FOR IMMEDIATE RELEASE February 2007
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Manufacturer's Worker Compensation Costs for Repetitive Stress Injuries Decreased By $1 Million With Effective, Proven On-Site Rolfing® Program; OSHA Sets New Ergonomics Protection Standard

Boulder, CO ..."Officials at Starkey Laboratories, one of Minnesota's largest and most successful manufacturers, cite Rolfing® structural integration as a big factor in slashing their workers compensation costs nationally to less than $150,000 in 1996 from $1.3 million in 1992." St. Paul Pioneer Press, 3/97.

The Associated Press reports that "the Starkey program is paying off...absenteeism is down and productivity is up." Starkey's Human Resources Vice President, Larry Miller, says, "Rolfing has been a key factor in driving down Starkey's "mod factor (a measure used to calculate companies' workers' compensation premiums) over the last seven years." Starkey now has the lowest mod factor of any manufacturer in the U.S.

OSHA (Occupational Safety & Health Admin.) has set new workplace ergonomics protection standards. The Associated Press reports, "Employers would have to correct injury-causing workplace conditions that require repetitive motion, overexertion or awkward posture under proposed regulations the Labor Department announced today." (11/22/99)

‘‘The fact is that work-related musculoskeletal disorders ... are the most prevalent, most expensive and most preventable workplace injuries in the country and it is time we do something about it," said Labor Secretary, Alexis Herman.

Starkey credits Certified Advanced Rolfer, Siana Goodwin's effective use of Rolfing bodywork techniques, with employees affected by RSI, as a significant factor in their success. "Rolfing systematically works with the connective tissues surrounding muscles, relieve stresses, increase muscle function and efficiency, and helps change harmful patterns of body use that contribute to physical discomfort," states Goodwin who works on-site in Starkey's employee-based wellness program, "Genesis.

Rolfing can be an economical alternative to surgery. "One hand surgery costs Starkey about $35,000," says Miller. Rolfing, which costs about $800 per client, has saved Starkey thousands of dollars. Marianne Dalton, a data entry worker at Starkey, was one of the first Rolfing clients in the program. "She had undergone carpal tunnel surgery on her right hand and was scheduled for surgery on the left

hand," reports the Associated Press.. "After a series of Rolfing sessions, Dalton said, her doctor reclassified surgery on her left hand as optional."

"Wellness programs have been gaining popularity since the ‘80's." (AP '97) In addition to improved health services, wellness plans help to increase workforce and provide preventative health services. Starkey's Miller says the Rolf Institute® of Structural Integration has "a unique program and is an excellent choice for employers who want to do just that." A new video, "Rolfing In the Workplace," features the successful program implemented at Starkey Labs.

Repetitive stress injuries, including carpal tunnel syndrome, are a significant problem facing companies today, both in terms of escalating the costs for worker's compensation claims and coverage, as well as the cost of the resulting lost production. Industries faced with rising workers' compensation costs due to RSI are looking for alternative approaches to deal with this expensive problem.

What is Rolfing structural integration? "The theory behind Rolfing is to break down the tight (connective) tissues of the muscles and at the same time realign the body into a more functional mode. If you get that function your pain will disappear," says Dr. Jim Mongomery, Olympic MD and Orthopedic surgeon at Dallas' Orthopedic Specialists. "A lot of the clients I refer to Rolfers no one else has been able to help."

Rolfers see many clients who are referred by doctors, patients that the traditional health care system have been unable to successfully treat. "Rolfing uses a wholistic approach that looks beyond the area of pain, and searches the entire body for the source of the problem, sometimes in areas that may have been overlooked," says Bob Alonzi, a Certified Advanced Rolfer, who works in affiliation with Olympic MD, Dr. Karlis Ullis' Sports Medicine and Anti-Aging Medical Group in Santa Monica, CA. "RSI tops the list of health complaints that people come to me for. A great deal of these problems are from computer usage, manufacturing-related tasks and even athletics. In many cases wrist and elbow problems that lead to repetitive stress injuries can be caused by a loss of mobility in the neck and upper back."

Headquartered in Boulder, Colorado, the Rolf Institute has trained over 1050 certified Rolfing® practitioners to provide services in 26 countries internationally. The Rolf Institute, dedicated to the scientific investigation and clinical evaluation of structural integration, offers the highest quality structural integration training available worldwide.

RSI Statistics

- The ‘97 Bureau of Labor Statistics (BLS) report stated, "64% of the new (occupational illness) cases were reports of repetitive stress injuries (RSI) or hearing loss."(AP, ‘98)
- A ‘92 survey by the U.S. Office of Disease Prevention showed that 81% of the companies with at least 50 employees offer some type of wellness program beyond traditional medical insurance." (AP 6/97)
- "Work-related musculoskeletal disorders (WMSDs) are now a leading cause of lost-workday injuries and workers' compensation costs. WMSDs account for more than $15-20 billion (out of $60 billion) in workers' compensation costs. (OSHA's working draft proposal, 5/99)
- With the phenomenal growth of desktop computing, there has been a significant increase in job-related RSI's. In fact, the number of repeated trauma cases reported to the Bureau of Labor has skyrocketed from 23,800 in 1972 to 332,000 in 1994 -- a fourteen-fold increase.

Work-related RSI's such as carpal tunnel syndrome, are now the "nation's largest workplace health problem," (TIME, ‘96) accounting for more than 60 percent of all occupational illnesses. Resulting worker's compensation costs have reached $20 billion annually.

Rolfing In Industry:

Addressing Repetitive Stress Conditions

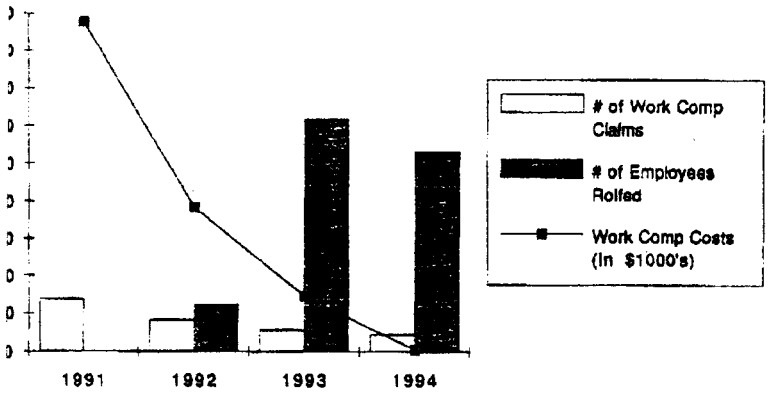
Siana Goodwin

Background

In April of 1992 I began working, as a Rolfer, for Starkey Laboratories, Inc. A privately owned company, Starkey is the world's second largest manufacturer of custom hearing aids. In 1992 they were aggressively addressing problems of high workers' compensation costs, much of which was due to repetitive stress injuries, such as carpal tunnel syndrome. At Starkey, I do soft-tissue work with people who are exhibiting physical symptoms related to the development of repetitive stress disorders. In addition, I advise people on the positioning of equipment at their workstations to help reduce physical stress, and also do some education for stress reduction, exercise, etc. Employees are not required to work with me; it is strictly voluntary. I believe my work at Starkey offers an example for Rolfers in practicing the profession in alternative settings, and providing a service for organizations as well as individuals.

Some background on Starkey will be useful. The main facility is located in Eden Prairie, a suburb of Minneapolis. It has over 800 employees. Approximately half of them are directly involved with the manufacture of hearing aids; the rest are in administrative and support functions. There are presently 22 Starkey facilities of various size around the world. The Starkey facility in New Jersey has Rolfers Bill Harvey, Linda Grace, and Rebecca Carli-Mills working on-site. These are the only two Starkey facilities that currently provide this service.

Starkey's workers' compensation insurance premiums are based on anticipated costs, which are based in part on prior years' claims. A year of high costs means increased costs over the next few years. Conversely, a reduction in claims means not only an immediate expense reduction but also savings on future insurance premiums. The chart in Figure 1 (shown on following page) shows Starkey's workers' comp statistics for the years 1991-94. In 1991 there was approximately $460,000 in costs, representing about 60 claims of repetitive stress injuries. I began working regularly at Starkey in June of 1992, and workers' comp costs and claims declined. In 1993 and 1994, they continued to decline dramatically, the number of claims being reduced by more than half, and the cost of work comp being reduced to 1% of the 1991 costs. During this period of cost reduction, I was seeing more people on-site, as shown by the gray bar on the graph. It is



The diagram above compares the number of worker's compensation claims and costs at Starkey Laboratories Eden Prairie facility for four years. "Number of employees Rolfed" was calculated on a per session basis; one employee seen 5 times counts as five people. Over the period shown, work-comp claims decreased from 60 to less than 20; and costs dropped from $450,000 to $4,000.

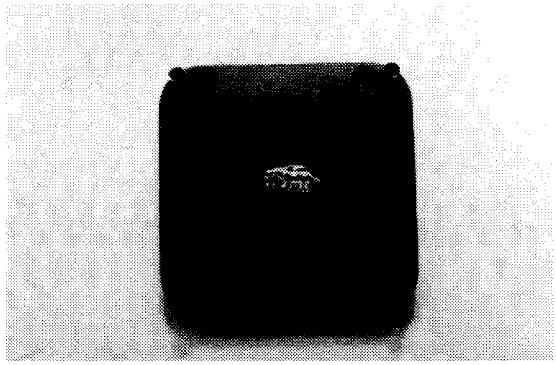
of course impossible to directly attribute this reduction in cost to on-site Rolfing. However, within the organization itself, the decrease in workers' comp costs is attributed to Rolfing.

I should add here that I am not doing a Rolfing series or working with the entire body. I only address fascial conditions relating to stress in hands, arms, and necks.

Conditions of Repetitive Stress in an Industrial Setting

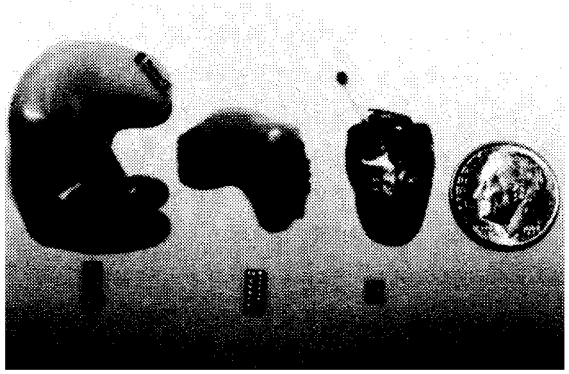
Helen James' article in carpal tunnel syndrome has detailed the anatomy and sources of stress in the neurology of the hand. This article will show how those stresses can be identified in the actual working conditions of hearing aid manufacture. While this is a very specific situation, I believe it can serve as an example for addressing any workplace.

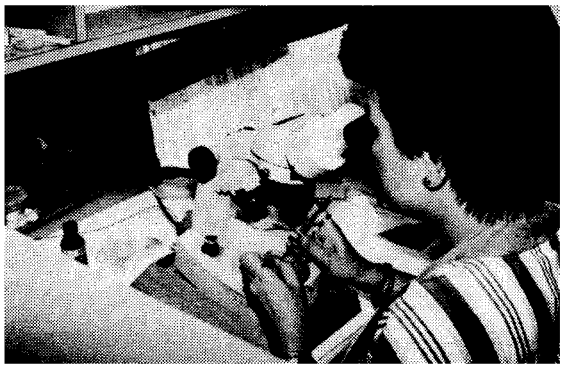
Some understanding of the process of making custom hearing aids will help in observing the conditions of repetitive stress syndrome as seen at Starkey. The company specializes in making hearing aids that fit within the ear, either in the outer part of the ear or in the canal. Figure 2 (below at left) shows these different types of hearing aids. The extremely small size is evident. The components of hearing aids include microphone, receiver, amplifier, and battery. All electronic components are wired into circuit boards, shown underneath each aid. During the wiring



process, the circuit board is embedded in a plastic plate (Figure 3 above) that will later be trimmed to fit the custom shell of the hearing aid.

Because the components of the aids are so small, a microscope is used for the wiring process. Figure 4 (pictured below) shows a wirer at work. It is not so obvious when first looking at



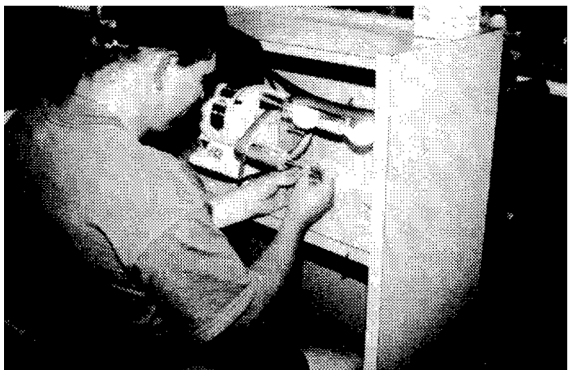


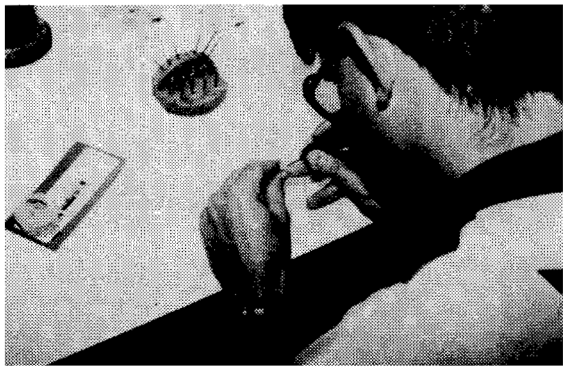
it, but the use of the microscope places a peculiar stress on the neck. The neck must be flexed in order to bring the head forward, but must also be extended slightly (from about C4 and C5) in order to see into the eyepiece. This position is obviously a source of muscle strain, and possibly of the "double crush" syndrome mentioned in Helen James' paper.

In the process of wiring (Figure 5 below), the wirer holds the component wire in place with tweezers with one hand, while using a soldering iron to connect other wires and components. The

continual maintenance of a tight grip on small surfaces is a primary source of muscle stress and consequent circulation restriction and nerve irritation.

Such stress factors are also present in other jobs connected with hearing aid manufacture. Figures 6, 7, and 8 (pictured at right) show the processes of cutting, venting, and surfacing, respectively. In cutting, the plate holding the circuit board is trimmed to fit the shell of the hearing aid. An electrically powered, rotating cutting blade is used for this. In venting, a drill is used to shape the hearing aid shell to accommodate components and provide ventilation. In surfacing, the end of the case is being sanded to fit snugly against the plate. In all of these jobs, the extremely tight pinching movement of the hands is evident. Problems caused by maintaining this tight grip can be exacerbated by the vibration of the tools used. Also, most workers with jobs of this kind have a tendency to bend close to their work. They are unsupported in sitting, even when they use ergonomically designed chairs. This kind of posture also promotes the possibility of nerve stress at the anterior neck.





Another exacerbating factor is immobility. Sustained positions restrict blood supply to the muscles that maintain that position, which can result in measurable loss of the muscle's capability. Blood supply to the nerves is also diminished, leading to lessening of nerve efficiency and ultimately nerve damage. And, obviously, the positions which are maintained for long periods of time can also result in nerve compression.

Some Factors in Working With Repetitive Stress Syndrome

Before the completely debilitating symptoms of carpal tunnel syndrome appear, there are usually symptoms of tingling and numbness in the hands or fingers, or a weakening of grip strength. I believe if an intervention (soft tissue work being ideal for this) is made at this point, the continuing irritation on muscle and nerve is reduced, and full-blown carpal tunnel syndrome can be avoided. In this section, I'll share with you what I've observed about conditions that seem to precede carpal tunnel syndrome. Reference to an anatomy atlas, detailing the musculature of the forearm and hand, and the pathways of the median, ulnar, and radial nerves, will be useful for this.

The first factor I've found is that stress will often appear in the thumbs. In the maintenance of a tight grip, there is continual contraction of the thenar and hypothenar muscles. Often the first complaints of repetitive stress that I hear are of pain in the carpal-metacarpal joint of the thumb, soreness or pain in the thumb extensor tendons, and cramping or tingling in the flexors and opponens of the thumb.

The possible importance of these symptoms in the thumbs can be seen by looking at the ligaments of the abductor and the opponens group. The fasciae of these ligaments are virtually continuous with the carpal retinacula. Repeated contraction or shortening of these muscles will also affect the resiliency and perhaps length of the retinacula. In my experience, the whole carpal ligament area appears to shorten, so you see a bunched look of the tissues at the carpal ligament. The hand appears narrow just distal to the wrist.

When this shortening, or lessening of resiliency, at the carpal ligament occurs, it also seems to involve the carpals themselves. The carpal ligament attaches to the hamate and the trapezium, which articulate with the metacarpals of the little finger and thumb, respectively. Shortening of the muscle attachment and the connective tissues between the hamate and trapezium not only decreases the length of the proximal carpal ligament, it can cause a slight rotation in the wrist bones. Helen James' article pointed out that there is a greater degree of play in the proximal ligament of the carpal tunnel, but also that there is less space in the carpal tunnel at this point. The rotation of the carpals can alter the space of the carpal tunnel from the bottom, as well as putting pressure on it from the top. Even though the change may be very small, I believe it can significantly alter the pressure within the carpal tunnel.

My primary approach to these symptoms is to lengthen the area of the carpal ligaments. What I look and feel for is ability of the muscles involved in opposition to extend. I also check for the feeling of the carpal bones being in place and appropriately mobile. The relationships of the thenar metacarpal to trapezium and scaphoid, and the capitate to the scaphoid and lunate seem especially important in this.

Bearing in mind the possibility of "double crush", I also insure that the finger flexor and thenar extensor compartments in the forearm have free movement. Some specific sites often need attention. One is the area of the biceps tendon attachment. Some anatomy texts show the biceps tendon as having two branches, spreading out into the flexor fascia as well as attaching to the radius. In addition, the biceps tendon is superficial to the brachialis tendon on the inside of the elbow, and the brachialis, in its excursion to its ulnar attachment, makes part of the bed of the median nerve. Tension in the biceps seems to shorten the whole connective tissue web of this area.

Supinator and pronator muscles are also key. Pronator teres as a structure of the anterior elbow can exert pressure on the medial nerve bed. In addition, pronator teres and supinator can also become inelastic due to lack of movement, and fixed positions are a given in many manufacturing jobs. I find it important in distinguishing the function of the wrist, finger, and thumb muscles, to also distinguish the movement of supinator and pronator. My approach to this is to ask for finger flexion, and gentle pronation and supination of the arm, while working.

Often symptoms of pain, tingling, or numbness in the extremities are due to pressure at or near the root of the brachial plexus. Stresses in the neck, and at ribs one and two, are often part of this. It is evident from the pictures of the workers using the microscope, that the peculiar fix of the neck—part flexed and part hyper-extended—exerts an unusual stress, much of it in the scalenes. There is usually compression in this area, with the pos-

sibility of rib #2 crowding up against rib #1. When working with symptoms of stress in the hand, I will usually also find muscular stress in the neck, and neck pain and tension often precede symptoms in the hand.

Although the fashionable concern with repetitive stress injuries is with carpal tunnel syndrome, some types of work stress other nerves as well as the median nerve. Resting the forearms on hard or edged surfaces can put pressure on the radial nerve and lead to sensory problems or problems with extending the hand. Jobs that require tight grip such as are illustrated here will often lead to stress on the ulnar nerve, which can produce discomfort, both sensory and motor, before the median nerve may be affected.

Working on-site provides some experience for a Rolfer that isn't always available in a private practice. You are able to observe conditions that lead to the development of repetitive stress problems, and have the satisfaction of working with them before they become crippling. You are also able to work in a direct way with people's work habits. On-site coaching in body use, supported sitting, etc. has more immediacy and impact for the client. Often modifications of the physical environment reduce continued physical or repetitive stress. The combination of workplace modification and soft-tissue work can be highly effective in reducing work-related stress disorders.

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