

Fab Four - The Muscle-Building Supplements

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Are you trying to pack on a little muscle? Are you stuck at a certain poundage at the gym? Do you need to improve your time in a sprint? Are you confused about what supplements "they" tell you to take? Here are my fab-four muscle-building supplements.

Creatine

Creatine is a naturally occurring compound found in large amounts in skeletal muscle as a result of dietary intake and endogenous synthesis from amino acids. Creatine monohydrate is the most practical form for supplementation with creatine. Phosphorylated creatine provides a number of important functions related to fuel supply in the muscle. The most well-known role is as a source of phosphate to regenerate adenosine triphosphate. The creatine phosphate system is the most important fuel source for sprints or bouts of high-intensity exercise lasting up to 10 seconds.

This particular author does not believe in high-loading phase followed by a lower maintenance phase. I prefer a non-loading protocol, but use of creatine over longer periods of time. Empirical research has proven this to be accurate.

Creatine supplementation has been shown to enhance the performance of exercise involving repeated sprints (long distance runners can use this product while doing their speed training protocols) or bouts of high-intensity exercise, separated by short recovery intervals. Therefore, exercise routines involving intermittent high-intensity work patterns with brief recovery periods (less than one minute) or resistance training programs may be enhanced by creatine loading.

I recommend 2 grams before exercise and 5 grams after exercise with co-ingestion of a substantial amount of carbohydrate (50 - 100 g, pending on size of participant and type and length of exercise). (Note: Alpha Lipoic Acid - a co-

factor for blood sugar metabolism - with high-glycemic index carbohydrate is the choice for co-ingestion with creatine after a workout).

Branched-Chain Amino Acids

Respect for the effectiveness of branched-chain amino acids (BCAA) has reached new heights due to the growing body of scientific literature on them. BCAA are known to enhance energy, reduce muscle breakdown, increase brain function, reduce body-fat, build-up immune function, blunt muscle soreness and recovery and, of course, help boost muscle growth.

While BCAA are composed of the amino acids leucine, isoleucine and valine, leucine appears to be the star performer. Studies show it is key to turning on the process of muscle protein synthesis, or muscle growth.

In a 2006 study, it was shown that a 1500 mg dose of BCAA reduced cortisol levels by 48%. Reducing cortisol is an effective way to enhance muscle recovery and growth. Try taking BCAA about 30 minutes before, and immediately, after workouts to inhibit cortisol and its catabolic effects and boost testosterone's anabolic effect. Take a dose of 1000 mg before and 2000 mg after a workout of BCAA. BCAA work best with co-ingestion with all the other amino acids.

Whey Protein

Whey is a unique (and impressive) protein in that it has shown to confer both performance-enhancing effects as well as an ability to help improve "health" under selective clinical conditions. Whey is a high quality, complete protein, with all the essential amino acids. It is also the richest known source of naturally occurring branch-chain amino acids (leucine, isoleucine and valine). Additionally, whey is

ranked the highest on the biological value scale (a measurement of protein quality) for protein. It has the ability to act as an anti-oxidant, anti-hypertensive, anti-tumor, anti-viral, anti-bacterial, and chelating agent. The primary mechanism by which whey is thought to exert its effect is by intracellular conversion of the amino acid cystine to glutathione, a potent intracellular anti-oxidant.

Whey proteins have insulinotropic effects and reduce the postprandial glycemia in healthy subjects. (Allows insulin response to be high, yet has a lower blood glucose level, which aforementioned effect is excellent for an after exercise meal). Whey protein has exhibited benefits in areas of exercise performance and enhancement through many different studies. Approximately 30 - 40 grams after a workout is the *whey* to go.

Glutamine

Amino acids are the building blocks of protein. Glutamine is an intriguing amino acid; it is the preferred fuel source for two crucial body functions: the intestines and the immune system. Scientists have classified glutamine as a conditionally essential amino acid. That is,

under certain conditions (severe stress), glutamine may be needed in much higher amounts. Data from studies in adults show that plasma levels of glutamine decline during acute stress and illness. Glutamine makes up roughly 60% of the amino acid pool and skeletal muscle.

Therefore, the regulation of intramuscular glutamine has significant effects on skeletal muscle metabolism. The loss of muscle glutamine may be a signal for muscle degradation, so it is essential that intra-muscular glutamine stores are maintained. Prolonged, exhaustive exercise can decrease the plasma level of glutamine, which is an important fuel for some cells of the immune system and may have specific immune-stimulatory effects.

Ingest glutamine dosage at about 5 g. per day if you're working out and 10 - 15 g. if you have your sights set on the Olympics. Take glutamine with protein before carbohydrates with arginine, ornithine, lysine before sleep or after exercise for added growth hormone secretion.

"A strong body makes the mind strong..."
Thomas Jefferson

- ❖ Protein added to a sports drink improves fluid retention: a 2006 study shows that a sports drink containing protein was 15% more effective in rehydrating athletes than a conventional sports drink and 40% more effective than water. (Only add about 5 g. of protein).
- ❖ Eat soon after workouts: a 2006 study shows that essential amino acids with carbohydrates stimulate muscle protein anabolism by increasing muscle protein synthesis when ingested within one hour after resistance exercise.
- ❖ Replace fluids, carbohydrates at 30 - 60 g. per hour.

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