

FACT SHEET



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CONSTRUCTION WORK and CUMULATIVE TRAUMA DISORDERS



What are Cumulative Trauma Disorders?

Cumulative trauma disorders (CTDs) also known as repetitive strain injuries, repetitive motion disorders, overuse syndrome, and work-related musculoskeletal disorders are the largest cause of occupational disease in the United States and the most frequently reported type of occupational disease in Connecticut. CTDs are injuries of the musculoskeletal system (joints, muscles, tendons, ligaments, nerves, and blood vessels) which are caused by over use as a result of stressful work over a period of time. CTDs are usually caused by a combination of the following risk factors common to construction work:

- **repetitive motions**
- **forceful exertions** - pulling, pushing, lifting, and gripping
- **awkward postures** - body positions that are not the natural resting position
- **static postures** - body positions held without moving
- **mechanical compression of soft tissues** in the hand against edges or ridges, such as using tools or objects which press against the palm
- **fast movement** of body parts
- **vibration**, especially in the presence of cold conditions
- **lack of sufficient recovery time** (rest breaks, days off), which will increase the risk of developing a CTD by any of the above factors.

Cumulative trauma disorders most often occur in the upper body. Common symptoms of CTDs include pain and swelling of the body parts that are performing work duties involving the above risk factors. Although back injuries are excluded from the definition of CTDs, back injuries are often caused by similar risk factors and occur quite frequently in construction workers.





WHICH CTDs ARE MOST COMMON AMONG CONSTRUCTION WORKERS?

Construction work frequently demands performing tasks above the head and the use of vibrating hand and power tools, which are often poorly designed and uncomfortable. There are many different types of CTDs. The most well known CTDs related to construction work are **tendonitis**, **carpal tunnel syndrome (CTS)**, **rotator cuff tendonitis**, **tennis elbow**, **golfer's elbow**, **thoracic outlet syndrome**, **Raynaud's syndrome**, and **trigger finger**.

Tendonitis is inflammation of the tendons (bundles of fibrous tissue that connect the muscles to the bones) that occurs when a muscle/tendon is repeatedly used or tensed. With normal use, fibers that make up the tendons are exposed to “micro-traumas” or small tears that are easily repaired by the body. With continued overuse and lack of recovery time, however, some of the fibers that make up the tendon can actually fray or tear apart. Commonly affected areas are the wrists, elbows, and shoulders.

Carpal tunnel syndrome (CTS) refers to compression of the median nerve as it passes through the carpal tunnel in the wrist. As the tendons in the carpal tunnel are over used or the tunnel itself is compressed the median nerve is compressed. Commonly reported symptoms of CTS include numbness, burning, and tingling in the first 3 ½ digits. If left untreated, symptoms can become much worse and may result in loss of grip strength, clumsiness, increased pain at night, and possibly permanent loss of hand function. Tasks like electrical work and inserting caulking in windows require repetitive bending and flexing of the fingers and wrists. These jobs and others like them can contribute to the development of CTS.



Rotator cuff tendonitis is the most common shoulder tendon disorder. It is often associated with work that requires the elbow to be in an elevated position for long periods of time, such as when performing overhead tasks. These tasks put stress on shoulder tendons and arm sockets. This can give rise to “frozen shoulder” syndrome, which may include severe pain and the loss of shoulder function. Jobs like sheet metal work, plumbing, painting, and drywall installation can all contribute to the development of rotator cuff tendonitis.

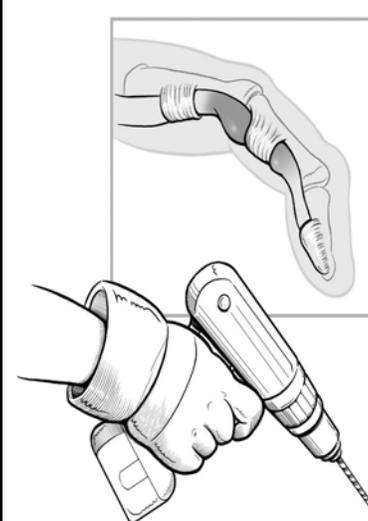
Tennis Elbow (also known as Lateral Epicondylitis) is caused by the forceful twisting motions that cause strain on your elbow tendons, causing discomfort or pain.

Golfer's elbow (Medial Epicondylitis) is associated with tasks that require repeated or forceful rotation of the forearm and bending of the wrist at the same time. Tasks that require the use of poorly designed tools contribute to the frequency of this CTD.

Thoracic outlet syndrome involves the compression of nerves from the spine and blood vessels from the heart that go to the muscles in the arms. Performing overhead tasks for extended periods of time can cause this condition. Like carpal tunnel syndrome, symptoms of thoracic outlet syndrome include numbness in the fingers along with weakened wrist pulse and the sensation of one's arm "falling asleep."

Because the nerve does not "know" where it is being injured, thoracic outlet syndrome is often mistaken for being CTS. Jobs that contribute to rotator cuff tendonitis can also lead to the development of thoracic outlet syndrome.

Raynaud's syndrome, also referred to as "vibration white finger" or "hand-arm vibration syndrome," (HAVS) is a condition caused by forceful gripping and/or prolonged use of vibrating tools such as hand-held power drill, power saws, needle guns, chipping hammers, and rotary hammer drills. The risk of Raynaud's syndrome is even higher when vibrating tools are used in cold temperatures. Symptoms include numbness and tingling in the fingers, skin that turns pale and cold, and ultimately loss of sensation and muscle control in the fingers and hands.



Trigger finger occurs when the tendon sheath of a finger is so swollen that the tendon becomes locked in the sheath. This is often associated with using tools that have handles with hard edges or ridges, and/or repetitive bending of the fingers with continued forceful gripping of equipment. Although severe pain is uncommon, attempting to move the finger will cause snapping and jerking movements.



Hand-intensive work cannot be eliminated from construction, but it is possible to change how you do it so the work is easier on your body. Solutions are available that can reduce the level of stress on your hands, wrists, and arms. They may also reduce how often and how long your body is subjected to this stress. Many of the solutions can also eliminate other potential safety hazards and increase productivity.

HOW CAN CTDs BE PREVENTED?

- Hand tools with smooth, rounded edges and long handles are better than tools with hard edges and short handles.
- Work area layout is very important. Your tools, parts, and equipment should be easy to reach without excessive stretching or bending.
- Job rotation or reassignment as well as having a variety of job duties is helpful in preventing CTDs from occurring. Using different muscles and body parts helps to prevent CTDs caused by repetition, force, and awkward posture.
- Regular breaks give your muscles and tendons time to heal naturally from repetitive motions and force.
- Adjusting physical factors in the work environment such as temperature, lighting, and humidity can also help prevent CTDs.
- The ability to stretch and move around whenever you feel any pain or tingling in your neck, shoulders, arms, or hands is essential to the prevention of CTDs.

These recommendations are part of a science called ergonomics. **Ergonomics** is the study of fitting the job to the person rather than forcing the person to fit the job. An **ergonomist** is a trained professional who is qualified to evaluate and make recommendations regarding work areas, work organizations, work practices, tools, and equipment. Once a CTD has developed, however, early diagnosis and treatment are very important in order to prevent further or permanent damage.

TOOL TIP

A tool can be considered “ergonomic” when it fits the task you do, fits your hand, allows a good grip, takes less effort, does not require you to work in an awkward position, does not dig into your fingers or hand, and is comfortable and effective. Remember that a tool designed for one task may put more stress on the hand or wrist when used for a different task.

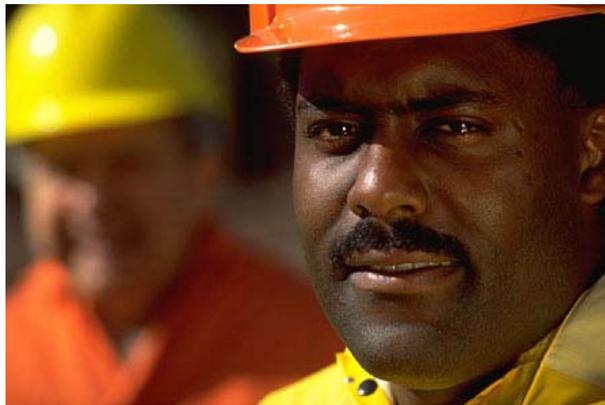
For example, needle-nose pliers work well for crimping electrical wire but should not be used for twisting.





WHAT SHOULD YOU DO IF YOU THINK YOU HAVE A CTD?

- Consult your doctor or an occupational health clinic. Discuss non-surgical treatments, and work with your doctor to reduce risks. Let him/her know of your concerns.
- Keep track of your symptoms and their frequency.
- Keep track of which tasks cause you pain. This can be very helpful to your doctor.
- Keep track of postures that strain your neck, shoulders, elbows, wrists, hands or back. Bending, stooping, twisting, and reaching are examples of awkward postures.
- Learn more about Cumulative Trauma Disorders and their symptoms. Know what to look for. Share your information with your physician.
- Learn how to prevent Cumulative Trauma Disorders.
- Recommend to your Health and Safety Committee that an ergonomic committee be formed to identify commonly experienced CTD problems and discuss possible solutions with your employer.



Some information and images contained within this fact sheet were extracted in part from the National Institute for Occupational Safety and Health (NIOSH) and The United States Department of Labor, Occupational Safety and Health Administration.

WHERE CAN I GET MORE INFORMATION?

For more information about Cumulative Trauma Disorders contact

- Your doctor or an occupational medicine clinic
- Connecticut Department of Public Health, Environmental and Occupational Health Assessment Program
(860)509-7740
www.ct.gov/dph/occupationalhealth
 - Connecticut Department of Labor
CONN-OSHA Consulting Services
860-263-6900 (Employer Referral Only)
<http://www.ctdol.state.ct.us/osha/consulti.htm#Consulting%20Services>
- Ergonomic Technology Center of Connecticut UCONN Health Center
(860)679-2893
<http://www.oehc.uhc.edu/ergo.asp>
- National Institute for Occupational Safety and Health - Simple Solutions: Ergonomics for Construction Workers
<http://www.cdc.gov/niosh/docs/2007-122/default.html>
&
<http://www.cpwr.com/simple.html>
- National Institute for Occupational Safety and Health - A Guide to Selecting Non-Powered Hand Tools
<http://www.cdc.gov/niosh/docs/2004-164/default.html>
- U.S. Department of Labor, Occupational Health & Safety Administration
Safety & Health Topics: Ergonomics
<http://www.osha.gov/SLTC/ergonomics/index.html>

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