TRAINING to CLIMB YOUR MOUNTAIN

– Featuring The Grand Teton

"We cannot lower the mountain. Therefore, we must elevate ourselves." Todd Skinner

Overview of the Guide

This training guide features physical conditioning strategies for how one can prepare to climb a mountain. Specifically, this guide relates to climbing the Grand Teton in Jackson Hole, Wyoming. This training guide was written by Gary Falk, Exum Guide, former Personal Trainer of One to One Wellness and contract facilitator for Grand Dynamics. Edited and redistributed with permission by Grand Dynamics. This training guide will answer questions such as:

- What should the main focus of the physical training be on?
- What is the difference between aerobic and anaerobic fitness?
- Should I use heart rate training? If so, How?
- What does the concept of "volume" in training mean?
- What is the role of "cross training" in preparation for mountain climbing?
- What are some sample cross training exercises?
- What are some sample training schedules for a typical week or month?
- How can I prevent injuries while training to climb a mountain?

GRAND TETON TRAINING

Congratulations! You are going to climb the Grand Teton; one of the most awesome summits in the lower forty-eight; quite an athletic achievement in anyone's book. When you come to Wyoming, we'll teach you the technical skills you will need on the mountain, but physically you will have to prepare yourself in advance. Here are the tools. If you are serious about this challenge, be serious about the training. - Gary Falk

Aerobic verses Anaerobic Training

Generally speaking, climbing the Grand Teton is an aerobic venture. So the main focus of this training will be aerobic fitness. There will be times when shifting into anaerobic metabolism in unavoidable, so we will train for that, too. To help understand the difference between aerobic and anaerobic lets compare and define them:

AEROBIC	ANAEROBIC
A) presence of adequate oxygen……	without oxygen
B) utilizes fat as fuel…….	utilizes sugars as fuel
C) heart rate <70% of max……..	heart rate >70% of max
D) 5-7 on the RPE scale……..	>7 on the RPE scale
E) steady, rhythmic exercise……	stop and start exercise
F) perspiring from your torso…….	perspiring from your head

A: Aerobic exercise is at an intensity level that can be sustained for prolonged periods of time. This is because the cardiovascular system is able to supply an adequate amount of oxygen to the working muscles. Anaerobic exercise is at an intensity level that cannot be sustained due to inadequate oxygen supplies to the tissues.

B: Aerobic exercise utilizes fat as its major fuel source; an infinite source in any person. Anaerobic exercise utilizes stored sugars in the muscles; a finite fuel source. When muscle glycogen (sugar) is exhausted you “bonk” or “hit the wall”. This explains why you cannot sprint for a mile.

C: Heart rate training is a fantastic tool for building aerobic fitness. People are in aerobic metabolism when their heart rate (HR) is below 70% of its maximum beats per minute (BPM); anaerobic above that. The optimal training zone for aerobic fitness is between 50-70% of maximum heart rate (MHR). There is a simple formula to determine this: **(220-age) x .5 to (220-age) x .7**

This will give you your training zone. If you have access to a heart rate monitor, it is very easy to stay in your zone during exercise. If not, monitoring your HR by palpation (touch) works, too. Do this by first finding your radial pulse. Find the groove formed by the radial bone (thumb side of your wrist) and the tendons coming up the forearm from your palm. Press lightly here with your pointer and index fingers until you feel your pulse. Now you will need a clock with a second hand. Counting the first beat as “zero”, count the beats for ten seconds, then multiply by six. Now you have your HR. Many cardio machines have the capability for determining HR built in. Use this feature when available.

D: Another option for staying in your HR zone is using the RPE scale. RPE stands for Rate of Perceived Exertion, or how hard you feel you are working. Used properly, the RPE closely correlates to your percentage of maximum heart rate. The scale goes from 1-10, one being the intensity of standing still, and ten being so intense that you have to stop exercise. A RPE between 5-7 will be aerobic, and >7 will be anaerobic.

E: Exercise which is rhythmic, steady, and lasts longer than five minutes is considered aerobic. Exercises which are explosive in nature, or stops and starts in intervals of less than five minutes are considered anaerobic.

F: This one will not be found in any physiology book. It is generally known among endurance athletes, though, that sweat pouring from your head indicates anaerobic activity. Sweat coming from your torso indicates aerobic activity. This is a bit of an alchemist's theory, but in my research in mountain travel, it holds true. Exceptions would be in hot, humid environments. The point of this comparison is to give you tools to keep yourself in aerobic metabolism when you are training. Like I said earlier, a majority of your time spent climbing the Grand Teton will be in aerobic metabolism, so you need to be training by primarily using this energy system. The cross-training days will train your anaerobic energy system. This will be worked into your weekly schedule.

CROSS TRAINING

PRINCIPLES:

1) Warm-up on a cardio machine for ten minutes before work-out.

2) Movements are always pain free. If it hurts, stop.

3) Move through the circuits quickly; the idea is to be in anaerobic metabolism.

4) Move through each circuit twice.

5) Progress to the advanced moves only when you can perform the basic moves with perfect form.

6) Remember, you are only dealing with your body weight in the mountains. Lifting heavy weights will not prepare you for climbing. Most of these exercises utilize your body weight for resistance.

CIRCIUTS:

ONE	TWO	THREE
Step-up	Step-over	Walking Lunges
Ham Curl	Ham Raise	Push-ups
Shldr X-rotation	Calf Raise	Crazy Eights
Knee Raises	Plank	

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Cross Training Movements

Step-up

Step height should be enough to create a ninety degree angle at your knee when the leg is on the step. Keep your other leg close to the step. Step up using only the top leg; no pushing off with the lower leg. Push with a flat foot; not off the heel or toe. Perform ten to twenty repetitions for each leg. Progress to holding a dumbbell in one hand.

Step-over

Step height should be half that of the step-up height. Begin the same as step-ups, but instead of stopping on top of the step, continue over to the other side of the step with the non-weight bearing leg. Now push off the toe of the top leg and return to the starting position. Perform ten to twenty slow repetitions for each leg. Progress to holding a dumbbell in one hand.

Walking Lunges

You will need a hallway or some open space for this one. Begin by standing at the beginning of the "runway". Alternating legs, lunge forward and stand back up making forward progress. The emphasis should be on the front leg; do not push with the back leg. NEVER ALLOW YOUR KNEE TO TRACK PAST YOUR TOE. Look down when in the lunge position to be sure you can see your toe. Note the distance you have traveled to reach fatigue; each week try to improve. Progress to holding a dumbbell in each hand.

Hamstring Curl

Be sure you are properly fitted for the machine; if you are not sure, ask. The pivot point on the machine should line up with the pivot point of your knee. If you do not have access to a machine, go to the "Step Hamstring" exercise. Perform the movement using one leg at a time. Pick a weight that will allow for ten to twenty smooth repetitions for each leg.

Step Hamstring Raise

Use the same step height as for step-ups. Lying on the floor with the heel of one foot on the step, the other in the air, and your knee at a ninety degree angle, push downward off your heel and raise your hips off the floor. Return slowly to the floor. Be sure your toes are always pointing towards the sky. Perform ten to twenty repetitions for each leg. Progress to holding a weight in your lap.

Calf Raises

Place the ball of your foot (the base of your big toe) on the edge of a step or a stair. Keeping your knee slightly bent, never locked, push your heel up as high as possible. Return to the start. Never let your heel touch the ground. Perform as many as you can with each leg. Progress to holding a dumbbell in one hand.

Push-ups

Begin in the "plank" position; facing down on the floor on your hands and toes with your back straight. Make sure your hands are directly under your shoulders, and your pointer fingers are pointing forward. Now move your hands laterally one hands width away; this is the proper starting position. Flaring your elbows outward, lower your chest towards the floor and return to the starting position. Avoid touching your chest to the floor. Avoid arching your back during the movement. Perform ten to twenty repetitions. Progress to elevating your feet on a bench or exercise ball.

Dips

You will need two parallel bars for this one; typically found in any gym or playground. Begin by supporting your body weight between the bars on straight arms, feet off the ground. Unlike the push-ups, keep your elbows in close to your sides as you bend them and lower until they reach a ninety degree angle, then push back up. Bend slightly forward during the movement to put some emphasis on your chest (pectorals). STOP DOING THIS EXERCISE IF YOU FEEL PERSISTANT PAIN IN YOUR SHOULDERS. This is a very aggressive upper body exercise. If you cannot do this one, work on the push-ups for one month, then try again. Perform ten to twenty repetitions.

Pull-ups/Pull-downs

These are essentially the same move, except the pull-down is a modified version of the pull-up; only to be done if you cannot perform a pull-up. For the pull-up you will need a suspended bar; typically found in any gym or playground. With an overhand grip, grasp the bar with your hands one fists-with wider than your shoulders. Now pull yourself up until your chin is over the bar, and lower yourself slowly. Try not to arch your back during the movement. Perform five to twenty repetitions.

Shoulder External Rotation

This one works two of the four small muscles of the rotator cuff. You will need a small dumbbell that weighs between three and eight pounds. A rock works fine, too. Lying on your side, place the elbow of the working arm (the arm you are not lying on) on your hip. Your elbow joint is at ninety degrees. Keeping your elbow pressed down on your hip, rotate your arm externally so the weight is lifted towards the sky. Return slowly to the start. Remember, these are very small muscles; lifting heavy weight will only cause you to recruit other muscles. Perform ten to twenty repetitions.

Crazy Eights

This one requires a pair of dumbbells between three and ten pounds. It works the three “heads” of the deltoids, or shoulder muscles. Hold the dumbbells by your sides. During this exercise, always keep your palms facing the “midline”; the imaginary line that runs from the top of your head, through your nose, to your belly button. Start by lifting the weights upward to the front eight times. Next, lift them to the sides eight times. Finally, dropping into a “mini” squat and bending forward at the waist so your back is almost horizontal, lift them to the rear, so your arms and torso form a “T”. All movements are done with straight arms. Total repetitions are twenty-four. Increase weight only when you can complete all twenty-four repetitions with perfect form.

Hanging Knee Raises

This one works your abs. You will need the same equipment as for the pull-ups. Hang from the bar with straight arms. Keeping your knees together, raise them towards your chest, lower, and repeat. Lowering them slowly will help avoid swinging. Your grip muscles are also working. Perform ten to twenty repetitions. Progress to raising straight legs.

Plank

This one works your abs. Begin in the same position as for push-ups. Hold this position for thirty seconds to two minutes. Stop if you feel pain in your lower back; this means that your abs are fatigued and can no longer support the lower back. You will feel some work in your shoulders also. Progress to extending your opposite arm and leg. This is a tricky balance move and a real tough core strengthener.

Training Schedules

The following program is designed to build aerobic fitness and volume. Volume is an important word, so let me explain it. Volume deals with the length (time) of a given exercise, not the intensity. In this case the exercise is walking uphill. The purpose of this training schedule is to gradually increase the volume of your aerobic workouts.

There are three different schedules here, depending on your current fitness level.

Each schedule is designed to terminate one week before your trip up the Grand Teton. Schedule one is designed to build an aerobic base, preparing you for schedule two. It is eight weeks long. Schedule two is designed for people with a reasonable level of aerobic fitness and muscular strength acquired from another sport, but has never trained for volume. It is sixteen weeks long. Schedule three is designed for the endurance athlete who is fit, and comfortable with long bouts of aerobic exercise. It is sixteen weeks long. All values represent time exercising aerobically. C/T means cross training. On these days, do the aerobic work-out first, then cross train. See the cross training work-out for these days. On the "off" days, zero activity is recommended. Except for the first week, the "DAY 1" workouts are designed as an active recovery day. Train in the lower end of your zone on these days.

SCHEDULE ONE

If you are beginning with schedule one, plan for eight weeks with this schedule, plus sixteen weeks for schedule two. That is a total of six months. The whole may seem like a lot, but taking it week by week and having fun will make it easy. During schedule one, any aerobic activity will work. Cycling, walking, rowing, running, or swimming is all recommended.

Week	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Total
1	20	C/T	40	off	30-C/T	off	60	150
2	24	C/T	45	off	30-C/T	off	65	164
3	28	C/T	45	off	35-C/T	off	70	178
4	25	C/T	40	20	35-C/T	off	75	195
5	30	C/T	45	25	35-C/T	off	80	215
6	32	C/T	48	30	40-C/T	off	85	235
7	35	C/T	55	30	45-C/T	off	90	255
8	40	C/T	60	32	48-C/T	off	95	275

SCHEDULE TWO

This schedule is sixteen weeks long. Now the recommended aerobic activity is walking uphill. Other forms of exercise are OK, but a majority of your time should be spent walking uphill. At least two days per week, wear a pack during exercise. The pack should weigh no more than twenty pounds, and you should work up to this. If running is your main source of exercise, do not wear a pack while running; substitute walking. I realize many of you may not live in a mountainous part of the world; treadmills on an incline and stair-steppers work fine.

WEEK	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	TOTAL
1	35	45-C/T	70	off	45-C/T	off	105	300
2	35	45-C/T	off	70	45-C/T	off	115	310
3	35	45-C/T	70	off	45-C/T	off	125	320
4	35	45-C/T	off	75	45-C/T	off	135	335
5	35	45-C/T	off	80	45-C/T	off	120	325
6	35	50-C/T	off	75	45-C/T	off	150	355
7	35	50-C/T	off	80	35-C/T	off	off	200
8	C/T	50	85	C/T	45	OFF	165	345
9	35	45-C/T	off	85	50-C/T	off	125	340
10	35	C/T	85	35	45-C/T	OFF	180	380
11	35	50-C/T	of	f 85	35-C/	T of	f off	205
12	C/T	50	90	C/T	50	OFF	195	385
13	35	50-C/T	OFF	90	45-C/T	OFF	130	350
14	35	90	C/T	50	45	OFF	180	400
15	35	50-C/T	OFF	80	45-C/T	OFF	110	320
16	35	35	OFF	35	OFF	20	WYOMING	

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SCHEDULE THREE

This schedule is sixteen weeks long. Again, this schedule is designed for the endurance athlete who is fit, and has experience with training at a high volume level. Same rules apply as for schedule two.

WEEK	DAY1	DAY2	DAY3	DAY4	DAY5	DAY6	DAY7	TOTAL
1	45	30-C/T	75	40	55-C/T	off	115	360
2	45	35-C/T	45	75	C/T	40	125	365
3	45	35-C/T	80	45	40-C/T	35	135	370
4	45	40-C/T	off	80	45	30	off	240
5	C/T	45	85	50-C/T	45	off	150	375
6	45	40-C/T	90	off	45-C/T	30	155	405
7	45	C/T	90	45	50-C/T	off	165	395
8	45	45-C/T	off	90	45-C/T	30	off	255
9	C/T	50	95	45-C/T	50	off	175	415
10	45	40-C/T	95	off	50-C/T	40	160	430
11	40	95	C/T	50	45	30	180	440
12	45	45-C/T	off	90	50-C/T	30	off	260
13	C/T	50	90	45-C/T	45	35	190	455
14	45	45-C/T	off	85	45-C/T	35	175	430
15	40	45-C/T	off	80	40	30	115	350
16	40	off	35-C/T	50	off	20	WYOMING	

OVERTRAINING/OVERUSE INJURIES

Injuries can and do happen to any athlete involved in any sport. Typically, the kinds of injuries we are used to dealing with are trauma injuries. These are injuries due to a sudden, violent event. Most likely this will not happen during your training. The kinds of injuries you might see are the overuse variety. These injuries usually result from doing more of a repetitive physical activity that the body is not conditioned to handle. They include, but are not limited to: pulls and tears, strains and sprains, tendonitis, bursitis, stress fracture, cartilage damage, shin splints, and heel spurs. The signs and symptoms are varied. They could include dull or sharp pain, inflammation, and/or hindrance of movement. This section is not meant to address any treatment options for any of these. Consult a medical professional if chronic conditions exist. Prevention is easy: warm-up properly, stretch, rest on rest days, and stay hydrated.

Overtraining, on the other hand, is a very preventable and manageable condition. There are a number of signs and symptoms associated with overtraining, and the key to preventing this is early recognition.

Symptoms include:

*excessive fatigue while training, even on light training days
*dreading your work-outs and wanting to take unscheduled days off
*disturbances in sleep patterns
*feeling sleepy during the day
*loss of appetite
*diarrhea or upset stomach
*irritability
*trouble with concentration
*mood swings
*depression
*losing interest in sex
*loss of interest towards your goal

Prevention is the key: get plenty of sleep, stay hydrated, and eat regular meals (including breakfast!). Treating overtraining is simple: Take a week off of exercise. Upon returning to the program, follow a one day on, one day off routine.

A note from the folks at Exum about training and preparation:

““Climbing the Grand Teton (or any high peak) is a physically demanding endeavor. We recommend a training program consisting of any aerobic activity such as brisk uphill walking, climbing up and down stairs, hiking, and biking. If you have access to weight training equipment, then doing leg presses, extensions, and curls are a great way to strengthen your quadriceps and hamstrings.”

“It is important for you to know that Grand Teton climbers must qualify for the climb in the Level II school or in a Grand Teton preparation class/climb. The two reasons that someone might not qualify are 1) the inability to learn and perform the skills required, and 2) a lack of aerobic conditioning. We will teach you all of the technical skills you need to climb, but you must be in good physical condition to get the most out of your experience. It is rare for someone to be disqualified due to technical ability, however ***it is not uncommon for climbers to be disqualified because they are not in good enough physical condition to attempt the climb.*** We don’t want you to be disappointed so please be prepared.”

- Notes from Exum “Important Information”