

Tips on How to Minimize Musculoskeletal Injury

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It is well recognized that the practice of diagnostic medical sonography has been associated with significant risk for work-related musculoskeletal disorders (WRMSD). Research shows that 84% of clinical sonographers experience pain related to their profession. Of those, twenty percent suffer career-ending injuries. (Pike, Russo, Berkowitz, Baker, & Lessoway) Workforce shortages are affecting productivity, patient care and reimbursement revenue. The Center for Disease Control (CDC) and National Institute for Occupational Safety & Health (NIOSH) have written a paper on sonography injury and how to prevent it. (Environment of Care News, 2006) Other legislative efforts have been ongoing in an effort to address this serious occupational health issue.

Risk factors for occupational injury include forceful exertions, awkward postures, repetitive motions, and “pinched” or “expanded” grip. (Department of Industrial Relations Cal/OSHA, 1999) The accumulated exposure to one or more of these risk factors over time leads to injury because repeated exposure interferes with the ability of the body to recover. Due to the chronic, cumulative nature of exposure to risk factors among sonography professionals, seemingly healthy persons are exposed to occupational hazards without apparent effect because of the body’s ability to compensate. However, over time the chronic exposure results in pain inflammation, swelling, and deterioration of tendons and ligaments, which further stresses muscles and joints. In sonographers, the most common injuries are shoulder bursitis and tendonitis, neck and back strains, carpal and cubital tunnel and epicondylitis of the elbow. Treatment for work-related musculoskeletal disorders has a poor outcome because the worker is often sent back to the same work environment that initially produced the injury or intervention is done too late. Therefore, it is important to prevent these injuries.

Body Awareness

The first step is to develop body awareness so that you know what postures you are assuming and recognize the onset of pain. Prolonged patterns of pain are injury producing, so we must develop an early awareness of pain. Working through pain for extended periods can cause a ‘shut-down’ in the ability to recognize the body’s pain signals. Additionally, pain can alter the brain to facilitate or enhance pain pathways creating chronic pain syndromes, making it especially important to identify and intervene at the onset of pain. Developing an awareness of posture will also increase your awareness of pain signals. It is vital that changes in positioning be made at the onset of pain to avoid injury-producing situations.

The goal is to avoid a debilitating injury. Like any of life’s crises, until you’ve been through it, you can’t ever imagine the impact a debilitating injury will have on your life. In reality, the effects of injury include suffering chronic pain, potential financial hardship, and a seriously altered lifestyle with possible permanent disability.

Self Care

Self-care for the prevention of work-related injury encompasses both the physical and emotional. Psychosocial stressors play an important role in our risk for injury as well as the perception of our symptoms. Stress contributes to musculoskeletal injury through muscle tightness and spasm. Muscle recovery time can be accomplished through rest and relaxation both on and off the job. Additionally, relaxation reduces pain. Because our lives are so busy, we often don't allow adequate time for relaxation. Relaxation doesn't have to be time consuming. Regular "moments" of relaxation will actually increase your energy level, making it a valuable use of your time. An act as simple as sitting with your eyes closed for 5-10 minutes can provide great benefit. Relaxation can be as simple or as complicated as you choose, from reading a book to guided meditation or yoga. Choose what works for you.

Fitness

The great misconception about sonography is that it is easy. After all, you're just waving a wand around someone's body. In reality, sonography is extremely physically demanding. As a result, physical fitness is a key factor in avoiding injury. A sonographer must have the strength to tolerate the demands of their work activity. Because the risk for musculoskeletal injury is great, it is important to maintain flexibility and elasticity of muscles and tendons through good fitness and nutrition. Added benefits of fitness are stress reduction, endurance and improved healing time.

The key to correct postural alignment for sonographers is trunk stability. Core strength and trunk stability helps to support the work of the upper extremities. Many of our injuries occur because we are demanding physical loads that exceed the capacity of the muscles we are using. Involving the whole body in the process helps alleviate the workload on the small muscle groups. Fitness must include the entire physical frame for the body to have the strength and endurance to support the work of the arms. Without a solid trunk, the upper body must work harder to meet the physical requirements of the job. Overloading muscles results in soreness, spasm and delayed recovery time. Therefore, fitness for the sonographer should include strengthening exercises, stretching, and relaxation.

Exercise helps to develop the supporting muscles needed to maintain normal posture. Sonographers typically overuse select muscles groups through prolonged periods of exertion causing hypertrophy of some muscles with atrophy of others. A complete fitness program will allow those opposing muscles groups to maintain their integrity to be able to provide the balance needed to support the overused muscles. Additionally, maintaining this balance will help to insure the continuance of normal posture.

Nutrition

Stretching and nutrition go hand in hand. Good hydration and nutrition are vital in preserving the elasticity of our muscular system. Because there is a normal loss of elasticity with aging, proper diet and regular stretching become even more essential. Elasticity of muscles groups helps to protect from injury resulting from the excess muscular workloads of the sonography profession.

Important vitamins and nutrients are:

Vitamin A:	Necessary for repair of body tissues
Vitamin B complex:	Maintains muscle tone, healthy joints, and aides in effects of stress
Vitamin C:	Maintains collagen, helps heal tissues
Vitamin E:	Essential for cellular respiration
Antioxidants:	Reduces damage to molecules caused by free radicals
Water:	Vital for elasticity of muscular system

Physical Self Care-Self Management of Symptoms

The greatest self-care we can do for ourselves for the prevention of injury is to have a top of mind awareness of when we are having pain associated with an activity and discontinue or alter the activity to stop the pain. But when we've pushed our muscles beyond their capacity there are other self-care measures that can help in management and recovery of symptoms.

- Ice massage
- Heat
- Medications--*not to be used to work "through" the pain
- Rest
- Stress Management
- Alter Activities of Daily Living
- Stretching/Strengthening Exercise
- WRMSD log
- Splints/Braces--*be sure to balance immobilization with mobilization
- Know when to seek medical help

Medical Intervention

If your symptoms continue to worsen or do not respond to self care methods, do not delay in seeking medical intervention. You may have to obtain several opinions before you find a physician who understands the nature of your injury. However, generally speaking, because sonographer injuries are repetitive in nature, doctors who treat athletes are often most knowledgeable in the musculoskeletal injuries of sonographers. If you feel your condition is not being appreciated or adequately treated, do not hesitate to obtain another opinion. A complete care plan for your injury should include:

- Pain control
- Reduce inflammation
- Rehabilitation
- Strengthening
- Injury prevention training
- Gradual transition back to work

Too many sonographers are treated then released to go back to the same work conditions that caused their injury without any training in prevention. Doing the same thing and expecting different results just doesn't work!

Emotional Self Care

Become your own caregiver. Those of us in health care often lose ourselves in the role of caring for others; it is our nature, and why we are so good at what we do. But if you fail to nourish your own emotional self, you will eventually deplete your reserves and have nothing to give others either. Give yourself permission to put yourself first.

As sonographers, each of us has the potential to experience a work related injury resulting in a sudden and significant change in our lives that will require a period of rehabilitation in order to recover. Gain as much information about your condition as you can. You must become your own advocate, because often, there is no one else in your court. Openly seek out help from your employer through employee health, risk management or human resources. Become part of the solution and involve yourself in the process as much as possible. There is much you can do both to prevent and to manage injury. Embrace the opportunity to be an active part of your own wellness.

Postural Alignment for Sonographers

Ideal postural alignment for sonographers includes:

- * Facing forward
- * Upright spine; avoid excessive reaching/twisting
- * Arms/hands in front of body
- * Wrists straight
- * Forearms parallel to floor
- * Elbows at your side
- * No static positioning—keep moving!

References:

Department of Industrial Relations Cal/OSHA. (1999). *Easy Ergonomics: A Practical Approach to Improving the Workplace*. Retrieved September 9, 2008, from OSHA:

http://www.dir.ca.gov/dosh/dosh_publications/EasErg2.pdf

Environment of Care News. (2006). *Preventing Injury Among Diagnostic Medical Sonographers*. Commission on Accreditation of Healthcare Organizations.

Pike, I., Russo, A., Berkowitz, J., Baker, J., & Lessoway, V. *The Prevalance of Musculoskeletal Disorders and Related Work and Personal Factors Among Diagnostic Medical Sonographers*.