



# Athletic Recovery

## *Too Much Pain, No Gain*

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Literature Education Series On Dietary Supplements

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For some athletes, “no pain, no gain” is their personal mantra. However, *too much pain* may mean *no gain* if there are problems with excessive inflammation, and possibly less than optimal repair of muscle, joint and bone tissue. In such cases, prevention is definitely superior to treatment; and the best prevention may be avoiding workout routines that brutalize your body to the extent that you are incapacitated, eating a healthy diet that provides adequate protein and other macro-nutrients, and using dietary supplements to support the maintenance and repair of tissues from muscles, joints and bones; and that also may help reduce excessive inflammation. Following is a discussion of such dietary supplements.

### **Calcium & Vitamin D**

Calcium's role in supporting the maintenance and repair of healthy bone is well established and does not require further elucidation here. Likewise, vitamin D has a long-established role in facilitating calcium absorption; and research indicates that vitamin D supplementation can help to prevent bone loss.<sup>1 2</sup>

### **SierraSil™**

SierraSil is a naturally-occurring mineral composite found only in the high Sierra Mountains. Research has demonstrated that SierraSil suppresses cartilage degradation and inflammation.<sup>3</sup> In an unpublished double-blind, placebo-controlled study SierraSil was evaluated in patients with osteoarthritis. Results indicated that with doses of 2000 or 3000 mg, SierraSil improved joint flexibility and quality of life.<sup>4</sup> A previous unpublished pilot study on SierraSil in osteoarthritis patients demonstrated similar

results.<sup>5</sup> SierraSil has a patent pending for supporting joint mobility, flexibility and active lifestyles.

### **Paractin™**

Spasov et al<sup>6</sup> has reported that standardized extracts of *Andrographis paniculata* have been investigated in a number of studies, showing significant reduction of major symptoms of common cold and other upper respiratory tract infections. Paractin™ is a patented, standardized extract of *Andrographis paniculata* which has been shown in preliminary research to stimulate immune response at low doses and to reduce inflammation at high doses.<sup>7 8 9</sup> It does this by invigorating the activation of Peroxisome Proliferator-Activated Receptor gamma (PPAR $\gamma$ ), which in turn inhibits inflammatory chemicals in the body such as NFkappaB interferon gamma (IFN $\gamma$ ), and Interleukin 2 (IL-2). By supplementing the body's ability to naturally activate PPAR $\gamma$ , Paractin™ help promote healthy inflammation response while maintaining normal cellular structure and activity in the joints, bones, and throughout the body.

### **Glucosamine Sulfate**

According to the book, *The Arthritis Cure*, there are three requirements to keep cartilage healthy: water for lubrication and nourishment, proteoglycans to attract and hold the water, and collagen to keep the proteoglycans in place. Proteoglycans are large molecules made of protein and sugar. They trap water like a sponge and make cartilage resilient.<sup>10</sup> Glucosamine sulfate figures into healthy cartilage since it is a major building block of the water-loving proteoglycans. In addition, glucosamine sulfate's very presence stimulates the production of more proteoglycans. The fact that glucosamine sulfate increases the synthesis of these key elements of cartilage means that it actually helps repair damaged or eroded cartilage.<sup>11</sup> In fact, for many years glucosamine sulfate has been successfully used in the therapy of osteoarthritis, and has met all standards of an efficient and well tolerated drug (albeit a natural drug). This has been demonstrated by experimental as well as clinical studies, in which glucosamine

sulfate led to long-lasting pain reduction and functional improvement.<sup>12</sup>

### Chondroitin Sulfate

Chondroitin sulfate is the perfect complement to glucosamine sulfate since chondroitin acts like a liquid magnet, attracting fluid into the proteoglycans. This fluid acts as a shock absorber and also brings nutrients with it into the cartilage. Perhaps of greater significance than its fluid-enhancing properties, chondroitin sulfate protects existing cartilage from premature breakdown by inhibiting certain cartilage-chewing enzymes. Furthermore, like glucosamine, chondroitin stimulates the production of proteoglycans and collagen that are needed for healthy new cartilage. As a matter of fact, chondroitin works synergistically with glucosamine.<sup>13</sup>

### Plant Based Enzymes

Research has shown that certain plant-based (fungal) enzymes were shown to have powerful effects on protein digestion at the University of Rhode Island. Specifically, 300 to 500 mg of these fungal enzymes successfully released 62,000 mg of free form amino acids from protein (in the form of beef steak)—that's 42% more amino acids than stomach acid and enzymes alone, without fungal enzymes. Furthermore, in the laboratory fungal enzymes release branched chain amino acids from beef steak at up to 200% the rate of stomach acid and enzymes alone. This is particularly important since branched chain amino acids (BCAA) make up at least 35% of key muscle proteins. The results of this research clearly demonstrate that these enzymes cause amino acids in protein to become more bioavailable. This can help to rebuild and repair muscle tissue.

### References

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<sup>11</sup> Theodosakis, J., *ibid.*

<sup>12</sup> Anonymous, *Fortschr Med Suppl* (1998) 183:1-12.

<sup>13</sup> Theodosakis, J., *ibid.*



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