

## **COMMENTARY ON THE STATUS OF THE WORKPLACE AND REPETITIVE STRESS INJURY**

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The fingers, wrists, hands, ligaments, joint structures, and bones of employees using keyboards, cell phones, BlackBerrys, i-pods, or text messaging devices are taking a beating. The American College of Rheumatology estimates that 3% of the population now suffers from carpal tunnel syndrome (CTS) and this is only one of many repetitive stress injuries (RSI).

More technology is not reducing the growing epidemic of RSI affecting hand and wrist movements, such as use of hand tools, sports activities, or any movements requiring fine motor coordination. Ergonomic devices for employees work only if each device is specifically designed and customized for the employee and the employee actually uses it. Regardless of whether the true cause is recreational activities or job related, work gets blamed and the employer pays.

CTS, a leading cause of workforce disability, costs employers \$60 billion annually. Costs continue to rise. CTS now represents 62% of all Workers' Compensation claims. 73% of workers suffering from CTS do not return to the same job. Retraining is expensive. Lost productivity is never recovered when workers are assigned a different job, as they may lack experience, interest or the necessary skills. Modified work duties reduce the optimal performance and contribution of the workers, when they are not working at their capacity.

How can employers reduce their workers' RSI and lower costs of Workers' Compensation claims? Start with early detection and an accurate diagnosis. Today, more than 50 % of CTS cases are misclassified and consequently, as expected, OSHA reports that 45% of CTS surgeries fail.

Obviously, CTS screening is effective, but only when the person can be actually detected with CTS, accurately, reliably, and cost-effectively. Different wrist and hand conditions, such as those associated with Fibromyalgia and Reynaud's Disease, have physical symptoms similar to CTS. To date, diagnostic tests for CTS have not been specific or sensitive enough to accurately determine if the person truly has CTS or whether surgery is the only option.

New diagnostic tools can improve health screening, medical treatment and outcomes. During the past three years, researchers at our Foundation have studied a new, non-invasive FDA-approved device that accurately measures and evaluates hand functionality. This simple five-minute test uses a 12-ounce handheld device to measure the mechanical forces applied by the thumb, index finger, and little finger. Every 4 milliseconds, three types of measures are collected, giving a total of 180,000 measurements that are used to compute the probability of a person having CTS or other impairments. Easy-to-read graphs show the level at which a person's hands and wrists are currently functioning.

This device is used to screen employees for early-stage CTS when it is still curable. New hires who may have early symptoms of CTS can be pre-screened and assigned to jobs that would have less likelihood of injuring the hands. Now, we have the potential to follow individual workers over time to monitor their hand functionality so that early interventions at the workplace can be considered to prevent injury.

The accuracy and reliability with which physicians currently identify and diagnose CTS can be improved. Moreover, the ability to evaluate recovery of hand functionality after therapy or surgery is now possible. Workers need to know precisely when they can return to work and resume their jobs. Additionally, this device can be used to study other RSI and other work-related disorders or injuries that affect hand functionality. Our preliminary results are showing that each distinct hand condition has unique motor and sensory characteristics.