

REPETITIVE STRAIN INJURIES (RSI)

Causes of repetitive strain injuries Repetitive strain injuries (RSI) are a category of injuries involving damage to muscles, tendons and nerves caused by overuse or misuse. Any combination of the following factors can lead to the overuse of some part of your body.

- **Repetitive tasks:** Small, rapid movements and/or tasks that are repeated over and over
- **Awkward or fixed postures:** Working in an awkward position or holding the same position for a long time
- **Forceful movements:** Using force or moving heavy loads to complete tasks
- **Insufficient rest time:** No time to relax during the above activities

Unlike strains and sprains, which usually result from a single incident (called acute trauma), repetitive strain injuries develop slowly over time; thus, they are also called Cumulative Trauma Disorders (CTDs). Other names for these injuries include Repetitive Stress Injury, Repetitive Motion Syndrome and Occupational Overuse Syndrome.

Symptoms of RSI

The most common body parts affected by RSI are the fingers, hands, wrists, elbows, arms, shoulders, back and neck. Other areas can be affected as well. Computer users suffer mostly from repetitive strain injuries to the hand, wrist, and arm.

The symptoms of RSI include: aching, tenderness, swelling, pain, crackling, tingling, numbness, loss of strength, loss of joint movement and decreased coordination in the injured area. If your hands are affected, you may find yourself dropping things or it may be difficult to do even simple tasks like buttoning a shirt.

These symptoms may appear in any order and at any stage in the development of an injury. Symptoms may not appear immediately after the activity that is causing the problem and are not necessarily experienced

in the body part where the actual stress is occurring. For instance, if you wake up in the middle of the night with elbow or shoulder pain, that may be a sign of a repetitive strain injury resulting from keying or mousing at a computer.

In general, the more intense the symptoms, the more often you experience symptoms, and the longer symptoms last, the more serious your injury is likely to be. A serious injury can develop only weeks after symptoms appear, or it may take years.

Common RSI

To understand the various repetitive strain injuries you need a basic understanding of how your body works. Body movements are produced by contracting and relaxing muscles. The muscles are attached to bones by tendons. Tendons are smooth and in some parts of your body glide back and forth inside tubes called synovial sheaths. The sheath produces a lubricant called synovial fluid to help the tendons glide easily. (See Figures 1 and 2)

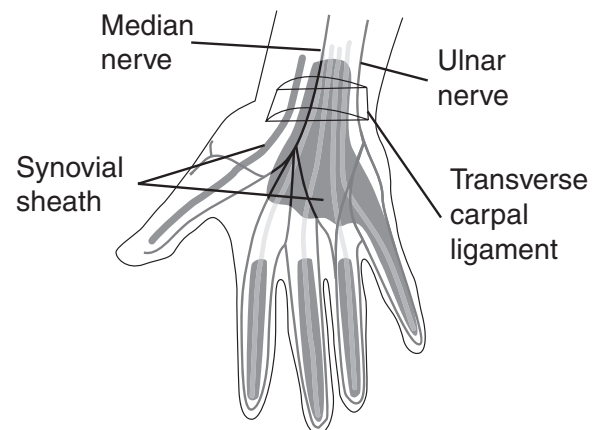


Figure 1

For example, the muscles in your forearm are used to move your fingers. They are attached to the finger bones by tendons in sheaths that travel through your wrist. The type of injury resulting from keying or mousing at a computer depends on whether the muscle, tendon, tendon

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sheath, or nerve tissue have been irritated or damaged.

- **Tendinitis** refers to the inflammation of tendons that occurs when muscles and tendons are repeatedly tensed. Symptoms may include pain and swelling. Eventually, the tendon becomes bumpy and fibers may fray. Or the tendon may thicken, making movement of the fingers, hands or arms difficult. Without sufficient time to heal, the tendon may be permanently weakened.
- **Tenosynovitis** refers to the inflammation of the synovial sheath caused by repetitive motion. It usually occurs in the hands and wrists (although it can also occur in the legs, elbows and shoulders). This injury can be quite **painful** and tendon movement may become restricted due to the swelling of the sheath. If the sheath or tendon becomes scarred, tenosynovitis can cause permanent damage.
- **Ganglionic Cysts** are another tendon sheath condition. The sheath swells up with synovial fluid and causes a bump under the skin, often on the wrist. Ganglionic cysts may be a symptom of tenosynovitis.
- **Carpal Tunnel Syndrome (CTS)** is one of the most potentially disabling RSI. Nine tendons for flexing your fingers, along with the median nerve, pass from the forearm to the hand through a passage in your wrist called the carpal tunnel. The tunnel is made up of bone and ligament (flexor retinaculum).

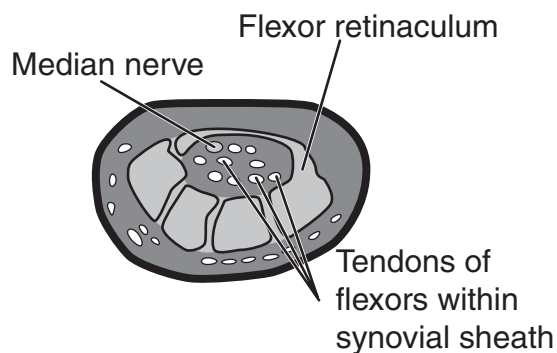


Figure 2

CTS results when the median nerve is compressed, either from the swelling of tendons and sheaths or from repeated bending of the wrist. Symptoms include numbness, tingling, and pain in the side of your hand that goes from the thumb to the inside of your ring finger. Often the pain is worse when sleeping. Advanced symptoms include weakness, especially in the thumb muscle, and clumsiness in your hands.

Other repetitive strain injuries to the upper body include De Quervian's Disease, Trigger Finger, Epicondylitis (tennis elbow), and Thoracic Outlet Syndrome.

RSI and work activities

These conditions, when present during work, can lead to RSI:

- **Repetition:** Long or concentrated hours of repetitive motions, especially if under pressure to move quickly
- **Posture:** Long hours of sitting in the same position while working – especially if in an uncomfortable or poorly supported position
- **No Rest:** Intensive hours at the task with few breaks, especially if the work has little variety or if you don't take a rest when you need one

RSI from non-work activity

RSI can be caused by activities which are not work-related. These include hand-intensive sports and hobbies such as knitting or playing a musical instrument. The risk of developing an RSI can also be related to certain medical conditions such as bone fractures, rheumatoid arthritis, hypertension, diabetes, obesity, pregnancy and use of oral contraceptives. Older workers are more at risk because the body's ability to repair from constant wear and tear decreases with age.

RSI can be prevented

If symptoms are allowed to progress, a person with RSI can have protracted or chronic symptoms. However, RSI can be prevented. Don't wait until it's too late.