and pulling loads is generally better than lifting and carrying them. The force required for pushing and pulling is not the same as the total weight of the object being moved. For example, a cart loaded with 200 kg may only require 30 kg of force to push or pull. Ergonomic tools (such as Snook tables and push / pull calculators) are available that can determine safe push / pull force limits while also accounting for the frequency, duration, speed and distance, and endurance requirements of the job.

Pushing usually allows for safer body mechanics compared to pulling. However, in some cases, such as when using hand tools, especially in a confined space, pulling may offer more control than pushing. Whether pushing or pulling, it is important to "set" or the shoulder blades, keep the wrists straight, and use body weight to assist in the movement.



DID YOU KNOW?

A push / pull gauge can accurately measure the amount of force exerted when pushing or pulling. An abrupt push or pull will register more force than a smooth steady push or pull.

QUICK TIP

When standing, pushing is safest when the hands are at about elbow height and the forearms are perpendicular to the floor. The best height for the arms when pulling an object is slightly lower, with hands between hip and waist height.

QUICK TIP

If handles are provided, it is ideal if they are round (for power gripping) and vertical so that a worker can grasp them at an ideal height, with the forearms in a neutral position.

Although pushing and pulling requires less force than lifting, moving heavy loads this way still places demands on the soft tissue that may exceed tissue tolerance, especially in the upper portion of the lumbar spine. This demand on soft tissues tolerance is called **shear force**, which is when there are forces pushing one part of the body in one direction, and another part of the body in the other direction. When pushing or pulling a heavy load, the shearing force causes ligaments and discs between each vertebrae to move forward and back, or side to side, increasing the risk for injury. The risks of injury during a push or pull are greatest when initiating movement from a still position.

Tips for protecting the arms and hands

As much as possible, try to:

- work with arms below chest height
- use a power grip rather than a pinch grip
- reduce repetitive and forceful gripping
- keep elbows close to the body
- keep the wrists neutral (straight)
- set shoulder blade(s)
- use handles as improved grip can reduce lifting effort
- do not use your hand as a hammer
- use your hips and legs to assist push or pull rather than using arms alone (weight shift).

Protecting the legs and feet

When performing MMH tasks in standing and walking positions, the feet bear the full weight of the body plus anything that is being lifted and carried. This means that over a day, the feet may experience a cumulative load of thousands of pounds, which could exceed tissue tolerance in the feet and lead to injury.

The foot has a natural arch between the heel and balls of the feet. Stiff tissue called planter fascia runs between the balls of the feet and the heel absorbing much of the force and impact of weight bearing activities. If the demands are too great or too repetitive, this tissue becomes stressed and may begin to break down, leading to pain and injury.

Shoes with adequate cushioning and arch support can reduce the risk of foot injuries and general discomfort, especially if the work requires extended periods of standing or walking on hard surfaces such as concrete.

DID YOU KNOW?

A common soft tissue injury to the foot is Plantar Fasciitis, which occurs when the tissues between the heel and toes becomes inflamed from overuse. People experiencing this condition typically complain about pain under the heel. Left untreated, this condition can become quite painful with standing and walking.

Almost any surface including carpet or wood will have more "give" than concrete. Anti-fatigue matting can also reduce pressure on the joints and feet, which will increase comfort for the feet during prolonged standing. An additional benefit of anti-fatigue matting is improved lower limb circulation from slight postural movements when standing on a less stable surface.

Both shoes / boots and insoles have a life span and do degrade, and become deformed with use. In general, denser materials deform more slowly than low-density materials. Typical low-density foam insoles and other absorbing foam that comes with many shoes or boots start to deform within months of heavy use. It is important to note that although the outside appearance of a shoe or work boot may not appear worn out, the supportive foam may still need to be replaced. Sometimes foot conditions may require custom orthotics to improve support and the mechanics of the foot.

Tips for protecting the legs and feet

As much as possible, try to:

- wear properly fitting, supportive footwear
- use anti fatigue mats or other absorbing material for sustained standing
- take periodic breaks from sustained standing or walking
- do not use the bottom of the foot as a hammer to impact tools such as shovels
- use three point contact when dismounting from equipment
- maintain a reasonable level of fitness.

QUICK TIP

Supportive footwear that provides arch support and cushioning can reduce the risk of developing foot injuries such as plantar fasciitis.

CONTROL MEASURES

The most effective way to reduce the risk of injury from MMH tasks is by eliminating hazards. This could mean using specialized machines instead of people to lift, handle and move loads. However, in many workplaces it may not be feasible to have machines do all the work. If injury risks cannot be eliminated, they must be reduced through controls.

Control measures are steps or methods that can be taken to reduce the risk of injury. Using safe body mechanics when handling materials can reduce the risk for injury, however, even with the best body mechanics, injury may still occur when loading, repetition and other factors exceed what the soft tissues are designed to withstand. Controlling for work demands and environmental factors all need to be considered. The four common control measures used to control MSI hazards are listed below in descending order of effectiveness.

1. Engineering controls
For example: mechanical lifts, roller shelves, vibration dampeners, motorized carts

2. Safe work procedures (SWP)
Explanations/instructions of how to perform a task safely

3. Appropriate work schedules
For example: job rotation, micro-breaks

4. Personal protective equipment (PPE)
For example: knee pads, vibration absorbing gloves

DID YOU KNOW?

Manitoba Workplace Safety and Health Act and Regulations Part 8 states that when an employer becomes aware that a work activity carries a risk of MSIs, employers must assess the risk and implement control measures if the hazard cannot be eliminated.

DID YOU KNOW?

Back belts have not proven to be effective in helping to reduce back injuries.

QUICK TIP

Incorporating controls such as mechanical lifts, roller shelves and other mechanized equipment are highly effective ways to reduce soft tissue stress.

DID YOU KNOW?

Ergonomics is the study of how to improve the "fit" between people and their tasks. Designing jobs using ergonomic principles makes work safer and more productive.

DID YOU KNOW?

Working in heat above 30 degrees reduces lifting capacity by 10 to15 percent.

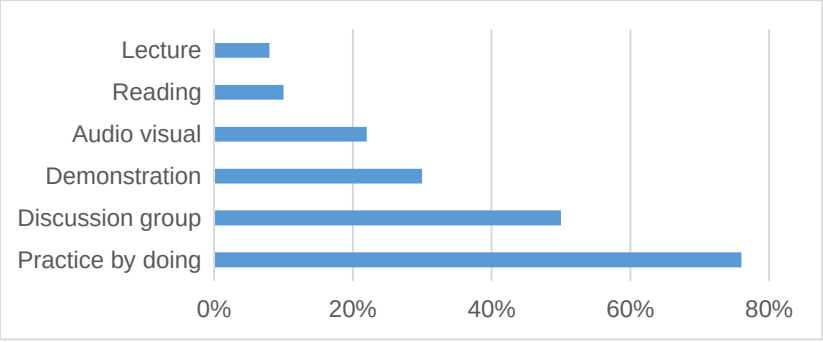
Responsibilities

Employers are required to put measures in place that protect their workers from sustaining injuries. Once an employer identifies and puts controls such as safe lifting techniques in place, they are responsible for ensuring workers are properly trained to follow those controls. Typically, supervisors ensure workers are working safely and following the controls set out by the employer. To keep themselves safe, workers are responsible for following rules and procedures laid out in training. A worker who chooses not to follow policies and procedures is not only at greater risk for injury, but also is at risk for disciplinary action from the employer.

Training

Safe movements need to be demonstrated, practiced and reinforced. Instructions such as "use good lifting technique" do not effectively describe to a worker *how* they should move to reduce their risk for injury. Training must be conducted in a manner that ensures the worker understands the information being conveyed and can apply that information to their work. Hands-on training or training that requires workers to demonstrate their understanding is often most effective to ensure competency.

Top learning techniques



Follow up

Once employers implement control measures, including worker training, it is important that they proactively follow up to ensure that workers follow these controls. The best way to do this is through periodic observations. Unscheduled or unannounced observations of work tasks usually give a more accurate representation of the work rather than a scheduled observation.

Following up ensures that:

- changes to work processes are being followed
- implemented changes are effective
- job tasks are being performed as outlined in safe work procedures
- training is consistent with the safe work procedures.

DID YOU KNOW?

Exercise can help improve tissue strength and endurance. Sedentary behavior can have the opposite effect and reduce tissue tolerance.

DID YOU KNOW?

Stretching can increase joints' range of motion, increase blood flow and help to prevent muscle imbalances.

Exercise and stretching

A healthy, fit individual is more alert and more able to respond effectively to unexpected or demanding events. In addition, a fit person who suffers an injury typically recovers more quickly.

QUICK TIP

Regularly checking on workers is the best way to ensure that they are using required equipment, devices and safe body movements. It is important for workers to know that the goal of these follow ups is to ensure their safety.

Regular exercise can:

- improve muscle strength and endurance
- increase support to joints and spine
- increase bone density
- improve posture
- decrease muscle stiffness
- maintain or improve joint range of motion
- improve mental abilities.

Tissues that have more tolerance will be able to withstand more demands before they begin to breakdown. Research has shown that well-chosen exercise can be a powerful strategy to help prevent injuries. Training involves appropriate use and duration of specific exercises and recovery time to improve tissue strength and endurance. Both too much and too little activity can lead to problems. In the work environment, gradually increasing the duration and frequency of a task is called **work hardening**.

When performing an unfamiliar or demanding task, some muscle discomfort is normal. The "burning" in the muscle during exertion is due to lactic acid build up and indicates muscle fatigue. This burn goes away quickly after the activity ceases and the waste product (lactic acid) is metabolized. The soreness that often comes after an activity will normally last about 2-3 days as microscopic muscle fibres are stimulated to rebuild due to new demands. This recovery process is normal and necessary and helps to improve tissue tolerance. Too little activity can reduce tissue tolerance.

QUICK TIP

The best time to stretch is soon after a prolonged activity or to break up a prolonged activity.

QUICK TIP

Well-chosen exercises for the core, hips and shoulder blade regions can help prevent occupational back troubles.

Stretching

Stretching should be used to target muscles that have been held stationary or shortened (flexed) repetitively during a task. Stretching that incorporates movement (active stretching) can increase blood flow to the muscles. Stretching can also increase joint range of motion and can help to prevent muscle imbalances, which reduces the risk for injury.

Professional athletes carefully train for improved performance and reduced injury risks. Material handlers can use the same concept to learn and practice safe movements and become more efficient at their tasks while reducing their risk for injury. The back and shoulders are particularly at risk of MSIs caused by improper MMH technique. Core stabilization and scapular stabilization exercises can be worked into an exercise program to reduce injury risk.

Aging

We are typically at maximum physical capacity between 20 and 30 years old. Between 30 and 50 years old, changes in muscle power and strength are minimal. Pronounced changes to physical capacity begin after 50 years old with approximately 15 percent loss of strength per decade. Age-related losses can be delayed with exercise.

Water

When you are dehydrated, brain function decreases, blood pressure and heart rate can rise. This can lead to mental and physical fatigue, which can increase the risk of mistakes and poor body mechanics. Individuals' water needs vary depending on age, sex and activity level. In the workplace, provide fresh, cool water at worksites and encourage consumption. Physical exertion and working in hot environments will accelerate fluid loss. Be aware that many commercial beverages such as juices, flavored waters and soda are loaded with sugar and therefore are not a wise substitute for water. Educate employees on the importance of healthy hydration.

Nutritious foods

Sometimes it can be easy or necessary to eat the food that is easily accessible at work. However, eating highly processed, packaged foods will tend to make a person feel sluggish. Nutrient dense, whole food meal and snack options will help fuel performance while also meeting nutritional needs. Consider stocking snack machines with nuts, dried fruit and other healthy options rather than sugary drinks and candy. If your workplace has a cafeteria, or you pack a lunch, choose healthy meal options.

QUICK TIP

Drinking a healthy amount of water and eating healthy foods will improve mental and physical performance.

ADDITIONAL RESOURCES

Musculoskeletal Disorders Prevention Manual - Canadian Centre for Occupational Health and Safety

A Guide to Manual Materials Handling second edition - A. Mital, A.S. Nicholson, M.M. Ayoub

Ergonomics guidelines for Manual Materials Handling 2nd edition - Worksafe New Brunswick

Practical Demonstrations of Ergonomic Principles - Department of Health and Human Sciences

Ergonomic Guidelines for Manual Materials Handling - California Department of Industrial Relations

Bulletin 246 Safe Lifting - Safe Work Manitoba