

Prepare for the Altitude

By Rob Lockey

"Don't buy upgrades, ride upgrades"---Anonymous

This quote seems to beckon the goal for most cycling events. Ascend, ascend, and ascend. So, to provide this for the participants, a large number of cycling events have their routes at an elevation greater than what most folks live at. The aspect of training for an event that not only starts higher than you normally live, but also doubles, triples your normal elevation through the day creates a paradox to which the odds are stacked against us. Acute Mountain Sickness (AMS) is one name given to a condition that affects the human body when it is subjected to a lower oxygen environment. Preparation, knowledge and practice can help combat its grasp on the athlete. Basically, each person will acclimate to the change in elevation differently and although training for the event can assist, there are some other factors to take control of to help assure AMS stays away. A few symptoms of AMS are: headache, mild dizziness, nausea, insomnia, and irritability. These can indicate the onset of AMS and should not be ignored.

Here are the basics as to why altitude plays such a significant role in a decrease in athletic performance. First is pressure differential: as the elevation increases from sea level to say 7000-10,000 feet the pressure of the air is decreased. This reduction in pressure affects the lungs ability to transfer the oxygen in the air to the blood in the body and further to the working muscles. This reduction in available oxygen in the body then has an influence on the body's capacity to do more work aerobically. So, it's not that there is less oxygen in the air it's that the body is not able to absorb as much at altitude. Second is the body's reaction to the reduced oxygen: the brain increases the breathing rate to attempt to make up the loss, but with every amplified breath comes a larger loss of moisture. This loss of water speeds the body towards dehydration and AMS is not far behind.

To prepare for an active altitude jaunt, train your body regardless of your home elevation. Being consistent in your workouts will help with the adaptations in your energy systems, which will help to make you more efficient. Along this same thought, training your digestive system to work better with the fuel you ingest will help keep AMS at bay. It is suggested to increase your carbohydrate intake while at altitude. You are not only bringing water on board with the carbs, you're supplying the fuel that is in most demand for the higher workloads of climbing. Another aspect to hone while training is to determine your personal water losses encountered while exercising. This can be done using a comparison of body weight to a measure of fluid consumption while exercising and then measuring body weight after exercise. Follow some simple calculations to find the proper intakes and over time you will get better at setting up your system to be more hydrated. Finding the equilibrium of fluid intake is the key to keeping the system in balance and keeping AMS from occurring. (further explanations/calculations for water loss: [Wetter is Better: Proper Hydration for Increased Performance](#) can be found on the OES website)

So, now a few tips to help set up your acclimation to a high altitude environment. If you have the time, arriving 10-14 days prior to the event will allow for a slow steady acclimatization. But not many people have this ability, so adopt the strategy that many college and professional teams employ. Arrive the day before, get the event completed and get out. This isn't full-proof but is more likely the case for the time-crunched cyclist. Some folks will have a day or two prior to the event, which is fine. Just avoid attempting high-intensity workouts, they will only put you behind in the ability to recover and prepare by increasing muscle soreness and any number of concerns mentioned above. Stick with low to moderate exercise only.

Dehydration is the biggest reason AMS can become a problem for an athlete. Make sure to hydrate prior to coming to elevation and drink before you get thirsty while enjoying the scenery that mountains can provide. Proper training and nutrition practices will assist in an enjoyable event at altitude.

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