OUTCOME MEASURES IN INJURY PREVENTION: CASE STUDY

By Scott Ege, Ege WorkSmart Solutions

A medium sized manufacturing industry worked with Ege WorkSmart Solutions to reduce injuries, measure the related outcomes, and obtain employee feedback on the stretching component. Management demonstrated commitment to the prevention efforts by providing the necessary resources and capital to support the overall MSD prevention initiative and measure outcomes.

In 2006, I worked with a manufacturing facility to implement a comprehensive ergonomics program specifically focused on reducing the frequency and severity of musculoskeletal disorders. Ergonomics training was provided over nine months for all supervisors and employees. Over 180 “ergonomic opportunities” were identified and addressed.

After ergonomic changes were in place, a stretching program then was delineated. Evidence on stretching is positive but mixed. Many studies demonstrate physiological benefits of stretching [1-5]. Some indicate stretching in the workplace can be beneficial in reducing muscle-related discomfort and musculoskeletal disorders [6-7]. Two studies conclude stretching should be part of an overall injury prevention program, not “stand alone” [6-7].

The standardized stretching program began with all production employees including machining, assembly, and shipping/receiving areas. Mandatory participation included over 400 employees. 42 “Stretch Coaches” were trained to lead stretch groups of 6-12 employees. To measure employee “buy-in” and satisfaction, the Stretch Coaches completed surveys at 6, 12, &18 months. 100% returned the surveys. 19 males and 23 females participated: Average age -40.1 years and average years of service- 12.5.

The 5 survey questions rated satisfaction on a 1–10 scale. Average response to “How beneficial would you rate the Stretching Program” ranged from 7.5 to 8.2, which the employer interpreted as “very positive”. 75% felt stretching should “definitely” be performed twice a shift. 81% indicated “no changes” to the stretches were needed. Over 50% performed at least one stretch during their shift outside of the scheduled stretching times.

Measurement of combined results of the injury prevention programs of safety, ergonomics and stretching interventions were analyzed:

- The company experienced zero lost work day cases in 2007 and only two lost day cases in 2008. This represented a 67% reduction of lost work day cases over the previous five year average.
- In addition, a 50% reduction in MSD-related cases was realized. This reduction included both OSHA recordable and first-aid cases.

Prevention of work-related musculoskeletal disorders requires a comprehensive approach. This study measured both satisfaction with a specific stretching regime and the effectiveness of the overall program of ergonomics, safety, and stretching. Program outcomes can be used by employers to validate, modify or expand injury prevention.

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815-988-7588  www.egesolutions.com
○ Hebert, L; “Preventive Stretching Exercises for the Workplace”, Orthopedic Practice, Vol. 11, April 1999

DSI WORK SOLUTIONS TO OFFER AUDIO CONFERENCES

For the continuing education season of fall 09-spring 2010, DSI Work Solutions is creating audio conferences on several topics.

- Ergonomics
- Post Offer Testing
- Stretching and exercise onsite,
- Job Focused Acute Musculoskeletal Care
- EARLY return to work
- Functional Capacity Assessment Evidence
- Improving employer and medical provider communication

If you would like to receive more information or suggest additional topics, please contact Susan Isernhagen at sisernhagen@dsiworksolutions.com

RESEARCH UPDATES

Two recent research articles point to cost effective measures for work injury management of low back problems. The Bigos research identifies physical exercise at the worksite as the most effective injury prevention strategy.

The second study offers a non-surgical cost effective option for treatment of low back problems, avoiding costly interventions.


Bigos et al, studied research and selected only the high quality studies for inclusion. Interventions studies included back/ergonomic education, lumbar supports, shoe inserts and reduced lifting. Exercise interventions were found effective and other interventions not effective.

The exercise identified as successful in different studies varied from stabilization exercises (strengthening of core trunk muscles to stabilize the back), strengthening of back and abdominal muscles, exercise in lifting techniques and others. The authors also stated “the varied successful exercise approaches suggest possible benefits beyond their intended physiological goals. By this, they indicated that creating a body awareness and a capability awareness may have also had a positive effect either on the reduction in back injury or the reduction in back injury “reports”.

In a later statement, one of the coauthors, Holland, mentioned that this did not mean that ergonomic work changes themselves had been discarded. Ergonomic intervention needs further study.


This review states that meta-analyses of the literature have expanded what is known about degenerative disk disease. In most patients symptoms resolve without surgical intervention. **Physical therapy and nonsteroidal anti-inflammatory drugs are the cornerstone of successful nonsurgical treatment.**

Other more invasive procedures such as intradiskal electothermal treatment have not been shown to be effective. Nucleus replacement and motion sparing technology have not been studied long enough because
Certain equipment and principles can solve multiple ergonomic problems. The following are the problems and the solutions:

**Ergo problem**: Home transcriber used an “off the shelf”- small computer desk. The desk was narrow and had a non-adjustable pull out tray for the keyboard.

*Problem*: Neck and shoulder pain. The keyboard was at a height that was too low- forcing rounded posturing.

*Answer* was Ergo product: “Morency arm rest” available from Alimed.

*How it works*: This u-shaped arm-rest attaches to the desk and allows the worker to rest the arms on it while typing. It promotes a more upright posture. She did not use the pull-out tray as the desk was low enough she could place the keyboard on the desk and keep the elbows at about 90 degrees of flexion. She was also able to slide the monitor back to keep it at the comfortable distance from her for visual purposes. (eyesight line horizontal to top of the script on the screen)

**Ergo problem**: Worker experiencing early carpal tunnel symptoms; worked at a standard keyboard for the majority of the day. Her wrist position was hard to adjust for neutral positioning.

*Ergo product*: Ergo advantage Contoured keyboard (was called the Kinesis).

*How it works*: this is a split design keyboard with two “bowls”; one half of the keys are in each “bowl”. This configuration allows less deviation and more neutral positioning of the wrist. It allowed this worker to continue at her job without symptoms.

**Ergo problem**: worker experiencing carpal tunnel symptoms -- data entry with frequent use of the mouse.

*Ergo product*: 3M Reneissnace Mouse

*How it works*: this is a “handshake design” or joystick type of mouse- allowing a neutral wrist position. The worker was also advised to alternate between the right and left hands when using the mouse. This mouse allowed her to perform work with less symptoms

**Ergo problem**: Lack of space on desk when using the standard, L-shaped desk with one portion lower and narrower than the other. Due to the “drop-off” the workers could not utilize the corner to place the monitor and keyboard, and tended not to use the lower portion of the desk much at all.

*Ergo product*: None- had the maintenance men modify the desk to make it all one level and add an extension onto the lower portion – adding space and allowing more posture variety.

**Ergo problem**: hand fatigue from opening boxes- using a utility knife and then pulling the box open.

*Ergo product*: gloves with a tacky surface.

*How it works*: the gloves allowed the workers to use less grip force when opening the boxes- with both the knife and with their hands (they were encouraged to use sharp blades and not use the hands as well). Fatigue was reduced and slippage for safety was also reduced.

*Alimed’s website is* www.ERGObilities.com;

*Gloves;* www.marigoldindustrial.com;

*magidglove.com or pipUSA.com; USA@bestglove.com; www.valeoinc.com*

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**CONSTRAINING ARTHRITIS**

By Ginnie Halling PT, Work Therapeutics

*Case In Point* magazine, the official magazine of the Case Management Society of America, published Halling’s article, “Constraining Arthritis”. It is an overview of how joint disease and joint damage from osteoarthritis affects a significant portion of the American population. The article discusses the prevalence of this disease and the impact of obesity, nutrition and a more sedentary lifestyle. It explores strategies for slowing the progression and effects of osteoarthritis, and reviews current medical management approaches. Management strategies are highlighted including physician management with
medications, injections and surgery, and rehabilitation management with education, exercise and various treatment interventions.

Some highlights of the article include:
- the Arthritis Foundation: **27 million Americans have a form of osteoarthritis**
- age is the number one contributing factor to primary osteoarthritis which affects the weight bearing joints- spine, hips, knees, fingers
- injury, overuse, poor nutrition and a *sedentary lifestyle* are major contributing factors to secondary osteoarthritis which affects shoulders, elbows, wrists and ankles. These factors can accelerate primary osteoarthritis as well

Although this article speaks generally about this disease’s effect on Americans, the impact on the American workforce can be construed from this piece as well. Employers need to be educated and informed about how osteoarthritis is affecting their workforce. They need to use this information in a positive and proactive way to help workers make better choices that maintain quality work lives as well as quality home lives. For example, **there is a tendency to place aging workers into more sedentary jobs “arbitrarily”**. **Research tells us that staying active at an appropriate level is more healthful** than becoming sedentary. Employers and employees could use functional testing and job matching to track safe ability, and keep aiming towards a safe work level that encourages an appropriate level of work activity.

The article can be read in its entirety at [www.caseinpointmagazine.com](http://www.caseinpointmagazine.com), February/March 2009 issue. Select the “clinical focus” and then the “disease management” tabs.

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