The Theory of Endurance Training

ATP Enables Endurance. Adenosine Triphosphate provides the energy for movement and is the product of metabolic process in the muscles. More ATP equals more power. Training for endurance is to increase your muscles' rate of ATP production. There are two distinct metabolic pathways for the production of ATP: anabolic (anaerobic glycolysis) and aerobic (Citric Acid Cycle). The anaerobic pathway does not require oxygen, and can only utilize glucose from the carbohydrates in your diet as a fuel source. The aerobic pathway can be fuelled from fats, sugar and protein, also from the food you eat.

The Aerobic System. The aerobic system is rate limited in its production of ATP so can only fully meet the energy demands of relatively low intensity exercise. The principle heart-rate intensity marker of the aerobic system is the Aerobic Threshold (AeT). When that aerobic capacity is exceeded the anaerobic system begins to contribute to the overall demands for ATP. Since the aerobic path can utilize all different fuel sources and the body's store of fats is many times that of sugar storage, aerobic fat metabolism will dominate as the fuel of choice in endurance athletes especially in events lasting over 2 hours.

The Anaerobic System. Once past the AeT, the anaerobic ATP contribution will climb exponentially along with the intensity of the exercise. This is the high power metabolic pathway and is what fuels feats of speed especially in events lasting less than 2 hours. Its output is limited by the athlete's anaerobic capacity. This process has a drawback that makes the anaerobic output self-limiting for endurance events (defined as anything over 2 minutes). That limiter is the production of lactate. Lactate production rises at an ever-accelerating rate along with intensity. On the ascending scale of intensity, one's Anaerobic Threshold is crossed after which the duration of exercise will be reduced to a few minutes at most due to fatigue. This form of fatigue is due to a reduction in ATP output, prompted by the accumulation of hydrogen ions along with the lactate in the blood. The only option is to slow down.

Anaerobic Threshold. Lactate is the preferred fuel for low-intensity slow-twitch fibres, so the more massive your slow twitch fibre's aerobic capacity, the more lactate that can be removed and the higher heartrate you can sustain for endurance events. Once the aerobic capacity is maximized for a training cycle, then high intensity work can be utilized to its fullest to make the greatest gains in endurance, translating to a higher anaerobic threshold.

Boosting Your Aerobic Capacity. Since ATP provides the energy that powers movement, and since aerobically derived ATP will be the most efficient and sustainable, we need to best develop the ability to aerobically produce ATP. There are three principle adaptions:

- **Increased Mitochondrial Mass:** Mitochondria are organelles inside every cell and become muscle fuel when combined with oxygen. More mitochondrial mass means muscles can contract with more force and do it longer with less fatigue. The adaption takes place on a short-term scale of days to weeks. In training, the most effective way to trigger a mitochondrial biogenesis response (cells splitting and doubling) is to induce an aerobic stress to the system of sufficient duration and repeat with sufficient frequency.
- **Increased Aerobic Enzymes:** Mitochondria are full of enzymes, which aid aerobic metabolism. The more of these are present, the speedier the CAC will proceed. Enzymatic adaption occurs within minutes of exercise but begins to diminish within a few days. Hence, aerobic adaption requires frequent stimulus to maintain.

- **Increased Capillary Bed Density:** Capillaries are blood vessels across the body, which deliver oxygen to muscle cells and remove metabolic by-products (such as lactate). The more capillaries and the denser the networks, the faster oxygen can be delivered. We grow new capillaries as a response to training, on the scale of weeks to months.

It is necessary to monitor and control the intensity of training to create the conditions necessary for these aerobic adaptations to occur.

Cardiac response. The cardiac response also has an impact on anaerobic power, with stroke volume being the most significant trainable factor. Extended periods of elevated heart rate have a training effect on the cardiac muscles and the size of the heart chambers, thereby allowing greater blood flow per pump. As your aerobic fitness improves, you'll notice a drop in your perceived effort at high intensities, and your HR will be lower.

Muscle Fibre Types. The intensity of training determines which type of muscle fibres are recruited. Muscle fibres can be divided into three basic types:

- **Slow Twitch (ST):** ST fibres have a higher density of mitochondria, a smaller diameter, and greater capillarization, as well as high levels of aerobic enzymes. These characteristics allow them to process oxygen more quickly than FT fibres and thereby aerobically produce greater amounts of ATP via the CAC. Through long duration and low to medium-intensity training, these ST muscle cells can be trained to utilize fat as their primary fuel while only sipping at the glycogen supply.
- **Fatigue-Resistant Fast Twitch (FTa**): FTa fibres tend to be larger in diameter than the ST fibres and have a lower mitochondrial density. They rely mostly on glycolytic metabolism and are about five times as powerful as ST fibres. FTa fibres appear to be very trainable for endurance and with training can develop endurance properties more like ST, if not actually converting completely to ST fibres. This phenomenon is essential for athletes to effectively train these powerful fibres to become more fatigue resistant. Duration of the exercise is key, and the muscle fibres need to be stressed by repeatedly contracting and relaxing for long durations in order to stimulate mitochondrial biogenesis along with the other aerobic enzyme adaptations. Long duration for an FT motor unit may be only 20 seconds due to their lack of fatigue resistance. Because they quickly fatigue, an interval method will need to be used in order to accumulate a high volume of time at this higher intensity.
- **Fast Twitch (FTb):** FTb fibres are the strongest, but fatigue within a few seconds. They are harder to engage, and the muscle has to be called upon by the brain to contract with a substantially greater force in order to get these fibres into action, giving them a training effect. Producing the force necessary to engage FT motor units requires real mental effort, coordination, and concentration. At the same time that we are trying to encourage these FT fibres to shift toward a more aerobic metabolism, they will be receiving a strong stimulus to develop their anaerobic capacity to new levels due to the intensity of the exercise required just to get them into the act.

ARC Training is Zone 2 Training for Rock Climbers: Aerobic base is crucial for an endurance athlete. For an endurance climber, Aerobic Respiration and Capillarity Training establishes the base fitness that climbing performance relies on. This is done by a high volume of climbing at low intensity, progressively increasing the relative volume spent at moderate intensities. With proper stimulus, you can maximize the three principal adaptions to improve the lactate shuttle's effectiveness, the power of the ST fibers, and aerobic capacities of FTa fibers. With a correct progression, you can then raise the aerobic and anaerobic thresholds to produce more power at the same intensity.

The Theory of Strength Training

Muscular Strength and Power. Strength is defined as the force a muscle group can exert in one maximum effort. Your ability to pull a single hard movement or grip a small, difficult handhold is a function of your maximum strength. Muscular power is more complex, because it is the product of force and the distance through which the force acts. Therefore, power is the result of strength and speed. This would be expressed as: power = strength x speed.

Neuromuscular Adaption. Two primary adaptations occur in response to strength training. Muscular adaption, and neurological adaption. Both create a higher power output, and the more powerful climber will be able to climb harder and faster.

- **Muscular Adaption.** Muscular adaption improves strength by how hard each individual fibre can contract. Long-term gains in muscular strength result from increasing the size of the individual muscle fibres in response to high-intensity, heavy-load training - a process known as hypertrophy. While muscular adaption generates muscle mass, certain muscle groups are a liability to climbers depending on their objective. Legs and chest muscles for example, can negatively impact a climber's strength-to-weight ratio. It's important to be specific with this adaption.
- **Neurological Adaptation.** Neurological adaption improves strength by enables your muscles to be more efficient and coordinated. By engaging in maximal strength training, the athlete increases the pool of motor units that become neurologically hardwired. By increasing the brain's neurological connections, the brain can recruit more muscle fibres. With a larger pool of fibres available, there are more fibres to share in the workload on a rotating basis. Because untrained motor units tend to fire randomly, continued training also enhances motor unit synchronization. With motor units firing together, muscle movements can be more efficient and coordinated.

Muscle Movements and Roles. The production of movement involves three different muscular actions, as well as three basic roles the muscles can play during a performance.

- **Concentric contraction**: Muscle action in which the tension developed produces a shortening of the musculature, as in the biceps during the upward phase of a pull-up.
- **Eccentric contraction:** Muscle action in which the muscle resists as it's forced to lengthen, as in the biceps during the lowering phase of a pull-up.
- **Isometric contraction:** Muscle action resulting in no shortening of the muscle (no movement), as in musculature of the forearm while gripping a handhold.
- **Agonist:** The muscle or muscle groups causing an action to occur. For instance, the biceps and the latissimus muscles of the back are some of the prime movers in the pulling motions common to climbing.
- **Antagonist:** The muscle or muscles providing an opposing force to the primary muscles in action. For example, the muscles on the back of your forearm oppose the action of the forearm flexor muscles when gripping the rock.
- **Stabilizer:** The muscle groups that help stabilize the skeletal structures so that tension of the agonist (prime movers) can produce smooth, effective movement. In climbing, there are many small and large stabilizers (including the antagonist muscles) that come into play, from the arms to the core muscles of the torso and down through the legs.

The Training Principals

Training should be viewed as the structured and progressive application of physical stress on your body followed by periods during which your body is allowed to regain its homeostasis. Understanding the principals of training maximises the effect of this application.

Continuity. Skipped workouts or breaks in a training cycle will make strength and endurance gains unlikely and lead to a loss of fitness. You must maintain a regular schedule with minimal interruptions, while recognizing and addressing sickness and unavoidable gaps.

Gradualness. To increase physical capability, it is necessary to expose your body to a level of training stress beyond that to which it is accustomed. This can be achieved by increasing training intensity, speed, volume, or by decreasing the rest interval between sets or climbs. However, your body's numerous systems require time to adapt to the various stresses you apply with a training load. Acknowledge the body's limited capability to adapt to the training stimulus, and gradually increase its load.

Modulation. Modulation is the undulating level of training stimulus that allows your body a chance to recover, then overcompensate through neuromuscular and aerobic adaption. While some adaptions occur within a few hours or days, base adaptation occurs in a six-week cycle. During the first three weeks, your body rapidly adapts. During the next three weeks, if the training load is held constant, it begins to yield diminishing results as your body adapts to that training stimulus. During these final three weeks many of the adaptations begin to consolidate, creating a base upon which to build the next step upward on the fitness ladder.

Specificity. Only the systems that are stressed are going to see the training effect. With that in mind, the most effective training will be specific to the movements done, and at a similar speed and intensity of climbing. As a climber, you should spend most of your time climbing.

Individuality. Your optimal training program will target your weaknesses, and maintain your strengths. Also, individuality comes from recognizing all the aspects of your life – age, gender, flexibility, illness and injury, stress, commitments, finance, and motivation.

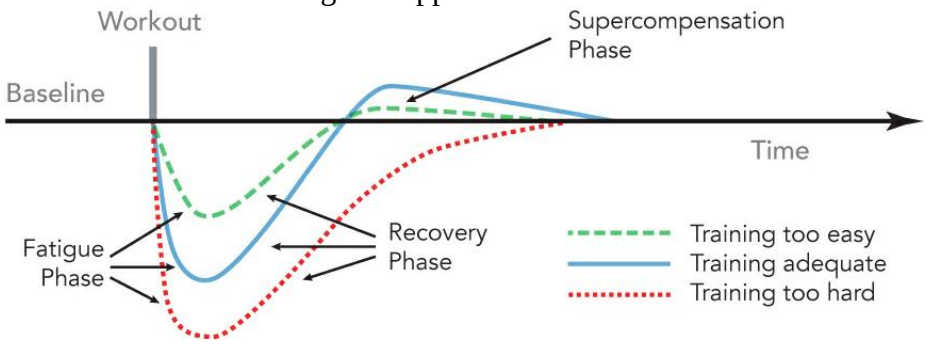
Intensity. The intensity of training determines the energy systems involved in producing the movements you are making. It also determines what types of muscle fibres get recruited to do the work. Heart rate zones is the best intensity measure for endurance training.

- Zone 1: 55– 75 percent max HR. Basic aerobic. Nose breathing. This is the key component of a big motor. It is done at or below your nose-breathing limit.
- Zone 2: 75– 80 percent max HR. High-end aerobic. Deep and steady. Used by advanced athletes with years of base. Too hard to be easy, not hard enough to elicit positive training effect.
- Zone 3: 80– 90 percent max HR. Max aerobic effect. Sort Sentences. Fun, hard.
- Zone 4: 90– 95 percent of max HR. Strong anaerobic component. Not talking. This zone is used sparingly even by the best.

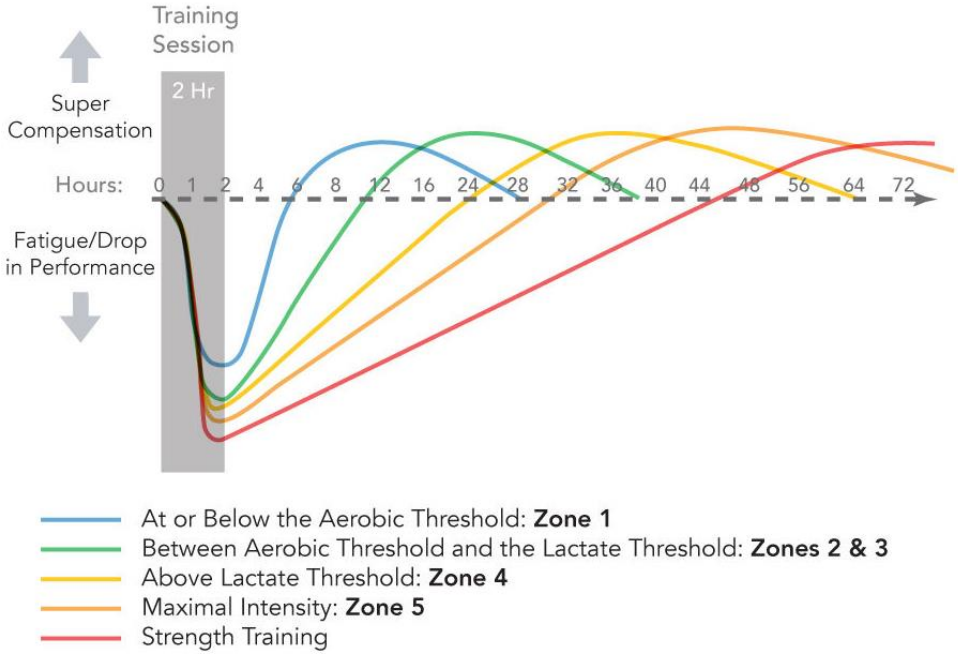
Recovery Strategy. It's important to maintain sleep, glycogen, and water in order to function during training and an event. A depletion of glycogen stores will dramatically slow down the metabolic processes and reduce the creation of ATP. Excessive training coupled with a lack of adequate nutrition, especially protein, results in a catabolic state - the third metabolic pathway that breaks down muscle tissue. Monitor your resting morning heartrate – if it's significantly elevated (7bpm or higher), it's a sign you're not fully recovered or overtraining.

The Training Effect

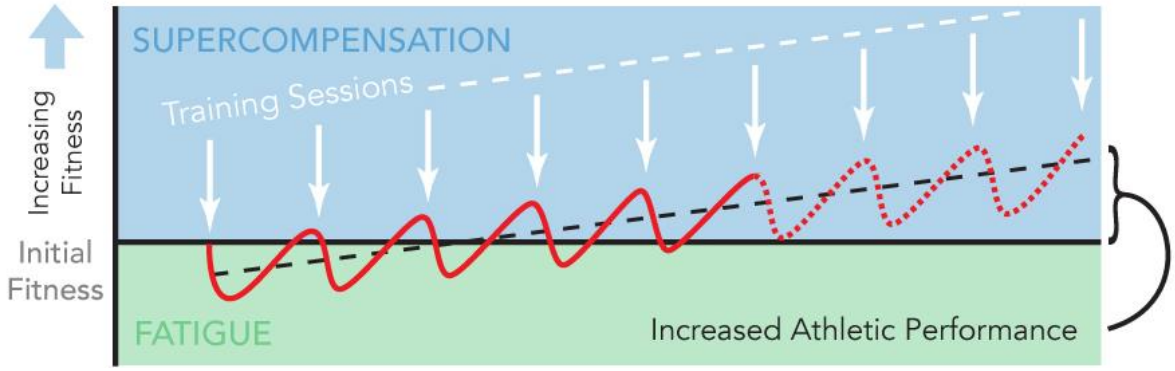
The Training Cycle. To see progress in your fitness you need to temporarily put some systems of the body into a crisis state and allow the body to restore its homeostasis through its natural regenerative processes. This stress/ recovery process results in what is termed a training effect. If properly coordinated, these adaptive mechanisms result in a process known as supercompensation, whereby your body overcompensates and ends up at a higher fitness level than before the stress of training was applied.



The Recovery Rate. The various changes that your body undergoes due to this training effect occur at different rates, and the restorative periods can vary from a few hours to several days depending on which body systems experience stress. The graph below accurately reflects the average recovery rate of the various body systems when stressed for two hours at a specified HR zone.

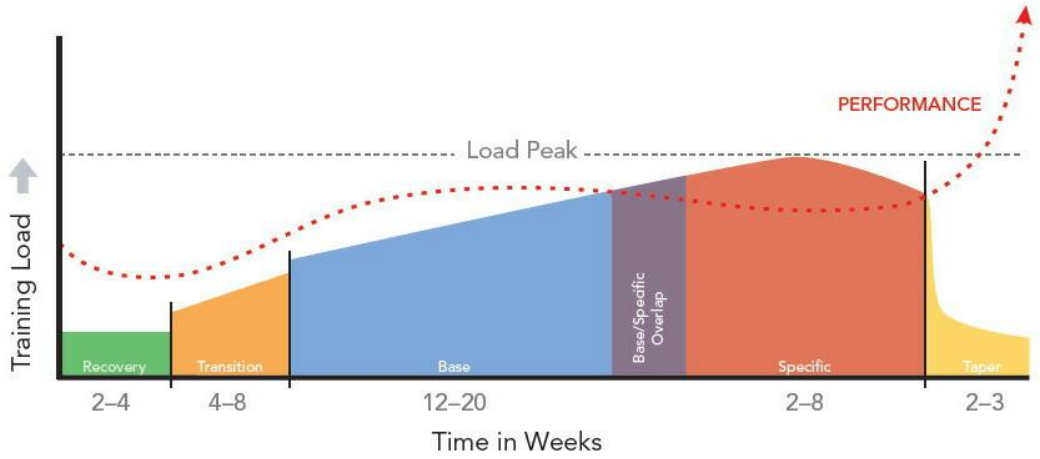


The Training Program. If there is a new training stimulus applied while your body is still in a supercompensated state, the resultant new level of adaptation will be higher than the previous one. This progression of load and adaptation is the goal of a training program.



The Training Periods

The more advanced the athlete, the more important it becomes to periodise the training—breaking the training cycle into discrete segments, each with its own focus. This allows you to emphasize specific training in an additive process where the training that has gone before supports that which is about to be undertaken. There are five periods:



Recovery Period: Climbing at a high level is very physically, psychologically, and emotionally taxing. It is critical that you are well recovered from any previous serious and demanding climbs, even if unsuccessful, before you embark on either another hard climb or a new training season. The fatigue of the central nervous system is one of the hardest to sense and often takes the longest to recover from. The length of this recovery is determined by the demands of the climbs that have gone before it. Take a break from climbing. Do other recreational activities at a low level. Have fun. Taking this necessary short break of at least two to four weeks refreshes both body and mind before starting the next cycle. If you are normally driven to be active but feel lethargic, the reason may be an underlying fatigue.

Transition Period: When beginning a training program, it is important to give your body a chance to accustom itself to the routine and stress of regular training. If you are a seasoned athlete, this period can be as short as two to three weeks. For beginners or those coming off the couch after a long break, it should be eight weeks. If you are in great shape from a previous season and only need a short recovery break then it can be shortened to six weeks or in some cases even four weeks among the well-conditioned. In this phase, you'll spend your time gradually becoming an athlete again. Many people struggle with this period because they come into it highly motivated, rested, and hungry to get back to training. They have new goals, renewed energy, a new training plan, and are stoked from recent success. This can lead to prematurely ramping back to full-fledged training loads before their bodies are ready. Even though the workouts will be somewhat unstructured and quite general in nature, the training load must still be progressive and gradual in nature. You may not even train daily in the beginning of this period, but you are still setting the stage for some real training ahead. The strength plan you follow will be for general strength.

Base Period: The purpose of this period is to build a general resistance to fatigue by increasing the capacity of each of the fundamental physiological qualities that contribute to your success, and most importantly your aerobic threshold. It is the longest and most important training period. The bigger aerobic capacity is, the more work you will be capable of in the specific workouts to come; this will, in turn, take you to a new, higher fitness level. The adaptation of the aerobic systems necessary to maximize your oxidative energy resources is one that responds to gentle, frequent coaxing rather than infrequent, brutal flogging. During this phase, volume is the key. The more you train, the bigger the base you have to work from.

The intensity needs to be kept low to moderate on most workouts, or you will not be able to achieve the necessary high volume. If you are a mountain professional, such as a guide, or you are a very active amateur alpine climber who has spent one hundred-plus days in the mountains each year for the last several years, you are off to a great start. You've already developed a substantial base of aerobic training. Your basic aerobic and strength capacities are probably already high, which will allow you to move to a more advanced training regimen. For less-active amateurs who get out for long, full days of climbing fewer than six to seven days a month, you will need to pay particular attention to this phase since your basic endurance and strength is likely underdeveloped.

The results of the training you do during the Base Period will be slow to accumulate and subtle to detect. Don't expect to see or feel any significant fitness gains before four weeks. After twelve weeks, you will really begin to see and feel the effects of a consistent, gradual, and progressive training plan with its big volume of low-intensity training. This slow adaptation is due to the structural changes that are going on at the cellular level in your muscles. The protein synthesis necessary to grow new capillaries and increase mitochondrial mass takes weeks for measurable changes to occur. During this phase, your heart rates will be mostly in Zone 1, with some training in Zone 2 and occasional sessions of Zone 3. Athletes with several years of solid training will be able to use more Zone 3 intensity because they have a more well-developed aerobic physiology to support these harder efforts. The strength training will be periodised to first build maximum strength through muscular adaption, then maximum power through neuromuscular adaption.

Specific Period: Toward the end of the Base Period and phasing into the beginning of this period, you start to add in principal workouts that create a sport-specific training load on the structural and functional systems directly related to climbing. In these, we put the fundamental qualities we have been developing together in one workout to simulate physiological stress and conditions encountered while climbing. This is very demanding training, both mentally and physically, and will give the best results if undertaken after extensive preparation during the previous periods. Adequate recovery before and after the principle workouts is essential. The Specific training period can have some overlap in time with the Base Period to allow for a shift in emphasis from general volume to more focused sport-specific volume. As the principal workouts progress to become more challenging, the interim workouts will become less intense and serve the function of maintenance of basic endurance as well as recovery. Near the end of this period will come the final tune-up training in which you put all the individual components you have worked on together into some test climbs. The length of this Specific Period can range from a couple of weeks for less-experienced climbers to two months for those with years of training behind them.

Taper Period: The purpose of the Taper Period is to allow your body to fully recover and realize a maximum state of supercompensation from the long-term stress of training. As you are coming off the intense Specific Period and into the Taper Period you will dramatically drop both your volume and intensity of training. This will result in the peaking effect and you will reach your best fitness for the year. The amount of time it will take for that supercompensation to produce your peak will vary depending on the length and intensity of your past training and the quality of your recovery. If you have done a good job with your training up to this point, this will take about two weeks of tapering to achieve peak fitness. If you engaged in continuous, progressive training for a short time, less than four months, your Taper Period may be much shorter, on the order of four to seven days. Once at your peak, a maintenance program can keep you there for up to six weeks.

Active Recovery

You get weaker during training, and it is during recovery that you become fitter. Equal attention must be paid to each, or your training results will be severely diminished. Using these tools will help you train more effectively and recover faster.

Sleep: The most important tool for recovery is sleep, especially REM sleep (Rapid Eye Movement). During REM sleep the release of several anabolic (growth) hormones are highly elevated. One of these hormones, GH1, is the body's primary signaling agent for adapting to higher training loads. If you aren't getting enough REM sleep GH1 levels will be reduced and your recovery will be impaired. Naps are a staple of elite athletes to insure they get enough REM sleep. Even a 30min nap can do wonders.

Food and water: Refueling is critical to recovery especially within 20-30 minutes of your workout. Missing this window after training can extend recovery time by. Depending on the workout, it is advisable to take in 100-200 calories immediately. Using a recovery drink or eating a bar works as an easy way to get the macronutrients. Adequate hydration is important especially if you are training in heat or for extended periods of time.

Foam Roll/Self-Massage: Foam rolling and self-massage are cheap and easy things you can do every day to speed up recovery. When your muscles are tight or sore, you are experiencing acute inflammation. Inflammation is part of the adaptation process, but too much inflammation will result in stiff and tired muscles and impact your ability to train. Several self-massage tools are available, from foam rollers, to sticks and balls, all of which serve the purpose of working out knots and increasing blood flow to tired muscles. Stretching and Yoga will have similar effects on your muscles, but probably will not have the immediate impact of a good self-massage session.

Recovery Workouts: Proper recovery workouts are a fundamental part of training for almost every professional endurance athlete. They are not meant to increase fitness, but instead, serve the vital purpose of getting you back to training as quickly as possible.
The key to recovery workouts is to keep the intensity very low. It can also be a good idea to mix modalities of training. For foot borne athletes, swimming is ideal when your legs are feeling really beat up from running. Something as simple as a 20-minute evening walk can also be helpful, and is especially effective after a long hard day in the mountains. Even on days off, the light aerobic stimulation of a recovery swim or bike ride will speed recovery. If you are pushing the envelope of what your body can absorb these should be built into every training week.

Swimming: Swimming is the most effective recovery workout for loosening up and getting rid of that dead leg feeling. A few hundred meters of freestyle in a pool coupled with some flutter kicking works wonders on heavy legs. If you are not a swimmer, then try vigorously treading water or running in place in water too deep to stand in.

Contrast Baths: Taking an ice bath followed immediately with a hot bath creates a flushing effect of increasing blood flow to your limbs and reducing local inflammation. It is particularly effective at reducing dead legs following a long run.

Massage: Massages are one of the best ways to speed recovery. A professional massage therapist accustomed to working on athletes can do a better job than self-massage and any machine, which is why pro athletes use them so much.

Training for Climbing

Below are the components of climbing. Power is a measure of how hard a climber can move for the duration of the climb, and technique is a measure of how effectively the climber can execute those moves. Each component has a specific relationship to succeeding on the climb, and all sum together to equal the performance of the climber. They should be trained in accordance to the training principles, and then optimized on climbs similar to the objective. It takes at least 12 weeks to effectively train each component and see significant enough gains.

Power (Strength x speed x time)			Technique (Skill x mobility x confidence)		
Max Strength (Primarily Agonist Capacity)	Lock-Off Capacity (Primarily Isometric and stabilizer muscle capacity)	Muscular Endurance (Primarily LRM of Forearms)	Skill (How well you can jam)	Mobility (How efficient you can move)	Confidence (How often you can execute hard moves)

Max Strength: When we choose the strength exercises that we will perform at the gym, we should select those that induce a positive stimulus over the muscles and joint angles that determine performance. The goal should be to train movements, not muscles. For climbing, the following do:

- Dumbbell row (with arm at 90º abduction) and one-arm reverse flies
- One-arm lat pulldown (slightly laid back)
- One-arm standing cable pullover or dumbbell pullover
- Dumbbel row (with arm at 0º abduction), or sitting one-arm cable row
- Standing one-arm cable triceps pushdown or triceps kickbacks
- 4x4 bouldering that target the desired movements of the objective

A max strength workout should choose 4 strength exercises from the above list. With a 15-minute core-circuit warm-up, complete the 4 exercises as 4 reps and 4 sets with 3 minutes rest between sets. You should be able to do no more than 5 reps and should never go to complete failure.

Lock-Off Capacity. For complex movements, you need to be able to have strong lock-off and stabilizer muscles. Lock-off is primarily in the arms, and stabilizers are primarily in the shoulders, core, and hips. The most effective way to train your lock-off strength is by doing lock-offs, which are a text-book isometric contraction. In a workout, hold the desired position for 12 seconds. Rest for 1 minute between sets and do 6 sets. You want to start sharking 6 seconds into the movement. Rest for 5 minutes at the end of the sixth set. For the second circuit, only do 8 seconds per side. Rest for 1 minute between sets and do 6 sets. You want to start shaking within 4 seconds. Rest for 5 minutes at the end of the sixth set. For the third circuit, only do 4 seconds per side holding a weight if necessary to elicit shaking within four seconds. Rest 1 minute between sets and do 6 sets. You should start shaking immediately.

Besides training the core, stabilizer muscles are trained in the same way as agonist muscles. With a 15-minute core-circuit warm-up, complete the 4 exercises as 4 reps and 4 sets with 3 minutes rest between sets. You should be able to do no more than 5 reps and should never go to complete failure. The various stabilizer exercises are complex, and in my opinion, the book Gimme Kraft best outlines the various exercises specific to climbing and their progression from beginner to expert.

Muscular Endurance. Muscular endurance is the time-component of a climber's power. It is their capacity to sustain sub-maximal effort, their aerobic capacity, and their ability to resist forearm pump. Three workouts train muscular endurance. ARC Training, aerobic threshold training, and anaerobic threshold training. Aerobic and anaerobic threshold training decreases the lactate production rate, while ARC training increases the lactate removal rate. These two lines compete, and as soon as LPR exceeds LRR, pump happens. The higher the LRR rate is, and the higher the thresholds are, the harder and longer a climber can go before feeling pumped.

- ARC Training: ARC training increases the capillary density in forearms and thus the lactate removal rate. To ARC train, start with three circuits of 10 minutes on followed by 10 minutes of rest three times a week. Increase this to 15 minutes the following week, then 20 minutes the third week. From week 4, begin to add weights at 2-4kg per week. The climbing should be easy, and the main focus is having the forearms right at the point of being pumped (where LRR = LPR).
- Aerobic Capacity Training: The aerobic threshold is about when nose breathing becomes laboured and you transition to mouth breathing. At this point, your body transitions from producing ATP via the citric acid cycle metabolic pathway, which doesn't really produce lactate, to the anaerobic metabolic pathway, which does. The higher the aerobic threshold is, the harder you can go before your body begins to drain of glucose and produce lactate. To increase the aerobic threshold, simply do a high volume of zone 1 training. This would look like hiking or jogging. Consult TFNA for an appropriate progression.
- Anaerobic Threshold Training: High intensity interval training. That's all it is. It's important to begin this late in a training program, as it must be done on top of a strong aerobic base to elicit a positive training effect.

Skill. Rock climbing is a skill-based activity, primarily. If you're a highly skilled rock climber, and relatively fit, you can probably still climb at a high level. The opposite is not true; you probably can't send 5.12 slab without good technique. To excel at rock climbing, you have to develop climbing skills.

Generally, beginner climbers will benefit more from skill training, while advanced climbers will benefit more from strength training. But each climber will need to find a balance between the two that suits her or his particular goals, and existing skillset. For example, the same climber might need to train more strength in order to climb overhanging 5.12 jugs, and more skill to climb slabby 5.12 friction. So there's no one answer here for how you should go about training for your goals.

But there is one strategy, which, if applied to your goals, will likely yield the best results. That strategy is to get intentional about how you train. Assess your goals, assess your weaknesses, and try to figure out what's holding you back. You might want to ask your climbing partners to watch you climb, and offer their input. Maybe you lack dynamic technique. Maybe you lack finger strength. Maybe your core is weak. Maybe your

footwork is poor. Find a route in the gym that gives you trouble, and then watch a more skilled climber climb it. What do they do that you don't? Are they better at breathing? Do they balance better? Do they simply do a pullup on holds you can barely hold onto?
The real key here is not to conflate skill and strength training. Both are important, and not to be ignored. But rather than trying to force both types of training into a single workout, I'd recommend doing what all other athletes do, and isolate physical training and technique training, so as to give individual, focused attention to each. By doing this, you'll not only be better able to monitor, and measure your progress, you'll also make progress more quickly.
So, going forward with your climbing goals, try to get more intentional. Step one: figure out the weaknesses that are standing between you and your goals. Step two: determine to what degree those weaknesses are strength or skill related. Step three: come up with a training regimen that directly reflects your particular needs.
Once you've gotten to step three, you'll need detailed information about how to train for strength and skill.

Mobility. Three components: flexibility, ropework, and strength-to-weight. A solid flexibility plan will both allow you to reach the unreachable, while preventing injuries that may restrict you. There's several ways too stretch, and this webpage summarises it well: https://people.bath.ac.uk/masrjb/Stretch/stretching_4.html. For everything else, the longer you climb and the heavier you weigh, the higher the chance of burning out becomes. Have transitions dialled, gear placement dialled, the lightest rack possible, and the suitable clothing and food to keep you warm. Becoming as mobile as possible is critical to efficient climbing.

Confidence. Confidence is key. Try to make yourself as prepared and mentally ready for the climb as possible. It's a big topic that i'm not the best at going in-depth at. Generally, the more confident you are, the better you will do at everything. A lack of confidence will make you commit less, avoid funky climbing positions, slow-down, and second-guess everything. Confidence is key.