



Kansas RTAP Fact Sheet

A Service of The University of Kansas Transportation Center for Rural Transit Providers

Dangerous Discomfort: Avoiding Repetitive Strain Injuries

by Laura Snyder

What are repetitive strain injuries?

If you are a transit worker who spends most of your day sitting on a bus or in the office, or if you are a mechanic who uses hand tools, you might be at risk of developing a repetitive strain injury. Called musculoskeletal disorders, or MSDs, by the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA), these injuries encompass a number of more commonly known disorders, such as Carpal Tunnel Syndrome, tendonitis, and low back pain.

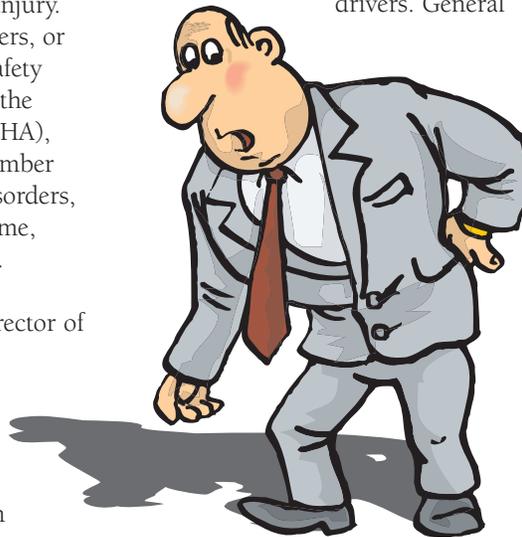
According to Jaye Cole, occupational therapist and director of Lawrence Memorial Hospital's Kreider Rehabilitation Services, the term musculoskeletal refers to the soft tissues supporting the skeletal system injured by chronic overuse or misuse, including muscles, tendons, ligaments, joints, and cartilage.

Common symptoms of musculoskeletal disorders include pain, swelling, numbness, tenderness, muscle spasms, weakness, or loss of joint mobility or coordination. One single strain or sprain will not cause an MSD. You are more likely to develop an MSD over time from repetitive use and misuse.

Who is at risk?

Drivers, dispatchers, and office staff who maintain sedentary positions

throughout the day are especially susceptible to MSDs in the lower back. Heavy lifting, such as assisting persons into wheelchairs, may be a contributing factor for drivers. General



office staff can suffer wrist injuries from keyboard use, while dispatchers who do not use head-sets run the risk of neck and shoulder problems from frequent telephone use.

Maintenance workers and mechanics risk inflammation of the wrists and hands from using tool handles that are too short or dig into their wrists or palms. Vibration from power tools over time can cause MSDs, as can exerting extra force while lifting, pulling, pushing, or gripping a tool.

Pre-existing medical conditions and

lifestyle add to work-related MSDs. Joint disease, arthritis, diabetes, gout, pregnancy, and the use of oral contraceptives increase the risk or worsen MSDs. Certain health conditions may slow the healing process. Arthritis especially "puts fuel to the fire" by contributing to an existing inflammatory process, said Cole.

Workplace effects

Improving ergonomic conditions will increase your worker productivity, boost morale, and decrease workers' compensation premiums. The U.S. Department of Labor's Bureau of Labor and Statistics reports that MSDs accounted for 34 percent of the injuries and illnesses that caused employees in private industries to take days off work in 2002. MSDs cost the U.S. more than \$2.1 billion each year in workers' compensation, according to the National Occupational Research Agenda.

Cole compares trying to perform a job task with an MSD to trying to drive a car with a bent axle. "You're not going to get very far," she said. "If you're doing it in a position that puts a lot of stress on the joints, you're not going to be able to keep doing that."

What can workers do to prevent MSDs?

You can decrease the likelihood of developing an MSD by getting moderate exercise, having good posture,

and stretching. Cole said MSDs are more likely to result from misuse than overuse. Slouching can cause back pain for workers who spend the majority of their time sitting.

“If you sit in a slouched position all the time, it puts stress on ligaments that hold the bones in place,” said Cole. Even worse, when you have to exert yourself to lift something heavy, like a wheelchair, your ligaments will not be as strong and you will put your body at risk of injury.

When sitting for extended periods of time, try to sit upright and tighten your abdominal muscles. Try placing a rolled up or folded towel in the small of your back to prevent your body from slouching. You can also purchase lumbar pads that serve the same purpose.

Stretching is key to avoiding MSDs. If possible, Cole suggests planning stretch breaks every hour. During this break, stand up, walk around, stretch in the opposite direction of what your body has been doing, arch your back, then curl over and touch your toes. These exercises, called a Recovery Technique, send new oxygen into the muscles and prevent tightness and stiffness from building up.

What can transit agencies do?

Transit agencies can take some steps to make sure their workplaces are friendly to employee needs and minimize risk of MSDs. This practice, called ergonomics, is a science that fits workplace environments to individual workers. It involves redesigning equipment, work spaces, and job tasks to fit the physical capabilities of workers of all shapes and sizes to prevent injuries.

Your agency should look at bus design to see if the driver seats are comfortable, upright, and most importantly, adjustable. That way, the driver can ensure that there is a good distance from the seat to the foot pedals. The hips and knees of the driver in the seat should be at a 90 degree angle. Make sure the tilt on the steering wheel is adjustable, and the controls of the bus are within arms’ reach of the driver.



Here are a few common musculoskeletal disorders and their symptoms:

Carpal Tunnel Syndrome is caused by constant bending of the wrist or pressing it against a hard object, like holding a tool or steering wheel too tightly. Compression of a nerve in the wrist causes inflammation in the hands, wrists, and fingers.

Tendonitis is the inflammation of a tendon or the sheath-like surrounding of a tendon. It affects a variety of tendons to produce specific conditions, including:

- Tenosynovitis, which affects the wrist;
- Trigger finger, which affects the palm side of the fingers;
- DeQuervain’s Disease, affecting tendons in the wrist which control the thumb;
- Epicondylitis, including tennis elbow and golfer’s elbow; and
- Rotator cuff tendonitis, affecting the shoulder and upper arm.

Low back pain is caused by frequent or incorrect lifting, pushing, pulling, bending, or reaching.

Mechanics can limit the incidence of MSDs by examining tool size and shape. Look for tools that require the least amount of grip. Thick handle surfaces on vibrating tools will decrease vibration without requiring a stronger grip. Select vibrating tools that do not blow cold air over the hands. Cold air reduces blood flow in the hands and decreases muscle strength, putting a worker at higher risk of injury.

In the office, use adjustable keyboard trays to allow height to be fitted to individual workers. Keep your wrists straight while typing. Try using a padded wrist rest and be sure to keep the keyboard flat instead of tilted. The padded rest also keeps wrists off sharp desk edges. Position your computer monitor directly in front of you so you can avoid twisting your neck. Dispatchers should use head-sets or speaker phones to decrease neck and shoulder discomfort.

According to Cole, it is also important to teach workers about MSD prevention and encourage them to stretch and improve posture.

Federal and state guidelines

Neither the Occupational Safety and Health Administration (OSHA) nor the Kansas Department of Labor (KDOL) has an ergonomic standard. This makes

it difficult to cite hazards unless injuries are actually reported, according to Rudy Leutzinger, Administrator of Industrial Safety and Health at KDOL. If there is no injury reported, inspectors can make recommendations for hazard abatement. OSHA does have a set of ergonomic guidelines, which Leutzinger said KDOL primarily relies upon when identifying hazards.

In state, city, and county agencies, hazards can be discovered either by employee complaints or during inspections. Employees can phone in complaints to KDOL or to the Kansas Department of Administration’s Division of Personnel Services. Leutzinger said KDOL tries to perform inspections in the public sector every three to five years, but recent budget cuts have made it difficult to achieve the desired frequency of inspections. Another way KDOL discovers hazards is to monitor reports of workers’ compensation, injuries and illnesses. A high number of injuries would prompt KDOL to notify an agency and offer assistance in hazard abatement.

City or county agencies can be penalized under KSA 44-636 for \$25 to \$100 per hazard per day, but Leutzinger said KDOL has never assessed penalties. He said they are more concerned with getting the

hazard corrected within the required 60 days. "As long as they do that, we don't see any reason to penalize or fine," he said.

In the private sector, OSHA's hazard penalties run up to \$7,000 for serious violations and up to \$70,000 for willful, repeated violations, but inspectors may reduce fines depending on the good faith of a business owner or the size of the business.

OSHA issues citations under its General Duty Clause, which states that an employer has an obligation to "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

Private companies with less than 250 employees may request a consultation with KDOL's 21(d) Consultation Project. The service is free and confidential.

The 21(d) Consultation Project also oversees OSHA's Safety and Health Achievement Recognition Program (SHARP), which helps employers work with their employees to develop workplace safety programs. First, an agency must request a consultation. KDOL performs the consultation, during which KDOL assesses an agency's hazards, trains employees, and usually helps write a safety and health plan. Finally, before entering the SHARP program, injury and illness rates for the business must be below the national average for the business's particular industry.

No citations are issued during the consultation. After completing the consultation, SHARP program participants receive a two-year exemption from OSHA's General Schedule Inspections. For more information on the SHARP program, contact Rudy Leutzinger at (785)296-4386 or Rudy.Leutzinger@dol.ks.gov.

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Resources on repetitive strain injuries

The sources below also contain much more detailed information than we have space for here. All are available on-line:

Center for Disease Control: Ergonomics <http://www.cdc.gov/od/ohs/Ergonomics/ergohome>

Kansas Department of Labor: Workers Compensation Industrial Safety and Health Section
http://www.dol.ks.gov/wc/html/wcSHARP_DEE.html

Kansas Legislature: Kansas Statute No. 44-636
<http://www.kslegislature.org/cgi-bin/statutes/index.cgi>

National Occupational Research Agenda. Musculoskeletal Disorders of the Upper Extremities
<http://www.cdc.gov/niosh/nrmusc.html>

National Transit Institute Musculoskeletal Disorders Hazard Fact Sheet
http://www.ntionline.com/documents/NTI_36300_f_Sheet_disorder.pdf

U.S. Department of Labor: Occupational Safety and Health Administration: Consultation: Free On-Site Safety and Health Services
<http://www.osha.gov/dcsp/smallbusiness/consult.html>

U.S. Department of Labor: Occupational Safety and Health Administration: Ergonomics: Enforcement
<http://www.osha.gov/SLTC/ergonomics/enforcement.html>

U.S. Department of Labor: Occupational Safety and Health Administration: Ergonomics: FAQs
<http://www.osha.gov/SLTC/ergonomics/faqs.html>

U.S. Department of Labor: Occupational Safety and Health Administration: OSHA Facts Sheet: OSHA Inspections http://www.osha.gov/OshDoc/data_General_Facts/factsheet-inspections.pdf

U.S. Department of Labor: Lost-Worktime Injuries and Illnesses: Characteristics and Resulting Time Away From Work, 2002 <http://stats.bls.gov/news.release/osh2.nr0.htm>

Washington State Department of Labor and Industries: About Ergonomics
<http://www.lni.wa.gov/Safety/Topics/Ergonomics/default.asp>