

Austin Quan Yin Newsletter

The Better Health News

Special Interest Articles:

- Link between knee injuries and the menstrual cycle
- Insulin insensitivity and sleep
- Congestive heart failure
- CoQ₁₀, and exercise performance
- Arginine and congestive heart failure
- Hawthorn and CHF
- Congestive heart failure and thiamin

Exercise-Induced Asthma & Fish Oil

A small study appearing in the journal *Chest* (2006; 129(1): 39-49) looked at essential fatty acid supplementation and its effect on exercise induced asthma. The subjects of the study were 16 asthmatic patients with exercise induced bronchospasm (EIB). They were randomly divided into two groups with one group receiving fish oil capsules and the other receiving a placebo for a period of three weeks. During the study the subjects stopped taking their usual medication. After a two-week washout period, the placebo group and the supplement group were

switched, with the original placebo group receiving the supplement and the original supplement group receiving the placebo (crossover study).

Subjects taking fish oil reduced bronchodilator usage by 31%. They also had improved pulmonary function to below the diagnostic EIB threshold (64% improvement). Chemical markers of inflammation (leukotrienes, prostaglandin D-2, interleukin-1 beta and tumor necrosis factor-alpha) were all reduced.

Vitamin B₁₂ and Cognition

Vitamin B₁₂ does seem to help with cognitive function. A small pilot study, appearing in the *Journal of the American Geriatric Society* (February 1992;40(2):168-172) looked at 22 subjects with low serum B₁₂ levels in conjunction with cognitive dysfunction. The subjects received B₁₂ injections (1000 milligrams) daily for one week, weekly for four weeks then monthly for a period of six months. At the beginning of the study and after at least six months of therapy, the subjects

were evaluated with the Mattis Dementia Rating Scale. Of the 18 patients who finished the study, 11 showed improvement. The amount of improvement experienced by the subjects correlated with the amount of time they had exhibited symptoms. The authors of this study believe that there is a narrow window of opportunity to treat patients with cognitive problems due to vitamin B₁₂ deficiency and that elderly patients should be regularly screened.

Link between Knee Injuries and Menstrual Cycle

The researchers found that ACL injuries were more common during the ovulatory phase of the menstrual cycle—this is when the estrogen levels are at their highest.

According to researchers, in female athletes, knee injuries are more likely to occur when estrogen levels are highest. A research project conducted in 1997 by the University of Michigan and the Cincinnati Sports Medicine Clinic studied 40 female athletes with acute anterior cruciate ligament injury (a ligament that supports the knee—these are serious injuries that often require surgery).

Injuries to the anterior cruciate ligament (also called the ACL) are becoming increasingly common in women. The researchers found that ACL injuries were more common during the ovulatory phase of the menstrual cycle—this is when the estrogen levels are at their highest. This occurs around the middle of the cycle (between days 10 and 14). The scientists think that estrogen and relaxin may possibly have a pronounced effect on the mechanics of connective tissue like ligaments

and tendons, and on neuro-muscular systems in women.

The study also found that just under two-thirds of the ACL injuries in the women studied occurred during a game. Almost two-thirds of the injuries happened during the first half-hour of play. The injuries did not seem to be influenced by the type of shoes that were worn.

It is possible that women have more knee injuries because of their body mechanics. For example, wider hips place greater pressure on the inside of the knee and less leg-muscle strength and endurance. Some believe that women's knees are more susceptible to knee injury because female athletes, in general, rely excessively on their quadricep muscles and too little on their hamstrings. These mechanical considerations do not explain the possible connection between knee injuries and hormone levels.

Insulin Insensitivity and Sleep

Research published in *Family Practice News* (April 1, 2005:1,4) looked at 44 healthy adults and their sleep patterns. Half of the group slept a normal amount of time each night (averaging 7 hours, 52 minutes of sleep each night) and half of whom were described as chronic "short sleepers", averaging only 5 hours and 16 minutes of sleep each night. Overall, the short

sleepers tended to have lower insulin sensitivity when compared to the group who slept normally. In general, obesity is inversely related to the amount of time spent sleeping. Sleep deprived individuals generally experienced improved results on glucose tolerance tests when they increase the amount of sleep they get.

CoQ10 and Exercise Performance

Coenzyme Q₁₀ is also known as ubiquinone. The letter Q refers to quinone, which is a chemical group derived from aromatic rings. The number 10 refers to the 10 isoprene (CH₂=C(CH₃)CH=CH₂) units attached to the molecule. CoQ₁₀ is found in all human cells. It is found primarily in the mitochondria and is vital for the production of energy in the cell. CoQ₁₀ is found in high levels in cells that require a lot of energy, like the cells of the heart, liver and kidney. CoQ₁₀ is oil-soluble and also acts as an antioxidant.

Since it is so important for cellular energy, CoQ₁₀ turns out to be a great supplement for sports performance. A study appearing in the *British Journal of Nutrition* (2008, 100: 903-9097) looked at CoQ₁₀ supplementation and muscle damage after intense exercise. This was a double-blind, placebo controlled study. Athletes were given either 300 mg of CoQ₁₀ or a placebo for 20 days. During the course of the study they exercised intensely for 5^{1/2} hours each day for six days. Blood tests to indicate the level of muscle damage were taken (myoglobin, and creatine kinase). The muscle-

damage indicators increased in both groups, but were significantly lower in the group receiving the supplement.

Another double-blind, placebo-controlled study, appearing in the *Journal of the International Society of Sports Nutrition* (2008; 5(1): 8) looked at CoQ₁₀ supplementation along with athletic performance. The participants of the study were 22 trained athletes and 19 untrained subjects. An hour before a series of exercise tests they were randomly given either a placebo or 200 mg of Coenzyme Q₁₀. Blood samples and muscle biopsies were taken before and after exercise. The subjects were then given either a placebo or 100 mg of Coenzyme Q₁₀ twice each day for a period of two weeks. At the end of the period they performed the same exercises and were tested in the same way. A trend for increased time to exhaustion was observed following 2 weeks of CoQ₁₀ supplementation.

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D-Ribose

D-ribose is a naturally occurring five-carbon sugar found in all living cells.

Though not an essential nutrient since it can be made in the body from other substances such as glucose, D-ribose, however, is essential for life. Some of the most important biological molecules contain D-ribose. Since D-ribose is ubiquitous in living matter, it is ingested in our diets. Supplementally, it enhances energy significantly when additional support is needed.

Supplemental D-ribose may protect the heart. D-ribose allows for synthesis of ATP, the energy molecule produced in the mitochondria. So it may enhance cellular energy. Scientists have found that ribose can rapidly restore ribose levels in nerves and muscles and dramatically improve recovery of failing ATP levels as during and following acute or chronic hypoxia or ischemia. Research has shown that taking D-ribose has a positive effect on ATP production in all muscle fiber types, especially the heart. D-ribose supplementation increases the de novo production of ATP through oxidative phosphorylation by 340 to 430 percent. It activates material salvaging, causing nucleotides to be revitalized into the manufacture of ATP by over 700 percent. The heart being very dependent on ATP, especially when ATP levels are low, is double pressed to pump harder to get more oxygen to the cells for increased ATP synthesis. D-Ribose obviously helps save the situation by providing the material for the manufacturing of ATP, as well as for quickly needed genetic nucleotide components generally.

Research Summaries: In a study of 20 men (aged 45 to 69 years) with documented severe coronary artery disease and a history of angina induced by normal daily activities, 60 grams of ribose (in four doses

of 15 grams each) were tested against placebo. Treated subjects exhibited improvement as measured both electrocardiographically and time to onset of moderate angina during exercise testing. There was no significant electrocardiograph improvement in the placebo group, and there was no significant difference between the groups in time to onset of moderate angina. However, the authors concluded: "In patients with CAD, administration of ribose by mouth for three days improved the heart's tolerance to ischemia. The presumed effects on cardiac energy metabolism offer new possibilities for adjunctive medical treatment of myocardial ischemia." Besides improving diastolic function parameters following ischemia, D-ribose demonstrates a benefit in ventilatory efficiency, one of the most powerful predictors of survival in congestive heart failure patients. This is more than likely also due to increased efficiency in the same blood volume.

In other studies, patients treated with D-ribose showed significant, positive improvement in ventilatory efficiency as well as oxygen uptake efficiency, and stroke volume, the amount of blood the heart pumps with each beat. In patients undergoing "off" pump coronary artery revascularization, those treated with D-ribose demonstrated a 49% greater increase in cardiac indices compared with the control group. One case reported a patient with adenylosuccinate deficiency whose neurological symptoms (behavior and seizure frequency) improved with supplemental D-ribose. There are no known contraindications for its use.

Caution: Insulin dependent diabetics and pregnant women should consult their physician before use of this product.

Arginine and Congestive Heart Failure

There is some evidence that taking enzymes can reduce pain and inflammation, and improve healing. Usually enzymes are taken to aid digestion. When they are taken on an empty stomach, they act to clean up the debris left over from the chemical warfare of inflammation. One study in the *Journal of Strength and Conditioning Research* (2007 Aug;21(3):661-7) showed that taking enzymes reduced loss of strength due to muscle damage following exercise. Another study in *Clinical Experimental Rheumatology* (Jan-Feb;24(1):25-30) compared enzyme supplementation to NSAID use in patients with osteoarthritis of the hip. The double-blind, placebo controlled study lasted six weeks and involved 90 subjects and found that enzyme to be comparable to the drug in relieving pain, joint stiffness and improving function.

Antioxidants in cherry juice also can mitigate pain from exercise. According to research submitted to the 2009

annual meeting of the American College of Sports Medicine (abstracts 851 and 852), consuming tart cherry juice can reduce pain from exercise. Healthy runners between the ages of 18 and 50 were randomly selected to receive either tart cherry juice or a placebo to drink one week before the race. The group who drank the cherry juice reported less pain. Another study had 14 women with fibromyalgia drink either tart cherry juice or a placebo for 10 days to determine its effect on muscle pain and strength after exercise. Once again, the group receiving the cherry juice had less pain and more strength.

It makes sense, according to an article appearing in the *Journal of Natural Products* (1999;62(2):294-296), substances in tart cherries, called anthocyanins and cyanidin are both antioxidant and anti-inflammatory.

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Hawthorn and CHF

Hawthorn (*Crataegus species*) has been used to treat heart disease since the 1st century. Traditional use of the berries include the treatment of heart problems ranging from irregular heartbeat, high blood pressure, chest pain, hardening of the arteries, and heart failure.

A double-blind, placebo-controlled study appeared in *Phytomedicine* (2003;10(5):363-9); it looked at the effectiveness of treatment with Crataegus berries (Hawthorn) had on

patients with heart failure. A total of 143 subjects, with a mean age of 64.8, participated in the study. They were treated with either a standardized extract of Crataegus berries or a placebo for a period of eight weeks. There was a greater improvement in exercise tolerance, and a reduction in both fatigue and shortness of breath in the supplemented group as compared to those receiving the placebo.

Congestive Heart Failure and Thiamin

"Happiness: a good bank account, a good cook and a good digestion."

—Jean Jacques Rousseau

Patients on the diuretic furosemide (sold under the brand name Lasix) tend to be deficient in thiamin. A study appearing in *The American Journal of Medicine* (1991;151-155) measured thiamin status in 23 patients with congestive heart failure who were taking furosemide. A high thiamin pyrophosphate effect, which indicates thiamin deficiency, was found in 21 of the 23 subjects. Thiamin deficiency was only found in two out of 16 controls. This result was confirmed by other research appearing in the *Journal of the American College of Cardiology* (2006; 47: 354-61), which found that 33% of 100 hospitalized patients with congestive heart failure were thiamin deficient. Only 12% of healthy controls were found to be thiamin deficient.

Beriberi is the disease of thiamin deficiency. Wet beriberi affects the cardiovascular system and is characterized by an enlarged heart, and congestive heart failure.

There is some research that indicates supplementation with thiamin may be of benefit to patients with congestive heart failure. A study appearing in *The American Journal of Medicine* (May 1995;98:485-490) looked at 30 patients with severe congestive heart failure who were also taking furosemide. In the double-blind study, the patients were given either IV thiamin (200 milligrams per day) or a placebo. The thiamin group experienced improvement in left ventricular ejection fraction--increasing by 22% in 27 patients who completed the full seven-week therapy. The authors of the study concluded that thiamin supplementation would be a beneficial addition to conventional therapy for congestive heart failure.

