

# Sonographer Occupational Musculoskeletal Disorders: What Are They And How Can They Be Prevented

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## Conclusions:

Musculoskeletal disorder, or MSD, refers to a group of disorders caused by or aggravated by workplace activities. These neuromusculoskeletal disorders are referred to by a number of names, such as musculoskeletal injury (MSI) and repetition repetitive strain injury (RSI), but the currently accepted term by OSHA is musculoskeletal disorder. Although MSD has been described for years in a number of other professions, it has only recently been identified in sonographers. MSD accounts for between 40% and 60% of all recorded work-related illnesses. In the field of diagnostic medical sonography, 84% of sonographers surveyed suffer from some form of injury. It is the leading cause of long-term illness absence in health care workers. The incidence of MSD has increased nine-fold over the last 10 years and may actually even be higher, since many cases remain unreported. The physical problems of MSD result from a combination of factors. There are biomechanical factors, which include inefficient scanning postures, frequent repetitive motions, exertion of excess force while performing these motions, wrist flexion or deviation, faulty work space and equipment design.

A second set of factors relates to work organization. Employees may work long hours without breaks, often enticed with bonuses and incentives. There is often a lack of training for employees in the proper ways to perform their duties or in the proper use of the equipment.

A third set of factors includes delayed reporting or diagnosis of injuries, and inappropriate injury management.

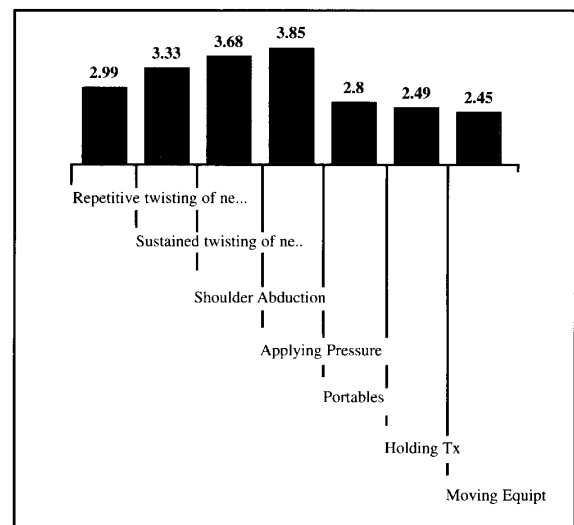
Some individual physical factors associated with MSD risk include age, gender, height & weight, body-mass index (BMI), systemic illnesses, level of physical fitness, and hand dominance.

The types of work activities known to cause MSD in sonographers include:

- repetitive motion
- forceful exertions or strain when pushing into a patient's abdomen or compressing leg veins
- awkward postures or unnatural positions, commonly from reaching over patients during bedside exams

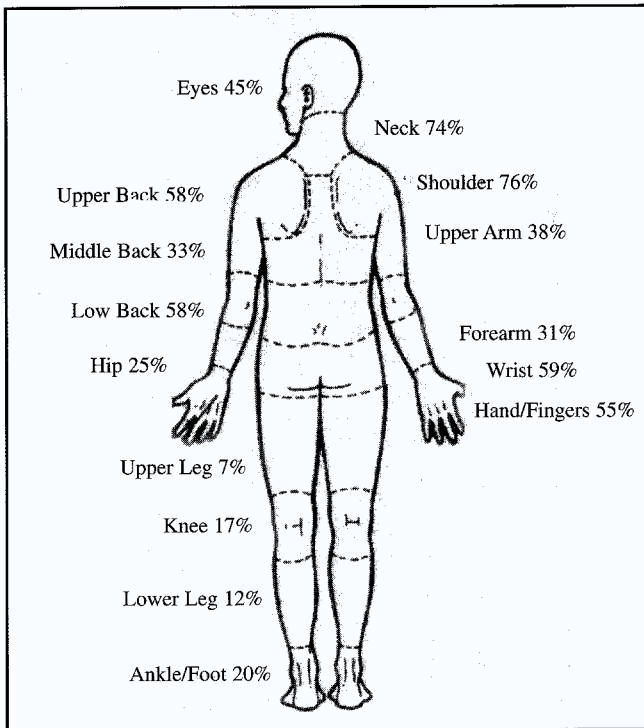
- uncomfortable positioning of limbs, such as flexion, extension or deviation of the hand
- overuse, generally the result of downsizing and an increase in the number of exams performed per day
- frequent reaching above shoulder level
- work activities to which the individual is unfamiliar

What Aggravates the Pain



Advances in technologies, particularly automatic film developing and filmless storage devices have increased the time sonographers are actually scanning because these new devices have reduced the time needed between patients. Sonographers do not have sufficient "down time" to allow the muscles used during scanning to recover.

MSD causes pain, inflammation, swelling, and deterioration of tendons and ligaments. Muscles and joints become stressed once their support structures are weakened. The most commonly affected areas in sonographers are the shoulder and neck in those who scan right-handed and the wrist and elbows in left-handed cardiac sonographers.



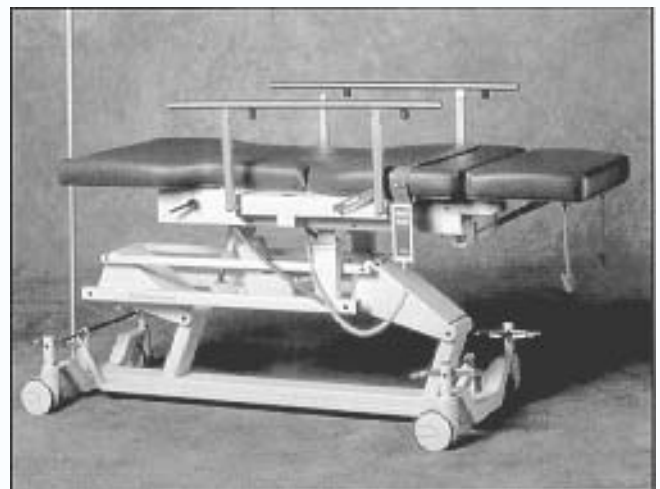
Symptoms of MSD occur after months or years of overuse and usually occur away from the job, commonly at night. The symptoms most often reported are pain, loss of sensation, numbness, burning or tingling, tenderness, swelling, clumsiness, or muscle spasm. They range in severity from aching and fatigue that subside with overnight rest to constant pain that impacts work and leisure activities and may even be career-ending.

The injuries associated with MSD in sonographers include carpal and cubital tunnel, epicondylitis of the elbow, neck and back strains, shoulder capsulitis, tendonitis and tenosynovitis. Treatments for these injuries range from rest and analgesics to surgery. Alternative treatment methods, such as massage therapy, provide relief in some instances. However, the outcome for treatment of occupational MSD is poor – once treated it often recurs. The key, therefore, is to PREVENT the injury initially.

Prevention of MSD is multifactorial, involving sonographers, department managers, and equipment manufacturers.

- Sonographers must be aware of what activities cause their pain and learn to modify those activities.
  - they must help educate their supervisors about occupational MSD
  - they should request ergonomic adaptable equipment
  - they should learn the proper use of all the exam room equipment

- they should become familiar with and utilize adaptive equipment when scanning, such as support cushions, wrist braces
- they should learn and perform some stretching and strengthening exercises designed to prevent injury.
- they should report symptoms of MSD as soon as they occur
- Department managers should be responsive to the requests of their staff.
  - work breaks must be built into the daily schedule and workloads should be modified
  - ergonomic designs should be implemented in the scanning rooms
  - they should supply ergonomically designed equipment
  - they should facilitate injury reporting and initiation of treatment
- Equipment manufacturers should work closely with those using their products and solicit input as to the ergonomic impact of those products.
  - ultrasound equipment should have adjustable monitors and keyboards
  - transducers should be wide enough to allow for a comfortable grip
  - transducer cables should be lightweight
  - chairs and stool should be height-adjustable with back supports and footrests
  - exam tables should be height adjustable with hand or foot controls.
  - tables should be the appropriate width and length
  - tables should have the capability to add stirrups, IV poles, and/or oxygen tank holders.
  - tables used for cardiac exams should have removable or drop-out sections to allow the sonographer to maintain comfortable arm and hand positions when scanning



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Ergonomically-adaptable features of the exam room equipment and the sonographers awareness and proper use of those features are critical to the prevention of occupational MSD in this profession.

The economic impact of MSD includes lost wages, more numerous medical insurance claims and Worker's Compensation claims, increased sick and disability leave time, and ultimately compromised patient care as the profession loses the most experienced sonographers to injury. Injured sonographers can cost employers thousands of dollars each year. Loss of chargeable revenue can be as high as \$520,000. Worker's compensation claims have been estimated to amount to \$29,000-\$32,000 per injury, or \$2,700 per month. Medical bills for the average shoulder injury, excluding possible surgical treatment, can add up to \$20,000 per year, or \$1700 per month. The cost to an employer of hiring replacement staff for an injured sonographer can range between \$60,000 to \$80,000 per year, or from \$5000 to \$6500 per month. It has been estimated that the average cost to find and hire a sonographer is \$10,000, which is strong motivation for providing an ergonomic environment that will help protect experienced sonographers from injury and allow them to continue providing quality patient services.

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