

# Is It Safe for My Child to Use Energy Drinks?

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**An “energy drink” is a beverage that contains an added stimulant purported to have various performance enhancing effects such as increased energy, alertness, or focus, yet has no nutritional value. This differs from a “sports drink” in that the primary intention of a sports drink is to rehydrate as well as replenish electrolytes, minerals, carbohydrates lost during exercise. A sports drink provides energy in terms of calories and nutrients but does NOT contain any added stimulants. Similar labeling and marketing of the two types of beverages can lead to confusion among consumers which is a cause for concern among medical professionals.**

The beverage market has seen an explosion in energy drink consumption in the last decade. About half of this growth is made up of children and young adults. Studies among college students demonstrate usage rates that vary from weekly to monthly. Additionally, these same studies report multiple energy drinks are frequently consumed in the same day by college students as well as often being combined with alcohol. Aside from the desire to increase energy or reduce fatigue, kids also report choosing energy drinks because of the taste and to quench thirst. However, it should be noted that the American Academy of Pediatrics states that “energy drinks have no functional benefit in the diets of children or adolescents. “

## What’s in Energy Drinks?

The most commonly found stimulant in energy drinks is caffeine. The amount of caffeine in energy drinks varies significantly and is frequently difficult to determine from packaging. Some energy drinks are similar to coffees (80 mg in 8 oz) but others can contain amounts in excess of 300 mg per 8 oz serving. Similar to coffee, the caffeine intake can range widely (from 200 to 300 mg in 16 oz). Especially with “shots”, energy drinks can pack in a greater dose in less total volume. By comparison, most colas contain between 30-45 mg of caffeine per 12 oz serving but a typical “shot” contains 215-242 mg per 2 oz serving. Many energy drinks additionally contain substances like yerba mate, guarana and taurine, which can enhance the effect of caffeine. The amounts of these stimulants are often not included on package labels and in most cases the health effects are unknown.

Many energy drinks also contain significant amounts of sugar and can add unnecessary calories to a child’s diet. This is particularly true when energy drinks or sports drinks are being

used in place of low or no-calorie drinks, such as water. Added calories can increase the risk for obesity and are an additional cause for concern in children who are not physically active.

Other commonly found ingredients include B vitamins, vitamin C, protein or amino acids, and electrolytes. Most children and adolescents eating a well-balanced diet do not require additional supplementation of vitamins, protein, or electrolytes. Only after heavy exercise should supplementation be considered, and low fat chocolate milk or a sports drink would be appropriate options for post-exercise recovery.

## How Much Caffeine is Safe?

At the current time, caffeine intake for children is discouraged, and this applies to substances that are similar to or enhance the effects of caffeine, such as taurine and guarana. Despite this, caffeine use among children and adolescents is widespread, and some studies have shown ingestion of caffeine averaging five or more days a week in pre adolescents. Caffeine is used by adult athletes to enhance performance by improving endurance, strength, reaction time and reducing fatigue at a dose of about 3 mg per kilogram of body weight or higher. However, depending on individual sensitivity, side effects of jitteriness and hyperactivity might outweigh potential benefits. It is important to note that these effects have not been adequately researched in children or adolescent athletes, thus the relative dose that elicits adverse effects is unclear in smaller sized or physiologically immature persons. The same energy “shot” in a child provides a greater dose due to their smaller body mass compared to the adult.

## Harmful Effects of Stimulants for Youth Athletes

Caffeine may cause temporary increases in blood pressure, attentiveness, and body temperature. Potential harmful effects include sleep disturbances, anxiety, and arrhythmias. Palpitations, or the sensation that the heart is beating too hard or too fast, is a common side effect of caffeine and has led to emergency department visits for children. Stimulants such as caffeine, can cause abnormal heart rhythms, called arrhythmias, which can be serious. This is an even bigger risk when energy drinks are consumed prior to or during exercise.

Stimulants are also suspected to have potential deleterious effects on growing bodies by affecting sleep cycles during development. Eight to ten hours of dedicated, uninterrupted sleep is essential for the health and wellbeing of young adults. More sleep is necessary for younger children and athletes. Caffeine and the other stimulants found in energy drinks can easily affect the sleep-wake pattern of children, by increasing wakefulness for up to six hours after ingestion. This can delay onset of sleep in the evening and even affect the quality of sleep beyond that. If young athletes are getting enough sleep, there should be no need for supplementation with caffeine or energy drinks to increase alertness.

Mental health professionals consider caffeine to be the most widely used mood altering substance in the world. This is particularly true in children where relatively small amounts of caffeine are sufficient to alter mood and behavior. Regular caffeine use can also lead to physical dependence and addiction. Withdrawal symptoms could potentially include headaches, fatigue, drowsiness, muscle aches, depressed mood, or nausea. Frequently these symptoms are self-treated with repeated or more frequent ingestion of caffeine thus creating a constant stimulation and withdrawal cycle. Symptoms of withdrawal can occur even after short term use of high doses of caffeine.

Finally, additional medical concerns associated with energy drinks exist. Dental health is a concern for repeated use because of the acidity found in energy drinks (as well as sports drinks and sodas), and caffeine interferes with intestinal calcium absorption and therefore could potentially interfere with bone growth during adolescence. This risk is also associated with repeated use of sports drinks because of similar acidic properties.

## The Regulation of Energy Drinks

In the United States, the Food and Drug Administration (FDA) limits the caffeine content of soda to 71 mg per 12 ounces. So-called "energy" products are relatively new to the market, and some manufacturers have labeled them as dietary supplements and others as conventional foods. FDA regulates both dietary supplements and conventional foods under the Federal Food,

Drug, and Cosmetic Act, but the requirements for them are different.

A dietary supplement does not require testing, labeling, or restriction of sales to minors. Other countries have banned or passed restrictions on the sale of energy drinks, and there have been some proposed regulations at the state level in the United States, but to date the sale of energy drinks are unrestricted in all states.

Because of vague and inconsistent labeling practices and marketing of energy drinks targeted at athletes and youth, it is not uncommon for kids to choose drinks based on packaging without knowledge of the caffeine or herbal supplement content. The FDA does not require caffeine content on food labels.

## The Message

Energy drinks are becoming more prevalent and accessible with marketing efforts frequently targeting athletes and young adults. The caffeine and caffeine related products contained in energy drinks have no demonstrable benefit for children and have the potential to be harmful. For this reason, energy drink usage by children and adolescents is strongly discouraged.

## References

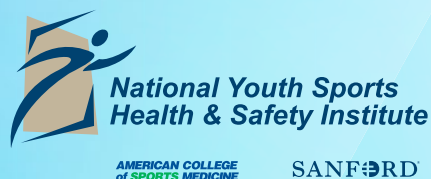
*Sports and Energy Drinks for Children and Adolescents; Are They Appropriate? Committee on Nutrition and the Council on Sports Medicine and Fitness. Pediatrics 2011;127;1182.*

*Rodriguez NR, DiMarco NM, Langley S; American Dietetic Association: Dietitians of Canada; American College of Sports Medicine. Position of the American Dietetic Association, Dietitians of Canada, and American College of Sports Medicine: nutrition and athletic performance. J Am Diet Assoc. 2009;109(3):509-527. Graham TE. Caffeine and exercise: metabolism, endurance and performance. Sports med 2001;31(11):785-807.*

*Bernstein GA, Carroll ME, Crosby RD, Perwien AR, Go FS, Benowitz NL. Caffeine effects on learning, performance and anxiety in normal school age children. J Am Acad Child Adolesc Psychiatry. 1994;33(3):407-415.*



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