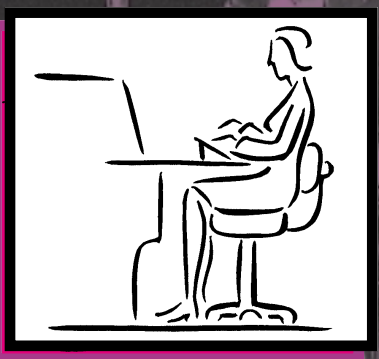
Repetitive Strain Injuries



Prevention

WSIB ONTARIO Workplace Safety & Insurance Board

CSPAAT Commission de la sécurité professionnelle et de l'assurance contre les accidents du travail

What's in a Name?

Repetitive Strain Injuries (RSIs) can be called many things such as:

- Repetitive Motion Injuries (RMIs)
- Carpal tunnel syndrome
- Bursitis
- Tendonitis
- Trigger finger
- Cumulative Trauma Disorders (CTDs)

Work-related Repetitive Strain Injuries (RSIs) are among the most common ways workers are injured. These injuries happen because of the constant use and wear and tear on the same parts of the body.

Understanding how the injuries happen helps to know what steps to take to prevent them.

What are the risk factors for RSIs?

RSIs are caused by the following major risk factors – especially when combinations of them occur:

1. Awkward or Static Posture

An awkward body posture is any change of all or part of the body from the neutral position.

Examples of awkward body positions are:

- bending
- twisting
- stooping
- reaching above shoulder level
- reaching behind the body
- bending the wrist forward, backward or side to side.

When using a neutral body position, you work with maximum efficiency and use the least amount of energy.

Static posture is any posture, neutral or awkward, that is held for an extended period of time. The same parts of the body must be used continuously and become tired and overused. Examples are constant standing at a cashier checkout, or twisting your neck to see a poorly placed computer monitor.

Whether awkward or static, when body positions are near the extremes of their range of movement, stretching and compression of tendons and nerves occur. When muscles stay contracted for too long, blood flow can be affected. The longer or more often a static or awkward body position is used the more likely the person will be injured.

2. Repetition

Repetitive movements are especially hazardous when they involve the same joints and muscle groups over and over and when we do the same motion too often, too quickly and for too long. This type of work is very tiring because the worker cannot fully recover in the short periods of time between movements. Eventually, it takes more effort to perform the same repetitive movements. When the work activity continues in spite of the fatigue, injuries can occur.

No one really knows at what point a repetitive job will cause an injury. However, as a general rule, jobs or tasks are considered repetitive when:

- A task has a cycle time of less than 30 seconds. For example, packing a box of jars every 20 seconds
- A task that requires repeating the activity more than 50% of the time. For example, a computer operator who enters data more than 50% of the day.

3. Force

Force is the amount of effort our bodies must do to lift objects, to use tools, or to move. All work requires us to exert some force. If the force required to perform the work overloads the muscles, joints, tendons and other soft tissues, it is considered to be excessive force.

Excessive forces can be created by:

- Long reaches: working with outstretched arms or handling objects away from the body.
- The weight of the object and how it is handled – any amount of weight can create excessive force if it is difficult or awkward to handle.
- Awkward or improper hand grips. Using a pinch position requires more force than in a hook position.
- High contact forces: High amounts of force applied over a small area creating pressure points. Red marks and dents in the skin are signs of excessive contact

force. They can be caused by wrist coming into contact with sharp edges of a desk when keying, or carrying a heavy bag over one shoulder.

Just like repetition, using a lot of force is a problem because it does not allow time for the body to fully recover between movements.

4. Vibration

There are two types of vibration that can contribute to an RSI. They are:

- Hand/Arm Vibration can affect those who operate power driven hand tools such as jack hammers, air guns and chain saws.
- Total Body Vibration affects the whole body. It is common among heavy equipment operators, such as long haul truck drivers. This type of vibration often contributes to low back pain.

Vibration is a problem because more force than normally needed may have to be used to control a vibrating hand tool or hold onto a vibrating steering wheel.

Possible Solutions

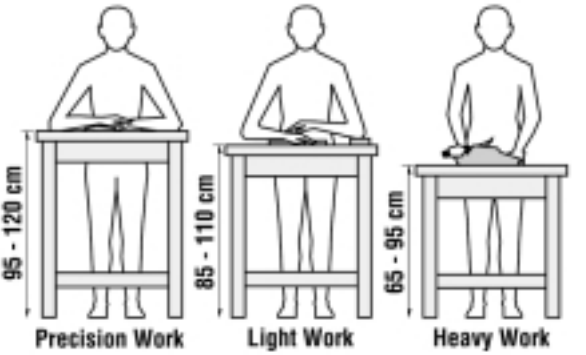
Eliminating the risk factors for RSIs involves changes in workplace, tools and work practices.

Workplace

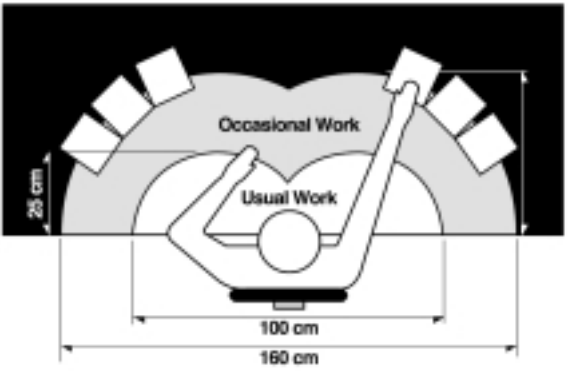
Proper design of the workstation promotes good body postures and helps minimize the forces required to do the job. It is important that the workplace design is appropriate for the job and fits the worker's body size and shape.

The work may require visual, manual or foot tasks, or a combination of these. Each of these types of tasks requires different modifications in workstation design. Ideally, the workstation should be fully adjustable providing the worker with options to use different body positions such as standing, sitting or sit-stand.

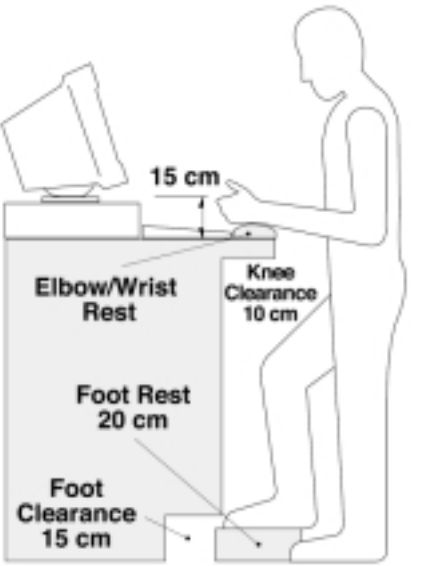
Standing at Work



- Adjust the height of the work using elbow height and type of work they are doing as a guide. Generally the work surface should be around elbow height. If more precise work is being done, the work surface should be a little higher than elbow height. If work is heavier and requires strength then the work surface should be a little lower than elbow height so more force can be used.
- Place the things used most often close by and things used less often further away. Do not overreach – move body closer and then reach for object.
- Place work right in front so there is no need to twist to see or reach.



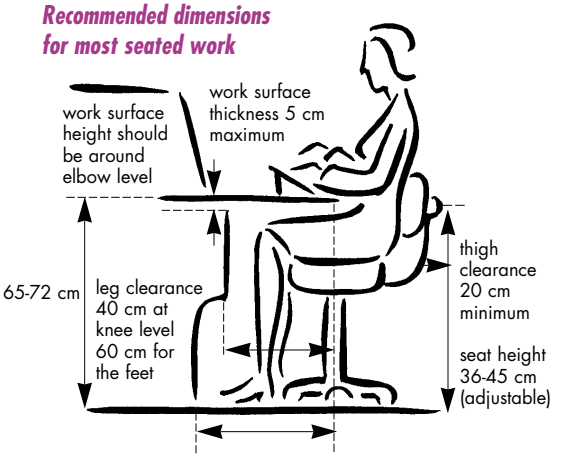
- Use a foot rail or footrest to place one foot on periodically. This helps shift some of the body weight and rest the muscles.
- Wear shoes that fit well and are appropriate for the workplace.
- Use an anti-fatigue mat – this is a floor mat made of a special rubber material that helps provide some, but not too much, cushioning on hard floors.
- Tell the supervisor about floors that are in poor condition or slippery.

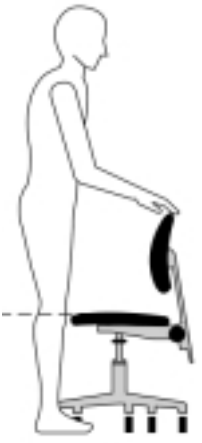


Sitting at Work

The chair should always be considered as an integral part of the workstation. The chair's design should match the tasks. The desk, computer, workbench or panel in a control room all affect the worker's body position. The work station and the chair make it possible to work in a balanced body position. Because everyone is different, adjustable chairs are recommended. The chair must have controls to allow for easy adjustment of the seat height and tilt. The back rest height and angle should also be adjustable.

Recommended dimensions for most seated work





1. Stand in front of the chair. Adjust the height so the highest point of the seat is just below the knee cap

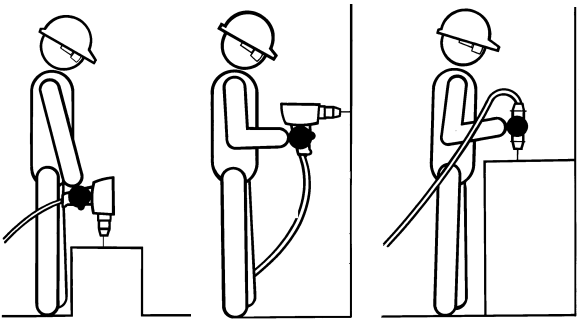
2. Sit on the chair and keep your feet flat on the floor. Check that the clearance between the front edge of the seat and the lower part of the legs fits a clenched fist

3. Adjust the back rest forwards and backwards as well as up and down so that it fits the hollow in your lower back

4. Sit upright with your arms hanging by your sides. Bend your elbows at about a right angle and adjust the arm rests height until they barely touch the undersides of the elbows. Remove the armrest from the chair if their level cannot be achieved or if armrests, in their lowest adjustment elevate your elbows even slightly

Tools and Equipment Design

Proper design and selection of tools and equipment significantly decreases the RSI risk factors. They allow the worker to use a good body position that maximizes muscle strength and minimizes the RSI risk factors.



Work Practices

Training should be provided for workers in how to adjust their workstations and work safely. Training should also emphasize the importance of varying body positions, stretching and, rest periods and how to use microbreaks to their best advantage.

The Team Approach

Proper job design helps eliminate the risk factors for RSI. Preventive measures require the involvement of workers, their representatives and management to improve health and safety in the workplace.

WSIB Offices

For more information contact the WSIB at 1-800-663-6639 or your account manager in your local office.

Guelph
Telephone: (519) 826-4650
Toll-free: 1-888-259-4228

Hamilton
Telephone: (905) 523-1800
Toll-free: 1-800-263-8488

Kingston
Telephone: (613) 544-9682
Toll-free: 1-800-267-9461

Kitchener
Telephone: (519) 576-4130
Toll-free: 1-800-265-2570

London
Telephone: (519) 663-2331
Toll-free: 1-800-265-4752

North Bay
Telephone: (705) 472-5200
Toll-free: 1-800-461-9521

Ottawa
Telephone: (613) 237-8840
Toll-free: 1-800-267-9601

Sault Ste. Marie
Telephone: (705) 942-3002
Toll-free: 1-800-461-6005

St. Catharines
Telephone: (905) 687-8622
Toll-free: 1-800-263-2484

Sudbury
Telephone: (705) 675-9301
Toll-free: 1-800-461-3350

Thunder Bay
Telephone: (807) 343-1710
Toll-free: 1-800-465-3934

Timmins
Telephone: (705) 267-6427
Toll-free: 1-800-461-9856

Toronto
Telephone: (416) 344-1004
Toll-free: 1-800-387-0080

Windsor
Telephone: (519) 966-0660
Toll-free: 1-800-265-7380

For TTY (telephone service for the deaf), please call
1-800-387-0500

For more information on other prevention products,
or your health and safety association,
please call the WSIB Prevention Hotline at
416-344-1016 or 1-800-663-6639

Pour obtenir ces renseignements en français, composez le
1-800-465-5606.

Sections reprinted with the permission of the
Canadian Centre for Occupational Health and Saftety (CCOHS),
250 Main Street East, Hamilton, Ontario L8N 1H6;
Tel: (905) 572-4400; Toll free 1-800-263-8466;
Fax: (905) 572-4500; e-mail: Inquiries@ccohs.ca

WSIB ONTARIO CSPAAT
Workplace Safety & Insurance Board
Commission de la sécurité professionnelle et de l'assurance contre les accidents du travail

3104A (08/01)