



Efficiency of diet, A nutritional perspective on sports person

Jaswinder Singh Brar

Baba Farid Group of Institution Bathinda Punjab, India

Abstract

Creatine has become a popular nutritional supplement among athletes. Recent studies have shown a number of potential therapeutic uses of creatine. Creatine is an amino acid, like building blocks that make up proteins. Creatine has been accepted as a safe and useful ergogenic aid. The creatine market has grown significantly, in enhancing athlete performance. Majority of studies have focused on the effects of creatine monohydrate on performance and health. A quantitative scientific summary and view of knowledge showed the effect of creatine supplementation in athletes by the International Society of Sports Nutrition. More recent literature has provided greater insight into increasing and enhancing athlete performance by the use of creatine supplement.

Keywords: creatine, supplements, monohydrate, ergogenic

Introduction

Creatine is a natural and most popular supplement for increasing performance. Creatine is very much beneficial in high intensity sprints or endurance training. Creatine is an oral supplement which is safe and ethical if it is used in the right amount. Creatine is produced endogenously at an amount of about 1g/d. Synthesis predominantly occurs in the liver, kidneys, and to a lesser extent in the pancreas. The remainder of the creatine availability of the body is obtained through the diet at about 1g/d for an omnivorous diet. 95% of the body's creatine stores are found in skeletal muscles and the remaining 5% is distributed in the brain, liver, kidney and testis. As creatine is predominantly present in the diet from meats, vegetarians have low resting creatine concentration. Although creatine is accepted as a reliable and useful ergogenic aid, creatine is a compound that is built within the body from amino acids and also obtained through diet. As an oral supplement the most widely used and researched form is creatine monohydrate (CM). When orally ingested, creatine monohydrate has shown to improve exercise performance and increase fat free mass. Many athletes and experts in the field have reported that creatine supplementation is not only beneficial for athletes but also for medical conditions. It is used to enhance athletic performance in the field of power, strength and muscle mass.

About Creatine

Creatine is a natural substance first discovered in 1886 by a French chemist named Chevreul. It is found in highest concentrations in lean red muscle tissue of animals and humans in the form of creatine phosphate. In 1912, Harvard University researchers, Otto Folin and Willey Glover Davis found proof that ingesting creatine dramatically boosts the creatine content of the muscle. Creatine is a combination of three amino acids: arginine, glycine and methionine, and three enzymes: arginine:glycine amidinotransferase, guanidinoacetate methyltransferase, and methionine adenosyltransferase and required for creatine synthesis. The impact of creatine synthesis has on glycine metabolism in adults is however the demand is more appreciable

on the low metabolism of arginine and methionine. Creatine plays a vital role in energy metabolism. Creatine use, is not considered as doping and is not banned by sports governing bodies. The studies have shown that adequate amount of creatine is beneficial for an athlete to achieve highest performance.

Benefits of Creatine

Creatine is a naturally occurring amino acid that is manufactured in the human body. Creatine is a fuel source of ATP, which is an energy system and also a safer supplement. Creatine works for athletes who use it as a regular part of their exercise programme. The number of benefits is achieved by the use of creatine.

- **High intensity workout:** creatine enhances the body's capacity to perform high intensity work as it increases greater muscle size and also helps to gain highest performance. Creatine provides immediate energy, ensuring muscle to avoid premature fatigue and helps the athlete to pump out more repetitions, sprint at a faster rate and engage more forcefully in whatever sport they play. Creatine is regarded as high energy phosphate. The more adenosine triphosphate is made available to muscle to boost performance which helps in gaining high intensity and powerful workout.
- **Creatine Enhances Recovery:** The researchers have found that creatine helps in generating muscle properties. Creatine helps to fill the gaps of cell damage and tear of tissue. The creatine helps to reduce inflammation after the exhaustive workout. It helps to promote complete recovery and helps to strengthen endurance athletes for gaining optimum relaxation.

Creatine Enhances Muscle Volumization and Enhances Brain

Functions: Another important benefit for body builders and strength athletes is creatine which helps to volume muscle mass. Creatine helps in muscle building which benefits and offers ergonomic properties. Neuroscience showed creatine to be an extremely important neuroprotectant which increases the

survival of nerve cells. At the institute of cell biology in Switzerland found creatine could be used successfully as an adjuvant therapy for bone fracture healing for treatment of osteoporosis. Creatine enhances cellular energy production. Neurological and cognitive functions has also been shown to improve by creatine supplementation. Creatine highlights other possible benefits of creatine ingestion to older adults such as improvement in fatigue, resistance, strength, bone mineral density and performance of activities of daily living. Although creatine has increase all spheres of an athlete performance. Creatine helps in enhancing muscle glycogen storage. in general, it is accepted that glycogen depleting exercises, such as high intensity or long duration exercise should combine high carbohydrate diets with creatine supplementation to achieve heightened muscle glycogen stores. Creatine is also beneficial for children and adolescents. Studies has also shown that creatine supplements have great impact on range of motion.

How does creatine works?

Creatine helps in increasing strength in relatively short period of time. Creatine is that substance which is produced in the liver and kidneys at about a rate of 2 grams per day. Basically 90 to 95% of body creatine travels to muscles, heart and body via blood stream. Once inside muscle cells, it is turned into a substance called creatine phosphate aids replenish the reserves ATP which is a molecular fuel that provides the power of a muscular contraction. Atp is used as a primary fuel source for short term energy bursts that lasts about 5 to 10 sec.in skeletal muscles, where energy is generated for movement creatine participants in the complex muscle contraction process to maximise muscle energy. atp is a key fuel for contraction of muscles. It boosts performance in bursty sports like sprinting, rowing, and bodybuilding. Creatine phosphate serves as an immediate backup to restore the missing phosphate bond.

Ethics about Creatine

Several athletic governing bodies and special interest groups have raised a question about the use of creatine is ethical for an athletes. Since research indicates that creatine monohydrate can improve performance, and it is unethical to deny the use of creatine when it cause number of benefits. Creatine supplementation is not currently banned by National Collegiate Athletic Association (NCAA) And International Olympic Committee considered that there is no need of banning the use of creatine.although creatine can be bought commercially as a standalone product it is often found in combination of creatine with other nutrients.a prime eg is combination of creatine with carbohydrate or proeteins and carbohydrate for arguing creatine muscle retention mediated through an insulin response from the pancreas. Since research indicates that creatine monohydrate can improve performance and it would be difficult to ingest through diet so they rationalize that it is unethical.we see no difference between creatine supplementation and ethical methods of gaining athletic performance. It is same as carbohydrate loading, which is considered as a nutritional technique to enhance skeletal muscles in relation to achieve highest performance. If anything unethical it has been reported to decrease the incidence of musculoskeletal injuries provide neuro protective effects.

Conclusion

Bodybuilders and strength athletes need use of creatine to improve size and strength from decades as a supplement. creatine is a healing aid for many suffers in relation to sports and medical too. Creatine is reported as a safe supplement in improving anaerobic capacity, strength and lean body mass. Despite many myths concerning to creatine supplementation in combination with exercise, creatine remains most effective, nutritional aids available to athletes. it is safe and perfect legal supplement. Finally the future of creatine looks bright in all the spheres of transport mechanisms, improved muscle retention via supplementation

References

1. Persky A, Brazeau G. Clinical pharmacology of the dietary supplement creatine monohydrate pharmacolrev. 2001; 53:161-176.
2. Burke DG, Candow DG, Chilibeck PD, Macneil G, Roy BD, tarnopolsky MA, Zigenfuss T. Effect of creatine supplementation and resistance exerci training on muscles. Nutr Exer Metab. 2008; 18:389-398.
3. American college of sports medicines round table, the physiological and health effects of oral creatine supplementation. Med Sci. Sports. EXC. 2000; 32:706-717.
4. Stoppani JIM. Creatine new and improved recent high tech advances have creatine even more powerful. Muscles and fitness retrieved, 2010, 03-29.
5. Brosnan JT, da silva RP, brosnan ME. The metabolic burden of creatine synthesis amino acid. 2011; 40:1325-1331.
6. Bembem M, lamont H. Creatine supplementation and exercise performance, recent findings sports med. 2005; 35:107-125.
7. O'ptEijende B, Urso b, ritcher EA, Greenhaff PL, Hesepe IP. Effect of oral creatine supplementation on human muscles GLUTG protein content. 2001; 50:18-23.
8. Steengegr, lambourne J, Casey A, Macdonald IA, Greenhaff PC. Stimulatory effect of insulin on creatine accumulation in human skeletal muscles. Physiol. 1998; 275:E974-E979.
9. Chanutin A. The fate of creatine when administered to man. J Biol Chem. 1926; 67:29-34. Suggested website resources: 2009-10.
10. NCAA Banned Drugs. <http://www.ncca.org/wps/wcm/connect/53e6f48044e0b8a>.
11. <http://www.nebi.nih.gov/pmc/articles/pmmc33080578>. creatine ethyl ester rapidly degrades to creatinine in stomach. International society of sports nutrition 4th annual meeting.