

Repetitive Motion Injury and Control

Hand and wrist injuries which can be caused or aggravated by repetitive motion tasks in industrial environments have been prevalent for many years. In light of the rising compensation and medical costs associated with these often painful and debilitating injuries, increased attention is being given to their control.

Several injuries and diseases associated with repetitive motion include various types of tendon disorders such as simple Tendonitis, an inflammation of tendons, and Tenosynovitis, in which the inflammation extends into the tendon sheath. The most debilitating injury is Carpal-Tunnel Syndrome. This is a disease caused by injury to the median and/or the ulnar nerve which runs through the wrist into the hand. Carpal-Tunnel Syndrome may require surgery to correct, making this disease more serious than those associated with tendon inflammation.

Tendonitis, Tenosynovitis and Carpal-Tunnel Syndrome are caused by repetitive movements with extreme wrist positions while exerting high levels of force with the hand/arm/wrist.

The extreme wrist positions are extension, flexion, ulnar deviation and radial deviation.

When the wrist is in these positions, flexing or moving repetitively while exerting force results in trauma to the nerve and tendons. Continuation of this condition over a period of time will result in injury to the fingers, hand, and wrist. The “pinch” position of the fingers has also been found to promote these types of injuries.

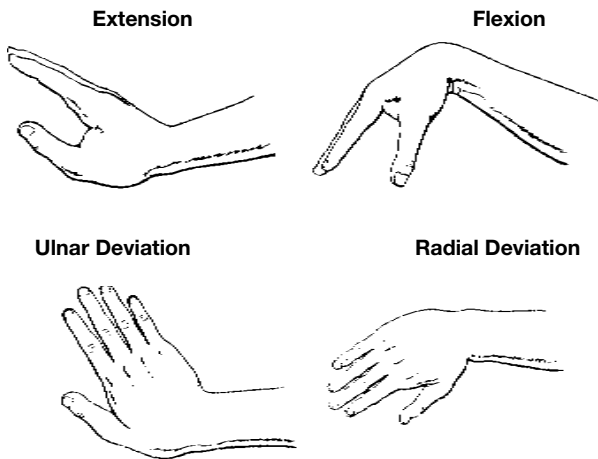
Causative factors associated with repetitive motion injury and diseases include the following:

- Performing repetitive manual operations with extreme wrist/hand positions.
- Performing manual repetitive tasks while exerting high levels of force (i.e. pounding with hand tools or with the heel of the hand).
- Performing manual tasks which cause high levels of force to be centered on the palm of the hand. (Using conventionally designed hand tools for tasks that require high levels of torque or force).
- Performing manual operations which involve the use of the “pinch” position.
- Using vibrating hand tools which produce low frequency vibration (10 - 60 hertz).
- Female workers who have a history of gynecological surgery.

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- Pre-existing injuries or conditions that are aggravated by repetitive motion tasks.
- Use of tight or overly-constrictive work gloves.
- Repetitive motion injury and disease reduction/control methods include the following:
 - Completing in-depth accident analyses to identify the actual injury-producing repetitive task(s).
 - Completing work station arrangement evaluations to ensure that the physical environment does not require the employee to perform awkward body or hand-arm motions to perform required tasks.
 - Mechanizing the repetitive motion task.
 - Reducing task frequency.
 - Rotating workers between different types of jobs.
 - Redesigning and/or modifying jobs so that they can be done by either hand and with little or no wrist movement (keeping the wrists straight).
 - Redesigning and/or modifying hand tools to reduce/eliminate wrist bending.
 - Utilizing employee selection techniques. Middle-aged females and employees with previous wrist and arm injuries should not be placed on highly-repetitive jobs. Once employees develop repetitive motion injury symptoms, they should be transferred to a nonrepetitive motion task.
 - Training employees to recognize and report initial symptoms of repetitive motion injury and disease so that prompt corrective action can be taken to reduce injury severity.

Contact your local Great American Loss Prevention Specialist for additional information.



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