

High Altitude Performing

Playing and singing at high altitudes require special approaches to preparation and performing. Simply put, the higher the altitude—the less atmosphere there is present. We will define high altitude as levels 4000' and above, although one may sense differences at any change in altitude. For most people, being at high altitude simply means using a lot of sunscreen because more of the sun's bad rays get through and making adjustments in cooking because water boils at a lower temperature so it takes longer for food to cook. For those of us performing at high altitudes, we notice less oxygen, drier atmosphere, less air available to move, and—for reed players—non-vibrating, closed reeds.

Anyone traveling through most of the inland Western United States will encounter altitudes above 4000'. What can you do: water, as much as you can stand to drink; use good breathing techniques; but extra breath marks in the music; be patience, you cannot do at altitude what you do at sea level; allow 48 hours at altitude whenever possible before a performance; maintain a healthy heart; and reed players use longer reeds made from smaller diameter cane.

First let's take the issue of water. High Altitudes are drier places because there is less atmosphere. You cannot wait until you are thirsty to start drinking because at that point you are already dehydrated. Athletes start drinking more water about 48 hours before an event, as do successful hikers of the Grand Canyon. At high altitudes, musicians need to do the same thing. Two days before you go to a higher altitude start drinking more water, but especially two days before a performance. Those who attempt the Canyon without drinking water in advance often have to be taken out by emergency helicopter. It is amazing how quickly people dehydrate at altitude without realizing it. Those of us who have lived in the clouds for a long time often keep water bottles with us continually and make sure that we drink several bottles per day. Dehydration causes almost flu-like symptoms. Also keep in mind that I mean water: not tea, coffee, or any other drink with caffeine. Caffeine dries you out. I am not saying that you cannot have a cup of coffee in the morning, but follow it up with a big glass of water. When performing, be sure to keep a bottle of water beside you and drink often. Reed players, you need to constantly wet your reeds. If you have a long passage of several minutes without several measures rest, you may need to plan to wet the reed as you take a breath. I have had to do this when playing concertos with bands and orchestras in Flagstaff, Arizona. The first time that I played a concerto at 7000' I got near then end of a long passage and the reed almost stopped playing because it had actually dried out as I was playing!

Good breathing techniques are essential at high altitude. There is less oxygen available, so you will need to take more frequent and deeper breaths. The good news is that the air that is available at 7000' is cleaner than in lower altitude cities. Two of the cities cited as having the cleanest air in the US are Colorado Springs, Colorado and Flagstaff, Arizona—both at 7000'. Those with breathing problems, like asthma, generally do not have problems with less air at higher altitudes. You will need to take more breaths at higher altitudes especially if you are performing less than 48 hours after arriving (see the 48 hour recommendation below). If you have any trouble or come close to running out of

air at sea level in a phrase of music, plan on taking an extra breath at high altitude. Don't even try to go without the extra breath; you won't make it. Wind players may also find low note response and fast articulation a bit more difficult because there is less air to move. This is where excellent breathing techniques are essential. You have to have a lot of air pressure behind articulations and low notes. I tell my students that if you can do it at 7000' you can do it anywhere. In Flagstaff, Arizona where I live, we are designated a high altitude Olympic training city and athletes from all over the world come here to train. Perhaps musicians should take a cue from athletes and come to higher altitudes to learn to breath.

Taking a minimum of 48 hours adjustment time to higher altitudes is highly recommended. It takes 48 hours for the hemoglobin in the human body to adjust to oxygen level changes which occur when you change altitudes. For those of us who live at higher altitudes and then descend to sea level, this means we have at least 48 hours when we feel like super men and women! But for those coming to high altitude, this means that you will find yourself out of breath and may suffer from an altitude head ache. If you work out, you will have to lighten it up especially during the first 48 hours. When playing, this means that you will run out of air and tire more quickly. I am often told by visitors that they sleep great for the first 48 hours when the body is adjusting to the lack of oxygen. While you will never be able to perform the same length phrases at high altitude as at sea level, you can get much closer after the body has adjusted to the lower levels of oxygen.

Reed players will experience changes in reeds. Again, when possible, 48 hours can make a big difference to both you and your reeds! Most double reed players will tell you to make the reed at the altitude that you are going to play it. Adjusting a finished reed generally is not very successful and, yes, this includes bassoon players. That said, there are reed making techniques that help oboe reeds and can probably be applied to other reed instruments as well. First of all, I don't recommend changing everything. I know some use a wider shape at higher altitudes but that only causes intonation problems for me. Instead, I suggest a thicker gouge and a smaller diameter cane. On oboe, I use a gouge above .60, like .61 or .62, and 10-10.5 diameter cane. In an article that I wrote for the International Double Reed Society, I discussed the measurements of reeds made at different altitudes and used a dial indicator to measure thicknesses of these reeds.¹ After many more years living at 7000' the measurements have remained unchanged, but I do have a few more observations. The biggest difference between the reeds of high and low altitude is overall length. My reeds are about a millimeter longer at 7000'. Much of this comes from the length of the tip, which makes sense when you consider that there is less air to move so you need a longer tip to get things vibrating. I also found that the relationship of the spine to the back has more of a contrast. The back is thinner to a thicker spine. You will also feel like you are doing more scraping if you are using the thicker gouged cane. While most of the thicknesses were the same, you have a thicker gouge so more scraping results. I find that the reeds I make at 7000' look more

¹ Rebecca Kemper Scarnati, "Oboe Reed Notes from Seven Thousand Feet," *The Double Reed* 18 (Spring 1995): 75.

integrated but have thicker rails going up the sides of the back which stop at the heart. I always feel like I take a lot of cane off the sides of the tip and heart to get the reed to vibrate but measurements show that the end result is the same as on a low altitude reed. In my measuring of thicknesses, I found that most of the thicknesses of the heart and tip were the same from altitude to sea level. I do have to change altitude often and seldom have 48 hours to make a reed once I get to a performance venue, so I keep reed boxes for different places at different altitudes. I can usually find a couple of good reeds to get by with for a day or two if I cannot make a new reed fast enough. I also take partially scraped reeds and finish them. This works better going from altitude to sea level, if you leave the reed heavy as you usually can take more off at sea level. (You have to leave more cane on the reed in different places and make it longer if you are going up in altitude.)

One final Warning, if you have heart problems see your doctor before traveling to high altitudes especially if you also have trouble flying. I don't mean to scare anyone away, since the Western United States has some of the most beautiful country that you will ever see and much of it is at high altitude. Most people have no trouble at all and those with asthma may find the clean air makes them feel better. If you do get out of breathe—Stop! Remember that you cannot physically exert yourself the same way that you do at sea level, especially for the first 48 hours. One of my student's parents brings a small portable oxygen tank with her when she comes to Flagstaff, but most often if you feel funny start drinking water!