EVEREST SURVIVAL GUIDE

Humans need oxygen to survive. We get it by breathing the air around us. The higher you go, the thinner the air becomes and the less oxygen there is to breathe. At the summit of Everest, three breaths provide about the same amount of oxygen as one breath at sea level, so you have to breathe much harder to get the oxygen your body needs.

ACCLIMATISATION

To cope with the thinner air and lower oxygen levels at altitude, our bodies must adapt. This process is known as acclimatisation.

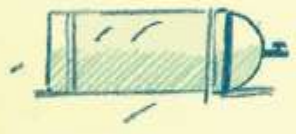
To give their bodies a chance to acclimatise, climbers should ascend slowly to high altitudes.

Climbers who don't acclimatise properly can suffer from something called Acute Mountain Sickness (AMS). Symptoms of AMS range from headaches, nausea, exhaustion, confusion and dizziness, to a life-threatening build-up of fluid in the lungs (pulmonary oedema) or brain (cerebral oedema).

Even those who do acclimatise will still feel the effects of altitude. These can include breathlessness, a faster heart rate, coughing, loss of appetite and trouble sleeping.

EXTRA OXYGEN

Today, most climbers use bottled oxygen to get to the summit of Everest. This helps them combat the effects of high altitude and improves their performance.



But, in the days of Mallory and Irvine, debates raged about whether using oxygen was necessary or 'sporting'. It was not until Hillary removed his breathing apparatus at the top of Everest that scientists knew once and for all that humans could survive on the summit without extra oxygen.

The Italian climber Reinhold Messner became the first person to climb Everest without extra oxygen in 1978.

OTHER DANGERS

Frostbite: It is the freezing and ultimate death of body tissue. Frostbite generally occurs in bits of the body that are farthest from the heart, including the fingers, toes, nose, ears, cheeks and chin. It can cause permanent numbness or loss of use of the affected area. In the worst cases, the body part must be amputated.

Dehydration: Without enough water, the human body cannot work properly. Dehydration happens when more fluid is lost by the body than is replaced by drinking liquids. The risk of dehydration is greater for mountaineers because our bodies lose water more quickly at altitude. The symptoms of severe dehydration include confusion and weakness. If left untreated, dehydration is fatal.

Hypothermia: Normal body temperature is around 37°C. Hypothermia happens when someone's body temperature drops below 35°C. At such a low temperature, the heart, nervous system and other vital organs can't work properly. If untreated, hypothermia can lead to death. Hypothermia is usually caused by being in a cold environment for a long time.

High altitude cough (Khumbu cough): Breathing cold air quickly and deeply can cause the lining of a climber's lungs to dry out and become inflamed. The resulting irritation causes the climber to cough – often quite violently. People have been known to break ribs as a result of the Khumbu cough.