



# MOUNTAINEERING FITNESS & TRAINING PLAN

RMI GUIDE DAVE HAHN DESCENDING FROM THE SUMMIT OF MT EVEREST.

## TRAINING FOR MOUNTAINEERING

Training for mountaineering focuses on building an endurance athlete by developing cardiovascular fitness (fitness of the heart and lungs) and motor fitness (particularly endurance, strength, and balance), using specific goals, and following a defined timeline.

### THE ENDURANCE ATHLETE

A solid mountain athlete is an endurance athlete. More than any other specific fitness skill, endurance is the fitness area of greatest importance to a mountaineer. An endurance athlete is able to perform at a variety of intensity levels all day long and is not a specialist in “long and slow” or “short and explosive” activities. Endurance athletes have both excellent cardiovascular and motor fitness.

### CARDIOVASCULAR FITNESS

Cardiovascular Fitness is measured through your aerobic capacity: your body’s ability to take in and use oxygen. Cardiovascular training is directed at conditioning your heart and lungs to deliver oxygen to your muscles.

### MOTOR FITNESS

Motor Fitness refers to endurance, strength, power, balance, agility, and flexibility. These are all important factors in your ability to climb smoothly and efficiently on mountainous terrain.

### TRAINING GOALS

Training goals are critically important given the time constraints placed by weather, route conditions, objective hazards, and the effects of altitude. Proper physical conditioning allows you to perform better by climbing longer, stronger and faster, be more comfortable on steeper and awkward terrain, carry heavier loads, recover more quickly at rest, and better enjoy the entire adventure.

Set your goals at the beginning of your training program. Begin by asking these questions:

#### WHAT IS THE FITNESS NEEDED ON THE CLIMB?

How many days does the climb require?  
What type of terrain and climbing will you encounter?  
To what altitudes will you climb?  
How heavy a pack will you carry?

#### WHAT IS MY TIME FRAME?

How long do you have to improve your fitness before the start of the climb?

#### WHAT IS MY CURRENT FITNESS?

What are your current cardiovascular fitness strengths and weaknesses?  
What are your current motor fitness strengths and weaknesses?

## TIMELINE & SCHEDULE FOR TRAINING

Once you have examined the physical requirements of the climb, your current fitness levels, and your training goals, establish a timeline for your training program. Divide your timeline into three roughly equal phases in order to focus your training.

Training timelines will vary significantly depending on the climb, the amount of time before to prepare, and your initial level of fitness. Very generally, 3 - 9 months are needed to implement an effective program.



### Phase 1: Build Base Fitness

Your training schedule should incorporate both cardiovascular and motor fitness training from the start and build your “fitness base” as you get into a routine and your body adjusts to these workouts.

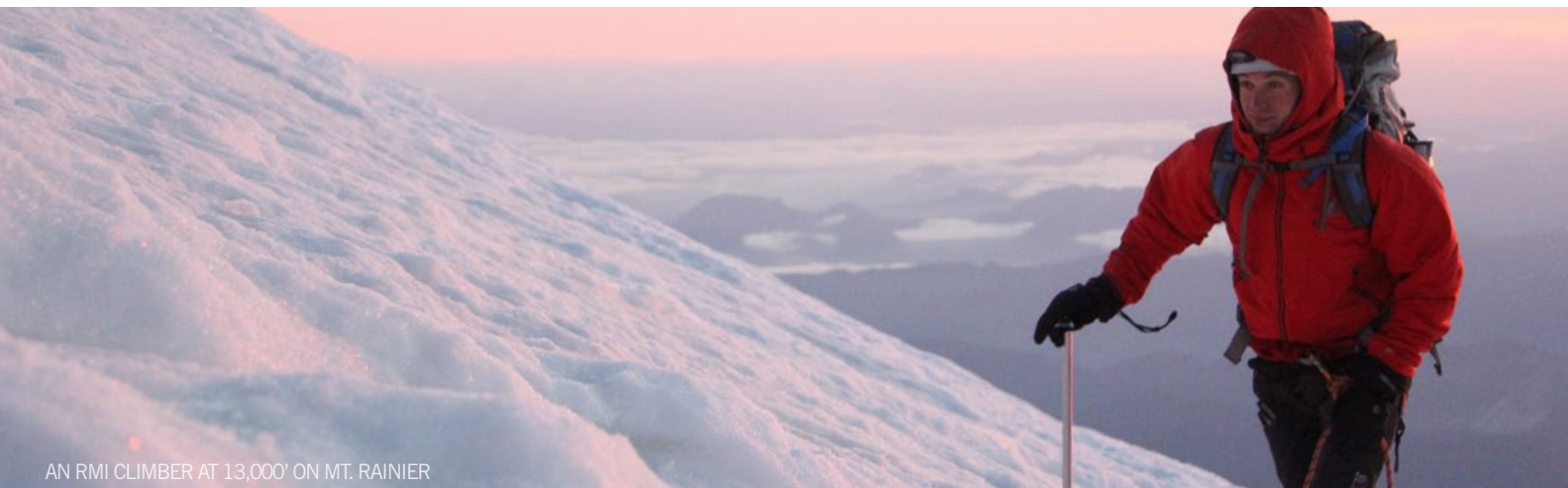
### Phase 2: Introduce Mountaineering Specific Training

Begin making your workouts more mountaineering specific with hikes and climbs and occasional interval sessions aimed at broadening your range of comfort at various effort levels.

### Phase 3: Tailor Training Specifically for the Climb Ahead

Train on terrain similar in steepness and difficulty to the mountain and with a pack weight mimicking what you will be carrying.

After establishing your training timeline, plan out your training schedule. Your training schedule should incorporate both cardiovascular and motor fitness training from the outset, but start carefully to avoid overuse or over-enthusiasm injuries. Use a variety of exercises, activities, locations, etc. to keep physically challenged and mentally engaged.



AN RMI CLIMBER AT 13,000' ON MT. RAINIER

Aim for interval and strength training once every 3 days. Aerobic, balance, stretching, and abdominal exercises can be done every day. Stretching should be completed after every workout. Over time incorporate endurance training into all activities.

A general weekly schedule follows:

| Monday           | Tuesday           | Wednesday        | Thursday          | Friday           | Saturday                      | Sunday   |
|------------------|-------------------|------------------|-------------------|------------------|-------------------------------|----------|
| Aerobic Training | Strength Training | Aerobic Training | Interval Training | Aerobic Training | Strength or Interval Training | Rest Day |

The actual exercises you choose depend on the phase of your training timeline. Feel free to change the days to accommodate your schedule, but we recommend you adhere to this sequence and frequency as best you can. Information, descriptions, and recommended training exercises are listed in the following pages.

If available, we recommended working with a fitness trainer to lay out the specifics of your training program. Make sure the trainer understands how to train for mountaineering, and invite them to contact us.

## CARDIOVASCULAR FITNESS TRAINING

Cardiovascular training uses both aerobic exercises and interval training and functions as the foundation for your ability to climb for long periods of time.

### Aerobic Training

A variety of aerobic exercises work well for training, including climbing and descending hills, stairs or stadium bleachers, skiing, running and cycling. Build your aerobic training over time, beginning with shorter sessions and increasing to longer workouts. By the time your climb approaches you should feel comfortable with an aerobic exertion that is similar to any day of your anticipated climb. Don't forget to prepare for the downhills too by training on varied terrain and developing your aerobic ability for the descent.

#### Aerobic Training Recommendations:

- We recommend that you devote at least 30 minutes of aerobic training per session. Of course, in order to train for the exhausting days in the mountains, you've got to get out and do lengthy training climbs; nothing else will prepare you as adequately.
- The frequency of your aerobic workout is fairly unlimited. Train every day if you like, but don't overdo it and end up with injuries. Include some rest time each week.
- Keep your training range at 65 to 85% of your maximum heart rate. A well-known formula for determining your maximum heart rate is based on your age: subtract your age from the number 220 (beats per minute). For example, a 39 year old has a maximum heart rate of 181; i.e.,  $220 - 39 = 181$  beats per minute. The training range, then, is between 118 and 154 beats per minute. This is arbitrary at best and we suggest that you begin with that formula but be aware of how you feel. Your perceived exertion usually serves as a better indicator of how you ought to be performing on a given day. We have good days and bad days such that "how we feel" should come into play.

### Interval Training

Interval training is an important component in improving your cardiovascular base and preparing to climb comfortably at a variety of paces. The technique of interval training calls for including surges in activity while maintaining an elevated heart rate. Interval training, used over a long period of time, can increase the heart's capacity for pumping blood through the body. We have had success with interval training when we have a minimum of three months of training time.

Intervals can vary from repeating several minutes of effort to single intervals that last over half an hour. The goal of interval training is to elevate your heart rate beyond a comfortable pace to raise your "lactate threshold," the level of effort beyond which your body can no longer process the lactate produced by your muscles. Over time repeated interval training, combined with adequate rest, will raise this level. Intervals can be done in a variety of activities, including running, biking, hiking on steep hills, rowing, etc. All interval sessions should include a proper warm up and cool down afterwards.

#### Interval Training Examples:

- 5-minute running intervals
- 30-minute time trials riding a bike
- Speed hikes lasting up to an hour



RMI GUIDE ED VIESTURS ON SUMMIT DAY ON ACONCAGUA  
© First Ascent Photo: Jake Norton



RMI GUIDES PETER WHITTAKER, ED VIESTURS, DAVE HAHN,  
AND SETH WATERFALL MAKING THE TREK TO EVEREST BASE CAMP

© First Ascent Photo: Jake Norton

## MOTOR FITNESS TRAINING

Motor fitness training develops the endurance, strength, power, balance, agility and flexibility to climb efficiently on steep and challenging terrain.

### Endurance Training

Endurance is a motor skill like strength and balance and can be developed with training. In short, endurance training is a focus on continually increasing the intensity of your training and not becoming complacent in your routine or your level of fitness. This will build a more durable body and allow you to climb strongly for an extended period of time as well as adapt to the unanticipated physical challenges of the climb.

Endurance training is incorporated into all aspects of your training and requires a strong cardiovascular base. Endurance training involves challenging yourself as your fitness improves by:

- Increasing the weight carried in your pack
- Performing your aerobic exercises for longer distances
- Maintaining your interval efforts for longer periods of time
- Pushing yourself to run or hike your favorite loop in a shorter period of time
- Increasing the weight or repetitions in your strength training
- Making your balance exercises more challenging

### Strength and Power Training

In addition to leg strength, mountaineering requires a strong core (back and stomach) as heavy pack weights add a new dimension to climbing. Strength training principles are essentially the same for upper and lower bodies. Strength training can involve body weight exercises as well as routines using traditional weights.

We suggest that when you work with weights, limit it to 2 sets of 20 repetitions with lighter weights (lighter than the heavy weights customarily used to intensify muscle growth). Choose your weights so that the first 15 reps are manageable and become difficult with the last five of each set. Rest for 30 to 60 seconds between sets.

Strength & Power Training Examples:

- Squats, lunges, & leg presses
- Push-ups, pull-ups, and military presses
- Sit-ups and abdominal exercises



RMI GUIDE ELÍAS DE ANDRÉS MARTOS CLIMBING IN OREGON

### **Balance and Agility Training**

Balance exercises give you increased body awareness and aid in your ability to negotiate tricky terrain under a heavy pack. Balance is a motor skill and can be improved over time. Distinguish between static and dynamic balance exercises. Static exercises will keep one or both feet on the ground. Dynamic exercises involve the body in motion. Both are important for the development of this fitness skill.

Balance & Agility Exercise Examples:

- Standing on one leg (with and without eyes closed)
- Walking a line (with and without eyes closed)
- Many of our guides use yoga as a great way to improve overall balance, flexibility, core strength, and to guard against injury

### **Stretching Exercises**

Stretching helps reduce muscular tension and increases flexibility.

Stretching Recommendations:

- Focus on slow, static stretching and hold the stretch for 30 to 60 seconds, breathing through the stretch. Hold it only to the point of tension.
- Stretch all parts of your body, not only your legs. Carrying a heavy pack often puts unexpected strain on your neck, shoulders, and back in addition to fatiguing your legs.
- With static stretching, don't stretch through pain; you are stretching and tearing muscle fibers with this activity. Improper stretching can lead to injury and disillusionment with this aspect of motor fitness training.

## **MORE INFORMATION**

### **WEEKLY TRAINING EMAILS**

Sign up for RMI's Weekly Training Emails, offering direction, guidance, and motivation for your training routine!

[www.rmiguides.com/resources/conditioning](http://www.rmiguides.com/resources/conditioning)

### **FIT BY NATURE**

Fit by Nature, by John Colver of AdventX, lays out a flagship 12-week outdoor training program—a regimen that requires nothing more than outdoor space and a little inspiration.

[www.fitbynature.us](http://www.fitbynature.us)

### **ADVENTX**

AdventX is a leading outdoor fitness-training program based in Seattle, Washington.

[www.adventx.com](http://www.adventx.com)