

ALAN L. COLLEDGE, MD  
HUGH I. JOHNSON, MPA

## **S.P.I.C.E.— A MODEL FOR REDUCING THE INCIDENCE AND COSTS OF OCCUPATIONALLY ENTITLED CLAIMS**

From the Labor Commission, State  
of Utah  
Salt Lake City, Utah (ALC)  
and  
Utah Transit Authority  
Salt Lake City, Utah (HIJ)

Reprint requests to:  
Alan L. Colledge, MD  
c/o Labor Commission, State of  
Utah,  
PO Box 146610  
Salt Lake City, UT 84114-6610.

Despite remarkable advances in health care and increased emphasis on safety, ergonomics, and general employee health, the incidence and costs of workers' compensation and disability claims continue to increase. Today, the total cost of an average workers' compensation claim is estimated to be \$13,182,<sup>1</sup> while the average cost of a lost-time (disability) claim can reach more than \$20,000.<sup>2</sup> From 1985 to 1993, U.S. companies have seen their workers' compensation insurance premium almost double, with the cost now averaging 3.4% of the payroll.<sup>3</sup> Total costs for work-related injuries and illnesses in the U.S. have grown from \$2.1 billion in 1960 to \$171 billion dollars in 1997.<sup>4</sup> Of particular concern are common musculoskeletal injuries. Currently, 28% of all work-related injuries are soft-tissue musculoskeletal strains, accounting for approximately 40% of all lost-time injuries.<sup>5</sup>

Current literature indicates that the growth in disability from musculoskeletal discomfort is somewhat unique to modern western culture. Studies of third world countries show similar prevalence of discomfort (approximately 44%), but disability is virtually nonexistent.<sup>6,7</sup> Pain and discomfort is seen as an acceptable part of living. Interestingly, however, as western medicine becomes more prevalent in these countries, disability increases.<sup>8</sup> Historically, those who did the manual labor required in developing our modern society likely suffered musculoskeletal discomfort over the years, yet the record is mostly silent about disability. As with today's less-developed cultures, if they had pain and discomfort it appears

they simply accepted it and made necessary adjustments in their lives. For all our good intentions, the remarkable interventions provided by modern medicine and businesses have not had a significantly positive impact on preventing or reducing disabilities.

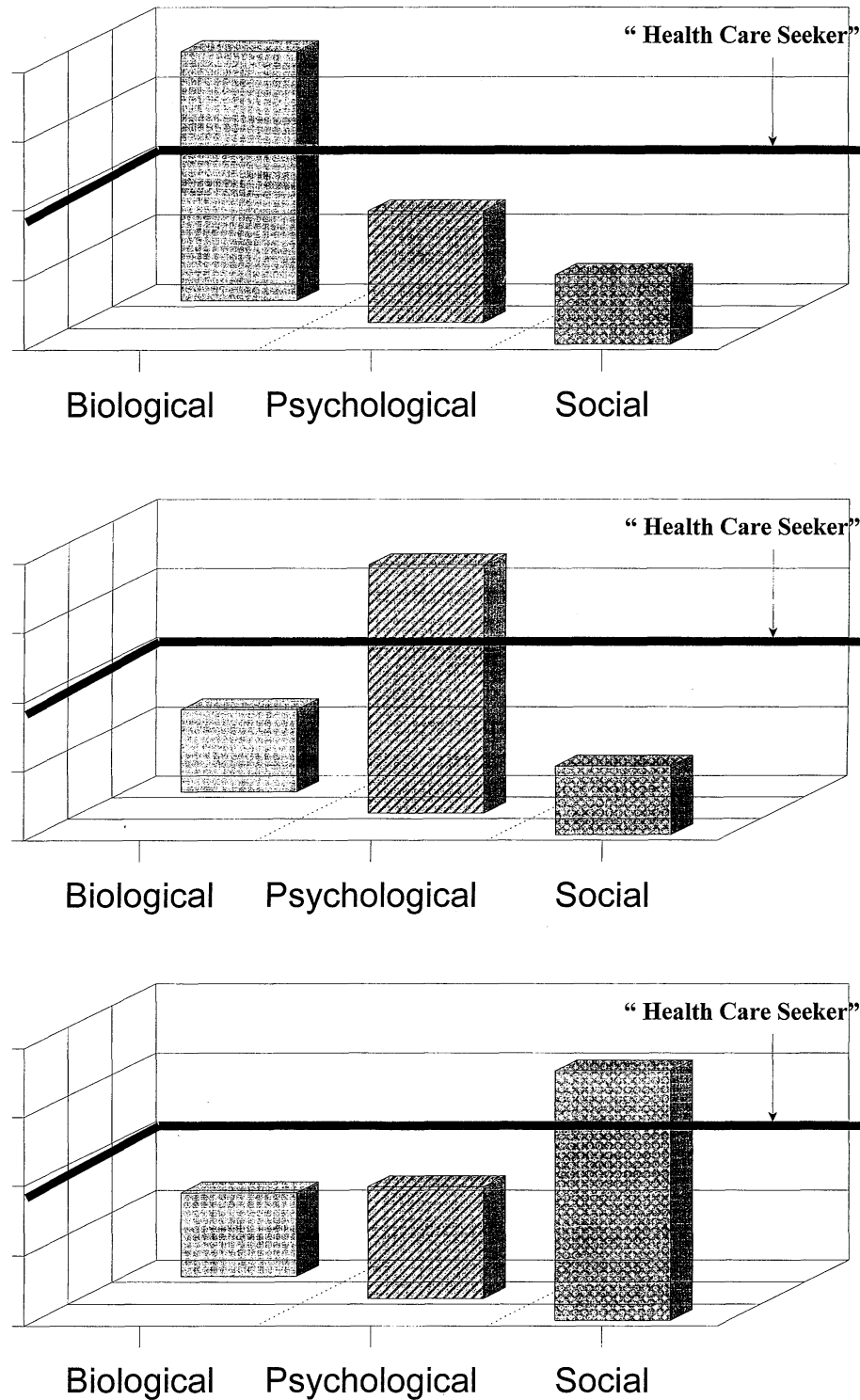
Many individuals have a continual presence of discomfort in their lives. A recent study of 3000 randomly selected individuals showed that 14.4% of a general population experience carpal tunnel-like symptoms as a part of daily living.<sup>9</sup> Back pain shows a yearly prevalence in the U.S. population of 15–20%.<sup>10</sup> Among working-age people surveyed, 50% admit to back symptoms each year.<sup>11,12</sup> Most of these common ailments are benign, and recovery time is minimal. However, a small number recover much more slowly than expected and generate a considerably greater cost. A 1992 review of 106,961 workers' compensation low back injury cases found that approximately 86% of the costs were incurred by 10% of the injured workers.<sup>13</sup> A similar study of 21,338 work-related upper extremities injuries found that 25% of the claims account for 89% of the costs.<sup>14</sup> A State of Washington study found that the 5% of their compensation claims (accounting for 84% of the costs) are from individuals with nonverifiable muscle and back complaints.<sup>15</sup> Nationally, injured workers with skeletal fractures incur an average of 21 days off work, and those with amputations incur 18 lost days.<sup>16</sup> Yet patients with carpal tunnel syndrome complaints average 25 days away from work.<sup>17</sup> Similar studies have demonstrated that *compensated injuries have delayed recovery*,<sup>18,19,20</sup> *increased disability*,<sup>21,22,23,24</sup> and *decreased to return to work rates*.<sup>25,26,27,28</sup>

At any given time, up to 45% of currently employed workers could file work-related injury or disability claims, but most do not, choosing instead to carry out their job responsibilities, accepting some discomfort as part of living<sup>29</sup>. This **ability to tolerate discomfort** is determined by three primary elements: (1) the level of the biological stimulus (discomfort); (2) existing psychological distress; and (3) current personal social stress. Whenever one of these elements exceeds a personal toleration level, health care is sought (Fig. 1). Studies by Cameron found that those who sought assistance from health care providers reported more life stresses in relation to a sample of matched controls.<sup>30,31</sup> Zola found that individuals who sought health care did so because they could not stand their discomfort any longer.<sup>32</sup> A major international report from 15 centers in Asia, Africa, Europe, and the Americas reviewed 5,438 adults coming to health clinics with persistent pain during a period of 6 months or more during the prior year. Participants, who were interviewed and given psychological testing, were found to have rates of anxiety and/or depression four times higher than the normal population.<sup>33</sup> Of these, 48% had complaints of back pain, 42% joint pain, and 34% arm or leg pain. These results imply, as other studies have done, that psychological or social distress can be manifest as physical complaints that create a perceived need for professional health care.<sup>34</sup> In the workplace, psychosocial stress added to work activities can make even the normal discomfort levels associated with a particular job intolerable and result in a disability claim.<sup>35</sup> Often these complaints can have minimal or only coincidental relationship to the actual job tasks.

After becoming disability claimants these individuals can, by maintaining their symptoms, exert a level of control over their psychosocial stressors. With a medically acceptable physical diagnosis, the psychosocial concerns are legitimized, pride is maintained, and an unpleasant environment now becomes more socially acceptable.<sup>36</sup>

As these psychologically and socially stressed claimants enter the health care system, medical providers do as they are trained, i.e., mostly concentrate on relieving the physical complaints without addressing the social or psychological stressor. However, improvement is minimal since the individual cannot afford to improve physically—continued treatments validate the injury and solidify the role of a claimant and victim.<sup>37</sup> Treatments may become more varied and intense, but progress

# Bio-Psycho-Social Balance

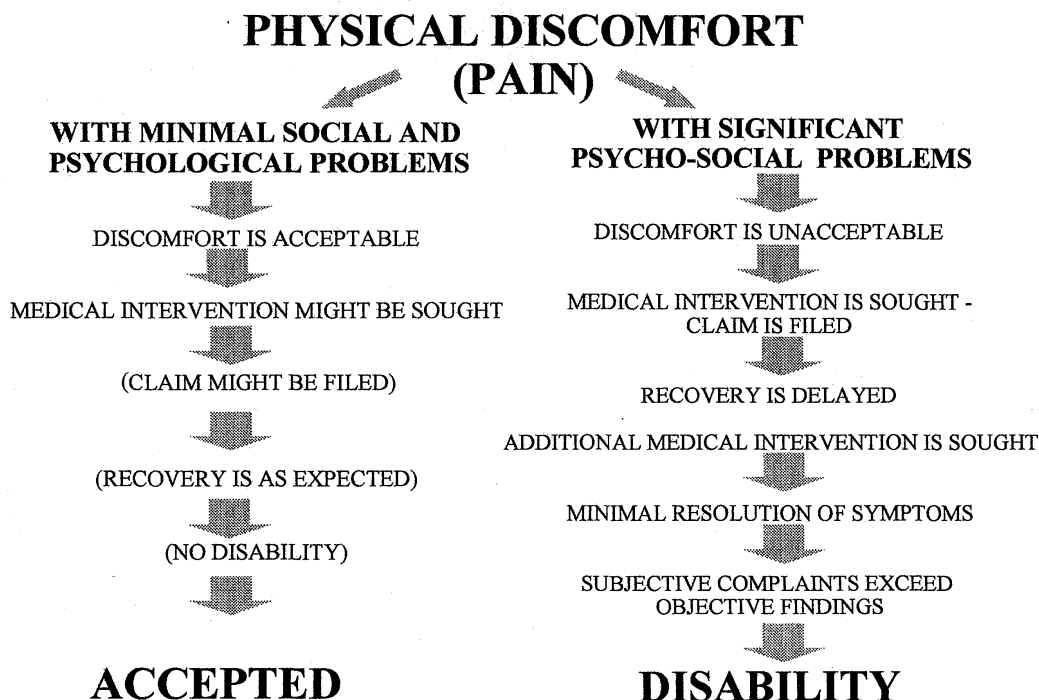


**FIGURE 1.** Why people seek health care. The ability to tolerate discomfort is determined by the level of the biological stimulus (discomfort); existing psychological distress; and current personal social stress. Whenever one of these elements exceeds a personal toleration level, health care is sought.

is minimal, tolerance decreases, and symptoms worsen. As the desperate and anxious patient succumbs to more invasive and questionable procedures, disability is the natural result (Fig. 2).

This cascade may continue until some permanent disability occurs—a disability that is most likely the result of a discomfort level that could have been tolerable and nondisabling were it not for underlying social and/or psychological concerns. The medical and management system designated to help the injured individual instead creates more disability. A number of published reports have recognized such iatrogenic (system-induced) disability occurring within entitlement systems, and suggest the need for appropriate policy and management reforms.<sup>38,39,40,41,42,43</sup> More and more U.S. companies are offering higher levels of short- and long-term disability coverage to employees who find themselves unable to return to work as a result of both work and nonwork-related illnesses and injuries. With the federal government becoming more involved by passing legislation such as the Americans with Disabilities Act (ADA) and the Family Medical Leave Act (FMLA), the growth of disability seems poised for an unprecedented surge.

Nowhere is this more readily apparent than in **occupationally related back pain**. Occupational low back pain (LBP) is one of the most commonly encountered conditions in the industrial setting. Each year approximately 10 million employees in the U.S. suffer back pain that impairs their performance, and an estimated 1 million employees file workers' compensation claims.<sup>44</sup> Of the more than 11,500 complaints filed with the Equal Employment Opportunity Commission (EEOC) from July 1992 to June 1993, 18.5% have been for back impairments, making them the most common EEOC complaint, and monetary benefit awards have now reached \$26.7 million.<sup>45</sup> In a survey of 12 states, the National Safety Council found that occupational back injuries account for 22% of workplace injuries/illnesses and 32% of workers' compensation costs.<sup>46</sup> Back pain is now the single most expensive category of industrial injuries, responsible for 31% of total industrial expenses, and is second only to



**FIGURE 2.** Disability cascade.

the common cold as a reason for physician office visits in the United States.<sup>47</sup> Back pain results in a loss of 93 million to 250 million workdays per year and is the most common cause of disability in workers under the age of 45. Yet back discomfort appears to be part of living, with 28% of the adult population reporting current discomfort, and 50% of the population reporting back pain in the previous 6 months.<sup>48,49</sup>

Studies suggest medical or management tools that can affect this problem. However, as LaRocca stated, “This predicament is not the result of an inadequate fund of available information with which to address the matter. Instead the problem emanates from the lack of a comprehensive and unifying problem-solving strategy.”<sup>50</sup> The quality of life for disabled individuals and their families, along with significant cost savings for business and industry, depend on identifying and instituting a dynamic, comprehensive system that decreases employee disability and maintains productivity. It is the authors’ view that such a comprehensive, unifying, and dynamic model has been developed and validated over the years within **the military’s “Forward Treatment” method** that prevents system-induced disability among battle casualties. Originally published in *The Journal of Occupational Rehabilitation* in 1993,<sup>51</sup> this model has been updated herein and expanded to include medical and management techniques demonstrated in literature and in practice to both prevent and manage injuries efficiently and fairly.

The model integrates medical and business management activities. Application of the model allows everyone involved with the disability management process to participate in reducing both incidence rates and costs.

### **S.P.I.C.E.**

As today’s medical providers and businesses struggle with increasing rates and costs from disability claims, it is important to note that during the past 150 years the militaries of the world have developed a method of preventing delayed recovery and reducing system-induced losses.

Militaries discovered that when soldiers with relatively simple physical complaints were left to heal alone, or received inappropriate treatment for battle-related stress, some became permanently and totally disabled.<sup>52</sup> Placed under combat-induced conditions of anxiety and stress, the soldiers’ protective psychological reserves eroded, and defense mechanisms began to form. Unchecked, these defenses transformed a relatively simple disorder, such as fatigue, into an “illness” that was both socially acceptable and serious. Further, once the “illness” was validated by the system, it released the soldier, either consciously or subconsciously, from the unpleasant emotional stress of his/her duties.<sup>53</sup> In response, the militaries evolved a successful treatment model, referred to as forward treatment, that prevents this system-induced disability.

During Israel’s 1973 war with the Arabs, Israeli physicians noted that many soldiers had relatively minor physical impairments, yet behaved in a greatly disabled fashion. The best known medical care that could be given to these soldiers resulted in many of them becoming permanently disabled, with few returning to active duty.<sup>54</sup> Treatment appeared to create iatrogenic or system-induced disability. Nine years later, during the Israeli war with Lebanon, Israel adopted the United States’ Forward Treatment concept, and returned 60% of soldiers, with injuries similar to the 1973 casualties, to full duty within 72 hours.<sup>55,56,57,58,59</sup>

There are many similarities between military personnel and individuals involved in the disability/ workers’ compensation environment:

1. Both groups are basically healthy. A certain degree of job-related intelligence has been tested for and is required, and those with pre-existing disabilities or serious illnesses have been screened out.<sup>60</sup>

2. Individuals are expected to function in terms of the needs of the team rather than the individual.
3. Both groups have legally mandated entitlement programs for “on-the-job” injuries.
4. The number and type of disability complaints are directly related to the intensity of psychosocial stressors to which the subjects are exposed<sup>61</sup>
5. Psychosocial stressors arise from factors other than the duty that the individual is exposed to. These factors may include personal performance, poor social support, team morale, duty satisfaction, personal belief in supervisors, and economic downturns.<sup>62,63,64,65,66,67</sup>

While certainly soldiers exposed to battle are highly stressed, many workers are likewise subjected to unprecedented daily personal stress that carries over into the workplace. Many employees feel that their lives are out of control as they deal with the difficulties of two-income families, care for elderly parents, experience reduced job security, and respond to increased expectations from employers.

These similarities suggest that ‘Forward Treatment’, validated on the battlefield, can provide an extremely useful model for the prevention and treatment of entitled individual’s claims and costs.

This model, given the acronym **S.P.I.C.E.**, consists of five general components:

**Simplicity**—the concept that simple, benign conditions, treated in a complicated fashion, become complicated.

**Proximity**—the need to keep the worker associated with the workplace by building morale and support of employees

**Immediacy**—the need to deal with industrial claims in a timely manner.

**Centrality**—all parties involved with workers share a common philosophy and ultimate goal of returning the individual back to gainful employment as quickly as possible.

**Expectancy**—the concept that individuals often fulfill the expectations placed on them.

### **Simplicity**

Simplicity comes from the military observation that ominous-sounding diagnostic terminology, complicated tests, and treatment for fairly minor problems (like battle fatigue) only served to strengthen the soldier’s rationalization that he was indeed seriously ill.<sup>68</sup> Injured workers, like soldiers with stress, at times believe they are suffering from a serious ailment. For example, in one study 60% of back-pain patients believed or had been told that they had a “disc prolapse,” although only 11% had any evidence of nerve root pain or dysfunction.<sup>69</sup> Another study of 140 patients with mechanical low back pain found that 67% were concerned with a serious illness causing their pain.<sup>70</sup> This contrasts with actual statistical experience that only 2% of persons with back pain may require surgery, and less than 1% have any underlying systemic illness.<sup>71,72,73</sup> Regardless of the cause of back pain, approximately 70% of affected people recover in 2–3 weeks, and 90% in 6 weeks.<sup>74,75,76,77</sup>

### DIAGNOSTIC TERMINOLOGY

“Battle fatigue” has been closely tied with the history of warfare and has been given many names. During the American Civil War it was called “nostalgia”; during World War I, “shell shock”; during World War II, “war neurosis” and “combat exhaustion,” and during the Korean War it was referred to as “combat fatigue.” The more ominous sounding the “diagnosis,” the worse the soldier responded. Many times

it appeared that the diagnosis given to stressed soldiers became a self-fulfilling prophecy, with the prognosis directly related to the initial label.<sup>78</sup>

Concerns about **diagnostic labeling** (which refers to the unintended, and usually adverse, consequences of simply assigning a diagnostic label to an anxious individual) have long been recognized. Researchers have shown that simply informing a person who feels that he or she has a ‘disease’ (such as asymptomatic hypertension) can cause an increase in ‘sick behavior.’<sup>79</sup> For this reason, the military abandoned ominous-sounding labels such as shell-shock or war neurosis and replaced them with more benign names, such as ‘battle fatigue’ or ‘combat reaction.’

The issue of assigning a diagnostic label has been identified in a review of 7,000 medical articles. This review showed that a pronounced lack of uniformity in diagnostic terminology is a major barrier to research and a key challenge to defining methods of treatment.<sup>80</sup> One study showed 20 current diagnostic terms ranging from the mundane “lumbar strain” to the exotic “Metameric Cellulotenoperiostomyalgic syndrome.” In reality, only 10–20% of patients can be given a precise pathoanatomical diagnosis.<sup>82</sup>

Unjustified diagnoses must be replaced with **clear, nonthreatening terms** such as “simple strain.” The physician should apply concepts of simplicity by: (a) providing an explanation of the most likely pain mechanisms; (b) reassuring the patient that serious disease is absent and; (c) providing information about the favorable prognosis of the natural history of the disorder. Business and disability claim managers should re-emphasize the simplicity of the diagnosis and discuss the likelihood of return to regular duty in the time frames given by the treating physician. Return-to-work programs should emphasize the physician’s findings and allow light duty and other return-to-work activities that specifically follow the natural healing process of the injury.

#### TESTING

Sophisticated testing procedures can at times reinforce the severity of the “illness” to the injured worker. Physicians should limit the use of expensive diagnostic tests unless it is strongly suspected that the results of such tests would significantly change the course of treatment. For example, only one in every 2,500 cases of plain x-rays reveals a finding that is not suspected from a thorough history and physical examination.<sup>83</sup> Many imaging findings have nothing to do with the patient’s current symptoms and are more likely the result of the natural aging process. A recent study of spinal MRIs in 98 asymptomatic subjects revealed that while 36% of the subjects had normal disks at all levels, 52% had at least one bulge at least one level, 27% had a protrusion, 1% had an extrusion, and 38% had an abnormality involving more than one intervertebral disk. Not surprisingly, physical findings increased with the age of the subject. The conclusion is that many asymptomatic people have disk bulges or protrusions, and the discovery of disk bulges or protrusions in people with back pain may often be merely coincidence.<sup>84</sup> In general, current image findings correlate poorly with back pain,<sup>85,86,87,88,89,90,91,92,93,94,95</sup> and are reported to be performed more frequently on workers’ compensation patients than on comparative group health patients.<sup>96</sup> Because specific diagnoses are rare, and sophisticated testing procedures can have an adverse effect on the patient’s illness behavior, adequate reassurance and education is often more effective in the long-term treatment of the compensated patient—and is no more time consuming.<sup>97</sup> Over-emphasizing the potential seriousness of a patient’s symptoms can lead to the injured employee overreacting to them and can subsequently have a negative effect on recovery.<sup>98</sup>

**Psychological Testing.** Medical providers and managers dealing with claimants should be sensitive to the impact of somatic components and clinical inconsistencies on

the long-term outcome of the case. However, extensive psychological tests are usually not needed during the first few weeks of treatment. Objectification can be measured by the process of establishing the medical history, performing a complete physical examination, the practitioner's effort assessment, and pain drawings<sup>99,100,101</sup> With this information, the practitioner can more readily quantify other subjective reports and findings of the examination.

Physicians must keep in mind the increasing volume of valid studies demonstrating the role of pain and illness behavior in certain patients. Do not immediately interpret behavioral signs of distress as physical disorders. The illness behavior component of a patient's disability can often be more important than the underlying presumed physical problem.<sup>102</sup>

### TREATMENT

During World War II, the military used such exotic and complex-sounding treatments as 'narcosynthesis' and 'electroconvulsive therapy'.<sup>103</sup> The use of these treatment modalities often strengthened the soldier's rationalization that he was significantly physically or mentally ill.

Current treatments for musculoskeletal pain often fare no better than the exotic "cures" applied during World War II, and, like those cures, today's medical care has the potential to prolong disability by reinforcing illness behavior. Recent studies have shown that some medical providers are utilizing expensive, time-consuming treatment modalities, with little attention to efficacy.<sup>104,105,106,107</sup> As described previously, in third world countries where expensive diagnostic and treatment modalities are not available, there is little evidence of back disability being a problem.<sup>108,109,110</sup>

Note that of all procedures in routine medical practice, only about 10–20% has a basis in published scientific research.<sup>111</sup> This means that 80% of current treatment is somewhat subjective, explaining the significant practice variations that exist for treatment of some conditions throughout the U.S.<sup>112,113,114,115,116</sup> Outcomes, such as reporting those injured workers who are able to return to an occupational role, have been considered by some to be a "harsh" or "inappropriate" measure of success.<sup>117</sup> One study reported that 52% of injured workers undergoing spinal cord stimulation for pain obtained good to very good relief; however, less than 5% returned to any kind of work.<sup>118</sup> From the practical point of view, returning an injured/disabled worker back to productive employment is the ultimate measure of successful worker rehabilitation.

### MEDICATION

In treating low back pain, strong narcotic medications may be contra-indicated, as they have been shown to delay recovery with significant complications and to be no more effective in pain reduction than milder analgesics such as aspirin (this is especially true if symptoms have been present for more than a few days).<sup>119</sup> In addition to reduced efficacy, narcotic medications have significant side effects, including tolerance, addiction, depression, and repression of endorphins. Tranquilizers are equally habit forming. When evaluating the effectiveness of muscle relaxants, the study results are mixed.<sup>120,121</sup> The most effective medications for reducing mechanical low back pain appear to be nonsteroidal anti-inflammatories (NSAIDs), such as ibuprofen and aspirin, which are relatively safe and inexpensive.<sup>122,123,124</sup>



## INJECTIONS

A number of studies have looked at the use of injection procedures for the treatment of low back pain.<sup>125,126,127,128,129,130,131</sup> Infiltration of trigger points has not been shown to be particularly effective. Epidural injections of cortisone and local anesthetics have been the topic of a number of clinical studies, with variable results, and their use remains controversial.<sup>132</sup> Facet joint injections are also a common injection therapy. However, like trigger point injections, no significant studies are available to verify their effectiveness. Selective nerve root injections have, however, been proven effective in identifying the site of origin of the pain.

## BEDREST

Over-emphasis on pain and discomfort alone and over-prescription of rest may indeed be a major factor of iatrogenic disability. The rationale for bed rest is the observation that intradiscal pressure is lowest in the lying position, and many patients actually feel better with bed rest. However, protracted bed rest leads to a catabolic state, with general malaise, bone demineralization, and loss of muscle strength.<sup>133,134,135,136,137,138</sup> There is also evidence that rest and inactivity actually inhibit healing and lead to increased psychological distress and depression, loss of work habit, and progressive loss of job opportunity.<sup>139</sup> Feeling better in the short term and getting better in the long term can often be two entirely different outcomes. *Return to normal activities should be the objective of all medical treatment and management efforts.*

## PHYSICAL MEDICINE MODALITIES

Currently there is a marked increase in the utilization of physical medicine, now accounting for nearly 40% of the medical dollars billed in some states.<sup>140</sup> Yet traction, massage, electrical stimulation, ultrasound, thermal agents, acupuncture, manipulation, and diathermy have not been scientifically proven to heal tissues or facilitate healing.<sup>141,142,143,144</sup> Although these modalities may provide some measure of temporary symptom relief, there is little evidence that therapy modalities have long-term efficacy greater than a placebo and, unfortunately, modalities can create dependency and can distract patients from more responsible and effective treatment.<sup>145</sup>

## ERGONOMICS

Although originally promising, prospective studies utilizing ergonomics and education have failed to demonstrate significant reduction in claims.<sup>146</sup> Ergonomic interventions apparently reach a point of diminishing returns. The 50-year quest to eliminate offending biomechanical stresses from the workplace has not had any positive impact on back pain or back pain claims in the workplace.<sup>147</sup>

## CONDITIONING

The key to musculoskeletal symptom control is balancing mechanical stress against the more debilitating effect of inactivity on the protective musculature. Aerobic exercise, physical conditioning, and psychosocial support appear to be very beneficial for the worker with a soft tissue injury.<sup>148,149,150,151,152</sup> Recovery is inevitably dependent on conditioning of the protective and supportive musculature to compensate

for any structural deficit caused by the injury. If strength is sufficient, a patient may return to full function—not because the back is cured, but because there is sufficient muscular compensation to tolerate the discomfort of activity.

### SURGERY

Since the first article describing surgery for back pain appeared in 1934,<sup>153</sup> the number of spinal surgeries performed in the U.S. has increased exponentially. According to the National Hospital Discharge Survey, spinal fusion rates increased 200% from 1979 to 1987.<sup>154</sup> This increase in surgery appears to parallel an increase in related disability.<sup>155</sup> Too often, surgery is performed on patients who encourage it, expecting it to be a cure. Some patients, consciously or subconsciously, desire surgery to validate their disability, or even to assuage guilt.<sup>156,157</sup> The natural history of a herniated disc is to heal itself. Failure to operate very seldom produces serious adverse effects.<sup>158,159</sup> Long-term outcomes demonstrate that nonoperative treatment of a disc herniation is often as effective as surgical intervention, and much more cost-effective.<sup>160</sup> In fact, Weber has demonstrated that surgery in the working-age group is a “luxury for speeding recovery when there are very strong preoperative indications.”<sup>161</sup>

Application of Simplicity in treating and managing a disability claimant allows an approach to recovery that parallels the **natural history of the injury**. Intervention is provided at levels only sufficient for recovery. As the patient receives more efficacious treatment, there is a concomitant reduction in disability of patient and in costs for employers.

### Proximity

“Proximity” deals with the need to create a work family both by developing worker morale and, when a claim occurs, by keeping the disabled individual as closely involved and associated with the workplace as possible.

Prior to 1917, the British army routinely removed ‘battle-stressed’ casualties from their duty stations, sending them home to England. It was assumed that returning the soldier to a more comfortable, stable environment would relieve the battle stress symptoms. Unfortunately, the reverse was found to be true. Many of those returned to England for battle stress became refractory to treatment.<sup>162</sup> After World War II, one-seventh of all military discharges were due to mental conditions. Of the 200,000 soldiers on England’s pension list, one-fifth had a permanent diagnosis of “war neurosis”.<sup>163</sup>

Later, in World War II, British and French physicians noted that soldiers with battle stress improved more rapidly when treated in permanent hospitals near the battlefield. The recovery rate was better still for those simply treated in casualty clearing stations near the front line. The most successful recovery was found in those **treated within the combat organization itself**: when encouragement, rest, persuasion, and suggestion (Simplicity) were offered close to battle lines (Proximity).<sup>164</sup>

The Israeli Defense Force (IDF) validated the concept of Proximity during the 1973 Arab-Israeli War and the 1982 war with Lebanon. In the 1973 conflict, all psychiatric casualties were evacuated to the rear of the battlefield. None of these casualties were returned to combat duty during the war, and many became chronically disabled.<sup>165,166,167</sup>

Sobered by the incidence of these psychiatric casualties, and the failure of the Israeli medical system to successfully rehabilitate any of them, the Israeli military adopted the doctrine of Forward Treatment, i.e., brief treatment (physical replenishment—water, food, sleep, and the opportunity to recount battle experiences) near the front, with a rapid return to combat duty. To implement this new approach, the IDF deployed mental health specialists with each medical battalion, operating from 2 to 5

kilometers from the front. With this system in place, 60% of combat reaction cases were returned to combat duty within 72 hours.<sup>168,169,170</sup>

The second element of Proximity is the concept of **developing and maintaining morale**. The military found that in addition to battle intensity and battle stress, a variety of personal and unit factors influence whether an injured soldier performs well or becomes a psychiatric casualty: (1) confidence in one's own skills as a soldier; (2) belief in the legitimacy of the war; (3) trust in one's weapons; (4) confidence in one's comrades; and (5) trust in one's commander. In 1973, IDF soldiers from units with good leadership and unit cohesion, and who had stable personal and family lives, were less likely to become psychiatric casualties<sup>171</sup> and more likely to perform well and be decorated for heroism.<sup>172,173</sup> In 1982, good personal and unit morale also protected IDF soldiers from psychiatric breakdown.<sup>174,175</sup>

All those involved with managing entitlement claims must remember that working is one of the most potent modalities in preventing iatrogenic disability. Often the unhappy and disappointing aspects of a worker's home life can be mitigated at work. Work creates status and builds self-esteem. Work defines identity. It breeds self-reliance, provides personal security, and offers an opportunity for personal advancement. Through work we gain skills and develop personal efficacy.<sup>176</sup> Being away from work, especially as the result of a disability, encourages introspection and maladaptive behavior that can lead to increased illness behavior. Many workers, once injured, feel abandoned by their employers and coworkers. That feeling leads to erosion of the personal benefits of work. One major review of 8,500 injured workers in six states who were losing work time found that only 48% of employers had taken the trouble to call them during their recovery time, and only 33% of employers offered a return-to-work program.<sup>177</sup>

Proximity for the industrial worker is not limited to simply maintaining geographical closeness. Proximity includes all elements identified as generally **improving the physical, mental, and social work environment**. Perceptive employers agree with W. Edward Demming that the individual worker is the company's most important asset and that respect for individuals is paramount for business success.<sup>178</sup> Today, employees are under unprecedented stress due to marked increases in single parenting, divorce, teenage pregnancy, caring for grandchildren, and suicide. Consider the following demographic changes in the U.S. during the last 30 years:

- Illegitimate birth rates have increased more than 400%.<sup>179</sup>
- The percentage of families headed by a single parent has more than tripled.<sup>180</sup>
- The divorce rate has more than doubled.<sup>181</sup> Many project that about half of all new marriages will end in divorce.
- Teenage suicide has increased almost 300%.<sup>182</sup>
- Scholastic Aptitude Test scores among all students have dropped 73 points.<sup>183</sup>
- The number one health problem for U.S. women today is domestic violence. Four million women are beaten each year by their partners.<sup>184</sup>
- One-fourth of all adolescents contract a sexually transmitted disease before they graduate from high school.<sup>185</sup>

The challenge for employers is finding a means of developing a "work family" and assisting their employees in being able to come to work ready to give 100%, managing their life's stresses and fulfilling their individual goals and purposes in life. Indicators of the erosion of an individual's or employee's psychosocial reserves and an attendant potential for an injury claim can be indirectly measured by levels of tardiness, use of health insurance, quality of work, employee turnover, reduced productivity, accident and illness rates, property damage, grievances filed, and percentage of employees using employee assistance programs.

## HUMAN RESOURCES

Personnel policies that are clear and evenly enforced can prevent undue employee frustration and help maintain a productive attitude among employees.<sup>186,187</sup> Occasionally, employees have an unrealistic idea about the financial benefits associated with being disabled. All employees should be educated about their rights as employees and what to expect, medically as well as financially, if a work-related accident occurs. A major review of injured workers found that 50% of injured workers had received no information from their employer about procedures to follow to get medical care.<sup>188</sup>

Qualified human resources staff should also provide channels for communication and dispute resolution. The majority of compensation-related litigation arises from the frustration, ignorance, unrealistic expectations, and/or fear level of the injured workers.<sup>189</sup> Human resource policies that educate, accommodate return-to-work programs, and reduce anxiety in the worker also reduce litigation.<sup>190,191</sup>

In one study involving a geriatric hospital,<sup>192</sup> 46% of nursing aids initiated low back industrial claims, with an 82% recurrence rate. The hospital, in an effort to control these workers' compensation losses, implemented a program of back school training, with individual education on injury prevention and careful follow-up of reported injuries. A follow-up study revealed essentially no change in the injury and recurrence rates among their employees.

However, when this same hospital began a *personnel policy* of immediate contact following an injury and regular 10-day follow-up contacts, coupled with evaluation of retraining and early return-to-work possibilities, they found they were three times more effective in reducing time loss and recurrence rates for low back injuries. This hospital's experience clearly illustrates that making employees feel that they are valued and needed at the workplace can have a significant impact on the employer's bottom line.

In another study of 31,200 Boeing employees,<sup>193</sup> a strong correlation was found between the incidence of lost-time soft tissue injuries and a poor supervisor relationship. This was manifest through a poor appraisal rating performed within the 6 months preceding an injury. A similar study has been completed with urban transit operators.<sup>194</sup> These studies demonstrate that an employer's policies can often be more successful in returning employees to work in a timely manner and in reducing the number of claims, than medical personnel can be by treating subjective complaints.

## SAFETY

A major review of injured workers found that only 44% had received special training or information on how to prevent injuries.<sup>195</sup> Companies using safety teams, videotaped safety meetings, incentives for worker participation, safety audits, safety management review of all accidents, placement of safety coordinators, and fatigue prevention programs have demonstrated a 30–90% reduction in claims.<sup>196</sup> Management commitment to safety should focus on identifying and reducing hazards, not just injuries.

## DRUG TESTING PROGRAM

In 1990, the U.S. Navy found that 41% of sailors under the age of 25 tested positive for some drug use. Now, after 10 years of random drug testing, the rate has been cut to 2%.<sup>197</sup> Of 4,375 postal service employees nationwide that underwent pre-employment drug tests, 8.4% tested positive.<sup>198,199</sup> The group testing positive had 41% higher absenteeism, 1.5 times more involuntary turnover, and 1.7 times greater likelihood of quitting than the group that had negative drug tests. A major, 1-year study of 1,500 of the state of Louisiana's largest workers' compensation policyholders, im-

plementing pre-employment, post incident, and random drug screening, demonstrated 50% reduction in workplace accidents and a cost savings of 22%.<sup>200</sup>

### UNIONS

Many employers have found that rather than fight a union's involvement in their workplace, they can benefit from involving union officials in the development of safety and disability prevention programs. Unions should assist with lateral placement for injured employees, and establishment and enforcement of light duty or alternative duty programs, as mandated under the Americans with Disability Act.<sup>201</sup>

### WELLNESS

The general health of an individual worker contributes to any incident that may occur and to the worker's response to that incident. A study of 1,652 firefighters tested several areas of general fitness including endurance, isometric strength, spine flexibility, blood pressure, and post exercise heart rate. Participants were divided into three groups—most fit, middle fitness, and least fit—based on the results of the testing. The subsequent worker's compensation back injuries and costs for these firefighters were then analyzed in relation to their prior fitness results. The frequency of subsequent injury for the least fit firefighters was ten times higher than that of the most fit group. The cost per claim for the least fit group was 13% higher than for the middle fit group. The most fit group had too few claims to make an accurate estimation of future costs per claim.<sup>202</sup>

Employers can contribute to a higher level of health and wellness by providing a worksite culture that encourages healthy lifestyles. Travelers Insurance Company, with 36,000 employees, introduced the Taking Care Program in 1986. Based on 4 years of experience, Travelers now reports an estimated return of approximately \$3.40 for every dollar invested in health promotion.<sup>203</sup> Successful employee wellness programs feature: convenience, supportive corporate culture, management support, employee involvement in decision making, clear goals, and comprehensive, long-range planning.

### INJURY RESPONSE

When injuries do occur, the safety program should enforce the management's concern for the injured worker and the impact of the injury on other workers. Worksite injuries should be investigated, but not in an atmosphere of distrust. Investigations should focus on clarification of how the injury occurred, both to assist the injured worker and to take steps to prevent similar accidents from occurring in the future. This does not reduce the need to monitor all disability claims for potential fraud. However, an immediate positive response, while investigating facts of the claim, greatly increases trust and confidence in the system. With that trust established, fraud is more readily identified since the desire to "get back at the company" is greatly reduced.

### RETURN TO WORK

Resumption of work has also been shown to be a significant part of the treatment for an injury or illness, even benefiting patients suffering from chronic pain.<sup>204,205,206,207</sup> Studies have shown that workers who return to their original employer are usually better off financially than workers who choose other options, such as alternative vocational rehabilitation plans that include retraining or new job placement.<sup>208,209</sup> Conversely, prolonged time away from work makes recovery and eventually returning to work pro-

gressively less likely. The longer an injured worker is kept from the worksite, the less likely it becomes that he or she will ever return to productive employment.<sup>210,211</sup> A recent study on the value of promptly offering modified duties reduced lost time by 30–50%.<sup>212</sup> Unfortunately, physicians, therapists, management, and labor all too often encourage disability by prolonging the injured worker's separation from the workplace. This is particularly true when the employer requires "100% recovery" prior to any work release. A 100% recovery policy may prove more costly to the employer than any other expense. Effective accomplishment of returning impaired individuals to work often requires the combined efforts of the individual, health care provider, and employer, to carefully evaluate the patient's ability and then, if necessary, consider efforts to provide reasonable accommodations.<sup>213,214</sup>

Applying the concepts of Proximity in the treatment of disability and occupational injury claims can significantly affect a company's profitability and employee morale, as well as reduce human suffering.

### **Immediacy**

The need for immediate treatment was one of the first principles identified in dealing with soldiers suffering from combat reaction. Often, when there was a large influx of casualties, soldiers suffering from combat reaction were not treated immediately. Instead, attention was focused on more life-threatening injuries. Left to their own devices, these same soldiers were found to be more refractory to treatment when it was eventually offered, and more likely to need further rearward evacuation. The soldier's time away weakened his bonds with the unit and allowed him to solidify and rationalize the severity of his symptoms. In other words, a soldier near to his unit in space (proximity) and time (immediacy) can generally expect to return to it. This expectation decreases with distance, in space and or time.

A vivid illustration of the effectiveness of applying Immediacy was recounted in a *Wall Street Journal* article describing the aftermath of the 1985 crash at the Dallas/Fort Worth airport.<sup>215</sup> On August 2, 1985, windshear slammed a Delta L-1011 to the ground short of the runway. The accident severely injured many, and killed 137 people. In the immediate aftermath of the accident, Delta Airlines' management sought only for ways to comfort the bereaved. Within hours of the crash, the airline had dispatched employees to be with the family of every casualty. These Delta representatives provided clothing, financial aid, assistance in locating lost articles, and in general made themselves available to provide whatever was necessary at this most critical period in these families' lives.

As a result of the bonds created by this early intervention, many crash victims and their families found it difficult to sue Delta, whom they had come to see as a friend instead of an adversary. Of a possible 152 passenger claims in the crash, only 65 suits reportedly have been filed, and about 50 of these suits have been settled, most without litigation. This is impressive when compared with the 1982 Pan Am crash in New Orleans. In this incident Pan Am did not employ early bonding tactics, and at least 75% of the 146 passenger deaths resulted in litigation.

### **CRITICAL TIME PERIODS**

Many clinical studies have validated the concept that timely treatment and return to work facilitates return to productivity. If, however, the absence from work is prolonged, permanent disability may be reinforced, and the chance to return to that job diminishes significantly.<sup>216,217</sup>

Within these studies of return-to-work parameters, several critical time periods have been identified.<sup>218,219</sup> All musculoskeletal soft tissue injuries should show some

objective improvement within 2 weeks, regardless of the treatment imposed. Delay of expected time periods alerts the management team to potential recovery delays, triggering movement to a more aggressive treatment mode.<sup>220</sup> If pain persists beyond 3 months, treatment should expand to concentrate on psychosocial factors associated with pain that might be complicating the clinical problem.

### Centrality

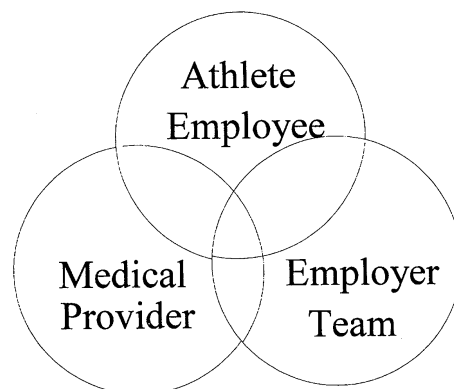
Centrality refers to the military's practice of making certain that all combat medical decisions, treatments, and evacuations are funneled through a central screening process. This ensures that only skilled personnel, trained in the Forward Treatment philosophy, are in contact with the soldiers at this critical period. This aspect of Centrality prevents the anxious soldiers from being exposed to confusing terminology, diagnostics, and treatments, thereby reducing iatrogenic disorders.

Too often in today's medical system a patient encounters a confusing maze of conflicting diagnoses and treatments. Specialists sometimes recommend tests that have already been performed, and often it is perceived that no one is directing care. With no one to take full responsibility for the direction of treatment, other members of the management team (the patient and employer) are confused as to what to expect and when to expect it.

To prevent this from occurring, health care providers must become more professionally coordinated, using the concepts of immediacy and expectancy in approaching the full spectrum of the patient's biological, psychological, and social needs. Often, at this point, like the soldier left to his own devices or subjected to inappropriate and uncoordinated care, the will or ability to work has been lost, disability is well established, and irretrievable harm has come to the patient and his or her family.

### THE ATHLETIC MODEL

The team concept is not unique to the military. Athletic teams consistently rely on the collective energy and abilities of each member to attain success. It is well recognized that athletes recover from injuries very quickly. This efficient recovery is the result of a treatment model wherein common recovery goals are shared by a team, which includes the medical provider, coach, team members, and injured athlete. The result of this team approach is that an athlete, highly motivated and well supported, is able to return quickly to full function. If any supportive team element is missing or if the goal is not shared by all, return to activity can be delayed (Fig. 3). This model



**FIGURE 3.** The team approach.

approaches treatment by sharing accountability equally among all involved entities with a return to productivity as the common goal (expectancy).

Just as with the injured athlete, the entitled (compensated) worker needs a structured, comprehensive approach to recovery. When the athletic model is applied, the worker becomes the “athlete,” the employer takes the role of “coach,” and fellow workers are the “team.” **The success of this model depends on three components:** (1) motivation and physical capability of the injured worker (the athlete), (2) appropriate medical care, and (3) the desire of the employer (the coach) and coworkers (the fellow athletes) to have the injured worker return to work, manifested by the employer’s willingness to support and accommodate the worker. Together, these components provide a structured and comprehensive approach to optimize recovery outcomes for the compensated worker. These include increased employee/employer communication; reduction in lost-time and associated, indirect costs; disability management; avoidance of litigation; and reduction of unnecessary medical costs. This approach ensures that all the patient’s issues, including sociological and psychological concerns, are addressed, and obstacles to recovery are removed. Injured or disabled employees usually seek legal assistance because of misinterpretation and miscommunication. A multidisciplinary, centralized team approach could potentially avert such cases by resolving communication issues before they require litigation.<sup>221</sup>

#### EMPLOYEE MOTIVATION

Most compensated injuries are minor and heal uneventfully with little or no disability. However, in some injured workers, recovery can take longer than can be explained by physical symptoms alone, indicating the presence of nonbiological issues that serve to prolong the disability. A review of the medical literature demonstrates that compensation benefits alone can significantly affect motivation toward recovery.<sup>222,223,224,225,226</sup> The principal difference in recovery rates between compensated and noncompensated patients appears to lie in motivation—motivation of the injured employee, the employer, the insurance carrier, and government and medical providers. All parties involved in the recovery of a compensated patient are required to recognize the unique set of expectations, critical periods, and specific needs that must be met to attain return-to-work status.

Current research shows conclusively that in cases of delayed recovery, nonphysical factors often directly impact the injured employee’s motivation.<sup>227,228,229,230,231,232,233</sup> These factors, often called “secondary gain issues,” can prolong the disability. There might be a single factor or a combination of factors present, i.e. social, emotional, neurotic, economic, and even some times vindictive motives. Beneath this lies the original physical complaint that maintains the disability compensation payment.

Epidemiologic studies reveal distinct characteristics in the occupational and psychological profiles of people disabled by soft tissue injuries, particularly low back pain.<sup>234,235,236,237,238,239,240,241,242,243,244</sup> For example, job dissatisfaction, monotony, and stress are common characteristics. Persons facing these problems are more likely to suffer from depression, anxiety, hypochondriasis, and hysteria.

These nonbiological factors have an even greater impact on motivation when the entitled patient retains an attorney and becomes a legal claimant<sup>245,246</sup> Once this happens, the patient is obligated to prove and preserve injury or illness. To improve physically jeopardizes the ability to prevail in a suit. Additionally, the worker’s own credibility is placed at risk. Hence, the disability continues throughout the litigation process, even in the absence of any objective medical basis for the disability. Because legal



counsel is usually sought only after a patient feels abandoned or “wronged” by the employer, personnel policies that prevent such adversarial relationships can have a significant financial impact on the company, as they may prevent costly litigation. Simple personnel policies can provide positive reinforcement for an injured worker, and also allow the employer to maintain control of an industrial claim.

#### TREATING THE TOTAL PATIENT—THE MEDICAL PROVIDER

Injured workers should be treated by clinicians whose treatment regimens have demonstrated the ability to effectively return the employee to work. Such clinicians must be sensitive not only to the biological pathology, but also to psychosocial issues that may limit motivation for return to work. In sports medicine, the provider must have an understanding of the game and knowledge of how the team interacts. The same principles apply in the occupational medicine arena. Clinicians who treat the injured worker should be comfortable with the type of work required for an injured worker to perform his/her job; this knowledge allows determination of the capability of the patient. These judgements carry heavy legal and ethical responsibilities, as fitness-for-duty decisions are often directly related to the individual’s earning capacity and/or disability benefits. The status of current employment law indicates that any attempt to limit an individual’s employability involves the need for a medical, legal, and ethical approach that protects not only the physician, individual, and employer, but the general public as well.<sup>247</sup> The clinician should also be well informed on workplace parameters such as the availability of modified duty.

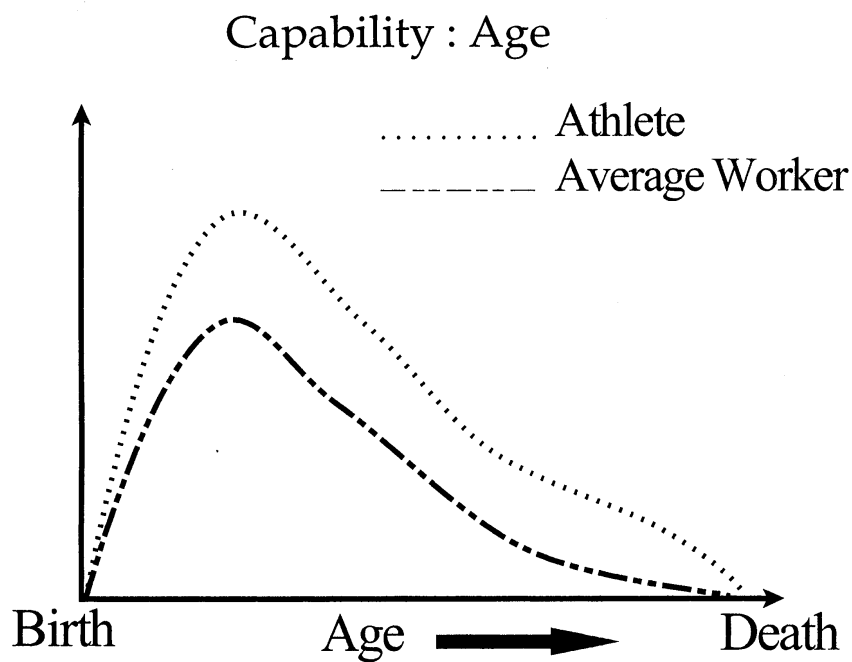
#### EMPLOYER’S RESPONSIBILITY

Applying the concept of Centrality, employers have two main responsibilities: (1) prevent injuries from occurring, and (2) create a favorable return-to-work environment for the injured employee. To accomplish this the employer must understand and support the concept that timely work integration is critical to the rehabilitation of the injured employee. The injured employee should seldom be removed from work. Physicians should make medical determinations of physical capability, with administrative decisions regarding accommodations left to the employer.<sup>248</sup> Employers should evaluate medical restrictions given by the physician and make an administrative decision, in consultation with the medical provider, about when and in what capacity the injured worker may return to the worksite, whether in the same job or a modified position. Employers must be willing to accommodate early return-to-work during the rehabilitation phase, prior to the worker’s full recovery.

#### RESIDUAL PHYSICAL CAPACITY

Many essential job functions require a significant amount of physical capability to perform. There is the eternal reality that we are mortal, and none of us will get off this planet alive. (Fig. 4)

We all arrive at points in our lives, irrespective of motivation, medical care, or employment concerns, when we physically cannot do what we would like nor what we once did. Just as injured athletes all reach a time when a change in careers is inevitable, so workers doing significant physical work will need to have serious discussion regarding accommodation of the labor-intensive essential functions of their work. Employers would do well to identify those jobs in which it is unlikely anyone could continue until retirement and develop plans to accommodate physical limits or, if necessary, shift aging workers to less physically demanding work.



**FIGURE 4.** Every human being's capabilities decline with age, although the athlete's physical decline occurs at a higher level.

### Expectancy

Expectancy, the final component of the SPICE model, reflects the fact that injured workers often fulfill the clinical and labeling expectations placed on them. Again, the military system provides a startling illustration of the role expectancy plays in the recovery of compensated individuals. Soldiers in World War I, who were diagnosed as suffering from shell shock indeed acted as if they had sustained a shock to the central nervous system. As recounted by Biley and others, "There were descriptions of cases with staring eyes, violent tremors, a look of terror, and blue, cold extremities. Some were deaf and some were [mute]; others were blind or paralyzed."<sup>249</sup>

When physicians realized that brain concussion was not the etiologic agent, as shell shock would imply, the term war neurosis was adopted.<sup>250</sup> This was hardly an improvement, as the general public associated neurosis with chronic and sometimes severe mental illness. The soldiers just as readily grasped this medical diagnosis as "proof" of their illness.<sup>251</sup>

Later, military medical personnel were instructed to label such casualties as "NYD (Nervous)" (for Not Yet Diagnosed-Nervous).<sup>252</sup> The term was obscure enough that it gave casualties little to cling to. This vague diagnostic label left the casualties open to the suggestion that they were just tired and a little nervous, and that with rest they would soon be fit for duty. Eventually, this disorder became referred to as simply exhaustion. In World War II, it was referred to as combat exhaustion. Finally, the term combat fatigue became preferable because it expressed more exactly the expectation desired, i.e., combat has fatigued the soldier, who requires only appropriate rest before quickly returning to full duties. The Israeli military has faced similar dilemmas in labeling combat fatigue.<sup>253,254</sup>

To fully understand why Expectancy plays such a vital role in human performance, it is necessary to recognize that belief or expectation can significantly affect the clinical outcomes.<sup>255</sup> Some authors suggest that the patient's expectations may influence outcomes more strongly than any clinical therapy.<sup>256</sup> Often referred to as the nonspecific effect of healing, or placebo, these effects have been reported to be

strongest when the patient is anxious, the physician is perceived as having great expertise, the patient and physician believe the treatment is powerful, and the treatment is considered both impressive and expensive. The clinician's friendliness, warmth, interest, sympathy, prestige, empathy, positive attitude toward the patient, and positive attitude toward the treatment have all been found to significantly influence positively the outcomes.<sup>257</sup>

A review of treatments for angina pectoris originally believed efficacious, but later found to be ineffective or no better than placebo, have demonstrated 63–100% objective improvement,<sup>258,259</sup> far better than the usual 30% usually explained by placebo. Other studies have reproduced these findings.<sup>260</sup> A review of 2,504 discectomies for lumbar disk disease that report negative surgical exploration found that 37% of the patients reported complete relief from sciatica and 43% complete relief from back pain,<sup>261</sup> results similar to those reporting positive disk findings at surgery.

## GOALS

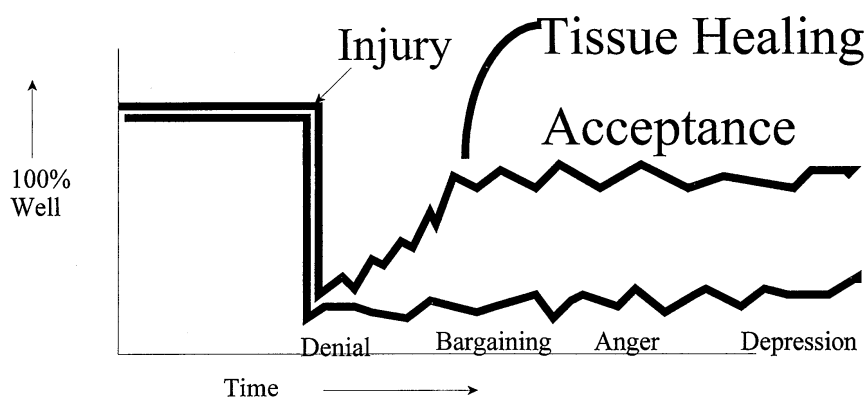
Because there is little difference in effectiveness between assigned goals and self-set goals,<sup>262,263</sup> the physician is able to exert a healthy influence on patients' goals and expectations without prejudicing the clinical outcome.

Cathlove and Cohen utilized a "Directive Return to Work" approach in a multimodality rehabilitation program for workers' compensation patients.<sup>264</sup> Patients were divided into two groups—one directed in return to work, the other left to routine treatment with no specific return-to-work goals identified. In the directed group, patients were informed at program entry that they would need to resume work within 1–2 months. This return-to-work understanding was part of the initial treatment contract. The staff continually reinforced this concept by actively initiating return-to-work discussions and by guiding patients in setting work goals commensurate with their abilities. Sixty percent of patients in the directed group became gainfully employed. This is striking when compared to the nondirected group, in which only 25% returned to gainful employment. Nine months later, 90% of the directed patients who had resumed work were still working. In contrast, only 75% of the nondirected group who had returned to work remained employed.

## THE PHYSICIAN'S ROLE IN TREATMENT AND PATIENT EXPECTATION

Often, patients unrealistically expect to be made completely well from a disorder or illness that is likely to leave residual symptoms. The lay press, family members, and other care providers often facilitate such unrealistic expectations. Left with symptoms and frustration with conventional health care, and receiving encouragement from peers and family, many desperate workers resort to aggressive surgeries or alternative health care therapies.<sup>265</sup> The goal is to provide the worker with realistic expectations of a disorder. This includes reviewing with the patient the risk and benefits of intervention as it compares to the natural history of the disorder and facilitating acceptance and independence. As with anyone left with a personal loss, these individuals will go through the five stages of grief outlined by Kubler Ross: denial, anger, bargaining, depression, and then, finally, acceptance.<sup>266</sup> (Fig. 5).

The physician must know how to recognize fixation at any level and assist the patient toward acceptance. One recent study matched treatment histories of 219 chronic pain patients under treatment at a multidisciplinary pain center and 185 former chronic pain patients who had not sought medical care for 1 year. Analysis demonstrated that the nonpatients had "learned to accept and live with their pain." The nonpatients demonstrated reduced levels of unrealistic thinking, less pain-related



**FIGURE 5.** Physical and mental acceptance of injury.

distress, higher activity levels, and higher levels of internal orientation, and they required fewer medications. Researchers concluded “acceptance is a very legitimate goal for intervention.”<sup>267</sup> Similar results have been demonstrated in other studies.<sup>268</sup> Physicians are mandated to be advocates of patients and of society, and in that role they should encourage ability, not disability. They should help patients retain a sense of purpose and self-worth that, for most, means a return to gainful employment.

## CONCLUSION

Comprehensive problem-solving solutions are now mandatory to prevent the creation of costly disability. Medical providers, disability managers, and business managers must coordinate the redirection of treatment to the whole person, recognizing all the factors that influence successful return to work. Claude Bernard once wrote: “The greatest error in the advancement of medical science has been the search for a single cause for a single disease.”<sup>269</sup> Or, as Aristotle said, “Treatment of the part should never be attempted without treatment of the whole. That is the error of our day, separation of the body from the soul.”

The SPICE model, as outlined above, provides the much needed structure for comprehensive problem-solving strategies in preventing work-related claims and, when they occur, to deal with them in an efficient, fair, and timely manner, thereby preventing iatrogenic disability.

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