IMPAIRED IMMUNE RESPONSE TO EXERCISE AFTER CERVICAL SPINAL CORD INJURY

Clinical data suggest that patients with spinal cord injury (SCI) suffer from profound immunological impairment at rest. It is known that strenuous exercise suppresses, while moderate exercise activates various immune parameters. This study investigated the relationship between sympathetic nervous system function and immunologic function in able-bodied individuals and those with SCI undergoing moderate exercise.

Subjects included six, able-bodied persons and eight patients with complete cervical SCI. All underwent exercise consisting of 20 minutes of arm crank ergometer activity at 60% of maximal oxygen consumption. The participants underwent measurement of levels of plasma cortisol, plasma adrenaline, number of natural killer cells and natural killer cell cytotoxicity. Blood samples were drawn before, immediately after and at one and two hours after exercise.

Plasma cortisol did not change significantly in response to exercise in either group. In able-bodied subjects, adrenaline increased immediately after exercise and returned to baseline after one hour. In this group, the number of natural killer cells and degree of natural killer cell activity increased significantly, immediately after exercise, and returned to baseline at one to two hours after exercise. In subjects with cervical SCI, adrenaline levels, number of natural killer cells and natural killer cell activity did not change in response to exercise. The authors suggest that this absence of immunologic response resulted from the absence of an adrenaline surge.

Conclusion: This study of patients with complete cervical spinal cord injury found an absence of immunologic response to moderate exercise, thought to result from dysfunction of the sympathetic nervous system.


DRIVING REACTION TIME AFTER TOTAL HIP REPLACEMENT

The time at which patients should return to driving after a total hip replacement is a common question for therapists and physicians. Arguably, the most important driving command with reference to the lower limb is the ability to perform an emergency stop. According to the Highway Code, the British national average is 0.7 seconds. This study further explored the recovery of reaction times after total hip arthroplasty (THA).

All patients undergoing primary THA at the authors’ institution were eligible for participation. Twenty subjects were recruited, including nine females and 11 males, with a mean age of 69 years. Reaction times were tested before surgery and at four, six and eight weeks after surgery. The data were reviewed for significant changes in reaction times between time periods.

The data revealed significant improvement in reaction times across the four time periods (p=0.015). Significant differences were seen between the initial and six-week results (p=0.003) and between the four- and six-week results (p=0.001). However, no significant difference was found between the six- and eight-week results. At week six, no patient scored above the 0.7-second reaction time published by the British Highway Code.

Conclusion: This study found that, after total hip arthroplasty, reaction times for braking an automobile improve significantly until week six. All reaction times recovered such that safe driving was achieved at six weeks.


ELCATONIN FOR POSTMENOPAUSAL BACK PAIN

Previous studies have confirmed the analgesic effects of salmon calcitonin for the treatment of low back pain (LBP) associated with osteoporotic vertebral compression fractures. This study assessed the effect of an injected calcitonin, Elcatonin, for the treatment of LBP in postmenopausal women.

Women over the age of 50 years with acute LBP were studied. Thirty-six subjects without evidence of vertebral fracture were randomized to receive trigger point injections of a mixture of Elcatonin (20 units) and 1% lidocaine (8 mL). A placebo group was given a mixture of a placebo and the same volume of lidocaine. The injections were repeated weekly until pain relief was realized.

Both the patients and the operators were held blind to the injection content. The injections were repeated once weekly until pain relief was achieved. All took daily supplements of vitamin D3 and calcium throughout the study. The subjects were assessed with a visual analogue scale for resting pain and pain during motion.

The mean numbers of injections were 2.5 for the Elcatonin group and 3.1 for the placebo group. No significant differences were seen between the groups in the amount of nonsteroidal anti-inflammatory drugs used. The patterns of pain at rest were similar between the two groups. However, the mean visual analogue scale scores for motion pain were significantly lower in the treatment groups.
group than in the placebo group at the third, fifth and sixth weeks of follow-up ($p = 0.047$ and $p = 0.023$, respectively).

**Conclusion:** This prospective, double-blind, randomized study of osteoporotic women with low back pain found that injections of Eclaxon relieve pain associated with motion.


**SIGNIFICANCE OF ACCURACY OF INTRA-ARTICULAR GLENOHUMERAL INJECTIONS**

Sources of shoulder pain can be intra-articular or extra-articular to any of the joints comprising the shoulder joint complex. A common treatment for the various pathologies is injection of a corticosteroid into the subacromial space, acromioclavicular joint or glenohumeral joint. As estimates of the accuracy of these joint injections have varied in the literature, this study compared the accuracy of intra-articular injections with the effect of those injections on pain and functional outcomes.

Participants were chosen from three outpatient clinics. The subjects included consecutive patients with shoulder dysfunction who were found to have evidence of symptomatic glenohumeral arthritis, adhesive capsulitis or other intra-articular pathology. For all patients, data collected included demographic, symptomatic and functional information, the Disabilities of the Arm, Shoulder and Hand Questionnaire (DASH), the Short Form McGill Pain Questionnaire (SFMPQ) and the Numeric Pain Rating Scale (NPRS). All subjects received injections of one percent lidocaine and 3 mL of 0.25% marcaine and corticosteroid mixed with dye. X-rays were performed after the injection to verify injection placement.

The study enrolled 103 patients who received injections, with four-week follow-up conducted. Of the 103 patients, 54 received injections that were identified as in the capsule, while 49 were identified as outside the capsule (accuracy 52.4%). Both groups of patients improved significantly after the injections, by over 2.5 points on the NPRS, over eight points on the SFMPQ and over 13 points on the DASH. No significant difference was seen in outcomes between the group with accurately placed and the group with inaccurately placed injections.

**Conclusion:** This study of patients receiving intra-articular glenohumeral injections found that the accuracy of the injection was not significant in determining the effect of this injection.


**SIGNIFICANCE OF A POSITIVE NEER IMPINGEMENT SIGN**

The impingement syndrome was first described by Charles Neer in 1972 as resulting from rotator cuff degeneration and impingement of the rotator cuff on the acromion and coracacromial arch. The Neer sign is considered an important diagnostic indicator for rotator cuff impingement. This study addressed whether the arm position where pain occurs with a positive Neer test correlates with the position where the rotator cuff makes contact with the superior glenoid.

This study involved patients who had undergone physical examination, including a Neer test followed by arthroscopic surgery, between August of 1992 and November of 2007. Of the 1,331 patients undergoing diagnostic arthroscopy, 681 had a positive Neer sign. The angle at which the Neer sign was positive in the preoperative test was compared to the angle of cuff-glenoid contact observed during surgery.

Of the 398 patients who had pain with a Neer sign during office examination, 76% had arthroscopically documented cuff-glenoid contact. In 302 patients, the preoperative measurement at which the patient reported pain was similar to findings on the intra-operative measure of flexion at the point of cuff and glenoid contact.

**Conclusion:** This study found that pain associated with a positive Neer sign most often relates to contact of the rotator cuff with the superior glenoid, rather than to
contact between the rotator cuff and the acromion.


BLIND SUBACROMIAL INJECTION: THE BALLOONING SIGN

As a component of the non-operative treatment algorithm for shoulder impingement syndrome, steroid injections have played a central role. However, a number of studies have suggested that blind subacromial injections are often poorly placed. Some have proposed that an injection placed successfully into the bursa results in palpable ballooning, anterior and distal to the acromion process. This study was designed to verify the association of the ballooning sign with the accuracy of a subacromial injection.

A total of 136 shoulders from 129 patients were studied. All patients were treated for a presumptive diagnosis of shoulder impingement syndrome. Each had a minimum of three months' symptom duration prior to a subacromial injection. All injections were completed with a 21 gauge needle, inserted obliquely, 1 cm inferior to the anterior lateral corner of the acromion. Injections included contrast, with post-injection radiographs performed to determine placement.

All patients were evaluated for pain, range of motion, and muscle strength prior to blind subacromial injection. Neer and Hawkins provocative signs were reassessed 20 minutes after the injection. All patients were assessed for the ballooning sign, defined as relative fullness which could be palpated over the skin just distal to the anterior acromion.

A ballooning sign was found in 104 of the shoulders. Of those, 43 were found to have accurately placed injections and 61 to have inaccurately placed injections. Only eight subjects in the inaccurate group demonstrated a negative ballooning sign, while 24 in the accurate group had a negative ballooning sign. Sensitivity and specificity of the ballooning sign were 64.2% and 11.6%, respectively.

Conclusion: This study of subacromial injections from the anterolateral approach found that the ballooning sign is not a reliable indicator of proper placement of the injection.


TAI CHI FOR FIBROMYALGIA

Evidence-based guidelines suggest that fibromyalgia (FM) is typically managed with multidisciplinary care, including medication, cognitive behavior therapy, education and exercise. Although exercise has been advocated as a core component of treatment, many patients with FM remain aerobically unfit, with poor muscle strength and limited flexibility. This study investigated the use of tai chi as an exercise intervention for patients with FM.

This single-blind, randomized trial include patients 21 years of age or older with a diagnosis of FM. The subjects were randomly assigned to a tai chi or a control intervention group. The tai chi intervention took place twice per week for 12 weeks, with each session lasting 60 minutes. In addition, the patients were instructed to practice tai chi at home for at least 20 minutes per day.

The control intervention involved wellness education and a stretching program, including 60 minute sessions twice per week, with instructions to practice stretching at home for 20 minutes per day. The primary endpoint was change in the Fibromyalgia Impact Questionnaire (FIQ) scores at the end of 12 weeks. Secondary endpoints included the summary scores from the Medical Outcomes Study-36 Short Form Health Survey (SF-36). The participants were reevaluated at 24 weeks.

At 12 and 24 weeks, the tai chi group had a significantly greater decrease in the total FIQ score than did the control group (p<0.001 for both). In addition, at 12 and 24 weeks the tai chi group demonstrated superior scores on secondary outcome measures including the Pittsburgh Sleep Quality Index, the SF-36, the depression scale of the Center for Epidemiologic Studies, the patients global assessment and the physicians global assessment.

Conclusion: This study of patients with fibromyalgia found that tai chi may be a useful treatment in the multidisciplinary management of this disorder.


RISK OF INCISION HEALING COMPLICATIONS FOLLOWING TOTAL ANKLE ARTHROPLASTY

Symptomatic ankle arthritis is initially treated nonoperatively with bracing and therapy. When these measures fail, surgery is now considered an option. Despite surgical improvements, relatively high complication rates have been reported in the literature. This study evaluated the risk factors for surgical failure, including wound healing complications, after total ankle arthroplasty (TAA).

This retrospective chart review included 106 patients who had undergone TAA. Postoperative notes were reviewed, with outcomes categorized according to criteria for three groups. The groups included those with no complications requiring surgical intervention. The charts were also reviewed for factors associated with wound-related complications, including diabetes, peripheral vascular disease, tobacco abuse, age, inflammatory arthritis, steroid or COX-2 inhibitor use, body mass index, gender, implant size and tourniquet time.

Of the cases reviewed, 66% healed without complications and 25% with minor complications, while nine percent required operative intervention. Comparing those patients without complications to those with minor complications, only diabetes was found to have a significant association with complications. Upon comparing patients with major complications to both other groups, an increased risk was found with female gender, corticosteroid use and inflammatory...
arthritis. However, of those factors, only the relationship with inflammatory arthritis reached statistical significance.

**Conclusion:** This study of patients undergoing total ankle arthroplasty found that those with inflammatory arthritis are at greater risk for major complications.


**METABOLIC SYNDROME AND KNEE REPLACEMENT**

The metabolic syndrome (MetS) is associated with systemic inflammation that increases the risk of cardiovascular disease, thromboembolic disease and colon cancer. Adipose tissue has been found to secrete mediators, including tumor necrosis factor-alpha, interleukin six and C-reactive protein, which induces a pro-inflammatory state and mediates insulin resistance. The orthopedic manifestations of this systemic inflammation have been examined by only a few studies. This study explored the relationship between one-year functional outcome following knee and hip replacement surgery and the number of MetS risk factors.

This prospective study included patients who were on a waiting list for primary knee and hip replacement surgeries. All were at least 18 years of age, with a primary or secondary diagnosis of osteoarthritis. Baseline data included age, gender, body mass index and self-reported medical comorbidities.

Risk factors for MetS included a body mass index of over 30, hypertension, diabetes and hypercholesterolemia. A total of 1,596 patients completed the study. The Western Ontario McMaster University Osteoarthritis (WOMAC) Index was used to assess functional status before surgery and at one-year follow-up. The reference group included those with one MetS risk factor.

One-year WOMAC scores were significantly higher with an increasing number of MetS risk factors in both the knee surgery group (p=0.006) and the hip surgery group (p=0.01). Hypertension and obesity were most predictive of poorer outcome following hip surgery, with obesity most predictive for knee surgery patients.

**Conclusion:** This study found that the number of metabolic syndrome factors present prior to hip or knee surgery is related to negative outcome.


**EXERCISE AND RECREATION FOR EXECUTIVE FUNCTION AND MEMORY AFTER STROKE**

Studies of patients with acute stroke have found that up to 78% have impairments in executive function, attention and memory. Physical activity has been found to improve cognition in healthy older adults. However, research concerning the benefits of physical activity on cognition in the stroke population is limited. This study sought to determine whether a combined exercise and recreation program improves executive function and memory in patients with chronic stroke.

Subjects included 11 patients, each with a stroke having occurred at least 12 months prior to recruitment. All participants were 50 years of age or older, without a general cognitive deficit. The subjects were required to be able to walk three meters without physical assistance, but could use assistive devices. The participants were involved in two, one-hour sessions per week of exercise, including stretching, balance and task specific exercises. The task specific exercises involved at least 20 minutes of activity at a moderate aerobic challenge. The recreation and leisure sessions were conducted for one hour per week by a recreation programmer, and included social activities as well as selected recreational activities. Standardized neuropsychological tests were used to assess cognitive functions and included measures of response inhibition, the Stroop test, and tests of attention and working memory, learning, recall, long-term memory, and dual task abilities.

At three-month assessment, Trail Making Test, Rey AuditoryVerbal Learning Test-Short Delay and Long Delay, as well as Walking while Talking Test scores improved more than 10% from baseline. At six months, Digit Span Backwards, Rey Long Delay and Stroop Test scores all improved more than seven percent from the three month scores. Significant main effects were found for the Rey Long Delay measure (p=0.04), the Walking while Talking Test (p=0.0025) and the Stroop Test (p=0.007).

**Conclusion:** This study of patients with chronic stroke found that exercise and recreation can positively impact verbal learning, but not working memory.


**EFFECT OF BLADDER MANAGEMENT ON STROKE REHABILITATION OUTCOME**

Stroke is a major cause of global disability, and is the second leading cause of death. Problems with urinary incontinence and bladder management are common after stroke. This study assessed the relationship between level of bladder management and overall functional outcome after stroke.

This retrospective study included 1,187 patients ages 60 to 96 years with stroke as their primary diagnosis. All had ischemic stroke and were medically stable for rehabilitation. Functional Independence Measure (FIM) Bladder Management scores were obtained. Those with bladder scores of five or less were compared to those with scores of six or more. Comparisons were made by demographics, clinical characteristics, total and motor discharge FIM scores and bladder scores.

Characteristics differentiating the two groups were older age, longer stay and lower Mini Mental State Examination scores for the low bladder score group (p<0.002, p<0.001 and p<0.001, respectively). Lower bladder management scores were independently predictive of total functional gain at discharge (p<0.001).

**Conclusion:** This study found that, among patients with ischemic
stroke, functional outcome is more favorable for those with higher bladder management scores at admission.


PNEUMATIC COMPRESSION WITH FOOT PUMPS AFTER TOTAL KNEE ARTHROPLASTY

Both thromboembolism and postoperative soft tissue swelling are common problems after total knee arthroplasty (TKA). Mechanical prophylaxis using a foot pump is seen as an alternative to pharmacologic and other physical compression devices. This study examined the clinical efficacy of a foot pump in reducing soft tissue swelling of the lower limbs following TKA. The A-V Impulse Pump (AVI) was the study device used.

Between September of 2005 and December of 2006, 80 patients were randomized to two groups of 40. After surgery, all patients received standard venous thromboembolism prevention with a subcutaneous dose of low molecular weight heparin given once daily. In addition, all were fitted with anti-embolic stockings. The AVI treatment group received the AVI to both feet in the recovery room, continued for 24 hours per day. The patients were free to discontinue the use of the device when needed for activities of daily living or therapy. Swelling of the lower extremities was assessed for each patient, with these data compared between the two groups.

Leg circumference was significantly less in the AVI group than in the control group (p<0.05). In addition, the AVI group demonstrated greater improvement in flexion of the knee than did the control group (p<0.01). No complications were noted in the AVI group.

Conclusion: This study of patients undergoing total knee arthroplasty found that soft tissue swelling and ROM of the knee are both improved by the use of foot pumps after surgery.


ULTRASOUND GUIDANCE FOR ACROMIOCLAVICULAR INJECTIONS

Disorders affecting the acromioclavicular (AC) joint are well-established causes of shoulder pain. Physical examination maneuvers have been found to have low sensitivities and poor positive predictive values for confirming the AC joint as a pain generator. Some have advocated the use of local injections to confirm this joint as the pain generator. This study compared the accuracy of palpation guided versus ultrasound (US) guided injections of the AC joint.

In this single operator, prospective, cadaveric study of unembalmed AC joint specimens, an equal number of right and left AC joints were examined by US or by palpation only. A colored latex solution was used to assist with placement verification. After injection, the joints were dissected by a co-author held blinded to the injection technique. At that time, injections were graded as accurate, partially accurate (within and outside the AC joint) or inaccurate.

All of the US guided injections were accurate, as compared to only 40% of the palpation guided injections (p=0.054). The remaining 60% were inaccurate.

Conclusion: This cadaveric study found that ultrasound guided injections into the acromioclavicular joint are significantly more accurate than are those guided by palpation.


PROMOTING HEALTH WITH EXERCISE

Physical inactivity is known to increase the risk of premature death and to elevate the incidence of chronic disease. As time constraints often prevent individuals from engaging in frequent, moderate exercise, this study investigated whether an intervention with brief, but very intense, aerobic training influences important health-related parameters.

This study included 86 untrained men who were divided into four groups. These included a control group, a strength training group (STR), a high intensity interval running group (INT), and a moderate intensity running group (MOD). All completed a 12-week program of three sessions per week, with subjects assessed before and after intervention with an exercise test, muscle biopsy, oral glucose tolerance testing, resting blood pressure and lipoprotein profile. The INT group performed five minutes of light jogging, followed by five Intervals of two-minute, near maximal running. The MOD group engaged in one hour of running at 65% VO2 max. The STR group engaged in 12 weeks of progressive heavy resistance exercise of 60 minutes duration per session.

Those in the INT group showed marked improvement in cardiovascular fitness, glucose tolerance, exercise endurance and decreased systolic blood pressure. However, the MOD group was superior in the management of lipids and obesity. In contrast to STR, INT had no significant impact on muscle mass or skeletal health.

Conclusion: This study found that brief, but very intense, exercise training can improve cardiovascular fitness, glucose tolerance, blood pressure and exercise endurance.


EXERCISE FOR WOMEN WITH OSTEOPENIA

Individuals with osteoporosis are at an increased risk for fractures, not only due to low bone mineral density, but also due to decreased balance and muscle strength. This study reported on the long-term effect of exercise in elderly women with osteopenia.

This randomized, controlled trial included women 70 to 73 years of age with a diagnosis of osteopenia. Those randomly assigned to an exercise group attended a supervised
training program, and then progressed to a home-based exercise program. The exercise program began with once per week supervised balance, leg strength and impact training sessions for six months. In addition, the participants were asked to train for 20 minutes per day following similar activities. A control group received general health information and resumed regular activities. Follow-up visits were conducted annually for seven years. The primary outcome measures were femoral neck bone mineral density, postural sway and leg strength. Secondary outcomes were hospital treated fractures and functional ability measures.

Over 50% of the patients in each group completed the trial. At follow-up, 17 fractures were documented in the exercise group and 23 in the control group. Of the hip fractures, all five occurred in the control group. Walking speed was the only independent predictor of fracture incidence. Of the hip fractures, all five occurred in the control group. Walking speed was maintained in the exercise group and was decreased in the control group (p<0.04). Bone mineral density decreased similarly in both groups.

**Conclusion:** This study found that home-based exercise can improve gait speed and may protect against hip fractures in elderly women. However, no positive effect of exercise on bone mineral density was seen.


**DOSE RESPONSE EFFECT OF EXERCISE ON CHRONIC SUBACROMIAL PAIN**

The prevalence of shoulder pain among adults under the age of 70 years is 7-27%, rising among those over the age of 70 years. Findings have been inconsistent concerning exercise for the treatment of shoulder pain. This study evaluated patients with shoulder impingement syndrome, in an effort to determine the effect of medical exercise training.

Patients between the ages of 18 and 60 years were recruited from their primary medical doctors. All demonstrated a positive subacromial impingement sign, with a minimum of three months of pain and no previous surgery or neurological signs. The subjects were randomly assigned to undergo either high-dose medical exercise therapy or low dose exercise therapy. Each group underwent progressive resistance exercise therapy, with the high-dose group receiving both aerobic exercise and shoulder focused strengthening exercise.

The high-dose group performed six sets of 30 repetitions, while the low-dose group performed two sets of 10 repetitions. In addition, the high-dose group underwent longer periods of aerobic training using a stationary bike or treadmill. The patients were assessed with a visual analogue scale for shoulder pain, with strength also measured.

Sixty-one patients were included in the final analysis, including 31 in the high-dose and 30 in the low-dose therapy groups. Pain and function were both significantly more improved in the high-dose group than in the low-dose group (p<0.05).

**Conclusion:** This study of patients with chronic subacromial pain found that high-dose medical exercise improves shoulder pain significantly more than does low dose exercise.


**SPLENE TYROSINE KINASE FOR RHEUMATOID ARTHRITIS**

Spleen tyrosine kinase (Syk) is an important mediator of immunoreceptor signaling, which has been found in rodent models to be effective for the treatment of rheumatoid arthritis (RA). Previous clinical studies have shown an association between decreased RA activity and decreased serum levels of disease markers. This study further investigated the efficacy and safety of Syk for the treatment of RA.

This randomized, double-blind, placebo-controlled trial included 457 patients diagnosed with RA who had failed methotrexate therapy. The participants were divided into four groups to receive Syk at 100 mg twice per day or 150 mg daily, placebo once per day or placebo twice per day. The primary outcome was the American College of Rheumatology (ACR) 20 response, evaluated at six months. Safety was evaluated every two weeks for the first eight weeks and monthly thereafter.

Significantly more patients in the treatment groups met the criteria for ACR 20 response (67% in the 100 mg twice per day group and 57% in the 150 mg once per day group) as compared to 35% in the placebo groups (p<0.001 for both comparisons). A significant effect was noted by the end of the first week of treatment. A slight increase in adverse reactions was seen with 150 mg dosing as compared to 100 mg twice per day dosing.

**Conclusion:** This study of patients with RA found that spleen tyrosine kinase may be an effective treatment for those who fail methotrexate therapy.


**WRIST EXTENSOR EXERCISE FOR LATERAL EPICONDYLITIS**

A variety of specific treatments have been prescribed for lateral epicondylitis, including bracing, steroid injections, shockwave therapy and surgery. In addition, isolated eccentric exercise training has been recommended as a conservative intervention. This study assessed the efficacy of a novel eccentric exercise program for the treatment of lateral epicondylitis.

Twenty-one patients with chronic, unilateral lateral epicondylitis of at least six weeks’ duration were studied. The patients were randomized to receive standard physical therapy or eccentric intervention. All received wrist extensor stretching, ultrasound, cross friction massage, heat and ice during their therapy visits. Additionally, the standard treatment group performed isolated eccentric wrist extensor strengthening, while the eccentric treatment group performed isolated eccentric wrist extensor strengthening. Each of
these extensor exercises involved extensor contraction lasting four seconds. Three sets of 15 repetitions were performed daily. Outcome measures included the Disability of Arm, Shoulder, and Hand Questionnaire (DASH) with pain reported on a Visual Analog Scale (VAS).

Improvements in DASH scores were significantly better for the eccentric group than for the standard treatment group, with the eccentric group improving by 76%, as compared with 13% for the standard group (p=0.01). In the eccentric group, five patients enjoyed more than 90% improvement in DASH scores, while no patients in the standard treatment group demonstrated such significant improvement.

Conclusion: This study of patients with chronic lateral epicondylitis found that wrist extensor eccentric exercise, in addition to standard treatment, can accelerate recovery.


COGNITIVE BEHAVIORAL THERAPY FOR LOW BACK PAIN

Recently, the American Pain Society published evidence-based clinical practice guidelines strongly recommending intensive interdisciplinary rehabilitation with a cognitive behavioral emphasis for patients with non-radicular low back pain (LBP). This prospective study evaluated the one-year follow-up of a program based on a cognitive behavioral approach in patients with chronic LBP.

This prospective cohort study included patients with LBP of at least six months’ duration, with no indications for surgical treatment, all between the ages of 20 and 65 years. All had been absent from work for under two years, and all were motivated to change their behaviors. Treatment consisted of 50 hours of cognitive behavioral training, 35 hours of physical activities and 15 hours of education.

Subjects learned relaxation techniques, use of sleep aids, pain management strategies and other cognitive behavioral therapies. The main outcome parameters included the Roland and Morris Disability Questionnaire (RMDQ), the Oswestry Disability Index (ODI), the Pain Self-Efficacy Questionnaire (PSEQ), and the MOS Short Form-36 Health Survey Questionnaire (SF-36). The results were compared with the expected improvement based on the medical literature.

At one year, the subjects reported improvement in function, better management of low back pain and improvement in quality of life. The treatment effect was larger than the predetermined minimal clinical important difference. Improvements in quality of life and functional ability achieved in this study were comparable with results of spinal surgery, and were better than results of less intensive rehabilitation programs.

Conclusion: This study of patients with chronic low back pain found that results of a rehabilitation program using cognitive behavioral therapy were comparable to those achieved after fusion surgery.


VERTEBROPLASTY FOR METASTATIC CERVICAL FRACTURES

Spinal metastases are found in more than two thirds of patients who die of cancer. As vertebroplasty has been suggested as a treatment for pathologic cervical spine lesions, this study reviewed the technical feasibility and the ability of percutaneous vertebroplasty (PVP) to reduce pain associated with cervical fractures related to metastases.

This retrospective analysis included 62 patients who underwent PVP to treat painful cervical fractures due to metastatic disease. The primary tumors included breast cancer, myeloma, lung cancer, gastric cancer and other tumors. Each patient was evaluated before, the day after, and at three months after the procedure. On the day after treatment, all subjects were evaluated by CT or MRI. Follow-up visits occurred at one and three months post-surgery, with clinical examinations including neurologic examination and a visual analogue scale for pain.

Pain was reduced within 24 hours of surgery, with mean VAS scores of 7.9 before and 1.5 after the procedure (p<0.001). Within 24 hours, the pain completely disappeared in 40% of the participants, with analgesics suspended in 55% of the patients and decreased in 42%. At three months, the subjects reported a mean visual analogue pain scale score of 1.7.

Conclusion: This study of individuals with metastatic cervical fractures found that vertebroplasty can provide significant pain relief for these patients.


EPIDEMIOLOGY OF ANKLE SPRAINS

Ankle sprains are the most common injury in athletic populations, accounting for up to 30% of all sports injuries. Little, however, is known about the epidemiology of ankle sprains in the general population of the United States. This study assessed the incidence of and demographic risk factors for ankle sprains presenting to hospital emergency rooms.

This cross-sectional, descriptive, epidemiological study used data identified in the Consumer Product Safety Commission’s (CPSC) National Electronic Injury Surveillance System (NEISS) database. Data were collected between 2002 and 2006, with variables including treatment date, age, gender, race, diagnostic category, body part injured, patient disposition and location of injury. These data were used to calculate at-risk person-years.

A total of 82,971 ankle sprains were recorded in the database, with an estimated incidence of 2.15 per 1,000 person years and a mean age of 26 years. Males and females had...
The overall incidence rates of 2.2 and 2.1 sprains per thousand person years, respectively. The peak age of occurrence in males was 15 to 19 years of age, and in females was between 10 and 14 years of age. Nearly half of all ankle sprains occurred during athletic activity. Basketball was the most common sport, accounting for 20% of all sprains. Falls from stairs accounted for 27% of the injuries. By race, ankle sprains occurred most often among African Americans (2.44 per thousand person years), and least often among Hispanics (0.68 per thousand person years).

**Conclusion:** This study of ankle sprains presenting to emergency rooms in the United States found the incidence to be 2.15 per thousand person years, most commonly occurring during sporting events.