# RECOMMENDATIONS FOR MANAGEMENT OF UNCOMPLICATED BACK PAIN IN THE WORKERS' COMPENSATION SYSTEM: A FOCUS ON FUNCTIONAL RESTORATION

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**ABSTRACT**

*Objective: To present recommendations for conservative strategies to improve the management of uncomplicated back pain and to evaluate the financial crisis currently facing the workers' compensation system due in part to rapidly rising medical costs.*

*Background: Medical costs in the workers' compensation system have risen at an alarming rate placing a tremendous burden on the cost of doing business in the United States. Historically, treatment for back pain in the United States has been a pathology-based approach; the literature supports a functional restorative approach for clinical efficacy and cost effectiveness.*

*Design: Narrative overview of the literature.*

*Methods: Computerized databases were searched for relevant literature in the English language from the years 1994–2004, including: Alternative Health Watch; Cochrane Database of Systematic Reviews; Pre-CINAHL; CINAHL; MEDLINE; AgeLine; SPORT Discus. A narrative synthesis of the literature was written from retrieved articles.*

*Discussion: A history and overview of the workers' compensation system is presented. Concerns regarding rising medical costs and recommendations for strategies to improve cost and quality of care with an emphasis on ergonomic and functional restoration recommendations are made.*

*Conclusion: A percentage of costs in the workers' compensation system go towards treating uncomplicated back pain; recurrences and chronicity of back pain are key contributors to these costs, which are currently increasing. Ergonomic advice plays a key role in helping the patient with musculoskeletal injuries heal faster and prevent costly flare-ups. Conservative care, which includes chiropractic manipulation, ergonomic recommendations, and exercise rehabilitation with an emphasis on coordination and endurance training, is supported by the literature as a possible method of cost containment. (J Chiropr Med 2004;3:129–137)*

**Key Indexing Terms:** Workers' Compensation; Low Back Pain; Chiropractic; Functional Restoration; Cost Containment; Ergonomics.

## INTRODUCTION

Workers' compensation insurance covers the cost of medical care and rehabilitation for workers injured on the job. It also compensates them for lost wages and provides death benefits for dependents if they are killed in work-related accidents, including terrorist attacks.[1,2] This is the standard "description" given for the workers' compensation system by the National Academy of Social Insurance in Washington D.C, and the Insurance Information Institute (III) in New York. Although it can be a source of frustration for beneficiaries and doctors who treat workers, the workers' compensation system is essentially a group of liability systems built on political compromises between business and labor communities rather than simply an insurance benefit or health care plan.[3] Workers' compensation systems vary from state to state.

The development of the workers' compensation system was a direct result of the industrial expansion that took place in the United States during the 19th century, which was accompanied by a significant increase in workplace accidents. At that time, the only way injured workers could obtain compensa-

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tion was to sue their employers for negligence.[1] Proving negligence was a costly, time-consuming process, and often the court ruled in favor of the employer.[1] By the early 1900's, a state-by-state pattern of legislative proposals designed to compensate injured workers had begun to emerge. The first state to enact permanent workers' compensation laws was Wisconsin in 1911. By 1920, all but 8 states had enacted similar laws. By 1949, all states had a workers' compensation system that provided compensation to workers hurt on the job, regardless of who was at fault, making the cost of medical treatment and wage loss benefits the responsibility of the employer. As part of the compromise that made the employer liable for work-related injury and disease costs regardless of fault, the employee surrendered the right to sue the employer for injuries caused by negligence.[1]

For more than 4 decades, the only comprehensive national and state data on workers' compensation benefits and costs were maintained by the research office of the U.S. Social Security Administration. The Social Security Administration's Office of Research, Evaluation, and Statistics filled the void in workers' compensation data by piecing together information from various sources to estimate the number of workers covered and, for each state and nationally, the aggregate benefits paid. The Social Security Administration discontinued compiling and publishing this data in 1995 after publishing the statistics for 1992–93.[2] Users of this data turned to the National Academy of Social Insurance (NASI) as a reliable and independent source to continue and improve upon the data series. The data are published in the Statistical Abstracts of the United States by the U.S. Census Bureau.[2]

The data compiled are only estimates since there is no national system for uniform reporting of states' experiences with workers' compensation. States vary greatly in their capacity and methods for assembling data to assess the performance of workers' compensation programs. Data from other credible sources like the III generally vary somewhat from data gathered and published by NASI, although the trends they show are the same.[1,2] There are 2 primary components to workers' compensation claims costs: 1) payments for lost income, usually linked to a state's average weekly wage, known as indemnity costs, and 2) payments for medical care.

In the second half of the 1980's, workers' compensation costs escalated rapidly, expanding at double-digit rates; between 1983 and 1992 total benefits grew by 170 percent, with the percentage of medical benefits increasing from 36 to 42 percent of total benefits.[2] This prompted legislation, which was pushed through by the insurance industry, providing greater ability to manage workers' compensation medical care costs and to coordinate and oversee the treatment plan and return-to-work process. New laws governing workers' compensation insurance allowed the use of large deductibles (which makes employers more safety conscious) and also provided for an increased emphasis on fraud prevention.[2]

Starting in 1993 steady progress was made in reducing costs of both indemnity and medical payments. This trend continued until the year 2000 when the trend unfortunately reversed. Costs have continued to rise steadily and at an alarming rate with medical costs continuing to rise faster than indemnity costs.[1,2] According to statistics from NASI, in the early 1990's indemnity costs made up about 60 percent of total losses. By the year 2002, according to NASI's latest statistics, this had been reduced to 54 percent of total losses. The III has published statistics through 2003, which state that now more than half of total costs in the workers' compensation system go towards medical with indemnity accounting for only 45 percent of total losses.

## METHODS

A review of the literature was conducted between March 2004 and September 2004. Literature was retrieved from searches of computerized databases, hand searches, and authoritative texts. The following computerized databases were used to search for relevant information: Alternative Health Watch; Cochrane Database of Systematic Reviews; Pre-CINAHL; CINAHL; MEDLINE; AgeLine; SPORT Discus.

The key terms used in the database searches included: chiropractic; workers' compensation; work; ergonomic; low back pain; low back pain and rehabilitation; low back pain and economics; functional restoration; active care; integrative medicine; cumulative trauma disorders. The search was limited to publication dates from 1994–2004 and articles in the English language. The search was conducted to search within the full text of the articles and to search for related words.

## DISCUSSION

### Rising Costs

In August 2004, NASI published its annual report of workers' compensation statistics for the year 2002 and made comparisons to workers' compensation costs for 2001.[1] Data revealed that workers' compensation benefits paid in 2002 were $53.4 billion, up 7.4 percent in 1 year; medical benefits increased 9.4 percent while cash benefits increased 5.8 percent. Employer costs for workers' compensation in 2002 were a staggering $72.9 billion, up 13 percent in 1 year. Employer costs per $100 of covered wages rose 12.5 percent to $1.58, up from its low of $1.33 in the year 2000. Employer costs per covered worker rose 14.2 percent to $580 in 2002. The III data shows even more dismal numbers from 2002 to 2003 demonstrating a very serious trend in the costs of doing business in the United States.[1,2]

The III reported that the growth of workers' compensation medical costs has become much steeper than in the health care industry as a whole. From 1996 to 2002 annual average workers' compensation medical care costs increased 9.0 percent, compared to an annual average rise of 3.8 percent for the medical Consumer Price Index (CPI) over the same 7 year period.[1,2] A study by Liberty Mutual Insurance Co. found that the average prescription drug cost workers' compensation insurers roughly 75 percent more than the same medication cost for group health plans.[1,2]

Another factor increasing costs in the workers' compensation system, according to the III, is the involvement of attorneys estimated to create a 12 to15 percent claim cost increase. The system was set up to function as a no-fault system. However, various factors including lack of cooperation on the part of case handlers and confusion over state specific laws have resulted in subsequent attorney involvement in 5 to 10 percent of all claims and approximately one-third of more serious claims that involve lost wages and temporary or permanent states of disability.[1]

One positive factor is that the rate of workplace injuries is now at the lowest level since the U.S. Bureau of Labor Statistics began tracing information in the 1970's. Bureau data show rates for private workplace injuries and illnesses dropped from 7.1 per 100 full-time workers in 1997 to 5.3 in 2002, the latest data available. These data also show that one quarter of on-the-job deaths are caused by highway crashes, and they are on the rise.[1,2]

According to data from Liberty Mutual, the nation's largest workers' compensation insurer, the results of overexertion from lifting or pushing, falls (on the same level, as opposed to falling from a height), and injuries from bending, climbing or slipping made up half of the cost of serious workplace injuries in 2001, costing about $23 billion a year or $450 million a week.[2] These data suggest that a major portion of workers' compensation injuries may be reduced with improved ergonomic factors and managed more cost effectively with more of a functional approach blending passive and active care.

### Low Back Pain, an Epidemic

An estimated 60 to 80% of all adults experience one or more episodes of back pain in their lifetime.[4,5] Population studies report a 1-month prevalence of back pain of up to 40%.[6,7] In the workers' compensation system, it is the minority of patients who become chronic. These patients having back pain for more than 3 months account for 75–90% of the total expenses related to this health care problem,[8–12] which exceeds $90 billion per year in the United States with about half of the costs incurred by workers' compensation insurance. Among those patients whose symptoms do resolve, recurrences are common with percentages ranging from 22–62%.[13–16] To prevent the transition from acute to chronic pain, 3 things should occur once the initial acute, inflammatory phase has passed: 1) patient education about how to identify and limit external sources of biomechanical overload; 2) early identification of psychosocial factors of abnormal illness behavior; and, 3) identification and rehabilitation of the functional pathology of the motor system (ie, deconditioning syndrome).[17]

Deconditioning is a common consequence of pain avoidance behavior or the inactivity associated with painful conditions. Losses in muscle strength have been found to correlate with the increased likelihood of recurrences in an individual once they have suffered a disabling back injury.[18,19] Studies by Biering-Sorensen[18] as well as Luoto and colleagues[20] demonstrate that muscle endurance is key to preventing back injury. If pain relief is the only goal of care, then deconditioning and various functional pathologies will remain as precursors to future bio-

mechanical failures.[21] Functional restoration in addition to pain relief is an appropriate goal, because prevention of recurrent or chronic pain is the ultimate goal of a cost containment-oriented approach.[21]

### Changing Paradigms

Gordon Waddell, MD, FRC has been a vocal proponent in changing the paradigm of management for musculoskeletal disorders from one of pathology to one of functional restoration. Dr. Waddell[18] in his foreword for Dr. Liebenson's book, *Rehabilitation of the Spine: A Practitioner's Manual* states:

> Backache is a 20th century medical disaster. All our knowledge, resources and efforts have certainly not solved the problem. There is some suspicion that we may actually have made matters worse. We now have investigations and therapies to deal confidently and quite effectively with serious spinal diseases and major neurologic problems. The real problem is nonspecific low back pain: the everyday bodily symptom that affects most of us at some time in our lives. Traditional medical management for back pain is rest, based on orthopedic principles and teaching. But there is little scientific evidence for rest, and all the epidemiologic evidence is that this approach has failed. Prolonged rest is not only bad for backs, it is disastrous for patients. Musculoskeletal nutrition and health depend on movement and use. Over the past decade there has been growing evidence that back pain is best treated by active rehabilitation. It is now time to rethink our whole approach to low back pain and disability. We must consider and deal with the physical problem in the patient's back but we must also look at how that individual deals with the pain and how it affects his or her life.

David Grimes calls for medical care to be based on evidence, rather than merely on authorities, experts, habits, and customs. He points out that traditional medical practice relies on assumptions almost 4 centuries old where older physicians are experts, physiology provides scientific foundation for competence, and clinical mastery enables doctors to formulate their own practice guidelines.[22] The evidence-based paradigm has different assumptions. Outcomes, not experts, provide evidence of care effectiveness, and a formal method is followed to evaluate evidence of best practices.[22] Dr. Grimes warns of the trap of unexamined dogma: adopting technology without evidence of its effectiveness.

There is a small window of time in low back pain care (4 to 6 weeks), to bring patients into an active reconditioning program, optimize their recovery, and prevent recurrence.[23] When this window is missed, the costs of treatment rise due to chronicity, deconditioning and sometimes the development of painful sensitization syndromes.

### Chiropractic in the Workers' Compensation System

In the February 2002 issue of the journal *Annals of Internal Medicine* an article titled "Chiropractic: A Profession at the Crossroads of Mainstream and Alternative Medicine" cited 43 randomized trials of spinal manipulation for treatment of acute, subacute, and chronic low back pain that have been published in Index Medicus referenced journals. The article[24] stated: "Thirty favored manipulation over the comparison treatments in at least a subgroup of patients, and the other 13 found no significant differences. . . . no trial to date has found manipulation to be statistically or clinically less effective than comparison treatment for uncomplicated low back pain."

Manipulative therapy, of which chiropractors perform the majority of in the United States, has clearly established its clinical and cost effectiveness.[25–33] The University of Maryland's Complementary Medicine Program ventured that chiropractic has the most convincing evidence for cost-effectiveness.[34] Cost-benefit studies are very encouraging,[35] with prospective studies for costs and outcomes of chiropractic and physician care for workers' compensation back claims currently underway.[36] Studies less favorable toward chiropractic in terms of cost-benefit have often ignored ancillary medical expenses in diagnostic testing and disability.[37] Despite these studies, a very small percentage of workers' compensation cases are referred to chiropractors in the United States today.

Desperate measures are being taken in the states worst hit, like California, where under the new leadership of Gov. Arnold Schwarzenegger, an injured employee's access to chiropractic care is significantly restricted. The Workers' Compensation Research Institute study concluded that chiropractic care could be a cost-saver if a physician and not a chiropractor directed the treatment. The California Chiropractic Association criticized the study, pointing to the institute's ties to the insurance industry, since twelve of the institute's 17 board members are insurance industry officials.[38] This is unfortunate not only for the chiropractic profession, but for the

state of California due to limiting access to the cost savings associated with chiropractic services.

In order to change public and insurance perceptions regarding chiropractic, it is essential that the profession humbly and critically evaluate its strengths and limitations. Despite the efficacy of the passive care that chiropractors render for treatment of musculoskeletal complaints, historically there has been inadequate emphasis on active care in the training and practice of chiropractors. There is a growing trend in chiropractic, however, to embrace this expanded paradigm through rigorous training in exercise rehabilitation and ergonomics. Most of this "active care" training is offered in post-graduate courses with some chiropractic colleges including this training as part of its curriculum. To compliment the effective passive care provided by manipulation, it is necessary to include active care to address the precipitating and exacerbating factors that can lead to re-injury and dependence on passive care.

Exercise rehabilitation is a necessary component of active care, the goals of which are to increase the strength and endurance of muscles essential to spinal stabilization resulting in a reduction of initial back injuries as well as recurrences.[14–16,39] It has been established that disability as a result of chronic low back pain is multifactorial.[22] Therefore it follows that a successful treatment approach would attempt to identify and address most or all factors.[40] As Dr. Stuart McGill reminds us "The very best professionals with expertise in low back injury prevention and rehabilitation have 2 things in common: an insight and wisdom developed from experience and a strong scientific foundation to enable evidence-based practice."[41]

**Ergonomic Advice**

Ergonomic advice is an invaluable part of patient management. Treating patients with musculoskeletal injuries without dispensing appropriate advice of this nature constitutes incomplete patient care. Doctors and therapists treating the motor system should take the time to educate patients about the physiology of their muscles, discs, and ligaments as well as the impact that movement and postural stresses have on these tissues. Several credible studies have demonstrated that in addition to modifications made to workplace design, addressing movement strategies of workers helps prevent injury and expedites injured workers return to their regular work.[20,42–44] The following is a brief discussion of ergonomic considerations as supported by the literature.

*Sitting:* Sitting produces mechanical changes in the ligaments and discs of the spine. With prolonged sitting postures, especially when slumped, plastic deformational changes or creep of connective tissues occurs. This results in increased vulnerability to injury in these tissues from bending and lifting; once established, this disc and ligament laxity can last over 30 minutes in some instances.[45–47] Patients, especially lumbar disc patients, should be advised to avoid sitting in a slumped posture, one with excessive lumbar flexion, to minimize creep and prevent a posterior shift of disc tissues. Old ergonomic recommendations consisted of sitting with hips and knees at 90 degrees with torso upright and maintaining this position for long periods. Recent studies show that this is not optimal. It is best to change sitting positions frequently, which shifts the mechanical load to varying tissues in the spine and minimize the risk of any single tissue accumulating micro trauma.[48] Thus, a truly ergonomic chair is one that not only supports the spine, but facilitates easy posture changes over a variety of joint angles.

Regardless of proper sitting techniques, there is no substitute for getting out of the chair periodically to give tissues a rest. It is best to get up at least once every 50 minutes,[41] however rest breaks from sitting should be more frequent for those with low back pain, particular when increased by sitting. Rest breaks must consist of the opposite activity to reduce the mechanical stress imposed on the affected tissues. Extension of the lumbar spine relieves posterior annulus stress, but more flexion while seated increases it, so avoiding flexing forward while seated as a form of "rest break." The recommended break that Professor McGill and colleagues have developed involves standing from the chair and maintaining a relaxed standing posture for 10 to 20 seconds. The main objective is to allow adequate time for the redistribution of the nucleus and reduce annular stresses.[41] An exercise to recommend while standing is: reach for the ceiling, then stretch pushing the hands upward, and then inhale deeply. This sequence when performed slowly causes a gentle and progressive extension of the lumbar region and dispels the stresses of sitting.[41]

*Sleeping:* Ligaments, joints, discs, muscles, and fascia are subjected to biomechanical forces such as ten-

sion, torsion, compression and shear. After prolonged or repeated loading of tissues, tissue creep will occur, resulting from the gradual rearrangement of collagen fibers, proteoglycans, and water in the connective tissue being stressed.[49] Once connective tissue is stressed, it has difficulty returning to its original length. Therefore, it is important that patients sleep in a position that will support and not stress their spine, shoulders, and pelvis. Sleeping in proper alignment will facilitate sitting in proper alignment. Forces acting on the spine are minimized when sleeping in a supine position with the neck gently supported and the legs slightly elevated.[50] Using a contoured pillow and placing a small pillow under the knees may accomplish this supportive sleep posture.

An important consideration, regarding the spine in a lying posture at night, is the physiologic observation that fluid is absorbed into the intervertebral disc as osmotic pressures exceed the hydrostatic pressure. This imbibition of fluid into the disc causes the disc to expand resulting in a 300% increase in disc-bending stresses and an 80% increase in ligament stresses in the morning compared to the evening. This situation increases the risk of injury to these tissues when bending forward early in the morning.[51,52] During the first 30 minutes after rising in the morning approximately half of this fluid is reabsorbed and vulnerability to injury is reduced proportionally.[53] Over the course of the day, hydrostatic pressures cause a net fluid outflow from the disc, resulting in the narrowing of the intervertebral space, which in turn reduces tension in the ligaments. Losses in sitting height over a day have been measured up to 19mm.[53]

Therefore, patients should be advised to avoid lifting and bending shortly after rising from bed. When one must lift first thing in the morning, as is the case with parents of newborn children, it is especially important to brace abdominally and maintain a neutral spine to prevent injury to the pre-stressed tissues. A study by Snook et al[54] demonstrated a significant reduction in pain intensity when early-morning lumbar flexion was controlled.

*Lifting:* A healthy adult spine can withstand significant axial compressive loads prior to failure of tissue leading to injury, but only about 25% of this load is tolerated in shear (flexion/extension); lateral flexion is about twice as stressful as shear and rotation or twisting is 3 times as stressful as shear on the spine.[46,55–57] When bending and lifting, patients should be advised to maintain a neutral spine with abdominal bracing or co-contraction and avoid even small amounts of twisting as this places significant stresses on the spinal tissues especially the discs and joints of the spine. [46,55–57] Most people focus only on bending the knees when lifting as this has been the traditional recommendation. This concept can be problematic since it is possible to bend the knees with the lumbar spine still in flexion, thus placing increased stresses on vulnerable tissues. It may be better to advise patients to maintain a neutral spine and brace abdominally when lifting even light objects as it is not just the weight of the object they are lifting but half their body weight as well.

When lifting, maintaining a neutral lordotic spine is important. This position will maximize shear support, ensure a high tolerance of the joint to withstand compressive forces, eliminate the risk of ligamentous damage since the ligaments remain unstrained, and eliminate the risk of disc herniation since this is associated with a fully flexed spine. Such a posture qualitatively emulates the spine postures that Olympic lifters adopt to avoid injury.[48]

Tight hamstring muscles, due to their pelvic attachments, may interfere with a patient's ability to maintain a neutral spine when bending over thus compromising the ability to practice safe lifting techniques. Careful hamstring tension assessment is important when evaluating a patient with low back pain. While short hamstrings are easily detected by performing seated or supine straight leg raise testing and noting overt tension, more subtle hamstring length compromises are more difficult to uncover. When testing for hamstring length it is helpful for the clinician to place a hand under the patient's lumbar spine with the patient supine or behind the lumbar spine if seated, to determine at what point flexion of the lumbar spine occurs. Interestingly, some people appear to have reasonable hamstring flexibility when tested supine, but when tested in a weight-bearing position, standing or seated, there is significant tension noted. This "functional tightness" is most obvious when a patient performs a standing (closed chain) single leg hamstring stretch while trying to maintain a neutral lumbar spine position. If a patient cannot bend forward using their hip joints as a fulcrum while maintaining a neutral lumbar spine, they tend to flex/fulcrum in their lumbar spine. It is difficult for a patient exhibiting these characteristics to lift without dangerously flexing

the lumbar spine and increasing the vulnerability of its soft tissues.

When a muscle imbalance is discovered, it is a good idea to look at related factors as "chains of dysfunction," which are more likely to occur than an individual muscle fault. In the case of a tight hamstring, there may be an inhibition of the gluteus maximus since both muscles act as hip extensors; the tightness of the hamstring a result of over-activation associated with inhibition of the gluteus maximus. Inhibition of the gluteus maximus (a hip extensor), may be due to tightness of the psoas major (a hip flexor) via Sherrington's Law of Reciprocal Inhibition. Tightness of the psoas may in turn be related to weakness of the trunk flexors causing an increased demand on the hip flexors. This common relationship, referred to as the lower crossed syndrome, may alter normal biomechanics and be a recurring source of low back stress making passive care palliative unless restoration of the proper biomechanics are also addressed.[58]

*Walking:* Analysis of gait is essential since people take on average an excess of 10,000 steps per day[59,60] or more than 3.5 million per year. It is easy to see how micro-trauma stresses may accumulate to produce significant problems. Since it takes less stress to aggravate an existing injury than it does to create an injury to healthy tissues, faulty movement patterns that occur as a sequela to an injury could precipitate the recurrence of stresses that could undermine or fully override an otherwise efficacious treatment approach. Gait anomalies that were preexisting to an injury and were not yet producing symptoms may need to be addressed in order to stabilize and correct the injury. An example might be a traumatic knee injury, which is aggravated by the increased torsional stresses caused by hyperpronation of the subtalar joint. In this situation, the hyperpronation should be addressed for expeditious healing of the knee even though it technically is not part of the injury that the patient presented with. In workers' compensation cases, it is up to the adjuster to make an executive decision in cases such as this to allow coverage or not if an orthotic or rehabilitative training is deemed necessary to assist in management of the hyperpronation.

Excessive foot pronation may produce various injuries to the foot such as plantar fasciitis, metatarsalgia, myositis/tendinitis of tibialis anterior and posterior, interdigital neuritis, and sub and retrocalcaneal bursitis.[61,62] In addition to these foot injuries, excessive subtalar joint pronation may be responsible for a wide range of injuries along the entire kinetic chain due to the increased internal torsional stresses it creates in gait.[63] Some of the more common conditions referenced here include: shin splints,[61,64] medial knee injury,[65,66] iliotibial band syndrome,[67] patellofemoral syndrome,[68] trochanteric bursitis, anterior shift of pelvis, lumbar facet syndrome, sacrococcygeal dysfunction.[63]

There are many differing approaches regarding orthotics technology today. Most orthotics design is based on the groundbreaking work of Root, Orion and Weed.[63] Regardless of the orthotics technology utilized, it is essential to address the muscle imbalances that are axiomatic with conditions warranting foot orthotics.

*Breathing:* Breathing inefficiently, ie chest breathing, can over-activate the scalene muscles, which are accessory muscles of respiration. This may lead to painful hypertonicity of these muscles, which can aggravate cervical and upper thoracic problems. Tight scalene muscles can also adversely impact cervicobrachial syndromes due to the passage of the neurovascular plexus between the anterior and middle scalene muscles. Hypertonicity and point tenderness of the scalenes due to faulty breathing will often elicit point tenderness anteriorly at the first and second rib. The respiratory rate in adults is about 16 to 20 per minute,[69] or in excess of 20,000 breaths per day. Faulty breathing and the stresses it places on the muscular system should be addressed since it can be a substantial contributor to recurring pain and dysfunction in the cervical and thoracic spine.

## CONCLUSION

Most traditional physicians may be too passive in their approach to lower back pain with an initial focus on rest and drugs.[5] Troup[70] offers, "The first attack is the ideal time for active and perhaps aggressive treatment. But if it is tacitly assumed that the vast majority of patients recover from back pain whether or not they are treated, then the opportunity may be missed." Linton and co-workers[71] demonstrated that properly administered early active intervention was superior to traditional treatment approaches. In their study the patient group that received education and active care had decreased sick leave, and a reduced risk of developing chronic

pain by a factor of 8 times that of the traditional care group. A study published in the *Journal of Occupational Rehabilitation* followed up on a prior study that developed a statistical algorithm identifying those patients in acute pain that were high risk for developing chronicity. Results of this 2003 study "clearly indicated" that high-risk subjects who received early intervention displayed statistically significant fewer indices of chronic pain disability on a wide range of work, healthcare utilization, medication use, and self reported pain variables, relative to the high-risk subjects who did not receive such early intervention.[72]

Ergonomic advice plays an important role in the treatment of spinal injuries. If from the onset of treatment, patients are given an understanding of the activities of daily living that can stress their injury; they are empowered to become more actively involved in their care. In addition to passive care, retraining functional imbalances in the motor system is essential if treatment is to be successful.

The emerging standards of care for musculoskeletal injuries include a timely shift from passive care to a blend of passive and active care with an emphasis on what patients can do for themselves. The chiropractic profession is well poised to excel in this new paradigm, not to minimize or marginalize the success of manipulation of the musculoskeletal system, but rather to enhance it and expand its utilization in a cost conscious environment.

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