

# MSI Prevention Guidance Sheet

## Risk factor: Local Contact Stresses

OH&S Regulation Section 4.49 (a)(v)

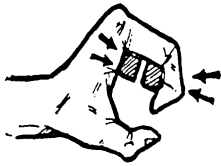
### Purpose

Worksheets A and B do not adequately address exposure to local contact stresses. This guidance sheet can be used with the Worksheets to identify and assess the risk of MSI due to local contact stresses.

### Description and general concepts

Local contact stresses result from contact between the body and hard or sharp work objects. Stress intensifies with increasing force and decreasing contact surface area. Adverse outcome can be injury or irritation to the skin, underlying nerves, bursae and blood vessels. Exposure to local contact stress may be sustained (continuous) or intermittent in nature.

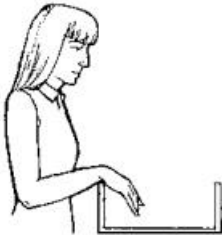
The amount of pressure, duration and frequency of exposure to the pressure, and area of body subject to exposure are important considerations in assessing the risk. Areas of the body that may be sensitive because tendons, nerves and blood vessels are located close to the surface and underlying bones include the sides and backs of fingers, sides and center of palm, base of wrist, elbow, shoulder and knee.



The normal contact areas of the hand are covered with fat pads, covered with skin so as to maximize friction, grip conformity and sensory feedback. When loads, especially point loads are applied elsewhere, such as the sides of the fingers, where the digital nerves and blood supply are located, injury can result. An example of such pressure can come from prolonged use of scissors.



When parts of the body strike an object such as using the hand as a hammer or when using tools, whose handles press into the palm, irritation of the skin and underlying tissues may result. The palm of the hand contains a branch of the ulnar nerve that is vulnerable to local pressure.



The wrist area is vulnerable to pressure from supporting the weight of the hand and also to pressure applied over the carpal tunnel area. Local mechanical stresses may also occur at the elbow and forearm; these are commonly used to support part of the body weight on work surfaces. The ulnar nerve runs across the inside of the elbow and can be compressed relatively easily when leaning on that side of the elbow.

### Examples

Sample occupations where local contact stresses may be present include the following:



Housekeeping: Kneeling to clean surfaces.



Manufacturing: Kneeling on pitted concrete.



Healthcare: Crushing pills for patients



Bakery: Pushing dough through press.

## Risk factor identification for local contact stresses

Determine if local contact stresses are present through observation of tasks and discussions with workers about contacts or sore points.

Local contact stresses can result from:

- Tasks involving handling objects with sharp or uneven edges
- Handles with sharp grooves or edges pressing on small joints of the hand
- Working movements that require contact with hard surfaces
- Palm-type control buttons
- Using power tool triggers with sharp edges
- Tool handles that are too short resulting in pressure on the base of the hand
- Handles made of hard, resistant material which presses on the base of the hand
- Kneeling, resting or leaning on a sharp or hard surfaces (for example the wrists resting on the edge of a desk)
- Striking a hard surface with a part of the body

## Risk factor assessment for local contact stresses

The greater the pressure exerted on the skin, the greater the magnitude and greater the risk of injury. Determine the magnitude through subjective reporting by workers exposed to the risk factor, pressure marks on the skin and any discoloration that may be present. The greater the total time over which the skin in a particular body area is subjected to the local contact stress (contact time), the greater the risk of injury. Sustained exposure can generally be expected to pose a greater risk than intermittent exposures totaling the same duration. Use of gloves or other protective coverings or paddings used to protect the area of contact will reduce the risk of MSI.

## Control Options

- Locate work or modify workstations so the body does not contact sharp edges
- Round or pad the edges of sharp or uneven-edged objects
- Avoid using tools that rub the wrist
- Use a spring rather than the fingers to open tools such as pliers or scissors
- Use a jig or fixture to hold an object during precise work to avoid resting elbows on a hard work surface
- Use a tool such as a hammer or a mallet to strike an object rather than using the hand or palm
- Distribute pressure over as wide an area as possible
- Use tools with long enough handles so they don't dig into the palm
- Pad or round surfaces with softer material (wrapping tools, wrist rests, padded edges of work surface) that the body contacts
- Round surfaces and avoid contours Use gloves or knee pads if force not an issue
- Avoid use of hand, knee, etc. for striking objects

