

Altitude sickness drug doesn't impair exercise performance above sea level, study finds

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A new study finds that a medication commonly prescribed to prevent and combat symptoms of acute mountain sickness does not reduce

exercise performance at high altitudes. This may be especially important for military personnel and first responders not accustomed to working above sea level. The study is published ahead of print in the *Journal of Applied Physiology*.

Acetazolamide is commonly prescribed to recreational mountain climbers, military service members and emergency medical responders who are often quickly dispatched—but are not accustomed to—high altitudes. Symptoms of acute mountain sickness—also called [altitude sickness](#)—can include fatigue, headache and nausea. Acetazolamide has been shown to decrease exercise performance at sea level, but similar studies at higher elevations have garnered conflicting results.

Researchers studied men who were not used to exercising at [high altitudes](#). The volunteers were exposed to a low-oxygen environment that simulated an altitude of 3,500 meters (m) above sea level. The simulated ascent time to 3,500 m was a rapid 15 minutes, and they stayed in the environment for approximately 30 hours. Each volunteer participated in two five-day blinded trials separated by at least two weeks. During one trial, subjects took 500 milligrams (mg) of acetazolamide daily; during the other they took a placebo. In each trial, the volunteers were asked to rate their symptoms of acute mountain sickness using a shortened version of the widely used Environmental Symptoms Questionnaire. While at altitude, the men performed a 15-minute steady-speed walking test at 40 to 45 percent maximum effort, followed by a two-mile self-paced time trial.

There were no differences in [heart rate](#) or perceived rate of exertion between exercise with and without acetazolamide. The researchers found that while acetazolamide effectively decreased the incidence of acute mountain sickness, it did not lead to changes in the self-paced two-mile time trial performance.

Blood oxygen levels (arterial oxygen saturation) were higher, and there were fewer reports of [altitude sickness](#) symptoms in the medicated trial when compared to the placebo. This result is consistent with hypotheses from previous studies that suggest the reason that acetazolamide prevents acute mountain sickness is because it increases arterial oxygen saturation.

The researchers explained that [hydration status](#) may explain why these positive findings were contrary to the negative results of some previous studies. The men in this study lost 1.5 percent of their [body weight](#) when taking acetazolamide due to its diuretic effects. At [sea level](#), weight loss from a similar degree of dehydration may affect exercise performance. But at high altitude, the 500 mg daily dose used in this study may not have produced as drastic a diuretic effect that would impair performance.

"These findings have important implications for individuals who need to rapidly ascend to altitude and complete physically demanding tasks upon arrival, including the military and emergency medical personnel," the research team wrote.

"Acetazolamide does not alter endurance exercise performance at 3500 m altitude" is published ahead of print in the *Journal of Applied Physiology*.

More information: Karleigh E. Bradbury et al. Acetazolamide does not alter endurance exercise performance at 3500 m altitude, *Journal of Applied Physiology* (2019). [DOI: 10.1152/jappphysiol.00655.2019](https://doi.org/10.1152/jappphysiol.00655.2019)

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