Workplace Health and Safety
Bulletin
WORK SAFE ALBERTA

Wrist Splints and MSIs

Walk into almost any grocery or retail store and you're likely to see them being used. Or roll up shirtsleeves at the assembly line and you'll probably find them there too: splints, braces or bandage wraps — all of them providing relief from painful wrists, forearms and elbows.

Splints and supports are frequently used by workers suffering from a musculoskeletal injury (MSI), often caused by overuse of the wrist. Many splints are advertised as being useful for preventing injury or as an on-the-job treatment of an existing injury. In general, splints and supports are overused and are often of questionable value. If used, they need to be chosen carefully and worn properly.

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What are MSIs?

MSIs are referred to by a variety of names including repetitive strain injuries (RSIs) and cumulative trauma disorders (CTDs). In each case, the name describes injuries of the bones, joints, ligaments, tendons, muscles and other soft tissues. Some MSIs have names that indicate the type of work performed – carpet layer's knee, letter carrier's shoulder or pizza cutter's wrist. MSIs also have medical names such as carpal tunnel syndrome (an injury to one of the nerves passing through the wrist) and tendonitis (inflammation of a tendon).

MSIs are of two general types. *Overexertion injuries* occur when tissues are subjected to a single traumatic event that exceeds their strength or range of motion. The result is a sprain, strain or tear injury. Lifting, pushing or pulling injuries are often of this type.

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Overuse injuries occur when tissues are used too much and the body is unable to repair the damage. Repeated small injuries add up over time, taking hours, days, months or even years to appear. In the case of the wrist, overuse through excessive bending and twisting of the joint, coupled with repeated gripping with the hand, can lead to injury.

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Purpose of splints

Splints and supports are intended to reduce the risk of using a joint or limb in a way that might aggravate the injury. Splints can help to rest a muscle, position or protect a joint, or prevent tissues such as nerves from being compressed. Splints should keep joints such as the wrist in a neutral position, the position the joint naturally assumes at rest. A neutral wrist position minimizes stress and pressure on the joint and the tissues passing through it.

Wrist splints should be used during sleep, when most people place their wrists in flexed or bent positions. Unless advised by a doctor or other medical professional, wrist splints should not be worn during activities that involve the affected joint. This applies to activities both at work and at home.

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Problems with splints

Wrist splints should be prescribed by doctors, physiotherapists, occupational therapists or other health professionals. When used properly following an assessment, they can be helpful. However, the use of splints by workers who are not injured, and by injured workers while working, creates the following risks:

- Muscle weakness

If a joint of the arm is immobilized through splinting, muscles controlling the joint are not used and weaken. To compensate, other muscles are put into action and try to make the arm function normally. Reliant on the splint for support, and other muscles to perform their work, the weakened muscles are more prone to injury when the splint is removed.

- Joint immobility

Splinting a joint for long periods of time (4 weeks or more) can reduce the joint's range of movement and therefore its ability to function normally. This again leaves the joint more prone to injury once the splint is removed.

- Increased stress on joints and other muscles

If the arm is used while the wrist is splinted, the elbow, shoulder and muscles of the arm are at risk for injury. In compensating for the reduced mobility of the wrist due to the splint, physical stresses of the worker's job or activities may be transferred to joints and muscles elsewhere in the arm. These joints and muscles might also become injured. The splint itself may interfere with a worker's ability to handle or grip objects during work.

- Wrist problems may worsen

There is evidence that workers with carpal tunnel syndrome can actually aggravate their injury by wearing a wrist splint while working. Work and other activities can place unwanted forces on the wrist splint, placing potentially damaging pressure on nerves passing through the wrist.

Recommendations

- Use a wrist splint only on the advice of a medical professional and use it only as instructed, particularly if the splint is worn while performing activities involving the wrist and arm.
- Unless advised by a medical professional, wrists splints are best used during sleep. Doing so protects the joint from excessive motion or awkward positions, while at the same time permitting injured tissues to rest and recover.
- Prevent injuries by recognizing, evaluating, and controlling workplace factors that might contribute to them. Modify workstations, work processes, equipment and tools to prevent MSIs.
- Educate workers and supervisors to recognize early signs and symptoms of MSIs. The chances of complete recovery are good only if the injury is caught early.

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Additional information

Workplace Health and Safety has prepared a six-part series of Safety Bulletins discussing MSIs and a three-part series discussing the lifting and handling of loads. Both series are available through the Department's Web site at www.worksafely.org

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