Creatine and the Downhill Skier

Creatine is by far the most highly studied and widely marketed of all sports supplements. In exercise physiology labs, it has been proven efficacious for increasing several performance measures and promoting lean muscle mass, and recently, researches have been studying its abilities in combating Alzheimer's, ALS, muscle wasting, and other conditions. But, what exactly is this stuff? Is it safe? Who should use it? And most importantly, can it increase one's ability on the slopes?

Creatine is synthesized in the liver by the amino acids arginine, glycine, and methionine, and is found in most lean meats and fish. It plays an important role in fueling high force muscular contractions, which rely on the phosphagen energy system. The phosphagen energy system and the glycolytic (anaerobic) energy system combine to fuel muscle contractions lasting between approximately 10 seconds and 3 minutes, the range of time it takes to do a bump run or World Cup downhill.

Multiple studies have shown that creatine supplementation enhances anaerobic athletic performance by increasing single and repetitive sprint performance, increasing total work capacity, increasing strength, and reducing onset of fatigue (Baylor University, 2005). Renowned physiologist Richard Kreider, PhD, has done numerous studies, documented in the *Journal of Exercise Physiology,* showing that creatine supplementation imparts positive morphologic changes including enhancements in lean tissue mass and body composition. Carry this research over to hard-charging alpine skiers, and this supplement can potentially create stronger legs which can extend the number of turns in a mogul run before the lower body fatigues.

Like most supplements, the athlete is potentially endangered when he or she overuses it, and/or combines it with other ergogenic aids. Although no study has proven this, it is feared that creatine can cause renal stress, liver damage, muscle cramping, and hypertension. Additional longitudinal studies are needed to either refute or support theses claims.

If you do decide to add creatine to your dietary regimen, pay special attention to your training, nutrition, fluid intake and lifestyle choices. General loading guidelines are to consume 2-5g (depending on lean muscle mass) four times a day for 5-7 days. Maintenance dosing is 2-5g, consumed before and after workouts, for 2-4 weeks. One should consume a 12oz – 20oz of a high glycemic drink and amino acids, with powdered forms of creatine, to ensure rapid absorption and to enhance protein synthesis. Overall fluid consumption must be increased when taking creatine and you should cycle off creatine when doing long endurance activities, or when fluid loss is high, i.e. pre-season camps, triathlons, etc.

Downhill skiers striving to gain strength and power during their per-season training phases need to first consider the building blocks of their program: solid nutrition, a periodized training program involving power, strength, and flexibility, adequate rest, and a clean lifestyle. Creatine may have utility with some athletes, but knowledge is key prior to starting any supplement plan, and always speak with your doctor first.