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# Repetitive Strain Injuries

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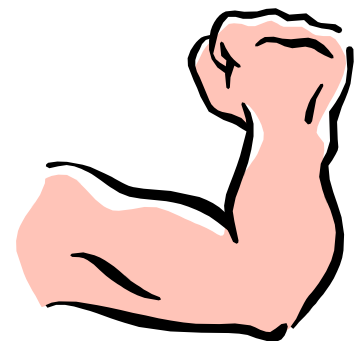
## Repetitive Strain/Over use injuries: Carpal Tunnel Syndrome, Tennis Elbow, ITB

Repetitive strain or stress injuries (RSI) is the number one occupational concern in the workplace, costing Canadian companies \$1.9 billion in 1995. **Carpal tunnel syndrome** has become the most common and most costly of all RSI's and the trend continues to increase. The reason given for the increase in the number of incidences is the increased use of computers. Chronic entrapment of the median nerve at the wrist is the most commonly encountered. There are several other repetitive strain injuries like tennis elbow, iliotibial band syndrome, carpal tunnel syndrome, lower back strain, etc. There are different approaches for treatment of the RSI's. Some doctor's will

recommend anti-inflammatory medicine, steroid injections, splinting or refer out for ultrasound or laser treatments.

Chiropractors have long understood the significance of problems the extremities will face if there are problems with the mechanics of the spine. Chiropractic is the only approach which effectively identifies and treats "subluxations, double crush, muscle imbalances and mechanical dysfunction" of the extremity (wrist, elbow, hip, shoulder). It is very important to look at the problems in the extremity as well as look at the source "the spine". RSI's will also cause muscle imbalances and thus adhesions/scar tissue to form. Dr. Rodwin is certified in the "Active Release Technique (ART)", otherwise known as Myofascial Release (Ledhy),

which is one of the most highly recommended treatments for RSI's. Chiropractic treatments along with ART is a very effective combination for relief of the pain suffered from RSI's.



## Work Related Musculoskeletal Disorders



In our clinic we have many patients present themselves with recurrent or chronic neck, arm and/or hand pain. It's discovered that they spend most of their day working in an office environment on a computer.

How come after treatment the symptoms return?

After the chiropractic adjustment the patient will feel better

but if the workplace isn't considered as a possible culprit you are missing a large part of the equation.

The jargon used for these work related injuries is **cumulative trauma disorder (CTD)**, **work related musculoskeletal disorder (WMSD)**.

**Risk Factors:**

Many studies have shown that there are specific risk factors related to the development of WMSD's. These include: forceful exertions, non-neutral postures, repetitive work, static postures, working over shoulder height, heavy lifting, twisting while lifting and whole body vibration.

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## (Cont.) Work Related Musculoskeletal Disorders

There is a strong link between the development of such conditions as: low back pain, shoulder and hand/wrist tendonitis, carpal tunnel syndrome, neck tension as well as thoracic outlet syndrome.

Let's look at a job type and analyze the occupational risk factors and possible outcomes.

**Patient #1:** Job is primarily at a desk typing or keying. The risk factors to consider are: static restricted posture, arms abducted (towards the midline)/flexed with high-speed finger movement, palm base pressure as well as ulnar (forearm) deviation. This patient is at great risk of developing carpal tunnel syndrome, neck problems as well as thoracic outlet syndrome.

**Office Worker Solutions:** Areas to consider upon workstation evaluation: the chair, work surface,

keyboard, **mouse**, monitor, document holder, CPU, phone, calculator, dataphone, file cabinets, lighting and flooring. The mouse is the most common problem.

### Tips on decreasing the risks with the mouse:

1. Place the mouse directly beside and at the same level as the keyboard. Place it within easy reach so that arm is not extended.
2. Position the mouse to keep the wrist straight. Do not extend the wrist more than 20 degrees or deviate it in either direction.
3. Rest the index finger lightly (click lightly) on the mouse button and hold the mouse loosely with all fingers.
4. Use whole and shoulder movements not just the wrist to move the mouse.
5. Choose software that reduces the

amount of double clicking

### Your Workstation:

- A) Chin should be in line with the centre of the screen.
- B) Keyboard directly in front of you.
- C) Chair should support the natural curves of the spine. Armrest should be at elbow height. Seat pan just below the knee cap.
- D) Knees slightly lower than the hip as well as the feet on a footrest.



## What Exactly is Carpal Tunnel Syndrome?

We have all heard of it, but what is Carpal Tunnel Syndrome? What causes it? What can be done to minimize or eliminate its occurrence?

Specifically, Carpal Tunnel Syndrome (CTS) is compression of the median nerve - one of four major nerves in your arm and hand. The name Carpal Tunnel Syndrome is actually somewhat of a misnomer. While the compression can occur at the carpal tunnel, the compression can, and often does, occur in other locations.

The Carpal tunnel is made up of the carpal bones (wrist bones) on the back of the wrist (where most people wear their wrist watch face) and a strong ligament that connects to the outside carpal bones across the front of the wrist. Inside this tunnel lies several structures, including the Median nerve, finger flexor tendons, arteries, and veins. When the flexor tendons are constantly being used (eg typing), the muscles are contracted for an

extended period, which leads to extra pressure on the thin-walled veins in the tunnel, effectively collapsing them, closing off the exit of blood flow to and from the hand. Blood from the arteries continues to flow (at a reduced rate when the

tunnel pressure gets high enough). Eventually, the increased pressure puts enough pressure on the median nerve, which can in the short term cause tingling and

numbness into the thumb, 2nd and 3rd fingers, and part of the 4th. In the long term, muscles of the hand can become weak because of the decreased electrical activity from the nerve. Proper function can cease and muscle wasting can occur if it progresses long enough.

Another common location of median nerve compression is just past the inside of the elbow joint under a muscle called **Pronator Teres**. This muscle is in a constantly flexed state when your hands are in

front of you with the fingers pointed down (thanks to your keyboard). The compression results in the same neuromuscular effects as the increased pressure at the carpal tunnel, but without the impaired bloodflow.

Symptoms can be minimized by stretching out the fingers and wrists. A particularly useful stretch would be to straighten out your arm at the elbow, and pulling back (extending) your wrist and fingers. This also has the advantage of stretching out Pronator Teres. Traditionally, surgery has been used to sever the ligament at the tunnel, thus decreasing the pressure. Unfortunately, there is a sizable rate of recurrence as the ligament heals. Massage is a viable and effective alternative to surgery. By relieving tight overused muscles, decreasing nerve tethering and improving circulation through several techniques, the need to go under the knife can be eliminated.

