How training at high altitude can keep you fitter

Training at altitude has a whole host of health and fitness benefits. Best of all - you don't even have to leave the country to give it a go

By Nilufer Atik

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Mention the phrase ‘altitude training’ to anyone and they immediately conjure up images of thrill-seekers scaling treacherous mountains.

But this type of exercise doesn’t just benefit those who want to climb Kilimanjaro or ski down the world’s highest peaks. It also boosts endurance, speed and overall performance in just about any sport, from running and cycling to football and rugby**.**

That’s why the likes of Mo Farah**,** Paula Radcliffe and triathlete Jonathan Brownlee regularly hit the high ground or sleep in altitude tents before a competition. In fact, 95 percent of all medal-winners at the Olympic Games train at altitude.

But what most people don’t realise is that this type of training, also known as hypoxic exposure, has numerous health and well-being benefits for ordinary folk too. And now it’s more accessible than ever. With altitude centres popping up all over the UK, it’s no longer necessary to head for the Himalayas to get your body used to functioning on less oxygen.

All you need to do is book an appointment with an altitude training coach and you can start feeling the benefits within days.

"It takes around a minimum of eight sessions before you notice a change to your endurance levels," said Emily de Beaux, performance specialist at the Altitude Centre in London. "This is because with reduced oxygen, the body becomes more efficient at using whatever o2 is available. Then, when you return to an environment with normal oxygen levels, you are able to work at a much higher intensity because your body is literally saturated with oxygen."

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There are numerous physical plus points too. Improving oxygen efficiency has been scientifically proven to strengthen the heart and lungs, ward off anxiety and depression, and treat a variety of medical conditions such as diabetes, arthritis, and even help those with spinal cord injuries.

Research published by the American Academy of Neurology showed that patients who'd suffered incomplete spinal injuries where their spinal cords remained partially intact, could be helped back to normal movement through intermittent hypoxic exposure (IHE).

Nineteen patients involved in a study by the academy performed 40 minutes of IHE sessions every day for five days. All participants improved in their ability to walk, and more than 30 percent increased their walking speed by at least a tenth of a metre per second. Seventy per cent also increased their endurance by at least 50 metres.

The reason for these health benefits is because when your body is exposed to low oxygen air, it responds by making new red blood cells to increase oxygen delivery, which strengthens the immune system.

In terms of boosting fitness levels, this increase in red blood cells also means more oxygen and nutrients are carried to the muscles then converted into energy for athletic performance, which causes them to work at a much higher level, thereby increasing aerobic capacity.

And if that isn't enough, training at altitude also makes you slimmer.

A study last year by the research group **PLOS ONE** found those living at higher points were less likely to be obese. The research focused on overweight ex-servicemen from the US armed forces. Those living at altitudes of approximately 2000 metres or above were almost half less likely to pile on the pounds compared to those living at under 1000m.

This is because exposure to hypoxic environments reduces levels of the hunger-inducing hormone, ghrelin, and encourages the body to produce more of the hunger-zapping hormone leptin, making people living at altitude less likely to overeat.

"A lot of our clients report post-class that they don't have the ravenous 'eat everything in sight' feeling they do when they complete high intensity interval sessions in an ordinary gym," explained de Beaux. "The great thing is they don't have to spend hours on a treadmill to get results.

"Training at altitude allows you to exercise at a higher intensity for a shorter period of time to elicit the same effects as longer workouts. So the body is subjected to reduced load which minimises the risk of injury."

"My sleep improved, which is a common side-effect of training at altitude. No wonder those highlanders living in the Tibetan Plateau in Asia never seem to have eye bags"

Traditionally, people would have to travel to high elevation destinations to obtain the benefits of altitude training. But the company Hypoxico Inc. eliminated this hardship by creating technology that allowed high altitude training facilities to be set up anywhere.

Through the production of normobaric hypoxic (oxygen reduced) air, there are now numerous centres that can simulate altitudes of up to 6,400 metres. As a result, athletes, fitness enthusiasts and health conscious individuals worldwide are taking advantage of the benefits.

'Hypoxic exercise can be added to your weekly schedule as part of a healthy lifestyle, and the more you do, the better you get,' said de Beaux.

With that in mind, I decided to try it out for myself at the Altitude Centre in east London. The first thing I noticed when entering the dimly lit 'chamber' was the cold. This, I was told, was because it got really hot in there when people were training.

'We have built environmental chambers that allow people to train with varying degrees of altitude, humidity and heat,' de Beaux told me. 'We recently built one of these at the Manchester City FC training ground.'

I began my first session on the treadmill. The chamber is kitted out with several of these along with some stationary bikes, a rower, a Woodway (which is a manual curved treadmill) and an altitude pod in the corner. The room is set at 2700m, which means it has around 15% oxygen in it at any time. At

sea-level, there is around 21%, so there was around 6% less oxygen in it than I'm normally used to - apparently the optimum level for this type of training.

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‘The best way to gain the full benefit is to have two high intensity interval (HIIT) sessions twice a week and one session in the altitude pod. This gives your body time to acclimatise slowly and also to recover in between sessions,’ de Beaux advised.

We started off with a steady two minute warm up jog and I noticed I was out of breath literally within seconds. ‘Don’t worry, that’s normal,’ de Beaux smiled, ‘it’s just your body getting used to less oxygen.’ It felt a bit like suffocating.

Still, I was convinced I could manage my first 20-minute HIIT session without too much struggle. After all, I run, weight-train and box regularly so consider myself fairly fit. But five minutes in and I was gasping for air.

The workout comprised four rounds of one minute sprints followed by 30 second rests. This was then followed by four rounds of 30-second sprints again but faster, with the same amount of rest. You repeat this as many times as you like, depending on time, but it’s advisable not to go over 40 minutes of training.

"We ask people to manage the intensity so that they avoid spending elongated periods of time in too high a heart rate zone," explained de Beaux. "Having your body work that hard for long periods without allowing it to recover properly isn’t the most efficient way to train."

Throughout the session I also had to wear a monitor to keep track of my heart rate, which was meant to be between 60-65% during my 'rest' periods and around 80% at maximum intensity. The measurements were on screen in front of me and I noticed I hit the 'red zone' a few times and began feeling a little sick. De Beaux coaxed me to pull back a little.

"This means your heart rate has gone above 90% which is supra-maximal and puts a lot of stress on the body," she said. "All cardiovascular work that is above a 70% heart rate releases cortisol, the stress hormone, which can have negative effects on the immune system and actually encourages weight retention around the torso.

When people hit the red zone their heart rate is not dropping during recovery periods, so it's not good to go that high too often."

The monitor also read my Vo2 max, which is the volume of oxygen per minute of exercise, per litre of blood going to each kilogram of muscle. The higher your Vo2 max, the more efficient you are in terms of cardiovascular endurance. An infra-red fingertip device on each machine also showed me my oxygen saturation level, known as Sp02.

At sea level, this should be between 97-100%. In the chamber it can go down to 94% at which point you may begin to suffer the effects of altitude sickness, so it serves as a warning.

"Mo Farah, Paula Radcliffe and triathlete Jonathan Brownlee regularly hit the high ground or sleep in altitude tents before a competition"

'We look for the SpO2 figure to rebound in periods of rest which is a sign of acclimatisation to altitude,' said de Beaux.

After just twenty minutes of jog and sprint intervals, I felt like I had run a hundred miles. My legs were like jelly and I was breathing so fast I couldn't whisper. Apparently I would continue to burn calories for the rest of the day though, which was good news.

Five sessions on and my fitness levels were already showing massive signs of improvement. I could run for much longer outside without getting tired and lift heavier weights too.

And my sleep improved, which is another common side-effect of training at altitude. No wonder those highlanders living in the Tibetan Plateau in Asia never seem to have eye bags.

https://www.telegraph.co.uk/lifestyle/wellbeing/fitness/11815796/How-training-at-high-altitude-can-keep-you-fitter.html