An Overview of Risk Factors for MSI

Some jobs include a number of different tasks. Some of these tasks may contain factors that can contribute to the risk of MSI. These are called risk factors - something that medical or scientific research indicates may cause or contribute to an injury. For example, applying a force to lift a heavy object and bending awkwardly to work in a cramped area are risk factors because these activities may expose a worker to a risk of MSI. Two or more risk factors can overlap, increasing the risk of injury.

The primary risk factors for MSI are the physical demands of a task, including the following:

- **Force required:** This is the force exerted by a worker on a load. Muscles and tendons can be overloaded when a worker must apply a strong force. Forcefully gripping tools can also overload muscles and tendons.

- **Repetition:** Using the same body part over and over to perform a task put as a worker at risk of MSI.

- **Duration:** Time factors affect the worker's exposure to risk. The longer the task with the risk factor is performed, the higher the risk of MSI.

- **Work posture:** Posture refers to the position the worker assumes to do a task. Awkward positions force the muscles to work harder as they stress the ligaments, such as when any part of the body bends or twists away from a comfortable position.

- **Local contact stress:** Contact stress occurs when a hard object comes in contact with a small area of the body. The skin and the tissues beneath can be injured from the pressure.

Other risk factors that can influence these physical demands include:

- The layout and condition of the workplace or workstation - for example, long reaches influence work posture

- The objects handled to perform a task - for example, large or awkward loads influence posture and the force required to lift the load

- Some personal protective clothing and equipment - for example, the weight of a welding helmet and the flicking movement when a worker moves the face shield influence the force required by the neck muscles

- The way work tasks are organized or undertaken - for example, heavy, demanding tasks that are not broken up increase the demand on the body and reduce the opportunity for recovery

When to identify risks

Risk factors must be identified wherever a worker might be at risk of developing an MSI. The employer should give priority to jobs that have a high risk of MSI. MSI trends can be identified by reviewing records such as first aid records showing signs or symptoms of MSI and WCB claims records showing the presence of MSI. You can also use other identification tools, such as worker interviews and employee surveys, to help you highlight jobs that are at risk for injuries.

There are a number of times when it is appropriate to identify risk factors:

- When a worker or supervisor observes risk factors in a job - during workplace inspections and observations of current work methods, for example
- When a worker has reported signs and symptoms of injury
- When a worker has reported to first aid with an MSI
- When a worker is off work with an MSI
- During an investigation of an accident where there were soft-tissue injuries
- When studying MSI trends of injuries
- When there is a new job or a process has changed

How to use the checklist

Risk identification should be conducted by someone who understands both the work process and the risk factors mentioned in the Occupational Health and Safety Regulation. In addition, the occupational health and safety committee or a worker representative must be consulted in the risk identification. The checklist on page 14 is one way to help you identify risk factors.

The person completing this checklist can use it by interviewing workers and observing them perform their job. Only one task at a time should be observed. Make copies of the checklist and use one for each task and each worker you are observing. Only some factors from the list will apply to each job.

There are two ways to use this checklist: the "body part" method and the "all risk factors" method. The body-part method is generally used when there are reports of injuries to specific body parts - the shoulders, for example. The all-risk-factors method can be used to identify all the risk factors to all parts of the body. It is useful as a proactive tool to identify risk factors before injuries develop.

Body-part method

The body-part method is used to observe risks to specific body parts after an injury has been reported or a trend in injuries identified. Before beginning, choose one of the following categories:

- Neck, shoulders, or upper back
- Elbows, forearms, or hands
- Lower back
- Hips, knees, or feet

You will not need to look at the risk factors that do not apply to that body part. To help you pinpoint your identification of risk factors, use only the column on the right that is labelled for that body part. A checked box means that particular risk factor applies to the type of injury you are investigating. For example, grasping or handling objects applies to injuries of the elbows, forearms or hands, but when your are investigating injuries of the lower back you do not need to observe if the worker uses a bent wrist when handling an object.

Answer the questions for each risk factor only where the box on the right is checked for the body part you are examining. As you observe a worker, answer the question for the risk factor by looking for each movement or activity listed. If the answer is yes, put a check mark on the chart in the box beside that factor. You can also make notes with additional observations about the risk factor.

How do you observe a task?

Observing a worker doing a task means examining all the parts you are seeing.

- Watch the worker. Look for postures, grip, lifting, exertion, and force being applied.
- Look at the workplace. Examine tools, equipment, and the layout of the workstation.
- Study the task or job being done. Look at the pace of work, variety of activities, work procedures, and duration of tasks.
- Look at the work environment, such as the lighting, temperature, and vibration.

These components overlap, but each can add to the risk of a worker developing an injury.

Risk assessment should be performed by someone who has the knowledge and skills to assess each applicable risk factor. Questions such as the following should be considered:

- How long is the worker exposed to the risk? (For example, is the worker exposed to the risk for a full shift or for 10 minutes?)
- What is the magnitude of the exposure? (For example, how much force and how awkward is the posture?)
- How frequently is the worker exposed to the risk? (For example, is the task highly repetitive or does it occur only occasionally?)
- What is the impact of the contributing factors? (For example, does the design of the workplace make the posture more awkward?)
- What is the combined effect of all the identified factors? (For example, is there more than one risk factor occurring at one time, such as leaning forward and lifting from a stooping position?)

For more information on the assessment process for MSI, contact your local WCB office.