



More Than Just A Drink: Effects of Alcohol on Training and Competition

Despite being more of a target for education programs, as compared to their non-athlete counterparts, collegiate student-athletes have been found to drink more and do so more often than the general collegiate student population.¹ Neither the education efforts directed toward nor the competitive motivation of student athletes seem to deter them from the temptation of alcohol use, so what exactly is the harm of alcohol use for a student-athlete?

The facts: Alcohol, otherwise known as ethanol, is defined as “a colorless, volatile, flammable liquid,” according to the Merriam-Webster dictionary.² The standard serving sizes for alcoholic drinks are as follows: 12 oz of beer or wine cooler, 8 oz of malt liquor, 5 oz of wine, and 1.5 oz of 80 proof liquor.³ When consumed in excess, often referred to as binge drinking, the social and physical repercussions can be especially detrimental to student athletes who often find themselves in the limelight. Binge drinking is considered five or more drinks for men and four or more drinks for women within a two-hour period.⁴

The internal process: Once ingested, digestion of alcohol begins in the mouth, moving through to the esophagus, stomach, and small intestine. While alcohol is absorbed into the blood stream quickly, simultaneous food consumption can help slow the process. Once alcohol has been digested and absorbed, the body’s goal is to process it via one of two pathways—metabolize it for energy or convert it to fat for storage. Due to its effects on the central nervous system (CNS), alcohol is also considered a drug,⁵ and its overuse can lead to impaired judgment and slurred speech, among other CNS side effects.³

The performance risks: For the collegiate student-athlete, alcohol consumption can result in a huge detriment to athletic performance. For example, excessive alcohol use can lead to loss of balance and coordination, reduced reaction time, and increased appetite.² The decline in cognitive function can lead to an increase in sports-related injuries. Furthermore, studies have shown that regular consumption of alcohol can depress the immune system and slow the body’s ability to heal.⁶ Vitamin and mineral deficiencies are common in those who excessively drink alcohol, further compromising the immune system. Alcohol can interfere with adequate nutrient intake and absorption of vitamins and minerals, be destructive toward vitamins in the body, and cause higher nutrient losses through urine. Common deficiencies are calcium, magnesium, iron, zinc, and B vitamins, all of utmost importance to athletes.⁷

Alcohol has a diuretic property that can lead to rapid dehydration and decreased athletic performance. Dehydration can cause increased core temperature, rapid heart rate, nausea/vomiting, and a general feeling of fatigue, all of which can be detrimental to performance. These side effects can begin to set in with a water weight loss of as little as 2-3% of total body weight.⁵ Dehydration and alcohol toxicity can also lead to a hangover, which has been reported to decrease aerobic capacity, by 11.4%.⁶

The common practice of drinking after a big win or competition can also negatively affect recovery. Muscle glycogen synthesis and storage may be decreased, and gluconeogenesis may be stunted, potentially leading to hypoglycemia and impairing future performance.⁶ Post-activity nutrition should focus on replenishing depleted glycogen stores with nutrient-dense carbohydrate sources. Athletes who consume alcohol after competition or practice are less likely to consume adequate carbohydrate, thus compromising performance in the next game or practice.⁵ Alcohol consumption also affects sleep quality, a major component of recovery. Alcohol has been shown to help one fall asleep faster, i.e., reduced onset sleep latency; however, more disruption in sleep throughout the night has been observed. A delay in REM sleep onset and decreased total amount of REM sleep are especially evident with moderate and high levels of alcohol consumption.⁸

Also related to athletic performance is the effect of alcohol on body composition. Alcohol is often mixed with high-calorie accompaniments such as soft drinks, juices, whipped cream, and other sugary toppings. These extra “empty” calories, along with the potential for alcohol to be converted to and stored as fat, can lead to less than optimal body composition for an athlete. For male athletes specifically, alcohol may lead to a reduction in testosterone production, which can in turn decrease the ability to gain muscle mass, again negatively affecting body composition and ultimately performance.⁶

As a general rule, abstaining from alcohol 48 hours prior to competition can be beneficial for athletic performance, and making it a priority to properly rehydrate and consume food after activity will help facilitate recovery.

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Written by SCAN Registered Dietitians (RDs). For advice on customizing a nutrition plan, consult a RD who specializes in sports, particularly a Board Certified Specialist in Sports Dietetics (CSSD). Find a SCAN RD at www.scandpg.org.

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