

Youth & Energy Drinks

Sports drinks and energy drinks have become main stream and the consequent market has erupted in recent years. Hundreds of different brands are now marketed, and according to *Drug and Alcohol Dependence* (2009) caffeine content ranges from a modest 50 mg to an alarming 505 mg per can or bottle. Mini markets now have whole cooler sections devoted to the products, and if 16 to 20 ounces is a bit much, there is an assortment of shots available at the checkout counter. While energy drinks are marketed more socially, sports drink companies glamorize the products using superstar endorsements. Although an effective marketing scheme, the market reach has exposed children to these products and in some cases the lines are being blurred between sports and energy drink purpose. Children want to be just like their sports heroes and certainly attempt to emulate their lifestyles so that they may someday walk in their footsteps. Based on new research, the American Academy of Pediatricians (AAP) has outlined how these products are constantly being misused and poorly consumed by the majority of youth athletes.

One of the major mistakes made by the young consumers is their unawareness between the differences of these products. Energy drinks are not “energy” in a can; they are packaged with stimulants such as caffeine, guarana, and taurine, all of which can be especially dangerous to children. Regulation of energy drinks, including content labeling and health warnings differs across countries, and according to the Department of Psychiatry and Behavioral Sciences at the Johns Hopkins University School of Medicine some of the most lax regulatory requirements exist in the United States. The absence of regulatory oversight has resulted in aggressive marketing of energy drinks, targeted primarily toward young males, for psychoactive,

performance-enhancing and stimulant drug effects. Although they are promoted as potential ergogenic aids, the effects of energy drink ingredients on physical and cognitive performances remain controversial. Researchers identified moderate positive effects of energy drinks on performances, whereas others found contrary results. Most manufacturers use the research associated with caffeine to back their “proprietary blends.”

The lack of regulation and knowledge places adolescents in particular, in harm’s way. Energy drinks are not regulated at the counter and they often replace water consumption in exchange for presumed energy increases. The stimulants can act as a diuretic, which may propagate dehydration in young athletes. Children and adolescents are particularly susceptible to heat illness as they do not have the same mature system of heat regulation as adults.

According to a report published in the *Journal of Pediatrics* (2011) energy drinks are consumed by 30% to 50% of adolescents and young adults. Researchers at John Hopkins suggest that, in children and adolescents who are not habitual caffeine users, vulnerability to caffeine intoxication may be markedly increased due to an absence of pharmacological tolerance. Genetic factors may also contribute to an individual's vulnerability to caffeine-related disorders including caffeine intoxication, dependence, and withdrawal. Although mixtures and ingredients vary, these stimulant based drinks have been reported in association with serious adverse effects in children, adolescents, and young adults. The Department of Pediatrics and Pediatric Integrative Medicine Program at the University of Miami cites reports which included cases of seizures, diabetes, cardiac abnormalities, mood and behavioral disorders as

well as compound toxicity in those who take certain medications. Researchers identified that of the 5,448 caffeine overdoses reported in the U.S. in 2007, 46% occurred in individuals under 19 years of age. These findings are supported by an article published in the *Journal of School Nursing* (2010), where school statistical reports of energy drink side effects in adolescents include jitteriness, nervousness, dizziness, the inability to focus, difficulty concentrating, gastrointestinal upset, and insomnia. Additionally, health care providers also identify dehydration, accelerated heart rates, anxiety, seizures, acute mania, and strokes as potential side effects in children.

According to an article published in the journal *Pediatrics* (2011), medical practitioners found energy drinks to have no therapeutic benefit, and suggest many ingredients are understudied and not regulated. One researcher states “The known and unknown pharmacology of agents included in such drinks, combined with reports of toxicity, raises concern for potentially serious adverse effects in association with energy drink use.” In the short-term, researchers suggest that pediatricians need to be aware of the possible effects of energy drinks in vulnerable populations. Health practitioners need to educate families, coaches, and teachers of the risks of energy drinks to children and adolescents.

In teenagers the problems may be two-fold. In a report published in the *Child and Adolescent Psychiatric Journal of North America* (2010) the adverse effects of energy drinks can be related to either the toxicity of ingredients or specific situations such as the combination of energy drinks with alcohol or caloric restriction and exertion, common in wrestlers and dancers. Therefore, this population subset is at risk for both caffeine overdose and toxicity as well as high risk behavior related to an increased likelihood of accidents and death. Due to the social nature of energy drink use and the pattern

of energy drink consumption there is an enhanced risk of both caffeine and alcohol toxicity in youths. Twenty-five to 40% of young people report consuming an energy drink with alcohol while partying. Consumption of energy drinks with alcohol during heavy episodic drinking places teenagers at risk of serious injury, sexual assault, drunk driving, and death. According to *Archives de Pediatric* (2010) even after adjusting for the risks associated with alcohol consumption independently, students who consume alcohol mixed with energy drinks had dramatically higher rates of serious alcohol-related consequences. The article suggests that a major issue with the drinks is the false perceptions that the consumption of caffeine-laden energy drinks can reverse alcohol-related impairment, including motor coordination and visual reaction time causing an increased confidence in impaired driving. The same article reported that the subjective perceptions of some symptoms of alcohol intoxication are less intense after the combined ingestion of the alcohol plus energy drink; however, these effects are not detected in objective measures of motor coordination and visual reaction time. Due to these issues several countries and states have debated or restricted energy drink sales and advertising.

On the other hand, sports drinks are hydrating and contain “natural” substances such as carbohydrates, minerals, electrolytes, and flavoring. Although Gatorade is backed by research and certainly may help an adult train for two hours, it is often unnecessary to completely replace water for youth athletes due to numerous differences in acute workload, duration, and mean intensities during sports. Although sports drinks may benefit young athletes during prolonged physical activity when provided in age and size appropriate quantities, this population is very small. In actuality the majority of sport drink consumption occurs outside of exercise environments and is cited as

a dietary risk when it replaces water and milk consumption. Sports drinks add sugar caloric content to the diet, which has the potential to lead to childhood hypercaloric intakes and the potential for dental caries. Many parents ignorantly let their children consume Gatorade and other sports drinks under the assumption that they are healthy. Pediatricians are strongly taking a different side.

According to a 2008 article published in the journal *Pediatrics* analyzing 4th-6th graders from 1999-2004, children and adolescents were deriving 10% to 15% of total calories from sugar-sweetened beverages including sodas and

100% fruit juices. Researchers went on to suggest that their analysis indicated increasing consumption of sugar-based beverages in all ages. Adding sports drinks to an already sugar rich diet increases the risk of weight gain. According to *Pediatrics* (2011) frequent or excessive intake of caloric sports drinks can substantially increase the risk for overweight or obesity in children and adolescents. Practitioners should work to educate parents as to these potential risks and encourage an appropriate intake of fluids during exercise, consistent with the age-appropriate activities, durations and intensities being performed.