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NEWS YOU CAN USE

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Welcome to the Bone & Joint Decade!

As populations continue to age and people live longer than ever before, governments and health authorities are focusing ever increasing attention on the “preventable” diseases and conditions that all too often undermine healthy aging.

One area of great interest is Bone and Joint Diseases. At the same time the average age of our population is increasing, we’re putting increased emphasis on physical activity (an important behavior for health and well being) and thus putting greater demands on our bones and joints. The combination of these two factors sets us on a collision course with pain and suffering that will affect the well-being of 10’s of millions and push health care cost further into the stratosphere.

To create public awareness and focus attention on this dilemma, the United States and governments and institutions around the world proclaimed that the first decade of the 21st century would be the Bone and Joint Decade. Their message is simple; the problem is real and it’s going to affect all of us in some way, but there are things we can and should be doing.

Osteoarthritis: is everyone going to get it?

Osteoarthritis (OA) is a “wear and tear” disease that robs cartilage from joints throughout the body. The medical community calls OA a “universal disease” because all the evidence shows that essentially everyone is at risk of getting it. Indeed, it’s already a widespread and growing health care crisis, affecting more than 70 million in North America alone, adding billions in health care costs.

Osteoarthritic joint deterioration is primarily caused by: repetitive motion and physical stress associated with athletic activity; being significantly overweight; trauma from accidents or injury, and aging. The underlying biochemistry of prevention and correction is the body’s natural cartilage creation, maintenance and repair capacities, all of which are dependent on an abundant supply of their primary building material, glucosamine.

Science finds the nutritional solution

Because of the widely broadcast knowledge about the need for a calcium rich diet, to first build and then maintain healthy bone density throughout life, dietary Osteoporosis prevention is an effective, everyday practice of millions. Now leading edge science tells us we can do the same for its sister disease Osteoarthritis.

The first studies showing a connection between glucosamine and joint repair/pain reduction took place in Italy in the early 1980’s (Drovanti, et al., *Clin Ther* 1980; 3: 260-272). The results showed for subjects given a laboratory prepared version of glucosamine sulfate joint pain significantly lowered in as little as 7 days and restriction of active movement lowered in 14 days. Consistent adverse side effects in the gastrointestinal tract in this research and others that followed into the 1990’s brought into

question the appropriateness of glucosamine supplementation and caused some researchers to look to intramuscular injection as a means of delivery. In 1994, German scientists (Reichelt, et al., *Arzneimittelforschung* 1994; 44(1):75-80) found that 55% of patients suffering with knee osteoarthritis who were injected with glucosamine sulfate responded positively to the treatment. Once again however, adverse reactions were an issue, including transient nausea and vomiting, even though the material was injected into the muscle.

More recent research utilizing the hydrochloride form of glucosamine showed the same functional benefits without the adverse side effects. Australian researchers reporting the *British Journal of Sports Medicine* (Braham, et al., *Br J Sports Med* 2003; 37:45-49) noted that the beneficial effect to those receiving the glucosamine hydrochloride supplement increased over time in this 12, week study. At week four, 36% reported some degree of pain relief. By week eight that number had grown to 68% and by week 12 fully 88% of test subjects reported benefits. Adverse side effects were not an issue and were essentially the same as those taking a placebo.

The latest research confirms Glucosamine works

In the March/April 2004 issue of the journal *Menopause*, researchers reported that a 1,500 mg. dose of glucosamine stopped cartilage loss in a 3 year study of women while for those receiving a placebo cartilage destruction continued. In addition, pain and joint function significantly improved among the women taking glucosamine while those taking the placebo continued to worsen.

In a summary review of double-blind, placebo controlled research investigating the effects of long-term treatment and the progression of knee osteoarthritis (the most common form) published in the June 2005 *Annals of Pharmacotherapy* (39(6):1080-1087) Poolsup, et al., reported that in all instances they investigated, glucosamine supplementation was more effective than placebos in stopping joint destruction (the risk of disease progression was reduced 54%), and concluded that the evidence shows that glucosamine is effective and safe in slowing or halting the progression and improving the symptoms of osteoarthritis.

There is no question that glucosamine works.

Drugs: dealing with the symptom and not the cause

In response to the growing occurrence of OA related pain and discomfort, pharmaceutical companies have produced a wide range of pain relievers including NSAID’s (non-steroidal anti-inflammatory drugs) such as ibuprofen and COX-2 (cyclo-oxygenase-2) inhibitors* such as Celebrex or Vioxx. Though they do offer the benefit of pain relief, they all address the symptom but not the cause. Several studies conducted on 1,500 mg/day glucosamine supplementation shows that pain relief benefits from cartilage repair are ultimately greater than drugs alone

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(Qui, et al., *Arzneimittelforschung* 1998; 48:469-474. Rovati, et al., *Second International Congress of the Osteoarthritis Research Society*, 1994. Muller-Fassbender, et al., *Osteoarthritis Cartilage* 1994;2:61-69).

(*COX-2 inhibitors have been implicated in increased cardiovascular disease risk in users.)

Additionally, when it comes to pain management for osteoarthritis, natural alternatives offer both short-term relief and long-term advantage. For example, the herb *Boswellia serrata* has been shown in a double-blind crossover study to provide anti-inflammatory, anti-arthritic and analgesic activities. Similarly, Bromelain, an enzyme extract of pineapple, was shown first in 1990 (*Planta Medica* 1990 Jun; 56(3):249-253) and later in 1999 (*In Vivo* 1999 Jan-Feb; 13(1):7-12) to provide anti-inflammatory activity. Neither has been shown to contribute to any of the adverse reactions associated with drugs.

The mineral link to new cartilage

Even though many scientists did not think minerals are important for cartilage health, recent research has proven them wrong. Minerals do play important roles in the development of the connective molecules that hold cartilage together. The best evidence comes from these important facts about 3 specific minerals and the cartilage tissue of OA sufferers:

- Low levels of Zinc are found in almost all OA inflicted joints. Zinc is critical for the production of cellular SOD (superoxidodismutase), which provides powerful natural antioxidant/anti-inflammatory activities within the cell.
- Lower than normal Boron concentrations are found in the bones, cartilage and synovial fluids of arthritic patients. Also, epidemiological evidence shows that populations with low boron intakes have high arthritic incidence.
- Silica is a recognized essential trace element in human nutrition. Babies have a vast supply in their tissue at birth but it's availability drops quickly with aging. It is found in all the bodies' connective tissues. It is fundamental to the proper functioning of polyhydroxylase, an enzyme directly involved in the formation of cartilage, collagen and connective tissues and is associated with healing and repair of damaged cartilage.

Comprehensive supplementation: The state of the science of joint health

As is almost always the case in Nature, it is not just one thing that is fundamental to maximizing joint health, but rather a balanced combination of elements working together over time. Joint degeneration is a condition that develops slowly. However, research shows that when given the right nutritional building blocks in the right form and balance, the body has the capacity to respond quite quickly and get on the path to regeneration and repair.

Full Motion provides just what the body needs:

- The pure, "biologically functional" cartilage building block Glucosamine
- The natural, comfort-boosting power of Herbal Comfort Complex
- The structurally critical elements in Regenerative Mineral Complex
- Our exclusive bioavailability maximizing 3D Advantage

For more about this amazing joint regeneration and repair product, talk to your GNLD distributor or visit www.gnld.com/Full Motion

Osteoarthritis: The Athlete's Biggest Competitor!

You start your morning run, but your knees are too sore to finish the planned distance. You play on a softball team, but your warm-up still doesn't help with the nagging soreness in your elbows and knees. You've been playing in a basketball league for years, but the pain in your back and knees forces you to sit this season out. Do these scenarios sound familiar? The common theme is painful joints impairing enjoyment of sports participation—something all too familiar with thousands of athletes.

While at one time, the subjects of aging and athletics were not normally discussed together, today, athletes are breaking records at the world-class level at ages that were once considered too old to be competitive.

This positive trend brings along with it new issues for health and performance, and one major issue for the older athlete is joint pain and soreness. As we age, the capacity for joints to function without pain or soreness decreases. In fact, for many athletes joint pain is a debilitating factor that precludes them from participating in a sport they may have enjoyed for years.

Even young athletes suffer from joint degeneration because of overuse and injury. Knee damage is a major concern for football and soccer players, who constantly face injury from the rapid—usually sudden—changes in direction. Years of this physical stress, coupled with the natural degradation of joint tissue, adds up to joints that are often prematurely worn out. This ultimately leads to pain, and loss of quality of life.

Traditional joint pain therapies for athletes, and non-athletes alike, have been limited and non-curative. Anti-inflammatory drugs (NSAID's) have been the primary method of treatment for chronic joint pain, but they have serious negative side effects and do not significantly help to repair damage to cartilage.

According to an article printed in *Clinical Sports Medicine*, "The use of these drugs has significant effects on pain and swelling associated with injury; however, this use does have significant risks to the gastrointestinal, hepatic, and renal organ systems. In the athlete with degenerative changes in the joints, the use of these medications can become chronic and lead to an increased risk of adverse effects."¹

What's more disconcerting, once anti-inflammatory drugs cease to be effective, athletes have very few options. One option, in the case of knees and hips, is to have the joint replaced. But in most cases, many athletes simply must quit their sport because they no longer can participate due to the pain. A recent study specifically targeting joint injury supports this assertion. "Osteoarthritis of non-knee joints, although less common than knee osteoarthritis, remains a significant and disabling condition for many present and former athletes."²

Luckily, for athletes of all ages, there is now an option that not only can relieve joint pain, it can repair and replace cartilage lost from overuse and aging. It's Glucosamine! A combination of the amino acid glutamine and glucose, glucosamine is a major building block of joint cartilage. Supporting the regeneration of new cartilage, glucosamine can provide much needed help to athletes and prolong athletic careers. What's even more exciting about glucosamine is that unlike anti-inflammatory drugs, it has no



Q *Can I take Full Motion if I am taking medications or have allergies?*

A There are no known negative interactions associated with the ingredients in Full Motion and prescription drugs. In addition, Full Motion is formulated to have a very low allergic potential. Even those who are allergic to shellfish should have no issues with Full Motion.

Q *Can diabetics safely take products such as Full Motion which contain glucosamine?*

A Absolutely! Diabetics can take Full Motion without worry about affecting insulin or blood-sugar levels. Although glucosamine is a combination of the carbohydrate, glucose, and the amino acid glutamine, it does not effect blood sugar or insulin levels. In fact, there have been multiple scientific studies to examine this issue and the overwhelming consensus in the scientific community is that glucosamine is completely safe for diabetics.

Q *Many glucosamine products contain chondroitin. What is the SAB's position on chondroitin?*

A Although chondroitin is used in many joint health products, there is no significant scientific proof that chondroitin actually gets into the cell and works. When chondroitin is absorbed (during the digestion process) it is broken down into its basic components. The problem is that there is no substantial body of scientific evidence to prove it is "reassembled" once absorbed. Cells need glucosamine to make cartilage, not chondroitin, and glucosamine is very bioavailable. Furthermore, during the cellular process of turning glucosamine into cartilage, the body makes chondroitin as it's needed, and it uses glucosamine to accomplish the task!

Q *I've been hearing a lot about xanthones. Are they in Flavonoid Complex?*

A GNLD's Flavonoid Complex was formulated to include the flavonoids found in a serving of flavonoid rich fruits and vegetables. Xanthones are not found in significant levels in fruits and vegetables that are part of the traditional human food chain; although they are structurally related, they are not considered flavonoids. Though there are some in vitro (test-tube or laboratory) studies that show xanthones have biological activity, the role in human health is yet to be demonstrated.

In contrast, GNLD's Flavonoid Complex has been tested to confirm that a specific profile is present for those flavonoids for which there is substantial research data regarding their protective role. All flavonoid groups involved in human health and nutrition are represented in our Flavonoid Complex: flavones, flavanols, flavanones, anthocyanins and catechins.

Q *Watermelon and cantaloupe are two fruits that seem to have high GI numbers but the GR² program says it's okay to have them. Can you explain this?*

A It is important to understand the difference between glycemic index (GI) and glycemic response (GR). The GI rates foods based on how quickly 50 grams of a food's carbohydrates raise blood sugar levels. The GR² diet figures the glycemic response (GR) time of one serving of a particular food or meal. The melons listed in the enjoy guide ranges between 11-13 grams of carbohydrates for one serving which is equivalent to one cup. These melons are mostly water, and have a low glycemic response time.

The SAB developed the GR² Control Weight Loss Program using both the glycemic index and the glycemic load ratings of foods as tools to help figure the glycemic response time. In addition, they considered the caloric content, along with the health value of commonly consumed foods. In keeping the GR² diet program simple to comprehend, the SAB created the Enjoy and Avoid guide. This useful tool removes the burden of calculating food figures while listing a large variety of food choices.

Q *Why is it important to drink so much water when taking Full Motion?*

A Glucosamine is water soluble and assuring adequate water when the product is taken helps to assure rapid and complete disintegration and dissolution in the stomach and optimum absorption. Cartilage itself is about 75 to 80% water. In fact, after glucosamine, water is one of the most important dietary factors in cartilage regeneration. Water also works to maximize the effectiveness of the other ingredients in the product; in particular, the HCC (Herbal Comfort Complex) components.

Q *I read White Willow can cause stomach upset, why did the SAB use it in Full Motion?*

A It is highly unlikely the White Willow used in GNLD's Full Motion would cause stomach irritation at the amount used. White Willow has obtained an undeserved reputation for stomach sensitivity due to the close association with aspirin.

When formulating GNLD's products the SAB chooses ingredients less likely to cause undesirable effects because we understand some individuals can have sensitivities.

negative side effects. According to a recent review article published in the journal *Drugs and Aging*, long-term therapy of glucosamine supplementation was considered to have the most promising results when compared to all other known modalities of treatment for osteoarthritis.³

In addition to the glucosamine connection, science has shown that specific minerals and herbs play critical roles to support joint health.⁴

1. "The use of NSAIDs and nutritional supplements in athletes with osteoarthritis: prevalence, benefits, and consequences," *Clinical Sports Medicine* (2005 Jan; pp. 71-82)

2. "Osteoarthritis in other joints (hip, elbow, foot, ankle, toes, wrist) after sports injuries," *Clinical Sports Medicine* (2005 Jan; pp 57-70.)

3. "Disease-modifying therapies for osteoarthritis: current status," *Drugs and Aging* (2005, vol.22 (2):141-61

4. *Encyclopedia of Human Nutrition*, Academic Press, pp 138-143, 1999

The GNLD Advantage!

GNLD and the Scientific Advisory Board spent several years researching the dietary impact of joint health and have developed a product that "attacks" joint degeneration and joint pain from multiple nutritional fronts. GNLD and the SAB have formulated one of the most comprehensive joint health products on the market. Full Motion provides not only 1500 mg of glucosamine, the dosage demonstrated in studies to effectively reduce pain and stiffness associated with osteoarthritis*, It uses a natural, pharmaceutically-pure hydrochloride form of glucosamine which is sulfite-free and has very low allergic potential. For athletes of all ages that are looking to maintain their game, or simply to get back into it, GNLD's Full Motion should be front and center on the training table.

*"The effect of glucosamine supplementation on people experiencing regular knee pain," *British Journal of Sports Medicine*, 2003

Bone & Joint Health Tips

Vitamin-D can save your hips! Researchers in Scotland reported in the July 2005 issue of the journal *Current Medical Research and Opinion* that in essentially every (97.8%) hip fracture case they investigated (548), the patients were deficient, often severely, in vitamin-D. In about 25% of the subjects, vitamin-D levels were too low to detect accurately. In their report, the researchers concluded that vitamin-D represents a correctable risk factor for bone fragility as we age, particularly as it relates to the risk of hip fracture.

Your "creaking" joints may be a sign you're rusting. Researchers at the Duke University Medical Center have been tracking down free radicals as accomplices in the biological processes that rob us of joint health. In their report (*Matrix Biology*, 21(2):175-184, 2002) they point out that Vitamin-C can not only slow the progression of Osteoarthritis by blocking free radical damage, but it also stimulates collagen synthesis, an important aspect of cartilage renewal.

More good news about vitamin-C and your joints. Researchers from the Framingham Osteoarthritis Cohort Study linked its antioxidant power to a reduced risk of Osteoarthritis (OA) when they showed that people in the middle and top intake levels (top 60%) exhibited a three-fold reduced risk of OA progression, which they tied to a reduced risk of cartilage loss.

Omega-3s: Good for bones & good for joints. The benefits of omega-3 fatty acids for arthritis sufferers have been well established for years. Omega-3s reduce pain and inflammation by rebalancing inflammation/anti-inflammation systems in the body (Calder, et al., *Dietary modification of inflammation with lipids. Proceedings of the Nutrition Society*, 16(3):345-358, 2002). Now new evidence says it's good for bone too. In a recent presentation to the World Health Organization, Purdue University Professor Bruce Watkins states: "Our lab and others have shown that omega-3 fatty acids help promote bone formation."

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