Biomechanics: A New Tool in WC Claims Reduction?

By Lori Widmer

It could be a scene straight from Disney design studios. In fact, schematics of employees' bodies in various stages of lifting and twisting belong much more with high-tech computer animation, not with workers' compensation. Yet technology is now available that allows employers to determine with nearly perfect accuracy just how injured an employee is. Biomechanics, using digital computer imaging to measure range of motion and other functions, is being used for both prevention of injuries and determination of an employee's return to work.

Biomechanics technology uses computer software to measure the compression forces on elbows, shoulders, hips, knees, ankle joints, and the back. A camera records an employee in the process of lifting. The measurements are then fed into the computer and the software analyzes the amount of compression on the joints, which can determine where injuries could occur and if the employee is ready to return to active duty.

Biomechanics is not new. It was used since Aristotle first examined a human and animal gaits. It gained popularity during both world wars with the development of prosthetics for war veterans. Thanks to technology, biomechanics has once again been dusted off and put to use in the workers' comp arena.

Liberty Mutual Group, Boston, developed a unique process of evaluating the potential for injury through implementing biomechanics technology to assess the risks of employees who are engaged in manual lifting as part of their jobs.

Wayne Maynard, director of ergonomics and tribology, has developed VidLiTech system. "It's a software analysis tool that assesses lifting tasks. We provide analysis of risk factors associated with lifting, bending, reaching, etc." The software allows you to stream a video clip that you've shot in the field. One customer was installing a conveyor system. It had varying heights in the specifications. "We know that the optimum range for lifting is about 30 inches. This customer had the conveyor system at a much lower 25 inches, increasing the risk of potential injuries. Using VidLiTech, we computed it and showed them the forces on the lower back. The higher the forces, the higher the likelihood of injury," Maynard says.

"These tools are available for one reason and that's to make lifting safer," he says. "When we do such an analysis, we follow up with recommendations. If we have a job that has lifting, bending, and reaching components, we would run the product and it would provide data on the joints and stresses on the lower back."

Statistics on the success rate of this product have not been determined, but Maynard says the company's goal is to prevent one out of every three lifting-related injuries. He indicated that current research on the product could raise that estimate of prevented injuries to two out of every three.

What makes this technology so useful is its application and accuracy. "It's not based on tables," says Maynard. "You put in very specific information about the employee--height, measurements--then you put in the factors such as height that they're lifting, weight that they're lifting. Using the videotape, you run the software to approximate how they're actually lifting. In the end, you can see the stresses on the body."