By the Numbers – Safe Lifting

SAFE LIFTING

DID YOU KNOW?

Manual lifting, is a source of many injuries.

- Overexertion while lifting can result in strains, sprains, torn ligaments or muscles, and ruptured or slipped The Bureau of Labor Statistics reports that 94,420 workers in private industry suffered injuries due to overexertion while lifting during 2015. These injuries were serious enough to require days away from work.
- Falls to a lower level (which many people consider to be more hazardous than lifting) caused 50,490 injuries during
- According to the National Safety Consul Laboure and Medical Research 20 % of back aches are interpreted to inflammation such as writers 10 % are due to actually about back injuries and other mexolide causes, 70 % result from degeneration of spinal discs that's right agent of spinal discs criteria causes the most trouble and can cause strain pain even from routine body

FACTS

- Injuries come from grounds workers lifting and lowering mowing equipment off trucks, employees lifting special needs students who have fallen or lifting/lowering them to and from wheelchairs, nutrition services workers who retrieve food containers from bottom shelves multiple times a day, or custodians who are injured from emptying trash cans in the cafeteria. According to the Bureau of Labor Statistics, work-related musculoskeletal disorders (WMSDs), **including back injuries, account for more than one out of every three work-related injuries in the United**

- Lifting and carrying objects is common for many workers across the country. But training is important. If performed improperly, lifting and carrying items can lead to **The National Safety Council notes that manual handling of objects accounts for an estimated 25 percent of all occupational injuries.** Common materials-handling injuries include strains and sprains (specifically to the back), cuts, fractures, and bruises.

According to the Bureau of Labor Statistics, back injuries are responsible for more lost work time than any other musculoskeletal injury. Moreover, of injuries occurring to the lower back, 3 out of 4 occurred while the employee was lifting. The frequency and economic impact of back injuries and disorders on the workforce are expected to increase over the next several decades as the average age of the workforce increases and medical costs go up.

NIOSH MODEL

NIOSH has developed a mathematical model that helps predict the risk of lifting-related injuries. The lifting equation defines a recommended weight limit (RWL) for specific lifting tasks that most workers could perform over an eight-hour day without increasing the risk of developing lower back pain.

The RWL is defined by the following equation:

RWL = LC x HM x VM x DM x AM x FM x CM

The equation is based on a model that provides a unit value for six task variables:

LC = Weight of the object lifted

HM = Horizontal distance of hands from midpoint between the ankles

VM = Vertical distance of the hands from the floor

DM = Vertical travel distance between the origin and the destination of the lift

AM = Angle of asymmetry – angular displacement of the load from the sagittal plane

FM = Average frequency rate of lifting measured in lifts/minute

CM = A value derived from lifting frequency and vertical displacement of the lift

The lifting index (LI) provides a relative estimate of the physical stress associated with a manual lifting job. The equation for the LI is:

LI = Load weight (weight of load in pounds or kilograms)/RWL

The LI can be used to estimate the relative magnitude of physical stress for a task or job. The greater the LI, the smaller the fraction of workers capable of safely sustaining the level of activity. Thus, two or more job designs could be compared.

When it comes to redesigning a task or workstation, you can test several scenarios using differing task variables before making adjustments or spending scarce resources. By varying the individual values in the formula, you can anticipate the effects of job modification prior to implementing any changes. Being able to change the causal factors theoretically allows the employer to address the largest contributing factors to ergonomic injuries more quickly.

The LI can also help prioritize ergonomic redesign. For example, a series of suspected hazardous jobs could be ranked according to the LI and a control strategy could be developed according to the rank ordering (i.e., jobs with lifting indices above 1.0 or higher would benefit the most from redesign).

The equation does have limitations, however. It only addresses two-handed lifts, for instance.

Material handling tasks should be designed to minimize the weight, range of motion and frequency of the activity, and using the equation allows you to get closer to optimal from the beginning.

KEEP IN MIND

Ergonomics and safe lifting practices go “hand in hand”. Ergonomic can be defined as the study of people in their working environment. The back is an apt starting point in the study of ergonomics. Why? Because back injuries are a major cause of lost workdays and represent nearly a quarter of lost time and half of all compensation costs both long – term and short – term.

Your back is not like other tools that you can replace when they are damaged.!!! The back is a network of fragile ligaments, discs and muscles which can easily be thrown out of order.

There are 33 vertebrae in your back that are separated by discs and held together by ligaments. The back has many different muscles to hold all the vertebrae together. Three curves make up your back – cervical (neck), thoracic (mid-back) and lumbar (lower back)). Unless you are standing in a natural position, with your ears, shoulders and hips all aligned, your spine is under some type of stress.

Almost everyone has suffered back pain at some time. Common causes include but are not limited to sitting improperly, heavy lifting, falls, motor vehicle incidents and whole-body vibration. To understand how often the back is used, just think that every time you bend, your back lifts approximately 70% of your body weight even when you aren’t lifting anything.

It is important to remember that it is not necessarily the weight of the load that causes the injuries, but rather the frequency and duration of handling. If the load is heavy, the frequency and duration of the lift will have to decrease. The human body is made for a variety of tasks, so it’s important to have variety in the tasks you do to prevent repetitive stress and keep your body active and flexible.

After you have been sitting or stooping for a long period of time you should not lift immediately, as this puts a great deal of stress on your back muscles, ligaments and tendons.

Overexertion and cumulative trauma were the biggest factors in these injuries. Bending, followed by twisting and turning, were the more commonly cited movements that caused back injuries. Strains and sprains from lifting loads improperly or from carrying loads that are either too large or too heavy are common hazards associated with manually moving materials.

NSC states that no "sure-fire" rules exist for safe lifting: "Manual materials handling is a very complex combination of moving body segments, changing joint angles, tightening muscles and loading the spinal column." However, NSC does recommend following a number of do's and don'ts pertaining to lifting.

Do:

- Eliminate manual lifting whenever possible to help reduce
- Stay in good physical shape if lifting items is part of your
- Keep materials within easy reach and have handling aids around in case you need
- Make sure you have a good grip on any item you attempt to lift. Test the weight and balance of items before moving them. Too heavy? Get a mechanical lifting aid or ask a co-worker for
- Keep the item you are lifting close to your Ensure your feet are close to the load, stand in a stable

position with your feet pointed in the direction you're moving, and lift mostly by straightening your legs.

Don't:

- Twist your back or bend in a sideways
- Attempt to lift or lower an object if you're in an awkward
- Feel compelled to lift an item that is too heavy – get help
- Lift or lower an object if your arms are
- Continue to lift an item if you realize it's too
- Lift above your shoulders or below your knees.

Factors that contribute to the risk of injury

The weight of the load is obviously a factor in whether or not material can be lifted safely, Other lift factors include:

- The force needed to perform the
- The frequency of lifting.
- The duration of lifting
- Postures and body motions during the

Concerning the force needed to perform the lift, there may be increased risk for injury if:

- The lift involves pinching to hold the
- Heavy lifting is done with one
- Very heavy items are lifted without the assistance of a mechanical
- Heavy items are lifted while bending over, reaching above shoulder height, or The following postures and motions can contribute to the risk, as well:
- Bending or twisting the back while lifting or holding heavy
- Lifting objects out of, or putting them into, cramped
- Leaning, bending forward, kneeling or squatting during lifting
- Lifting or carrying materials with the hands below the waist, above the shoulders, or to the sides of the
- Carrying or holding lifted materials with the arms or hands in the same position for long periods of time without changing positions or

How engineering controls reduce the risk.

The most effective way to prevent injury is to redesign the work environment and work tasks to reduce lifting hazards. These engineering, administrative and workplace controls take a close look at lifting jobs and redesign them so they are safer.

Engineering controls are used to redesign a job so employees do less-strenuous manual lifting. They often involve the use of mechanical lifting equipment.

Engineering controls include

- Reducing load weight or
- Adding handles to material packaging so that workers can get a strong, comfortable
- Adjusting the work environment so workers can keep loads close to the body and between shoulder and knee height, without having to twist.
- Installing mechanical lifting aids and material handling equipment (conveyors, slides, chutes, hoists, adjustable lift tables, and hand trucks).

Use of administrative and work-practice controls

Implementing administrative and work-practice controls involves carefully selecting and training workers so they know how to safely perform lifting tasks.

Administrative and work-practice controls include:

- Conducting medical monitoring of employee strength/lifting
- Setting weight, size, and frequency limits on manual lifting
- Providing physical conditioning for
- Training employees to use proper lifting
- Determining the need for using two-person lift teams when mechanical lifting aids are not