

THE PROS AND CONS NUTRACEUTIC

Many athletes and non-athletes have turned to supplements for weight loss and performance enhancement. There is a literal alphabet soup of dietary supplements out there on the shelves—from amino acid K, beta carotene, and creatine to the traditional

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Chinese medicines Xue Zhi Kang and Zhitai. You can find these substances in natural foods we know are good for us, such as fruits and vegetables, and in products that claim to be good for us, such as pills, energy drinks

and endurance products.

According to the FDA, there are more than 29,000 of these manufactured supplements on the market today. Americans spend more than \$14 billion a year adding these pills, powders and capsules to their diets. Many athletes take supplements (also known as nutraceuticals) hoping to enhance their performance in ways that are legal, and, they hope, not harmful to their health. Dr. Jim Miller, USMS immediate past president, current USA Swimming National Team physician and FINA doping control officer, had this to say about supplements and nutraceuticals in a presentation to the Sports Medicine Symposium

at the 2006 FINA Worlds:

“People feel that if a product is sold in a health food store, then it must be healthy,” Miller said. “But is it? Is it even really necessary? Will it interact with other products or medicines you might be taking?” Miller became interested in the roles of supplements after he traveled to Australia with the national team. Over there, he noticed, people spent a lot of money on supplements. “It piqued my interest,” he recalls. “They viewed these products as food items, not as drugs.” But which ones are beneficial, which ones are useless, and which ones are potentially harmful?

Congress defined the term

“dietary supplement” in the Dietary Supplement Health and Education Act (DSHEA) of 1994 as a product taken by mouth that contains a dietary ingredient intended to supplement the diet. These dietary ingredients may include vitamins, minerals, herbs or other botanicals, amino acids and substances such as enzymes, organ tissues, glandulars and metabolites.

Dietary supplements can be extracts or concentrates, and may be found in many forms—tablets, capsules, softgels, gelcaps, liquids or powders. These substances also may be provided in other forms, such as an energy bar. However, when food manufacturers include



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Are These Legal Substances Useful for Enhancing Performance?

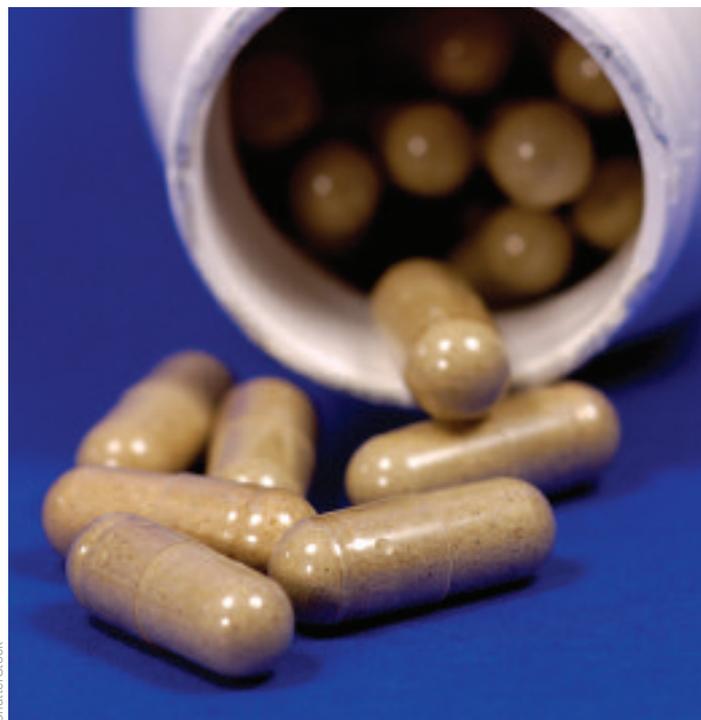
by Raena Alexis Latina

supplements in a food product, the information on the food label must not represent the product as a conventional food or a sole item of a meal or diet. Whatever their form, federal law places dietary supplements in a special category under the general umbrella of foods, not drugs, and requires that every supplement be labeled a dietary supplement.

Are these products regulated? Yes and no. The FDA regulates dietary supplements under a different set of regulations than those covering conventional foods and drug products (both prescription and over-the-counter). Under the DSHEA, the dietary supplement manufacturer is



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Good Nutrition: The Food Pyramid

- Food pyramids show what foods a person should eat each day for optimum health.
- The USDA's new food pyramid factors individual information such as weight, gender, activity level and age into a personalized pyramid. (www.MyPyramid.gov)
- The Harvard School of Public Health Healthy Eating Pyramid, based on the USDA pyramid, offers more information to help people make better choices about what to eat. (www.hsph.harvard.edu/nutritionsource/pyramids.html#pyramid)

Muscle Fuel

- Muscle fuel comes from carbohydrates, fats and proteins. The body burns these fuels in that order as it needs energy.
- Good sources of carbohydrates are fruits and whole grains such as oatmeal, whole-wheat bread and brown rice.
- Good sources of fats are olive, canola, soy, corn, sunflower, peanut, and other vegetable oils, as well as fatty fish such as salmon.
- Good sources of protein are fish, chicken, turkey and eggs.

Dr. Miller's Top 10 "Rules" for Good Nutrition

10. Consume foods in balance with variety, taking into account exercise sets and duration.
9. Exercise should be preceded by a simple carbohydrate, usually in a liquid or gel form.
8. If your exercise set exceeds an hour, then you need nutrition to avoid muscle immobilization (again, in a liquid or gel form).
7. In an exercise set planned for more than an hour, take carbohydrates early in the set and mix in water increasingly as the set proceeds.
6. More and smaller meals of carbohydrates stimulate less of an insulin surge, and therefore less stimulation of appetite.
5. Excess consumption of any food results in fat storage.
4. Proteins and fats mixed with carbohydrates blunt the glycemic/insulin response.
3. Keep concentrations of fat away from exercise times by at least two hours.
2. Brightly colored foods are fun and contain anti-oxidants (this means fruits and vegetables, not M&Ms and Skittles).
1. Chocolate is not a food group (and neither is beer).

responsible for ensuring that a dietary supplement is safe before it is marketed. Manufacturers must make sure that product label information is truthful and not misleading. The FDA is responsible for taking action against any unsafe dietary supplement product after it reaches the market. Generally, manufacturers do not need to register their products with FDA nor get FDA approval before producing or selling dietary supplements.

The FDA's post-marketing responsibilities include monitoring safety, which often includes voluntary reporting about adverse events, and product information, such as labeling, claims, package inserts and accompanying literature. The Federal Trade Commission regulates dietary supplement advertising.

Miller notes, "You have to be careful with some of the phrases on these products, as to whether or not it is OK from a doping standpoint as well as for general health." Although terms such as "muscle building," "performance enhancement" and "muscle fuel" may be enticing, these products cannot actually guarantee any health benefits.

Is it legal to market a dietary supplement product as a treatment or cure for a specific disease or condition? In a word – no. A product sold as a dietary supplement, treatment, prevention or cure for a specific disease or condition and promoted as such on its label and in its accompanying marketing materials, would be considered an unapproved drug—and thus illegal. To maintain the product's status as a dietary

Other Resources

- www.fda.gov
- www.supplementquality.com
- www.mayoclinic.com > "drugs and supplements"

supplement, the labeling must be consistent with the provisions in the DSHEA.

Where can I get information about specific dietary supplements? Manufacturers and distributors do not need FDA approval to sell their dietary supplements. This means that the FDA does not keep a list of manufacturers, distributors or the dietary supplement products they sell. If you want more detailed information than the label tells you about a specific product, you may contact the manufacturer of that brand directly. The name and address of the manufacturer or distributor can be found on the label of the dietary supplement.

Are there problems with supplements? In 2001, 20 percent of all supplements were found to have the anabolic steroid precursor Nandrolone. This substance occurs naturally in small quantities in the human body, yet increased amounts can equal trouble for any athlete who is subject to doping control. The International Olympic Committee has set a limit of acceptable amounts of Nandrolone found in a person's urine, beyond which an athlete is suspected of doping.

In USA Swimming, Miller notes, there are team physicians who watch athletes closely and answer questions for them. He hasn't noticed

swimming to be plagued with doping problems the way some other sports are. "Kids may have a coach who says, 'Here's something that may help your performance.' Masters generally don't face that."

While doping is regulated on the elite competition level, Masters swimmers in general are not only concerned with daily performance enhancement, "but also just improving our daily lives," he adds. In fact, for any athlete subject to doping control, the use of nutritional or dietary supplements is completely at the athlete's own risk, even if supplements are "approved" or "verified."

Another potential problem with supplements is that more than 50 percent are found to have impurities not listed on the label. The most common are insects, mold, glass and even animal waste.

What really works? While they may sound rather boring, proper hydration, proper nutrition and getting enough sleep are really the best ways to ensure peak performance.

Hydration, quite simply, is drinking enough water to keep our bodies running efficiently. Nutrition includes carbohydrates, proteins and fats consumed in a fashion that supplies the exercising muscle to allow for rapid repair and fueling. For about 20-30 minutes after a workout, the muscle is primed to be refueled, due to the release of insulin. Generally, this window can be extended to up to two hours, which allows a person time for a meal to refuel the body. When a body is not refueled, muscles break down, leading to fatigue, soreness and a decline in performance. Other signs of nutritional

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failure include an elevated heart rate during and after the workout, as well as a poor recovery.

In addition to proper hydration and nutrition, the body needs sleep to give the body time to repair itself. According to the St. Luke's Hospital's Unity Sleep Medicine and Research Center, most adults need seven-and-a-half to eight hours of sleep nightly.

There are certain substances that may increase performance. Creatine, caffeine and sodium bicarbonate are three often-touted supplements for performance enhancement. But medical doctors and nutritionists say each should be used in moderation and always with a "user beware" caveat.

Creatine has only been tested for short-term use. No studies have been conducted to determine long-term safety. And in some forms, Creatine may have potentially dangerous additives that could affect the kidneys. Side effects include fluid retention, muscle cramping and weight gain.

Caffeine is often thought of as a performance booster, but again, users beware. Most studies indicate that in order to receive a benefit from caffeine, an athlete must not be using caffeine routinely. High caffeine use also has been linked to cardiac arrhythmia.

Sodium bicarbonate is sometimes used in high doses as a buffer against the buildup of lactic acid. However, gastrointestinal side effects from sodium bicarbonate can be severe. More importantly, studies have shown sodium bicarbonate has many drug interactions that could be harmful for the user.

What doesn't work? Overtraining is a sure way to decrease your performance. Training is a delicate balance between challenging the muscle and cardiovascular system to accommodate increasing

stress, and then rebuilding to meet those challenges. Some factors include hydration, nutrition, sleep, and conscious medical health. The biggest clue is to listen to your body.

Rapid change may also have a negative effect on performance. This applies to everything from diet, to sleep, to training. Slow and steady change is the way to build a lifetime habit. The exception here is in regards to ceasing an addictive substance, which should always be done with medical supervision.

As they age, Masters swimmers need to watch their weight and practice regularly. Stimulants may present a danger to the cardiovascular, central and peripheral nervous systems, and should be used with caution. Likewise, anything that disturbs the balance between the aerobic or anaerobic system is a concern.

"As we get older," notes Miller, "we are more likely to have other health issues, such as diabetes or high blood pressure. And we're more likely to be taking other medications that may have unknown interactions with supplements." Medication without monitoring, such as using diuretics, is a "no-no." Miller says it is important to use medications only under the proper supervision of a doctor. And athletes should make sure they keep their doctors well aware of their active lifestyles.

"For a Masters swimmer," notes Miller, "we are interested in performance, but, as a group, we're also interested in how to keep the clock turned back. What we always need to keep in mind is improving our health and performance without crossing the line, either illegally or with something that will ultimately have adverse effects." <<<

>>> **This information is not intended as a substitute for professional or medical advice. For personal medical advice, consult your healthcare provider.**

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