

## AltitudeDream.com - FAQ

### **1 Q: For how long do I need to be in the tent?** *(Training Protocol Support)*

**A:** Two separate issues are involved here: First, there's the factor of how many hours per day should I spend in the tent. Early tests have shown that between 6 to 8 hours per day will trigger the adaptive response associated with high elevations. Athletes using the tent in this manner have seen significant increases in performance. A recent study in Finland showed no difference between individuals who stayed just 12 hours in a hypoxic environment as compared to those who were there 24 hours a day.

Second, there is the question of how long it takes before improvements begin to appear, and then are fully realized. This depends upon the athlete. Just as in the mountains, some will adapt quicker than others (perhaps in a similar way to muscle-memory). The adaptation begins as soon as you start using the tent. The more you use the Altitude Tent, the faster you will acclimate and the sooner you begin to make gains. We like to recommend at least a month, though there are still substantial further gains to be made after that point as the body learns to fully utilize the extra oxygen available to it.

### **2 Q: Why not just live at altitude?** *(Training Protocol Support)*

**A:** Studies have shown that spending time at altitude causes the desired physiological responses, but the inability to train with the full oxygen availability of sea-level caused a de-training that tends to negate the gains. The Altitude Tent allows you the benefits of both sleeping high and training low.

### **3 Q: What is the optimal sleeping altitude?** *(Training Protocol Support)*

**A:** In general, the higher the altitude the stronger the response. However there is a trade-off - recovery and sleep quality. Experience has shown that the vast majority of athletes can sleep at 9000ft/2750m with no reduction in sleep quality and recovery from training. In fact it is very often reported back to us how these both improve at 9000ft/2750m, resulting in increased training capacity!

At some point above 9000ft/2750m the altitude will cause a reduction in recovery and sleep quality. The altitude at which this occurs varies for each individual, but is generally in the range of 9500' to 12,500ft/3800m. It also varies with time (upwards). Generally we recommend not going beyond this point for normal day-to-day use. However, many athletes have very successfully gone beyond this zone as special preparation for championship events and produced world-beating performances as a result. For more information on this please contact us directly as each case is different and we will do our best to share feedback and offer advice to our customers based on their individual situation and goals.

### **4 Q: What is the optimal altitude for exercise training?** *(Training Protocol Support)*

**A:** The lower the better, as there is more oxygen available to fuel the training. This allows you to train harder and recover faster.

### **5 Q. Will it help to nap, read or just hang out in the tent for a few hours in the middle of the day if I have some time, or do you need to be in the tent for 6-8 continuous hours to obtain any benefit?** *(Training Protocol Support)*

**A:** The optimum way of using the HYPOXIC ALTITUDE TENT is still being learned, however it almost certainly will not do any harm to use the HYPOXIC ALTITUDE TENT for a few extra hours a day to supplement the long period at night. However, at least one study has shown no difference between individuals who stayed just 12 hours in a hypoxic environment as compared to those who were there 24 hours a day.

### **6 Q. Are there any health risks in spending several hours a day in the tent?** *(Training Protocol Support)*

**A:** No. There are countless places around the world where people live, and train, full-time at altitude (like many ski resort areas). Only the very frail will experience problems coping with the diminished oxygen content in the air. Use of the HYPOXIC ALTITUDE TENT is the same as sleeping at altitude. If your doctor says it's ok for you to fly in a commercial plane,

then you're safe to use the HYPOXIC ALTITUDE TENT. Carbon dioxide is flushed out by the constant in-flow of fresh hypoxic air. See our Safety report

**7 Q. Should I have Blood Tests to monitor what is happening?** (*Training Protocol Support*) **A:** The only thing we recommend to have checked is the serum ferritin. This should be at least 40ug/l BEFORE altitude training is started. Iron-rich foods and supplementation may well be required, but should not be undertaken without first establishing that iron levels are indeed low.

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## Results

### **1Q. What sort of athletes will benefit from using the tent?** (*Results*)

**A:** Any athlete involved in a sport where oxygen uptake is an important factor. These are primarily events lasting over a minute and a half, though events as short as forty-five seconds have a significant aerobic component and will also benefit from the increased buffering ability that is a result of the increase in hemoglobin and myoglobin. That said, currently studies are showing great benefits for anaerobic athletes as well. Specifically, anaerobic athletes utilizing altitude training have shown tremendous power improvements. It seems that the increased efficiency of the mitochondria is enabling enhanced energy production with less available oxygen. Regarding ability level, athletes of all levels can benefit from this form of altitude training. For the very elite athlete, many of whom train hundreds of hours looking for minute improvements, it opens up a realm of performance levels that could never be obtained without this sort of preparation.

### **2Q: Studies show that "sleep high and train low" makes a 1-3% difference. Will the Hypoxic AltitudeTent produce the same effect as those studies?** (*Results*)

**A:** The HYPOXIC ALTITUDE TENT has the potential to yield an even greater effect than these studies. - and this has frequently been reported back to us from athletes. Most studies on "sleep high and train low" were a compromise on the ultimate desired altitudes because of the practicalities of suitable locations. For example, one previously mentioned study trained the athlete subjects at 4,100 feet above sea level where there is approximately 17% less oxygen than at sea level. Had the athletes been trained at sea level, they likely would have seen a greater improvement in performance. The Altitude Tent allows you to sleep at up to 12,500 feet and train at sea level. Secondly, the inconvenience associated with living away from home and driving down each day for a training session, meant that the studies could not be maintained for more than a month. This is not enough time to realize the full potential from this sort of training.

### **3Q: How long does the effect last?** (*Results*)

**A:** It's a little like asking "if I stop training (exercising) how long before my performance drops off." Most people notice little, or no, drop-off for up to a week, and then only marginal for the second. On the other hand if you were to miss three or four days EVERY week then the results would be better than nothing, but not optimal. The portable nature of the Hypoxic Altitude Tent allows it to be taken to events and on away-trips, thus allowing you to sleep at altitude anywhere and therefore maintain and continually develop the benefits of altitude year round.

### **4Q: What are the physiological benefits of altitude acclimatization?** (*Results*)

**A:** There are several, however the most significant are:

1. Altitude produces a change in the oxygen association curve and an improvement in efficiency of gas exchange. When an acclimatized athlete takes a breath, more oxygen gets from the lungs into the blood stream than in a non-acclimatized athlete.
2. Greater red blood cell mass. Red blood cells carry the oxygen to your muscle cells for athletic performance. The more red blood cells the greater the oxygen carrying capacity of the blood.
3. Greater total blood volume. Altitude acclimatization produces more red cells. It also produces a greater total blood

volume as well. By Sterling's Law, an increase in blood volume means the stroke volume of the heart will be greater. Again improving the oxygen carrying-capacity of the blood.

4. Increased volume of capillaries. This improves the delivery of the oxygen to the muscles by giving the blood more pathways to the muscles. Because of the increased total blood volume, these capillaries are expanded making it easier for red blood cells to get into them and deliver oxygen. This is a long-term adaptation

5. Increased enzyme levels, including 2,3 DPG, in the mitochondria. The mitochondria are the powerhouses of the cells - the "furnaces" where the fuel is burned and energy is produced. 2,3 DPG is the enzyme that helps unload the oxygen from the blood. Other enzymes assist in the power-producing oxidation of fuel.

**5Q: I already train at altitude. How will the Altitude Tent benefit my training? (Results)**

**A:** We have several athletes who live in Colorado, but who sleep in the Altitude Tent as they understand how 6000' is not enough to get full acclimatization. Often, athletes who have lived and trained at altitude for some time are able to comfortably sleep at higher altitudes than those athletes who live at sea-level. This extra altitude will cause a more acute response. The idea is to sleep higher than you train. If you cannot handle this then you should move.

**6Q. Will I get a boost in performance for a while, and then "pay" for it later? (Results)**

**A:** This certainly doesn't appear to be the case. In fact, athletes who have used the HYPOXIC ALTITUDE TENT on an ongoing basis have found that their performances continue to edge upward as the body becomes more efficient at using the increased amounts of oxygen available to it

**7Q. Will my Hematocrit level rise? (Results)**

**A:** Not necessarily. In many cases it has, in some cases it has not. We have seen very little correlation between hematocrit change and increase in performance. This was confirmed in a recent independent HYPOXIC ALTITUDE TENT study where, although the "tent group" showed significant gains, there was no change in hematocrit.

The body likes to maintain itself at certain levels. For example, it has a desired hematocrit count while at altitude, and a desired hematocrit count while at sea-level. The hematocrit count is determined by two factors: The Red Blood Cell count, and the blood plasma (water) volume. Whereas the RBC count increases over a period of weeks, the plasma volume can change in just hours. Thus, during the day, the hematocrit will go down, reverting towards it's normal for sea level. The red blood cells do not die off any faster than normal, so that level stays elevated.

Use of the HYPOXIC ALTITUDE TENT is unlikely to push the average athlete up to the limit of 50% RBC that some sports are enforcing. If you are concerned about this you should perform regular checks.

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## Equipment

**1 Q. Can the altitude be adjusted? (Equipment)**

**A:** Absolutely and easily. On the face of the hypoxic generator is an adjustable flow meter that regulates the composition of the resulting air from 20.9% (sea level) to 14.8% (simulates 9000ft/2750m). It's as simple as twisting the dial.

**2 Q. Is 9000ft/2750m the maximum that's available? (Equipment)**

**A:** No. Hypoxico Generators can achieve up to 21,000ft/6,400m. An oxygen meter is suggested for those working with higher altitudes. Experienced mountaineers should contact us to discuss even higher possibilities for their unique application.

**3 Q. How do I monitor the effective altitude? (Equipment)**

**A:** Hypoxico Altitude Training Systems are extremely consistent and predictable, so there is no need to monitor the O2 content. So long as the tent is visibly filled with air then the correct altitude will be simulated, or is being approached. For

those who wish, oxygen monitors are available through Hypoxic Inc. which provide a digital readout of the O2 content within the tent.

Note, an oxygen monitor is required if the high-altitude adapter is used.

**4 Q. Is there anything that is used up in the process and regularly needs replacing? How about maintenance?**

*(Equipment)*

**A:** No. - All we recommend is that the filter screen in the case is kept clean, and that the HEPA filter is replaced twice a year. This HEPA filter ensures that the air inside the tent is dust and contaminant-free - much cleaner than the air in the rest of your house.

**5 Q. What are the power requirements? (Equipment)**

**A:** There are two units available: 110 Volts, 60Hz, 4 Amp, OR 220 Volts 50Hz, 2 Amp. These are chosen according to the country in which you will use your system. Both are rated at approximately 450W of electricity. This is slightly less than a window air conditioner.

**6 Q. If the unit produces oxygen-depleted air, what happens to the other oxygen? (Equipment)**

**A:** While the oxygen-depleted air is pumped into the tent, the generator also produces oxygen-rich air that is released into the room through an exhaust valve where it is immediately diluted with the regular air, so even on its own it does not constitute a hazard. Furthermore, as air is pumped into the tent an equivalent amount of oxygen-depleted air is pushed out. This air mixes with the oxygen-rich by-product from the generator and the two naturally cancel each other out.

**7 Q. Can more than one person be in the tent at once? (Equipment)**

**A:** Absolutely, we recommend our "Everest Ascent" Hypoxic Generator for one person but it will also work for 2 people. However, for extreme comfort we recommend the new high flow "Everest Summit" Hypoxic Generator.

**8 Q. Are there any special requirements needed as far as the bed is concerned? (Equipment)**

**A:** We try to provide a variety of tent options to accommodate virtually any potential customer. The standard portable tent fits over any queen-size bed (80" x 60"/2m x 1.5m) or smaller. The tent's base slips under the mattress but over the box-spring. Alternatively it will sit on the floor with just a mattress, futon, or air-mattress inside. Another option is At-Home Cubicle which sits in your room with the entire bed inside it. There are a range of sizes of these tents which can accommodate even a king-size bed.

**9 Q. How portable is it? (Equipment)**

**A:** The generators are 21.5" x 23" x 10.5" (54.6cm x 58.4cm x 26.7cm) and weigh 56lbs (25.4Kg). The optional aluminum travel case is 23.5" x 25" x 13" (59.7cm x 63.5cm x 33cm) and weighs 18 lbs (8.2Kg). They have been checked onto commercial planes or mailed by parcel services many times.

The generator and/or case is initially shipped to you in a special cardboard box with double skin and 3" of padding in between.

The queen tent weighs 9 lbs. and can be carried on a plane or stuffed in a check-on bag.

**10 Q: Can I take a whole room to altitude? (Equipment)**

**A:** It is theoretically possible to take an entire room to altitude. However, we do not necessarily recommend this method unless the room or dormitory has been constructed for this purpose. Factors to consider include:

- 1) To take a room to altitude may require significant sealing. Central air-conditioning or even window air-conditioners must be blocked off, as well as any other significant leak. Even walls, floors and/or ceilings MAY be too porous.
- 2) The volume of the room, as this can mean several hours to get it to altitude each day. In response to this second issue one could consider leaving the equipment running 24 h/day. However, apart from causing considerable wear on components, and using a lot of electricity, it would still hit the problem that ANY OCCUPIED ENCLOSURE REQUIRES

SEVERAL HOURS PER DAY TO AIR-OUT to avoid a number of health problems.

Hypoxico Inc. is the sole manufacturer and multiple patent holder of the hypoxic (simulated altitude) technology and is the worldwide leader in normobaric hypoxic environments.

Please contact us with details of your particular need and we would be happy to evaluate the possibilities.

Our technology is already included into Altitude Spa and Meditation Room concept in a new chain of 180 hotels that are being built throughout Europe; we are also currently involved in several "dormitory" projects, some of which are in Olympic Training Centers. For these, the number of generators required is determined primarily by the number of occupants, and the desired maximum altitude. The rooms are often built from scratch.

**11 Q. What happens to the altitude when you get in and out of the tent? (Equipment)**

**A:** Actually very little happens! Most tent owners use the optional oxygen monitor so they can see that the variation is minimal, about 0.1% which equates to about 200'.

**12 Q. Is it noisy? (Equipment)**

A: With our system, noise is not an issue. Our generators will pump 40,000+ L/night into your tent with NO machinery inside or even near the tent. The generator comes with a 20ft hose so you can place it in a closet or even in another room, very far from the tent. With an optimal setup, athletes have reported having to place their hand over the air input valve inside the tent to ensure that the system is even running.

**13 Q: Can the altitude be adjusted? (Equipment)**

**A:** Absolutely. The generator can be adjusted to simulate any altitude between 0 and 12,500ft/3800m with the turn of a dial. The system can reach even higher altitudes with the addition of the high-altitude adapter.

**14 Q: How do CO2 levels compare? (Equipment)**

**A:** The Hypoxic tent system gets rid of CO2 the same way it gets rid of all other waste gasses emitted by humans .... it flushes them out with a large volume of incoming air. More than 40,000 liters of fresh hypoxic air are pumped into the enclosure during the course of a night, keeping the CO2 levels well below dangerous or uncomfortable levels. The HYPOXIC ALTITUDE TENT meets ALL relevant standards.

It has been suggested that, rather than pump in a supply of fresh air, one could instead just keep the SAME air inside all night and "scrub" out the excess CO2.

The problem with this is as follows:

- 1) Scrubbing CO2 requires more than just having a tub of crystals on the floor. Any system which DOES actually remove CO2 would need a large constant exchange of crystals. Check it out yourself at <http://www.frogdiver.com/scrubber.html> .
- 2) Even if a system DID actually remove CO2, then what about all the other gasses that we give off? Don't eat beans before going to bed! (sorry if we're getting crude here).

Joking aside, this is a serious matter, and many building and environmental codes have strict limits on how many air-exchanges there must be. Unless you're pumping in the volume that we are, you're possibly heading for some illness problems.

There have been reports of imitation hypoxic set ups where the customer was sold on the "scrubber" idea, and the resulting CO2 levels made the system very unpleasant to use. Remember, Hypoxico Inc invented these self-contained Hypoxic Systems (see our patents), and we deliberately chose the method we did for some very real reasons!

As we said before, if you'd like to speak with some actual athletes, STAR athletes, we can usually accommodate that. And who knows, maybe you'll be able to pick up some training tips!

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**1Q. Isn't it Hematocrit rise that determines performance?** *(Science)*

**A:** If it was simply Hematocrit that improved performance, then athletes could remove a pint of blood, centrifuge it, tap off the plasma, and re-infuse just the red blood cells to increase their hematocrit levels. This doesn't work as the total Red Blood Cell volume is what is important and actually affects performance. The body must create NEW Red Blood Cells to enhance performance.

**2Q. How is the altitude created?** *(Science)*

**A:** Altitude is characterized by the reduced partial pressure of oxygen. At a lower partial pressure, there is less oxygen in the air you breathe. It is this reduced oxygen content that stimulates the body to adapt and become more efficient in the uptake, transportation, and metabolism of oxygen. The HYPOXIC ALTITUDE TENT utilizes the same oxygen reduced air that one would find at high elevations. Our Hypoxic Generator continually separates out a portion of oxygen from ambient air before it is pumped into the enclosure. All other gases remain in the air, maintaining the atmospheric pressures of sea-level (or whatever altitude you are living at).

**3Q: Why not just take synthetic EPO?** *(Science)*

**A:** EPO is erythropoietin - a hormone that makes the bone marrow create more red blood cells - a wonderful drug that has saved many lives - IN MEDICINE.

In the sporting world it has unfortunately been abused and cost many lives. It causes many problems in the body when not used for its intended medical application, completely throwing off the natural balance that the body needs for healthy long-term living. Consequently it is illegal to use in sports.

Already, drug-test samples are being frozen for re-analysis when the test for EPO is very soon perfected.

**4Q: Do you have expert advisors?** *(Science)*

**A:** We certainly do. Check out our advisory board.

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## Purchase

**1Q: Do you rent out systems?** *(Purchase)*

**A:** Yes, we have a limited number of systems available for rent for periods of a month or more. Contact us for further information regarding our rental options and policies.

**2Q: Does the system come with a warranty?** *(Purchase)*

**A:** Naturally. Hypoxico stands behind its products. The Hypoxic Generator comes with a 3-year/8,000 hour warranty.

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## Miscellaneous

**1Q. Is it true that Hypoxico is the true world leader in Altitude simulation?** *(Miscellaneous)*

**A:** Absolutely. In fact Hypoxico Inc invented the whole concept of self-contained hypoxic enclosures for both exercising and sleeping, whereby the hypoxic air is created on-site. The first of our many patents "US# 5850833 Apparatus for hypoxic training and therapy" was applied for in early 1995, and later approved by the US patent office. Other US Patents include "US# 5964222 Hypoxic tent system".

Various other patents have been approved in countries worldwide, recognizing Hypoxico inc. as the pioneer in such

systems. Since introducing the first hypoxic systems to the market (which drew huge media coverage), Hypoxico has been in the center of developments in this new industry. Our products are used by Olympic associations, professional sports teams, world and Olympic champion athletes and even the military.

More athletes use Hypoxico's tent and room systems than all other altitude-simulating systems combined.