

How to Prevent RSI

Mouse users, here are some simple changes you can make to your workspace that can help minimize your chances of getting carpal tunnel syndrome.

Many of us in digital media and web development use mainly our mice to work at a computer, rather than our keyboards. But most of the articles written about RSI prevention give advice on keyboarding techniques, not mousing strategies. So this technical brief fills in the gaps for mouse users.

I've gathered this information during the past 12 years after I developed RSI in the early days of desktop publishing. I've used these techniques to both recover from it and prevent its reoccurrence for over a decade. When I first developed RSI, the pain was so intense that I couldn't use a computer, play piano, hold a half-gallon of milk, brush my teeth, drive a stick-shift car, write checks, take notes, or shake hands with clients, and it took me nearly two years to recover. You can imagine the toll this took on my career (computer graphics designer) and personal life (wimp automatic car...oh no-o-o!).

Here's some information about how to prevent RSI and Carpal Tunnel Syndrome. I hope this information helps keep you pain-free.

What is RSI?

Three nerves run from your thumb & fingers through your hand, through the narrow carpal tunnel in your wrist, and up your arm to your shoulder where they join into one nerve that connects to your spinal cord at the C7 vertebra at the base of your neck (reference: *A Pectoral Handbook of Anatomy and Physiology* by Dr. James Bevan, ISBN 0-7607-0147-4). Keep in mind that if a nerve

is injured at any point along its length, the pain can be felt anywhere else along its length and not necessarily at the point of injury.

So, flexing your wrist too much by working at a computer for a long time, painting your house, or playing tennis, can inflame a nerve at your carpal tunnel and you could feel the pain in your wrist, elbow, or shoulder. Bending your head down or up to look at a mis-positioned computer monitor can put the pressure on the nerve as it passes through the C7 joint in back of your neck.

Common symptoms

Some common symptoms of RSI are:

- tingling in the one or more fingers;
- pain (dull or sharp) at your wrist, elbow, shoulder or neck when you move a certain way or flex your wrist; and,
- numbness in your hand or arm.

I've found the numbness from RSI to be quite distinct and not at all like the my-foot-has-gone-to-sleep type of numbness. RSI numbness feels like my arm has been amputated and no amount of shaking, stretching or flexing brings back normal feeling. It's quite a disturbing sensation.

Prevention

It's simple to prevent RSI: stop irritating your nerves!

Here are some simple adjustments you can make. Different techniques work for different people, so give them a try.



-
- Use an **ergonomically-designed mouse** at your computer to minimize the stress put on your nerves as they pass through your wrist. (See pictures below for my suggested models.)
 - Use a **track-ball** or track-pad type of mouse (not recommended for digital media folks who use predominantly a mouse and need to make precise mouse movements).
 - Use a **digital stylist and tablet** (also called a graphics-tablet, such as Wacom's line, see www.wacom.com).
 - Minimize your mouse strokes by using **keyboard shortcuts** as much as possible.
 - Position your **monitor** so that your eyes are level with a point just below the middle of your monitor to keep the C7 neck joint in a healthy position. You should be looking neither up nor down at your monitor.
 - Wear a **wrist brace** (available at drug stores) at the first sign of pain or discomfort. Wear it not only while working at your computer, but especially when sleeping at night, as it will prevent you from twisting your hand and wrist in your sleep. (I find this particularly helpful in preventing the pain in the first place.)
 - Position your **workspace and desk** to keep yourself from twisting your torso and leaning forward to reach your mouse. I recommend an L-shaped configuration where your mouse arm can rest comfortably by your side. (See photo and section below on "Desk Configuration.")
 - If you use a "mouse tray" (one of those small shelves that attaches to your keyboard tray or desk), make sure it's adjusted so that your wrist doesn't bend or articulate while you use it. Many I've seen can't be properly adjusted. (See Dr. Alan Hedge's research at the Cornell website listed at the end of this article.)
 - Get up from your desk, stretch, and MOVE at least every hour. For example, I have my laser printer on the other side of the room, which forces me to get off my butt and stretch whenever I print something.
 - See if **chiropractic visits or acupuncture** help you. Some people have found that regular visits help prevent symptoms from flaring up.

Logitech Mouseman Wheel



- Use your non-mousing hand whenever possible. For example, I've learned to open doors, grab a gallon of milk, brush my teeth, and use a mouse with my left hand, even though I've very dominant with my right hand.
- If all else fails, get rid of your kids, spouse, in-laws, or anyone else who gets on your nerves! (Just kidding.)

Bevi's recommendations for mice

Pictures of my favorite mice are shown below. Of all the ones that I and my staff have used in the studio, these get the highest marks.

Use an ergonomic mouse because it keeps your hand and wrist in a more natural position, thus minimizing the chance of irritating the nerves as they pass through your wrist. I've found that the Apple mouse, even the newest design used on the G4s, has me in pain within a few minutes of use because it forces me to articulate my wrist too far.

Demonstration: 1) Stand with your hands at your side. Note that your thumb faces forward and your palm faces toward your body. This is the natural position of your hand and wrist, and you shouldn't feel any tension or pain in this position. 2) Raise your arm

straight out in front of you, keeping your thumb facing the ceiling and your pinky finger facing the floor. Still no pain. 3) Now rotate your hand 90 degrees so that your palm is facing the floor. Ouch! Pain! And this is the position most mice put your hand and wrist into. A good ergonomic mouse will position your hand somewhere between steps 2 and 3, relieving the tension on your wrist.

My mouse recommendations are (prices are approximate street prices):

#1 Logitech MouseMan Wheel

Available either corded (USB/PS2 plug, \$39) or Cordless (serial/PS2 port, \$59) Website: www.logitech.com. Note that not all Logitech models are ergo-designed—make sure you purchase one of the MouseMan Wheel models.

#2 Microsoft Serial Mouse (\$39)

This one looks like a kidney bean with a small wheel between the buttons. Daffy Duck mousepad not included.

#3 Contour Mouse (\$99 and up)

Available in many sizes (small, medium, large, extra large) and in left- and right-handed versions. Available from www.contour.com

Continued on the next page

Microsoft Serial Mouse



Contour Mouse



Bevi's recommendations for desks To reduce your risk of getting RSI/Carpal Tunnel Syndrome, place the mouse on your **desktop**, not on a keyboard tray or separate mouse tray as these placements cause your wrist to bend too much (see Dr. Alan Hedge's research at the Cornell website below).

Also, make sure that your entire forearm is supported by the desk, that you are not lean-

ing forward or sideways to reach the mouse, and that your forearm is kept level with your elbow bent at a 90 degree angle.

An **L-shaped desk configuration** can help you position yourself correctly to minimize your RSI risk. You can either sit diagonally in the corner of the desk (as in the picture below) or face forward along one leg of the desktop with your forearm along the side leg.

Try to keep your mouse arm as close to your body as possible, maybe even in front of you as if you were writing on a notepad, if that position is comfortable.

More information

For more information on ergonomic research and computers, you can visit Cornell's website at <http://ergo.human.cornell.edu>.

I hope this helps you feel more comfortable as you work. If you're doing more web development work or desktop publishing, you'll be spending a good deal of the workday "mousing around" rather than typing, so it's best to prevent injuries from the get-go.

—Bevi Chagnon
president & information architect
PubCom / i-Imagery Design



pubcom

Publishing & Communication
Trainers • Consultants

i-imagery
INFORMATION ARCHITECTS

7417 Holly Ave
Takoma Park MD 20912
www.pubcom.com
info@pubcom.com

The information in this article is not intended to be medical advice. Please see a doctor if you are suffering from RSI.

PubCom is a training and consulting firm in Washington, DC that specializes in digital media, including desktop publishing, computer graphics, and internet websites.

i-Imagery is PubCom's in-house design studio.