

In this issue:

Manual Material Handling

Analysis and Controls

Back Belts

Produced by:
Erik Goplin, CIH, CSP
QBE Regional Insurance
608-825-5644
Erik.Goplin@us.qbe.com

Manual Material Handling

Manual material handling related injuries are one of the most frequent and costliest types of injuries in the workplace. Manual material handling is defined as moving containers, parts, equipment or other items by lifting, lowering, pushing, pulling, filling, emptying or carrying them. Manual material handling can also be thought of as those activities where items are moved from one place to another in the workplace. These are generally thought of as non-value added activities as compared to production or assembly operations where work activity is adding value to the product.

Injuries associated with manual material handling involve musculoskeletal disorders (MSDs) of

the back, arms and shoulders. Warehouse employees, deliverymen, and other employees that move products and materials are at risk for these types of injuries and an effective loss control program involves assessing and controlling manual material handling exposures in the workplace.



The four main risk factors associated with MSDs are:

- Awkward posture
- Repetition
- Forceful exertions
- Duration of exposure

Vibration, cold temperatures, static posture and contact stress such as grasping and holding materials are secondary risk factors that may contribute to the overall risk of injury and may be present as well. Over time these risk factors can cause the soft tissue injuries characteristic of MSDs.

Any of these factors by themselves pose a risk for MSDs but when in combination the risk is greatly increased. Highly repetitive work involving forceful exertions poses the greatest risk for injury.

Training in back safety and proper lifting technique by itself rarely reduces the frequency of back injuries because it doesn't eliminate the hazard. Training should be used in conjunction with engineering controls and changes in work practices that address the source of the problem.

Analysis and Controls

The first step to controlling manual material handling related injuries is to analyze the operations and identify the problem areas. Start by looking at operations with a history of manual material handling related injuries. A loss trend analysis or review of OSHA 300 logs can aid in the analysis. Next, look for any situations where materials are lifted from the floor. Lifting below knee level poses the greatest risk for back injury and should always be avoided. Loading and unloading the bottom layers of pallets is another common low lift work practice. Next, look for operations where lifting is done above shoulder height. This type of lift creates unstable loads and poses a risk for injuries of the upper back and shoulders. Also look for operations that involve heavy loads and a high level of physical demand. Operations where there is high turnover or a high level of absenteeism may also indicate problem areas.

A job hazard analysis (JHA) which involves identifying the steps in a job task, the hazard associated with those tasks and then identifying controls for the hazards is a good

way of starting the process. If you don't know how to conduct a JHA, contact your QBE Loss Control Consultant for assistance. The jobs and tasks with the highest risk and highest number of affected employees should be highest priority for intervention.

Once problem jobs and tasks have been identified controls should be implemented. There are three types of controls for eliminating hazards. They include:

- Engineering controls
- Administrative controls
- Personal protective equipment

Engineering controls are the preferred control option since they eliminate the hazard. Options include:

- Reduce container weights
- Use of mechanical lifts, conveyors and transport equipment
- Change workstation layout

Administrative controls are management dictated controls. These types of controls require supervision and changes in employee behavior. Therefore, they are not as effective as engineering controls. Some examples of administrative controls include:

- Job rotation
- Training
- Two-man lift policies
- Stretching programs

Personal protective equipment is the least effective control since it relies on the employee and does not address the underlying causes of the hazards.

When selecting possible control options, involve a wide range of employees from management and maintenance to employees working

at the job. All of these employees provide valuable insight into the job and possible control options. Hold brainstorming sessions and develop a list of possible control options. Questions that should be asked when developing controls include:

- Will the control reduce the risk?
- Will new hazards be introduced?
- How will the control affect productivity?
- Is the control affordable?
- How long before the control can be implemented?

The best controls increase productivity at the same time they reduce the risk injury. A cost benefit analysis or return on investment calculation may aid in determining the best control.

Many control options should be tested and evaluated before they are fully implemented. Mock-up a workstation to see how it works before all the workstations are modified. This station can be used to train employees with new equipment and procedures as well.

Don't make final determination of the effectiveness of a control until it has been implemented long enough to see how it affects injuries and productivity. If employees don't accept the control or it hasn't reduced the potential for injury, another option should then be tried.

Back Belts

The use of back belts has been a widely used control method in back safety programs for many years. Back belt use has been promoted by some vendors and some safety programs require all employees performing manual material handling tasks to use back belts. Handing out back belts to employees, although

easy to do, is not an effective back injury prevention program because it does not address the root causes of the back injuries. As long as the potential exposure is present, employees will always be at risk for back injury. Back belt use may also actually increase the risk of injury.



In 1992 NIOSH (National Institute of Occupational Safety and Health) formed a working group to review the scientific data pertaining to back belts. In 1994 they published their finds and concluded that the effectiveness of back belts in preventing back injuries was unproven. A very comprehensive study was conducted by NIOSH from 1996 to 1998 involving over 9,000 employees performing manual material handling in 160 stores. Findings from that study included:

- There was no statistically significant difference between the rates of back injuries among employees wearing back belts and those who didn't.
- There were no significant difference in reporting of back pain between those using and those not using back belts.
- There was no significant difference in rates of back injury claims between those wearing back belts and those who did not.

The study also concluded that the strongest predictor of a back injury

was a previous back injury or back pain. If an employee had a history of back pain or injury, they were nearly twice as likely to have another injury. So, if history of back injury and pain is the most significant risk factor for future injuries, employers should ensure that they monitor the work activities of these high risk employees and provide them with the necessary tools and equipment to reduce the potential for future injury.

Back belt use should never be mandated by an employer. If an employee voluntarily wears a back belt or one is recommended by their physician, it needs to be worn properly. A back belt should only be tightened when conducting a lift. If the belt remains tight all the time, it may actually weaken the lower back and abdominal muscles.

Back belts may also provide a false sense of security and employees may attempt to lift more weight than they would without the belt. Remember that the use of manual material handling aids and redesign of the work environment and work tasks are the preferred control to prevent back injuries.