

The Adverse Role of Stimulants in Athletics

Key Points

1. Stimulants have several potential adverse physiologic effects
2. Many so-called stimulants are not proven
3. Stimulants are disavowed in all athletic competition

Stimulants have been, and will continue to be a highly controversial subject in human performance and athletics. Commonly misunderstood, stimulants do not provide energy for the body and are counterintuitive to the principles of athletics. In fact, no substance other than the common macronutrients found in food (carbohydrate, protein, and fats) provides an actual surplus of energy to the body.¹ Although metabolic cofactors such as vitamins and minerals make processing of macronutrients for energy possible, they do not bring a surplus of energy into the body.

Although stimulant ingredients give the impression of elevated energy levels, they only increase metabolism (the speed at which the body creates its own energy). Adding stimulants to increase metabolism is much like pressing the accelerator down in an automobile: the vehicle moves faster, but it will run out of fuel sooner (not to mention increased wear on its parts) and, the body will adapt to stimulants if exposed to them repeatedly. The principle of adaptation leads to the physiologic requirement for larger and larger doses to achieve the same effect in the body.² Continual use of stimulants will also lead to a more rapid depletion of energy cofactors (vitamins and minerals) found in the body, possibly leading to eventual fatigue if they are not replaced at a greater rate than they are used.

There are few true stimulant ingredients in existence. The vast majority of ingredients that manufacturers claim to increase energy have very little in the way of positive clinical studies behind them.³ The majority of 'energy enhancing' ingredients are not shown to enhance performance in human studies. In fact, many of the claims behind them are derived and extrapolated from test tube or animal studies that show little beneficial effect and cannot be automatically applied to human physiology with any certainty. Even more, the amounts of so-called 'energy enhancing' ingredients are found in such miniscule doses in products that further reduces the certainty that any energy enhancement will occur whatsoever.

The use of stimulants to enhance athletic potential is unacceptable. Numerous beverages are marketed to consumers (and athletes) that contain actual stimulants and other ingredients that have purported stimulant effects⁴ because they believe athletes will use whatever they can in hopes of fighting fatigue or obtaining an extra boost despite that countless sporting organizations blatantly object to the use of any stimulant, in any form in athletic training and competition.

Consuming so-called "energy enhancers" will never make up for proper training, diet, rest and commitment. Performance results from intense training and the proper combination of dietary strategies with adequate rest and recovery. Chances are if one feels the need to consume a stimulant, that urge is there to compensate for other shortcomings in training

and dedication. Optimal energy stores are obtained by consuming the right diet, staying hydrated, and allowing enough time for recovery.

¹ Magkos F, Kavouras SA. Caffeine and ephedrine: physiological, metabolic and performance-enhancing effects. *Sports Med.* 2004;34(13):871-89.

² Bohn AM, Khodae M, Schwenk TL. Ephedrine and other stimulants as ergogenic aids. *Curr Sports Med Rep.* 2003 Aug;2(4):220-5.

³ Williams MH. Facts and fallacies of purported ergogenic amino acid supplements. *Clin Sports Med.* 1999 Jul;18(3):633-49.

⁴ Online Document at: <http://www.bevnet.com/>

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Gleukos Key Points:

1. Gleukos contains a natural form of fuel with optimal levels of electrolytes designed to rapidly deliver what the body needs during exercise.
2. Gleukos does not contain any stimulants, or ingredients with purported stimulant effects.