

# TCOM NEWSLETTER

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## MEDICAL NEWS BRIEFS

### *Long Working Hours May Be Risk Factor for Decline in Brain Function*

Long working hours may predict decline in cognitive function, says recent research coordinated by the Finnish Institute of Occupational Health and University College London. Results, published in the *American Journal of Epidemiology*, indicate that advances attained by working overtime may be lost in terms of reduced well-being and cognitive function of employees. More than 2,000 middle-aged British civil servants participated in the present study. The effects were cumulative – the longer the working week, the worse the test results. Employees with long working hours also had shorter sleeping hours, reported more symptoms of depression, and used more alcohol than those with normal working hours.

### *Link between salt and potassium levels to Heart Disease*

According to a new analysis from the National Heart, Lung, and Blood Institute (NHLBI), sodium and potassium may work together to affect blood pressure and heart disease risk. When the ratio of sodium to potassium is too high, risk for cardiovascular disease was increased. The findings suggest that lowering sodium intake while increasing potassium consumption may reduce cardiovascular disease.

**COMMENT:** *The relationship between salt intake and high blood pressure has been known for a long time. This research supports a theory taught years ago by one of my internal medicine professors, that the human kidney was designed to preserve salt (sodium), and excrete potassium. The kidney, which plays a central role in blood pressure regulation, is best suited to a high potassium and low salt diet, the ratio of which is naturally found in a diet high in potassium rich vegetables. Salt was a precious commodity in ancient cultures because of its scarcity. Today it is overabundant in our Western diets. – Dr. Kusnetz*

### *Questionnaire Can Predict Back Pain Disability*

The Liberty Mutual Center for Disability Research and University of Massachusetts Medical School report that a short questionnaire administered to workers with acute back injury can predict 3 month disability status with a > 75% accuracy. Worker compensation claims data suggests that for individuals who are not working 3 months after onset of back pain, 78% will remain out of work for at least 6 months, and 56% for at least one year.

Although screening questionnaires have been tried in the past, few are focused on workers, or administered within the first few weeks of pain onset. Although only 10% of worker's filing claims for back injuries receive treatment for more than six months, these cases account for 83% of costs related to lost time and health care. The questionnaire developed for work related back pain was designed to be given to the patient within the first 14 days after pain onset.

Workers who reported prior back surgery had nearly a 5-fold increase in persistent back problems at 3 months. Patients who had been working less than one year before back pain onset or who had already missed a day of work had more than double the risk of persistent problems at 3 month follow up. Individual concerns of re-injury, fear of returning to physical work, and the presence of life stressors each contributed to a 2-fold increase in the risk of persistent problems at 3 months. Although psychological intervention to address these factors has been shown to be beneficial, there has been little acceptance to promote behavioral and psychological interventions in workers with back injuries.

**COMMENT:** *This study confirms earlier work that identified psychological components that predict severity and likelihood of reinjury in work related back pain. Beside prior back surgery, psychological components are the largest determiners of back pain disability. Since psychological approaches have been shown to benefit return to work and pain resolution, we must bite the bullet and address these patients in a more holistic approach than just ordering an MRI, orthopedic consult, physical therapy or epidural injection for the patient with persistent pain. No one benefits when we continue to ignore the elephant in the room. – Dr. Kusnetz*



## *Helping Employees Address Substance Abuse*

Employers now have free access to a series of 14 two-page briefs outlining the benefits (including financial) of helping their employees receive treatment for substance abuse. The 14 briefs were developed by the Substance Abuse and Mental Health Services Administration (SAMHSA). The briefs discuss a variety of workplace related topics including the full effects of substance abuse in the workplace; how employee assistance programs can be cost effective; and substance abuse's effects among younger and older employees. The briefs are free and available in print and on line. To order printed copies, call SAMHSA at 877-726-4727; or download the on-line version of the briefs at <http://csat.samhsa.gov/IDBSE/index.aspx>.

## **Does Physical Therapy Really Work for Back Pain?**

In the 1960's physical therapist Robin McKenzie developed a method of categorizing and treating back pain according to mechanical derangements. Decades later, his "McKenzie Method" has become increasingly popular among physicians and therapists who care for patients with back injuries. The reason is because it works. While generic physical therapy banks on the fact that 90% of patients with back pain are healed within 6 weeks regardless of treatment, randomized studies have shown that the McKenzie Method is clinically more effective than other treatment guidelines, and can determine if a patient will respond to treatment within two weeks.

According to the McKenzie Method, patients are categorized into one of four groups, three of which should respond to therapy. Those who fall into the last category do not have mechanically generated pain and will require a different treatment modality. What makes the McKenzie Method so attractive to physicians is that the patient should see definite improvement within two weeks of treatment. Additionally, the focus of treatment is on educating the patient to treat him or herself with a program of home exercises. "Treat Your Own Neck" and "Treat Your Own Back" are the titles of McKenzie's book that emphasize self reliance in dealing with future or recurrent episodes of pain.

Unfortunately, most physical therapists are not certified in the McKenzie Method. The vast majority of therapists use a combination of modalities for pain control, myofascial techniques (massage), and stretching exercises that have no proven effectiveness in speeding the return to function. In the meantime, nature takes its course and the patient's pain resolves regardless of treatment offered. It's no surprise that therapists document slow improvement while requesting additional therapy that extends into the 6-8 weeks anticipated recovery period.

The McKenzie Institute provides training, testing and certification of physical therapists. Learning the system takes a considerable period of time and both written and clinical tests are administered. Once certified, a therapist is listed by Institute. To find a McKenzie trained therapist, see [http://www.mckenziemdt.org/index\\_us.cfm](http://www.mckenziemdt.org/index_us.cfm)

### **McKenzie Back Pain Classification**

**DERANGEMENT-** pain that "centralizes" or moves to the center of the back when the patient bends in a particular direction.

**DYSFUNCTION-** pain in conjunction with limited range of motion (bending)

**POSTURAL-** pain occurs at the end of range of motion, although range of motion is not limited by pain

**NON-MECHANICAL-** pain does not fall into one of the three other categories. Pain may be from chemical irritation, medical disease, or psychological in origin.

## COLOR VISION

Very few occupations require perfect color discrimination, but for some occupations, normal color discrimination is essential.

Defective color vision is found in 8% of men and less than 1% of women. For practical purposes, the most common problem is an inability to identify red and green. Although some color vision problems are temporary or correctable (for example lens opacities or toxicity from medicine), most color vision defects are permanent.

Prolonged work with display screens can produce a perceived temporary color shift complementary to the color of the screen. Employees exposed to high energy lasers can also experience a permanent shift in color vision.

Occupations requiring normal color vision can be broken down into three main categories: transportation and signal recognition, occupations using color coding for technical or safety purposes, and commercially color dependent services.

Transportation, navigation and military occupations use colored signals routinely, and demand that employees be able to discriminate between signals. Proper installation, maintenance and testing of signals requires the employee to have the ability to distinguish colors. Testing of signals has been established because of past errors attributed to incorrect color vision during installation. Technical interpretation of dip sticks used in medical tests or swimming pool chemistry analyses also falls into this category.

Color coding used for technical purposes includes coloration of wires, cables and pipes that are found in telephone, communications, and building maintenance. Often, cables, wires and pipes are located in otherwise poorly lit and dusty conditions. Telephone wiring uses multiple combinations of colors within the same wires.

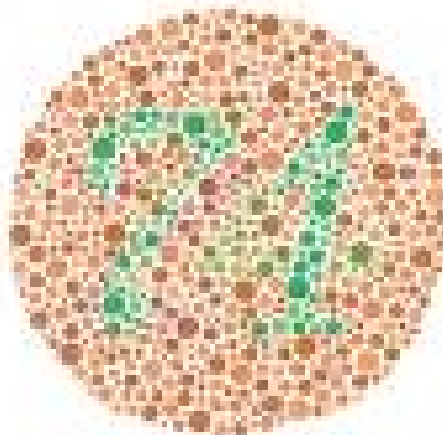
The last category of occupation dependent on normal color vision is the commercially color dependent industries. Textiles, printing, and dyeing demand excellent color discrimination.

Color vision may be tested by a number of standardized tests including Ishihara color plates, lantern and the Holmgren wool test. An example of an Ishihara test is seen on the right. Can you tell what number is inside? You should see the number 74.

## Total Care Occupational Medicine *YOUR ADDRESS FOR*

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# CARDIOVASCULAR FITNESS FOR WORK

**Q:** I have an employee who had a heart attack and his doctor gave him a note saying he can come back to work. I'm afraid he'll have a heart attack at work. How do I know it's safe for him to work?

**T**he first six to 18 months following a heart attack is the period of highest risk for death. The risk of death within one year is up to 10%, and about 1/3 of those deaths occur suddenly. Those with diabetes, older age, and lower left heart function are at highest risk.

Physical activity increases the work on the heart and lungs to pump more oxygen to the muscles, and remove carbon dioxide and breakdown products of energy use. The amount of work on the heart has been estimated by using a measure of the amount of oxygen required for specific activities. Sitting at rest in a room with normal humidity and temperature will require one "metabolic equivalent" (known as a MET). The MET is a measure of how much oxygen consumption is necessary for the activity. The increase demand for oxygen is described in increasing units of METS. For example, driving a car is estimated to use 3 METS, while shoveling requires 7 METS.

If we know how many METS a certain activity requires, we want to know is if the employee can safely perform that level of activity. People who are healthy and athletic are capable of attaining a higher MET score. This is due to good exercise tolerance that results from regular exercise. Exercise testing can tell us about the employee's physical conditioning, exercise tolerance, and presence of symptoms that limit exercise. It also tells us if a person's heart is not getting enough oxygen. Lack of enough oxygen may cause abnormal electrical heart rhythms, cause angina, or ultimately, death of heart muscle, known as a heart attack.

The patient may stop the stress test for leg pain, shortness of breath, chest pain or fatigue. The stress tests typically measure how many METS are accomplished at specific time intervals of exercise on the treadmill. Physically active subjects can achieve 5-16 METS on testing. Sedentary, but otherwise healthy people usually achieve 4-10 METS. Patients with heart disease usually do not exceed 7 METS.

Several workplace exposures present special problems. Heavy work, work in very hot, humid, or very cold conditions, rotating shift work, travel, emergency response, mandatory overtime, and exposure to cardiac toxins all must be considered in returning the employee to work even if the employee is asymptomatic. All of these factors may increase the heart's demand for oxygen. In addition, employees with lung disease are at even higher risk, due to diminished oxygen exchange.

An employee who is unable to exercise on a treadmill for whatever reason indicates significant exercise intolerance, and is very likely unfit for physically demanding work.

Cardiac rehab is sometimes prescribed following a heart attack. Cardiac rehab is a program of increasing exercise and activity while under monitoring to build up a person's exercise tolerance. Patients should not return to work until they have demonstrated an ability to perform at the anticipated work activity level while in rehab.

Return to work for commercial drivers is regulated by DOT guidelines published by the Federal Motor Carrier Safety Administration. According to those guidelines, drivers should be able to achieve a workload of 6 METS, have a normal stress test, clearance by a cardiologist, and a demonstrated left ventricle function of >40%. Of course, they must also be free of symptoms of heart disease. Following a heart attack, commercial drivers are required to be recertified every year.



## Demand on the Heart Activity METS

Rest	1
Sweeping the floor	1.5
Driving a car	2.5
Making beds	3
Bricklaying	3.5
Wheeling barrow	4.0
Carpentry	5.5
Shoveling	7
Ascending stairs with 17 lb load	7.5
Heavy labor	>7.5