

## MSD Prevention

### Developing an Early Symptom Intervention Program

By Christopher King

In 2007, Karl Storz Endovision (KSE), a manufacturing affiliate of medical device company Karl Storz GmbH & Co. KG, began a transformation of its manufacturing practices to reduce lead time, improve inventory control, reduce reliance on overtime, better synchronize vertically integrated operations, reduce employee turnover and boost morale. The KSE operation evolved from a traditional manufacturing resource planning scheduling system based on forecasts toward a lean manufacturing system rooted in the Shingo model and the Toyota Production System (TPS).

Surgical endoscopes and industrial boroscopes combine flexible fiber optics, powerful lights, lens, and advanced optic and digital imaging to enable minimally invasive examination of the body or machine spaces. Due to the small size and sensitive nature of glass and electronics parts, nearly all component assembly at the KSE facility in Charlton, MA, is carried out in several clean rooms by assemblers using microscopes and fine tools (Photo 1).

In 2010, with more than 400 employees at the facility, injuries related to musculoskeletal disorders (MSDs) and injuries or pain involving joints, ligaments, muscles, nerves, tendons and other support structures accounted for almost half of the total workers' compensation claims.

At the same time, workers' compensation premiums were significant each year. "We had a lot of walking wounded

at the time," recalls KSE general manager Bruce Watkins, who joined the firm in 2007. "The thinking was that if you are a production associate and you have a sore wrist or your finger is numb, you were going to have to take time off from work, schedule appointments and have to wait, sometimes weeks, to see a specialist. So, they would wait until it became critical enough to make a workers' compensation claim or other type of reportable injury."

#### Taking Steps to Prevent MSDs

As part of the KSE journey to lean manufacturing, the firm installed a wide range of new equipment intended to enhance worker comfort and boost productivity, including ergonomically correct chairs, workstations (Photo 2), safety belts and shoes. At the same time, KSE management learned about a multifaceted wellness program that had produced noticeable results at a neighboring manufacturer.

The early symptom intervention (ESI) wellness program from Quality Physical Therapy (QPT) employs a therapeutic approach known as Bio-Synchronistics (Photo 3). The technique features a whole-body methodology that uses one-on-one hands-on techniques to assess employees and identify the root cause of aches and pains. In many cases, the methods can relieve

cumulative stresses and strains before they develop into actual injuries.

The ESI program was particularly appealing to KSE because it was directly in line with a key cultural enabler of the Shingo model and TPS: respect for every individual. In addition, program administration was simplified by the fact that the therapeutic techniques used no modalities (e.g., ultrasound, e-stim). The fact that the program had already proven itself to be both culturally popular and financially rewarding at other local businesses helped make KSE's decision even easier.

In 2010, KSE embarked on a 12-week pilot program to introduce and assess the service. ESI was added to the other programs that had been implemented, such as behavior-based safety and stretching (Photo 4). An appointment room was established at the facility to conduct the pilot program. Two experienced clinicians from QPT staffed the examination room.

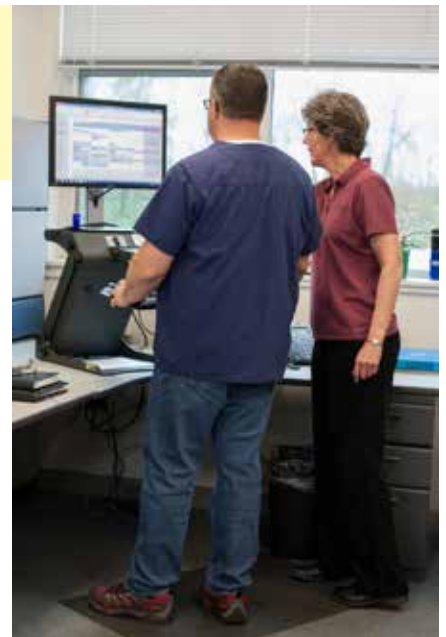
For the pilot program, as well as the ongoing program, any employee may request an ESI appointment time. A supervisor must approve the visit, primarily to arrange for a temporary replacement while the employee attends the appointment, which typically lasts about 20 minutes.

"Our goal was to create the path of least resistance to bring assistance di-



Photo 1: At KSE's Charlton, MA, facility, endoscopes and boroscopes are assembled from precision parts in several clean rooms by skilled technicians using microscopes and other tools.

Photo 2: Carol Tschirpke (right), co-founder of Quality Physical Therapy, advises Chris King, environmental health and safety manager for KSE, in the use of a new standing workstation.



rectly to employees in the workplace," Watkins notes. "By establishing the proactive approach embodied in ESI wellness, we are now able to deal with symptoms at an early stage by addressing the root cause."

### Making a Difference

Surveys show that KSE employees, now numbering more than 600, appreciate the ESI wellness program. They understand that they can sign up for an appointment for any reason, even for nonwork-related symptoms. For example, those who strain their back playing softball or shoveling snow are free to take advantage of the program. There is no copay or lost work time. The employee simply fills out a symptom form, gets approval from his/her supervisor and steps off the line for 20 minutes at the appointment time. Another worker temporarily covers the position and work flow is not disrupted. If the clinic is heavily booked, preference is given to assembly associates over administrative staff.

The company's safety culture has changed since implementation of the program. It is a proactive approach; employees now identify symptoms before they become injuries. Once the first few workers experienced positive results, word spread throughout the facility.

The results of the program were almost immediate. The shift from reacting to injuries or pain to proactively addressing aches and pains before they become injuries was a critical improvement. The program played a major role in reducing OSHA recordable MSD injuries at KSE by more than 90% in its first 3 years. "The ESI staff provides one-on-one coaching interactive on-the-floor coaching for high-risk ergonomic hazards," Watson says. "This positive reinforcement helps empower employees and managers to act quickly and responsibly to adverse symptoms, thereby preventing injuries from occurring."

### Above-Average participation

A 2014 nationwide survey by the RAND Corp. shows that 69% of employers with more than 50 employees offer a wellness program. Among employers that do not offer direct incentives (i.e., rewards or penalties), such as

**Photo 3: Early symptom intervention is practiced at the wellness clinic on site at KSE. Here, a pioneering form of hands-on therapy known as BioSynchronistics is provided to help normalize postural imbalances, and relieve other stresses that may be causing pain or discomfort.**



**Photo 4: Early symptom intervention at the KSE manufacturing and research site includes industrial stretching (shown here), ergonomic equipment, on-site wellness sessions and other programs.**



KSE, the median employee participation rate in wellness programs is just 20%. KSE employee participation in the ESI wellness program hovers at about 75%.

"There are a lot of engineers and other technically trained employees at KSE, and they really understand our approach," says QPT's Carol Tschirpke. "When we explain that we are balancing the body around its center of gravity and addressing the root cause of symptoms, they get that."

"For instance, a person may have a stiff neck that limits his motion. We may discover that the person is an avid bicycle rider and we find that his hip flexors and abdominal muscles are tight. By working the abdominal fascia and hip flexors, we may be able to relieve a stiff neck without ever going near the person's neck."

### Bottom-Line Benefits

KSE attributes several positive outcomes to the ESI program.

- Over the past 5 years, workers' compensation insurance premiums paid by KSE have been cut nearly in half. At the same time, the employee head count has risen by nearly 200.

- The firm's experience modification rate has also fallen from a high of 1.17 in 2012 to 0.74 in 2016, reflecting a drop in total claims.

- MSD claims have been reduced from an average of 13 to just one or two per year over the same period.

Savings in workers' compensation and health insurance premiums more than pays for the wellness program.

**Christopher King** is the former manager of environmental health and safety for Karl Storz Endovision, Charlton, MA. He is currently a consultant for injury prevention and work site wellness for Associated Industries of Massachusetts. He has implemented proactive safety programs, safe work practices, continuous improvement, and innovative wellness and ergonomic programs focused on eliminating work-related and non-work-related injuries, and reducing workers' compensation and health insurance costs. King is president of ASSE's Worcester County Chapter, as well as a member of the Manufacturing and Ergonomics practice specialties.

The company has also seen a reduction in sick time and absenteeism, fewer emergency room visits, and reduced use of specialists and imaging.

ESI wellness clinicians have also become involved in a growing list of related preventive and therapeutic programs at KSE. "We're getting invited to more Kaizen events," notes Tschirpke, referring to meetings conducted by process owners and operators who wish to make process improvements. ESI clinicians are asked to provide advice on workstation ergonomics, provide industrial stretching instruction, conduct lunch-and-learn meetings (e.g., how to get a better night's sleep), and lead preventive maintenance groups for employees with similar symptoms (e.g., arthritic knees, backs, shoulders).

Wellness has become an integral part of KSE's lean approach. "The program helps send a strong message to our employees that we value and respect them," Watkins emphasizes. "When I announced to our sales and logistics group that we were extending the ESI wellness program to them, the room erupted in applause. We are an example of success for our insurance carrier as we now rarely use our workers' compensation funds."

### References

RAND Corp. (2014). Workplace wellness programs: Services offered, participation and incentives (Document No. RR-724-DOL). Santa Monica, CA: Author.