Ergonomics: Back to Basics

by Stephen Nickson

The premise is simple: Most work-related back injuries are preventable. That is what motivated Don Norris, risk manager of the City of Modesto, California, and Marlin Buse, risk manager of the University of Colorado, to implement comprehensive back injury programming in their organizations. With the emphasis on prevention and behavior change, both organizations have experienced substantial reductions in the costs, prevalence and severity of work-related back injuries.

The goal of each program has been to achieve measurable reductions in workplace back injuries, increase productivity, and improve employee health and well-being. Both Norris and Buse enlisted the services of Blaine, Washington-based BodyLogic Health Management to help create programs that would complement their existing safety and health initiatives.

Employee groups within each organization underwent training exercises that focused on identifying unsafe workplace behavior and prescribing specific ways of performing the same tasks safely. By incorporating employee input and targeting individual work activities, this approach helped to ensure long-term compliance.

With the help of preventive maintenance tools such as stretches and exercises, employees from the accounting staff to maintenance personnel have been given the ability to make changes in their daily work behavior to prevent back injuries. For the University of Colorado and the City of Modesto, this has been translated into measurable results: a decrease in the number of avoidable back injury claims and a reduction in severity and recovery time when back injuries do occur.

A Big Problem
Since 1989, the National Institute for Occupational Safety and Health (NIOSH) has listed musculoskeletal disorders as a leading priority for research and prevention efforts in the United States. Over the past decade, increased awareness among industry groups has been reflected in a general decline in workplace injuries and illnesses requiring days away from work. But workplace injury numbers—especially in connection with the back—are a persistent problem that could be reduced with simple prevention efforts.

Approximately one-third of American workers are employed in occupations that may significantly increase their risk of developing back disorders or disabilities. Low back pain disorders are the most frequent reason for workers' compensation claims, and approximately 85 percent of the general population will develop low back pain disorders at least once in their lifetime. Of all workers' compensation claims filed, spine injuries are the most costly, accounting for 60 percent of all medical and indemnity dollars spent on worker injuries.

The risk management teams led by Norris and Buse were familiar with these statistics. "Back problems are a real issue, particularly for people over thirty-five," says Buse. "Employees are

often more susceptible to back injuries at work, and weak backs affect the propensity to become injured and then the ability to recover."

The physical nature of a job can greatly influence the exposure and risk of back injuries. Recent examinations of work-related low back pain have identified lifting and forceful movements, and repetitive or static, awkward body posture resulting from bending and twisting as the main contributing factors to the development of back weakness and injuries.

A Modern Problem Needs a Modern Solution
Training in proper body mechanics—including proper lifting and body posture—is an important way of controlling the risk of back injuries. This is critical for employees who work in physically strenuous jobs, but also for another sector of the workforce with a high risk for back injury: those whose job activities keep them in front of a computer all day.

Based on their workers' widespread susceptibility to back injury, Norris and Buse decided on an aggressive back injury prevention program. The training they implemented at the University of Colorado and for the City of Modesto is ongoing, involves numerous departments and uses tracking data to measure success.

The Basics of Injury Prevention
Norris handles a wide array of risk exposures. Many of Modesto's municipal operations involve risks to the public; but equally challenging are the risks to the city workers who provide municipal services and run operations.

With a diverse employee base carrying out sometimes very different job tasks, Norris has created a proactive safety and health program that includes initiatives such as personal fitness training for fire department employees. Since 1999, he and his staff have used back injury prevention training to provide city employees with hands-on training that is practical and easily applicable.

"The number one outcome [that we wanted the training to accomplish] was to develop employee awareness so that the employees themselves could do something to prevent injuries," says Norris.

The training attempts to address and correct positions that all workers can be exposed to, including:

• Neck or shoulders forward
• Repetitive lifting and twisting
• Overhead lifting or reaching
• Back extension
• Prolonged standing
• Weight on one leg
• Prolonged sitting
• Hunching, crouching or kneeling

Susan Rock, an instructor with BodyLogic, who works with the city employees, explains the risk: "Workers are at the greatest risk when their bodies are away from a neutral position or posture. For the back this would mean anytime the worker bends forward—even as little as ten degrees—or has to extend back."

Results
With the use of preventive maintenance tools such as stretches and exercises, city trainees have experienced improvements in their individual risk of back injuries. Participants are classified as high, moderate or low risk depending on their level of function (results are kept confidential to encourage employee involvement).

Through ongoing training, Modesto's high-risk group has been reduced from 10 percent to less than 2 percent of total participants. The moderate risk group has been reduced from 70 percent to 50 percent and the number of employees in the low risk category has increased from 20 percent to 50 percent.

"The number of back claims has remained fairly constant, but claims per number of employees have actually declined as we have added additional staff," says Norris. "The real payoff has been in an overall decline in lost workdays and a reduction in the severity of claims. Teaching employees proper body mechanics and stretching exercises has not only helped prevent injuries, it also helps employees recover more quickly when injuries do occur."

Buse has had similar experiences at the University of Colorado, even though his workforce is very different. He introduced back injury prevention programming to strengthen aggressive loss prevention efforts.

"I had used back injury prevention training at my previous position as the risk manager of a public school district," say Buse. "Our number of claims dropped from two hundred and seventy to two hundred, but even more significantly our claims costs were reduced by more than fifty percent. At two hundred and seventy claims, our costs had been eight hundred and sixty thousand dollars. When we got down to two hundred, our costs were under four hundred thousand dollars. When I got to the University of Colorado, I wanted to put in place more aggressive loss prevention strategies and I wanted to implement back injury prevention to reinforce that."

In May 1999, more than four hundred employees were given basic ergonomic training for one week; most were from the facilities management and housing departments. As with the Modesto program, the training consisted of work site analysis and familiarizing employees with strenuous work positions and preventive maintenance exercises and stretches.

"The training gives employees knowledge that they can use at work and at home to ensure a well-supported back," says Buse. "And it's applicable for workers from custodians to office staff— it bridges occupational groups. I was hooked by the personal assessment that showed me my weak points and exactly how to improve my back function."

Since the first session, the training has been broadened to include additional departments and programs. Along with assessing high-risk positions, employees are taught how to perform six common positions—squat, lunge, bend, twist, push and pull—that enable them to carry out work tasks in the safest possible manner.

Ultimately, this gives workers the ability to make long-term behavior changes, which remains the most effective way of controlling the exposure and risk of back injuries.

In the three years since implementing back injury prevention training, the University of Colorado has experienced significant reductions in injury claims. In 1997, 518 claims were reported; in 1998, that number rose to 550 claims. After introducing more aggressive loss prevention efforts and back injury prevention training, claims were reduced to 391 in 1999 and 393 in 2000.

Proactive Efforts
A proactive stance on back injury prevention has helped both Norris and Buse strengthen their safety and health programs and provide their employees with practical training to prevent back disorders. Aside from the reductions in injury claims, the rewards are in positive employee relations.

For Norris, the responses from the police and fire departments in particular have reinforced the impact that the training has had. "They're a hard lot to get involved, but we've received rave reviews about the training," he says.

"This kind of training is important in showing credibility," says Buse, "especially to those departments [of university employees] that experienced higher numbers of claims, like facilities management and housing. Being able to show improved results makes people in other disciplines understand how risk management works. I also wanted to show that we considered our frontline workers important, because it is, after all, their dedication to the program that makes it possible."