Outdoor Sports Conditioning: Preparing for Alpine Climbing Season
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As the snow falls across much of the country, some of you are probably out enjoying your newly acquired skis, snowboards, sleds and snowshoes, while others of you may be in hibernation, waiting for the snow to melt and warmer weather to return to the mountains. It is never too early to start preparing for a fun-filled spring and summer of alpine climbing, hiking, and mountaineering. This first of a series of articles addresses preparation for hiking and indoor climbing, which in most parts of the country can actually be done year-round, especially if you're willing to brave cooler and less certain weather conditions.

Once a hiker has acquired the necessary outdoor gear (most importantly, a properly fitting backpack, breathable clothing layers, and sturdy boots that are comfortably broken in) and understands how to use two of the most important of the "10 essentials," a map and compass, then the very next thing to consider in wilderness adventure is your own personal level of physical conditioning. The wonderful thing about hiking is that nearly everyone, of any age level, body type, and geographic location, can participate; proper preparation can make it that much more enjoyable. Consider the following categories as they relate to your own conditioning and technical levels and set several appropriate goals for the coming months:

- Sufficient cardiovascular training base to be adequately prepared for participation on hikes and approaches to climbs. In general, 2-3 aerobic workouts a week including 30-45 minutes of vigorous walking, hill or stair climbing, elliptical cross training, or other suitable aerobic exercise that works the muscles in the legs will help establish a baseline for beginning alpine conditioning.
- Adequate strengthening of any muscle groups important for hiking that are known to be particularly weak. That may include muscles of the hips, such as the glutes, abductors and adductors; the lower back; shoulders; the large muscles around the knees including the hamstrings and quadriceps, and the smaller muscles in the feet, ankles and calves. Upper body strength becomes important for alpine climbing, which requires use of both arms and legs to move vertically.
- Knowledge of how to stretch muscles that get tight during or following activity. The muscles that tend to get tight after long hikes with a loaded pack are hips, lower back, calves, quads, glutes, hip flexors, shoulders, and hamstrings, all to varying degrees depending on individual body types. The forearms and fingers tend to experience the most exertion and fatigue during vertical climbing, particularly the flexors.
- Existence and correction of any pre-existing physical conditions that need to be addressed before going on any extended hiking outings, such as lower back pain, bad ankles, a torn Achilles tendon, tight ITB (iliotibial band), weak knees, inflamed finger or elbow tendons. A sports medicine doctor, physical therapist, or qualified outdoor conditioning specialist can help address these issues.
- Knowledge of safe climbing practices and techniques. If your idea of climbing is visiting a local climbing gym a few times a week, consider taking a few lessons from a qualified instructor who can give you pointers on how to improve your technique (a subject for

future articles); if you plan to climb a glaciated volcano such as Mt. Baker or Mt. Rainier in Washington, you'll want to get solid instruction on how to travel safely across snow and ice and around crevasses. Climbing schools such as Alpine Ascents International (www.alpineascents.com) offer such programs around the world; local climbing clubs such as the Mazamas in Oregon (www.mazamas.org) or the Mountaineers in Washington (www.mountaineers.org) also have extensive climbing programs to teach self-sufficiency and safe travel in the mountains.

Training Guidelines for Proper Cardiovascular Preparation

The best way to train for any activity is … to do that specific activity, of course! But before your first outing of the season, you will benefit by doing some specific aerobic conditioning to get you prepared. How? If you are first starting out, you'll want to get to the point where you can comfortably walk 3-4 brisk miles several times a week. If you have access to a treadmill, try adjusting the incline angle so that your body gets used to steadily going uphill. Even better, find a steep hill near your home or a walking route that has several good hills and walk up and down them for anywhere between 20-45 minutes, depending on whether you are just starting your program or, later in the season, getting ready to go on a hike. Several flights of stair steps are also great for training for steeper hikes. Snowshoeing and cross-country skiing are great winter training alternatives to keep you in condition when the snow finally melts away. Remember that nearly any alpine climb will involve an approach (hence the recommendation for aerobic conditioning), unless you plan to climb primarily at crags (rock climbs close to the road) or indoor climbing gyms (where routes are literally positioned merely a few feet from one another.)

If you happen to enjoy jogging, that's another viable aerobic training option. However, it is certainly NOT a requirement to jog or trail run as part of your training in order to enjoy hiking or climbing; there are many alternatives that will allow for excellent cardiovascular conditioning without the constant impact involved in running. Remember that when you hike, you will probably 1) carry a pack of greater than 15 pounds, 2) travel at a slower walking pace than you would unencumbered and on flat ground, and 3) cover widely varied terrain. To prepare your hips, ankles, and legs for the added weight and uneven terrain, once you can walk for 30-45 minutes at a sustained pace over varied terrain (including hills and stairs) without a pack, start adding a backpack once or twice a week. Start with 12-15 pounds the first time and add 5 pounds every 1-2 weeks until you're at your target hiking weight. When you try your first hike of the season, remember that the sustained upward climb will become a steady descent on the way back; if you anticipate having any trouble with your knees, consider taking trekking poles for the first few hikes "just in case" you need a little help with balance during early season. Other aerobic options such as rowing, swimming, biking, or aerobic classes might also be good for cross-training; the closer your chosen activity is to the sport itself, the more carry-over your training will have.

If you are more advanced, and would like to eventually challenge yourself with an extended hike, multi-night backpacking trip, trekking excursion in a foreign country, or climbing expedition to a high-altitude peak, a good milestone will be to reach the point where you can comfortably carry 1/3-1/4 of your bodyweight hike for 4-5 hours at a time, gaining over 3,000 feet of elevation while covering 8-10 miles round trip. Upcoming Dolfzine articles will include

plenty of advanced conditioning tips for rock, ice, and glacier climbing, backpacking, and training for high altitude excursions.

Training Guidelines for Lower Body Strength Endurance

Strength training for the lower body can help make any outdoor activity feel much easier and hence a lot more enjoyable. It also can help prevent injury by increasing joint integrity and maintaining muscle balance, and is crucial for enhancing body composition, if reduction of body fat is of concern to you. Alpine climbers will benefit from having strong muscles, but the lighter their bodyweight, the less they have to drag with them up the mountain. Free weights exercises, including step downs and step ups, 1-leg squats, 1-leg deadlifts, and side low lunges (described and pictured below), all are helpful for enhancing your balance, developing balance in the muscles of the legs, and increasing your coordination just as you'd need for hiking and climbing. Furthermore, such exercises can be done without a gym membership using simple items you'd find at home.

Alpine-Specific Strengthening Exercises and Stretches

Following are my five favorite free weight hiking-specific exercises for the lower body, which you can do in the privacy of your own home. Pay close attention to form the first few times you try them so your body learns how to do the exercise properly from the very beginning. Start with little to no weight, a set of 10-12 repetitions for each exercise that you feel will help your body and its particular needs, then each week add a little more weight, a few more repetitions, or another set or two. Work up to as many as 3-4 sets of 8-12 repetitions with strict form. I suggest NOT training to muscular failure on any of these exercises, as your goal is to increase local muscular strength endurance, to match the primary energy system you'll be using in the mountains.

Step Downs and Step Ups

To perform the Step Down, place a sturdy box, bench, or step about 4-10 inches high in front of a mirror and stand on top of the bench. Keep the foot of your non-dominant leg on the bench, with the toes slightly turned out 10 degrees. Keeping your hips and shoulders squared forward, and arms on hips or in front of you for counterbalance, slowly step forward off the bench as though you're going down stairs but in slow motion. Watch what your knee does in the mirror, especially as you lift yourself back up to the starting position. If your knee is very wobbly, or if it

buckles in toward the midline of your body, then lower the step height and try again. This exercise (done with a pack, barbell or dumbbells) specifically targets the descent muscles in the quadriceps, particularly the Vastus Medialis Obliquus, or VMO, the teardrop-shaped muscle near the knee). Be sure to do as many sets and reps on your stronger leg as you were able to successfully complete with the non-dominant leg.

To perform the Step Up, try increasing your step height 2 inches from what you were able to use for the Step Down. Many of you may already be familiar with the Step Up. Stand facing the step, with your non-dominant leg on top of the step (to work it first) and toes turned out about 10 degrees. Slowly step up, being sure not to bounce off the floor with your lower foot. For both exercises, take 2-3 seconds to lift, 2-3 seconds to lower. This exercise is NOT the same as the fast steps you might perform in a step class; keep the exercise under control and the knee aligned directly over your ankle.

1-leg Squat

The 1-leg squat is an advanced version of the stationary lunge (what I call a “dip”), and it helps you: 1) stretch your hip flexors and quads; 2) strengthen the entire leg, from hips, to quads and hamstrings, to ankles; 3) train each limb evenly, since one leg is doing more of the work at any given time; 4) develop balance and muscle control in your legs, especially if you perform the exercise slowly and with precision. If you are at all concerned about your knees, try a dip without your rear foot elevated, first, to see how they feel. To complete the 1-leg squat, place your rear foot up on a low box, stair or bench, and hold dumbbells in each hand. If you are outside, or do not have access to gym equipment, you can do this with your foot on a porch, curb, or boulder, with a backpack on for added resistance. As you lower your torso, make sure that you will have your knees at approximately right angles (a little forward of the shoelaces, shown below, won't do any harm; if you have any discomfort in the front knee, then try to keep the forward knee behind the shoelaces). On a dip, avoid jamming your rear kneecap into the ground. Keep your torso as upright as comfortable, abs tight, and shoulders and hips squared forward. Inhale as you lower, and exhale as you press back up. Drive the forward heel into the floor to activate the large glute (buttocks) muscles. Complete the desired number of repetitions, rest, then repeat with the other leg. (Model pictured: Lee Murray, photo by Courtenay Schurman)

1-leg Deadlift

This exercise enhances balance as well as strengthens the glutes, quads, ankles, and hips. Stand on one leg, with the other foot hovering just above the floor behind you for balance. Hold a dumbbell, dictionary, or gallon jug in each hand, and then squat down as low as you can toward the floor without rounding through the back (as shown) before lifting back up to vertical standing position. If you find your balance is off, check your feet; are you gripping tightly with your toes? Try relaxing the foot and you will probably find that your balance improves significantly. Once you've completed your repetitions, shake out the leg, switch to the other, and repeat. For variation, try doing this with a weight in only one hand, and switch the weight to the other hand half way through the set. For added difficulty, pause at the bottom, increase the weight, add repetitions, or drive yourself upward as though you were going to hop off the floor.

Side Low Lunges

To stretch your hips and strengthen the quadriceps for vertical wall climbing, perform the side-to-side low lunge, pictured below. Keep your torso vertical, toes turned out, and for added effect, do this standing face in to a wall while avoiding touching your knees to the wall. An option is to reach up as though you were going for your next hold and use primarily the bent leg to lift you up -- a super quad-blaster. To increase difficulty, add a pack on your back, books or dictionaries in each hand, or hold the pause longer in bent knee position. The lower you go, the more stretch you'll feel in your hips.

Remember that anytime you perform a new exercise, you may experience a bit of soreness 24-48 hours afterwards. With repetition, your body will adapt to the exercises and the new stresses put on your body, and the soreness will decrease. However, if you experience discomfort beyond the usual muscle soreness post-workout, and the affected body part is really painful, then you may

have overdone it. Try any new exercises with light or no weight first and gradually add intensity as you master form on each exercise and your strength and endurance increase.

If you have access to some filled gallon jugs, a sturdy backpack, or several dumbbells, you have all you need to strengthen your legs, shoulders, abdominals and lower back for hiking. We highly recommend that you use free weights for your strength training, rather than machines, as machines support too much of your body and require very little integration of various large muscle groups together. For each exercise, a general rule of thumb is to start with a weight that is light enough to allow you to perform anywhere from 1 to 3 sets of 8-15 repetitions with perfect form, and gradually add sets, reps or weight as you increase your strength. Be sure to change your workouts every 3-4 weeks or so as your body adapts to the program, so that you continue to stay interested, make good progress, challenge your body, and have fun.

Training Guidelines for Upper Body Strength

Upper body strength becomes quite important for gym, crag, or alpine climbing where ascending the wall or mountain involves use of the upper body in addition to the lower body. Technique and strength both play important roles in moving to advanced climbing levels. Women who lack upper body strength often excel at climbing by relying on increased flexibility, lighter bodyweight, and stellar technique; enhancing their upper body strength will help on overhangs and dynamic moves known as “dynos,” not to mention sticking on the wall for longer periods of time without needing a rest. Not only are the vertical pulling muscles of the lats, biceps, and rear deltoids important for climbing, but also the triceps (for stemming and manteling, counter-pressure techniques that require pushing), rhomboids (horizontal pulling muscles to balance the vertical pulling muscles) and front deltoids (trained in overhead pushing movements, also to balance the climbing muscles.) The other muscle groups that become especially important are those in the hands and forearms, not to mention the elbow and finger tendons. Because climbing engages the finger flexors to a great extent, training the finger extensors becomes crucial to long-term hand and elbow health.

Training Guidelines for Proper Flexibility and Balance

If you know ahead of time that you lack flexibility in certain muscle groups, you may want to invest in a good stretching book or video, or consider taking a yoga class. A qualified exercise instructor can also help you develop a program that will address your needs. In general, aim for the stretching to feel good, never painful. We recommend putting any static stretches at the end of your workout, rather than at the beginning, when the muscles, tendons and ligaments have been thoroughly warmed up. Hold your stretches for 20-30 seconds, and gradually increase the stretch as you ease into it. Hip, shoulder and trunk flexibility become especially important to alpine and rock climbing in order to use holds just out of reach and move up the wall in dynamic near-split stemming positions to rest your fingers and arms. My two favorite lower body stretches for alpine climbers are the Triangle Pose and Piriformis stretch, described below. For excellent home instruction consider including yoga such as that presented by Karen Voight in her yoga videos and DVD’s.

Triangle Pose

The Triangle Pose, a multi-joint stretch popularized by yoga, helps stretch the lower back and obliques, chest and shoulders, and hamstrings. If you have never tried this stretch before, start by standing near a wall. Turn one foot so it is lined up parallel to the wall, and the other foot should point straight out away from the wall. As you exhale, slowly bend to the side with your arm reaching down the thigh and shin toward the "parallel foot." Hold for 30 seconds and repeat to the other side. Your goal is to try to keep the shoulders touching the wall, with palm open and knuckles reaching toward the wall as well. For a more complete stretch, reach your higher arm along the top ear rather than reaching for the ceiling. You may find that one side is easier to stretch than the other; start with the tighter side first.

Piriformis Stretch

This is an excellent stretches for the muscles deep in the glutes and hips, especially for anyone experiencing sciatica or piriformis pain. To get into position, squat down in a sprint stance, with your right leg extended. Bring the left foot diagonally underneath your body so that your right hip can be lowered directly onto the left heel. Shift your left hip onto the floor, and lower your chest to the left thigh. Reach fingers forward and hold for 30 seconds. Repeat to the other side. Again, start with whichever side feels tighter, first, and do not be alarmed if you feel excessively tight – most people are, initially.

Climbing Tips for the Novice Alpinist

If you are brand new to the "vertical game," a good place to learn the basics off-season is an indoor climbing gym. Always remember to focus more attention on your FEET than constantly looking up for hand holds. Sometimes moving a foot merely three inches higher can mean the difference between being stuck and reaching the top. The muscles in the legs are much stronger than the tendons and ligaments in the fingers and hands; use them to your full advantage. Below are a few starting suggestions for things to work on during your first few trips to the climbing gym.

- **Develop a Sense of Balance**
  From the very first time you start climbing up a wall, you'll want to remember to keep your weight over your feet in order to increase your sense of balance. At any point you should be able to have 3 points of contact with the wall and find a way to balance with one arm or leg off of the wall. That means if your hands are solid, you'll be shifting weight onto one leg in order to move the other; if your feet are solid, you'll be looking for a hold for one of your hands.
- **Resist "Over Gripping"**
  When you first leave the floor or ground, it's easy to get nervous about being on small edges and holds a dozen feet above ground, and start squeezing the holds too tightly in order to stay on the wall. Death grips on the holds will only result in "a pump" in which increased blood flow to the working muscles and lactic acid build up from excessive exertion will cause you to "pop off" the wall. Think about sneaking up on the holds, and try to remain as relaxed as possible. If you are on top rope (meaning you have a trusted belayer holding you safe from a fall), you'll want to experience "popping off" so that you learn to trust the system of ropes and anchors and to not be afraid of it. Try to relax, enjoy yourself, and learn to trust the feet.
- **Hang on Straight Arms**
  Pulling your body in close to the wall is a sure-fire way to reach fatigue in the biceps and forearms. When climbing, try to keep your weight on your legs and hang straight-armed so that your skeleton and stronger legs will take most of the weight, rather than the smaller muscles in the arms. If you have not had a chance to try climbing before, imagine the difference in a pullup from the bottom position and the top; you will be able to hang on a pullup bar for a much longer time with arms straight and you dangling at the bottom, than you would be able to hang with your chin over the top of the bar with flexed arms. The goal is to conserve as much energy as possible and stay on the wall as long as you can without feeling "the pump."
- **Find Good Rest Spots**
  As you climb from hold to hold trying to "stay in balance," see if you can find good places to rest. That might mean standing on two solid foot holds while shaking out your arms; it could mean stemming in a corner or chimney, pressing outward in opposite directions with your legs as you rest your arms; it could mean hanging straight-arm on a "jug" or trusted, large hand hold while you get ready for your next series of moves. A

good climber can gauge rest spots along a climbing route as he or she mentally previews where hands and feet will go up the next pitch (part of a route.)

- **Climb Silently**
  Another drill that is great for footwork is to imagine climbing on pumice, the fragile, somewhat brittle volcanic rock that can crumble if slammed to the ground. Think of placing your foot exactly where you want it to be on the hold, rather than stuttering or smashing your foot onto any part of the hold. "Quiet feet" are skilled feet, and the sooner you can learn to carefully and deliberately place your feet on the best part of the hold, the better your climbing will be.
- **Experiment with Features for Hands and Feet**
  Some climbing gyms will have smooth walls on which foot and hand holds are the only things you can use for climbing; others will have "textured walls" that have built-in "features" such as cracks, small ledges, bumps and so forth, in addition to larger hand and foot holds. Vertical World in Seattle, Washington (www.verticalworld.com) is such a "textured wall" gym. They tend to be a lot more like the climbing you'd experience on real rock, hence the textured wall gyms are, in my opinion, much more desirable for beginning climbing. A good drill to try after you've climbed a few times is to use "features only" for feet, in order to learn just what your feet can stand on comfortably. This is also a good drill for anyone who tends to rely on upper body strength to muscle up a route.

Putting It All Together

Once you understand the components you need to include for a well-balanced alpine conditioning program, it's time to integrate them with your personal goals for the next 3-9 months. Would you like to attempt a few easy hikes that gain less than 1000 feet of elevation and are shorter than five miles in length? Do you aspire to eventually doing the Pacific Crest Trail or Appalachian Trail? Are you satisfied climbing easy gym routes (5.0-5.5 range)? Would you like to learn how to lead (place protection as you climb, vs. being on a top rope) in the alpine environment? The conditioning program needed to attain the first hiking goal will look vastly different from that necessary to attain the second goal. The technical know-how required to advance from gym climbing to leading on actual rock differs significantly. If your ultimate goal is to be able to gain 3,000-3,500 feet of elevation in 8 miles round trip carrying a 30 pound pack in about 4 hours, then a beginning program for the first eight weeks might look something like this (including cardio and strength in one workout allows more rest days):

Weeks 1-2: Get moving! 3-4x/wk.

Aerobic training: 2x/wk. 20-30 min. each, 60-70% MHR. Choose walking, jogging, stairs, stairmaster, treadmill, Elliptical machine, or hill hiking to work targeted leg muscles
Activity Specific: Weekend hike w/10# pack, gain 800-1000 feet, easy pace, 3-4 miles
Climbing Specific: 1x/wk. introductory climbing lesson (1-1.5 hours) at indoor gym

Weeks 3-4: Develop a stronger fitness foundation 4-5x/wk.

Aerobic training: 2x/wk, 30-45 min., 65-75% MHR. Same choices as weeks 1-2.
Activity Specific: Weekend hike w/10-15# pack, gain 1000-1300 feet, 4-5 miles
Strength: 2x/wk, full body, 20-30 min. 1-2 sets of 12-15 reps, 6-8 major muscle group free-weight exercises specific to climbing/hiking/scrambling, done as a circuit with short rest intervals
Climbing Specific: 1x/wk. bouldering (non-top roped climbing) 45 minutes, NO PUMP

Weeks 5-6: Build muscular strength 5-6x/wk.

Aerobic training: 3x/wk, 45 min., 65-75% MHR; one day city hill/stairs hike w/15-20# pack
Activity Specific: Weekend hike w/15-20# pack, gain 1300-1600 feet, 4-5 miles moderate pace
Strength: 2x/wk, 20-30 min, 2-3x8-10 reps, full body strength, with additional weight
Climbing Specific: 1-2x/wk top-roped climbing or lesson, 45-60 minutes, NO PUMP

Weeks 7-8: Increase muscular endurance 4-6x/wk.

Aerobic training: 3x/wk; 1 of 3: hill intervals or stairs 30 min. w/20# pack; 1 of 3: 25-30 min. medium intensity with a 45-60 minute climbing session
Activity Specific: Weekend hike w/20# pack; gain 1600-2000 feet, 5-6 miles round trip
Strength: 2x/wk, 30-45 min, 2-3x12-15 reps, change exercises from wks. 3-6

By weeks 11-12, increasing in gradual increments as above, you should feel comfortable gaining about 3000’ of elevation with your targeted pack weight. As always during any training program, listen closely to your body. If you are brand new to exercise, it might be a good idea to consult with your physician before starting on a rigorous exercise program. If you are familiar with exercise, or already have some knowledge of training for alpine climbing and have already established an aerobic base, you might be ready for additional elevation gain or pack weight earlier in the program. One final note: when first starting at an indoor gym, avoid climbing for longer than about an hour and try to resist climbing to the point of “getting pumped.” Your finger and elbow tendons will appreciate a slow and gradual increase in effort over the course of several months rather than having you rush right into high grades of climbing to see what you can do, resulting in tendon strains that take an inordinate amount of time to heal. The best way to train without injury, especially at indoor gyms where the next route is merely a few feet away, is safely, gradually, and carefully. Happy climbing!