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INTRODUCTION & PURPOSE

Many athletes believe they need dietary supplements to perform at their best, but this trust in supplements is undeserved. While it's true that some supplements can be helpful in some circumstances, people regularly overestimate their benefits and safety.

Many use them without understanding the supplement industry or talking to a dietitian, and they instead rely on advertisements and labeling. However, people can't trust what many supplements claim to contain or deliver because of ineffective regulation of the supplement industry.

It's easy to assume that if a product is on a store shelf, then it must be safe. But dietary supplements are regulated in a post-market manner, meaning the Food and Drug Administration (FDA) does not evaluate the contents or effects of supplements before they are sold. A harmful or illegal dietary supplement can stay on store shelves for a long time, sometimes even years, before the FDA can remove them.

Because of this, it's important to be an informed consumer and understand the risks before deciding to use any dietary supplement.

This booklet is designed to help you decide if the potential benefits of dietary supplements outweigh those risks, and if so, how you can better choose a low-risk product.



Q: What is a dietary supplement

A: The dietary ingredients found in supplements can also be found in foods. In fact, by law, dietary supplements can only contain ingredients that are already in the food supply. But dietary supplements are highly processed and there is always a chance of contamination during the manufacturing process. **Who would you rather have manufacture your calcium, a factory or mother nature?**

WHERE CAN I FIND CALCIUM?

PRODUCED IN A FACTORY



Sold in bulk powder as a dietary ingredient

----- OR -----



Sold as supplement

NATURALLY IN FOOD



Seeds



Cheese



Yogurt



Sardines



Almonds



Beans & Lentils



Spinach & Kale



Milk

DEFINITION

DIETARY SUPPLEMENT: According to the Dietary Supplement Health and Education Act (DSHEA) of 1994, a dietary supplement is defined by law as a product taken by mouth (a patch or a cream is not legally considered a supplement) that contains a “**dietary ingredient**” and is intended to supplement the diet. The intended use can only be to supplement the diet. A supplement cannot advertise to treat or cure a disease or ailment of any type.

DEFINITION

DIETARY INGREDIENTS: The dietary ingredients contained in supplements may include vitamins, minerals, herbs or other botanicals, amino acids, and substances, such as enzymes, organ tissues, glands, and metabolites. Dietary supplements may also contain extracts or concentrates of dietary ingredients, and may be found in many forms, including tablets, capsules, soft gels, gel caps, liquids, or powders. They can also be found in other forms, such as a bar, if the label does not represent the product as a conventional food or as a replacement for a full meal or diet. A dietary supplement can also be a liquid if the information on the label makes it clear that it's not a standard beverage or drink for the sole purpose of rehydration.

Regardless of the form, the DSHEA 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.

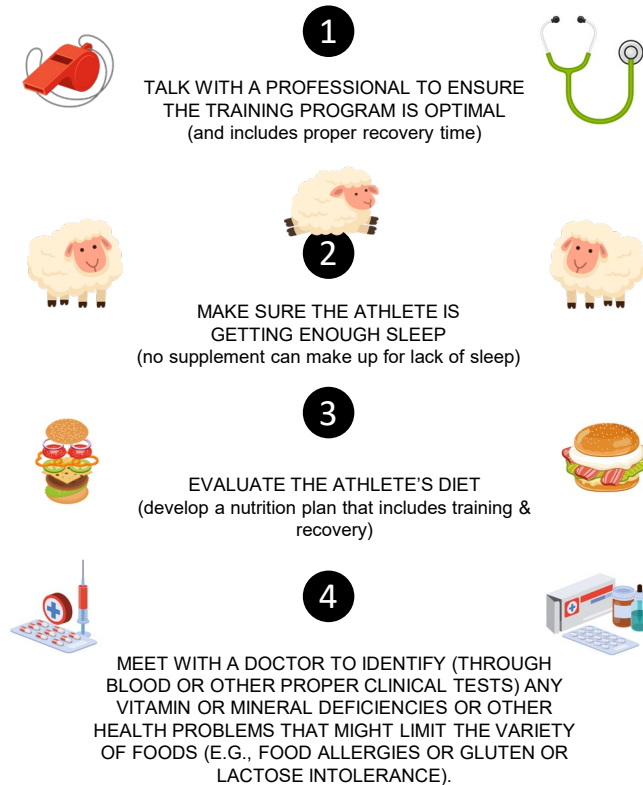
Excerpted and modified from the FDA: https://www.fda.gov/Food/DietarySupplements/UsingDietarySupplements/ucm480069.htm#what_is

Q: Do athletes need dietary supplements?

A: All athletes need good nutrition, but it is up to each individual to determine whether that nutrition is best obtained through foods or supplements. Under certain circumstances, some dietary supplements may be helpful to athletes.

It is important to first evaluate the nutritional needs of the athlete, and then identify whether increasing the intake of certain vitamins, minerals, or other ingredients is necessary. You can use the steps below to determine if an athlete needs a dietary supplement.

EVALUATING AN ATHLETE'S NUTRITIONAL NEEDS



CASE STUDY

In 2013, a Long Island doctor noticed that his patients were showing symptoms normally associated with anabolic steroid use, such as liver damage, blood clots, muscle pain, masculine features appearing in women, and even testicular shrinkage, infertility, and gynecomastia (breast tissue development) in men. These patients had all gone to the same chiropractor, who prescribed Healthy Life Chemistry vitamins by Purity First to each of them.

**REMEMBER, EVERY
"SAFE" SUPPLEMENT
CAN POSE A RISK.**

Although the label of these products appeared normal and didn't list unusual ingredients for a vitamin, regulators discovered anabolic steroids in the products after investigating health complaints. The ensuing warning letter from the FDA was initially ignored by Purity First, and the contaminated products remained on sale until they were finally recalled and destroyed after further federal pressure. Although Purity First supplements are no longer on the market, stories like this are all too common, and the FDA's list of recalled supplements grows every month. It's important for consumers to remember that the label does not always paint an accurate picture of what is, or isn't, in a supplement. Even simple, safe-looking products from seemingly reputable companies can be contaminated with dangerous ingredients that can cause serious health problems and violate anti-doping rules.

Q: Should an athlete buy a supplement that advertises what they want to achieve?

A: Because the benefits of dietary supplements are often exaggerated, the decision to use a product should be based on nutritional needs and not any competitive advantage a product claims to offer.

Despite the claims a dietary supplement might make in its advertising, there are no regulatory or enforcement agencies that check to make sure the advertisements are accurate. Federal law does not even require supplement companies to prove to the FDA that their products are safe or effective before they are sold. Because of this, athletes and consumers should ignore advertising and focus instead on the research about the individual dietary ingredients, such as basic vitamins and minerals.



DON'T FALL FOR FALSE ADVERTISING

Advertisements for dietary supplements often make extremely exaggerated claims. Sometimes dietary supplements with the same ingredients even claim to improve wildly different aspects of performance.

For example, whey protein is advertised to be the key ingredient in both weight-gain and weight-loss products, implying that the same ingredient somehow has opposite effects. The benefits listed on supplement packaging and advertising sound nice, but it's important to remember that what a product can do for an athlete doesn't always match up with the label.

Athletes and those supporting them should carefully evaluate their diet and training regimen to figure out what ingredients aren't being obtained through food, and then choose a safer product that delivers that ingredient. Visit Supplement411.org for information on choosing a lower-risk supplement.

— BE SMART —

Q: Is there evidence behind the benefits of using dietary ingredients?

A: To determine which, if any, dietary supplements can benefit athletes, it is necessary to first evaluate the athlete's metabolic needs and diet.

Since everyone is different, it is not possible to simply say "all athletes need fish oil/vitamin D/branched chain amino acids (BCAAs)" or that "creatine improves the sport performance of every athlete." For example, creatine can help some athletes in a few specific instances (see Table 1) if they are not eating enough of the right foods, but there is no one-size-fits-all solution.

Table 1 shows some of the potential benefits and risks of commonly asked-about dietary ingredients.

To evaluate whether a specific ingredient would benefit an athlete, it is helpful to consult with a certified sports dietitian or other qualified healthcare provider. If you do not have access to someone with the credentials to help, you can also consult the True Sport Nutrition Guide for information about dietary ingredients' effects on health and performance.

If an athlete has an identified nutrient deficiency, the question becomes how to best increase the intake of that ingredient. The U.S. Anti-Doping Agency (USADA) recommends that athletes first try to modify what they eat. However, if it is determined that food alone will not do the trick, then an athlete should undertake a thorough evaluation to minimize the risks around supplement use.



Table 1: POTENTIAL BENEFITS AND RISKS OF COMMON DIETARY INGREDIENTS

	Potential Benefits	Potential Risks
Vitamins & Minerals	Can provide necessary nutrition for adolescents who do not eat a balanced diet. There are no demonstrated performance benefits aside from general good health.	Mega-doses can cause toxicity leading to nausea, vomiting, organ damage, and other adverse effects.
Calcium	May benefit some female athletes between ages 13-18 or lactose intolerant athletes. Build bones and teeth.	High doses can cause kidney stones and heart problems.
Creatine	Can delay muscle fatigue in high intensity training. In most studies, performance benefits are small and only experienced during short-duration, maximum-intensity resistance training. No benefit shown in aerobic activities or with "on-field" athletic performance.	High doses can cause kidney damage, nausea, diarrhea, cramping, and upset stomach.
Caffeine	Offers some energy and performance benefits to adults, but its effects are not well studied in adolescents.	Effects can be intensified if used with ADHD medications. The American Academy of Pediatrics recommends against kids using caffeine.
Nitric Oxide Boosters (beet juice, arginine, citrulline, and other vasodilators)	Results are mixed regarding potential benefits of high nitrate containing foods on athletic performance. The evidence that arginine in normal doses actually causes vasodilation is debatable.	Vasodilation can cause a sudden loss of blood pressure, dizziness, lightheadedness, and a loss of balance.
Protein Powder	No performance benefit if diet provides adequate protein.	High doses can cause thirst, bloating, cramps, diarrhea, reduced appetite, and fatigue.
Iron	Necessary for production of red blood cells. Signs of deficiency include fatigue and irritability. Once normal levels are achieved in the blood, additional iron provides no performance benefit.	High doses can cause stomach pain, nausea, and vomiting.

(Source: American Academy of Pediatrics and LaBotz et al 2016)



Q: What are the risks associated with dietary supplements?

A: The use of unhealthy, low-quality, or unlisted ingredients is a big problem in the supplement industry.

Even though there are many high-quality and safe dietary supplements on the market, there is always the possibility that the supplement an athlete chooses could contain dangerous or illegal ingredients. There are often no warning signs that a product is unsafe and many athletes have suffered health problems or had positive drug tests from using products that are incorrectly labeled or contaminated with dangerous ingredients, such as anabolic steroids, pharmaceuticals, or research drugs.

Sometimes, risky or dangerous ingredients are even listed right on the label or identified by a confusing name. Supplements can also contain low-quality ingredients, or old or unstable ingredients that degrade very quickly.

Other supplements might not even contain the ingredients on the label. The FDA and other organizations list many examples of tested products containing zero amounts of a listed ingredient. In some situations, this could lead to malnutrition if the athlete stops eating foods with the ingredient because they relied solely on the supplement.

ARE YOU *SURE* IT'S WORTH THE RISK?



Q: If a dietary supplement is the most realistic way for an athlete to obtain necessary dietary ingredients, how do you pick the safest one?

A: There is no risk-free way to choose a supplement, as the only way to have zero risk is to not use supplements. But, an athlete can reduce the risk significantly by following USADA's Decision-Making Flow Chart.

If using a dietary supplement is needed, the best way to reduce the risk of using a low-quality or contaminated product is to choose one that is certified by a USADA-recommended third party. See Supplement411.org for the most current recommendations

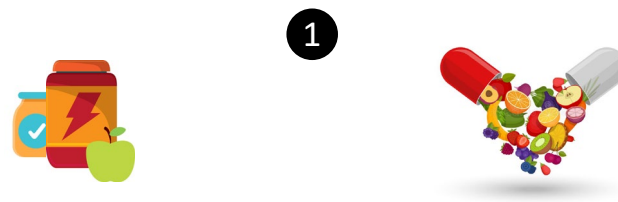
Q: What types of products should I avoid?

A: If you choose to use uncertified supplements in spite of the risks, avoid using products with red flags, which are listed in the Supplement Red Flags section of this booklet. Keep in mind that this is no guarantee. USADA is aware of several dietary supplements that, on initial inspection, would not have exhibited any "red flags," but testing revealed that they were contaminated with experimental drugs!

Because a supplement's label and contents are not checked by the FDA or anyone else before a product is sold, it is completely up to the manufacturer to accurately list the ingredients and the amounts. While there are many companies that make high-quality supplements and spend a lot of time ensuring the labeling on their products is accurate, there are also companies that are sloppy during manufacturing or deliberately spike their products with illegal ingredients that are not on the label.

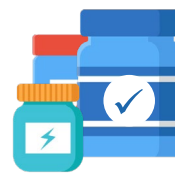
There have been many cases where seemingly safe or low-risk products ended up containing prohibited performance-enhancing drugs, even though there was nothing on the label that made the product appear unsafe.

DECISION-MAKING FLOW CHART



1

MAKE SURE YOU NEED A SUPPLEMENT
(make sure the benefits outweigh the risks)



2

USE PRODUCTS CERTIFIED BY A USADA-RECOMMENDED THIRD PARTY
(see Supplement411.org for current recommendations)



3

IF YOU CHOOSE TO USE AN UNCERTIFIED PRODUCT IN SPITE OF THE RISKS, THEN ELIMINATE PRODUCTS WITH RED FLAGS.
(see the Supplement Red Flags section)

4

MAKE A DECISION KNOWING THAT IN SPITE OF YOUR DUE DILIGENCE AND CARE IN SELECTING A LOWER RISK SUPPLEMENT, THERE ARE NO GUARANTEES. YOU CAN NEVER BE 100 PERCENT SURE THAT WHAT IS LISTED ON THE LABEL IS WHAT'S IN THE BOTTLE.

CHOOSING A DIETARY SUPPLEMENT