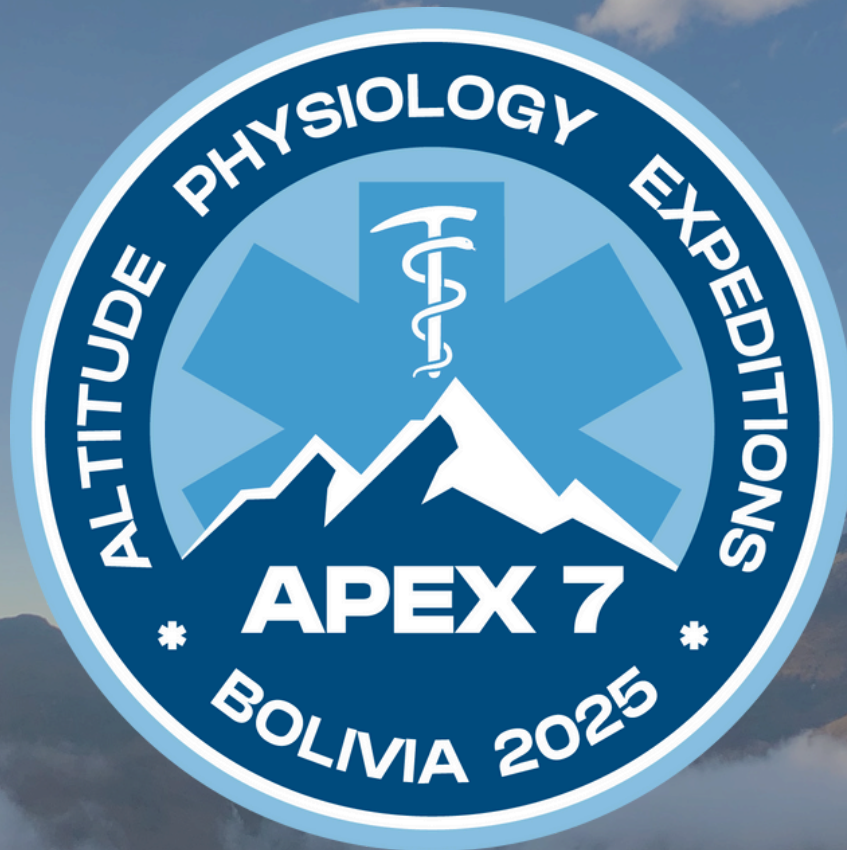


APEX 7

A STUDENT-LED, HIGH ALTITUDE
MEDICAL RESEARCH EXPEDITION



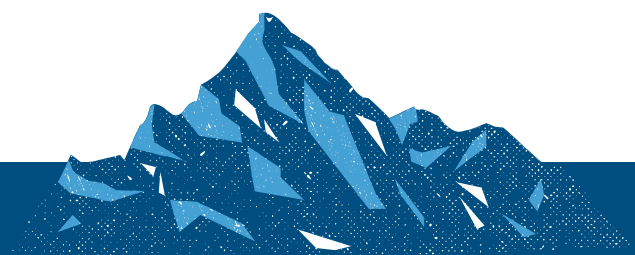
Volunteer Information Booklet
Version 2.1



APEX is a recognised Scottish charity - SC030345

Contents

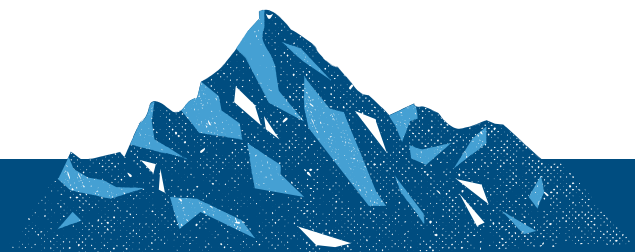
1. What is APEX?
2. Expedition Outline
3. Research
4. Safety
5. Being a volunteer
6. Costs
7. Applications
8. FAQ



1. What is APEX?

Altitude Physiology Expeditions (APEX) is a charity, founded in 2001 by a group of medical students at the University of Edinburgh which aims to conduct high altitude medical research expeditions to further understanding of the effects of hypoxia on human physiology. Since 2001, APEX has successfully run 6 expeditions to South America (most recently APEX6 in June/July 2022), breaking world records and producing high-quality research along the way.

Research output from previous expeditions includes a multitude of publications in reputable medical journals, and has been used to redefine how acute mountain sickness is categorised and managed around the world.



1. What is APEX?

APEX 7 is the latest expedition, set to head to Bolivia in June 2025, taking over 80 student volunteers from the University of Edinburgh. This makes it the largest controlled simultaneous ascent of a mountain in history!

This information booklet is designed for prospective volunteers to get an idea of what joining us on APEX 7 will be like. Please note that any information is subject to change. If you have any further questions feel free to send us an email at apex7@altitude.org, message us on instagram or even just stop one of the organising team for a chat.

We hope to see you up the mountain!

The APEX 7 Team



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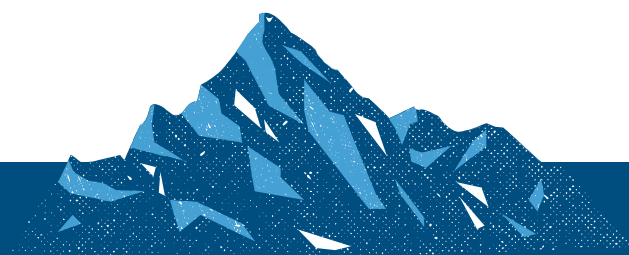
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2. Expedition Outline

Overview

Country

Bolivia

Duration

16 Days

Dates

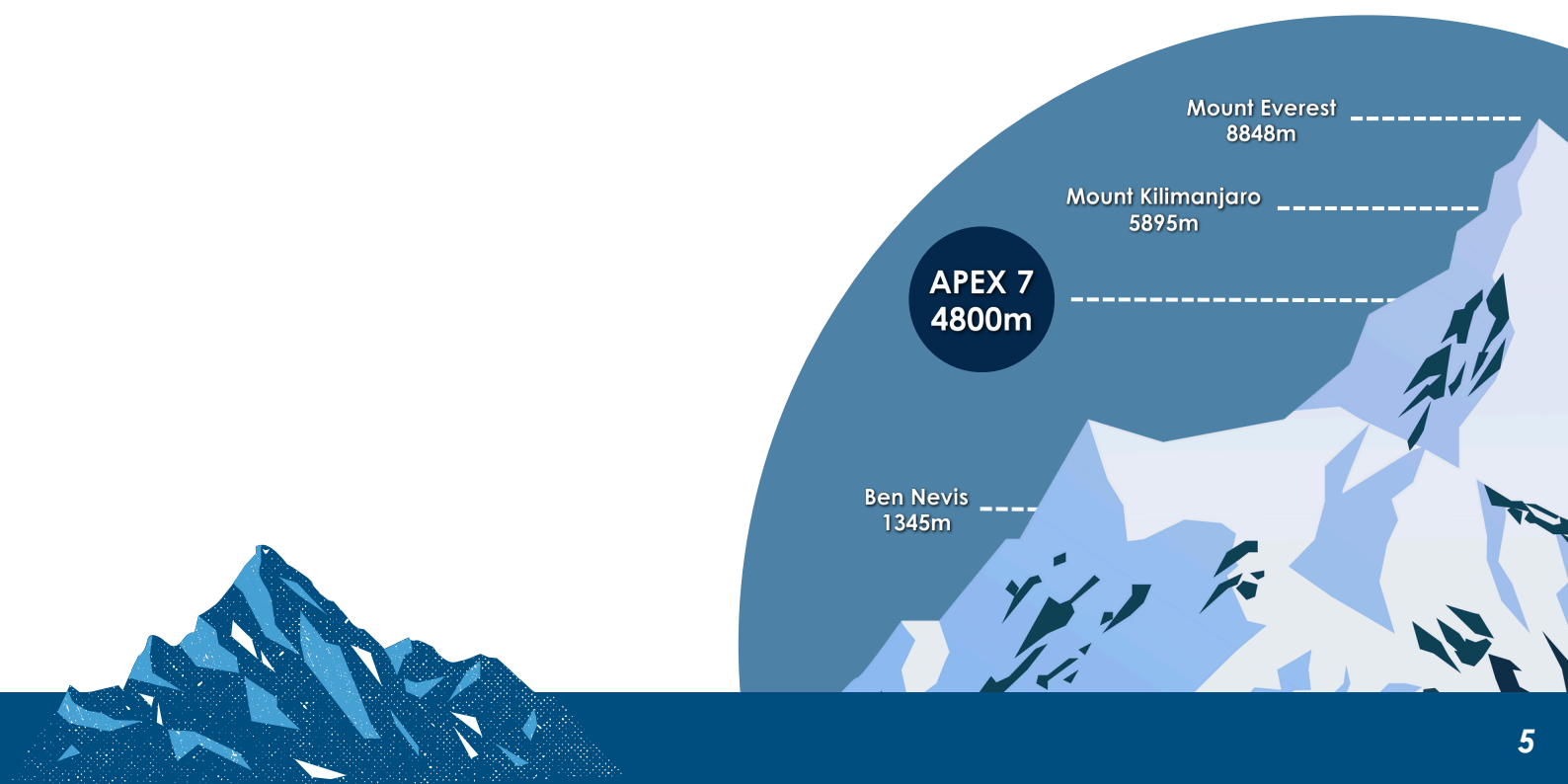
(fly out 26th) 28th June 2025 - 13th July 2025

Accommodation

Hostal Republica, La Paz @ 3600m

Huayna Potosi Basecamp, Cordillera Real @ 4800m

APEX 7 is scheduled to take place from Saturday the 28th of June until Sunday the 13th of July for a period of 16 days and 15 nights. The team will set off from Heathrow on the 26th of June, flying in to El Alto International Airport (LPB) to arrive early morning on the 28th. We spend the next five days in the centre of La Paz at Hostal Republica at an altitude of 3800m, exploring the city and acclimatising to the altitude. After this time, the team will ascend to Huayna Potosi basecamp via buses to spend the next leg of the expedition conducting the main bulk of our research. On the penultimate day, teams will descend back down to La Paz for a final day of research before the expedition finishes that evening with a team dinner and night out!



2. Expedition Outline

Pre-Expedition Dates

Volunteer Information Evening - **26th September 2024**

Recruitment Form Opens - **30th September 2024**

Recruitment Form Closes - **13th October 2024**

Phase 1 Outcomes Emailed - **31st October 2024**

Interviews - **November 2024**

Phase 2 Outcomes Emailed - **January 2025**

Deposit Taken - **January 2025**

Team-building Weekend - **March 2025**

Baseline Testing - **29th/30th March & 5th/6th April 2025**

Expedition Itinerary

Day -1 - 0

Fly out from Heathrow

Day 1

Rest and acclimatise in La Paz

Day 2 - 5

Initial data collection and explore La Paz

Day 6

Ascend to Huayna Potosi basecamp

Day 7 - 13

Basecamp data collection and explore the mountains

Day 14

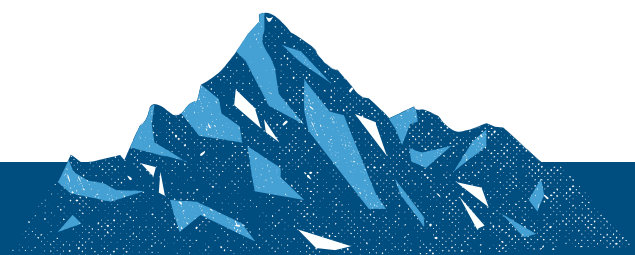
Descend to La Paz

Day 15 - 16

Final data collection and team night out, expedition ends at midnight

Day 17+

Explore South America



2. Expedition Outline

Flight Routes

As APEX 7 is on track to be record-breakingly large, we have decided that group booking of flights is the best way forward for a few reasons:

- It allows volunteers to get their flight deposit back if they need to drop out
- It reduces average costs and ensures we all get the best deal possible
- We all arrive in La Paz at the same time which improves research accuracy

For this to work we need volunteers to choose one of three return route options (or alternatively arrange their own flights) listed below. Whilst this may initially seem restrictive, we have consulted previous APEX volunteers, who all agree that booking flights first, then making plans to fit the dates works very well for travelling around South America. We expect all return dates to be before the start of the year for returning medical students.

Route A

Lima, Peru to Heathrow

27th July 2025

2 weeks post-expedition travel window - heading north

Route B

Lima, Peru to Heathrow

3rd August 2025

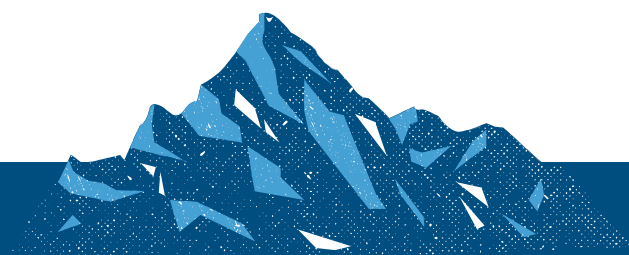
3 weeks post-expedition travel window - heading north

Route C

Santiago, Chile to Heathrow

3rd August 2025

3 weeks post-expedition travel window - heading south



3. Research

APEX at its essence was set up to conduct medical research and contribute knowledge and findings to the scientific community and APEX 7 strives to be no different. Research findings from APEX have been used internationally to improve patient care, including those critically unwell and those travelling to high altitudes. Listed below are some of the APEX 7 research projects and their required samples, more information can be found on our website.

Example Projects

eQTLs and Gene Expression at High Altitude

Summary

Expression Quantitative Loci (eQTLs) are variations in the genome which regulate the expression of nearby genes. Through analysing human genomic DNA and RNA, this project aims to identify genetic areas which differentially regulate gene expression in hypoxia as a result of high-altitude exposure. This may reveal important information about an individual's response to altitude and their risk of altitude illness.

Requirements

- Standard blood sampling

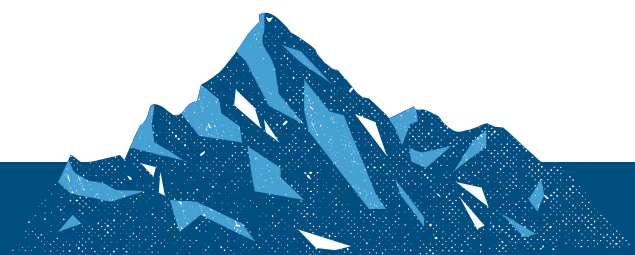
APEX-HiCORT

Summary

APEX 7 HiCORT aims to establish how 24-hour variation in cortisol at the tissue level is impacted by acute exposure and acclimatisation to hypobaric hypoxia. APEX 7 HiCORT will use a revolutionary round-the-clock sampling device to enable sampling of tissue hormones with high temporal resolution in a chronotype-controller manner. APEX 7 HiCORT aims to further understanding of these interactions in hypoxic patients at sea level.

Requirements

- Standard blood sampling
- Minimally invasive interstitial fluid sampling
- Actigraphy sampling (wearing a specialised watch for several days)



3. Research

Hypobaric Hypoxia and Fat Metabolism

Summary

Hypoxic (low oxygen) environments have been found to directly impact fat metabolism in mice and our thermogenesis project will be the first of its kind to investigate the relationship between high-altitude hypoxia and brown adipose tissue activation in humans. By advancing our understanding of how low oxygen states change the way our bodies store fat, produce heat and metabolise, we hope that our research can contribute to novel therapeutic interventions for obesity and metabolic diseases.

Requirements

- Standard blood sampling
- Finger prick blood glucose sampling
- Small number of abdominal fat tissue biopsies

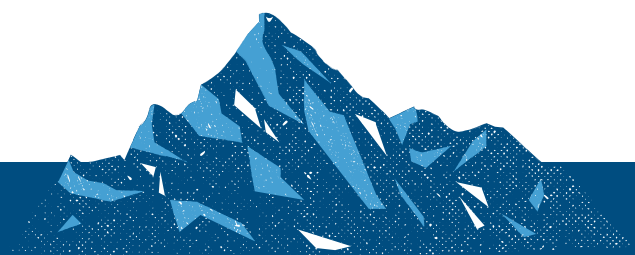
Fluctuations in Cognition at High Altitude

Summary

APEX 7 CogMon aims to establish the effects of living in an isolated, confined and extreme environment at high altitude on cognitive load over a prolonged period. This involves measuring biometrics like heart rate variability and placing subjects into a simulated high-stakes environment to assess cognitive performance. We hope this research will help us understand how prolonged exposure to hypobaric hypoxia affects our ability to think and perform high-risk tasks.

Requirements

- Actigraphy sampling (wearing a specialised watch for several days)



3. Research

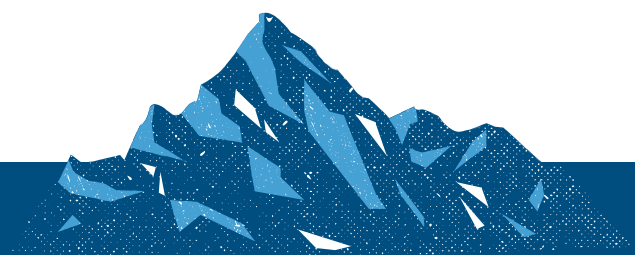
Research as a volunteer

Being a volunteer on APEX 7 is a great opportunity to gain first hand exposure to medical research. On APEX 7 you will act as a subject in novel, cutting edge projects that influence medical practice and mountaineering around the world. Where possible we strive to include volunteers in the research process, whether this is collecting samples like bloods, or performing analysis in our makeshift laboratory up the mountain.

Consent in research is an absolutely vital part of the process and we are aware that not all projects appeal to everybody. Research is the core of our expeditions, so we encourage all volunteers to keep an open mind and step out of their comfort zones, but involvement is not mandatory.

Key Points

- We will never force you to take part in a project
- You can do some but not others: you will be consented to each project individually
- You will be consented by Good Clinical Practice accredited team members
- Our expedition doctors will provide advice on past medical history and research conflicts
- All of our research is approved by the Edinburgh Medical School Research Ethics Committee (EMREC)
- You will need to be available for both pre and post expedition testing. Pre-expedition testing will be at the BioQuarter on the **29th/30th of March & 5th/6th of April 2025**. Post-expedition testing is TBC.



4. Safety

Volunteer safety on APEX 7 is a top priority for the committee and is paramount to the success of the expedition. To help minimise risks associated with travel to high altitude and another culture, there will be 4 expedition doctors on the trip available 24/7. The doctors are on expedition solely for the safety of our volunteers and committee; all are specialists in the field of expedition medicine, altitude medicine, remote and rural medicine and GP and all have experience working in similar climates. Our doctors will provide several medical talks pre-expedition, screen all volunteers medical history for contraindications to travel to high altitude and will be bringing an extensive medical kit.

Additionally, whilst at base camp, in the event of any serious medical issues, there will be multiple 4x4 Jeeps available 24/7 to take sick/injured team members down to La Paz in the company of one or more of the expedition doctors. In the unlikely event that volunteers or committee need to be evacuated to lower altitudes than that of La Paz, contingency plans and funds will be in place for air travel to Lima, chosen for its altitude (sea level), strong medical support and travel links. Committee and doctors will also have 24/7 access to emergency contacts/services via satellite phone.

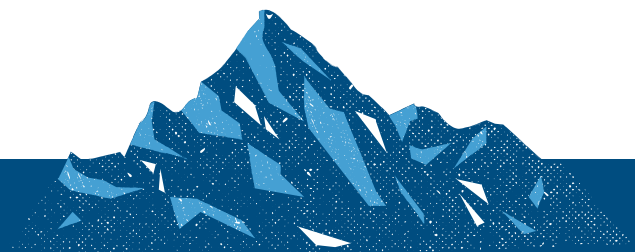
Up the mountain we will have access to running water for washing and cooking, as well as mains electricity and gas cooking equipment. Drinking water canisters will be brought up the mountain every couple of days.

Mountain Sickness

It is important to be aware of the symptoms of acute mountain sickness (AMS) as most of us will experience some form when in La Paz or up the mountain. AMS symptoms include:

- Headache
- Dizziness
- Nausea
- Difficulty sleeping/concentrating
- Loss of appetite
- Tiredness

High-altitude pulmonary oedema (HAPE) and high-altitude cerebral oedema (HACE) are more serious forms of altitude sickness and are treated as medical emergencies. These however are exceedingly rare, and treated easily with rapid descent to a lower altitude.



5. *Being a volunteer*

Expectations

Being a part of APEX7 is an incredibly unique experience and opportunity and allows volunteers to explore aspects of culture and academia otherwise inaccessible. There are a couple of expectations of our volunteers, but not a lot!

Pre-expedition

Baseline Testing

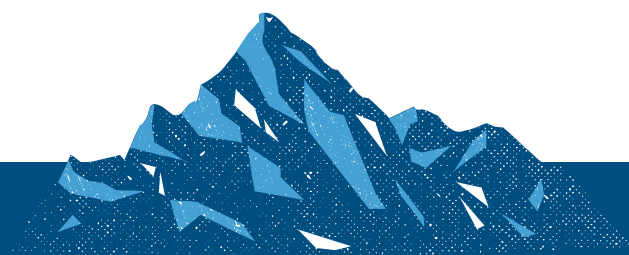
Before we can go on the expedition, for our various research projects, we will be collecting some baseline data and samples from our volunteers. These will take place on the **29th/30th of March & 5th/6th of April 2025** at the BioQuarter, likely the IRR or Chancellor's building. You must be available for these dates.

Socials & Events

In order to get to know all the volunteers and all the committee, we will be hosting socials and team-building events in the months preceding the expedition. These are optional but we would expect volunteers to come to at least a couple, You are spending two weeks up a mountain with each other after all!

Medical talks & Information Evenings

In the time leading up to the expedition, there will be multiple information sessions for the committee to give you more detail about what the expedition will be like, in addition to medical talks from our expedition doctors to help prepare you the best you can before we jet off to South America. These are mandatory for all volunteers to attend.



5. *Being a volunteer*

On Expedition

Data collection

Whilst on the expedition itself, there will be various points each day where we require volunteers to be in the lab for data collection, questionnaires, blood samples etc. Our volunteers are expected to do all their research commitments each day before heading out to La Paz/Basecamp to explore all it has to offer (e.g. exploring the markets, taking the gondolas to El Alto, trying local delicacies, Cholita wrestling (google it!)). These research commitments won't take long and will depend entirely on the specific research project requirements.

Medical Checks

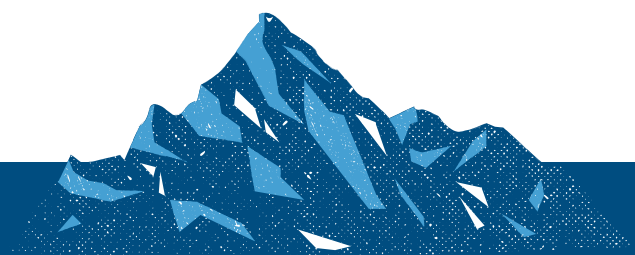
Whilst in La Paz or up the mountain, our expedition doctors may want to check in with volunteers to see how they're doing and you can always reach out to any of the doctors yourself or the committee if you're struggling with anything and would like any support. Each of the committee will be mental health trained and available for chats at any time, anywhere and anything you say will be entirely confidential and only spoken about with the doctors with your permission or if we deem it necessary.

Buddy System

Like previous APEX expeditions, we are implementing a buddy system where each volunteer will be paired up with another. The aim of this is for volunteers to check in with each other at various times throughout the day, see how they're doing and help with that added layer of safety about picking up signs and symptoms of AMS.

Sponsorship & Media

Throughout the expedition we may ask for some of the volunteers' assistance with tasks such as fun photoshoots or vlogs to fulfil our sponsorship / media obligations.



5. Being a volunteer

Post-Expedition

Post-Expedition Testing and Samples

Once we're all back in Edinburgh, we will require most volunteers to come back to the BioQuarter for some follow up tests and samples to be used for data analysis. The dates for these are tbc and will work around volunteers onward travel plans as well as times when they'll be in Edinburgh.

Reunion events

It is important to keep in touch with each and everyone that we were on the expedition with, and to help do this we will be organising various reunion events. This is a wonderful chance to get together, reminisce about the trip and some of your highlights (and low points!) of the expedition and further travels. APEX 6 had various socials after we got back from the expedition, from pub quizzes to black tie Christmas dinners and these were lovely ways to all meet up again and catch up on any exciting developments!

Opportunities

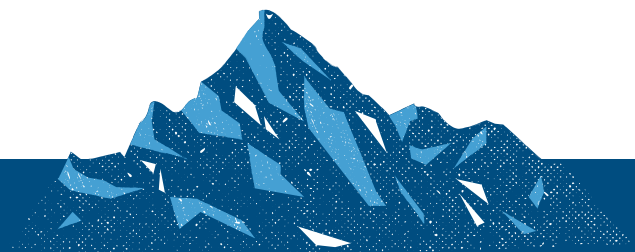
Climbing

Volunteers are not expected to know or even be interested in mountaineering to come along on APEX 7! When ascending to basecamp we take coaches & 4x4s and the same goes for decent, at no point do we trek long distances or carry our own equipment.

However, for those interested in climbing, the region has many great beginner and intermediate peaks, one of which being the mountain we stay on - Huayna Potosi often labelled 'the world's easiest 6000m mountain'. We are working with our logistics partner Bolivian Mountains to get some great deals on guided treks up some of the beautiful Andean mountains. These costs will not be included in your expedition contribution.

Exploring South America

There is so much to do in South America that it would be impossible to list them all here! Instead check out our APEX Survival Guide on Instagram (@altitudeapex) for an idea of things to do. We're again partnering with Bolivian Mountains to create some bespoke tour & travel opportunities around Bolivia at a large discount for our volunteers.



5. *Being a volunteer*

Provisional Kit List

▣ Expedition jacket: This is an essential piece of kit for the expedition. We are currently trying to secure a sponsorship deal for APEX 7 jackets at a reduced price

▣ Waterproof: Even though it is the dry season, there is always a chance of rain/snow. A good waterproof layer is essential

▣ Softshell/Fleece/Jumpers: Underneath the jacket, and for moving around the lab – these could be in the form of a softshell jacket, fleeces and/or lots of woolly jumpers. If you are a 'cold' person, this is where you need to be extra generous in your packing!

▣ Baselayer Top and Leggings

▣ Warm Socks, Hat and Gloves

▣ Sunglasses: There is a lot of glare and the sun is strong at altitude. Get unglases that protect against UV-A and UV-B

▣ Rucksack and day bag: With a liner, plastic bags ± dry bags

▣ Sunscreen, lip balm: Remember that you burn much more easily at 4800m

▣ Toiletries

▣ Personal first-aid kit (including any prescription medications)

▣ Swimwear (If required for travel post-expedition – we regret to inform you that basecamp does NOT have a Jacuzzi or swimming pool... there is a lake if you're feeling brave)

▣ Sleeping bag: With everyone crowded together in the lab, it should be quite warm. However, a good sleeping bag will make the world of difference. You should look at the Comfort Rating, not the Minimum Rating when choosing your sleeping bag. As a minimum, we would recommend a three-season sleeping bag that is comfort rated down to -5°C

▣ Sleeping mat: Either a roll mat, or an inflatable mattress. If you are taking an inflatable mattress then please bring a puncture repair kit. There should be a mattress for everyone in the refuge, but it is best to be prepared

▣ Entertainment: Books, writing material, iPod, games, cards etc

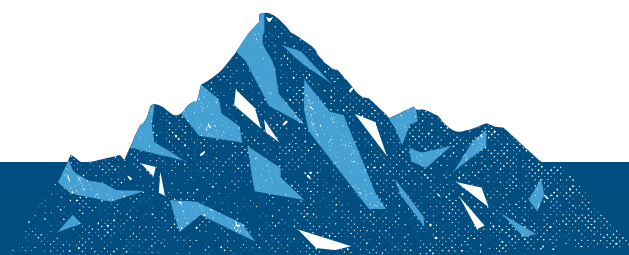
▣ Guidebook/Phrasebook: Especially for post-expedition travel

▣ Broken-in walking boots: Preferably leather/winter/warm ones

▣ Shoes: For wandering around the lab

▣ Headtorch/torch

▣ Ear plugs and sleep mask



6. Costs

Our funding, grants and sponsorship (FGS) team are working tirelessly to reduce costs as much as they possibly can to allow APEX 7 to be as accessible as it can be. However, running an international expedition does not come cheap! Outlined below are some **approximate costs** for essential parts of the expedition. We have chosen to not provide costings for more personal additional costs as these will vary depending on your post-expedition travel plans. Please reach out to the committee for an idea of what you might spend in and around South America.

We appreciate that coming on an expedition like APEX 7 does have financial implications to all volunteers, but rest assured we do not expect volunteers to fund the entire expedition out of pocket. The FGS team are constantly looking for grants that volunteers can apply to themselves to help reduce costs, and they are working to secure funding to provide subsidised places for Widening Participation students. Some of these personal grants include:

University of Edinburgh Go Abroad Fund

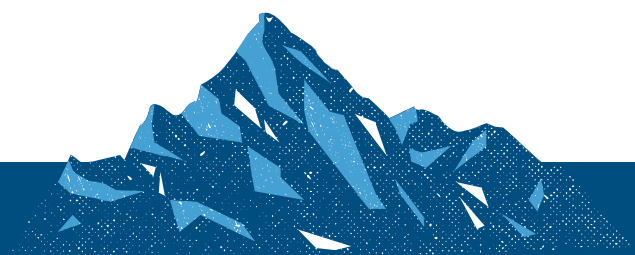
£500 - All students

£950 - Widening participation students

Royal Medical Society Travel Fund

Available to RMS members

The APEX 7 team will be providing volunteers with a comprehensive guide of vetted grants, to help you secure as much funding as possible for the trip, but we encourage you to do your own research too. There are many niche grants available to people from a specific place or background, look around!



6. Costs

Flights - £800 to £1000 return

Flights are the single biggest cost for coming on APEX7. For APEX 7 we are booking volunteer flights in bulk (available routes are detailed under *Expedition Overview*). Our FGS team are also working tirelessly to apply for grants to help reduce these costs for our volunteers as much as we possibly can.

Expedition Contribution - £400

We will be asking volunteers to pay a contribution towards expedition costs. This money will go to covering things such as transport, accommodation in La Paz and Huayna Potosi as well as all our food up the mountain. These costs will be subsidised by APEX 7 as much as we can, and sponsorships and grants will help contribute to doing this.

Insurance - £50 to £100

Volunteers will require travel insurance for the duration of the expedition. These costs can vary massively depending on your post expedition travels (for volunteers who plan to travel >6000m after the expedition, this will be associated with a sharp increase in insurance costs). The APEX 7 team will be on the lookout for the best travel insurance for volunteers to purchase, and the team will communicate with volunteers about these when they arise.

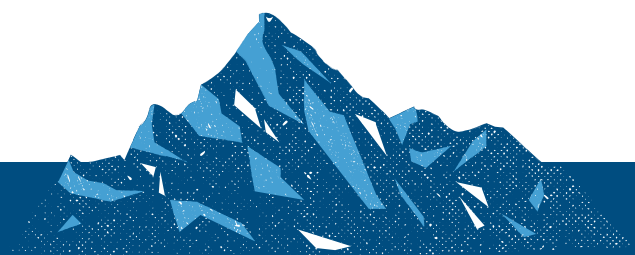
Vaccinations - Free to £200

Most of the vaccinations required to come on APEX 7 will be free on the NHS, you may however wish to pay for extra ones depending on your plans for post-expedition travel. For example, you may wish to pay for Rabies jabs (~£80) or Yellow Fever (~£65).

Additional Costs

Kit, merch, spending money, onward travel.

Volunteers will need warm clothes and sleeping bags, it can get down to around -10 degrees celsius overnight! We will be offering subsidised warm clothing, including APEX 7 expedition jackets! Volunteers will also need spending money for their time in La Paz, as well as for any post-expedition travels.



7. Applications

We don't ask for much! Just that you will still be a University of Edinburgh student by **June 2025**. You do not need to be interested in mountaineering or even be a medical student, all are welcome. What we're looking for:

- Enthusiasm
- Open to new experiences and meeting new people
- Good at teamwork
- Kind and friendly
- Willingness to participate in research projects
- Understands the role of a volunteer
- Listens to the committee and doctors

Process

Written pre-application - **September / October 2024**

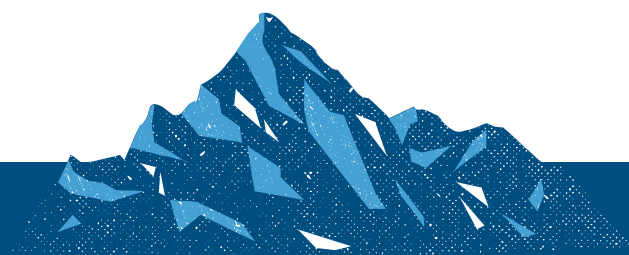
- A few questions to get to know you better!
- These will be anonymised to keep things fair and get as many of you to the interview stage as possible

Panel interview - **November 2024**

- Successful pre-applicants will be invited to an in person interview
- This is informal and allows us to put names to faces and get to understand you even more
- We have decided that the interviewers will not be interviewing close friends/people in their year to give everyone an equal chance

Outcomes - **January 2025**

- Get excited - this is when all the team bonding happens!
- There will be lots of socials including a weekend away!
- Pay your deposit for flights and your space on the expedition



8. FAQ

Do I need to be a medical student?

No! All University of Edinburgh students are welcome to join us on APEX 7. You must however still be a UoE student by June 2025 for insurance purposes.

I graduate in summer 2025, can I still join?

Yes.

Can I come on the expedition if I'm on medication?

Most likely. Some medications may have to be disclosed for research purposes, but most common daily medications e.g. SSRIs should not be a problem.

I have a medical condition, can I still join?

Similarly to above, most conditions will not be an issue. Our expedition doctors will assess your past medical history and may ask you further questions in the interest of your safety under standard confidential practice. Specifics will not be disclosed to the expedition team, simply a yes or no on your fitness to join will be passed along. We'd suggest going to your GP with any concerns.

How fit do you have to be?

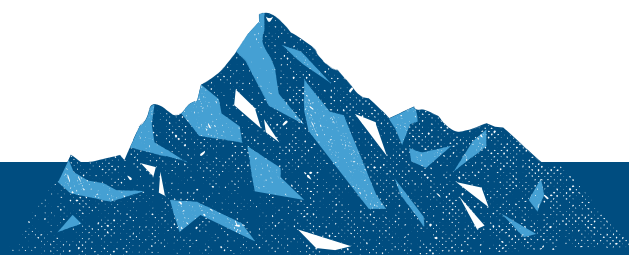
We don't have any particular requirements for volunteer fitness. Even the most physically fit people will suffer from altitude sickness. Post-expedition climbing can be very physically demanding, so do your own research before committing to any trips.

Is there any climbing / trekking?

No. There will be plenty of opportunities to climb after the expedition ends, but this is independent of APEX and completely optional.

I won't be able to fly out on the 26th/27th of July, can I still come?

Unfortunately not. We require all volunteers to arrive within a 12 hour window for research purposes.



8. FAQ

What things can you do up the mountain?

Our Heads of Volunteers Els and Ella have plenty of fun activities in mind. We'd like to break the record for highest altitude ceilidh one night; there's plenty of beautiful walks and a few lakes to swim in if you're particularly brave. Stargazing is another committee favourite and we'd be amiss if the popular APEX 6 bookclub didn't get a mention. There is absolutely zero mobile signal available, so you're stuck with making some friends for life the old fashioned way - how dull. Keep up with our Instagram @altitudeapex for the APEX Survival Guide series the volunteer team run.

Does the sample collection hurt/is it dangerous?

Generally no. We follow standard NHS practice for all of our procedures and they will be performed by doctors with years of experience. Some stuff can be sore afterwards (e.g. ABGs bruise a little), but nothing that some paracetamol can't fix.

Is Bolivia safe?

Yes. Bolivia is one of the safer countries to visit in South America and we generally never run into any problems. However, like with travelling anywhere, it's important to stay vigilant and always follow FCDO advice. We consult regularly with the British embassy in La Paz and have extensive risk assessments and emergency procedures. These can be obtained by emailing us at apex7@altitude.org.

