



THE "OUCH!" FACTOR

# TAKE CARE OF YOUR MOST IMPORTANT TOOLS

*How to prevent  
and treat repetitive  
stress injuries.*

by Sharon Elaine Thompson

**Y**ou're working on a big commission that will make your Christmas season. The hours are long, but the money is worth it. Then you wake in the middle of the night with excruciating pain in your hands and wonder if your career is over. While your career might not be over, it may be on hold if you've developed a repetitive stress injury (RSI), such as carpal tunnel, trigger finger, or tendonitis.

## What is an RSI?

RSIs have been around since the specialization of work, but began to proliferate during the Industrial Age when workers moved into factories in large numbers and began long hours at repetitive jobs. While metalsmiths might not consider their work dull, Portland, Ore., jewelry artist Kristin Mitsu Shiga isn't surprised that RSIs take a toll. "There's something about the personality of metalsmiths," she says. "We're obsessive-compulsive — always overdoing things."

A repetitive stress injury is just what it sounds like: an injury (usually to hands, wrists, elbows, or shoulders) that results from stressing a joint by doing a task — such as forging, hammering, holding, sawing, drilling, or polishing — over and over and over yet again. When you move into assembly-line mode, you move into high RSI risk. Dr. Cynthia Vaughn, DC, of Austin, Texas, explains it as the difference between tapping your wrist gently on the wall once and tapping it gently on the wall 1,000 times. The first creates no injury; the

second does. Overuse will inflame a tendon, the part of the muscle that anchors the muscle to the bones. The inflamed tendon then swells within its protective sheath and nasty things happen: pain, numbness, and often an inability to work.

**In brief:** A repetitive stress injury results from stressing a joint by repeatedly doing a task. RSIs often affect hands, wrists, elbows, or shoulders.

### CTS and other causes of RSI

Carpal Tunnel Syndrome (CTS) is the most well-publicized RSI. The carpal tunnel contains tendons and the median nerve in the wrist, says Dr. Steven Conway, DC, DACBOH, Esq., a national spokesperson for the American Chiropractic Association, who specializes in industrial injuries. Normally, there's enough space in the tunnel, and the tendons can move freely. However, when the tendons swell, pressure bears on the median nerve. The first symptoms are tingling and pain, followed by motor impairment — you drop things and can't pick them up.

But hand pain doesn't necessarily mean you have CTS; the problem may originate elsewhere. The nerve to the hand starts in the neck and passes through the shoulder

and elbow before entering the hand. Pressure anywhere on that nerve can trigger tingling or pain in the hand. Also, there are eight bones in the wrist, arrayed like an arch with a keystone. "If the keystone moves backward, the arch collapses and the joint doesn't have as much room," says Conway. "That can put pressure on the carpal tunnel."

Muscle fatigue in the arm can cause pain in the hand when trigger points — tiny contraction knots — develop in the injured or overworked muscle. Blood flow essentially stops in the area around the knots. "The resulting oxygen starvation and accumulation of metabolic-waste products further irritates the trigger point, which responds by sending out pain signals," says Conway. You may not feel pain in the trigger point area but in the hand.

Oxygen deprivation in the muscles "is always bad," says Jill J. Page, OTR/L, an industrial rehabilitation consultant with ErgoScience, Inc., in Birmingham, Ala. Oxygen deprivation can occur in many ways; for example, if you sit or stand in one fixed position for a long period of time.

When Calgary, Alberta, jewelry artist Kari Woo got an RSI scare, she saw both a chiropractor and a massage therapist, and discovered that the problem was in her shoulders. Both professionals "agreed my

shoulder muscles were so tight that it was creating a lack of blood flow to my forearms and fingers," she says.

Sitting on a chair that is at the wrong height for you or sitting so that your calves are pressed against the edge of the chair seat can restrict blood flow. "If you constrict blood flow in one area, you constrict it throughout the body because circulation is a closed system," says Page.

Your environment and habits can also affect the amount of oxygen in your body. Smokers are at higher risk, as are jewelers who work in a fume environment. Sleeping on your stomach, with the neck in an awkward position, decreases the body's access to oxygen. And birth control pills, which draw down the body's level of vitamin B6 (which affects the creation of red blood cells), increase the risk of an RSI.

**In brief:** RSI causes and effects:

- When the tendons in your wrist swell, the resulting pressure on the median nerve may cause Carpal Tunnel Syndrome.
- Muscle fatigue may lead to "trigger points," tiny contraction knots, in the muscle.
- Oxygen deprivation in the muscles brought on by staying in a fixed position for too long, maintaining bad posture, or by your environment or habits (like smoking or working amid fumes) can also cause RSIs.

"IT NEVER OCCURRED TO ME THAT I WAS DOING DAMAGE TO MY JOINTS BY BEING A JEWELER... THAT [THE MEDICAL] TERMINOLOGY OF 'ABUSE' IS WHAT I'VE BEEN DOING AS A LIVING."



### Who is at risk?

RSIs do not strike everyone equally. You can be predisposed to an RSI. Some people have smaller-than-average carpal tunnels and so are more susceptible to CTS, says Vaughn. Maine jewelry artist Rachel Flaherty discovered that the nerve through her wrist is routed somewhat differently than in the average person, making it more susceptible to pressure when she works.

People with diabetes recover more slowly from injuries, says Conway, and as a result, cannot withstand as many repetitions as someone without the disease.

Although arthritis is not technically an RSI, "sometimes there is arthritis in the

# PREVENTING RSI: 16 TIPS

Admittedly, it's not easy to change the way you work; how often do we try to change a habit or start an exercise program? But if it makes a difference in being able to work longer at what you love, it makes sense to give it a try. Here are some basic rules to follow to keep your hands in good working order.

**1 Vary your tasks.** "If you're doing one piece, and doing all the different steps, you're using your hands in different ways as you go through the process instead of soldering 100 of the same thing," says Laurel Freeman of the American Massage Therapy Association. "It's made a tremendous amount of difference just varying what I'm doing," says jewelry maker Rachel Flaherty. "It took some adjustment for me to work on multiple things at a time, but that has proven, for me, to be crucial to working at all."

**2 Remember the healthy working triad.** Work with perfect posture for whatever task you're doing, minimize the force needed as much as possible, and reduce the repetitions. Allow only one part of the triad to be out of balance, and only for a short time, to avoid injury.

**3 Work in a body-neutral position.** Body neutral, says Dr. Cynthia Vaughn, DC, means your back is straight and supported, your knees are bent at 90° (not too high or low), your feet are flat on the floor, your elbows are bent at 90°, and your wrists are as close to level as possible. Short people may have to bring in a stool; tall people may have to raise their benches.

**4 Practice the 20 minute rule.** No matter what you're doing, says Dr. Steven Conway of the American Chiropractic Association, stop every 20 minutes. Get up and move around. Stretch for 10 or 15 seconds. When you stretch, consciously stretch in the opposite direction. If your head is forward and down, move it up and back. If your arms are up and forward, move them down and back. Take deep breaths and expand your chest. Stretch your fingers out as far as they can go to get relief from a pinch grip. Remember to take your Optivisor off and rest your eyes as well.

That's all it takes. But remembering to stop and do it, well, that's where the personal retraining has to take place. (See "Get Up and Move It!" page 29, for suggestions to get you out of your chair.) "It usually takes at least 30 days for adults to change their habits," says Jill Page, an industrial rehabilitation consultant. "If you can concentrate on your attempt to change, you'll have a greater likelihood of succeeding. You have to take small steps to accomplish that. If you're invested in being comfortable, then you'll make the changes."

**5 Use tools.** Yes, your hands are quicker to hold something, but a pinch grip can create damage in your hand. Hold work with a ring clamp or Benchmate. Use a benchtop drill press rather than your fingers and your handpiece.

**6 Make your tools more comfortable.** Buy ergonomically designed tools that fit your hands, or use thermoplastic or sports racket tape to pad pliers or hammer handles.

**7 Think big.** Use the largest joint available when performing any action, says Page. "Pushing a drawer shut with your whole hand as opposed to using one or two fingers is less stressful on the tissue. Apply that principle wherever you can."

**8 Adjust your bench and tables to fit.** At the suggestions of a physical therapist and an occupational therapist, Flaherty, who is tall, lowered her chair and raised her bench, her soldering tables, and the tables holding her belt sander and polishing machines.

Be sure you're doing it right, though. "One of the problems with adjustable equipment is, how do you adjust it correctly to fit you?" says Page. "Most people don't know. They adjust to comfort but not necessarily into a position of health."

**9 Hire help.** If you get a big order or a commission that requires the manufacture of many identical pieces, get enough of a down payment so you can hire help with the sawing, polishing, or whatever. Be aware of the health of your helper, though. You don't want to pay disability for someone who develops an RSI while working for you!

**10 Think outside the bench.** Jeweler Kristin Mitsu Shiga's injuries, coupled with arthritis, mean that she can no longer depend on jewelry making as her primary source of income. She now teaches or does other arts-related work. "I save the work-making for shows I care about or issues and techniques I want to work out," she says.

**11 Take care of yourself.** "Doing something that's good for you is like buying an insurance policy," says Freeman. Integrate whatever practice helps you relax and helps stretch your muscles. Barbara Simon does yoga and swims, while her fellow jewelry maker Joanna Golberg stretches her hands during her work day. Make a regular walk or exercise date with a friend. Make use of massage therapists, acupuncturists, and chiropractors. And while hobbies are wonderful, be sure they're actually doing good; some hobbies, like knitting, can actually exacerbate the problem.

**12 Enhance your oxygen intake.** Anything that interferes with your body's ability to absorb oxygen affects the ability of your muscles to recover from fatigue. Be sure your work space is vented, with downdraft ventilation that pulls soldering and other fumes away from your face. Talk to your health care practitioner about other ways to enhance oxygen absorption and muscle-recovery time, including vitamin supplements.

**13 Practice good habits.** Develop work habits that let you get enough rest at night, eat right, exercise, and relax. And don't feel guilty about it!

**14 Buy disability insurance.** Jewelry maker Kari Woo advises that you take out insurance, just in case. "Don't expect so much of yourself that your health suffers," she says.

**15 Wear wrist supports.** Several jewelers continue to wear wrist supports at night even though their RSI flare up has passed. Before buying or using a support, talk to your health care professional, as the wrong support can create its own problems.

**16 Talk to professionals.** Ask other jewelers for their suggestions. If colleagues can't help, hire an occupational therapist to examine your site and your specific working situation, and follow his or her instructions! 