Ergonomics and Overweight Employees

By William H. Kincaid, P.E., CSP

With 64 percent of our U.S. population classified as overweight by the Centers for Disease Control, and 30 percent as obese, most workplaces have overweight employees. In spite of these facts, ergonomics seminars often make little or no mention of body weight. (A wellness effort might help some lose weight and should be a high priority. This article is about working with those who don't respond to wellness programs.) A good ergonomics effort should be prepared to handle the issues caused by obesity.
Obesity can affect hand/wrist postures, increase pressure on discs in the lower back, increase the probability of back strains and cumulative trauma disorders and raise the risk of knee injuries, among other undesirable effects.

A study by Atlas Ergonomics indicated that obese workers were three times as likely to report elbow discomfort, and twice as likely to report hand/wrist discomfort. This likely has to do with hand/wrist postures. A person's waist size affects the location of their elbows when keyboarding. Since elbows influence forearm angles, a large waist increases ulnar deviation of the wrists. Combined with the higher tendency of obese people towards cumulative trauma disorders, this leads to a hazardous situation in keyboarding jobs. There are a variety of "ergonomic" keyboards that divide the keys into two angled sections help reduce the wrist deviation. One of these, the sturdy **Key Ovation "Goldtouch" keyboard** (www.keyovation.com), has excellent adjustability along with low keystroke force. It's adjustable in three dimensions and allows obese people to have straighter wrists while keying.

The typical American adult gains 1 to 2 pounds each year, according to James O. Hill, director of the Center for Human Nutrition at the University of Colorado Health Sciences Center, and colleagues, writing in the February 2003 issue of Science. The heavier a person is, the more upper-body weight must be supported by the back. As our employees age and become more prone to back injuries, we can expect them to gain this weight, resulting in an ergonomic double whammy.

The answer to this problem isn't a simple one, but we should at least be aware that overweight employees may have a higher risk of back injuries when assigned to lifting tasks.

Eliminating deep bending is an effective way to reduce back injury cases. Lots of companies still have deep-bending tasks in their workplaces, particularly at packing or shipping areas, in warehouses and in maintenance and housekeeping jobs. There are ways to engineer some deep bending out. A more aggressive focus on using pallet lifters can raise loads to a safer height. Lighter incoming bulk package weights reduce the maximum weights handled. Special tools reduce the need to bend (like long-handled scrapers for cleaning gum off floors rather than the common putty knife, as an example). Hoists can help – although they often are slow and somewhat awkward – which tends to hinder use.

Reducing knee injury risk might seem futile due to the uncertain causes of knee injuries. Many overweight people have osteoarthritis of the knees, which can be aggravated by work. Total weight lifted, total distance walked to perform tasks, the need to twist and turn on travel paths and changes in level are job factors to work on. Sit/stand stools or chairs take the load off knees, but if sitting is excessive it leads to low-back problems. One client refined their process so workers could sit the entire day and focus on their hand-intensive jobs. Unexpectedly, their two largest claims after the change weren't carpal tunnel syndrome, but ruptured discs requiring expensive laminectomy surgeries.

Seating makes a big difference in employee morale and in injury prevention. Most industrial and office chairs are made for a weight range from 250 to 300 pounds, depending on the quality. Chairs that can hold over 300 pounds are usually two or three times the cost of a standard chair. That may be why they are rarely seen in use. When a person outweighs the chair's load rating by 50 or 100 pounds, a dangerous situation exists. Obviously, the size of the seat pan makes a big difference in how the person fits the chair and how the chair supports the back. The extra cost of a large chair unfortunately is a necessary expense.

Americans are getting heavier, and that's a trend that probably will continue. Those of us who practice ergonomics need to be prepared to work with and help an overweight workforce. Considering the relationship of obesity to ergonomics and injuries is a step in the right direction.

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