



SUMMIT STRENGTH

# THE MOUNTAINEER'S MUSCULAR ENDURANCE HANDBOOK

**7 Awesome Workouts  
To Get Your Legs  
Mountain Strong**

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**Muscular endurance is one of the single most important aspects of fitness for a mountaineer to develop.**

Defined as is the ability of the muscles to produce a relatively high force output for an extended period of time, it is incredibly important for anyone who will be carrying a full load up a mountain, doing a 12+ hour summit day or surviving a serious descent.

However, while most mountaineers understand the benefits of muscular endurance training, many seem to be quite limited in their workout choices here...

There are one or two muscular endurance workouts which are popular with mountaineers, but that is about it. And if you do a quick Google search on the subject, you will find hundreds of articles and workouts written for the general population (and doing a set of 15 squats and calling it 'endurance' does not really add up for a mountaineer...)

**So with this in mind, we created  
The Mountaineer's Muscular Endurance Handbook.**

To give mountaineers some simple options for their muscular endurance training, which will provide them with some extra variation, flexibility and enjoyment.

The following workouts are all lower body based. Upper body muscular endurance training is similarly important for most mountaineers, but this topic is beyond the scope of this handbook.

**Important note:** the following workouts are general recommendations only. If you have a specific injury concern, or you suffer from pain during any of these workouts, please consult a physiotherapist right away.



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## COMMON MISTAKES MOUNTAINEERS MAKE WITH THIS TRAINING

There are a few common mistakes we regularly see from mountaineers which must be addressed before going any further:

### #1: Only Doing Muscular Endurance Training

The effects and benefits of this training is severely limited if you do not have sufficient maximal strength. All too often, mountaineers will try to skip out on the maximal strength training, in favour of more endurance work. But if you are following this approach, you are shooting yourself in the foot.

### #2: Repeating A Workout Too Many Times

The body gets used to things very quickly. And if you repeat a workout too many times in a row, you will likely see a diminishing of results at a certain point.

With this in mind, most mountaineers should avoid repeating the same workout more than eight times in a row.

### #3: Not Emphasising Recovery

These workouts are taxing on the body! And if you are not allowing yourself sufficient time to recover afterwards, you are limiting the potential benefits of all the hard work you are putting in (not to mention increasing your risk of injury and illness).

Recovery should be prioritised after these workouts. This means getting your nutrition, hydration, active recovery and sleep in order. And avoiding backing up with another higher intensity workout the next day.





## GENERAL PRINCIPLES OF THESE WORKOUTS

Each of these workouts has two principles in common which you should follow:

### 1) Stick To A Nose Breathing Pace

These workouts are not a cardio workout. As such, you want to find a resistance/load/tempo in which you get a solid burn through your legs, but don't get out of breath. An easy way to judge this is you should be able to breathe through your nose throughout (or maintain a conversation).

If you find yourself going faster than this, you need to add more load and slow down!

### 2) Progress Every Week

When it comes to any training, progression is critical. This is because the body adapts to things very quickly.

So you need to be regularly giving the body additional stimulus, to ensure it is continually getting fitter, stronger and more resilient (and not plateauing).

With this in mind, mountaineers need to ensure they are progressing their workout each time they repeat a session.

There are two main ways to do this:

- Increased duration (e.g. add 5-15 minutes each session)
- Increased resistance/load

Make sure you are choosing one of these options every time you repeat a muscular endurance workout.



# #1:

# HILL REPEATS



This is the tried and true workout which most mountaineers will be familiar. Popularised by the guys at Uphill Athlete it is an incredibly effective and specific method of training muscular endurance.

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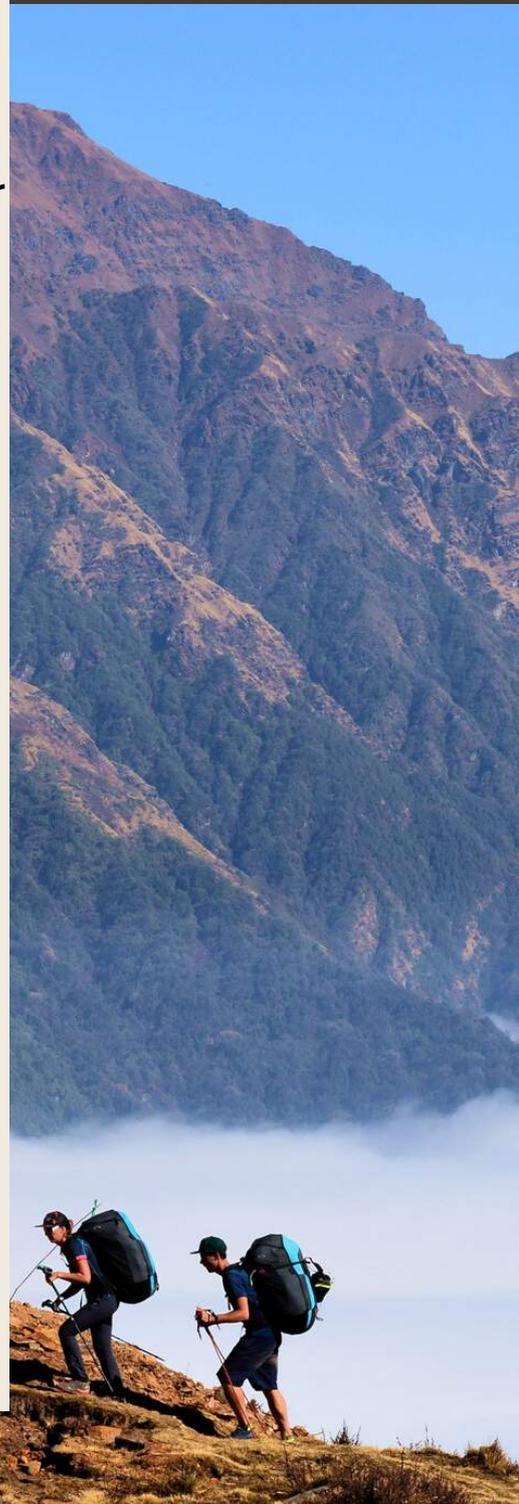
## The Workout:

- Find a steep hill (the steeper the better)
- Load up a heavy pack with water jugs or dry bags full of water
- Climb to the top of the hill
- Empty out your water at the top
- Return to the bottom as quick as you can
- Refill your water and repeat

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\*To make this workout effective, you need a super steep hill. Most treadmills will not have a high enough grade for this.

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# #2:

# STAIR REPEATS



This is a great option for those who don't have access to any hills. The beauty of this workout is it completely eliminates any descents (so is perfect for anyone who has an ongoing foot or knee issue).

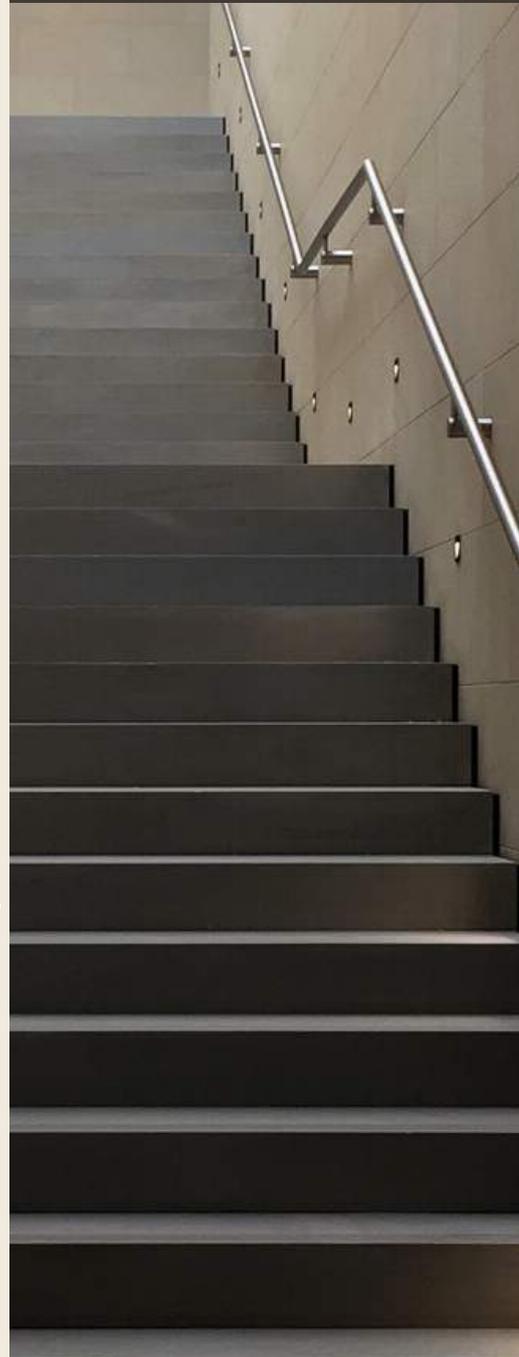
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## The Workout:

- Find an office tower or apartment block with easily accessible stairs
  - Load up a heavy pack
  - Climb the stairs at a steady pace
  - When at the top, find the elevator and take this to the bottom
  - Repeat
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\*If you cannot find an appropriate multi story building, you can do this workout on an outdoor set of stairs or in a stadium. You will just need to be wary of your knees with the repeated descents under load.

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# #3:

# INCLINE LUNGES



This is a solid workout for those who have access to hills, but they are not quite steep enough to be effective for a loaded hill climb.

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## The Workout:

- Find a slight/moderately steep hill
- Perform walking lunges up to the top
- Walk/jog quickly to the bottom
- Repeat

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\*Lunges should be performed at a relatively slow tempo

(2 sec lower, slight pause at bottom of the rep, 1 sec on the way up)

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\*You may have to add resistance with a loaded pack or weight vest

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# #4:

# SLED PUSH



Using a sled is a great method to challenge the lower body in a very controlled and safe way. While working on a purely horizontal plane, this can still transfer well into incline climbing.

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## The Workout:

- Load up a sled with a heavy weight
- Push it back and forth at a moderate pace

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\*This workout can either be done as a continuous effort or broken up into intervals

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\*If you don't have access to a sled in your gym, you can either make your own (there are many articles on this online) or push a car back and forth in an empty car park (use your handbrake for extra resistance).

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# #5: GYM CARDIO



If you are limited by weather, time availability or just want something a bit more convenient, performing muscular endurance work on several gym cardio machines can be effective.

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## Equipment Options:

- Spin bike
- Step machine\*
- Jacobs Ladder\*
- Versa Climber

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## The Workout:

- Choose a heavy resistance/load
- Move at a steady pace, sticking between 20-30 rpm
- Maintain this for as long as desired

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\*These options require a loaded pack or weight vest

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# #6: GYM CIRCUIT



Another great option for muscular endurance is to perform gym circuits.

There are a million and one ways to go about this, but here are a couple of my favourite templates you can use:

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## Option #1:

- A1) Lower Body Push (double leg) x20
- A2) Lower Body Pull (double leg) x20
- A3) Lower Body Push (single leg) x20
- A4) Lower Body Pull (single leg) x20
- A5) Core x 60 sec

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\*Repeat 4-6 times, your rest is during the core exercise.

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\*For exercise options, you [can go here](#)

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# #7:

# GYM CIRCUIT



This option is a great option for those who want to help maintain their maximal strength during their muscular endurance training.

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## Option #2:

- A1) Barbell Front Squat x6
  - A2) Barbell Back Squat x12
  - A3) Dumbbell Walking Lunge x 15 (each leg)
  - A4) Hollow Hold x 60 sec
  - A5) Wall Slides x 60 sec
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\*Repeat 4-6 times, your rest is during the core and mobility exercises.

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\*Use the same bar/weight for the front and back squat.

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\*Choose a weight which is a challenge to complete the 6 reps of the front squat (but doesn't result in 'failure').

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# FAQ'S

## **Q) Which Workout Is Best For Mountaineers?**

A) In theory, the 'best' option is likely the repeated hill climbs (as it is the most specific for mountaineers). However, in the real world, the best workout is the one which works for you. If you feel like another option is a little more realistic, more practical or even more enjoyable for you, it is likely you will put more effort and be more consistent with it - so start with that.

## **Q) Why Are There No Elevation/Duration Targets Included?**

A) Elevation/duration targets are an incredibly individual number (depending on your stage of training, your upcoming event etc.) so to give specific numbers here would be doing many people a disservice.

If you do want some specific recommendations for this, feel free to reach out to me at [rowan@summitstrength.com.au](mailto:rowan@summitstrength.com.au), and I am more than happy to have a chat.

## **Q) Do I Need To Warm Up?**

A) Absolutely! Before every workout it is essential you follow a thorough warm up.

To learn more about specific warm-ups for mountaineers, you can watch this video lecture: [Warming Up For Mountaineers](#)

# FAQ'S

## **Q) Can I Perform These Workouts All The Time?**

A) This ultimately depends on what type of 'periodisation' model you are following with your strength training. For example, if you are following the traditional 'block periodisation' (e.g. transition phase --> max strength phase --> muscular endurance phase), this type of training is best left for the last 8-12 weeks before your climb.

Alternatively, if you are following a bit more of a flexible periodisation scheme, these workouts can be cycled through during your entire preparations. To learn a bit more about these different approaches, you can watch this video lecture: [Periodisation For Mountaineers.](#)

## **Q) What If I Have An Injury, Pain Or Other Limitation?**

A) Anything like this, you should consult your physiotherapist about this training. While these workouts will be very beneficial for many mountaineers, dealing with any injury/pain concerns is well beyond the scope of this handbook.



## ABOUT SUMMIT STRENGTH

Summit Strength is an online personal training service specialising in preparing trekkers and mountaineers for their dream adventure.

With a background in sport science and strength and conditioning, it is our mission to provide the very best coaching, advice and support for anyone with an adventure aspiration.

We firmly believe that with the right training, guidance and education, absolutely anyone can get 100% ready for a significant adventure, regardless of their experience or history.

Being an online personal training service, we help adventurers all around the world get fit, strong and resilient for anything the mountain might throw at them.

We have worked with first-time mountaineers who are stepping into their first mountain challenge to life long adventurers who want to conquer some of the tallest peaks in the world.

We are the difference between completing your adventure and turning back halfway.

# NEED EXTRA HELP?

When it comes to your training for mountaineering, muscular endurance workouts are only one facet of a much more detailed plan.

In the event you want to have any questions about applying these workouts to your training or want additional help with your preparations, please don't hesitate to reach out.

Here is our contact information below, and, a button that you can click to view our online personal training service for mountaineers; The Online Summit Program

## Contact Details:

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Need Some Extra Help With Your Training?

**[Online Summit Program](#)**

We hope you enjoyed the Handbook.

**Train Strong, Summit Strong!**