

EAT TO GROW

SUPPLEMENT RESEARCH

Creatine and Beta-Alanine For synergistic size and strength gains

Several new studies pertaining to creatine were presented at the 2006 meeting of the American College of Sports Medicine, including the following:

- A study investigated the effects of combining creatine with beta-alanine, a new supplement that increases levels of L-carnosine, a dipeptide amino acid, in muscle.¹ Carnosine is a major intramuscular buffer that neutralizes the effects

of the higher muscle acidity levels produced during anaerobic metabolism. Researchers examined the combined effects of creatine and beta-alanine on strength, power, body composition and hormone changes in strength and power athletes during a 10-week weight-training program. Hormones tested included testosterone, growth hormone, IGF-1 and sex-hormone-binding globulin, which is bound to

testosterone and estrogen in the blood.

Thirty-three male athletes were randomly assigned to one of three groups:

- 1) Placebo (P)
- 2) Creatine only (C)
- 3) Creatine and beta-alanine (CBA)

The CBA group showed more gains in lean mass, coupled with a loss of bodyfat, than the

P and C groups. The CBA group also showed greater strength gains than the other two groups, as measured by maximum squat and bench press lifts. The creatine-only group showed the only hormonal change—an increase in resting testosterone levels.

This preliminary study shows that creatine and beta-alanine appear to work together in promoting gains in muscle strength and a loss of bodyfat.

- Creatine is often linked to a lower rate of muscle injuries and a higher rate of recovery following workouts. A new study tested those effects in 23 weight-trained males, aged 19 to 27, who took either creatine or a placebo for 10 days.² They used a loading regimen for the first five days that consisted of 0.3 grams of creatine per kilogram of bodyweight, amounting to 27 grams of creatine per day for a 200-pound man. On the second five days of the study the creatine was reduced to a maintenance dosage of 0.03 grams per kilogram of bodyweight.

Both groups had similar levels of muscle damage and soreness following the workouts. That led to the conclusion that creatine supplementation “does not reduce skeletal muscle damage or enhance recovery following resistance exercise.”

- Training in a hot environment leads to rapid fatigue related to overheating and possibly dehydration. Those problems can be counteracted with hydrating agents that lower body temperature. The agents work best when used in conjunction with copious fluid intake. Two popular hyperhydrating agents are glycerol and creatine. A



Beta-alanine, a.k.a. Red Dragon, synergizes with creatine for unique muscle- and strength-building effects.

Neveux \ Model: Tamer Elshahat

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study examined the effects of combining glycerol and creatine during prolonged exercise in the heat.³

Experimenters randomly assigned 23 well-trained cyclists to either a creatine or a placebo group. The creatine group drank 10 grams of creatine twice daily along with 75 grams of glucose polymer mixed in a liter of warm water. Both groups participated in two seven-day exercise regimens. During the first trial they were given one gram of glycerol per kilogram of bodyweight or a placebo.

Combining creatine with glycerol did increase total-body water levels more than just creatine alone did. Adding glycerol to the creatine regimen, however, didn't lead to any further changes in rectal temperature, heart rate or perceived exertion. So if adding glycerol to creatine does lead to greater internal water retention, it doesn't appear to reduce the effects of heat stress more than taking creatine alone.

—Jerry Brainum

References

¹ Hoffman, J., et al. (2006). Effect of creatine and B-alanine supplementation on performance and endocrine responses in strength/power athletes. *Med Sci Sports Exerc.* 38:S126.

² Rawson, E.S., et al. (2006). Creatine supplementation does not reduce muscle damage or enhance recovery from resistance exercise. *Med Sci Sports Exerc.* 38:S126.

³ Easton, C., et al. (2006). Effects of combined creatine and glycerol supplementation on physiological responses during exercise in the heat. *Med Sci Sports Exerc.* 38:S125.

AMINO AMMO

Whey or Aminos? Which is best for muscle protein synthesis?

Recent studies show that for purposes of increasing muscle protein synthesis, dosing up on essential amino acids is of primary importance. The EAAs are defined as those that cannot be synthesized by the body and so must come from food. (Other amino acids can be synthesized—hence the misleading “nonessential” label.

In a study presented at the 2006 ACSM meeting, scientists tested whether adding whey protein to essential amino acid intake would increase the rate of muscle protein synthesis. All of the subjects were elderly, 68 to 76 years old (older people have lower rates of muscle protein synthesis than younger people do). One group got 15 grams of whey protein; another group got EAAs.

There was a higher rate of muscle protein synthesis in the whey group than in the EAA group. The authors attributed that to whey's stimulation of insulin. Insulin provides an increased rate of muscle protein synthesis in the presence of higher blood levels of amino acids. The whey may have been responsible for that effect because of either a richer amino acid content or perhaps because of some intrinsic property of the whey itself, such as rapid amino acid absorption and uptake into the body.

—Jerry Brainum

Katsanos, C.S., et al. (2006). Muscle protein synthesis in the elderly following ingestion of whey protein or its corresponding essential amino acid content. *Med Sci Sports Exerc.* 38:S112.

