



## **POSITION STATEMENT AND RECOMMENDATIONS** **FOR THE USE OF ENERGY DRINKS BY YOUNG ATHLETES**

### **National Federation of State High School Associations (NFHS) Sports Medicine Advisory Committee (SMAC)**

**Background:** Energy drinks continue to be popular among adolescents and young adults. These beverages are specifically marketed to young athletes who look to energy drinks as a quick and easy way to maximize athletic and academic performance. The energy drink market also includes energy shots (a more concentrated form with high caffeine content) and energy drink powder mixes that can be combined with water or juice. The marketing of these beverages to adolescents and young adults through social media and other advertisements has significantly increased in recent years. In 2016, about \$2.8 billion was spent on energy drinks.

#### **The NFHS SMAC strongly recommends that:**

1. Water and appropriate sports drinks should be used for rehydration as outlined in the NFHS “**Position Statement and Recommendations for Maintaining Hydration to Optimize Performance and Minimize the Risk for Exertional Heat Illness.**”
2. Energy drinks SHOULD NOT be used for hydration prior to, during, or after physical activity.
3. Information about the absence of benefit and the presence of potential risk associated with energy drinks should be widely shared among all individuals who interact with young athletes.
4. Athletes taking over the counter or prescription medications should not consume energy drinks without the approval of their physician.
5. Energy drinks ARE NOT sports drinks and should not be used by athletes in training or competition.

**WARNING:** The exact content and purity of energy drinks cannot be ensured, as there are no regulatory controls over these products. Thus, there is the risk for negative side effects (see below), potentially harmful interactions with prescription medications (particularly stimulant medications used to treat Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD)), or resultant positive drug tests due to impurities with banned substances.

#### **Frequently Asked Questions**

##### **What is an energy drink?**

- An energy drink is a beverage marketed to both athletes and the general public as a quick and easy means of relieving fatigue and improving performance. In addition to water, nearly all energy drinks contain carbohydrates and caffeine as their main ingredients. The carbohydrates provide nutrient energy while the caffeine acts as a stimulant to the central nervous system.

##### **What are the differences between an energy drink and a sports drink?**

- Sports drinks are designed to provide rehydration during or after athletic activity. While contents vary, most sports drinks contain a 6 to 8% carbohydrate solution and a mixture of electrolytes. The carbohydrate and electrolyte concentrations are formulated to allow maximal absorption of the fluid by the gastrointestinal tract. Energy drinks often contain a higher concentration of carbohydrate (usually 8 to 11%), and thus a larger number of calories than sports drinks. They also contain high amounts of caffeine and, in some cases, other nutritional supplements. Other ingredients with caffeine-like effects may be present; yet, typically their caffeine content is not noted. **Energy drinks are not appropriate for hydrating or re-hydrating athletes during physical activity and should not be used in such circumstances.**

### What ingredients are found in energy drinks?

- *Carbohydrates*- Most energy drinks have from 18g to 25g of carbohydrate per 8 ounces. The high carbohydrate concentration can delay gastric emptying and impede absorption of fluid in the gastrointestinal tract.
- *Caffeine*- Nearly all energy drinks contain some quantity of “natural” or synthetic caffeine. The caffeine concentration may range from the equivalent to an 8 ounce cup of coffee (85mg) to more than three times that amount.
- *Herbs*- Many energy drinks include herbal forms of caffeine such as guarana seeds, kola nuts, green tea extract, and Yerba mate leaves, in addition to synthetic caffeine. The “performance enhancing” effects, safety, and health benefits of other herbs like Astragalus, Echinacea, Ginko biloba, ginseng, and countless others have not been well established by scientific studies.
- *Vitamins*- Athletes with reasonably good diets should be assured that they are at low risk for vitamin deficiency and typically do not need supplementation. There is no evidence to suggest that vitamin supplementation improves athletic performance. Female athletes may benefit from iron and calcium supplements, but those are more easily and inexpensively obtained in supplement form rather than from energy drinks. Some individuals may benefit from Vitamin D supplementation and should discuss it with their primary care provider.
- *Proteins and amino acids*- Only a small amount of protein is used as fuel for exercise. Carbohydrates are utilized as the primary fuel source. To date, there is no definitive evidence that amino acid supplementation enhances athletic performance.
- *Other ingredients*- With the hundreds of energy drink brands that are available, the potential ingredients which they may contain are virtually unlimited. Possible additions include pyruvate, creatine, carnitine, medium-chain triglycerides, taurine and even oxygen.
- Recent manufacturer trends to mix energy drinks in alcoholic beverages is specifically concerning for the potential abuse of alcohol and the resultant higher amounts of alcohol consumption.

### What are the possible negative effects of using energy drinks?

- *Central nervous system*- Caffeine often has the effect of making a person feel “energized.” Studies have shown some performance-enhancing benefits from caffeine at doses of 6mg/kg of body weight. However, these and higher doses of caffeine may produce light headedness, tremors, impaired sleep, suppression of appetite, and difficulty with fine motor control.
- *Gastrointestinal system*- The high concentrations of carbohydrates often found in energy drinks may delay gastric emptying, resulting in a feeling of being bloated. Abdominal cramping may also occur. Both carbohydrates and caffeine in the high concentrations found in most energy drinks may cause diarrhea.

- *Dehydration*- Energy drinks should not be used for pre- or rehydration. The high carbohydrate concentration can delay gastric emptying and slow absorption from the gastrointestinal tract, and, may cause diarrhea. Caffeine can act as a diuretic and, therefore, may result in increased fluid loss.
- *Positive drug tests*- Like all nutritional supplements, there is little or no regulatory oversight of energy drinks. The purity of the products cannot be assured and it is possible that they may contain substances banned by some sports organizations.
- Consumption of energy drinks by adolescents and young adults has been linked to heart arrhythmia (irregular and/or rapid heart rate), other cardiovascular events such as high blood pressure and heart attacks, and liver problems.
- Sales of certain energy drinks have been banned in Denmark, Turkey, Uruguay, Germany, and Austria. Some states in the U.S. have introduced legislation to restrict sales of energy drinks to adolescents and children. Recently, healthcare providers have voiced increasing concerns about the consumption of energy drinks in association with alcohol because of the interaction of the stimulant effects of energy drinks and the depressant effects of alcohol.

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