

## Repetitive Strain Injury: Could You Please Repeat That ... Again and Again and Again?

This OSACH Fast Fact is intended to assist workers and managers in minimizing the risk of repetitive strain injury.

Repetitive work can take its toll on a worker's body by causing what is commonly referred to as a repetitive strain injury. The evolution of modern technology has been a double edged sword. On one hand, it has made life "easier" but on the other it has been blamed for an increase in repetitive actions and consequent repetitive strain injuries in workers. These injuries have become common in many departments within health care facilities as technology advances. For example, food tray preparation lines have become faster, allowing more trays to be prepared but necessitating more repetitive movements in a given amount of time. Laboratories have introduced a wide spectrum of equipment that has sped up diagnostic procedures, allowing more tests to be run but again requiring more repetitive movements. Computer users can now execute between 8,000 to 15,000 keystrokes per hour, with a commensurate increase in wear and tear on muscles, nerves, and ligaments in the hands and arms.

In order to control repetitive strain injuries, we need to understand how these injuries occur. Repetition alone poses a risk, but this can be aggravated by body position and force exerted during the repetitive movement. For example, a repetitive task requiring that the wrist be held in a bent position while the hand presses forcefully on an item would be a higher-risk task than one requiring a straight wrist and less force, although the latter is still not without risk.

### Repetition

A job is considered to be repetitive when the duration of a task or group of tasks (a cycle) is less than 30 seconds. When cycles are longer than 30 seconds the task is considered repetitive when the worker is performing the same motion for more than 50% of the cycle.

### Posture

The posture of the joint that is being worked repetitively will contribute to the degree of risk for a repetitive strain injury. There are two factors concerning posture that should be considered.

The first is whether the joint is moving (dynamic) or fixed (static) during the action. Dynamic actions are less hazardous than static actions because a static joint posture increases risk due to decreased blood circulation and nutrients to the muscle tissue.

The other factor concerning posture is the part of the joint's range of motion in which the repetitive movement occurs; if this is at the extremes of a joint's range of motion, then the risk is greater than for movement at the mid-range. This is particularly true for the wrist.

### Force

Work that requires prolonged or repeated exertion that is one-third or more of the worker's maximum strength may put the worker at increased risk of repetitive strain injury. The force generated by a worker's muscle groups during exertion is difficult to measure since it requires complex biometric instrumentation. However, a scale of 1-10 can be used to subjectively quantify the worker's degree of effort, where 1 indicates very, very easy and 10 very, very difficult.

## How can the risks of repetitive work be controlled?

1. Education - This is one of the most important aspects of prevention. It is essential that employees and supervisors are educated about the causes, early signs, symptoms, and prevention of repetitive strain injuries. If these injuries are acted upon promptly, the damage can be reversed. The longer they are ignored, the more difficult is the rehabilitation. Workers who suspect an RSI should report it to their supervisor and seek early treatment.
2. Job rotation - This is an effective way to distribute the exposure across a wider population of workers. Job rotation or enlargement has also proven to be a positive motivating factor for workers who would otherwise be entrenched in a tediously monotonous job. Ideally, the rotation is arranged so that different primary muscle groups are worked from one job to the next.
3. Task rotation - If a worker cannot rotate to different jobs, task variety within their own job is important.
4. Frequent rest breaks - The Health Care and Residential Facilities Regulation (sec. 24) actually stipulates that workers required to use a computer continuously must have a five minute break from this work every hour, either a rest period away from the work or a change in the type of work being done.
5. Stretching exercises - When performed two to three times daily, these can help to prevent repetitive strain injuries. Stretches of the fingers, wrist, forearm, and elbow are most effective.
6. Modifications to the work site - Reconfiguration of work stations to improve ergonomics or to add adjustability enables workers to position their joints in less hazardous positions.
7. Assistive devices - Power tools, ergonomically designed chairs and tools, lifting devices, etc. should be provided where possible.

## Summary

Work that involves repeated movements can be very tiring because the worker cannot fully recover in the short periods of time between movements. Eventually, due to fatigue, it takes more effort to perform the same repetitive movements. When the work activity continues in spite of this fatigue, injuries can occur.

## References

Cassvan, A., Weiss, L.D., Weiss, J.M., Rook, J.L., and Mullens, S.U., Cumulative Trauma Disorders (Newton, MA: Butterworth-Heinemann, 1997), pp.59-62, 71 - 73.

Hagber, M. et. al., Work Related Musculoskeletal Disorders: A Reference Book for Prevention (London: Taylor & Francis Ltd., 1995), pp.158.

**Workers' Compensation Board of BC Health and Safety Centre:** [www.healthandsafetycentre.org/](http://www.healthandsafetycentre.org/)

**Canadian Centre for Occupational Health and Safety - OSH Answers - Ergonomics page:**  
[www.ccohs.ca/oshanswers/ergonomics/](http://www.ccohs.ca/oshanswers/ergonomics/)

**NIOSH Ergonomics and Musculoskeletal Disorders Page; Other Documents, Resources, and Links:**  
[www.cdc.gov/niosh/ergopage.html#odr](http://www.cdc.gov/niosh/ergopage.html#odr)



*The information contained in Fast Facts is correct at the time of publication.*

The Fast Facts series is copyrighted by the Ontario Safety Association for Community Healthcare (OSACH). Individual Fast Facts can be copied freely provided appropriate credit is given to OSACH.

For more information, please contact:

**Ontario Safety Association for Community & Healthcare**

4950 Yonge Street, Suite 1505, Toronto, Ontario Canada M2N 6K1

Tel. (416) 250-7444 • Toll Free 1-877-250-7444 • Fax (416) 250-7484 • Web Site: [www.osach.ca](http://www.osach.ca)

FRSIE143 • Rev. 03/06 • ISBN 1-894878-01-9