



CAFFEINE

AND ATHLETIC PERFORMANCE

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I've heard that caffeine can give that extra boost during a workout to improve my performance, but I know that in high amounts it can also lead to testing positive for a banned substance.

Is caffeine something I should incorporate into my nutrition plan? Are there certain forms that are better than others?

THE BASICS

Caffeine is a central nervous system stimulant. When consumed in moderate amounts of 200-300 milligrams per day in the form of food or beverages (equivalent to about two 8-ounce cups of brewed coffee), it is considered socially acceptable and safe. There is evidence to support caffeine's benefits for both physical and mental performance, but the timing of consuming caffeine, the form of caffeine, your current caffeine use, and the amount consumed must be carefully considered.

(For information on caffeine's effects, turn the page.)

Information presented by



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CONSIDERATIONS FOR CAFFEINE USE FOR PERFORMANCE

- **Amount and timing.** Consume 2-6 milligrams of caffeine per kilogram of body weight (one to three cups of brewed coffee for a 150-pound individual) one hour before cardiovascular endurance training or up to 20 minutes of high-intensity training. Performance-enhancing effects may last up to four hours.
- **Form.** The amount of caffeine in energy bars, gels and medications tends to be standardized, while the amount in coffee and tea can vary considerably. Be sure to read labels and know how much you are consuming.
- **Food first.** The perception of having increased energy from caffeine will not replace the actual energy provided from food. Successful athletic performance is dependent on a nutrition plan that meets your energy and nutrient needs through food first.
- **Usual habits.** Those regularly consuming 200-300 milligrams of caffeine a day may not notice performance improvements. Decreasing caffeine intake or abstaining altogether for seven to 10 days before competition may be necessary to obtain maximal benefits.
- **Individual variability.** Some individuals are simply nonresponders to the effects of caffeine and will not experience the effects. Be sure to experiment before competition to know how your body will respond.



HOW MUCH CAFFEINE ARE YOU CONSUMING?

Caffeine-Containing Food Product	Amount of Caffeine (mg)
8 ounces of home-brewed drip coffee	80-100
8 ounces of instant coffee	65-100
2 ounces of espresso (latte, cappuccino, Americano)	100
8 ounces of decaffeinated coffee	5
8 ounces of brewed tea	50
12 ounces of caffeine-containing soft drinks	35-55
8 ounces of energy drink	80
Energy bar with caffeine	50 or 100
1.5 ounces of dark chocolate	30
2 caplets of Excedrin	130
1 caffeine tablet	200

NOTE: Exact amounts may vary between product brand and types. Approximately 10 grams, or 80-100 8-ounce cups of coffee, is considered the lethal dose of caffeine.



POTENTIAL BENEFITS

- Decreased pain and perception of fatigue, which allow for training at higher intensities.
- Decreased perceived exertion during submaximal resistance training, which can allow athletes to engage in longer strength training sessions.
- Improved performance in endurance and sustained high-intensity training or competitions with consecutive high-intensity bouts lasting longer than 90 seconds.
- Increased body coordination, ability to focus and concentrate and sustain training intensity.

POTENTIAL RISKS

- Caffeine is a banned substance by the NCAA. A urinary caffeine concentration exceeding 15 micrograms per milliliter (corresponding to ingesting about 500 milligrams, the equivalent of six to eight cups of brewed coffee, two to three hours before competition) results in a positive drug test.
- Energy drinks, pills and “sports performance enhancers” may contain unlabeled or unclear amounts of banned stimulants like synephrine, which, when added to unknown amounts of caffeine, can result in serious health consequences, including death.
- More caffeine is not necessarily better. Caffeine consumed at very high levels — 6-9 milligrams of caffeine per kilogram of body weight — can cause gastrointestinal issues, nausea or shaking, as well as “overstimulation” that can negatively impact training, sleep and performance.
- Caffeine is an addictive substance when consumed regularly in amounts as low as 100 milligrams a day (one cup of brewed coffee). Withdrawal symptoms include headache, fatigue, depression, irritability, insomnia, increased or irregular heart rate, and increased blood pressure.
- Caffeine consumed without adequate fluids can negatively impact thermal regulation in athletes training in hot environments.