

## Ergogenic Aids

**Ergogenic aids:** the application of a *nutritional*, physical, mechanical, psychologic, physiologic, or pharmacologic procedure or aid to improve physical work capacity, athletic performance, and responsiveness to exercise training.

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### Evaluating Dietary Supplements

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#### Evaluating Dietary Supplements

The manufacture and sale of dietary supplements is an \$18 billion per year industry. Sorting through the advertisements and associated claims for the 29,000-plus dietary supplements available can be difficult and confusing. But if an individual is going to be ingesting something, it's important to learn about it first. In this Nutrition Roundup column I provide six guidelines and recommendations on how to evaluate any dietary supplements on the market.

#### 1. Are there legitimate physiological mechanisms associated with the supplement?

The purpose of an ergogenic aid is to enhance performance in one way or another, whether it is to allow athletes to lift more weight, run faster, or increase endurance. When evaluating the product, ask yourself, "Is it possible for the supplement to enhance the pathway from point A to point B?" For example, creatine phosphate is useful in energy reactions to regenerate ATP, the body's "energy currency." The next step is to consider whether the supplement in question is necessary for the reaction to occur, may enhance the speed of the reaction, or will do nothing to change what normally goes on in the body.

#### 2. Is this product useful for the intended sport?

Certain supplements are designed for high-intensity, short-duration events, such as weight lifting or sprinting. Others are designed to increase endurance. Therefore, depending on the sport one is involved in, certain supplements should not even be considered. Again using creatine as the example, it is not beneficial for long-duration, endurance-type activities, such as marathons. Using such a supplement to train or compete in these types of events would be nothing more than a waste of money.

#### 3. Are there scientific, placebo-controlled studies to support or refute the claims being made for the supplement? Have the results been duplicated?

Dietary supplements are being developed, improved, and launched practically every single day. Unfortunately, well-conducted scientific studies take much longer than this, and in the meantime athletes are being drawn to them. Dietary supplements do not have to endure the same rigor as pharmaceutical agents. However, some supplements have had a number of safety and efficacy studies conducted on them. Such studies are published in peer reviewed, scientific journals. It is also important to find out if the research has been duplicated. If one study was conducted in the laboratory of the company that produces the supplement, and there has never been any follow-up

research conducted, one should be hesitant about putting too much faith in their claims. Access to thousands of well-respected journals can be found for free on PubMed, a resource of the National Library of Medicine at [www.ncbi.nlm.nih.gov/pubmed](http://www.ncbi.nlm.nih.gov/pubmed).

#### **4. Is there adequate safety data on the particular dietary supplement?**

The importance of long-term health can be difficult to get across to young, otherwise healthy athletes. However, it's vital to stress the safety concern that's associated with dietary supplements. If the athlete's goal is to gain lean body mass, and the supplement he or she is taking will do so at the expense of curtailing his or her adult life, it's too high a price to pay. This caution is obviously a bit extreme, but excess stress on the kidneys, liver, and other organs should be a concern with some supplements.

#### **5. What is the source of information regarding the dietary supplement?**

Did the athlete hear about the dietary supplement in question from a friend, coach, magazine, etc.? Remember that most mainstream fitness magazines are owned by supplement companies. Therefore, it is common to read articles that are very slanted towards promoting a particular product(s). Magazines are a good way to be introduced to a product, but then the consumer must continue the investigative work to determine if there is any truth behind the supplement's claims.

#### **6. Is the product banned by any governing agencies?**

This is of particular concern for collegiate and professional athletes. There are a number of products that are banned by the NCAA, IOC, NFL, and other organizations. Whether or not a product may work, it is not worth risking a career over. The banned supplement list should be posted so athletes know and understand what products are included on the list.

This is a basic list of questions and concerns that should be answered prior to consuming any dietary ergogenic aids. And remember to emphasize the importance of real food whenever talking to athletes about supplements. Dietary supplements are called supplements for a reason—they are intended to supplement whole foods in the diet. No dietary supplement can or will ever be able to replace what can be obtained through the diet. Consuming adequate energy and fluids should be the first concern. Dietary supplements should then fill in the very tip of the “iceberg,” but only if they are proven to be safe, legal, and beneficial.

A *Fitness Nutrition Coach* should focus on learning the overall concepts of nutrition before delving into learning about specific ergogenic aids; doing so will help explain basic concepts, which can then be applied to the study and understanding of dietary supplements and how they function. The term ergogenic aid is used interchangeably with dietary supplement; this course will briefly review three popular products or categories of products used by active individuals and athletes alike.

### **Practice Points**

#### **Creatine**

Creatine was discussed briefly with the energy systems in chapter 2, but considering it is the most widely studied dietary supplement to date, it deserves more attention. Creatine is synthesized endogenously in healthy individuals and is also consumed via the diet. It is a natural compound present mostly in skeletal muscle, but is also found in cardiac and smooth muscles. Normal, healthy individuals typically consume approximately 2 g/day. Herring is actually the greatest