

PUTTING IT INTO PERSPECTIVE

WHY DOES ALCOHOL GIVE YOU A HANGOVER?

We all know that drinking too much alcohol can lead to a hangover. But why? And how can we prevent it? Hangover symptoms include fatigue, headache, poor sleep, thirst, nausea or vomiting, dizziness, and sensitivity to light, among others. Unfortunately, the mechanisms that lead to a hangover are not entirely clear. Although alcohol causes hangovers, there appears to be no way to prevent them other than the obvious—not drinking or drinking less. However, among the factors that can reduce the severity of a hangover, two are in our control: getting enough sleep and not smoking (64).

In addition to hangovers, an acute bout of heavy alcohol consumption can harm the body in other ways. Alcohol decreases the amount of ADH produced, leading to a larger volume of urine and increased dehydration (87). Alcohol shrinks and disrupts brain tissue, throwing neurotransmitters off course, so you feel sleepy and function in slow motion—both physically and verbally. A single night of heavy drinking can also compromise your immune system, decreasing the ability of white blood cells to handle harmful bacteria (57).

To prevent or reduce some of the negative side effects of overdrinking, try these strategies for drinking less. Know how much alcohol is in your drink (figure 8.5), and alter your pace accordingly. Drink a glass of water after each alcoholic drink. Eat something—eating slows down the absorption of alcohol so you have more time to metabolize what you are drinking. Also, for academic performance, don't drink, or at least limit drinking, the night before tests, exams, or days of intense studying.

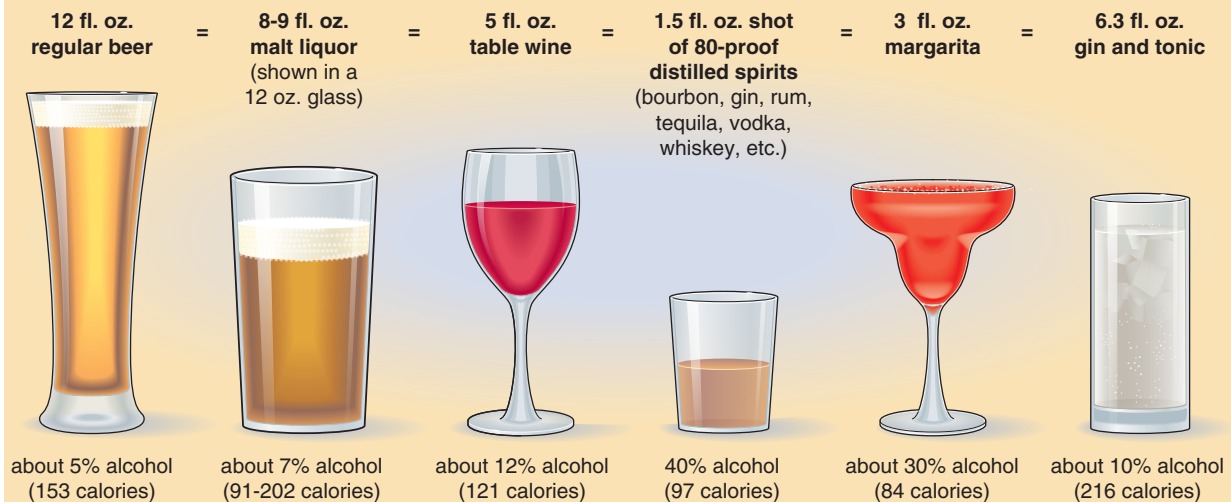


Figure 8.5 Percent alcohol by volume in alcoholic beverages. To find out the amount of alcohol in a drink, multiply the percent alcohol by the volume of the drink. Each one of the drinks pictured above contains 0.6 oz. of alcohol. Interactive calculators to help you determine both the caloric content and amount of alcohol in various drinks are available online.

Adapted from National Institute on Alcohol Abuse and Alcoholism.



WILL SUPPLEMENTS MAKE ME DEHYDRATED?

Certain ingredients commonly found in detox products, cleanses, and weight-loss supplements will increase water lost through urine. Some of these products include uva ursi, dandelion (*Taraxacum officinale*), burdock root, horsetail, and hawthorn. Though many people believe creatine increases dehydration, no research supports this (23, 38).

Signs and Symptoms of Hyperhydration (28, 59)

- Confusion
- Inattentiveness
- Blurred vision
- Muscle cramps or twitching
- Poor coordination
- Nausea or vomiting
- Rapid breathing
- Acute weight gain
- Weakness
- Paralysis

Hyperhydration can result in cellular edema and hyponatremia, which is a dangerously low blood sodium level, defined by plasma sodium below 135 mmol/L (96). When blood sodium levels fall below 125 mmol/L, an individual might experience intracellular swelling, headaches, nausea, vomiting, muscle cramps, swollen hands and feet, restlessness, and disorientation. When blood sodium drops below 120 mmol/L, risk of developing cerebral edema, seizures, coma, brainstem herniation, respiratory arrest, and death increases (3, 5, 74, 97). Hyponatremia can occur during an event or up to 24 hours after. In athletes, hyponatremia might result from high water intake during prolonged endurance or ultraendurance events, particularly for athletes with slower race times (97).

Signs and Symptoms of Hyponatremia

- Core body temperature less than 40 °C (104 °F)
- Nausea

- Vomiting
- Swelling of the hands and feet
- Low blood sodium level
- Progressive headache
- Confusion
- Lethargy
- Altered state of consciousness
- Apathy
- Pulmonary edema
- Cerebral edema
- Seizures
- Rhabdomyolysis (skeletal muscle injury)
- Coma

Based on Coris 2004; Sawka et al. 2007; U.S. Institute of Medicine 2005.

ELECTROLYTES

Electrolytes are essential for muscle contraction and nerve conduction, so an electrolyte imbalance could certainly impair athletic performance (22, 74). **Electrolytes** lost in sweat include sodium, chloride, potassium, calcium, and magnesium (figure 8.6) (74).

Because of the high amount lost through sweat, sodium losses are the greatest concern, ranging from 230 to greater than 2,277 mg/L (10 to 99 mEq/L), followed by chloride, which is lost along with sodium (22, 74, 96). Sodium influences fluid regulation by helping the body retain more of the fluid consumed (less fluid consumed is lost through urine) (49). With greater sodium losses, risk of muscle cramping increases (14, 84). Athletes who exercise intensely or for several hours and hydrate excessively with only water or a