Back Injury Prevention – Fact Sheets



WHAT IS THE MOST LIKELY KIND OF INJURY RESULTING FROM MANUAL MATERIALS HANDLING?

It is probably fair to say that every worker who lifts or does other manual handling tasks is at some risk for musculoskeletal injury. Low back injury is the most likely kind of injury. The complete elimination of this risk is not realistic. However, organizations can reduce the number and the severity of manual handling-related injuries by using safe work practices.

HOW CAN WE PREVENT BACK INJURY RESULTING FROM MMH?

To prevent occupational back injuries, it is essential to identify the factors of MMH that make the worker more susceptible to injury or that directly contribute to injury.

When efforts to prevent injuries from MMH focus on only one risk factor, they do not significantly reduce the injury rate. A more successful approach combines knowledge of ergonomics, engineering, the work environment, and human capabilities and limitations. The following aspects should be considered:

- organization of work flow
- job design/redesign (including the work environment)
- pre-placement procedures, where necessary
- education and training

The design or redesign of jobs involving MMH should be approached in the following stages:

- eliminate heavy MMH
- decrease MMH demands
- reduce stressful body movements
- pace of work and rest breaks
- improve environmental conditions

HOW DO YOU ELIMINATE HEAVY MMH?

Consider using powered or mechanical handling systems if eliminating the MMH tasks completely is not possible. Mechanical aids lower the risk for back injury by reducing the worker’s physical effort required to handle heavy objects.

Manual handling such as lifting and carrying can be easier and safer if mechanized by using lift tables, conveyors, yokes or trucks. Gravity dumps and chutes can help in disposing of materials. However, it is essential that the worker is properly educated and trained in the safe use of the available equipment.

HOW CAN WE DECREASE MMH DEMANDS?

Where possible, use mechanical aids. The next step is to decrease the manual material handling demands. There are several ways to achieve this:

- Plan the work flow. Often poor planning of the work flow results in repeated handling of the same object (e.g., when articles are temporarily stored in one place, moved to another, stored again, and moved again).
- Decrease the weight of handled objects to acceptable limits.
- Reduce the weight by assigning two people to lift the load or by splitting the load into two or more containers. Using light plastic containers may also decrease the weight of the load versus other containers.
- Change the type of MMH movement. Lowering objects causes less strain than lifting. Pulling objects is easier than carrying. Pushing is less demanding than pulling.
- Change work area layouts. Reducing the horizontal and vertical distances of lifting substantially lowers MMH demands. Reducing the travel distances for carrying, pushing or pulling also decreases work demands.
- Assign more time for repetitive handling tasks. More time reduces the frequency of handling and allows for more work/rest periods.
- Alternate heavy tasks with lighter ones to reduce the build-up of fatigue.

HOW CAN WE REDUCE STRESSFUL BODY MOVEMENTS IN MMH?

It is important that the design of MMH allows the worker to do tasks without excessive reaching, bending, and twisting. These body motions are particularly dangerous and can cause back injury even when not combined with handling loads.

- Provide all materials at a work level that is adjusted to the worker’s body size.
- Eliminate deep shelves to avoid bending.
- Ensure sufficient space for the entire body to turn.
- Locate objects within easy reach.
- Ensure that there is a clear and easy access to the load.
- Use handles or have a good grip whenever possible.
- Use slings and hooks to move loads that do not have handles.
- Balance contents of containers.
- Use rigid containers.
- Change the shape of the load so the load can be handled close to the body.

WHY IS PACE OF WORK IMPORTANT?

Pace of work, particularly when externally imposed, may significantly contribute to the worker discomfort, and consequently to the onset of musculoskeletal injuries. Generally speaking, pressure to work at a certain pace creates the mental need to work in a hurry. This perception, in turn, creates tension not only in the mind but also in the body. Tensed muscles are much more prone to injury.

For example, pace of work is related to the frequency of a lift. Lifting equations, such as the Regulator, use this factor as one of the ways to determine the impact of a lift. Assessments include not just how many lifts are preformed, but the amount of time there is to rest between lifts.

It would be ideal if workers could work at their own pace and have some freedom to take a rest break when they start feeling the effects of fatigue. However, this option might be impractical. It seems reasonable to incorporate two additional 15-minute breaks, mid-morning and mid-afternoon, in addition to the 30-minute lunch break. If that schedule is still not feasible, shorter but more frequent breaks can do as well.

It is also important that people new to a particular job or task be given time to adjust by allowing them more breaks.

HOW CAN WE IMPROVE THE ENVIRONMENT TO REDUCE THE RISK FOR INJURY DUE TO MMH?

The design of the work environment is an important element for back injury prevention.

- In extreme cases that require heavy MMH in temperatures above 30°C, rest periods or light work load tasks may account for 75 percent of the work time.
- Wear properly designed clothing to decrease the heat absorption by the body and to increase evaporation. This factor is particularly important for people required to work in high temperature environment.
- Encourage using proper protective clothing for people working in a cold environment. This equipment is essential to protect the worker from hypothermia and to preserve dexterity needed for safe work.
- Illuminate the work area for MMH tasks at the level of 200 lux.
- Use task lights or other additional light sources to improve the ability to see clearly where MMH requires fine visual discrimination.
- Use angular lighting and colour contrast to improve depth perception. This lighting technique helps the worker where MMH involves climbing stairs or moving in passageways.

When the MMH tasks are done outdoors, the temperature conditions including the humidex (in hot weather) or wind-chill factor (in cold weather) have to be monitored very closely.

- Reduce MMH tasks by half when the temperature exceeds 28°C.
- Stop MMH when the temperature exceeds 40°C.
- Restrict MMH to the minimum possible when wind-chill drops below -25°C.
- Stop MMH when wind-chill drops to -35°C.

HOW EFFECTIVE IS PRE-PLACEMENT SCREENING IN BACK INJURY PREVENTION?

The objective of pre-placement screening is to try to determine if an individual is likely to be injured by activities of their work. There is limited research available to help determine the effectiveness of these measures. In general, it appears that the screening is more accurate when job specific tasks can be included and/or evaluated.

HOW CAN EDUCATION AND TRAINING BE USED TO HELP PREVENT BACK INJURIES?

When combined with work design, education and training are an important element in the prevention of injuries. Part of this education and training also includes showing the worker how to actively contribute to the prevention of injuries. A program should:

- Make the worker aware of the hazards of MMH.
- Demonstrate ways of avoiding unnecessary stress.
- Teach the worker to handle materials safely.

Instruction on how to lift “properly” can be a controversial issue. While there are good guidelines there is no single correct way to perform a lift. Because of this fact, on-site, task specific training is essential. Some general lifting rules include:

- Prepare to lift by warming up the muscles.
- Stand close to the load, facing the way you intend to move.
- Use a wide stance to gain balance.
- Ensure a good grip on the load.
- Keep arms straight.
- Tighten abdominal muscles.
- Tuck chin into the chest.
- Initiate the lift with body weight.
- Lift the load close to the body.
- Lift smoothly without jerking.
- Avoid twisting and side bending while lifting.
- Do not perform the lift if you are not certain that you can handle the load safely.

It is also important that workers:

- Take advantage of rest periods to relax tired muscles; this rest prevents fatigue from building up.
- Report discomforts experienced during work; reporting will help to identify hazards and correct working conditions.
- Know how to recognize a MMH hazard and report concerns.

Finally, there is an aspect of training that cannot be overlooked if training is to be part of an effective prevention program.

Workers should be educated that muscles, tendons and ligaments are not prepared to meet the physical stress of handling tasks when they are not “warmed up.” Pulls, tears or cramps are more likely when stretched or contracted suddenly under such conditions. These injuries can lead to more serious and permanent injury if physically stressful work is continued. Warming up and mental readiness for physically demanding tasks are important for any kind of MMH, but particularly for occasional tasks where the worker is not accustomed to handling loads.

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