

Alcohol and Athletic Performance

The effects of alcohol can depend on the amount consumed, the environmental context, and on the individual. Daily consumption of up to four drinks may have a protective effect on the cardiovascular system. Nonetheless, people most commonly drink for alcohol's anxiolytic (stress-reducing) property. Conversely, alcohol has a wide spectrum of negative effects, from societal to physiological, accounting for approximately 100,000 deaths yearly in the United States. From a physiological perspective, two situations draw special attention for the fitness-oriented individual who consumes alcohol. Acutely, alcohol can cause negative effects on motor skills and physical performance. Chronically, alcohol abuse may eventually impede physical performance; individuals diagnosed with alcohol dependence have displayed varying degrees of muscle damage and weakness. Furthermore, alcohol abuse is at least as prevalent in the athletic community as it is in the general population; the vast majority of athletes have begun drinking by the end of high school.

ALCOHOL USE IN ATHLETICS

Alcohol use by athletes often starts at the junior high school level and can start even earlier. Among high school students, male athletes are more likely to not only use alcohol regularly but also to abuse alcohol. This relationship does not seem to exist at the college level. Nonetheless, alcohol consumption is high enough for alcohol to have been named the most abused drug in collegiate sport by the NCAA and in professional and Olympic sports by the NFL, NBA, and USOC.

ALCOHOL AS A NUTRIENT

Each gram of alcohol (ethanol) provides seven kilocalories compared to nine for fat and four each for carbohydrate and protein. Other nutrients may be present, depending on the type of beverage. Beer, for example, has been seen as a good source of many nutrients and has sometimes been used in preparation for endurance events or to replenish nutrients following competition. Actually, orange juice supplies four times the potassium plus almost three times the carbohydrates, and it would take 11 beers, for example, to obtain the B-vitamin recommended daily allowance (RDA).

PERFORMANCE WHILE BLOOD ALCOHOL IS PRESENT (ACUTE EFFECT)

Motor Performance - Low amounts of alcohol (0.02-0.05g/dL) can result in decreased hand tremors, improved balance and throwing accuracy, and a clearer release in archery, but in slower reaction time and decreased eye-hand coordination. A moderate (0.06-0.10 g/dL) amount of alcohol negatively affects such skills.

Strength/Power and Short-term Performances - The effect of alcohol, in low to moderate doses, is equivocal. It can have a deleterious effect on grip strength, jump height, 200- and 400-meter run performance, and can result in faster fatigue during high-intensity exercise. Conversely, alcohol has been shown to lack an effect on strength in various muscle groups, on muscular endurance, and on 100-meter run time.

Aerobic Performance - Low or moderate amounts of alcohol can impair 800- and 1500-meter run times. Because of its diuretic property, it can also result in dehydration, being especially detrimental in both performance and health during prolonged exercise in hot environments.

PERFORMANCE DURING HANGOVER

Any lingering effect of alcohol would especially hinder physical conditioning progress. According to current research, the effect during a hangover seems to be undecided, with no effect on several performance variables, but a decline in total work output during high-intensity cycling. Furthermore, handgrip muscular endurance has been shown to suffer a delayed decline on the second morning following intoxication.



PERFORMANCE WITH CHRONIC ALCOHOL USE

Chronic alcohol abuse may be detrimental to athletic performance secondarily to many of the sequelae that can develop. Alcohol affects the body's every system, linking it to several pathologies, including liver cirrhosis, ulcers, heart disease, diabetes, myopathy, bone disorders, and mental disorders. The following implications may especially interest the athletic individual. Alcohol can result in nutritional deficiencies from alterations in nutrient intake, digestion, absorption, metabolism, physiological effects, turnover, and excretion of nutrients. Myopathy (muscle damage, wasting, and weakness) can occur in various muscles, including the heart, often compounded by alcohol-caused neuropathies. Also, the hormonal environment can change, making it less conducive to increasing muscle mass and strength.

PRACTICAL APPLICATIONS

There are various methods to screen for alcohol abuse. Standardized questionnaires are available, but taking a more subtle approach by adding questions in medical history forms may be more effective. A team physician may also look for certain signs in the athlete's appearance, but this has limited usefulness; it is good only for extreme cases of alcoholism. Athletes should be informed of all of alcohol's detrimental aspects. Team rules and guidelines such as the following can be used:

- * Pre-event: Avoid alcohol beyond low-amount social drinking for 48 hours.
- * Post-exercise: Rehydrate first and consume food to retard any alcohol absorption.

To address any underlying causes of alcohol abuse, professional counseling should be available to athletes either directly or by referring athletes to community resources.

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Current Comments are official statements by the American College of Sports Medicine concerning topics of interest to the public at large.

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