HIGH ALTITUDE



INTRODUCTION

The purpose of this document is to give you an understanding of the affects that trekking at high altitude can have on your body, how you can prepare for such a trek and how to conduct yourself during the trek. Not everyone experiences the negative effects of being at altitude. Everyone is different, and you may have a different experience every time you go to high altitude.

WHAT IS ALTITUDE SICKNESS?

Altitude sickness is a general term used to describe a variety of symptoms that can occur when trekking at high altitude, when your body has not acclimatised to that altitude. In this context, high altitude is accepted as being around 2500 metres above sea level and above.

However, ascending to an altitude above 2500 metres does not automatically mean you will suffer the negative effects of being at a high altitude. For example, the Dalai Lama trek which reaches a final altitude of 3300 metres and the Himalaya trek which reaches a final altitude of 3210 metres, the effects are likely to be limited, if at all. These final heights represent the 'peak' height of these treks and for the rest of the trek you will be at lower altitude.

The medical problems associated with trekking at high altitude are caused by changes in atmospheric pressure which in effect means there is less oxygen available. Simply put, the higher you go, the less oxygen there is.

The two main causes of altitude sickness are ascending to a higher altitude too quickly and exercising too vigorously when at a high altitude. The likelihood of someone suffering altitude sickness is not determined by gender, physical fitness or age.

MEDICAL PROBLEMS ASSOCIATED WITH ALTITUDE SICKNESS

Altitude sickness takes three forms;

AMS (acute mountain sickness) – This presents similarly to a hangover and causes headaches, nausea, vomiting, loss of appetite and fatigue. Not everyone experiences AMS, and you may only have one symptom i.e. a headache. If you do suffer a headache, in diagnosing the cause, you must consider other possible causes as well, for example are you dehydrated, have you been drinking enough water, has the headache been caused by exposure to the sun, have you been wearing a sun hat and using sun protection. Treatment for AMS include rest, anti sickness medication and over the counter painkillers such as Paracetamol and Ibuprofen.

HAPE (high altitude pulmonary oedema) – This is caused by excess fluid on the lungs and is a serious condition. HAPE usually develops over 2 or 3 days, but the effects can also be quite rapid. Sufferers usually have the same symptoms as for AMS, but also usually experience breathlessness on exertion and also at rest, a rapid heart rate, cyanosis (blueing) of the lips and a cough that may produce white or pink frothy saliva.

HACE (high altitude cerebral oedema) – This is caused by the build-up of fluid on the brain and is a serious condition. It presents as a severe form of AMS, severe headache, vomiting, lethargy and progresses to unsteadiness on your feet and confusion.

Treatment of HAPE AND HACE – Descent is the best course of action. Supplementary oxygen and the use of a portable inflatable pressure bag to increase the air pressure around the person can help. There are prescribed drugs that can also help but these should only be taken on the advice of a suitable medical professional at the time of need.



HIGH ALTITUDE



WHAT CAN I DO TO PREPARE FOR MY TREK?

Physical fitness - Multi day trekking at altitude is both physically and mentally challenging. Whilst a good level of fitness does not prevent someone from suffering altitude sickness, it will help you deal with the physical aspects of your challenge. Further guidance on training plans is available on the Global Adventure Challenges web site and in your account hub.

Diamox (Acetazolamide) – This is a prescribed drug used to treat a variety of medical conditions including glaucoma and certain heart conditions. It has been shown to be beneficial in both the prevention and treatment of AMS. It works by increasing your respiratory rate thereby increasing oxygenation in the blood.

There are some down sides of taking Diamox though. The drug increases the need for urination, can cause nausea and can also cause tingling in the hands and face. The decision to take Diamox is a personal decision and the drug is not suitable for everyone. It is also not a requirement to use Diamox when trekking at high altitude.

In coming to your personal decision whether to take Diamox or not, you should speak to a medical doctor to discuss your suitability and the benefits and down sides of taking Diamox for the particular challenge you are undertaking.

Pre-Existing medical conditions – Depending on any pre-existing medical conditions, you may be required to provide a doctors authorisation confirming that you are medically suitable to undertake the trek.

Ensure that you have sufficient medication for any pre-existing medical conditions. It is good practise to have spare medication such as tablets and asthma inhalers for your challenge in case they become lost or damaged.

Dentist – Allow enough time for a pre trek dentist check up and then a revisit in case any issues are identified. The cold and changes of pressure at altitude can exacerbate existing dental issues.

Increase your carbohydrate intake pre trek– Multi day trekking at altitude is very energy intensive and consequently the meals you will have during the trek have been designed with this in mind. However, there is the potential that any onset of AMS i.e. nausea, vomiting and loss of appetite may effect your diet on the trek, so to have some stored calories as you start the trek will help. Consider increasing your calorie intake i.e. pasta, potatoes and rice in the month before your trek.

Caffeine and alcohol – Depending on the exact trek you are undertaking, there will be limited access to caffeinated drinks and alcohol. A sudden change in the normal consumed quantities of these drinks can lead to headaches and whilst headaches can be treated with over the counter medicine, this may mask the signs of altitude related health issues. Therefore, it is worth reflecting on your current consumption of these drinks in the context of a reduction whilst trekking and adapt as required pre trek.

Summary – It might be that you will only go to a particular high altitude destination once in your life. Approach your trek with this in mind, be kind to your body, get plenty of sleep, keep to your training plan, consider your caffeinated drink and alcohol consumption pre trek, assess any pre-existing medical conditions you have and consider speaking to your medical doctor regarding the potential use of Diamox.



HIGH ALTITUDE



HOW SHOULD I CONDUCT MYSELF ON THE TREK?

As previously mentioned, the likelihood of suffering AMS is increased when ascending to a higher altitude too quickly and exercising too vigorously on the trek.

The increase in altitude per day has been adapted in each trek itinerary, so this has been taken care of for you. What you can affect though, is your level of physical activity whilst on the trek. Physical activity is not just about walking, it applies to movement in general. From getting dressed in the morning, walking to the dinner tent, going to the toilet in the middle of the night, everything you do should be done **slowly and deliberately**. Be kind to your body and help it adapt to the altitude.

Keep hydrated – You should aim to drink between 3 – 4 litres of water per day. Because of the reduced oxygen levels at high altitude, you will find yourself breathing deeper/faster. This action will expel moisture from the mouth. Dehydration can develop quickly at high altitude and a water deficit of only 2% can reduce performance. *Keep Hydrated*.

Dust protection – High altitude destinations can be occasionally dusty and cold at times. Coupled with a tendency for people to breathe through their mouth, there is the potential to aggravate the back of the throat leading to an annoying cough. A 'buff' or similar face covering is useful to protect your throat, as is a packet of your favourite cough sweets.

Nutrition – Whilst the necessity to eat during the trek is obvious, an effect of AMS is nausea and vomiting, leading to a loss of appetite. You would benefit from ensuring that when you are feeling well, you take the opportunity to eat plenty and keep stocked up. Snacking every couple of hours during the day is also an effective way to keep your calories topped up.

Sleep – Disturbed sleep is a common occurrence during a high altitude trek and there are a number of different causes for this. Changes in your breathing pattern, sleeping in a tent, movement around the camping area by other trekkers, going to the toilet in the night. Don't be concerned about a perceived lack of sleep, it is part and parcel of the trek, just ensure that you remain relaxed and rested.

WHAT HAPPENS IF I HAVE ANY CONCERNS DURING THE TREK?

If you, or you notice a fellow trekker, experiencing any medical issues, then you must speak up. You will be accompanied by either a Global Adventure Challenges trek leader or an in-country trek leader. Doctors who accompany treks will be in possession of a comprehensive medical kit including items suitable for dealing with altitude related issues.

These are experienced outdoor professionals and are there to help you, offer advice, guidance and support. You should share concerns immediately with them, remain aware at all times and seek advice if you are unsure.

ACKNOWLEDGEMENTS AND FURTHER READING

Oxford Handbook of Expedition and Wilderness Medicine

British Medical Journal publication on the use of Diamox at high altitude www.bmj.com/content/361/bmj.k2153.full

