

Yoga Therapy in Practice

Yoga for People with Repetitive Strain Injury (RSI)

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Abstract

Repetitive strain injury (RSI) is the leading occupational disease in the United States, yet very few Yoga teachers know how to offer a safe lesson for injured students. Symptoms of RSI can appear in the neck, shoulders, elbows, and wrists, and many Yoga postures can make them worse. RSI can be severely disabling, leading to unemployment and chronic pain or weakness. Common risk factors for RSI include computer or other intensive occupational or recreational hand use. Warning signs of RSI can be extremely subtle, and should be taken seriously. Yoga, if expertly modified for the person's injury, can be enormously helpful for people with RSI; however, the wrong âsana practice can make matters significantly worse. The challenge for Yoga teachers and therapists is to both understand general principles of practice for RSI, and how to adapt to the individual. Some of these general principles are counterintuitive to many teachers. This paper discusses techniques for doing Yoga without exacerbating injuries. Other Yoga practices, such as pratyahara (withdrawal of the senses), meditation, and breathing techniques, can help reduce symptoms of RSI. Yoga precepts of yama and niyama, such as self-study and truthfulness, encourage people to look at lifestyle patterns that can lead to injury and reinjury. Proper practice of Yoga can lead to long-term diminution of symptoms and improved hand function.

Introduction

Most computer users are aware of the aches and pains that result from long hours at the keyboard. However, few know that they could lose normal use of their hands because of this activity. This is the reality of repetitive strain injury (RSI), a disorder affecting the entire upper extremity.¹⁻² In severe cases of RSI, people might not be able to bring a fork to their mouth without pain, or have the strength to lift a cup to their lips. Other important activities of daily living, such as holding a child, driving, turning the pages of a book, can all be difficult or impossible.³ Because of the importance of hand use in daily life, soft tissue injuries to the hand present one of the greatest functional disabilities.⁴

Thousands of people with RSI are unable to work, much less do downward-facing dog. Many of them ended up in this state because they worked at computers, typing and clicking millions of times per year, usually for a job requirement. In addition, personal email, text messaging, and games can add to the occupational risk factors, as well as hand-intensive hobbies from racquet sports to knitting or playing a musical instrument.^{3,5-6}

Many people with RSI find that certain Yoga poses exacerbate their symptoms, but when performed appropriately, Yoga has the potential to support the healing process.⁷ For over a decade, I have taught a Yoga-based exercise program to people with RSI. This program has proved to be an effective way for people with RSI to reduce pain and engage in Yoga and other physical activity without reinjury. The guidelines presented in this article are based on my clinical experience and the research I conducted for the two books I have published on RSI. As part of my research, I interviewed top physical and occupational therapists and had the rare and invaluable experience of spending several months observing leading RSI physicians as they examined and diagnosed patients.

What is RSI?

RSI is a highly complex soft-tissue disease that can affect the muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels, or spinal discs in the neck, shoulder, elbow, forearm, wrist, hand, and fingers.^{2-3,5} These disorders also include syndromes that refer mainly to the upper extremity.

RSI does not refer to a single diagnosis, such as carpal tunnel syndrome, as most people assume. The term RSI can describe many specific ailments of the upper extremity (from shoulder blade to fingertip), including the best-known (but not necessarily the most common): carpal tunnel syndrome. Also included are epicondylitis (tennis elbow), thoracic outlet syndrome, cubital tunnel syndrome, De Quervains' disease, and others.^{1,3,5} One injury can lead to another, because of substitution patterns, and people frequently have more than one diagnosis.¹

RSI happens gradually, over time, and in many cases disability can last indefinitely.¹ Western medicine has no cure for RSI, and the means for managing pain and other symptoms can have disappointing results. Standard treatment such as physical therapy can alleviate some symptoms in the short term, but patients often relapse shortly after resuming occupational hand use.^{1,3} There is no surgery for many forms of RSI, and even when it's indicated, it brings many risks.^{3,5} Cortisone injections can cause tendons to rupture; splints lead to disuse atrophy and impede fluid return.³

The Cost of RSI

According to the United States Department of Labor, RSI is a leading occupational injury in the United States. Repetitive motion—such as grasping tools, scanning groceries, and typing—resulted in the longest absences from work.⁸ The incidence of work-related injuries may be underestimated by as much as 68%.⁹⁻¹⁰ Work-related upper extremity conditions are estimated to cause 24% of lost work time in the U.S.¹⁰ According to one study, the prevalence of musculoskeletal symptoms among computer users has been reported to be as high as 76%.¹¹ The enormous popularity of handheld electronic devices such as Blackberries and iPods spurred the American Society of Hand Therapists to issue a national consumer-alert warning of the danger of hand injuries caused by heavy use of these devices.¹²

Yoga Can Help

Given the many challenges RSI presents, does this mean people with hand injuries are doomed to a life of pain and disability? No—in fact, people with RSI can make great gains in terms of managing pain and recovering varying degrees of hand function. Their recovery will depend on what they do for themselves.

This is where Yoga comes in. A balanced Yoga practice that includes *āsana*, *pratyahara* (withdrawal of the senses), meditation, and breathing techniques can improve function and reduce symptoms of RSI. Yoga

reduces anxiety and increases self-awareness, both important to the healing process.¹³ The Yoga precepts of *yama* and *niyama*, such as self-study and truthfulness, encourage people to look at lifestyle patterns that can lead to injury and reinjury.

The spiritual aspects of Yoga can offer the most healing benefits, because people can learn to be happy under difficult circumstances. Patanjali's *sūtra*, *Tapah svadhyayasvara pranidhanani kriya yogah*,¹⁴ is fitting. One interpretation, according to Yoga teacher Leslie Kaminoff, is similar to the Serenity Prayer: "Yoga helps us change what we can (*tapas*), accept what we can't change, (*isvara pranidhana*), and use our capacity to introspect (*svadhyaya*) to see the distinction." (Personal communication, email March 24, 2007.)

As wonderful as Yoga can be to the recovery process, it can present thorny dilemmas, because people with RSI are prone to reinjury and relapse,^{1,5,10} and symptoms have been found to linger for at least 1-4 years after injury.¹ In my experience, many people report that they have injured or reinjured themselves by doing *āsana* that was inappropriate, or practicing too vigorously or with improper form. People with RSI are often highly motivated, and they approach their rehabilitation with the same gusto they approached working (and injuring themselves) at their computers. Yoga, if expertly modified for the person's injury, can be enormously helpful for people with RSI; however, the wrong *āsana* practice can make matters significantly worse. Unfortunately, many people with RSI who seek out Yoga make their injuries worse by taking standard Yoga classes, which can place great strain on the hand during common postures such as sun salutations, downward-facing dog, and cat pose. While the latter posture is generally taught with the wrists under the shoulder, Mukunda Stiles notes that this puts the wrist in 90 degrees of dorsiflexion, when normal range of motion is 80 degrees. Stiles suggests placing the hands a hand-span forward of the shoulders instead (personal communication with author, June 21, 2007).

There are few studies on Yoga and RSI, and these studies have emphasized the role of standardized *āsana* sequences rather than individualized Yoga programs. One such study found that Yoga *āsana* and relaxation improved range of motion and reduced pain in individuals with osteoarthritis of the hand.¹⁵ Another study found that Yoga *āsana* improved hand strength and reduced pain in individuals with carpal tunnel syndrome.¹⁶ Unfortunately, some of the postures used in this study are painful or difficult for people with other forms of RSI, so the protocol may not be widely applicable or beneficial.

Developing a Practice for RSI

The challenge for Yoga teachers and therapists is to both understand general principles of practice for RSI and how to adapt to the individual. Some of these general principles are counterintuitive to many teachers, and many common approaches will worsen symptoms for some individuals. For example, when teachers are faced with students with an upper extremity injury, unless they are very knowledgeable about RSI, they often immediately want to focus on the point of injury. They may give wrist-strengthening exercises or suggest common modifications of the hand position in weight-bearing postures, but this approach can exacerbate symptoms. Many teachers suggest using the fists rather than placing the palms on the floor in table position. This would be painful for someone with deQuervain's disease. Similarly, if a teacher suggests that the student come to the elbows, it might be a good strategy for some, but could aggravate matters for someone with a nerve-compression injury at the elbow. Many people with RSI simply cannot bear *any* weight on their upper extremities, no matter what position they are in.

These kinds of boiler-plate modifications can place subtle pressure on the student to perform a standard *āsana* at any cost. Often students will go along to please the teacher, straining themselves in the process. These suggested modifications remind students of their pain and physical limitations, instead of focusing on pleasure and what they can do. Such suggestions also inspire fear in the students that they will be asked to do something they know is painful, which sets off a stress reaction in the nervous system. The discomfort students experience in these modifications will also convince them that the teacher does not understand the true extent of the injury.

It is also important for *āsana* practice to take place in the context of a holistic practice. The guidelines offered below include suggestions for *prānāyāma*, meditation, and *mudra*. In addition, because RSI is associated with psychosocial difficulties (such as depression, relationship difficulties, and lack of job satisfaction),^{3,5} Yoga philosophy is an important tool for overall healing.

Beginning a Practice

While Western medicine does not have a perfect solution for RSI, it is nonetheless important for people with RSI to have the guidance of an expert physician to properly diagnose RSI. I have found that many physicians welcome Yoga therapists as part of the healing team, and they can offer valuable suggestions about movements that are beneficial or contraindicated for the patient.

Because of the danger of reinjury and the uniqueness of each student's history, students are typically first seen one-on-one. Each student needs the teacher's undivided attention and a practice tailored to his or her unique needs. A thorough health history should be taken to get a general idea of which movements to avoid. It is important to emphasize that the student is in charge.

It is helpful to begin with attention to the breath and relaxation. Restorative Yoga is an excellent segue into *āsana* or *vinyasa* because it allows people to sense and feel, trust sensation, and realize how much they might be holding inner tension that leads to pain. It also reduces discomfort, and provides many of the same benefits as more active *āsana*, such as releasing tension and improving circulation. Yoga Nidra is also highly beneficial for RSI, leading to both relaxation and self-awareness.¹⁷

Breathing Practices

People often breathe shallowly at the computer,¹ holding their breath while waiting for data to download, for instance. Encouraging basic breath awareness and teaching *prānāyāma* can help people become aware of—and change—such habits in daily life. Calming *prānāyāma* can be very healing for RSI. One effective breathing technique is to have the student lie with his or her feet on a chair, place a loose bag of beans on the lower belly and allow this weight to bring awareness to the breath. *Nadi shodana* (alternate nostril breathing) is a wonderful breathing practice for RSI, but it may be difficult for some people to hold their hands up for that practice. In such cases, a more subtle form *nadi shodana* can be practiced with mental focus rather than manipulation of the nostrils with the hands.

Meditation and Mudra

Meditation is an important element for any Yoga program, but holding a *mudra* may be stressful to the hands. The *chin mudra*,¹⁸ with the index finger tucked into the base of the thumb joint, requires less effort. If that is still stressful, students may relax their hands in any comfortable position. *Mudras* that require a student to lift the arms can fatigue and strain people with RSI. Instead, resting the hands with the palms up can reduce the strain of pronation, and subtly helps reverse internally-rotated shoulders.

Ahimsa in Āsana

In the program I have developed for RSI, *āsanas* are performed in ways that avoid or greatly minimize using the

affected limb until enough healing has occurred to perform an *āsana* easily. This way, the proximal musculature can be strengthened without straining the injured area.

Many instructors emphasize stretching. While this is very important, strengthening is equally necessary. People often develop RSI because of weakness, particularly in the back muscles, so a Yoga program for RSI should bring balance to the muscles, strengthening and lengthening them to enable proper alignment of the bones.

Yoga for RSI should emphasize strengthening the muscles of the back and shoulder girdle and relaxing, rather than stretching, the muscles of the chest and neck. More generally, the total body should be strong and flexible, to compensate for the diminished use of the hands. Students will not need to use their hands to help themselves up and down from the floor or in and out of chairs, for instance, if you help them strengthen their abdominal and leg muscles. Improved function in one part of the body tends to lead to improved function in the whole.

Āsana should be performed with attention to the breath. Discontinue any posture that causes pain, soreness, or exacerbation of symptoms. Flare-ups can occur at any time for many reasons, and symptoms can change from day to day,¹ so adjust the postures accordingly. If an *āsana* is out of the student's comfort zone, it is omitted until it becomes easeful, sparing the student the frustration of not being able to perform the posture. In my experience, people frequently go into a posture spontaneously when sufficient healing has occurred. They will also gingerly test a posture, holding for a few seconds at a time, gradually building strength. This process is inner-directed and should be left to the student's discretion.

Once a student has learned to respect his or her boundaries, it is safe to proceed to moving at a slow, comfortable pace. Teachers should select postures appropriate for the student, and describe or demonstrate them in a modest range of motion before the student does them for the first time. If the student thinks that an *āsana* would bother her, it can be revisited at a later date.

When considering the role of *vinyasa* and posture-holding, it is advisable to start with what is easier for the student. For some people, movement causes pain; for others, stillness does. Later, the more difficult quality may gradually be introduced when it is better tolerated. Other-paced *vinyasa* is not advisable. People who could do sun salutations or other moving poses at their own pace safely can be injured trying to keep up with the teacher or fellow students, because they don't have time to feel their way into and out of the pose.

Avoiding Reinjury

Because of the self-perpetuating nature of soft-tissue injuries, it's extremely easy to re-injure yourself if you have RSI, and relapses can be worse than the initial injury.³

Sometimes students will disregard warnings to avoid strain, so watch facial expressions, quality of movement and breathing, and stop them immediately if there is any sign of struggle or strain. *Abimsa* (non-harming) should be emphasized. Non-grasping is another important related Yogic principle. People are often so eager to see progress that they strain to "achieve." In any pose, strong contraction of the muscles can aggravate symptoms.¹ Use submaximal effort instead.

Entering weight-bearing postures on the wrists, elbows, or shoulders must be done very cautiously. One of my students, an advanced *āsana* practitioner, took six weeks off from his usual practice, only to flare badly after briefly attempting *chataranga dandāsana*, a pose that is somewhat similar to a push-up. Another student began experiencing symptoms after attending a Yoga retreat where participants were required to hold poses for long periods. She might have avoided this if she had been told to come out of the pose before she felt strain.

Group Yoga Classes

Group classes present substantial challenges for people with RSI because the risk of injury is so great. First, the teacher may not be knowledgeable about RSI. Second, the pressure to keep up with others can be overwhelming. There is great peer pressure to do what everyone else is doing, even if the teacher says not to strain. Structural Yoga Therapy founder Mukunda Stiles has made the point that in group settings there will usually be at least one *āsana* that will not be appropriate for every person in the class, underscoring the inherent risk of group practice.¹⁹

It would be prudent for teachers not to allow people with RSI to take group classes unless they know the student's history very well and can trust the student to self-regulate, modify, or skip a stressful *āsana*, and go at their own pace. It is best to see people with RSI one-on-one for some time before they venture into group class, and better yet to see students privately to ensure that the practice is optimal for them.

That said, in certain circumstances, group classes can be wonderful. If, for instance, the class is designed for people with RSI, they can all support each other in doing their own variations. The teacher can offer each student variations of poses that reduce arm strain, so that every student has something comfortable to do. Better yet, the class could focus on Yoga philosophy, meditation, or *satsang*. This can provide a

much-needed social balm, because members will truly understand and empathize with each other's situations, point out denial, and offer coping strategies, success stories, and encouragement.

Considerations About Specific Āsanas

Lists of postures and one-size-fits-all approaches are not useful for a category as broad as RSI.¹ Practices that help one condition may worsen another. In addition, as people heal, a pose that may be contraindicated one day might be possible a few months later.⁷ That said, below are some postures or movements that can present problems to students with RSI. These are general observations. Not all students will find every movement difficult, because their injury may be less severe, or in a different area, so teachers need to use discretion. No single protocol will work for every person with RSI.

- Be cautious about overhead reaches. Postures requiring upward reaches, such as the first movement in a sun salutation, should be avoided in cases of thoracic outlet syndrome.¹ Overhead reaches can also be painful for people with shoulder injuries. (In fact, reaching for anything can be painful for people with RSI.)
- Holding arms up for sustained periods, as in warrior II (*virabhadrasana* II), can tire the arms. Fatigue is a risk factor for RSI.^{1,20} Overtaxing injured tissues can lead to further strain and injury.
- Most people with RSI can't support weight on their hands comfortably, as in poses such as cat and downward-facing dog (*adho mukha svanasana*). For this reason, arm and hand balances are also contraindicated.
- Postures that put body weight on the hands can lead to pain, too. In fish (*matsyasana*) and certain versions of locust (*shalabhasana*), many people with RSI can't comfortably bear their body weight on their hands. Many of these poses can be safely modified by using bolsters or other props.
- Avoid Yoga toe-holds or any binding, grasping, pushing, or pulling movements. It requires arm strength to hold the limb, which can strain forearm tendons.
- Strong stretches should be avoided when there is injury to the nerves.¹ Cow face pose (*gomukhasana*) can be too strong a stretch for people with a limited range of motion in the shoulder joint. As is often the case with many *āsanas*, this posture may be modified by holding the hands in a position the student finds comfortable.
- Avoid balance poses that require use of the hand to brace against falling.
- Some inversions are problematic. Shoulderstand (*salamba*

ba sarvangāsana) can be too much for someone with weak arms. This pose also requires a lot of arm strength to get in and out of, and if the student is bracing for a fall, could lead to pain. Plough (*halāsana*) and headstand (*sirsāsana*) can be problematic for the same reasons.

- Certain relaxation poses can present problems. People with RSI should avoid progressively tensing and dropping the limbs to relax them for corpse pose (*savasana*). It will likely be painful for them to squeeze their hands and drop them. Some people won't be able to lie with palms up, either, because of restriction in the shoulder.

Warning Signs of RSI

Repetitive strain injury (RSI) can affect the neck, shoulders, upper back, upper arm, elbows, forearms, wrists, thumbs, or fingers. The following warning signs of RSI can appear in any of those areas:

- Weakness
- Fatigue
- Lack of endurance
- Tingling, numbness, or loss of sensation
- A feeling of heaviness
- Clumsiness
- Difficulty opening and closing hands
- Stiffness
- Difficulty using hands (turning pages of books or magazines, turning doorknobs or faucets, holding a coffee mug)
- Reluctance to shake hands
- Difficulty carrying things or holding bus or subway poles
- Hands fall asleep
- Waking up with wrist pain or numb hands, especially during early morning hours
- Lack of control or coordination
- Cold hands
- Frequent self-massage
- Difficulty buttoning clothing or putting on jewelry
- Tremors
- Avoidance of activities or sports that were once enjoyable
- Pain or soreness (RSI is not always painful, though)

If you experience any of these warning signs of RSI, see a competent physician immediately.²¹

Toward a Better Future: Re-Thinking How We Work

Rather than merely addressing symptoms, the nature of Yoga is to go to the source of a problem. Given the dangers of computer use, as a society we need to think of ways we can free ourselves from risky technology that requires people to sit at desks making minute hand movements all day. The leading cause of RSI is ignorance. No one who uses a computer should find out about RSI the hard way by becoming injured. And no one who comes to Yoga seeking help should be further injured in the attempt to heal. With more studies and education, Yoga can be used appropriately as a helpful adjunct to healing.

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