Traumatic brain injury (TBI) often causes impairment to the vascular system, which supplies blood and nutrients to the cells of the brain. Some have speculated that, as damage to the brain includes the vascular system, TBI might further trigger the occurrence of cerebrovascular accidents. This study was designed to determine whether cerebrovascular damage from TBI is a predisposing factor for future stroke.

This nationwide, prospective, population-based study used data from the Longitudinal Health Insurance Database, released annually by the Taiwan National Health Research Institute. A total of 23,199 subjects included those hospitalized with a principal diagnosis of TBI within a three-year period. A control group of 69,597 individuals without TBI was matched for gender, age and year of index use of the health care system. The two groups were compared for incident stroke.

After matching for age and gender, patients with TBI were more likely to have hypertension (p<0.001), diabetes (p<0.001), coronary heart disease (p<0.001), atrial fibrillation (p<0.001) and heart failure (p<0.001) than were those in the control group. Compared to the control group, patients with TBI had significantly higher rates of stroke at three months, one year and five years (p<0.001 for all comparisons). The hazard ratios of stroke for patients with TBI were 10.2 times as high within five years (p<0.001 for all comparisons). The two groups were compared for incident stroke.

**Conclusion:** This study of patients with traumatic brain injury found that the risk of stroke is elevated for at least five years post-injury.


## CHOCOLATE AND STROKE RISK IN WOMEN

Chocolate consumption has been found to reduce blood pressure, improve endothelial and platelet function and improve insulin resistance. Flavonoids in chocolate possess strong antioxidant activity and can suppress the oxidation of low-density lipoprotein cholesterol. This study examined the association between chocolate consumption and stroke risk.

Data were obtained from the population-based Swedish Mammography Cohort. In the autumn of 1997, 33,372 women, ages 49 to 83, completed questionnaires concerning diet and lifestyle factors. Chocolate consumption was assessed using a self-administered food frequency questionnaire, with subjects indicating their average chocolate consumption over the prior year. Incident cases of first stroke which occurred between January 1, 1998, and December 31, 2008, were obtained from the Swedish Hospital Discharge Registry. Stroke events were classified as cerebral infarctions, intracerebral hemorrhages, subarachnoid hemorrhages or unspecified strokes.

During the 10-year follow-up, 1,549 strokes were identified. Chocolate consumption was inversely associated with the risk of total stroke, cerebral infarction and hemorrhagic stroke. The relative risks for a 50 gram per week increase in chocolate consumption were 0.864 for total stroke, 0.88 for cerebral infarction and 0.73 for hemorrhagic stroke.

**Conclusion:** This study identified a statistically significant, inverse association between chocolate consumption and subsequent stroke. Interestingly, only women in the highest quartile of chocolate consumption (a median of 66.5 grams/wk.) had a significantly reduced risk of stroke.


## ULTRASOUND DETECTED FASCICULATIONS AND AMYTROPHIC LATERAL SCLEROSIS

Early diagnosis of amyotrophic lateral sclerosis (ALS) is often difficult. To improve the sensitivity of diagnostic criteria, an international consensus meeting was held in Awaji-shima, Japan. In that meeting, fasciculations were introduced as evidence of acute denervation in the presence of chronic neurologic changes on needle electromyography (EMG). Previous studies have shown that ultrasound (US) may be more sensitive in detecting fasciculations than EMG in lower motor neuron disease and peripheral neuropathy. This study investigated the diagnostic value of US in ALS.

One hundred ten patients with suspected ALS were prospectively enrolled from an EMG clinic at Chiba University Hospital in Japan. Using revised criteria to diagnose ALS, 29 patients were excluded. In the remaining 81 patients, needle EMG and US were performed for all subjects to detect fasciculations. Six muscles were tested, including the tongue, biceps, first dorsal interosseous, T-10 paraspinal muscles, vastus lateralis and tibialis anterior. The results of these examinations were compared.

The number of muscles showing fasciculations was significantly greater with US than with EMG.
Tobacco smoking is highly addictive, with more than 95% of unaided attempts at cessation failing to last for six months. Success in quitting is increased by behavioral support and by a range of pharmacotherapies. However, many of these agents are quite expensive. Cytisine has been available in former socialist economy countries for more than 40 years, costing six to fifteen dollars for a course of treatment. While previous studies have suggested that Cytisine may be effective in helping smokers stop, no trials have addressed this. This study of patients with suspected ALS found that ultrasound is more sensitive than electromyography in detecting fasciculations, and could be used to increase the diagnostic sensitivity of ALS.


Cytisine for Smoking Cessation

Cytisine is more effective than placebo for cigarette smoking, found that Cytisine was reported more frequently in the treatment group than in the placebo group. Five deaths were documented, two in the treatment group due to lung cancer and cardiac arrest, and three in the placebo group due to lung cancer, hemorrhagic stroke and chronic obstructive pulmonary disease. Among minor events, gastrointestinal disorders were reported more frequently in the treatment group than in the placebo group.

Conclusion: This trial, involving patients wishing to discontinue cigarette smoking, found that Cytisine is more effective than placebo for cessation.


Teriflunomide for Relapsing Multiple Sclerosis

Teriflunomide is the active metabolite of leflunomide, which reduces T and B cell activation, proliferation and function in response to autoantigens. Teriflunomide has been found to delay disease onset, reduce relapses and improve neurologic findings in studies of experimental autoimmune encephalomyelitis. This study evaluated the efficacy and safety of Teriflunomide in reducing the frequency of relapses and progression of physical disability in patients with relapsing multiple sclerosis (MS).

This study included 1,088 patients with MS, ages 18 to 55 years, who had experienced at least one relapse of MS in the prior year, or two relapses in the previous two years. The patients were randomized to receive a once daily oral dose of placebo, 7 mg of Teriflunomide or 14 mg of Teriflunomide for 108 weeks. Randomization was stratified according to the Expanded Disability Status Scale (EDSS). The primary outcome measure was the annual relapse rate, defined as the number of confirmed relapses per patient per
year. Secondary outcome measures included the progression of disability over the study period, as assessed by the changes in EDSS scores.

A total of 796 patients completed the study; with similar proportions in the three study groups. Teriflunomide significantly reduced the annualized relapse rate at either 7 mg or 14 mg as compared with placebo (p<0.001 for both comparisons). In both Teriflunomide groups, the time to first relapse was longer, and more patients remained free of relapse than in the placebo group. The proportions of patients with confirmed progression of disability were 27.3%, 21.7% and 20.2% with placebo, Teriflunomide at 7 mg and Teriflunomide at 14 mg, respectively (p=0.08 and p=0.03, respective comparisons with placebo). In addition, the change in total lesion volume, as measured by magnetic resonance imaging, was significantly lower in the two Teriflunomide groups than in the placebo group (p=0.03 and p=0.001, respectively).

**Conclusion:** In this study of patients with relapsing multiple sclerosis, oral Teriflunomide was found to be effective in reducing relapse rates, progression of disability, and MRI evidence of disease activity.


**IMPACT OF FEAR AND CHRONIC LOW BACK PAIN**

Low back pain (LBP) has reached epidemic proportions in the industrialized world. Treatment strategies often shift from pain relief to pain management. However, few inventions have proven successful in treating acute LBP. Some have suggested that treatment failures may be related to an overly broad classification system. This study sought to describe the occurrence and the association of fear avoidance model variables in patients with specific or nonspecific, chronic LBP.

This prospective study included 147 consecutive patients examined by an orthopedic surgeon, each diagnosed as having chronic LBP. The subjects were classified as having specific LBP if the pain could be attributed to recognizable, known, specific pathology. These categories included disc herniation, isthmic spondylolisthesis and spinal stenosis. Before the initial visit, the participants completed questionnaires regarding age, pain duration, pain intensity, disability, subjective rating of kinesiophobia and depressed mood. The data were analyzed to determine how well three independent variables predicted levels of disability. These factors were back pain intensity, measured on a visual analogue scale, kinesiophobia, measured with the Tampa Scale of Kinesiophobia (TSK) and depression, measured using the Zung Self-Rating Depression Scale (SDS).

In both groups, elevated values were found on the fear avoidance model variables. In the specific, chronic LBP group, 75% of the patients reported having a disability, 60% had kinesiophobia and 80% had depressed mood. In the nonspecific, chronic LBP group, 85% reported having a disability, 70% had kinesiophobia and 80% had depressed mood. The fear avoidance variables were found to predict disability in both groups. In the specific group, all independent fear avoidance variables contributed to predict disability among those with chronic LBP. In the group with nonspecific pain, all variables except kinesiophobia contributed to the prediction of disability.

**Conclusion:** This study of patients presenting with chronic low back pain found that pain intensity, depression and kinesiophobia strongly predict disability.


**PAIN RELATED FEAR AND AVOIDANCE FOLLOWING DELAYED ONSET MUSCLE SORENESS**

Pain-related fear has emerged as a predictor of pain and disability in the acute, subacute, and chronic stages of back pain. This study examined the prospective relationship between pain related fear and physical performance in healthy individuals after experiencing an experimental induction of back pain.

Thirty subjects with no history of back pain, ranging in age from 18 to 24 years, were studied. All underwent baseline assessments, including the Pain Anxiety Symptoms Scale (PAIN) and the Tampa Scale for Kinesiophobia (TSK).

After baseline evaluation, using a lumbar exercise machine the participants were asked to perform an exercise protocol designed to induce delayed onset muscle soreness (DOMS) to the trunk extensor muscles. Upon their return, participants rated their current pain and completed the measure of DOMS-related interference. Participants then repeated the test of maximal trunk extensor performance. A hierarchical regression analysis was conducted to examine the relative contributions of demographic, pain and fear-related variables on performance at baseline and after DOMS sessions.

Pain-related fear was not significantly related to strength production prior to the induction of DOMS. Following the induction of DOMS, pain-related fear predicted reduced maximal strength production, and increased pain-related interference in life activities. Current pain intensity scores accounted for only four percent of the variance, while TSK scores accounted for 44% of the variance in predicting interference in life activities.

**Conclusion:** This study, examining the relationship between pain-related fear, physical performance, and pain-related interference found that pain-related fear is a significant predictor of outcome after the onset of pain.


**CERVICAL STRENGTH AND HEAD IMPACT BIOMECHANICS**

Very little is known about the forces which cause mild traumatic brain injury (TBI) and methods to reduce head impact forces. Some have speculated that cervical muscle strength may reduce the risk of mild TBI, by decreasing acceleration forces to the head during a collision.

This study investigated whether
greater cervical muscle strength results in lower head acceleration during impact.

Thirty-seven youth hockey players with an average age of 15 years were recruited from two AAA level travel teams. The rules in this league permitted body checks during competition. Cervical muscle strength was measured prior to the season using a handheld dynamometer, assessing the anterior neck flexors, cervical rotators, posteriolateral neck extensors, anteriolateral neck flexors and upper trapezius.

These measures were normalized to the player's mass and body size. During the season, the players wore helmets with six accelerometers to measure forces of impact. Outcome measures included linear head acceleration, rotational acceleration and Head Impact Telemetry (HIT) profiles. The latter were defined as weighted composite scores, including linear and rotational acceleration, impact duration and impact location data.

Baseline cervical muscle strength was averaged, and the players were divided into three groups (high, moderate or low strength). Over 98 games and 99 practices, a total of 7,770 impacts occurred. Upon comparing cervical strength to linear and rotational acceleration, no significant differences were seen in either acceleration type between low, moderate and high cervical strength groups. However, athletes with greater upper trapezius strength were found to have worse HIT scores.

**Conclusion:** This prospective study of youth hockey players did not find that increased cervical strength mitigates against head acceleration forces during collisions.


**COGNITIVE IMPAIRMENT AND MORTALITY**

Previous studies have demonstrated that severe dementia associated with Alzheimer's disease is related to an increased mortality rate. However, less is known concerning whether mild cognitive impairment has a similar impact on mortality. This study evaluated whether cognitive impairment is independently associated with long-term mortality among individuals 60 years of age or older.

This retrospective study included a cohort of 3,957 subjects, ages 60 to 102 years, presenting to a general medicine practice. All were screened with the Short Portable Mental Status Questionnaire (SPMSQ), a 10-question survey regarding short- and long-term memory, orientation, knowledge of current events and mathematical tasks. Depression and problematic alcohol use were also assessed. Survey results, as well as information regarding demographics, comorbidities, smoking history and body weight were obtained from electronic medical records. The researchers collected mortality data by requesting information from the National Death Index through December of 2006.

Over the observation period, the mortality rates for subjects with no cognitive impairment, mild cognitive impairment and moderate to severe cognitive impairment were 57.4%, 68.1%, and 78.6%, respectively. The median survival periods were 138, 106 and 63 months, respectively.

**Conclusion:** This study suggests that all levels of cognitive impairment, as determined by a single screening assessment, are associated with increased long-term mortality.


**ACIDIC FIBROBLAST GROWTH FACTOR FOR SPINAL CORD INJURY**

Acidic fibroblast growth factor (aFGF), in conjunction with a peripheral nerve graft, has been found to be beneficial in the repair of complete thoracic spinal cord transections in rodents. The success of connecting gray and white matter of a transected spinal cord is usually not clinically applicable due to the scarcity of such transection injuries in actual clinical practice. The repair strategy has been modified accordingly, sparing the need for peripheral nerve grafting. This study tested the efficacy and safety of aFGF, in combination with surgery, for patients with spinal cord injury.

This prospective, unlabeled, uncontrolled clinical trial included 60 patients with spinal cord injury, ages 16 to 68 years, with an injury duration of longer than 10 weeks. The aFGF was applied with fibrin glue and duraplasty via laminectomy. A booster of combined aFGF and fibrin...
Glue was administered at three and six months post-surgery via lumbar puncture. A comprehensive rehabilitation program was started after surgery and included bowel and bladder training, sensory and motor function and physical and occupational therapy. The patients were evaluated before and after surgery, as well as at three, six, 12, 18 and 24 months, using the ASIA Impairment Scales and the Functional Independence Measure (FIM).

Forty-nine patients completed the trial. At 12 and 24 months, ASIA motor scores had improved significantly among those with cervical injuries, as well as among those with thoracic injuries (p<0.001 for both comparisons). At 24-month follow-up, ASIA Impairment scores had improved significantly in the cervical, thoracic and thoracolumbar groups (p=0.011, p=0.003 and p=0.001, respectively). On the FIM, the average sum of motor items improved at each follow-up point in the cervical and thoracolumbar groups (p<0.05 for both). The walking/wheelchair locomotion subscale scores of the FIM revealed increases in the percentages of patients who were ambulatory in both the cervical and thoracolumbar groups.

**Conclusion:** This uncontrolled clinical trial of patients with acute or chronic spinal cord injuries found that the application of aFGF was safe and was related to significant improvements in motor and sensory scores, neurologic levels and scores on impairment scales at 24 months post-treatment.


**RECOVERY AFTER SPINE SURGERY**

Spinal surgery is among the most common inpatient surgical procedures in the United States. Despite advances in surgical techniques, outcomes realized by those surgeries remain highly variable. Recent studies have emphasized the importance of individual participation and responsibility in recovery. This study was designed to determine the association between preoperative patient activation and functional recovery.

This investigation included patients seen between 2005 and 2006 for the surgical treatment of degenerative lumbar spine stenosis. All subjects were at least 18 years of age. Patient activation was operationally defined as an individual’s propensity to engage in positive health behavior, as measured by the Patient Activation Measure, and categorized as one of four stages. In addition, the patients were assessed for levels of pain and disability and functional status. Comparisons were made as a function of patient activation, measured before surgery.

Patients with stage IV activation showed significantly greater declines in pain at follow-up than did those with stage I (p=0.029). Those with the highest stage of activation experienced a greater reduction in disability than did those in the lowest stage (p=0.035). Finally, those at the highest stage of physical activation experienced greater improvement in physical health than did those at the lowest stage (p=0.044).

**Conclusion:** This study of patients undergoing spine surgery found that those with a high level of positive health behavior before surgery experienced more improvements in pain, disability and physical health than did those with low levels of health behavior.


**SPINE SURGERY AND PAIN**

With the rates of spinal surgeries increasing, there is growing interest in evaluating postoperative outcomes and preventing negative outcomes. Studies have documented that up to 40% of patients with spinal stenosis who are treated surgically report residual chronic pain and restrictions in functional activity. This study assessed the effect of fear of movement on the outcomes of these surgical procedures.

This study employed 144 individuals with confirmed degenerative spine conditions who were scheduled to undergo a procedure. Ninety-two were treated surgically for lumbar degeneration and 49 for cervical degeneration. All were evaluated for fear of movement before surgery, after surgery and at six weeks and three months. The investigators used the Tampa Scale of Kinesiophobia to rate fear of movement and controlled for confounding variables.

There was a significant decrease in fear of movement beliefs from baseline to 6 weeks as well as from 6 weeks to 3 months (p < 0.001). Preoperative fear of movement was not a significant predictor of postoperative outcomes. However, patients who met the criteria for high postoperative fear of movement beliefs had poorer outcomes at both 6 weeks and 3 months after hospital discharge (p < 0.001). In addition, postoperative fear of movement was associated with postoperative pain intensity, pain interference, disability, and physical health.

**Conclusion:** This study of patients undergoing spine surgery for degenerative conditions found that postoperative fear of movement is significantly associated with worse postoperative outcome.


**DYSPHAGIA AFTER CERVICAL SPINAL CORD INJURY**

Dysphagia is a frequent complaint among patients with cervical spinal cord injury (SCI). Given that aspiration is a major risk factor for hospital acquired pneumonia, and given that patients with SCI frequently have respiratory problems, this study was designed to further explore swallowing function in patients with cervical SCI.

Data were retrospectively retrieved from the Yonsei Rehabilitation Hospital in Seoul Korea between May of 2001 and May of 2008. Medical records were reviewed to verify history of SCI, tracheostomy and pneumonia. Subjects were interviewed in order to identify symptoms of dysphagia. All patients underwent videofluoroscopic swallowing studies, with results compared with the clinical data.
This study included 121 patients with cervical SCI. A total of 35 (28.9%) showed signs indicating dysphagia. Seventy demonstrated abnormal findings on the videofluoroscopy studies, with 10 showing evidence of aspiration. Aspiration was significantly related to older age, the presence of a tracheostomy at the time of the study, and signs and symptoms of dysphagia. Incidence of aspiration did not differ by etiology of injury, ASIA classification or spinal surgical procedure. Of the 10 patients with aspiration, four did not report symptoms of dysphagia and two did not show clinical signs of dysphagia.

Conclusion: This study of patients with cervical spinal cord injury found that, while 29% demonstrate signs of dysphagia, only 8.3% show evidence of aspiration on videofluoroscopy.


DOSE RESPONSE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND COGNITIVE FUNCTION

Rapid population aging is now a worldwide phenomenon. Dementia is a major cause of morbidity among older people. As moderate exercise has been established as a protective factor against cognitive decline, this study explored the dose response association between physical activity and cognitive decline.

This study included subjects participating in the Guangzhou Biobank Cohort Study, which randomly selected participants from a large social and welfare association. A total of 27,651 individuals 50 to 85 years of age were recruited for participation. All subjects provided detailed information concerning physical activity, with metabolic equivalent values (METS) calculated. Based upon these calculations, the subjects were classified as physically active, moderately active, or inactive. Data were also obtained in an effort to determine anthropometrics, socioeconomic position, lifestyle and disease history. Cognitive function was assessed with the Delayed 10-Word Recall Test (DWRT). Mild cognitive impairment was defined as a score of less than four of 10.

Physical activity calculations revealed that 53.1% were physically active, 42.4% moderately active and 4.5% inactive. After adjusting for potential confounders, greater levels of physical activity were significantly associated with improved DWRT scores. This association was more pronounced among those with poor self-rated health. In this group, those in the highest quintile of physical activity had a 28% lower risk of mild cognitive impairment than did those in the lowest quintile.

Conclusion: This large Chinese study found a dose response relationship between physical activity and cognitive function among older adults.


MINIMAL PHYSICAL ACTIVITY AND EXTENDED LIFE EXPECTANCY

While much evidence suggests that 150 minutes or more per week of exercise can have substantial health benefits, this remains an underused public health intervention. Identification of the minimum amount of exercise sufficient to reduce mortality is a desirable goal. This study assessed the health benefits of different volumes of physical exercise.

In this historical, prospective cohort study, 416,175 healthy individuals were identified, ages 20 years or older, each of whom participated in a standard medical screening program. These subjects were followed up between 1996 and 2008. Each participant completed a self-administered questionnaire concerning medical history and lifestyle information. Through these results, physical activity level was assigned a metabolic equivalent value (MET) of 2.5 for light, 4.5 for moderate, 6.5 for medium vigorous or 8.5 for high vigorous exercise. Physical activity at work was also determined. Mortality risk was compared among the different exercise groups.

Compared with individuals in the inactive group, those on the low volume activity group who exercised an average of 15 minutes per day had a 14% reduced risk of all cause mortality and a three-year longer life expectancy. For every additional 15 minutes of daily exercise, up to 100 minutes per day, there was an additional reduction of 4% all cause and a 1% reduction of all cancer mortality. Compared with individuals in the inactive group, at age 30, life expectancy for individuals in the low volume activity group was 2.55 years longer for men and 3.1 years longer for women.

Conclusion: This study demonstrates that individuals who average 15 minutes of moderate intensity exercise per day can realize significant health benefits as compared to those who are inactive.


PHYSICAL TRAINING FOR OVERUSE INJURY

Muscle and tendon injuries are a common adverse outcome of physical activity. The treatment of these injuries is challenging, and recurrent injuries are common. Adductor-related groin pain is common among physically active individuals. In a randomized, clinical trial, a training program which included strength training resulted in a return of nearly 80% of athletes to their previous sport without any residual groin pain. This study assessed the long-term effect of such a program.

Between 1991 and 1995, 59 athletes with long-standing, adductor related groin pain were randomly assigned to an active training program or a passive training program. Active training included strength training of the adductor, abdominal and low back muscles, combined with coordination and balance exercises over a period of eight to 12 weeks. The passive training group received laser treatment, friction massage, stretching and transcunaneous electrical nerve stimulation. Outcome measures included pain at palpation of the adductor muscles, groin pain with athletic activity and return to sport without groin pain.
In the original study, 79% of the athletes in the active group returned to the previous level of sport without any groin pain, as compared with 14% in the control group. At eight- to 12-year follow-up, the majority of participants had reduced their level of activity, although no significant difference was found between the two groups. Upon assessing treatment outcome as poor, fair, good or excellent, a significant difference was seen between the groups in favor of active treatment (p=0.047).

**Conclusion:** This prospective, long-term study of patients with long-standing adductor related groin pain found that active treatment may have greater long-standing positive effects on recovery than passive treatment.


**RISK FACTORS FOR MENISCAL PATHOLOGY**

Meniscal lesions are frequent, incidental findings in middle-aged and elderly individuals undergoing magnetic resonance imaging (MRI) of the knee. The overall prevalence of meniscal pathology ranges from 19% in women ages 50 to 59, to 56% among men ages 70 to 90 years of age. As diminishing meniscal function is a strong risk factor for knee osteoarthritis (OA) and its progression, any such pathology may be a key factor in understanding the progression of OA. This prospective study evaluated potential risk factors that may be associated with meniscal pathology.

Subjects were followed in the Multicenter Osteoarthritis Study (MOST), a large, prospective cohort study of individuals ages 50 to 79 years of age. The primary goal of this study was to identify risk factors for incident and progressive knee OA. The subjects included 3,026 individuals recruited from two communities in the United States. All recruits were at higher than average communities in the United States. All individuals recruited from two study was to identify risk factors for incident and progressive knee OA. At baseline, the recruits were at higher than average communities in the United States. All individuals recruited from two study evaluated potential risk factors for the progression of medial meniscal pathology among middle-aged and elderly individuals.


**WEIGHT LOSS AND KNEE OSTEOARTHRITIS**

Epidemiological studies have found obesity to be an important risk factor for the development of knee osteoarthritis (OA). Obesity increases the load on the knee, and, when further aggravated by varus malalignment, this process can be accelerated. This study evaluated symptomatic improvement in patients with OA who were on an intensive low energy diet (LED).

This prospective, controlled trial randomized subjects to either 52 weeks of an intensive weight-loss therapy or 52 weeks of a moderate, conventional low-calorie high-protein diet, defined as the control. The LED group consumed 810 kcal/day of a nutritional power diet, administered for the first eight weeks. After eight weeks, guidance was provided to maintain a 1,200 kcal/day diet, returning to another four weeks of the 810 kcal/day diet between weeks 32 and 36. The control group received nutritional advice, which allowed the subjects to eat a variety of ordinary foods, providing approximately 1,200 kcal/day. In addition to body weight, the participants were assessed with the Western Ontario and McMaster Universities Index (WOMAC), addressing joint pain, stiffness and limitation of physical function.

At one year, the LED group exhibited a weight loss of 10.9 kg, compared to 3.6 kg for the control group (p<0.0001). No significant difference was noted between groups on total WOMAC indices. At one year, however, the pain subscale of the WOMAC demonstrated improvements of 7.7 mm in the LED group and only 0.5 mm in the control group (p=0.022).

**Conclusion:** This study demonstrates that, among patients with knee osteoarthritides, weight-loss can significantly reduce pain.


**ST ELEVATION IN ASYMPOMATIC ATHLETES**

Electrocardiogram has become an accepted part of the preparticipation examination (PPE) of athletes. This study investigated the prevalence and patterns of ST elevation in ambulatory patients and collegiate athletes in an attempt to discriminate normal variants from those associated with cardiac disease.

In this retrospective cohort study, electrocardiograms from 12,319 outpatients were obtained from the Veterans Affairs Palo Alto Health Care System. Excluded were those with atrial fibrillation or flutter, ventricular rates of greater than 100 beats per minute, QRS durations of greater than 120 milliseconds, paced rhythms, ventricular preexcitation, Q waves, ST depression or T-wave inversion. In addition, data were obtained from PPEs for the Stanford University varsity athletes in 2007. This PPE included computerized, 12-lead ECGs from 658 athletes. The two groups were screened for ST elevation and were compared for time...
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