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Repetitive Strain Injuries (RSIs)

Repetitive strain injuries (RSIs) are now the single largest cause of occupational health problems in the United States. RSIs can occur in any occupation that requires repetitive motions, including meat-packing, garment sewing, clerical work, auto assembly, and supermarket checkout. The [National Institute of Occupational Safety and Health \(NIOSH\)](#), estimates that over one quarter of all workers work at jobs that can cause RSIs.

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Basic Facts

WHAT ARE REPETITIVE STRAIN INJURIES?

Repetitive strain injuries are a group of health problems which result from over-use or misuse of muscles, tendons, and nerves. Job-related RSIs are caused by any combination of the following factors:

- fast pace (having to work quickly)
- repetitive tasks (making the same motion over and over)
- awkward or fixed posture (working in an awkward position or holding the same position for a long time)
- forceful movements (lifting, pulling, or pushing to get the job done)
- vibration (caused by power tools)
- working in cold temperatures
- job stress (such as monitoring)
- insufficient recovery time (inadequate rest breaks).

Unlike strains and sprains, which usually result from a single incident, RSIs develop over time. That's why RSIs are also called Cumulative Trauma Disorders (CTD). Repetitive strain injuries go by many other names too, including repetitive motion illness/injuries, repetitive stress syndrome, occupational overuse syndrome and repetitive motion disorders

WHAT PARTS OF THE BODY ARE AFFECTED BY RSI's?

RSIs can affect almost any part of the body, but they often occur in upper body. The most commonly affected body parts are the fingers, hands, wrists, elbows, arms, shoulders, back, and neck.

WHAT ARE THE SYMPTOMS OF RSIs?

One or more of the following symptoms will be present in the injured area:

- aching
- tenderness
- swelling
- tingling or numbness
- loss of joint mobility
- weakness or loss of coordination in the hand
- crackling
- muscle spasms
- decreased coordination

These symptoms may appear in any order at any stage in the development of the injury. Symptoms may occur at any time -- during work, immediately after work, or many hours (or days) after work. Many people first experience symptoms when they are not working. For example, an injured worker may have no pain at work and wake up in the night with a painful shoulder or elbow.

Jobs that pose a particularly high risk of RSI are:

- Assembly line worker
- Checkout scanner
- Computer keyboard operator
- Food handler
- Garment worker
- Hand tool operator
- Machine operator
- Materials handler
- Meat packer

RSI symptoms can be mild, but they can become so intense that it becomes difficult to perform everyday tasks such as opening a jar, or fastening a button.

In general, the more intense and frequent the symptoms, the more serious the RSI is likely to be. A serious RSI can develop only months after symptoms first appear, or it could take years.

WHAT ARE THE MOST COMMON RSIs?

There are many repetitive strain injuries, because many different parts of the body can be affected. Carpal tunnel syndrome is the most well-known RSI, but it is not the most common one. Here are the most common repetitive strain injuries:

Tendinitis / tenosynovitis is the inflammation of a tendon or synovial sheath that surrounds a tendon. It can occur in any part of the body that flexes. **De Quervain's tenosynovitis** is the inflammation of the tendons in the wrist that control the thumb. **Achilles tendinitis** is the inflammation of the tendon in the back of the ankle and lower leg. **Flexor tenosynovitis**, which is also called **trigger finger**, occurs in a finger or thumb. **Rotator cuff tendinitis** is the inflammation of tendons and muscles in the shoulder or upper

arm.

Epicondylitis is the inflammation of tendons in the elbow. If the pain is on the outside of the elbow, it is often called **tennis elbow**. If the pain occurs inside the elbow bend, it is known as **golfer's elbow**.

Ganglion cysts are lumps that form under the skin on tendons, most frequently on the wrist. If a ganglion cyst presses on a nerve, it can be very painful.

Bursitis is the inflammation of any of the body's more than 200 fluid-filled sacs (called a bursae) that provide a cushion between a tendon and a bone. Bursitis most frequently occurs in the shoulder, but it is also common in the elbow, the knee and the foot.

Carpal tunnel syndrome is the inflammation of the nerves in the wrist, hand and fingers. It can cause pain anywhere between the shoulder and the tips of the fingers.

Hand-arm vibration syndrome (also called **Raynaud's Phenomenon**) is a disorder of blood vessels, usually in fingers or hands, which causes the affected area to lose color and feel cold or painful.

Soft tissue pain can be caused by repeated stress or trauma to the hand, arm, shoulder, neck or back.

Thoracic outlet syndrome is a disorder of the nerves and blood vessels in the shoulder, causing pain, stiffness or swelling in the shoulder or arm.

WHY ARE RSIs SO COMMON NOW?

RSIs have always been around -- they've just gotten worse. Here's why: Changes in technology have streamlined job tasks. For example, manual typewriters created "natural breaks" for typists, who didn't make the same typing motions for four hours straight, because they had to use the manual carriage return, change the paper, and correct typing errors. Computers don't provide such breaks.

Another technological change that contributes to the increase in RSIs is electronic monitoring, which causes stress and has been demonstrated to increase the incidence of RSIs.

Another cause of the increase in RSIs is layoffs, which increase people's workloads. Downturns in the economy have forced some people to work two jobs. Other people have been forced to work excessive amounts of overtime. All of these factors can prolong workers' exposure to repetitive tasks and increase their risk of developing RSIs.

ARE ALL RSIs WORK-RELATED?

Most RSIs are work-related, but RSIs can be caused by activities outside of work, such as sports and hobbies, including tennis, golf, knitting or playing a musical instrument. RSI can be an aspect of a medical condition, such as rheumatoid arthritis, diabetes, or

pregnancy.

Older workers are more susceptible than younger ones to RSIs because the body's ability to repair the effects of wear and tear decreases with age.

CAN RSIs BE PREVENTED?

Yes. RSIs are caused by workplace conditions and/or job demands. If the conditions and demands of a job cause RSIs, they can be corrected by using ergonomics, which is the science of fitting workplace conditions and job demands to the capabilities of workers, instead of making the worker fit the job. There are two components of ergonomics:

(1) the design of the tools and equipment -- Is the equipment designed for the worker to do the task comfortably and to accommodate the physical differences between workers?

(2) the design of the job tasks -- Does the task, or the pace of work cause pain or discomfort? Does the length of time between breaks cause discomfort? Does the number of times the task is done each day cause discomfort?

If equipment or job design causes discomfort, ergonomics can be used to correct the problem.

WHAT CAN YOU DO IF YOU SUSPECT YOU ARE SUFFERING FROM AN RSI?

Contact your local union, if you belong to one, for help in getting immediate medical attention. If an RSI is work-related, consider filing for workers' compensation. NYCOSH may be able to assist you in these matters.

If you are not a union member, you may need to choose between protecting your job and protecting your health, because many employers are quick to retaliate against anyone who questions their working conditions. You might want to consult a doctor who is familiar with RSIs first. Many doctors know very little about occupational injuries, so make certain that you consult a doctor who knows the field.

One way to find a knowledgeable doctor is to contact an occupational and environmental medicine clinic. There is a network of such clinics in New York City and around the state, at the following locations:

- **New York City/Westchester** Mt. Sinai-IJ Selikoff Center for Occupational and Environmental Medicine -- in Manhattan: 212-987-6043; in Brooklyn 718-780-2805; in Westchester 914-366-3670.
- **New York City** Bellevue/NYU Occupational and Environmental Medicine Clinic 212-562-4572
- **Long Island** Long Island Occupational and Environmental Health Center 516-476-2719
- **Buffalo** Union Occupational Health Center 716-894-9366

- **Rochester** Finger Lakes Occupational Health Services 585-256-0853
- **Syracuse/Utica/Binghamton** Central New York Occupational Health Clinical Center 315-432-8899
- **Albany/ Poughkeepsie/Glens Falls** Eastern New York Occupational and Environmental Health Center 518-436-5511
- **SPECIALTY CLINIC - AGRICULTURE** New York Center for Agricultural Medicine and Health, Cooperstown, New York 607-547-6023 or 800-343-7527

It is important to get expert medical advice, even if you don't tell your employer, because some RSIs can result in permanent disabilities. If a doctor says your condition is dangerous, you can decide whether to talk to your employer, knowing that if you remain silent and continue to get hurt, you may suffer irreversible damage.

In addition, you can join the fight to prevent RSIs by joining NYCOSH or a Committee for Occupational Safety and Health in your area, or by discussing the problem with coworkers and by participating in activities (such as group grievances and OSHA complaints) through your local union. For a list of committees for occupational safety and health and similar organizations in the U.S. and Canada, including contact information, [click here](#).

WHAT IS THE LABOR MOVEMENT DOING ABOUT RSIs?

Many unions have actively pursued ergonomic changes at the bargaining table. Some collective bargaining agreements now contain ergonomics clauses. The labor movement has also pressed OSHA to regulate RSIs. OSHA issued [ergonomics guidelines for the meat-packing industry](#) in 1990. Unions are now pressing OSHA to create an ergonomics standard that will apply to other industries. Finally, unions continue to push for ergonomic legislation, such as laws concerning computer health and safety at the local, state, and national level.

(adapted from a factsheet by the Coalition for New Office technology, Somerville, MA. Funded in part by the New York State Dept. of Labor, under Contract #C00 6000.)

Typing Tips to Prevent RSIs

- **Your seat should support your lower back and enable you to sit with your back straight and your feet flat on the floor.** It is important to have a chair that is adjustable -- you should be able to adjust the height and tilt of the seat, the height and angle of the back.
- **Your keyboard should be on surface that can be tilted and moved up and down.** The keyboard should be about one inch above your knees so you can type with your forearms parallel to the floor. The keyboard should be level or tilted slightly away from you, with the spacebar higher than the top row of keys.
- **The top of your monitor screen should be two or three**

inches below your eye level, so you are looking down slightly to see the screen. The top of the screen should be tilted slightly away from you.

- **Type with your forearms parallel to the floor, your wrists straight and your fingers relaxed.** This is known as a "neutral" position, which puts a minimum of strain on you muscles, nerves and tendons.
- **Don't rest your wrists on anything while you type.** Resting your wrist on the desk or wrist pad forces you to bend your wrists and stretch your fingers, a major cause of RSIs.
- **Rest your wrists and hands when you are not typing.** It is best to place your hands in your lap whenever you are not actually striking keys - when you are reviewing your work, for example. It is also acceptable to rest your wrists on a wrist pad or on the desk during such "mini-breaks" from keyboarding.
- **Let your hands float over the keyboard.** Use your whole arm to move your hands. If you rest your arms or forearms on the desk or wrist pad, you are forcing the small muscles and tendons to do the work. Let the strong muscles in your back, shoulders, arms, and forearms "naturally" position your hands.
- **Don't stretch fingers to reach keys.** Move your arm over the key and then strike the key. This is especially important when using the keys at the outer edges of the keyboard, such as Escape, End, Insert, Delete, and the number pad.
- **Don't pound the keys.** Use a light touch.
- **Relax your shoulders.** Many cases of RSI begin with neck or shoulder strain. Lowering the keyboard can sometimes help relieve such strain.
- **Keep your fingers curved in a relaxed position.** Don't type with your pinkie or thumb up.
- **Hold the mouse lightly, not tightly.** The mouse should be on the same level as the keyboard. Although you should never rest your arms while keyboarding, you may put your forearm on a pad when using a mouse. This will keep your hand in a neutral position with your forearm able to float. Alternate use of the mouse with use of key commands when possible.

For a checklist to identify ergonomic hazards in an office workstation, [click here](#).

(adapted from "Repetitive Strain Injuries", The Labor Institute, 1997.)

For Healthy Computing Email Tips, [click here](#).

Medical Treatment for RSIs

SEEK EARLY TREATMENT

The symptoms of RSIs include any of these: pain, numbness or tingling, aching, tenderness, swelling, loss of joint mobility, weakness or loss of coordination in the hand, crackling, muscle spasms or decreased coordination in the affected body part(s). At first you may dismiss the symptoms, especially if they occur away

from the job. Sometimes RSI pain occurs while you are resting. People sometimes mistakenly assume that they've "slept wrong."

Or you may think these symptoms just go with the job. But if the pain doesn't go away, you should get proper medical attention as soon as possible. Don't put it off. Chronic conditions are much more difficult to treat. Permanent damage can sometimes occur only a month after your first symptoms.

FIND THE RIGHT DOCTOR

Many doctors are not aware of repetitive strain injuries, primarily because they are not trained about the factors at work that cause them. Consequently, RSIs are often misdiagnosed.

Your local union, or NYCOSH, may be able to help you find a doctor if necessary. If you are referred to a clinic or to a group practice, let your union know whether you've had a good or bad experience with the particular doctor who sees you.

Also check with your local union if you are uncertain about whether your health insurance will cover the doctor's visit. If you file a workers' compensation claim, you may or may not have to pay out-of-pocket for the visit, depending on the compensation law in your state and the circumstances of the case.

The following types of doctors tend to be more familiar with repetitive strain injuries: physiatrists (rehabilitation specialists), occupational physicians, neurologists, and orthopedists. Some people have also found chiropractors and acupuncturists to be effective in treating RSIs.

Make sure to show a doctor the information you have received from your union or from NYCOSH about repetitive strain injuries. Don't be afraid to educate your doctor about the causes for RSIs. If your doctor agrees that you have a work-related RSI, (s)he must be willing to say so in writing and to help you with a workers' compensation claim. If (s)he refuses to do so, you may want to consider going to someone else.

WHAT TO EXPECT AT THE DOCTOR'S OFFICE

A proper medical exam includes a thorough medical and work history. Your doctor must ask you to answer questions like these in detail:

What are your symptoms? Where are they? When did they begin? When and how often do you experience them (for example, at night, or after an hour of work)? How severe are the symptoms?

What tasks do you do at work? What kind of equipment do you use?

The doctor should also do a physical examination, which will usually include asking you to perform some movements, such as turning your head from side to side, moving your arms, pushing your hand against the doctor's hand, etc., to see how your range of motion and strength have been affected.

If a nerve problem, such as carpal tunnel syndrome, is suspected, you may be asked to undergo a test called nerve conduction velocity testing or electromyography. Special equipment is used to send an electrical impulse through your arm. A damaged nerve conducts the impulse more slowly than a normal nerve. X-rays or magnetic resonance imaging (MRI) are sometimes used to diagnose repetitive strain injuries. Blood tests may be useful to detect related health problems.

If possible, a doctor, ergonomist, or other qualified person should observe you performing your work tasks - either on the job, or in a simulated setting in a laboratory. Sometimes a videotape of your movements will be made in order to analyze the problem more thoroughly.

GET THE RIGHT TREATMENT

The type of treatment depends on the diagnosis: each person is different and there are many different RSIs, with different causes and treatments. However, there are some general principles that apply to most repetitive strain injuries. (*The following steps are intended only as a guide to help you understand what to expect. Do not attempt to treat yourself. Consult a qualified health professional.*)

Start conservatively. Most doctors recommend rest for the affected body part(s).

Work with rehabilitation specialists. Your doctor may also refer you to a licensed physical therapist, who will teach you stretching exercises to condition overused muscles or strengthening exercises to help prevent future damage. Some people have also found chiropractors and other alternative health professionals to be helpful in providing physical therapy. In addition to the physical therapist, you may need to work with an occupational therapist who can retrain you. For example, you may need to learn how to work or type differently.

Be wary of invasive procedures, especially surgery. Surgery does not necessarily provide relief, especially if you return to the same conditions that caused the problem in the first place. Some workers' compensation attorneys pressure people into surgery because surgery provides good evidence in a compensation case. If a lawyer refers you to a doctor who recommends surgery, get a second opinion. The use of cortisone injections (steroids) is also controversial. Many doctors do not recommend long-term use because steroids can have adverse side effects (such as reproductive system problems). Cortisone injections should only be used after the more conservative treatments described above have been given an adequate chance.

Watch out for gimmick cures. Vitamin B-6 is recommended by some practitioners, but there is no proof that B-6 prevents or cures RSIs. In fact, large doses of Vitamin B-6 can be toxic. Exercise programs may be helpful in providing relief from RSIs, but they should not be depended up to prevent RSIs. They are not a substitute for a well-designed job, adequate breaks, and proper tools, equipment, and procedures.

Do not return to the same working conditions. The doctor, physical therapist, or other health professional (such as an ergonomist) may

recommend certain changes in your job, including:

- modifications in the equipment you use (such as adjustable furniture,
- limitations on the number of hours at work at the same task,
- frequent and adequate rest breaks.

If your employer disregards such recommendations and refuses to make the necessary changes in your job - or if your employer discriminates against you in any way - contact your local union immediately for help.

Consider filing a workers' compensation claim. If your condition is work-related, you may be entitled to collect money for lost time from work and for medical expenses. Your local union can explain how to proceed.

Monitor your activities outside work. You may need to temporarily suspend or restrict activities outside of work which aggravate RSI symptoms, such as vacuuming, gardening, knitting or bicycling.

Don't let your condition get you down. Finding the right doctor, obtaining effective treatment, filing a compensation claim, and getting better working conditions take persistence and courage. It's not surprising that you may feel depressed at times. This is hard work! Be prepared to experience some setbacks. It can be therapeutic to talk about your condition with loved ones and/or friends. If depression persists, ask your doctor, union, or NYCOSH for the name of a counselor. There may also be a support group of workers with repetitive strain injuries in your area. Many injured workers have helped each other by sharing information about doctors, treatments, the workers' compensation system, and lifestyle changes. If there's no group in your area, you may want to form one. Your local union or NYCOSH may be able to help.

(adapted from a factsheet produced by Communications Workers of America, District One)

[Click here](#) for more links and resources about RSIs and ergonomics.

[Click here](#) for the latest news about RSIs and ergonomics.

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