

The beneficial effects of creatine have only been noted in poorly trained athletes, not in elite athletes. An adverse effect of creatine supplementation is weight gain due to increase in cellular water in muscle. Potential side effects include muscle cramping, dehydration, gastrointestinal distress, nausea, and seizures. Creatine may also affect kidney function. The long-term health effects of high doses of creatine are unknown, especially for persons who have liver or kidney problems or diabetes. Taking creatine supplements may depress the body's own synthesis of the substance, which may not return to normal once the athlete stops taking the supplements.

Creatine is categorized as a food supplement by the Food and Drug Administration and is available over the counter at drug stores and nutrition centers. Although readily accessible, creatine supplements are somewhat expensive, costing approximately \$30 to \$50 a month.

## Ephedra

The terms *ephedrine*, *ephedra*, and *ma huang* are used to refer to the same substance derived from the plant **ephedra**. Ephedra is a shrub-like plant that is found in desert regions in central Asia and other parts of the world. The dried greens of the plant are used medicinally. Ephedra is a stimulant containing the herbal form of ephedrine, an FDA-regulated drug found in over-the-counter asthma medications.

**ephedra** A substance derived from a shrub-like plant; used as a stimulant to boost energy and weight loss.

In the United States, ephedra and ephedrine are sold in health food stores under a variety of brand names. The FDA does not currently regulate ephedrine because it is a dietary supplement protected under the Dietary Supplement Health and Education Act of 1994. Nevertheless, ephedra is banned by the NCAA, the NFL, and the IOC.

Ephedrine is widely used for weight loss, as an energy booster, and to enhance athletic performance. These products also often contain other stimulants, such as caffeine. Ephedrine alkaloids are amphetamine-like compounds used in OTC and prescription drugs. They have potentially lethal stimulant effects on the central nervous system and heart. These serious adverse effects include hypertension (elevated blood pressure), palpitations (rapid heart rate), neuropathy (nerve damage), myopathy (muscle injury), psychosis, stroke, memory loss, heart rate irregularities, insomnia, nervousness, tremors, seizures, heart attacks, and death.

One illustrative case is that of Baltimore Orioles pitcher Steve Bechler, who died in February 2003, less than 24 hours after taking ephedra. Bechler took three tablets of Xenadrine, an over-the-counter drug whose primary ingredient is ephedra. The 6-foot-2, 239-pound Bechler collapsed at spring training with heatstroke. His body temperature was reported to be 108°F. A Florida medical examiner said his death may have been linked to Xenadrine, an ephedra-based diet



pill. The FDA has issued a warning on the dangers to anyone taking ephedrine-based supplements.

## CURRENT IOC, NCAA, AND PROFESSIONAL STANDARDS

The International Olympic Committee Medical Commission was created in 1961 to deal with the increasing problem of **doping** in the sports world. *Doping* is the unnatural use of any substance or means to gain an unfair edge over the competition. The initial goal of an anti-doping structure was rapidly widened to encompass the following three fundamental principles:

- Protection of the health of athletes
- Respect for both medical and sport ethics
- Equality for all competing athletes

Today, the IOC has strict rules governing the use and misuse of banned substances. The elimination of doping in sport is one of the fundamental objectives of the Olympic Movement. The Anti-Doping Code, which the entire Olympic Movement must observe, contains the following key points:

- It applies to the Olympic Games, the various championships, and all competitions to which the IOC grants its patronage or support.
- It intends to ensure respect for the main ethical concepts of sport and to protect the health of the athletes.
- It enables appeals to be lodged with the Court of Arbitration for Sport against certain decisions rendered in the course of application of the code.

### KEY CONCEPT

Performance enhancers are substances that athletes use because they believe the substances will enhance athletic performance, strength, and endurance. Athletes may experiment with performance enhancers because they are striving and being pushed to win no matter what the cost.

The National Collegiate Athletic Association (NCAA) has a drug-testing program that mandates urine collection on specific occasions and laboratory analyses for substances on a list of banned-drug classes developed by the NCAA Executive Committee. This list consists of substances generally purported to be performance enhancing and/or potentially harmful to the health and safety of the student-athlete. The drug classes specifically include

**doping** The unnatural use of any substance or means to gain an unfair edge over the competition.



stimulants (such as amphetamines and cocaine) and anabolic steroids, as well as other drugs. To review the list of banned substances, visit the NCAA's web site at [www.ncaa.org/health-safety](http://www.ncaa.org/health-safety); click on "Drug Testing/Banned Substances."

Several professional athletic teams have written policy statements concerning the use of banned substances.

### KEY CONCEPT

*To maintain ethics in athletics and fairness in competition, many organizations have banned the use of performance enhancers and monitor the athletes in their organizations for use of these substances. The two largest organizations that monitor use of performance-enhancing drugs by athletes are the NCAA and the IOC.*

## EDUCATION FOR ATHLETES

Athletes need to understand the inherent dangers and risks associated with the use of dietary supplements and performance enhancers. This understanding comes from education, and programs should be designed to educate athletes at a very young age. Everyone associated with athletics—parents, coaches, teachers, trainers, and athletes—must work together toward this goal.

One organization dedicated to the education of athletes is the Healthy Competition Foundation ([www.healthycompetition.org](http://www.healthycompetition.org)). This foundation is a nonprofit corporation that seeks to educate young people and their families about the potential health dangers of performance-enhancing drugs and to eliminate their use at all levels of sports. This organization provides research, information, and strategies designed to eliminate use of performance enhancers in athletics. Many other organizations also provide a wealth of information on this topic. Some of these organizations are:

- American College of Sports Medicine
- International Olympic Committee
- National Athletic Trainers Association
- National Collegiate Athletic Association
- National Federation of State High School Associations
- Physician and Sports Medicine
- United States Food and Drug Administration
- United States Anti-Doping Agency (USADA)
- World Anti-Doping Agency



## KEY CONCEPT

Athletes need to understand the inherent dangers and risks associated with the use of dietary supplements and performance enhancers. Some of these substances can be harmful to the athlete's overall health. Knowledge about these substances will help athletes make sound, informed decisions.

**athletic code of ethics** A tool to clarify and distinguish proper practices from those that can be detrimental and harmful.

## ETHICS IN ATHLETICS

The **athletic code of ethics** is an essential tool for protecting and promoting the interests of athletics and the coaching profession. Its primary purpose is to clarify and distinguish ethical practices from those that are detrimental and harmful. It also helps to emphasize the value of athletics in educational institutions and to stress the contributions of coaches and athletes to their schools. Ethics are the basic principles of proper action. Proper ethics in athletics implies a standard of character that affords confidence and trust.

The future of the athletic code of ethics rests in the hands of those engaged in athletics. All members of the athletic community assume obligations and responsibilities in relation to competitors, teams, coaches, and student bodies. These relationships are important in establishing the kind of friendships that count most in athletics.

The essential elements of a modern athletic code of ethics are honesty and integrity. Coaches and athletes whose conduct reflects these two characteristics will bring credit to the field of athletics and to themselves. Only through such conduct can athletics earn and maintain a rightful place in our educational program and make a full contribution to our way of life.

## Proper Conduct and Good Sportsmanship

Proper conduct and good sportsmanship refer to standards such as these:

- Treat other persons as you know they should be treated, and as you would wish them to fairly treat you.
- Regard the rules of your game as agreements, the spirit or letter of which you should not evade or break.
- Treat officials and opponents with respect.
- Accept the final decision of any official.