

WORK RELATED MUSCULOSKELETAL DISORDERS (WMSDs)



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WHAT ARE WORK RELATED MUSCULOSKELETAL DISORDERS (WMSDs)? WHEN A MUSCLE, TENDON, NERVE OR JOINT IS STRESSED AND TRAUMATIZED ON A REPEATED BASIS FOR DAYS, MONTHS OR YEARS, THOSE BODY TISSUES EVENTUALLY BECOME DAMAGED. This leads to a work related musculoskeletal disorder. Work related musculoskeletal disorders (WMSDs) are sometimes called repetitive strain injuries (RSIs), cumulative trauma disorders and overuse injuries.

When a WMSD develops, a worker experiences:

1. Swelling, as some tissues become irritated
2. Pain
3. Stiffness and loss of range of motion of surrounding joints
4. Inability to work and function at home

Besides the most common upper extremity disorders, WMSDs may also affect the low back, knees, ankles and feet.

HOW DO YOU TREAT WMSDs?

Ergonomics should be a priority in the workplace, so WMSDs are prevented instead of treated.

If you think you have signs and symptoms of a repetitive strain injury, see your doctor. Make sure your doctor has a description of your job and understands how your job affects your body.

Treatment may involve a combination of approaches such as:

- 👤 Job modifications
- 👤 Services of health professionals, such as physiotherapists or massage therapists
- 👤 Exercise program
- 👤 Use of medication for pain relief
- 👤 Application of heat or cold

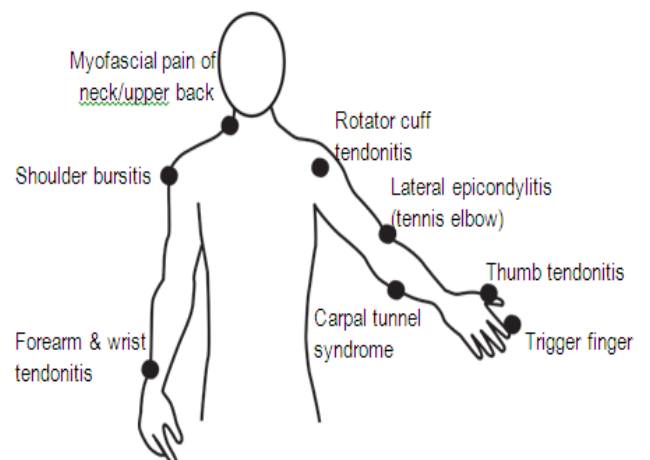


Table 1: Examples of common WMSDs

Disease/Condition	Tissue Affected	Symptoms	Possible Causes
Carpal tunnel syndrome occurs on the palm side of the wrist	Median nerve Blood vessels Tendons	Numbness/tingling affecting the thumb, index, middle, and half of the ring fingers, especially at night Weak grip	Repetitive flexion of wrist
Myofascial pain in the neck and upper back	Muscles Tendon Sometimes nerves	Heavy feeling, aching pain Stiffness in upper back & neck Poor sleep	Working overhead Arms in extended position
Shoulder bursitis	Bursa (lining of shoulder joint)	Shoulder pain Stiffness Problems putting on sweater	Repeated shoulder movements
Rotator cuff tendonitis	Rotator cuff tendon located in front of shoulder	Shoulder pain Stiffness Problem reaching behind on upper back	Repeated shoulder movement especially with twisting Overhead throwing
Tennis elbow (lateral epicondylitis)	Elbow tendon on thumb side or arm	Elbow pain Problem wringing towel & carrying groceries	Repeated twisting arm movement
Thumb tendonitis or DeQuervain's tendonitis	Tendon of thumb (from the nail to the wrist)	Pain in thumb Problem with pinching & gripping	Repeated pressing, pulling with thumb
Trigger fingers or tenosynovitis of fingers	Tendons, synovium (lining of tendons)	Fingers "lock" and release by pushing on them	Repeated use of hand tools or gripping motions
Wrist/forearm tendonitis	Tendons, muscle	Pain, swelling Weak grip	Repetitive movements of wrists & forearms

Your treatment program should be planned by you and your doctor.

WHAT IS ERGONOMICS?

Ergonomics is defined as fitting the task, tools, materials and equipment in the workplace to the worker. The goal of ergonomics is to reduce the risk of workers developing repetitive strain injuries.

Workers are at risk of injury if they use repetitive, sustained, forceful, or awkward exertions. Other risk factors are temperature, vibration, gloves, and contact pressure. If two or more risk factors are present, there is a greater risk of injury. For example, performing a forceful lift once places a worker at less risk of injury than performing a forceful lift several times per hour. Tables on the following pages identify several ergonomic risk factors and suggest ways to reduce the risk of injury.

The risk of work related musculoskeletal disorders can be reduced by applying ergonomics principles. Workstation design, equipment and tools, work environment, and work organization are work components that affect ergonomic risk factors. An ergonomic design can include such factors as adjustable seating, angled hand tools, or a work pace that can change to suit the worker.

USING ERGONOMICS IN THE WORKPLACE:

Does your workplace have any risk factors for repetitive strain injury?

Use the following tables to help you identify some risk factors that may be present in your workplace. Each table also identifies some general recommendations that may suite you and your workstation. Investigate other ways to reduce ergonomic risk factors at your job.

Figure 2: To fit the job to the worker, you must consider work station design, equipment and tools, work organization and work environment.

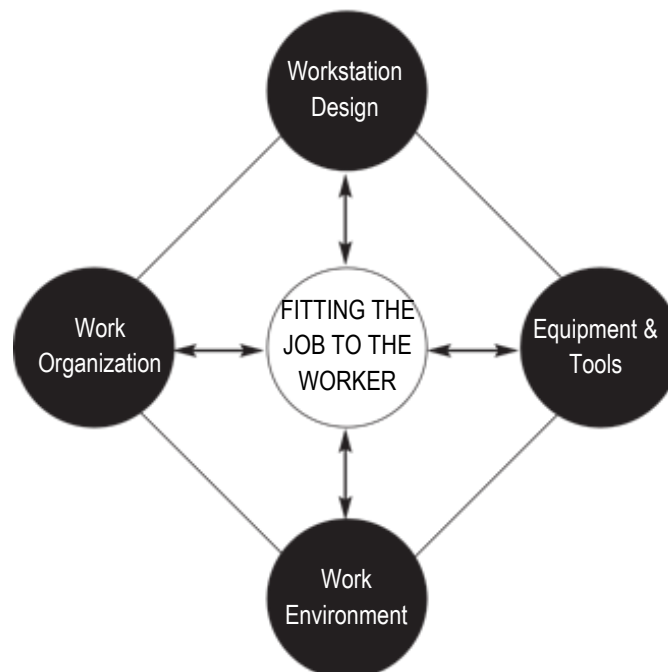


Table 2: Workstation Design

Ergonomic Risk Factors	Possible Recommendations
Is your chair uncomfortable?	If you are required to sit, your chair should be adjustable for height and angle and support your back. Change positions frequently.
Do you have to twist or bend?	Move equipment, parts, and papers closer to you. Store frequently used equipment and parts slightly above waist height.
Is lifting done above shoulder height?	Work should be performed below shoulder height. Lower the work piece or use a platform to reduce working above shoulder height (figure 3).
Are your elbows raised while you work?	Work heights should let you work with your elbows close to your body; for example, light assembly work or typing should be performed at elbow height.
Is your worktable adjustable?	If different people share a workstation, some height adjustments is necessary to suit workers of different heights.
Do sharp edges put pressure on the skin?	Round or pad edges of guards, containers or worktables.
Do workers have pain or discomfort while doing their work?	Express your concerns to the Joint Health & Safety Committee. Contact the Occupation Health Clinics for Ontario Workers for more information.

Figure 3: working with the arms above shoulder height increased the risk of developing shoulder injuries. Awkward postures can be reduced by raising the worker on a platform and/or lowering the workpiece.



Ergonomic Risk Factors	Possible Recommendations
Are the tools heavy?	Investigate redesigned tools that are lighter. Tool weight can be reduced with overhead tool balancers or supports.
Do tools/equipment vibrate?	Investigate redesigned tools with less vibration. Refer to the OHCOW handout entitled “Hand-Arm Vibration Syndrome”.
Can anti-vibration gloves reduce vibration exposure?	Choose anti-vibration gloves that have been passed technical testing.
Are awkward postures required when using tools/equipment?	Tools can be purchased with bent handles designed to reduce awkward postures.
Can the force required to use the tool/equipment be reduced?	Select the right tool size for your hand. A textured tool is easier to grip than a smooth tool.
Does the tool put pressure on the palm of the hand?	Tools should have handles that do not end in the palm of the hand.

Figure 4: By supporting the weight of the tool and reducing overhead work, the risk of shoulder injury is reduced.

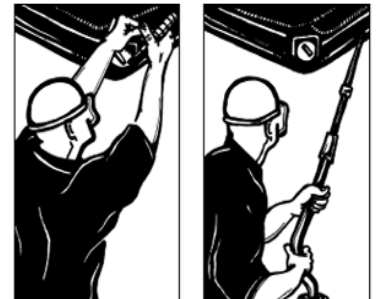


Table 4: Work Organization

Ergonomic Risk Factors	Possible Recommendations
Do you do the same tasks over and over?	Consider job rotation between jobs involving different movements and muscle groups. Consider adding a variety of tasks requiring different movements to a repetitive job (job enlargement).
Is the work pace too fast?	Reduce the pace of work. Take breaks that are long enough and frequent enough to allow recovery of overstressed parts.
Is the training period adequate to educate workers about safe performance of the task?	Workers should be trained about musculoskeletal injury risk factors
Is there a work hardening program?	Persons returning from absence, work-related injury, or illness require an adjustment period.

Ergonomic Risk Factors

Possible Recommendations

Are workers included in job assessments and design or redesigns?

From an Ergonomic Committee made up of worker and employer representatives as a starting point for reducing musculoskeletal injuries.

Table 5: Work Environment

Ergonomic Risk Factors

Possible Recommendations

Does poor lighting lead to awkward working postures?

Light levels that are too dim or too bright can lead to awkward postures. If your light levels are too bright or too dim, tell your Joint Health & Safety Committee.

Is it too cold?

Dress in several layers of clothing. Add and remove clothing as required.

Is it too hot?

Extra breaks may be required during times of extreme heat. Water should be readily available.

Is your work or workplace stressful?

Workplace stressors like lack of control, feeling overworked, or low levels of job satisfaction can increase the risk of developing musculoskeletal injuries. Clearly defined roles and responsibilities and good communication are starting points for reducing stress at work

How is the air quality?

Air quality and ergonomic problems can both lead to health effects like headaches, fatigue, and muscle soreness.

Is the workplace noisy?

Investigate noise reduction methods.

PUTTING ERGONOMIC RECOMMENDATIONS IN PLACE

If you have answered “yes” to the questions in Tables 2 to 5, there may be ergonomic problems in your job design. Nobody knows your job and its problems better than you, the worker who performs the job daily. If you have concerns about your workstation or ideas for improving the workstation design, tools, work organization, or work environment, tell your supervisor and Joint Health & Safety Committee Representatives.

Ergonomists, occupational hygienists, nurses and doctors at the Occupational Health Clinics for Ontario Workers are available to help your Joint Health & Safety Committee solve ergonomic problems.

USEFUL READINGS

1. Canadian Standards Association (CSA) (2000). *Office Ergonomics – A National Standard of Canada*. CSA: Rexdale.
2. Eastman Kodak Company (1983). *Ergonomic Design for People at Work*. Volume 1). Van Nostrand Reinhold: New York.
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4. Konz., S. (1995). *Work Design*. Fourth Edition. Publishing Horizons, Inc.: Scottsdale.
5. London Occupational Safety and Health Information Services (LOSH) (1994). *When Aches Become Injuries*. (519)433-4156
6. Ministry of Labour (1992). *Occupational Health and Safety Act*. Ministry of Labour: Toronto.
7. Occupational Health Clinics for Ontario Workers (OHCOW) (2003). *Office Ergonomics Workbook*.



If you need further assistance, call the Occupational Health Clinic for Ontario Workers Inc. closest to you:

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