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PRESS RELEASE

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KNOW YOUR LIMITATIONS
Our bodies have physical limitations that we can't afford to overlook.

Humans have cognitive and physical capacities and limitations. Ergonomic principles – the science of work – take human capacities and limitations into account to design work to optimize human performance as well as recognize when we are pushing our bodies into dangerous situations that can result in serious injury.

Pramila Kalaga, Ergonomics Specialist at Nebraska Medical Center in Omaha, says ergonomic principles apply to all types of work and work environments.

"Some common principles include avoid working in awkward posture such as stooping over for long periods of time or twisting at the same time you bend over," she says. "If you're sitting while you work, be sure to get up at least every 60 minutes and move to reduce fatigue and discomfort."

Additional ergonomic guidelines include avoiding putting excessive force on the spine by activities such as lifting, carrying or moving heavy objects/materials without the use of mechanical aids.

"Injuries to the back and spine are some of the most common problems that occur when heavy work is involved," Kalaga says. "Many people believe that using good body mechanics and fitness will protect them if they're working with heavy components. However, once a load exceeds a certain point, good body mechanics and fitness may not be sufficient to prevent injury to the intervertebral discs of the spine. People may sometimes exceed safe limits when handling heavy materials, and not experience immediate results. That doesn't mean there was no injury to the back. It just may not show up for a while."

Kalaga notes that injury to the spine is often cumulative. Accelerated wear and tear injuries can accumulate to the spinal discs over time. Wear and tear on the back and spine can occur

over a period of weeks, months or years. Often, by the time an individual recognizes an issue with the back or spine, the damage has been done.

"Our soft tissues such as muscles will give us feedback," Kalaga says. "However, we don't get good feedback from the intervertebral discs. If a muscle is strained, and muscles typically have good blood supply, the muscle will heal and a person feels good as new."

If there's excessive mechanical loading on intervertebral discs, with micro-factures to the vertebral endplates, a person may not necessarily have direct feedback from the injury. The micro-fractures to the vertebral endplates heal, forming scar tissue, and blood doesn't flow well through scar tissue, contributing to further disc degeneration. Repeated excessive pressure or mechanical loading on the spinal discs can accelerate disc degeneration. If muscles are giving feedback that the load being lifted is very heavy, the person may be impacting more than muscles. They may be putting undue stress on spinal discs.

While physical fitness will increase the threshold for injury and good body mechanics also help, this combination will not be sufficient to prevent injury if excessive mechanical loading occurs on a routine basis.

"Ideally, you would combine work design that takes human capacities into account along with physical fitness and good body mechanics," Kalaga says. "Also keep in mind that ergonomic adjustments to the work design, sometimes relatively minor changes, can make it easier to use optimal body mechanics, reduce stress on the body and facilitate better work performance.

According to studies published by the National Institute of Occupational Safety and Health (NIOSH), men who lift more than 50 pounds or women who lift more than 35 pounds need to be extremely careful how they lift and carry that weight.

"There may be individuals who can lift more than these recommended weights for men and women," Kalaga says. "However, there are many factors involved in the risk of injury when lifting or carrying these heavy loads."

In lifting or carrying any heavy object, it's critical to keep the load as low as possible when it comes to lifting. Use of mechanical aids such as a cart or mechanical device to reduce the load being lifted or carryied will significantly reduce the risk of injury. Additional safety measures include keeping the load as close to the body as possible when you begin to lift. Feet should be kept close to the load, with one foot turned in the direction of the move.

"Never bend and twist while you're lifting," Kalaga says. "If we bend and twist at the same time we're lifting, there is high risk of injury to the spine. Studies have shown that just bending sideways while lifting puts the body in an awkward position and increasing the potential for spine and back injury."

According to the Bureau of Labor Statistics (BLS), more than one million back injuries occur each year, making up one in five of every reported workplace injury or illness each year. Four out of every five of these back injuries occurred in the lower back and three out of four took place while the person was lifting.

When lifting heavy objects/materials is necessary, keep these guidelines in mind:

1. Wear supportive shoes.
2. Whenever possible, use mechanical assistance in the form of dollies, carts, lift tables, forklifts, etc.
3. Execute movements horizontally, such as push and pull rather than lift and lower.
4. When pushing, always use your body weight rather than your feet.

5. Avoid moving heavy objects outside the comfort zone between the hip and shoulder.
6. Keep all loads close to and in front of the body.
7. Keep the back aligned during the lift.
8. Maintain the center of balance.
9. Let the legs do the actual lifting.
10. Whenever possible, reduce the size of the object/material to keep it as light, compact and safe as possible to grasp.

Before attempting a lift, always consider all the aspects of the object and options for lifting/moving it. Determine if the object is too large, too heavy or too awkward for one person to move. Always consider the benefit of using a second person or mechanical aid to help with the lift/move. Review the route that will be used to move the material. Remove any potential problems or obstacles such as clutter on the floor or slippery areas along the way. Inspect the location where the load will be placed to avoid any unexpected difficulties in placing the load. Before making the lift, warm-up the back through exercise or stretching.

"Be sure you have a good grip on a load before you start to carry. It," Kalaga says. "If you begin to lift the load and it seems to be too heavy, don't attempt to move it anyway. Your body will tell you when you are exceeding safe limits. Be sure to pay attention to that feedback and avoid overstressing your back and spine. It won't matter how fit you are or how carefully you're implementing good body mechanics if the load is just too heavy."

Kalaga emphasizes the need to avoid rushing to lift or move heavy objects.

"Take time to problem solve rather than risk injuring your back," she says. "It's common for injuries to occur when we get in a hurry. Always divide a load up when you can, moving just part of it at one time.

Anyone who has or is concerned that they have already injured their back should seek medical care as soon as possible in order to access treatment and learn how to assist the body in healing and maintaining back health.

"It's possible for an injured back to become asymptomatic when proper treatment is provided and ergonomic principles are consistently observed," Kalaga says. "Many times, back pain is episodic and can be avoided when we avoid putting excess strain on our back."

Additionally, an ergonomic work assessment could help identify solutions for reducing or eliminating risk factors for injury. Protective measures in the workplace to help avoid back pain flare up include use of ergonomic seats in tractors to absorb shock and vibration during operation, cushions designed to support the body and avoid shock (including memory foam options), and familiarity with actions that can aggravate back pain - such as prolonged sitting – can all aid in maintaining back health and reducing compression of the spine.

"The old rule of thumb for sitting was to use a 90-degree angle," Kalaga says. "However, we know now that leaning straight back even in a 110- or 115-degree angle reduces compression on the spine. When you're sitting, relax and unload the stress on those muscles as much as you can. Always take care of your back."

Additional lifting principles are available at this Occupational Safety and Health Administration (OSHA) site: https://www.osha.gov/ergonomics.

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