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ORAL HEALTH AND RE-INJURIES IN SOCCER

Injuries in male elite soccer players are common, with one injury occurring for every 106 hours of sport related activity. As poor oral health is widely accepted as essential for good general health, this study evaluated the association between oral health and risk of injury.

Invitations were sent to members of soccer clubs, totaling 290 players. All participants received questionnaires concerning re-injuries, age, player position, oral health and psychosocial issues. Questions concerning re-injuries focused on 11 types of injury. Oral health was assessed as gum problems, restorations and apex resections. Other covariates assessed included eating habits, injury anxiety, psychophysical stress and dissatisfaction with the trainer/team.

Gum problems were reported by 16% and apex resections by 13%, while 56% reported one or more restorations. After adjusting for age, player position and psychosocial problems, poor oral health was significantly associated with re-injuries. Those with two or more oral health problems had an increased risk of muscle cramps (odds ratio 3.33), muscle or tendon injury (odds ratio 2.48) or multiple types of re-injury (odds ratio 3.4). In addition, those with increased injury anxiety scores, and those with psychosocial stress scores, were at increased risk of sustaining multiple types of re-injury.

Conclusion: This preliminary study of elite soccer players found associations between poor oral health and re-injury.

Solleveld, H., et al. Associations between Poor Oral Health and Re-injuries in Male Elite Soccer Players: A Cross-Sectional, Self-Report Study. *BMC Sports Sci, Med Rehab*. 2015. 7: 11.

CARE AND OUTCOMES OF IN-HOSPITAL STROKE

It is estimated that strokes occurring during hospitalization account for between four and seven percent of all acute strokes. This study was designed to better understand the care and outcomes of patients who sustain a stroke during hospitalization.

Data were obtained from the Ontario stroke registry database, with in-hospital strokes identified between July of 2003 and March of 2012. Those data were reviewed to determine the time from symptom onset to first neuronal imaging procedure. Secondary outcomes included time from stroke presentation to treatment and outcome of the stroke.

The study identified 29,810 patients with stroke, of whom 973 had in-hospital and 28,837 had community onset stroke. Compared to those with community identified strokes, patients with in-hospital strokes had longer times from symptom recognition to imaging (a median of 4.5 versus 1.2 hours, $p < 0.001$). Those hospitalized at the time of stroke also had lower rates of thrombolysis, longer door to needle times, were less likely to be cared for in a stroke unit, and had lower rates of neuroimaging, carotid imaging, Holter monitoring, and swallowing assessment ($p < 0.001$ for all comparisons). Patients with in-hospital stroke had a longer median length of stay, and were more likely to be disabled at discharge.

Conclusion: This study found that, compared with community onset stroke, patients with hospital onset stroke have longer delays before neuroimaging, are less likely to be cared for in a stroke unit and are more likely to be dead or disabled at discharge.

Saltman, A., et al. Care and Outcomes of Patients with In-Hospital

Stroke. *JAMA Neurol*. 2015, July 72 (7): 749 – 755.

COLLAGENASE FOR DUPUYTREN'S CONTRACTURE

Dupuytren's contracture (DC) is usually managed by conservative therapy, but can be treated with needling, enzyme injections or surgery, depending upon the severity. This study assessed the efficacy and safety of a modified treatment protocol using enzymatic injections for patients with DC.

This prospective cohort study included patients seen at one hospital with a diagnosis of DC between December of 2012 and November of 2013. All subjects had palpable cords with a restriction of range of motion of at least 20° in the metacarpophalangeal (MCP) joints and/or proximal interphalangeal joints. All were treated with collagenase clostridium histolyticum injections, with some receiving a larger than recommended dose. This treatment was followed by finger manipulation. Range of motion was measured before and after treatment.

Of the 164 hands treated, the mean baseline extension deficit was 79°. At a mean of 23 days after treatment, the mean change in the total extension deficit was 55°. Of those treated, 40% had skin tears, occurring more often among those with greater MCP extension deficits. At follow-up, all tears had healed. No other significant side effects were noted.

Conclusion: This study of patients with Dupuytren's contracture found that treatment with collagenase clostridium histolyticum results in significant improvement in range of motion, although with a high prevalence of skin tears.

Atroshi, I., et al. Collagenase Treatment of Dupuytren's Contracture Using a Modified Injection Method. A

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Prospective Cohort Study of Skin Tears in 164 Hands, Including Short-Term Outcome. **Acta Orthopedic.** 2015, June; 86(3): 310-315.

REPEATED HEAD TRAUMA AND THALAMIC VOLUMES

Previous studies of boxers have reported that the frequency and duration of fighting seems to be associated with cognitive or neurologic problems. This study included data from the Professional Fighters Brain Health Study (PFBHS), a longitudinal cohort of boxers and mixed martial arts fighters designed to understand the effects of repeated blows over time.

Participants were at least 18 years of age and were licensed to fight professionally in either boxing or mixed martial arts. A control group was recruited, matched for age and education, with no history of head trauma. Participants were seen for baseline evaluation and on an annual basis thereafter over the next four years. Baseline demographics and cognitive function were determined for all subjects. A high-resolution T1 weighted anatomical MRI was obtained with volumes of the hippocampus and amygdala, as well as the subcortical gray matter, calculated. Fighting exposure was determined by professional records.

Data were collected for 224 male fighters, including 93 boxers and 131 mixed martial artists, as well as 22 controls. The number of years of professional fighting ranged from zero to 24, with a mean of four years. Increased exposure, as measured by the number of professional fights or years of professional fighting, was associated with lower brain structure volumes, particularly subcortical structures. The most consistent relationships between exposure variables and brain volume involved the thalamus and caudate. Among the cognitive domains, only processing speed was related to volume of exposure. A significant relationship was seen between the number of professional fights and speed of processing ($p=0.041$), with an estimated 0.19% reduction in processing speed per fight.

Conclusion: This study of professional boxers and mixed martial artists found that increased exposure is associated with lower brain volume, particularly in the

thalamus and caudate, and with a decrease in processing speed.

Bernick, C., et al. Repeated Head Trauma Is Associated with Smaller Thalamic Volumes And Slower Processing Speed: The Professional Fighters Brain Health Study. **Br J Sp Med.** 2015, August; 49(15): 1007-1011.

STATIN INDUCED CAROTID PLAQUE REGRESSION

Cardiovascular disease is a major factor in the mortality gap between patients with and those without rheumatoid arthritis (RA). Despite this, no specific cardiovascular prevention guidelines have been created for patients with inflammatory joint disease. This study was designed to determine whether aggressive statin treatment affects cardiovascular risk factors in patients with inflammatory arthritis.

Subjects were patients with inflammatory arthritis who were statin naive, and for whom carotid plaque had been identified. The participants were initiated on rosuvastatin, 20 mg per day, with increasing doses titrated to achieve an LDL cholesterol level of 1.6 to 1.8 mmol per liter. The patients were evaluated by a cardiologist at three months and 18 months, with blood drawn to assess lipid profiles, liver enzymes, creatine kinase, sedimentation rate and C-reactive protein. Carotid ultrasound was used to assess carotid plaque.

After 18 months of treatment, the mean change in carotid plaque height was 1.9 mm. ($p<0.0001$). No significant change was seen in intima media thickness. In 72% of the patients with multiple carotid plaques, a reduction in height was seen in more than half of the plaques. No changes in measures of RA disease activity were noted. Further, no significant relationship was found between the degree of carotid plaque height reduction and LDL measurements or changes in measurements. A logistic regression analysis revealed that the change in carotid plaque height was not related to changes in body mass index, smoking status or treatment with anti-rheumatic medication.

Conclusion: This uncontrolled study of patients with inflammatory arthritis found that intensive lipid

lowering treatment with rosuvastatin induced atherosclerosis regression.

Rollefstad, S., et al. Rosuvastatin-Induced Carotid Plaque Regression in Patients with Inflammatory Joint Diseases. *Arthr Rheum.* 2015, July; 67(7): 1718-1728.

THROMBECTOMY IN STROKE

Mechanical thrombectomy has been proven to be of benefit when implemented early after ischemic stroke onset. This study compared the efficacy and safety of combined neurovascular thrombectomy and medical therapy with medical therapy alone for patients with acute ischemic stroke.

Eligible patients were 18 to 80 years of age with acute ischemic stroke by large proximal vessel occlusion, seen at one of four Spanish treatment centers between November of 2000 and December of 2014. Subjects were seen within eight hours of symptom onset. All demonstrated pre-stroke functional ability of one or less on the modified Rankin Scale (mRS) and baseline scores of six points or more on the National Institute of Health Stroke Scale (NIHSS). The 206 participants were randomized to receive medical reperfusion therapy alone (control group) or to that treatment plus endovascular reperfusion therapy (treatment group). The primary outcome variable was the severity of disability at 90 days, as measured by the mRS.

Improvement in the distribution of the mRS scores favored the thrombectomy group (odds ratio 1.7). The absolute difference in the proportion of patients functionally independent was 15.5% percentage points, favoring the thrombectomy group, with an adjusted odds ratio of 2.1. No significant differences were found between groups in rates of death or symptomatic intracranial hemorrhage. The study was halted prematurely due to a demonstration of a lack of equipoise.

Conclusion: This prospective study of patients with acute ischemic stroke supports the efficacy of endovascular treatment combined with medical treatment.

Jovin, T., et al. Thrombectomy within 8 Hours after Symptom Onset in

Ischemic Stroke. *N Eng J Med.* 2015, June 11; 372(24): 2296-2306.

SIMVASTATIN AND EZETIMIBE VERSUS SIMVASTATIN MONOTHERAPY AFTER ACUTE CORONARY SYNDROME

Many studies have demonstrated that statins reduce the risk of recurrent cardiovascular events, while studies of Ezetimibe (an inhibitor of cholesterol absorption) have shown this drug to reduce plasma cholesterol levels. This study evaluated the effectiveness of combining these two medications, as compared to the use of simvastatin alone.

This double-blind, randomized, controlled trial included 18,144 patients hospitalized with acute coronary syndrome. The patients were randomly assigned to a group receiving simvastatin 40 mg plus Ezetimibe 10 mg daily or simvastatin 40 mg, plus placebo. The primary endpoints were composite death from cardiovascular disease, a major coronary event or nonfatal stroke, as measured at seven years.

Of the patients studied, 9,077 were assigned to the simvastatin group and 9,067 to the combination group. At one year, levels of total cholesterol, triglycerides, non-high-density lipoprotein, cholesterol, apolipoprotein-B and high sensitivity C-reactive protein were all significantly lower in the combination group than in the monotherapy group. At seven years, the primary endpoint occurred in 32.7% of the combination group and 34.7% in the monotherapy group ($p=0.016$). No significant group differences were noted in adverse events.

Conclusion: This prospective, multicenter study found that, when added to statin therapy, Ezetimibe can assist in lowering lipid levels and improving cardiovascular outcomes.

Cannon, C., et al. Ezetimibe Added to Statin Therapy after Acute Coronary Syndromes. *New Eng J Med.* 2015, June 18; 372(25): 2387-2397.

TREATMENT RESISTANT HYPERTENSION AMONG PATIENTS WITH STROKE

Reports of risk factor management among stroke survivors

have revealed a low prevalence of adequate blood pressure control. This study was designed to determine the prevalence and factors associated with apparent treatment resistant hypertension (ATRH).

Data were obtained from a national, population-based, cohort study of 11,719 community dwelling individuals at least 45 years of age at enrollment who were treated for hypertension. Of these, 1098 had a history of stroke or TIA. The patients were assessed by interviews to obtain demographics, medical history, including medications, with a follow-up in-home visit for a physical examination. The participants provided prescription or nonprescription medications taken in the past two weeks. An ATRH was defined as systolic blood pressure of at least 140 mmHg, or diastolic blood pressure of at least 90 mmHg, while taking at least three classes of antihypertensives or requiring four or more antihypertensives regardless of blood pressure.

In the entire cohort, ATRH was found in 18.2%, including 24.9% of those with a history of TIA or stroke, and 17% of those with no such history. After adjusting for age, race, and gender, compared to those with no history of stroke or TIA, those with such a history were 31% more likely to have ATRH, and those with a history of stroke were 36% more likely to have ATRH. The prevalence of ATRH decreased with increasing levels of physical activity, and increased with male gender, black race, larger waist circumference and duration of hypertension.

Conclusion: This study found that, among patients treated with hypertension, apparent treatment resistant hypertension occurred in 24.9% of those with a history of stroke and in 17% of those without a history of stroke or transient ischemic attack.

Howard, V., et al. Apparent Treatment-Resistant Hypertension among Individuals with a History of Stroke or Transient Ischemic Attack. *Am J Med.* 2015, July; 128(7): 707-714.

GANGLION BLOCK FOR CHRONIC COCCYGODYNIA

Coccygodynia results in pain in the region of the sacrococcygeal joint.

In cases not responsive to conservative treatment, direct injections around the coccyx, caudal epidural blocks, or ganglion impar blocks have been used. Data concerning ganglion impar blocks is limited to case reports or small case series. This study was designed to better understand the effect of fluoroscopically guided transsacroccygeal ganglion impar blocks for patients with coccygodynia.

Subjects included 22 patients with coccygodynia not responsive to conservative treatment. All patients underwent a fluoroscopy guided transsacroccygeal ganglion impar block, with needle positioning verified by contrast. The injections consisted of 2 mL of 0.5% bupivacaine, 2 mL of saline and 1 mL of 40 mg of methylprednisolone. Intensity of pain was measured with a 10 cm visual analogue scale before, and then one hour and three weeks after the injection.

At baseline, the median pain on a 10-point VAS scale was nine. After the first injection, the median VAS score was two. Of the 19 technically successful injections, one patient experienced no relief and 18 had a least 50% relief. A second injection was administered to the three patients with a technical failure during the first injection, and to five patients whose relief from the first injection had ceased. In all cases, at least 50% relief was achieved, persisting for a median duration of 17 months.

Conclusion: This uncontrolled study of patients with chronic coccygodynia found that a transsacroccygeal ganglion impar block can significantly reduce pain in the majority of these patients.

Gunduz, O., et al. Pain Relief Due to Transsacroccygeal Ganglion Impar Block in Chronic Coccygodynia. *Pain Med.* 2015, July; 16(7): 1278-1281.

PLATELET RICH PLASMA VERSUS VISCOSUPPLEMENTATION FOR KNEE OSTEOARTHRITIS

Osteoarthritis (OA) of the knee is a common condition that can result in pain and decreased functional capacity. Among new treatments for OA are biologic treatments including platelet rich plasma (PRP). This study evaluated the benefit of PRP as compared to that of hyaluronic acid (HA) for the treatment of OA.

This randomized, double-blind trial included adult patients less than 80 years of age with unilateral, symptomatic OA of the knee, and with imaging findings of cartilage degeneration. The subjects were randomly divided into two treatment groups, receiving three weekly intra-articular injections of PRP or high molecular weight HA. The participants were evaluated at baseline and then at two, six and 12 months, using the International Knee Documentation Committee's (IKDC) subjective measures, Knee Injury and OA Outcome Scores (KOOS), the EuroQol visual analogue scale Tegner scores, range of motion and transpatellar circumference.

Significant improvements were noted on all scales, except range of motion, for both treatment groups, including improvements in pain and function. No significant difference in any outcome was noted for between groups. There were two episodes of transient pain and swelling in the PRP group, with no severe events in either group.

Conclusion: This study of patients with osteoarthritis of the knee found that platelet rich plasma provides similar improvement in function and symptom reduction to those of hyaluronic acid.

Filardo, T., et al. Platelet Rich Plasma Intra-Articular Knee Injections Showed No Superiority Versus Viscosupplementation. *Am J Sport Med.* 2015, July; 43 (7): 1575-1582 T.

PLANTAR FASCIITIS TREATED WITH POLYDEOXYRIBONUCLEOTIDE

Plantar fasciitis is a common cause of heel pain, and is a frequent complaint of athletes. As polydeoxyribonucleotide (PDRN) has been found to have anti-inflammatory and immune modulating properties, this study was designed to measure the efficacy of PDRN injections as a treatment option.

This prospective, randomized study included 40 patients clinically diagnosed with plantar fasciitis. The subjects were randomized to receive either a PDRN or a placebo injection. All participants were assessed at baseline and at four and 12 weeks' follow-up using a visual analogue scale (VAS) for pain, and the

Manchester-Oxford Foot Questionnaire (MOXFQ).

At four weeks, the treatment group had achieved significant improvement on both the VAS and MOXFQ, with that improvement continuing until 12 weeks. No significant improvement was seen in the placebo group. At four weeks' follow-up, the VAS average score of the treatment group was 4.7 and of the placebo group 5.9 ($p=0.06$), while, at 12 weeks, the average VAS of the treatment group was 3.7, and of the placebo group was 6.3 ($p<0.001$). Similar results were found on the MOXFQ, with significant differences evolving at 12 weeks, as compared with the placebo group ($p<0.001$).

Conclusion: This prospective, blinded study of patients with chronic plantar fasciitis found that a polydeoxyribonucleotide injection can improve pain and outcome.

Kim, J., et al. Effectiveness of Polydeoxyribonucleotide Injection versus Normal Saline Injection for Treatment of Chronic Plantar Fasciitis: A Prospective, Randomized, Clinical Trial. *Intern Ortho.* 2015; 39 (7): 1329-1334.

NEUROMODULATION FOR ACUTE BRAIN INJURY

In recent years, neuromodulation has been of increasing interest as a treatment regimen to increase brain activity after stroke. However, few studies have focused on its effects after traumatic brain injury (TBI). This animal study assessed the effects of epidural electrical stimulation (EES) and repetitive transcranial magnetic stimulation (rTMS) on recovery of motor function and brain activity after TBI.

This trial included 30, male Sprague Dawley rats which were initially trained in a single pellet reaching task (SPRT) and the rotarod task (RRT). The animals were then subjected to a cortical impact and a fluid percussion brain injury. They were then randomly assigned to receive EES, rTMS or sham treatment for 14 days after injury. The animals were then retested with the SPRT and the RRT. At two weeks, the animals were euthanized for histopathologic examination.

The success rates on the SPRT and the RRT were significant higher

in the EES group than in the sham group ($p < 0.05$ for both comparisons). In the EES group, SPRT success was significantly higher than in the sham group on postoperative days eight through 12 ($p < 0.05$). In the rTMS group, the improvement in the SPRT success rate was significantly higher between postoperative days four and 14 ($p < 0.05$). Performance on the RRT did not differ significantly between the three groups on postoperative day 14. Immunohistochemical staining revealed that the expression of C-Fos (a measure of plasticity) was lower in the sham group than in either treatment group, as well as in the non-stimulated side of the EES group as compared with the stimulated side.

Conclusion: This animal study found that transcranial magnetic stimulation, as well as epidural electrical stimulation, can be used to enhance motor recovery and brain activity after brain injury.

Yoon, Y., et al. Effect of Epidural Electrical Stimulation and Repetitive Transcranial Magnetic Stimulation in Rats with Diffuse Traumatic Brain Injury. *Annals of Rehab Med*. 2015, June; 39(3): 416-424.

EXERCISE PRACTICE RATE VERSUS INTENSITY FOR OBESE WOMEN

The World Health Organization recommends a minimum of 150 minutes of moderate intensity aerobic physical activity per week to maintain physical fitness and control body weight. As low to moderate cardiorespiratory exercise intensity has been shown to improve some components of the metabolic syndrome in postmenopausal women, this study evaluated the efficacy of a 16-week walking program in this population.

This study included healthy, sedentary, Caucasian, postmenopausal women 50 to 65 years of age with a body mass index of 29 to 35 kg/m². The subjects were engaged in three sessions per week of 45 minutes of walking at 60% of heart rate reserve (HRR). All participants used a portable heart rate monitor. The women were assessed at baseline for body composition, and for physical fitness with a two kilometer walking test and with lipid-lipoprotein profiles.

Adherence to exercise sessions was documented, with outcomes compared between those with adherence rates of less than 71%, 71-87% and over 87%. A comparable analysis was also made of average walking intensity ($< 56\%$, 56-63%, $> 63\%$ HRR).

The mean exercise adherence was 77.3% with a mean intensity 57.8% of HRR. Body weight, fat mass and waist girth decreased in all groups ($p < 0.001-0.05$). The greatest weight loss was among those in the group with the highest adherence ($p < 0.0001$), with no differences noted between intensity groups. The fasting lipid-lipoprotein profile improved in all groups, with no significant difference between groups.

Conclusion: This study involving sedentary, post-menopausal, moderately obese women found that three sessions of walking per week resulted in significant improvements in weight, cardiovascular fitness and lipid profiles.

Garnier, S., et al. Is Practice Rate Rather than Exercise Intensity More Important in Health Benefits in Moderately Obese Postmenopausal Women? *Annals Physical Rehab Med*. 2015, June; 58(3): 119-125.

CALMARE THERAPY FOR PAIN REDUCTION

Calmare therapy has emerged as a novel therapeutic modality for providing pain relief. Similar to transcutaneous electrical nerve stimulation, Calmare therapy differs by placing electrodes on normal non-painful areas surrounding the area of pain, stimulating the surface receptors of C fibers. This study was designed to identify factors associated with outcomes of Calmare therapy.

This multicenter study identified patients 18 years of age or older with chronic pain refractory to conventional treatments. During treatment sessions, stimulation intensity was increased until a maximum tolerated strength was reached, with each session lasting 40 to 60 minutes. The subjects were assessed for neuropathic pain, with successful treatment defined as a 50% or greater reduction in pain on a 10-point scale.

Data were collected concerning 147 patients with a mean age of 37.6

years, completing an average of 20.3 treatment sessions. Nearly half (49.7%) were diagnosed with neuropathic pain, 30.6% with nociceptive pain and 19.7% with mixed pain conditions. Of the entire group, 38.1% experienced a successful outcome. Higher success rates were realized among older individuals, females, patients with neuropathic pain, those with chemotherapy induced peripheral neuropathy and those not receiving opioid treatment ($p = 0.0007$, $p = 0.014$, $p = 0.0006$, $p = 0.004$ and $p = 0.028$, respectively).

Conclusion: This study of patients with chronic pain found that Calmare therapy can be successful in patients with neuropathic or mixed pain conditions.

Moon, J., et al. Predictive Factors Associated with Success and Failure for Calmare (Scrambler) Therapy: A Multicenter Analysis. *Clin J Pain*. 2015, August; 31(8): 750-756.

ANTIDEPRESSANT USE AND COGNITIVE DECLINE

Depression is consistently associated with cognitive impairment and increased risk for dementia. This study was designed to better understand the association between pharmacologic treatment of depression and cognitive decline.

Data for this study were derived from the nationally representative Health and Retirement Study (HRS) and the HRS Prescription Drug Study (PDS), which included serial assessments of cognitive function, depression and antidepressant treatment. Data were drawn from the 2004, 2006, 2008 and 2010 findings of the HRS and from the 2005 and 2007 findings of the PDS. Baseline depression status was determined using the 2004 wave of the HRS.

Of the 3,714 respondents, 12% were taking antidepressant medication at baseline. No significant differences were detected in cognition scores between the patients taking antidepressants and those who were not. At six year follow-up, both users and nonusers of antidepressants had experienced a cognitive decline. Adjusted analysis revealed that cognitive decline did not differ between those taking and those not taking antidepressant medications.

Conclusion: This longitudinal study of a population representative cohort of older adults found that antidepressant use is not associated with changes in cognitive function over a six-year period.

Saczynski, J., et al. Antidepressant Use and Cognitive Decline: The Health and Retirement Study. *Amer J Med.* 2015, July; 128(7): 739-746.

OBESITY PARADOX IN TYPE II DIABETES

The association between obesity and an increased risk for cardiovascular disease is well established. However, there is growing evidence that overweight patients with cardiovascular disease survive longer than do their normal weight counterparts, an effect referred to as the "obesity paradox". This study was designed to determine whether such a paradox exists among patients with diabetes mellitus (DM).

Patients with known type II DM diabetes, followed in a British clinic, were enrolled in an electronic database from 1995 to 2005. Data collected included comorbid conditions, age, diabetes history and duration, smoking history, height, weight and blood pressure, collected at the time of the initial visit. This cohort was followed for clinical events until 2011. The primary outcome measure was all-cause mortality, with the secondary outcome being hospitalizations for cardiovascular events.

A total of 10,568 patients with an average age of 63 years were followed for an average of 10.6 years. Overweight or obese patients had a higher rate of cardiac events requiring hospitalizations than did those with normal weight. However, the risk for cerebrovascular accidents was greater only in those with a body mass index of 30 to 34.9 kg/m² and among those in the 57 to 67 year age group.

Assessment of mortality risk of those hospitalized for these events revealed a survival advantage for higher body mass index categories (p<0.001). A Cox regression analysis demonstrated that those who were overweight had a reduced mortality risk as compared to normal weight individuals, while those who were obese had a similar mortality risk as

those with normal weight. The lower mortality risk conferred by being overweight or obese developed around age of 60 years.

Conclusion: This study of patients with type II diabetes found that being overweight or obese was associated with a higher risk of nonfatal cardiovascular events, but not a higher risk of mortality.

Costanzo, P., et al. The Obesity Paradox in Type II Diabetes Mellitus: Relationship with Body Mass Index to Prognosis. *Ann Intern Med.* 2015, May; 162(9): 610-618.

ANTI-SEIZURE MEDICATIONS AND INTELLIGENCE QUOTIENT

Some antiepileptic drugs (AEDs) have been shown to interfere with normal brain development early in life. In addition it is well recognized that many AEDs can adversely affect cognition. This study investigated the effect of drug withdrawal on intelligence after epilepsy surgery.

The Time to Stop (TTS) study, a retrospective, European, multicentre, cohort study, collected data regarding AED withdrawal as related to seizure outcome. Subjects were patients younger than 18 years of age at the time of surgery, who began AED reduction postoperatively, all with at least one year of postoperative follow-up. All participants had undergone pre-and at least one post-operative neuropsychological assessment. Analyzed were the association between AED withdrawal, IQ and delta IQ.

The mean age at surgery was 9.6 years, with a mean of 19.8 months between surgery and the latest neuropsychological assessment. The mean IQ change for all patients who reduced or stopped AEDs was 4.6 points, while that for those who achieved complete withdrawal was 5.6. A significant relationship was found between the number of AEDs reduced and a greater gain in IQ (p<0.001).

Conclusion: This study of children undergoing epilepsy surgery found that withdrawal of antiepileptic drugs is independently associated with improvement in intelligence quotient.

Boshuisen, K., et al. Intelligence Quotient Improves after Antiepileptic Drug Withdrawal following Pediatric

Epilepsy Surgery. *Ann Neurol.* 2015, July; 78(1): 101-114.

OVERUSE INJURIES IN COLLEGE AND HIGH SCHOOL ATHLETES

Overuse injuries result from the accumulating microtrauma in a variety of tissues. This study used data from two large, national injury surveillance systems to describe the epidemiology of overuse injuries among college and high school athletes.

Data were obtained from the National Collegiate Athletic Association's Injury Surveillance System and the High School Reporting Information Online. Overuse injury rates were calculated as the number of injuries per 10,000 athletic exposures.

The rate of overuse injuries was 3.28 times higher in collegiate athletes than in high school athletes, and higher among women than men in each sport. In both populations, overuse injuries were primarily reported in noncontact running sports, with the highest rates for college women's/girls' cross country (19.59), college women's/girls' outdoor track and field (15.76), college men's/boys' cross country (13.67), and college men's/boys' outdoor track and field (13.56). Most (70%) of overuse injuries were in the lower extremity. The majority of injured athletes returned to sports activity within the same season, with 20% of college and 7.7% of high school athletes taking longer than 21 days to return.

Conclusion: This study of collegiate and high school athletes found that injuries due to overuse are over three times higher in college and high school, and higher among females than among males.

Roos, K., et al. Epidemiology of Overuse Injuries in Collegiate and High School Athletes in the United States. *Am J Sp Med.* 2015, July; 43 (7): 1790-1794.

CHOLINESTERASE INHIBITORS FOR PARKINSON'S DISEASE

Among the non-motor features of Parkinson's disease (PD), cognitive impairment has been shown to have a high, negative impact on the patient's quality of life. Postmortem

studies of patients with PD have shown degeneration of cholinergic and nigrostriatal pathways. This systematic review was undertaken to clarify the efficacy of cholinesterase inhibitors (ChIs) for symptoms of PD.

Four databases were searched with 945 articles identified by the initial search. From these, four randomized, controlled trials, were included in the meta-analysis. Among those were one comparing rivastigmine with placebo, and three comparing donepezil with placebo. The primary outcome measure was cognitive function, assessed using the Mini Mental State Examination, and rate of falls. Safety measures and secondary outcomes were also included.

The meta-analysis revealed that ChIs significantly slowed MMSE decline ($p=0.001$), without improving the risk of falls ($p=0.681$). Alzheimer's Disease Assessment-cognitive subscale, global assessment and behavioral disturbance improved in the ChIs group ($p<0.001$, $p<0.001$ and $p=0.025$, respectively), without impacting disability ($p=0.053$). Death rate was significantly decreased in the ChIs group (odds ratio 0.295; $p=0.01$). Increased tremor rates and adverse reactions were noted in the ChIs group ($p=0.001$ and $p<0.0001$, respectively).

Conclusion: This meta-analysis of patients with Parkinson's disease, treated with cholinesterase inhibitors, found that these medications can treat cognitive impairment but do not significantly improve gait dysfunction and fall risk.

Pagano, G., et al. Cholinesterase Inhibitors for Parkinson's Disease: A Systematic Review and Meta-analysis *J Neurol Neurosurg Psychiatr*. 2015, July; 86(7): 767-773.

INHALED CANNABIS AND PAINFUL DIABETIC NEUROPATHY

Diabetic peripheral neuropathy (DPN) has been increasing, now affecting an estimated 366 million individuals worldwide. Preclinical studies have shown that a major cannabinoid receptor, CB1, is expressed in regions involved in the dorsal root ganglion, periaqueductal gray, raphe nucleus and forebrain. In addition, animal models of neuropathic pain, including diabetic neuropathy, suggest that

cannabinoids may be effective in reducing pain. This study evaluated the effects of low, medium and high dose inhaled cannabis on the pain and hyperalgesia of DPN.

This randomized, double-blind, placebo-controlled, crossover trial studied 16 patients with painful DPN. All subjects participated in four sessions, separated by two weeks, involving exposure to a placebo or low (one percent THC), medium (four percent THC) or high (seven percent THC) doses of cannabis. Pain was assessed with a 10-point visual analogue scale at baseline and at five, 15, 30, 45 and 60 minutes, and then every 30 minutes for an additional three hours. Cognitive testing, using the Trail Making Test, Parts A and B, and the Paced Auditory Attention Test, was performed at five and 30 minutes, and then every 30 minutes, for three hours.

Spontaneous pain was reduced by an average of 1.1 points with greater reduction with higher doses ($p=0.001$). In addition, for evoked pain conditions, significant differences over placebo were noted in medium and high doses. Neuropsychological test results demonstrated impaired performance on two of three neuropsychological tests among patients who received the high-dose.

Conclusion: This small, placebo-controlled trial of inhaled cannabis demonstrated a dose dependent reduction in diabetic peripheral neuropathy pain.

Wallace, M., et al. Efficacy of Inhaled Cannabis on Painful Diabetic Neuropathy. *J Pain*. 2015, July; 16 (7): 616-627.

PERIPROSTHETIC JOINT INFECTION AND SUBSEQUENT SURGICAL SITE INFECTION

Studies have demonstrated that, when a patient presents with a periprosthetic joint infection (PJI) at a single site, there is a 15 % risk of PJI with prosthetic surgery at a second site. This study was designed to determine whether there is a difference in the risk of PJI after a second total hip arthroplasty (THA) or total knee arthroplasty (TKA) among patients with previous PJI at other anatomical sites.

This retrospective, matched, cohort study used databases of four academic institutions. The sample comprised 90 patients treated for PJI, subsequently undergoing a THA or TKA at another anatomical site. A control group comprised 90 patients who had had a prior THA or TKA procedure that was not complicated by PJI, who then underwent a second arthroplasty.

Ten of 90 patients in the sample had a second PJI, as compared with zero of 90 in the control group ($p=0.035$). In patients with a prior history of PJI, a high frequency of second infection was noted in female patients and in patients whose initial infection was with staphylococcus species.

Conclusion: This study of patients with a history of periprosthetic joint infection found that these individuals are at increased risk for infection with subsequent arthroplasties in other joints.

Bedair, H., et al. A History of Treated Periprosthetic Joint Infection Increases the Risk of Subsequent Different Site Infection. *Clin Ortho Related Res*. 2015, July; 473: 2300-2304.

HIP OSTEOARTHRITIS AND MORTALITY IN OLDER WOMEN

Osteoarthritis (OA) affects 27 million adults in the United States, primarily impacting the knees, hips and small joints of the hand. Those with OA are more likely than the general population to have certain comorbid conditions, including obesity, heart disease and gastrointestinal disease. This study was designed to determine the risk of all-cause and disease specific mortality among older women with hip OA.

Data were obtained from the Study of Osteoporotic Fractures (SOF), a prospective cohort study of women 65 years of age or older, recruited from four metropolitan areas in the United States. The original cohort comprised 9,704 Caucasian women, recruited from 1986 through 1988, all able to walk without assistance. Hip radiographs were obtained at baseline and at year eight, with radiographic hip OA (RHOA) determined for each. The patients were followed for 16 years, with all deaths verified and hospital

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discharge summaries obtained. Twelve potential confounders related to both hip osteoarthritis and mortality were selected for consideration in multivariate models.

The results revealed an eight percent prevalence of RHOA at baseline, and an 11% prevalence at eight-year follow-up. RHOA was associated with an increased risk of all-cause mortality (Hazard Ratio=1.14) and cardiovascular disease mortality (Hazard Ratio=1.24) after adjusting for age, BMI, education, smoking status, health status, diabetes and stroke. The authors estimated that 42% of the increase in all-cause mortality and 25% of the increase in cardiovascular disease mortality could be explained by poor physical function.

Conclusion: This study of women 65 years of age or older found that hip osteoarthritis is an associated with an increased risk of all-cause and cardiovascular disease mortality.

Barbour, K., et al. Hip Osteoarthritis and the Risk of All-Cause and Disease Specific Mortality in Older Women. *Arthritis Rheum.* 2015, July; 67(7): 1798-1805.

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