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Training for Sport Climbing
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1. Introduction

Training hurts. Training can be boring. Training will not make you cooler, more popular or more attractive (actually, it might do that one if you're a fatty). Despite all this, some of us love it. Perhaps it's for nothing more than the pain itself, for that feeling of hammering yourself until you collapse in a heap on the mat. Even more than that, training ultimately helps you to achieve your goals in climbing and succeed on routes that only a few years earlier seemed impossibly out of reach.

I started writing this document whilst on a trip in 2012, but never got around to finishing it. Finally I've pulled my finger out and tidied it up to be presentable to the world. The goal is simply to pass on some of the stuff I've learnt from climbers, coaches and books. It's not an academic paper so some of it is my opinion, not necessarily hard 'fact'. No doubt my views on some of the approaches to periodisation, the importance of the different energy systems and the exercises themselves will change over time. I accept no responsibility for ruining your climbing, though if it helps you crush I'm happy to accept all the credit. Payment in 8a.nu points or flapjack please.

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1.1. Where to Train

For most climbers the majority of training is best done on the climbing wall rather than using 'directed exercises' such as fingerboarding or campusing. Even better is to train outdoors on rock allowing you to hone technique, get the 'feel' of the rock and feel at one with the world. Strength and aerobic capacity are particularly well suited to being worked on outdoors, through bouldering and laps on sustained endurance routes respectively.

Sometimes it isn't possible or practical to train outside or at the wall and you'll need to train at home. In general training with limited facilities is rather more awkward for energy systems than for strength work, and this approach is likely to compromise your gains somewhat. However it is possible, especially if you have a high boredom threshold or a badass home setup. In each section I've given some examples on how to train using different apparatus, and some guidance on which exercises I think work particularly well when done in a non-climbing manner.

In any case, it is essential to ensure variety in your training. Different venues, different sections of wall, different exercises, different structures, even different training methodologies. Variety really is the spice of training life, and each training season should plan to include aspects different from the previous one.

1.2. Individuality

What works for someone else won't necessarily work for you. That said, there are certain things that most people respond well to. The key is to bear in mind that there will be some experimentation required. Taking aerobic capacity as an example, some may respond better to long periods on the wall at moderate intensities and others to shorter, harder bursts. This isn't necessarily a static thing either – what your body will respond well to evolves as you adapt to different exercises and training regimes.

2. Energy Systems

There are three systems which provide us with energy:
Anaerobic a-lactic- very high rate of energy supply (i.e. allows you do pull hard), lasts only a few seconds
Anaerobic lactic- fairly high rate of energy supply (i.e. allows you to pull pretty hard), produces lactate, the period for which it can be sustained depends upon the rate at which lactate is produced
Aerobic - lower rate of energy supply than the other energy systems (i.e. cannot fuel particularly hard climbing without assistance from the other systems), can be sustained for a long time

In this document, I will break our training down into 4 components relating to these energy systems: aerobic capacity, anaerobic capacity, aerobic power and anaerobic power. (Whilst these are attributes relating to the systems rather than systems themselves, I sometimes refer to them as systems in the rest of this document in the name of simplicity and my general incompetence). In reality, any route will use a combination of all of these energy systems, and the relative importance of each attribute will vary with the length of route, how good the rests are, how intense and long the sections between rests are, where the hard parts are and so on. If you're planning for a particular route you'll need to do some analysis of which of the energy system components are standing between where you are now and basking in the glory, riches and adoring fans that will inevitably come with your success.

2.1. Capacity and Power: An Analogy

In an attempt to explain what these are, let's picture each energy system as a tank. Each of these tanks has an input pipe, helping to fill it up, and an output pipe providing the energy to make you climb. Very roughly, increasing the capacity of the energy system is like expanding the size of the tank and the size of the input pipe. Increasing the power of the energy system is like increasing the size of the output pipe. We need to build a big tank and to be able to keep filling it quickly as we draw from it, but we also need a good output to actually do high levels of work whilst you're climbing. Without the capacity you'll quickly drain your tank, but without the power you won't be able to put out the maximum possible energy and make good use of the capacity you've got. (Of course real life doesn't work quite as simply as this – in reality the tanks are linked together in a number of ways, expanding one aspect will affect the others, and do doubt there are other flaws with the analogy I've not thought of!)

2.2. Aerobic Capacity and Capillarisation

This is your capcity to do work with your aerobic energy system. In a climbing context, increasing your aerobic capacity ('Aero Cap') will increase the level at which you can climb before you start to get pumped, and allow you to both recover quicker at good rests and get more out of marginal rests. Unsurprisingly, Aero Cap is thus hugely important on stamina pitches and when onsighting due to the amount of time spent on the wall and spent shaking out. In general, the more time you spend on your arms on a route, the more this energy system becomes important. For clarity it's worth pointing out that we're talking about energy systems local to the climbing muscles here, not your ability when it comes to running.

Aero Cap is the low intensity, high volume end of training, and covers a spectrum

Above this spectrum the pump reaches a level where it's not manageable – where you can't sustain the pump for more than a couple of minutes– and you're moving into training aerobic power. You're probably familiar with 'capillarising' (often called ARC or SACC) which falls at the bottom of this spectrum – very gentle pump or simply an increase in blood flow with no real pump. Moving up the spectrum to the central region of Aero Cap we're talking capillarising on steroids – you'll be on steeper terrain or smaller holds, with a fairly significant level of pump but one which is always still manageable. In between these two is a region where you're starting to move a lot of blood around your forearms but only have a quite light pump. (N.B. In general it's often easier to get the intensity right on steeper walls, rather than playing around with small holds on more vertical sections of wall.) At the top end of the spectrum you're pushing the boundaries of the pump you can sustain over 10 minutes or more, though you should still be in control most of the way.

Improving this area of your climbing should also translate into being able to recover more effectively between sessions.

2.3. Anaerobic Capacity ('An Cap')

Probably the 'new' training component for many climbers – this is the one you won't find mentioned so much in the usual articles online or in the climbing magazines. Despite this, it's well worth training. Combined with bouldering, fingerboarding or other strength work it can assist in getting good strength gains, but is also useful on longer routes, especially if they feature hard sections between ok rests. In particular, from a route climber's point of view, training this energy system helps you to be strong on a whole 10-15 move sequence on your route, rather than just the individual moves of the sequence. Whether you're powering down on that hard and sustained first section of a route, or exploding on the sting-in-the-tail sequence at the chains, your body is going to be wanting to get as much energy from the anaerobic system as possible.

Anaerobic capacity refers to your capacity to do work with your anaerobic lactic energy system, i.e. you can climb harder for longer on the hard sustained sections of your routes. It should be noted

that increasing your anaerobic capacity thus increases your ability to produce lactate, meaning that it is essential to do sufficient aerobic capacity work whilst working on this energy system (and aerobic power work afterwards), or your body won't be able to cope with this new ability and you'll quickly find yourself very, very pumped. This is a rare example of 'more is not always better' – a high anaerobic capacity with the aerobic components underdeveloped will lead to really bad performance on routes.

2.4. Aerobic Power ('Aero Pow')

The endurance end of what might typically be called 'power endurance' training: the boxed out of your mind, arm shattering, 'I can't make a fist', 'Jesus this hurts' type of pump. Essential on most sport routes near your limit, unless you're particularly keen on 2 bolt affairs or boulder problems off ledges. This is to do with maximising the proportion of your aerobic capacity which you can output during a route, i.e. once we've developed your ability to produce energy with the aerobic system, now we need to ensure we can exploit that to its full extent, for a time period long enough to get us to the chains. Without this…. You'll be a boulderer.

2.5. Anaerobic Power ('An Pow')

The power end of 'power endurance': that instant power fade where suddenly you can't pull any more. Primarily useful on very short, intense routes or long boulder problem traverses, although it's also important if you're into competition bouldering. As above, An Pow is about maximising the percentage of your anaerobic capacity which you can use over the course of a route or sequence.

2.6. Strength

In addition to these energy systems, strength is obviously hugely important, even if you only aspire to climb 50m endurance pitches (a fine aspiration if I may say so). For many climbers – myself included – this is what most of the training time should be spent working on. Clearly though for the strong but unfit it's not quite so key.

3. Planning Your Training: General Principles

The approach to training that I use is structured around being in the best possible form for sport climbing trips, generally around 2-3 weeks in length. This could just as easily be substituted for aiming to peak when your local project is likely to be in condition. The training is broken up into two main phases: 'base' and 'peak'. If you're aiming to peak for a season then things will be a bit different, but you'll still be looking at building a good base and then building up the 'peak' energy systems, but then you'll be trying to maintain a level of form for a prolonged period which will involve spinning a few more plates than might be ideal. [Don't get confused by the terminology I've used here – 'peak' phase is the phase leading up to your trip/goal, i.e. the phase building you up to the peak, not what you do when you're actually peaking.]

Base: During this phase the focus is on strength work and the capacities: An Cap and Aero Cap. Any An Pow or Aero Pow work is for maintenance only. The relative importance placed on strength work, An Cap or Aero Cap will depend upon your relative strengths/weaknesses in these areas and your goals. Any basic conditioning work is done in this phase, and the phase generally involves a quite high volume of work.

Peak: Here the focus shifts towards the powers: An Pow and Aero Pow. Strength work is maintained, and ideally modified to have increased emphasis on explosive power and hard, high quality efforts to ensure recruitment is high. Towards the end of this phase, as the trip/goal approaches, it's worthwhile spending some time combining the energy systems by replicating more closely the structure of your objectives. This will help to prepare you both physically and mentally for the demands of real routes, and remind you about pacing, deciding how long to spend at rests and so forth. In comparison to the base phase the volume of training is lower but the intensity is high, with the emphasis on quality rather than quantity.

3.1. Adaptation Times

These are times to relatively full adaptation of an energy system when working it effectively:
Aerobic Capacity: 8+ weeks
Anaerobic Capacity: 16+ weeks
Aerobic and Anaerobic Power: 6-8 weeks

These adaptation times are crucial to structuring your training: you can work hard on your anaerobic capacity for 4 months or more without wasting your time, but spending that long focusing on aerobic power will be an inefficient use of time and effort that could have been better spent elsewhere.

It should be noted that exactly how long it takes you to adapt each type of training will vary depending upon your strengths, weaknesses and previous training experience – individuality rears its head again, and you'll need to get an idea of how you respond to the various types of training.

3.2. Planning the Phases

A fairly ideal structure for a training cycle would involve a 4 month base phase with a 2 month peak phase, in order to allow for full adaptation of the energy systems. In this scenario you could avoid a particularly strong focus on Aero Cap until the second half of the base phase, since its adaptation time is around half that of An Cap. A rough example:

Weeks 1-8 (Base 1): Prioritise strength and An Cap work, combined with a reasonable level of Aero Cap work. Aero Pow and An Pow are maintained only.

Week 9-16 (Base 2): Strength, An Cap and Aero Cap are all high priority. Again, An Pow and Aero Pow are only maintained.

Weak 17-24 (Peak): Aero Pow and An Pow are now high priority. For most sport climbing Aero Pow is likely to be dominant, especially if onsighting is a chief goal. Those focused on shorter redpointing will include a good volume of An Pow, although be careful to ensure you also work some Aero Pow to avoid lactic overload with your newly raised rate of lactate production!

Some notes, outside of the basic general guidance outlined above:

- For those training/climbing 5 days per week, and capable of tolerating a reasonably high level of training, it should be possible to incorporate 'hard' energy system work (An Cap, An Pow, Aero

Pow) on 3 of those days. More than that is likely to be too much for all but the most highly trained; less than that may be required if you are doing a high volume of aerobic capacity work.

- When focusing on An Cap, 2 sessions per week is enough. More than this will only be possible if you can tolerate a very high training load, and would need a high volume of aerobic capacity training to keep up with your developing ability to produce lactic acid. Those who find themselves with a good anaerobic capacity might wish to only do 1 session of this per week.
- It can be worth keeping An Cap going at 1 session per week until only around 4 weeks before the trip, especially if you're naturally better at endurance than strength or if your goal is a redpoint. Be more careful with this if you're not usually good with Aero Pow or your peak phase is shortened due to lack of time, since the increased production of lactate might exceed your ability to cope with it. For onsighting trips there is less need to carry on working An Cap until so late.
- When focusing on Aero Pow 2 days per week should be sufficient if doing large sessions. Many climbers choose not to maintain the Aero Pow or An Pow for periods in order to allow more time to be spent on strength, Aero Cap and An Cap work. Clearly the less these systems have been maintained the longer the adaptation time will be when your focus switches back to them.
- If you keep a training diary (highly recommended) and want to have your weekends free to climb at will outside then start the diary weeks on a Saturday. Once you've done your weekend's climbing outside you can then assess what you need to do during the week; this is much easier than trying to guess what your plans might be on the coming weekend.

3.3. Tapering

To try to produce a peak for your trip, and make sure that you arrive rested and ready to go but still 'on it like a car bonnet' it's important to get the last week or two of training right. You want to be working at a reduced volume but at the same intensity or even harder e.g. if you normally climb/train 5 days a week doing 3hr sessions then either go day-on-day-off, or do short sessions of only around 1-1.5hr. During this period you should drop all An Cap, Aero Cap and ARC training. All climbing should be hard strength/power work and hard An Pow/Aero Pow work. For an idea of numbers, you should be looking at 1-2 weeks with a volume decreasing to around 50% of your normal training load. It is during this time that you should consider combining the energy systems by creating circuits which more closely replicate the structure of your chosen objectives. These circuits might contain bouldery sections, resistance sections, easier sections and shake outs.

3.4. Combining Multiple Components

When combining multiple training components always start with the most intense and work down to the least intense: bouldering → An Cap/An Pow → Aero Pow → Aero Cap → ARC. This applies equally whether within a single session or planning for consecutive days of training.

Doing anaerobic capacity workouts on the end of strength sessions works well and allows you to train both those components in a single session, though you need to stop the strength work a bit early. It also works as a good top-up if you've been out bouldering during the day and are fresh enough for a bit of evening training.

If doing an anaerobic power workout and wishing to combine it with another component then either do it on the end of a (shortened) bouldering session, or before some aerobic power or aerobic capacity work.

Many climbers, in particular many Europeans it would seem, like to put more basic work later in a session, following the principle that exercises requiring more coordination should be done when fresh, whilst basic exercises such as deadhangs, chin-ups and weigths can added on afterwards. Clearly this can sometimes conflict with the principle of starting with the highest intensity, and there is a balance to be struck. Personally, for example, I would put hard, short deadhangs after hard, short bouldering but before An Cap work if I were combining these into a single session.

Aerobic capacity training and – even more so – ARC can very easily be trained at the end of other sessions, particularly if you are not prioritising Aero Cap at that time.

4. Planning Your Training: 'Other'

4.1. Limited Time

When you don't have enough time for the 'ideal' structure above (and chances are you often won't), you'll have to change things around a bit. Count back from when you want to peak - when your trip is or when your chosen objective is in season – and work out how much time you've got to work with. Having done that, look at your strengths and weaknesses, and how these stack up against what's likely to be required on whatever route(s) you're training for – this should give an idea of where your priorities need to lie. This becomes more important the less time you have.

As an example, let's say you have 13 weeks to turn around from one trip and get ready for the next one: first up, taking a week off after a trip can be a good idea to recover and recharge, though be careful not to launch back into training too hard straight after the layoff – you'll be quite susceptible to injury at this point. That leaves 12 weeks to train with, though don't forget that the last 1-2 weeks of that are going to be tapering. In this scenario you've got two main options: either a 6 week base phase followed by a 6 week peak phase, or 3 phases of 4 weeks. If you choose the second option, you could start with a 4 week base phase, have a 4 week peak phase at the end, and use the middle phase as a transition period where your focus will be somewhere between the two. I've had good results with this kind of approach, especially if this kind of training is new to you as your body will easily be shocked into adapting!

4.2. Rough Example Plan

For a climber who generally has a pretty good endurance and a weakness in strength, training/climbing 5 days per week and working up to a sport climbing trip which will involve both onsighting and redpointing:

Base:

4 x strength, including 2 x An Cap. This may be bouldering, fingerboard, campusing etc.
0.5 x Aero Pow/An Pow i.e. half a session of maintaining some power endurance, the rest of the session spent working on Aero Cap
Aero Cap and ARC on the end of some other sessions

Peak 1 (~ 4 weeks):

3 x strength, including 1 x An Cap
1.5 x Aero Pow
0.5 x An Pow
Some Aero Cap and ARC on the end of sessions but a quite low volume
(You may prefer to drop the one An Cap workout scheduled for the end of one of the strength sessions, replace it with some An Pow work and then have 2 full sessions to focus on Aero Pow)

Peak 2 (~4 weeks):

3 x strength, plenty of explosive bouldering or campusing
2 x Aero Pow
1 x An Pow
Aero Cap dropped or done very little, ARC only done a little as a warm down

Then time to taper and crush!

5. Energy System Components – How to train them

Hopefully you now know a bit more about *what* training you want to do, but *how* is it best to train each of these energy systems? In the following sections I will set out number of example exercises for each system, together with some principles about how best to increase the intensity of the exercises. There are **loads** more good exercises out there for these workouts. Ask around, get ideas and experiment!

5.1. Aerobic Capacity and Capillarisation

In the following exercises you should not reach terminal pump, i.e. you should not fail. If the exercises become too easy then increase the intensity of the climbing used or increase the volume. Different people will respond better to different exercises .

Continuous climbing at constant intensity is ideally done on routes but is also possible by traversing or using a bouldering wall. Stay on the wall on the wall for somewhere in the range of 20-40 minutes, although 10 minutes of this at the end of a session can serve as a good warm down (particularly after a session where you've been getting pumped a lot as it helps to flush everything out). Particularly well suited to the easier end of the Aero Cap spectrum (ARC).

General Climbing: x-on, x-off

For aerobic capacity many find it best to break the work down into shorter chunks, especially if operating towards the top end of your aerobic capacity. Typically this may follow a structure such as 10 minutes on 10 minutes off. With fast changeovers this can be done effectively on routes, and a couple of extra minutes on the rest period is not a big deal if the work time is greater than or equal to 10 minutes. Be sure to prepare some food, drink and appropriate clothing at the foot of your chosen section of wall before starting in order to minimise excess rest periods. For those who feel they respond best to a longer period of work, the 'off' periods can be replaced by low instensity work (ARC). This allows you to use blocks of work at a higher intensity of Aero Cap whilst still having a continuous 30-40 minutes of climbing. If doing the 10-on-10-off structure, repeating this 4 times will create a good workout, and you should feel pretty (surprisingly) tired afterwards. (When tagging Aero Cap onto the end of other sessions it's generally tricky to do a full 40 minutes worth of hard Aero Cap – you may well wish to reduce volume or intensity.)

Speed Top Roping

This exercise should generally be performed with a 10 minutes on, 10-off structure so it works well to do with someone who is also keen for this workout. The first route of the set involves leading an easy line (perhaps almost two number grades below your onsight limit on the French grade system), then for the remainder of the work time you should top rope the same line as quickly as possible. Lower off as quickly as possible between laps. Whilst climbing do not shake-out or chalk up, and focus on climbing as fast as possible using copious momentum, really racing up as quick as possible. This workout should not be used too regularly since it involves a very different style of climbing to that which is generally most efficient outdoors, although it is a good way to mix it up if you are prone to climbing too slowly and statically. If you're not panting away and pushing pretty hard at the end of a 10 minute block then make it harder. Routes with large moves on large holds are particularly suitable for this exercises since climbing fast on more technical routes is often too tricky.

Route 4x4s

Lead a route. Lower off. Lead it again three more times. Easy! Now belay your mate whilst they do the same and then do 3 more sets, ideally not all using the same route. Don't bother untying between reps, just get your belayer to pull the rope through from the climber's end (a fairly short rope will make this faster). Simply raise or lower the difficulty of the route to adjust where you are on the spectrum of Aero Cap pump.

Foot-on-Campusing

Bring your finest mixtape, this one is the daddy of boredom threshold training! You'll need a campus board with footrungs behind it. Up and down, down and up, round and round…. It's just like climbing for a set amount of time, but much more monotonous. Most will need a set of rungs which are jugs, and will need to shake an arm basically every move. If you're finding it too easy then try to transition to smaller rungs – try 1 minute on the smaller rungs then 1 minute on the jugs and see if you can do 10 minutes worth, then gradually reduce the time spent on the jugs. You'll likely find that on jugs you can do 1-2-3-4-5-5-4-3-2-1 or similar, whereas on smaller rungs you may have to start out just using the rungs at the most comfortable height (so for me I might just go 3-4-4-3-3-4-4-3-3 etc quickly shaking out every move). I've found this a very effective exercise.

5.2. Anaerobic Capacity

This is a workout in which you're aiming to get hideously powered out, rather than pumped. The standard exercise is long boulders with limited rest: approx. 12-15 moves (30-50s climb time) with a rest time of 2-4 times the climb time. Note that this range is for choosing a rest time – once you've chosen, it stays fixed for that set of repetitions (unless it must be varied due to discovering that the difficulty is unexpectedly high or low). Using a longer rest allows for the use of harder circuits, and by adjusting the lengths of the work and rest periods you can tailor the focus of the workout – a 12 move circuit with rests of 4 times the climb time will give more cross over to strength work, whilst a 15 move circuit with rest times of 2 times the climb time will give more cross over towards An Pow and Aero Pow.

This workout can be done as one block of 8-10 reps, or split into sets of 3-5 reps if you want more volume or to use a harder circuit, e.g. 3 sets of 4 reps with 10-20min rests between sets. Aim to have an intensity and rest time which leads to failure on around 25% of the reps preformed. (Note, after rests of 10 min or more it can be useful to do a couple of moves or pullups on a fingerboard to get rewarmed up a little.)

An Cap can also be trained very effectively on a campus board, laddering up and down to create a circuit; due to the faster movements than on a climbing wall this will involve more like 15-20 moves. Training it on a fingerboard is likely to be less effective but it can be done: your 'circuit' is now 4 hangs of 7 seconds with 3 second rests between hangs.

This energy system responds best to increasing the difficulty or length of the circuit (still roughly within the given boundaries) in order to increase intensity between sessions rather than reducing the rest times used. This is where performing these exercises on a campus board really comes into its own, since it's very easy to steadily increase either the number of moves or the difficulty (simply make 1 movement harder every session or move to smaller rungs).

5.3. Aerobic Power

These workouts are about building up an arm shattering level of pump. Crank up the motivational music, don your amour, and prepare to go into battle... In all of these exercises you should try to ensure that the climbing is sustained and homogenous rather than cruxy to ensure that you don't fail prematurely. If you fall because of a technical error then pull back on immediately and complete the exercise.

This energy system is supposed to respond best to reducing the rest times. It can be good have some exercises kept the same though a whole peak phase, so you can steadily reduce the rests – e.g. foot on campusing on a set circuit or with a set 'work time'. When using climbing to train Aero Pow – e.g. circuits – don't get too hung up on altering the rest times so methodically, as it's important to vary the circuits more regularly to introduce new stimulus.

When training this energy system you should be using short rests. Some literature says rest time less than or equal to climb time, in practice I use this on directed exercises like foot on campusing but often use longer rests on actual circuits in order to allow the use of harder sequences.

Circuits
These should generally be around 30 moves and should not include any shake outs, if they end up using a good hold where you could rest then just force yourself not to stop. (In general it's not worth exceeding 30 move circuits, since you rarely encounter sequences longer than this with no rest outdoors. The exception to this is if you are training for a specific route which with a sustained section which is particularly long or slow to climb.) If you want to force yourself to slow down to a more realistic speed for outdoor climbing then try throwing in some pretend clipping positions. Rest times will depend upon the difficulty of the circuit used. As a rough guide aim for rest times between 1-2 times the climbing time.

The volume of these sessions can vary considerably, depending on how hard a session you want and how much training you can take. The 'traditional' 8 reps of a circuit, failing on rep 7 or 8, can give an intense work out in a fairly short space of time. Alternatively, breaking it up into, say 6 sets of 4 reps with 10-20min rests between sets, will give a beastly high volume session.

On-the-minute
Climb a boulder problem (6-8 moves works well in general) starting on each minute. This will usually correspond to around 20 seconds climbing and 40 seconds rest. Try 8 reps per set, the number of sets depending on the volume you want from the session and the intensity of the problem used.

4x4s
Here we refer to boulder problems (unlike for Aero Cap where we were talking about a 4x4 structure on routes). Climb 4 boulder problems in a row with no rest, then take a short rest, do 4 repetitions of this. Rests should be as for circuits – short, probably in the 1-3minute range. This can also be done with more reps (e.g. 4 boulders done 8 times) or can be done as multiple blocks of 4x4 to create a high volume session.

Foot-on campusing
The end-of-the-movie final battle against the evil forces of pump. Prepare to try HARD. Most walls will have some sort of foot-on rungs available. There are many variations of this simple but effective exercise, and its brilliance lies in the simplicity of the movements and their homogenous difficulty – a perfect exercise for really hammering your forearms as there are no cruxes and little chance of a foot pop, so when you fail it should be because your muscles really can't take any more.
Timing: when done at speed without any movement of the feet you'll need to do a lot of moves to build up much time on the board – it's not hard to do a move per second on this exercise. Alternatively, patterns of moves involving moving the feet between different rungs can be used to slow the movements down, as can counting in your head between moves or using a metronome or interval timer. Try picking a sequence which takes around 1 minute to complete, start with a rest time of 1-2 times the work time (depending on how hard you're finding the circuit) and each session aim to reduce it slightly. A block of 8 reps of this exercise can be a perfect way to finish yourself off after doing some other Aero Pow work, the plan being to have a rest time that means you fail on the last couple of reps.

5.4. Anaerobic Power

Boulders with Short Rests

This is a great way to train this, for example 4 reps of 5-7 moves, with a rest time less than or equal to climb time (i.e. very short rests). Then take 10 minutes off before the next set, and do 4 sets. If only training this in a session you'll want to do more, but 4 sets will allow it to effectively be trained after a short bouldering session or before some Aero Pow work. You're aiming to be working at max intensity and getting totally powered out rather than pumped. As with Aero Pow, reduce the rest between reps in order to increase the intensity until you can do the 4 boulders with no rests.

Circuits

One nice alternative method is to set a **broken circuit** of ~25 moves and break it into 3 or 4 sections to act as the boulders in the exercises described above, your end goal then being to redpoint the circuit fully. You can also simply try to **redpoint a circuit** at your limit in the 20-30 move range, in this case try to ensure that the circuit is sustained rather than cruxy. If you fall, pull back on and try to complete the circuit. Gradually add moves to the circuit or increase the difficulty of the moves in order to make the exercises harder.

6. Comparison with Other Terminology

Some people prefer to break their training up in a different way, with a common breakdown being into the following components: short boulder, long boulder, short resistance, long resistance, continuity. The table below gives an idea of how these would equate to the system used here.

Short boulder	Strength
Long boulder	Strength, anaerobic capacity, anaerobic power
Short resistance	
Long resistance	Aerobic power
Continuity	Aerobic capacity

7. Quick Reference (see text for details)

	Work Period	**Rest Period**	**Notes**
Aerobic capacity	10+ min	n/a	Sustained light pump
Anaerobic capacity	12-15 moves (30-40s)	Long (2-4 x work period)	8-12 reps, can be broken into sets of 3-5 reps with ~10min between sets. Powered out feeling.
Aerobic power	~30 moves (45 – 120s)	Short (approx. equal to work period)	One block of ~8 reps or multiple blocks of ~4 reps for a high volume session. Pumped out of your mind.
Anaerobic power	5-7 moves	Very short (less than or equal to work period)	4 reps per set, 10 min rests between sets. Powered out feeling.