

The Solution to the Soft-Tissue Injury Dilemma: We Think It's an Ergonomic Issue: It's Not!

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Introduction

The problem is: We have failed to adequately define the problem. One good illustration to substantiate that thesis would be the talk given at the opening session of the 1999 American Society of Safety Engineers Professional Development Conference in Baltimore. The essence of the message delivered by Assistant Secretary of Labor Charles N. Jeffress was that approval of proposed ergonomics standards would – at least in large part – solve the soft tissue injury problem. That mindset -- coupled with the prevalence of the quick-fix mentality -- is exactly what has led to the repeated failures (over the last twenty plus years), to make real progress in reducing the pain and suffering – not to mention cost – of neuromusculoskeletal injuries. There is some irony in the fact that the efficaciousness of a holistic approach was demonstrated almost two decades ago but has gone largely unheeded.

More recently, in the February 24, 2005 issue of *USA Today*, we read the headline story telling of the epidemic of soft-tissue injuries among *TSA* airport screeners. The article says that “Injured workers at the *Transportation Security Administration (TSA)*, more than two-thirds of whom are screeners, missed nearly a quarter-million days of work last year.

Careful reading of the article suggests that there is still little understanding of the etiology of soft-tissue injuries and the remedies currently in common usage just aren't working.

Why We Miss the Point

Safety professionals are burdened with a history of looking for *the* cause of accidents. The knowledge that almost all losses are the product of multiple causation is omnipresent but still usually disregarded. Nowhere is the oversight more obvious and more costly than in the case of soft tissue injuries.

For how long have accident investigations of back injuries required that a specific time of the "accident" be placed on the accident report? Back injuries are virtually *always* the result of

repeated strain – often over years. *This is common knowledge among safety professionals but rarely acted upon.*

For many years, loss prevention was seen as a technical problem. Then, behavioral scientists convinced lots of loss prevention professionals that, first and foremost, accident prevention was a behavioral problem. Certainly technology can reduce risk; just as certainly, shaping behaviors to comply with known low risk behaviors by soon, certain, and positive reinforcement can reduce exposure. While technology and behavioral science are ingredients in loss resistant environments, they are not at the heart of the matter: Attitudes are. And attitudes are simply a reflection of organization culture. Culture is shaped by what the population believes and values.

Here are some of the myths that cloud the soft tissue abatement issue:

- ◆ Jobs can be designed to limit physical stress and eliminate soft tissue injuries.
- ◆ Employees won't participate in an exercise program.
- ◆ No good model exists for successfully dealing with soft tissue injuries.
- ◆ Lots of employees are malingerers.
- ◆ Traditional medicine, if practiced well, can successfully "heal" people with soft tissue injuries.
- ◆ Better application of traditional approaches to loss prevention will solve the problem.
- ◆ The problem is the worker's compensation laws. If they were less liberal, the problem would go away.
- ◆ If you just select and place the right people in the right job, soft tissue injuries can be avoided.

Case Histories

1.) Back in the early 80's (before soft tissue injuries became epidemic and when almost no one knew how to spell ergonomics much less what it meant) the *Bass Shoe* and *Health-tex* Children's Clothing companies in Maine and Rhode Island incurred an epidemic of micro-cumulative trauma injuries. They resulted in annual workers' compensation costs of over \$10 million for a few thousand employees. Initial efforts were focused on trying to change or at least influence laws in Maine and then Rhode Island: It didn't work and the focus soon turned to accident prevention. Considerable time and money was spent to create a world-class ergonomics process that resulted in greatly improved workstation design. There was some improvement in costs and losses but it was not dramatic. Then a comprehensive approach was initiated and within two years costs were below \$1 million/year. At the time, it appeared that the approach that included enlightened return to work programs, early intervention, education of employees and managers, aggressive claims handling, etc. did it. One of the keys to understanding was that at first employees were reluctant to participate in exercise programs; once they understood the efficacy, they did them willingly and without any prompting. Once the culture changed, there was no need for any incentives or enforcement.

Reflection indicates that what really did it was an attitude change. Managers and supervisors came to realize that the injuries were not fabricated. Workers understood the etiology of the injuries and accepted and applied the engineering solutions and embraced the exercise programs.

They not only accepted but also clearly understood that they needed to participate in the prevention process and rehabilitation programs or they would not avoid injury or get better. The same effect could have been achieved years earlier if the beliefs and values that led to the culture and attitudes had been addressed earlier and more forthrightly. The programs would still have been needed but would have worked sooner as they would have been greeted with acceptance rather than skepticism and resistance.

2.) More recently, a major international manufacturer of small composite metal/chemical items often handled in tote boxes experienced a growing incidence of soft tissue injury disabilities in their operations in a New England state. They had an aging population and a history of good to excellent corporate safety performance. They quickly seized upon conventional wisdom and over several years instituted an enlightened (and costly) ergonomics effort employing the best advice and techniques. *Job Safety Analysis* was applied rigorously to all jobs and traditional accident investigations were done well. All the elements of traditional safety efforts were in evidence. The growth of problems abated for a while after the job redesigns; soon the incidence of troubling maladies began to become more frequent and even more intractable than before.

This troubling development led the company to take another, deeper look at the root cause of their problems. The institution of a more comprehensive approach to prevention that included on site therapy, work hardening, and employee education concerning the etiology of soft tissue injuries turned their situation around. Job redesign alone was close to useless in abating the injury incidence.

In general, the correct culture was present but it was not tailored to the unique aspects of soft tissue injuries. It was easy to modify the culture and achieve success in a matter of months. The new programs were the instruments that facilitated the improvement; the culture adjustment was the driving force that caused the application of the instruments to be effective and do so in a very short time frame.

Why Job Redesign Alone Doesn't Work

The more you reduce the stress, the more you reduce the body's ability to cope with stress. So the effect is not to reduce the probability of injury but only to reduce the stress level at which musculoskeletal injury will occur. In the early eighties, repeated strain injuries began with shoe and apparel workers. They experience a combination of movements at speeds that make one think they are experiencing blurred vision, combined with some unnatural angles and significant force (particularly in the shoe industry). In those days the thought of keyboard operators and checkout employees experiencing tendonitis was almost comical. But not many people are laughing now.

Why didn't workers in shoe factories experience carpal tunnel syndrome before the eighties? There are lots of answers including less fit workers, greater physical demands made by faster support machinery and piece work demands, and even the simple fact that years ago, workers who "broke down" just left; they didn't become statistics; then there is the psychological overlay problem...not so prevalent years ago -- or, at least not recognized and labeled.

Why did the problem manifest itself years later in less physically demanding jobs such as keyboarding? The answers are the same but lower physical demands just caused the onset to occur later. So, will reducing physical demands stop soft tissue injuries? -- Not a chance unless

the many other factors contributing to the malady are addressed concurrently. And, the psychological factors understood and factored into any set of solutions.

Yes there are significant psychological elements in soft tissue injuries and they are ignored at the risk of never really controlling the problem. Delayed recovery occurs in every injury and illness inflicted upon humankind. It is found far more frequently in soft tissue injuries and even illnesses than in traumatic injury. Why is that? An article found in the November 1983 issue of *Journal of Occupational Medicine*, "Delayed Recovery in the Patient with a Work Compensable Injury," provides the answer and the solution.

The answer is the insidious nature of soft tissue injuries coupled with the often inappropriate treatment that focuses more on rest, pain killers, and surgery than the more efficacious manipulation, stretching, and exercise that are less invasive and lower risk. Rest will cause atrophy; painkillers mask the real problem and often lead to re-injury and more serious injury (and often addiction and chronic pain); surgery often damages more soft tissue than it fixes.

The solutions are bound up in recognizing the psychological components -- that starts with knowledge of the high-risk factors listed by Drs. Derebery and Tullisin in their excellent article on delayed recovery. Then it requires the ability to diagnosis accurately using ranges of motion, palpation, and strength testing to replicate pain and accurately define both the site of the problem as well as the etiology of the injury. The diagnostician must have a good knowledge of the work performed and take a comprehensive medical history to include hobbies and activities away from the job as they often are components in the affliction. Then treatment must be prepared to deal with neurosis, depression, and even malingering, although history has shown that to be a factor in less than five percent of the cases.

Treatment must include vocational, activation, narcotics cessation, and relaxation components. Early return to *appropriate* work is essential. Bed rest should be minimized. The use of hot packs, massage, ultrasound, and other passive forms of therapy that may be appropriate for some acute injuries should be avoided for these chronic injuries. Use of drugs should be restricted to one or two weeks maximum. Since psychological stress – on and off the job – are often precipitating factors in soft tissue injuries, relaxation therapy combined with awareness training is often very beneficial.

In summary, it needs to be recognized that "treatment of delayed recovery is not a well-defined science but rather an intuitive art."

Characteristics of an Environment that is Resistant to Soft Tissue Injuries

The onset and proliferation of soft tissue injuries is often more related to the characteristics or culture of the environment than to the actual physical exposures, profile of the workforce, or other easily quantifiable factors. Organizations that will deal effectively with neuromusculoskeletal exposures will:

1. Recognize the complexity of causation.
2. Appreciate the unique aspects of onset.
3. See work as para-athletic and see workers as athletes.

4. Consider and employ creative solutions.
5. Be comfortable with the application of exercise to warm-up, relieve stress, and strengthen.
6. Employ appropriate diagnostic techniques.
7. Make therapy and consultation available on a timely basis for all employees.
8. Utilize enlightened claims handling.
9. Have intelligent return-to-work programs.
10. Be sensitive to the high incidence of delayed recovery in soft tissue injuries.
11. Select and place employees appropriately.
12. Recognize and value the skills their employees bring to the job.
13. Understand the close relationship between low back injuries and other soft tissue injuries.

This list of attributes or characteristics suggests that dealing with soft tissue injuries is more of a cultural problem than a technical problem; that is correct. The beliefs and values of an organization that will lead to acquisition of the characteristics suggested are as follows:

They believe that:

1. Their employees are basically honest.
2. Prevention and healing are a joint effort in which employees and employer must be partners.
3. They must enlist all employees including all levels of supervision right to the CEO in the prevention and healing process.
4. Enlistment will require that leadership sets a good example, sees that correct precepts are stated, and provides ongoing education on all aspects of prevention and treatment.
5. It is important to protect the honest employee from those who seek to use the system to their personal advantage (the less than five percent who are malingerers).
6. Their employees are entitled to the best health care available.
7. Soft tissue injuries are just as real as other more obvious injuries such as lacerations, contusions, and broken bones.
8. Soft tissue injury prevention is unique and does not lend itself to traditional techniques used to prevent traumatic injury.
9. Back injuries are a category of soft tissue injuries and should be treated as such.
10. Job rotation and job enrichment are good for many reasons.
11. Ergonomics is only one of many methods that need to be applied to abate soft tissue injuries.

These beliefs lead successful organizations to value:

- All employees.
- Skilled caregivers.
- Comprehensive education and those who provide it.
- Accurate diagnosis and those who can provide it.
- Aggressive claims handling and those who do it.
- Good employee and community relations and those who orchestrate them.

The right culture based on the correct beliefs and values will predict organizational characteristics that will not only lead to the right programs and processes but also will nurture and sustain them. An enduring effort is the only one that will work.

Precipitating Factors

Identical jobs in similar environments with comparable worker demographics can and do produce dramatically different frequency of soft tissue injury disability; and in turn very different incidences of delayed recovery. Why is that?

Here are some of the most frequent reasons:

- A plant closing or major downsizing.
- Recently liberalized workers' compensation legislation or advertising soliciting claims.
- A particularly aggressive legal community specializing in workers' compensation.
- Erosion of company loyalty as in the case of a family owned company being sold or work stoppages.
- An increase in psychological stress due to depressed economic conditions or other factors.
- Magnified physical stress due to more aggressive incentive programs, increased overtime, or reduced job rotation.
- Deterioration of employee and/or community relations.
- Unenlightened health care providers.
- Increased awareness of hazards associated with tasks such as keyboarding.

One or more of these factors can trigger off a rash of soft tissue injury complaints. Several of them occurring at once coupled with jobs that have significant inherent physical stress can produce an avalanche of claims particularly in an aging population or one that has a lot of menopausal woman who some experts say are more susceptible to micro-cumulative trauma hand and arm injuries.

Summary & Conclusions

Soft tissue injuries are not the result of a technical shortfall. Hence, technology will not – by itself – provide the solution. The phenomena is multi-causal hence abatement requires a multi-faceted approach, carefully orchestrated based on the circumstances and the culture of the affected population and their leadership. Eventually, the culture of the victimized population and their leadership will need to change. If that change comes as a result of programmatic effects the process will take longer than if the culture is deliberately altered *first* and then the programs instituted. They will then meet with less resistance and so work better sooner. And the corrective measures will be more likely to be enduring.

It is not uncommon for an afflicted organization that wants a quick fix to ask how they can have the greatest impact the fastest and for the least expenditure. That will come by providing an in-house “trainer.” The person may have a background in chiropractic, physical therapy, or sports medicine or even be a personal trainer. What is important is that they be credible, like and understand the work environment...and the workers, have a good knowledge of biomechanics, and some background in ergonomics. The right person will be likely to provide over 50 percent of the solution for less than ten percent of the cost. The ergonomic solutions often cost over 50 percent of the total approach and provide less than ten percent of the solution – a bad buy. One of the key aspects of the trainer is that they invariably facilitate early intervention, which is one of the keys to success in preventing soft tissue injuries.

There are some organizations that have created a model very much like the one suggested above and they have very few injuries. The best model that exists that almost everyone is familiar with is professional and some college sports teams with their strength coaches and elaborate exercise equipment. Worker athletes will respond in much the same way professional athletes do. The injuries they incur are virtually identical in most cases and they respond to care and treatment in the same way as the athlete. When an athlete returns from an injury, they come back gradually so they can build strength and avoid re-injury; the same methods work for the worker athlete. If a highly paid professional athlete incurs a minor injury, they aren't asked to play through it; they are immediately cared for. The same approach should be used for the worker athlete.

Until we begin to treat workers like professional athletes and recognize the futility of the one-size-fits-all ergonomic solutions, we are condemned to relive our failures and only achieve incremental improvements punctuated by regression and frustration as well as high capital costs.

The best way to get started is to consciously create a safety culture within which application of the concepts detailed above will be able to take root and propagate.

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