

Training Manual for Competition Climbers

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1 Introduction to Training for Competitions

Welcome to **A Training Manual for Competition Climbers**. This manual was designed to help competitors learn how to get ready for competitions. It was written based on past climbing and coaching experiences of the authors, articles about training for climbing, as well as input from the scientific community that is researching how to train specifically for climbing.

There are 11 chapters in this manual:

1. **Introduction to Training for Competitions** - This chapter explains what the manual contains and who it is designed for.
2. **Getting Started** - This chapter will focus on making goals and understanding what is needed in order to achieve those goals.
3. **Strength Training** - This chapter will introduce different training techniques that can be used to improve the strength of a climber.
4. **Power Endurance Training** - This chapter will introduce different training techniques that can be used to improve the power endurance of a climber.
5. **Endurance Training** - This chapter will introduce different training techniques that can be used to improve the endurance of a climber.
6. **Technique Training** - This chapter will introduce different training techniques that can be used to improve the technical ability of a climber.
7. **Resting** - This chapter will introduce different training techniques that can be used to improve the resting skills/ability of a climber.
8. **Competition Preparation** - This chapter will introduce different techniques that can be used to help a climber prepare for a competition.
9. **Cross Training and Other Issues** - This chapter will touch upon issues such as cross training, nutrition, and other lifestyle choices that can affect your performance in a competition.
10. **Summary** - This chapter provides a summary of the ideas presented in this document.
11. **References** - This chapter contains references that can be used to enhance what has been presented in this manual. There are references to articles on the Internet, books, and people who have contributed to this manual.

This manual is not intended as a bible for training, merely as a guideline to help climbers that are bored of their regular training routine. Climbers should feel free, and are encouraged to experiment with different variations on the drills to see what works best for them. As you read it you will find links and references to other documentation that may go into much more detail about specific drills and reasons for doing them. Please go to the links and read them thoroughly.

1.1 Disclaimer

I (Michael Doyle) am not a certified personal trainer nor have I taken any formal training on physiology or kinesiology. However, I do have over six years experience coaching climbers and have learned a great deal over that time. If you disagree with some of the drills presented here, or if a drill causes you discomfort, stop. Getting injured is always a bad thing. As always feel free to email me with any questions or comments.

2 Getting Started

One of the most important things about training is to define what your goals are. This manual was written with competing in mind but can be adapted to suit your own training needs. Once a goal is established it is easier to build a training program as well as to stay motivated.

There are several factors that must go into preparing a training program with a goal in mind:

- Length of time until competition - How much time do you have to train?
- Analyzing your own weaknesses and strengths - What should you focus on?
- Determining what facilities are available for training - Make the most of what you have.
- Training Partners - Make sure they will not lower your motivation.

This is in no way a complete list but highlights some of the key areas that climbers tend to use as excuses when training.

2.1 Time

The amount of time you have to prepare for a competition is one of the largest factors that will affect your training schedule. If you have two weeks to train, well, there isn't a lot a good training schedule will give you. If you have a year until a big competition then there is a lot of flexibility in the training that you can do. This manual will introduce theories and concepts that can be adapted to different time frames.

The biggest thing to remember when creating a schedule is that you want to be comfortable doing competition style routes by the time the competition rolls around. A typical competition route starts out easier and progressively gets harder. This means that you must be able to climb very difficult moves after doing numerous slightly easier moves. In order to do this you must be strong, fit, and willing to fight for each and every move. The following chapters will highlight the different types of training but it comes down to you to decide when to train the specific areas of climbing.

A general approach is to start with a period of time training power, then moving to redpointing longer routes and then running laps on routes or doing very long routes. As you cycle through the various training stages it is important to understand the differences in how your muscles are used on long routes and on boulder problems, and how to maximize the gains in both types. See the summary chapter for a sample training cycle.

Something to think about; if you only train power then you will get pumped 20 moves into a difficult route, if you only train endurance then you won't be pumped but you may be unable to pull a hard move, and if you only train power endurance then you won't get

much stronger or much more endurance. You will plateau much quicker.

Generally climbing four days a week during training season is not too much. Bouldering four days a week or training endurance four days a week will be too much. If you are in the strength building part of your schedule then try and do strength three days a week and bouldering once. As you move to your power endurance cycle try to increase the number of bouldering days and decrease the number of strength days. Then increase the number of redpointing days (routes) and decrease the number of strength and boulder days. When moving to the endurance part of your workout start by bouldering one day, redpointing two days, and doing endurance one day. Eventually you could go to endurance three days and bouldering one. In the summary chapter there is an outline of different workouts that will use the drills presented in this manual to be used during each cycle of training. Feel free to adapt and experiment with these workouts and see what works for you.

2.2 Strengths and Weaknesses

Every climber has both strengths and weaknesses. The better the climber the more specific the weaknesses and the more diverse the strengths. When trying to setup a training program it is important to know your own strengths and weaknesses and how to use them. If you are a powerful climber then you may not need to train strength as much as endurance, if you have a really good base for endurance then you must focus more time on strength.

One way to determine your strengths and weaknesses is to try and remember why you have fallen in the last couple of competitions. Were you too pumped? Was the move too hard? Did you make a mistake in the sequence? The answers to these questions may help you, and yes reading routes is as important as physical strength and fitness.

While it is important to try and improve your weaknesses it is just as important to know how to manipulate your strengths in a competition. If you know you are more powerful, but do not have much endurance even on large holds, then you will want to move quickly through the bottom of a route to get to the hard moves as quick as possible. If you are more of an endurance climber then you may want to climb slower to minimize the chance of making a mistake and trying to relax as much as possible so when you do start to hit the harder moves you are flowing on the route.

2.3 Make the most of what you have

It is not necessary to have the largest climbing gym, or the best coaches, or the most variety in routes in order to train well and become a very good climber. As long as you know what you are trying to train then you should be able to modify your local facilities to be able to train what you need. Granted it is easier to stay motivated when you have the large variety in routes, and when a coach is coming up with your training program but you can train almost anywhere. In order to train endurance you can run laps on short boulder problems. To train power you can set the shorter harder problems that force you to be

powerful.

2.4 Choose Your Training Partners

A large part of climbing and the competition scene is the relationships developed between climbers. A day of climbing can be great or horrible depending on who you choose to climb with. The same thing applies to training. If you are always climbing with someone who is lazy and won't push themselves, then chances are you won't push yourself as hard as you should, and your climbing will suffer.

Try and climb with people who have the same goals you do. This does not mean having to do the same routes or the exact same routine but it does help to have someone who is pushing themselves and willing to climb the extra route, and give the extra belay. Also if you enjoy the training part of climbing then you will train more and train harder.

3 Strength and Power Training

Strength and power are two different abilities that muscles may have. Many people confuse the two terms but for the sake of this manual we will use the following definitions to distinguish between the two.

1. **Strength** - The ability for the muscle to stay contracted under a maximum load.
2. **Power** - The ability to generate the contraction of strength.

Strength is static and power is dynamic.

There are many different types of strength involved in climbing:

- **Hand Strength** - Strength required to hold on.
- **Arm/Back Strength** - Strength required to bend your arms.
- **Core Body Strength** - Strength required to keep your feet and hips in place.
- **Power** - Ability to move quickly in control.
- **Opposing Muscle Strength** - Non-climbing muscles that you must strengthen in order to keep joints and muscles balanced.

The strengths can be trained using isolation movements, focusing on a specific set of muscles, while power is best trained using compound movements, possibly numerous muscle groups with movements involving more than one joint. The drills and exercises described below highlight the difference between power and strength training. The drills for strength involve less overall movement while the power drills try to focus on timing and learning to use the different muscles together. These drills are not laid out in a specific workout rather it is up to the climber to determine which drills they wish to do and to structure a workout accordingly. If you need help structuring a workout contact one of the national team coaches.

Wolfgang Gullich said "strength only supplements technique", Ben Moon said "Technique is no substitute for power", but remember power is nothing without control. No matter how strong you become always try to apply your strength to climbing and vary your movements as much as possible.

3.1 Hand Strength

Hand strength is the ability to clamp down on holds. It can be defined as contact strength (slopers), crimp strength, pocket strength, or pinch strength. Each type of grip requires different recruitment of the muscles in your forearms, and this requires practice. Holding a sloper requires a different amount of contraction than holding a pocket. Training on just slopers will improve your contract strength but may not help you on a steep wall with small crimpers. The trick is to train on many different hold types and to understand what your limits are. You don't want to climb slopers all evening and then try and crimp near the end. Injuries occur most often when you are tired and you try to push yourself on

small holds.

You will probably want to start a general training session (after warming up) by climbing less steep, crimpier routes then moving towards larger holds (slopers and incut, open handed holds).

If you are a very strong crimper but cannot hold slopers then you may want to focus on just slopers for a period of time, thus sacrificing some of your crimp strength to become a better all around climber. The same applies for the other type of grips as well.

Check out <http://www.8a.nu/eng/articles/fingerposition.shtml> where there is a very good article called **Gripping Positions** for information on different grips and the related strengths.

In addition to just climbing on different hold types there are also lots of drills that you can do to improve your hand strength:

- **Weighted hangs**

Weighted hangs is an incredibly effective drill for increasing hand strength, when done correctly. If done incorrectly you can easily harm yourself so it is best to start out slow and progress as you feel comfortable. In order to do weighted hangs you will need various different grip types and some way of adding weight to your body (attaching a diving belt, weight vests, backpack of rocks...). Start with little or no weight and try and dead hang some of the different grips, you can switch between one or two handed dead hangs if you want more difficulty. Determine which grips are your weakest and which are your strongest. You should be able to hang from the grips for at least 10 seconds before adding any weight. On the grips that you can hold for more than 10 seconds you can start to add weight, increasing the amount until you can only dead hang the holds for 8-12 seconds.

Select three different grip types and do three sets of 8-12 second hangs on each grip type. Rest one minute between sets and three to five minutes between grips. You can do other exercises between the sets to decrease the amount of time required to complete the drills (perhaps some core strength drills).

- **Hit Strips**

Hit strips are a drill designed by Eric Horst and described in his book "How to climb 5.12". They are distributed by Nicros and offer a great hand strength workout.

- **System Board**

A system board is a "woody" covered with different grips strategically placed at varying angles and difficulty. The nice thing about a system board is that you move your feet as you adjust your hand grips so you are actually climbing and practicing climbing movements. To train hand strength focus more on smaller holds than big moves and moving slowly between the holds.

3.2 Arm and Back Strength

Here arm and back strength refers to the muscle strength required to bend your arms, lock off, and move your upper body while climbing. Some of the common names of the muscles required for this are biceps, triceps, lats, and pectorals (pec minor and pec major).

Arm and Back Strength Drills:

- **Frenchies**

Frenchies is a standard drill for building the strength required to lock off in different positions. Start with a chinup and hold yourself in a fully locked off position for seven seconds, lower down. Do a chinup and lower yourself until the bend in your arms forms a 90 degree angle, hold for seven seconds, lower down. Do a chinup and lower yourself until the bend in your arms forms a 130 degree angle, hold for seven seconds, lower down. One rep is finished when you have held all three lock off positions and lowered down. For this workout try to do three sets of 5-8 reps with a one minute rest in between sets. If you can complete three sets of 8 reps then add a little weight. If you cannot complete three sets of 8 reps then add a chair or footholds to take some of your weight.

- **Typewriters**

For typewriters you need two grips of equal size placed between 1.5 and 2 times shoulder distance apart. The greater the distance, the greater the difficulty of the drill. Grab the two holds and hold yourself on one hand at a full lock off for three seconds, using the opposite hand to take as much weight as possible. Slowly shift your weight from one hand to the other and hold yourself at a full lock off for three seconds. One rep is completed when you have held yourself at full lock off on both hands. Remember to try and keep your chin above your hands when moving back and forth between the two grips. To increase the difficulty you can increase the distance between holds or add weight. To decrease the difficulty you can decrease the distance between holds or add a chair/footholds to stand on.

- **Power Ladders**

Power ladders are a great drill for combining hand strength training with arm and back strength training. This drill is best done on different walls of varying angles. Create a ladder of similar holds spaced 2-3 feet apart in vertical distance. These holds should be placed for left and right hands and shoulder distance apart horizontally. Do this for three or four different ladders using different hold types for each ladders. The ladders should be between 4-10 moves in length. To do this drill you start with one hand on and place you opposite foot on a hold that will allow you to reach the next hold. Lock off the first hold, hold it for 5-8 seconds and then grab the next hold. Bring your opposite foot up and lock off, hold for 5-8 seconds and repeat until you are at the top. If you have not done 8-12 moves then downclimb in a similar fashion until you have reached 8-12 moves.

For example I start with my left hand on a pinch and my right foot on a foothold down and right. I lock off my left arm and reach up with my right hand. Once my left arm

has been locked off for 5-8 seconds I grab the next pinch with my right hand and place my left foot on. My right foot comes off and I lock off my right arm. Once my right arm has been locked off for 5-8 seconds I grab the next pinch with my left hand and continue.

Do this drill three times for each power ladder with a one minute rest in between attempts. Take 2-3 minutes before switching to the next power ladder.

When doing this drill concentrate on pulling hard with you opposite foot and learning how to maximize the weight that your legs can take. The more weight on your legs the less weight on your arms.

- **Lock off Boulder Problems**

This drill is similar to power ladders but offers a variety of moves. To do this drill either make or find some boulder problems 6-10 moves in length. For each move you lock off the hold with one arm for 5 seconds and then try and move statically to the next hold. You will have to experiment with different boulder problem to see which ones this works with. Try and find the three most difficult problems that you can do this on. Do each problem three times with a one minute rest in between attempts and a 2-3 minute rest in between problems.

- **Campus**

What would strength training be without a reference to campus. This section will talk about campus for strength but you can also campus for power (see section below).

When campus for strength try to keep your movements slow and as large as possible. Try not to match hands but concentrate more on using your lower arm to help move to a lock off with your upper arm. Hold the lock offs and move slowly to the next hold. It is always a good idea to down campus slowly.

Campus should not be attempted if you cannot hold a lock off. If you are dead-pointing out of control for holds then you run the risk of shock loading your elbows or wrists and injuring yourself. Smaller and different hold types can be used to make campus more difficult.

- **Offset Pullups**

Offset pullups allow you to isolate one arm more than the other. Start with one hand on a hold and have the other hand holding something below and shoulder distance apart from the first hold. You can use a knotted rope, a piece of webbing, or another hold for the lower hand. When you do the pullup lock off the upper hand and use the lower one to help hold yourself there for 3-5 seconds. Do this in 3 sets of 8-12 for each arm. Concentrate on holding the lock off and isolating the upper arm as much as possible.

3.3 Core Body Strength

Core body strength is the ability to use muscles other than your arms to hold you in different positions. Some of the core muscles that are used for climbing are upper and lower abdominals, lower back, hamstrings, and calfs. Generally think of the core muscles as the ones that allow you to keep you feet on a roof, or to pull yourself onto a rock on without bending your arms. Body tension or the lack thereof is a result of core body strength and knowing how to use it.

Core Body Strength Drills:

- **Leg Lifts**

Dead hang from good holds and lift your legs straight in front of you, bending at the waist. Lift your legs until your body forms a 90 degree bend and lower slowly. Try not to swing or kick your legs up. If you cannot stabilize yourself have a partner stop your swinging. If you cannot do a leg lift with your legs straight then bend your legs at the knees to 90 degrees. Keep your knees bent at 90 degrees for the whole range of motion both up and down. Do this until failure or repeat as many times as possible in one minute (if you cannot do this for a minute straight). Complete three sets with a one minute rest between sets.

A good climbing variation on this is to find a roof and grab a large hold with both hands. Lift your feet off the ground and lift one foot at a time and place it on a foothold. To make this harder put the feet farther away and practice accuracy with your feet. Modify the holds from underclings, sidepulls, and straight downpulling so simulate different climbing movements. The key is to place your feet directly onto a hold, tighten up (let your feet take some weight) and then release.

- **Banana Boats**

Lie on your back and extend your arms straight above your head. Straighten your legs and then bend at the waist about 20 degrees (form a banana). Slowly rock back and forth keeping your lower back on the ground and pointing with your toes and fingers. Try to move slowly and don't let your head or feet touch the ground. Do this until failure or repeat as much as possible for one minute. Try to do this in sets of three with a one minute rest in between.

- **Swimming**

Lie on your stomach and extend your arms straight in front of you. Move your arms and legs up and down in a small range of motion trying to keep your quads off the ground. Try to keep your legs straight, but your arms may be slightly bent.

- **Superman**

Start on your hands and knees. Raise opposite arm and leg (left arm, right leg) at the same time to a horizontal position. From there lift the arm and leg in a reverse crunch and lower back to horizontal (one rep). Without letting you hands or feet touch the

ground pull up again and repeat until failure. Do this with the other leg/arm for a minimum of one minute each side. Try to do three sets of this exercise for each side.

3.4 Power

Finally the fun stuff. Dynamic movement is a very important part of climbing. While it is more apparent on boulder problems it is just as useful on routes. Using your momentum from a previous move to do the next allows you to do moves easier, using less energy, so you won't be as tired as you move up a route.

Power is a combination of timing and strength. The timing of when to contract different muscles is something learned through practice and training. Generally as you work a boulder problem you are not getting much stronger but you are getting more powerful, learning how to use the strength at the right time. Strength does not come quickly but gradually over time.

There are some key times when power is very useful:

- **Deadpointing**
Deadpointing is when you move dynamically for a small hold and must be accurate. To complete a deadpoint you must be able to generate the momentum required (power) and be able to slow down your momentum, tighten up, at the last instant in order to grab the hold correctly. This requires both timing and power.
- **Dynos**
Yes there will be competitions out there where you may be required to do small or large dynos. This means generating enough momentum to be able to reach a hold that you can't reach statically. The difference between dynos and deadpoints is that with deadpoints you can usually keep your feet, and one hand on and are going to a small hold.
- **Campus**
Campusing is when all your momentum is being generated by your upper body and is a very useful application of power on some routes. There are instances where it is easier to campus a move than to try and keep your feet on. If the feet are too far away or perhaps too high it may help to have the ability to campus

Power Drills:

- **Deadpoint Drill**
As described earlier deadpointing is when you move dynamically to potentially a very small hold. You must be accurate and be able to tighten up at the right moment to stick the hold. In order to practice this set up different small holds about eight feet off the ground. Place several good holds between four and five feet off the ground, and then place lots of good and bad footholds between two and three feet off the ground.

Now make some moves from the good holds to the bad ones that require you to be dynamic. Start by using good feet until you are comfortable sticking the bad hand holds, then move to progressively worse feet. Switch the type of holds that you are going to, pocket, pincers, edges, slopers etc... to help increase your ability to latch these

holds. You can also increase the distance to these holds and force yourself to blow your feet off in order to reach the holds.

When you are starting do not try to deadpoint to a hold that you must crimp. This can lead to injury very easily and is an advanced skill. Only attempt this from large feet first even then do not try to weight the crimp too much right away.

A good variation on this if you are limited for space is to climb one handed along a wall or just in a fixed area. You will need to generate momentum with one hand and then move it very quickly in order to be able to grab the next hold. Move around between different hold types.

The biggest thing about deadpointing is the timing so as you do these drills concentrate on what feels good and efficient. Some times you will go past the hold, sometimes you won't reach it. Try to determine when you are pushing with your legs, when you are pulling with your arms, and when you start to tighten up in order to grab the holds. Eventually you will not have to concentrate on these factors when you are deadpointing. This is why good climbers make it look easy, timing.

- **Campusng**

Campusng is a very good way to build dynamic ability and timing. Here you will have a different goal than the campusng described when strength training, you should be trying to move dynamically and do bigger moves. It is okay to match hands and throw as far as possible. Modify the holds that you are throwing to, and from. The smaller the holds the harder they are to catch, and the harder they are to generate momentum from.

There are four really good variations on campusng for power:

- **Big Throws** - Start with both hands on the same hold and throw as far as possible to catch a hold, then campus back down to the match and go up with the other hand catch the hold and back down. Do this in sets of three to failure. If you are doing more than 10 reps per set (10 per hand) then you should make the moves bigger, or holds smaller. Do not add weight when campusng.

This drill focuses more on the generation of mementum from the lats and biceps.

- **Go Agains** - Start with both hands matched on a hold. Go up with one hand, catch a hold and then go up with the same hand again. Go as high as possible (you'll have to fall a couple times to figure this out) then come back down one hold at a time. Then go up with the other hand in the same manner.

This drill focuses more on generation of momentum from triceps and lats.

- **Both Hands** - Start with both hands matched on a hold. Go up to a hold about 2-3 feet away with both hands at the same time. Go as high as possible, and come down with both hands at the same time as well, but try to do smaller distances.

A good variation is to go up two feet, down one foot, up two feet... with both hands always.

- **Bouldering** - Try to campus boulder problems that you have already done. This will mean that you have to generate momentum laterally as well as vertically, and have to grab holds from many different angles. You will have to experiment with this one but it can be very effective.
- **Bouldering**
Last but not least is bouldering itself. Bouldering is a very fun and efficient way to gain power. If you want to build hand strength set a problem with small holds, if you want power set a problem with big moves. Varying the style of climbing will allow you to have a fun and motivating workout. Not only that but it is easy to take a problem down and put another one up.

Try to approach a bouldering workout like any other. Have a goal, a set approach and make sure that you regulate the time between attempts and rest times. Do not try a problem a hundred times in 10 minutes. If you are trying a single move then it may make sense to try it three times in one minute separated by a three to five minute rest. You may need to stay warm during this time so try and climb other easier problems if you are getting cold.

3.5 Opposing Muscle Strength

Opposing muscles are the muscles that you do not use while climbing but are used to stabilize joints and move them in the opposite direction. Training your opposing muscles is very important when training strength to prevent injuries and to improve the strength of your climbing muscles. When strengthening your opposing muscles you are stretching the muscle fibers of your climbing muscles and that will allow them to be able to contract more, thus giving them more strength. These muscles can be strengthened at the end of a workout and will not affect your workout.

Some of the opposing muscles and strength training drills are:

- **Back of Your Forearms**
The muscles on the back of your forearm are generally very weak compared to your muscles on the front of your forearms. This can lead to wrist problems because the wrist joint is not stabilized properly.

To strengthen the muscles on the back of your forearm there are several good drills. Reverse wrist curls where you keep your palms facing the floor and curl your hand back towards your elbow. This can be done with or without weight, or by rolling a weight up with a broom handle or something similar.

Pushing and opening your hands in sand. This is great for constant resistance throughout a range of motion. Place a closed hand in a pile of sand and push down and out with your fingers as you open your hand.

Just opening your hand and extending your fingers as far as possible. Try to keep the back of your hand in line with your forearm as you do this. This one is good because it can be done anywhere; at school, in a car, or even at the dinner table.

- **Triceps**
While triceps are used a lot when climbing they are not as utilized as your biceps and this can lead to elbow problems. Triceps are easy to strengthen. Chair dips, pushups,

and tricep presses are all ways of strengthening these muscles. Not only that but stronger triceps will increase the range of motion in your lockoffs.

- **Lower Back**

Look at the core strength section above for some drills to strengthen your lower back.

[\[Core Strength\]](#), page 10

3.6 Strength Training References

Here is a list of references that you can find on the Internet:

Gripping Positions: <http://www.8a.nu/eng/index.shtml>

List of training articles: <http://www.planetfear.com/climbing/training/>

Some good books:

How to climb 5.12, Eric Horst.

Flash Training, Eric Horst.

Performance Rock Climbing, Dale Goddard.

4 Power Endurance

Power endurance can be defined as the ability of your muscles to contract at or near maximum for a greater amount of time. The more power endurance you have the longer you will be able to pull hard moves. Excellent power endurance is the ultimate goal of a difficulty competition climber, the ability to pull hard moves after already pulling numerous hard moves. Unfortunately it is also the hardest thing to train properly. It requires the correct blend between strength/power training and endurance training.

Generally power endurance can be described as climbing for 15-40 moves, or 3-8 minutes on the wall. Power endurance can be closely linked with redpointing routes. Especially indoors routes tend to be more consistent meaning that a 5.12 will have lots of 5.12 moves stacked on top of each other so that provides the perfect opportunity for power endurance training.

There are several keys to training power endurance:

- **Consistent routes** - the routes should be consistent without the opportunity for large rests.
- **Power and Strength** - the routes should have a mix of powerful moves and smaller moves on bad holds.
- **Desire** - power training is mentally hard. You've got to want to get better. Getting tired is not a bad thing.
- **Goal** - getting to the top without falling. It helps when you are trying to redpoint a route to remind yourself of the goal. It can get boring trying the same route over and over, but as a part of a workout it will make you stronger.

4.1 Power Endurance Drills

The following are some drills that you can do on your own or with a partner to increase your power endurance.

- **Bouldering**
Increase the number (volume) of boulder problems that you are attempting in a workout. Decrease the rest time between problems and always start each attempt from the first move (don't work individual moves). This allows you to pull lots of hard moves in a short period of time. Try and do three or four boulder problems in 5 minutes then a short rest 3-5 minutes, and repeat 3-4 times.
- **Linked Boulder Problems**
Linking together two or three boulder problems is a very effective way of extending the number of moves that you are doing. Start with a hard problem that you can barely do, move to one that you can do quite easily but can't stop and rest/recover on, and then move on to a problem that is again quite hard for you. You will have to take this drill into account when you are setting problems or else it will be too hard to link them together. Two things can be accomplished with this drill; one you are climbing lots of hard moves; and two you are climbing routes that you have already done so you should

be determined and will yourself not to fall.

With this drill you can partner up with one or two people and rotate through. Attempt each link up 3 times with 3-5 minutes for rest in between attempts. If you are not completing 20 moves then try and change up the boulder problems that you are doing, if you are always completing the linkup then make the boulder problems harder.

This drill is especially effective when you are starting the transition between bouldering and power endurance training. The problems should still be very hard and chances are you will not be on the wall for more than 3 minutes per attempt.

- **Redpoints**

Redpointing routes can be a great way of training power endurance if you are making it at least 15 moves into the route each time and the route does not provide lots of areas for resting. If you do not have long routes available to you then you can link routes together in a similar fashion to the linked boulder problems, or try and be tired by the time you go to start redpointing.

- **Circuit Training**

Make your own climbing circuit of between 20 and 40 moves. The moves should be powerful, consistent and not provide holds for resting. Try to vary the terrain that the circuit crosses and try and distribute the move/hold types evenly for both arms. The great thing about circuit training is that you can tailor it to your needs. You set the circuit for yourself and if it is too easy you can make the holds harder or take away footholds. If it is too hard then add a foothold or make the holds slightly easier. Once again you should try and be on the wall for between 3-6 minutes and attempt the same circuit 3 times in a row with a 5 minute rest in between attempts. On the first attempt you should complete the circuit and on the third attempt you should get very near the end. If you complete it all three times then make it harder, and if you can't complete it the first time make it easier.

4.2 Refernces

<http://www.timeoutdoors.com/Climb/Training/3CLMDBY01100303E.htm>

5 Endurance Training

Endurance is mentally the hardest thing to train. Your skin will be sore, your body will hurt, you will have to sweat and you will have to try. Fortunately endurance is one of the easiest things to improve on once you start training it, unfortunately it is also the first aspect of your climbing that you will lose if you do not train it.

Endurance can be defined as the ability of your muscles to contract at a less than maximum level for a longer period of time. This means 60+ moves and from 5-20 minutes of climbing. Some people claim that to really improve endurance you need to treat climbing like any other aerobic activity and climb for at least 45 minutes at a time (laps on 5.9s). Combined with increased strength you will be able to increase the difficulty of what you consider easy, holds that your muscles do not have to contract as much to hold on.

Endurance training can be very hard on your joints and tendons. As you start to get tired your muscles are not able to support the joints as much so make sure that you take at least two rest days between endurance workouts.

5.1 Endurance Drills

Endurance drills can be relatively simple but should be at least mildly fun. It takes a different mental approach to think that pushing yourself on a wall for 10-20 minutes in fun, but you should try and take that approach. Something to think about is that everyone gets pumped, it is the person who does more moves while pumped that will win the competition. Try and learn how to push yourself when pumped.

For most people their footwork and technique are the first things that fail them when they start to get tired. When doing these drills really concentrate on being as efficient as possible especially when you start getting tired. It doesn't make sense to make moves harder than they have to be especially when you are pumped.

Some good endurance drills are:

- **One and Ones**

One and Ones involve climbing one route, lowering down and immediately getting on a second route. The first route should be very hard for you and you should barely be able to do it. The second route should be easier but you should have to fight to do it while tired. A variation on this is to do the easier route first and then the harder route to see if you can still make it to the top of the harder route.

This drill is good for the transition from power endurance training to endurance training because the routes should be familiar after trying to redpoint them, and you are adding more moves onto them. Remember you want to complete approximately 60 moves.

- **Circuit Training**

Circuit training is good for endurance training because you don't have to downclimb routes or worry about ropes. You should try and create a circuit that goes in a loop

and see how many times you can do the loop. Record exactly where you get to, the number of moves and the time on the wall, and try and improve on this each time you get on the circuit. Try and complete more than 60 moves in a row and adjust the difficulty of the circuit accordingly.

Try two attempts at the circuit per workout with at least 10 minutes rest between attempts.

- **Laps on Routes**

Try and up and down climb routes for at least 10 minutes. You will have to experiment to find out which routes work best for you but the routes should be at least slightly overhanging. Vertical routes provide too many opportunities to rest. The key to this drill is the amount of time on the wall not necessarily the difficulty of the route. You want to get pumped but more importantly you want to be moving constantly.

This is a good drill to do near the end of a workout when you are already tired.

- **Fixed Time on the Wall**

Pick an area where you can boulder and set a timer for between 10 and 20 minutes. Start the timer and do not leave the wall until your time is up. Here you should play around with different moves of varying difficulty. Concentrate on what type of holds you can hold onto when pumped and body positions for rests etc. This is a good drill to practice some of the resting techniques on.

6 Technique Training

Technique is what allows you to do a route as efficiently as possible, to use the least amount of strength/energy to get to the top. Different people have different body types, different strengths and different needs for technique. Technique is used all the time while climbing. There are different ways of generating momentum, taking the weight off of your hands, or even holding onto holds with less energy. The drills presented here are designed to teach you how to become a more efficient climber. One of the most important techniques to learn is how to use your strengths to your advantage.

There are several areas of technique that this chapter will focus on:

- **Footwork** - learning to place your feet properly and how to weight them.
- **Kneedrops and flagging** - When to use them and how to position your body to take full advantage of them.
- **Generating Momentum** - How to efficiently generate momentum.
- **Stabilizing for Clips and Resting** - How to stabilize for the times when you only have one hand on.
- **Roof Climbing** - Different techniques that can be used when climbing on a roof and on very steep angles.
- **Pulling Lips and Bulges** - Different techniques that can help when pulling lips of bulges.

Each section will introduce some drills and it is recommended that you attempt these drills while warming up. You don't want to be trying a new technique while onsighting, or even while redpointing hard routes. While warming up just concentrate on a few drills each time while on larger holds. Then you will have more time to be able to figure out how the technique best works for you.

6.1 Footwork

Feet. These are those little things at the end of your legs that you walk on all day long. They are designed to support your weight so it is a good idea to learn how to use them when climbing. Not only that but you spend hundreds of dollars a year buying shoes so you might as well justify the money by using the shoes.

There are many different types of footholds and all of them require knowing how to properly stand on them. This section deals with drills for learning how to place your feet and how to weight them.

Some good footwork drills are:

- **Accurately Placing Feet**
If you watch a good climber or someone who climbs a lot you will notice that they do not adjust their feet that much. They know where to place their feet and they know when their feet are right. A great drill for this is to concentrate on your feet while you are warming up. This means looking at your foot until it is **on** the foothold. Indoors

you do not need to edge that much, most feet are fairly large and the best way to place your feet is to actually touch the wall about 1cm above the hold and smear down onto it. This will set you up for rotating on the hold later. Before your foot is placed try to determine the sweet spot of the hold, the place where you think you can stand and put the most weight on it. Experiment with different positions on different holds. Only when you are satisfied that you have the best foot placement do you make the next move.

This drill is great because it will teach you where your feet are. By doing it slowly in warmup you will reduce the amount of readjusting done on harder routes. Most people look up from their feet too soon, before their feet are properly on the hold. This means that they may miss the sweet spot of the hold.

- **Weighting Your Feet**

Determining how much weight you can put on your feet will depend on the angle of the wall, the size of the foothold, and the angle that you are stepping from. This drill should be done on several different angles and can be done as part of a warm up or when you are already tired.

Start with both feet on what you consider bad footholds. Hold on with one hand. Now slowly try and relax your hand and concentrate on your feet, feel how much weight they can take. You should relax until your hand lets go. Make sure you do this very slowly and on different types of footholds. This will show you how much you have to hold on with your hands and how much weight you can transfer to your feet, a very useful thing to know.

This drill should show you if you are overgripping too much when you climb. Overgripping is when you are squeezing too hard with your hands. Concentrate on relaxing your forearms and your arms. You may need to tighten up your core (abs, hamstrings, quads) in order to take as much weight as possible.

- **Pulling With Your Feet**

Your legs are stronger than your arms, and can support your weight better. Learning how to pull with your legs rather than your arms will allow you to save that precious upper body pulling power for times when you really need it. You can move your body with your legs by reaching out with your legs and pulling with your feet. This means that you will have to cup your toes slightly in order to pull from the other side of a hold.

Try this. On a vertical or slightly overhanging wall grab two holds and hang straight down. Keeping your arms straight put both feet on the wall, extend one leg out and place it on a hold. With your arms still straight pull your body towards the foot until your hips are almost directly above the foot. Try this in the other direction as well and on steeper wall. It helps to have softer shoes that allow you to toe in on foot holds for this drill.

- **Back Stepping**

Back stepping is when you place your little toe, or outside edge against the wall when standing on a hold. It allows you to push your body in one direction or the other while keeping your arms straight. For instance if you are reaching with your left hand you can backstep with your left foot and keep your right arm straight. Thus using your leg muscles rather than your upper body to push you in the direction you wish to go. Backstepping is very useful when holding onto sidepulls and underclings.

When warming up try back stepping every move with only one foot on. If you are reaching with your right hand keep your right foot on, and if you are reaching with your left hand keep your left foot on. This will not always make the move easier but at least you will learn when it works and when it does not.

- **Rotating**

Rotating is very important for conserving energy and momentum while climbing. Allowing the weight of your body to carry you through one move and into the next. When rotating it is important to keep contact with the foothold so you need to place your feet in such a way that rotating your foot will not cause it to come off (stand near the front of your shoes and be prepared to drop the heel).

Start with your hands crossed on two side pulls at chest height, and about one foot apart. Place both feet on decent footholds about 3-4 feet directly below the hand holds. Now if you are reaching out with your right hand you want to rotate on your right foot, moving the weight from your big toe to a back step. Concentrate on dropping your heel and not losing contact with the foot hold. You will learn where the sweet spot is for your shoes, and for most shoes it is different. Try and reach as far as possible with your right hand and then come back to the starting position. Repeat for your left hand.

Rotations are very important for cross overs and maintaining momentum so practice while warming up. Try and rotate every move, obviously this is not always desired but you will learn when it works and when it does not. Try and climb easier routes with just straight arms to see how rotating will help you.

6.2 Kneedrops and Flagging

Kneedropping and flagging are both ways of using your feet to position your body for either moving or stabilizing. This section will deal with these two techniques for movement.

6.2.1 Kneedrops

Kneedrops occur when you backstep your foot on the same side of your body as the foot. For instance if you put your right foot out to the right and it is placed as a backstep then your knee will be pointing in towards you rather than away from you. If your foot is higher than where your knee normally would be and you turn your knee in and down then this is

a deep drop knee, the classic definition of the term.

This technique is very useful for holding your hips against the wall on steeper angles, it is not that useful for slab climbing. If your hips are against the wall then you are able to pull across your body with your other hand.

Try this. On a slightly overhanging wall start with your hands at chest height on two straight down pulling holds that are about shoulder width apart. Place your left foot on a foot hold directly below the handholds at a comfortable distance. Take your right foot and place it just below hip height about two feet to the right. Turn your right knee in and down and try and pull your right hip against the wall. This should make it easier for you to reach with your right hand out and up. Do the same thing out to the left. You can also try and climb into these positions and then out of them. It helps to rotate in and out of kneedrops.

6.2.2 Flagging

Flagging is when you only have one foot on a foothold. Even without another foot hold the other foot can be used to stabilize or to generate momentum. This is accomplished by flagging. There are roughly three types of flagging:

- **Normal flag** - the leg that you are flagging is out to the same side. If you have your right foot on a foothold and place your left foot out to the left. The left foot can be smeared or in the air.
- **Reverse Outside Flag** - the leg that you are flagging is crossed behind the leg on the foothold. If you have your left foot on a foothold and cross your right leg behind your left leg.
- **Reverse Inside Flag** - the leg that you are flagging is crossed in front of the leg on the foothold. If you have your left foot on a foothold and cross your right leg in front of your left leg. This flag is particularly useful for avoiding a foot match.

The degree to which to flag will depend on what you are trying to do. On a move that requires a flag you may need to play around with how much you want to flag. It will depend on how far you have to move, what your other foot is on and where, and the size of handholds you are using. Try and climb one footed to see where flagging is useful and where it is not. Remember to try all three types of flagging in order to build these moves into your climbing repertoire.

6.3 Generating Momentum

Conserving momentum while climbing and efficiently generating momentum are two easy ways to conserve energy. Earlier rotations were mentioned as a way to conserve momentum, but this section will deal with how to generate momentum.

Most people would agree that it is easier to do a dyno with your legs on the wall than it is to campus the same move. Momentum should be started by your lower body, hips

and legs, and then carried through with your upper body. The timing of the transition is important. Rarely do you start momentum only with your upper body.

Here are a few good drills for generating momentum:

- **Dynos**

Practicing your dynoing is great for learning timing and generation of momentum. Start with your arms straight and your legs as high as possible. Get you hips swinging and be prepared to jump. You may have to pull your body up until your hips are above you feet, and then start pushing with your legs. Try and get the timing right so that you don't pause at all on the way up. Practice dynoing to the left, to the right and on numerous different angles.

- **Straight Arm Climbing**

Try to climb overhanging walls with your arms straight. Concentrate on how you push or pull towards the next hold. The goal is to learn which moves you can do with straight arms and which you can't. You want to try and conserve your pulling power as long as possible, especially when climbing through easier moves at the start of a competition route.

- **Fish Flop**

I don't have a better name for this so bear with me. The point of this drill is to learn how to use the momentum of your hips to carry your upper body forward.

Start on an overhanging wall 30-45 degrees with your hands matched on a hold. Place your feet in a froggy position below the hand hold. The next steps have to be done quickly to generate enough momentum. Keep your arms straight and bring your hips up against the wall. As you hips get near the top of their motion start pulling with your arms and throw your hips out. The momentum of your hips should carry your shoulders and upper body forward and allow you to reach up with either hand. In this fashion you can move quickly through big moves on steep walls without using too much energy.

6.4 Stabilizing for Clips and Resting

Most energy is wasted when you only have one hand on the wall therefore it is very important to be in a solid stance when clipping. Some of the same principles apply to rest stances as well, you want to distribute as much weight as possible to your feet and be able to relax your upper body.

Here are a couple of things to consider when clipping:

- **Dead Hang** - Try to keep your arms straight and just hang from the holds. Don't squeeze too hard or try to pull yourself towards the clip until you are ready.
- **Concentrate on Your Feet** - Adjust your feet so they can pull or push you towards the clip. Are your feet on the biggest footholds? Are they too high? Make sure they won't slip, there's nothing like having to catch yourself on one arm while the other is still

holding a loop of rope.

- **Centre Your Weight** - Try and distribute your weight as much as possible to your feet and stabilize with your arms. You don't want your feet to be off to one side or the other causing you to have to pull extra hard with your arms.
- **Push into the holds** - If the hold is an undercling, sidepull or gaston make sure that your feet are pushing you into the hold. This will allow you to straighten your arm and increase the length that you can reach. It will make clipping a lot more balanced as well. If possible try and avoid clipping off underclings, they require a lot of core strength to hold onto.

Not all of those techniques will work on every clip but play around and learn how to hold yourself in different clipping stances. Most of all don't rush it. Make your clip smooth and efficiently. Practice clipping draws from all angles. From the left, right, top and bottom. You should be familiar with how to stabilize the draw when clipping, especially on steeper climbing like on roofs. Try out finger clips and reverse finger clips, ask if you don't know what these are.

6.5 Roof Climbing

It is very easy to be inefficient when climbing on a roof, and this means losing lots of energy/power. Generally when climbing on a roof most of your weight is on your arms so the trick is to minimize the amount of work that they have to do. Climbers in general tend to focus more on their arms on a roof but your feet are just as important to take the weight off your arms.

Here are some things to try with your feet when climbing on a roof:

- **Toehooks** - Toehooks are when you use the top of your toes to pull down on a hold. This is very effective on a roof for holding your body in a fixed position and for taking the weight off your arms. As well it does not take a lot of core strength to use a toehook.
- **Toe in on Holds** - This is the opposite of a toehook where you are using the bottom of your toes (the side with the rubber) to hook the hold. You are pushing your toes onto the hold and then using your calves and hamstrings to pull your body up. This requires much more core strength (body tension) than a toehook but is much more common. Try to do this on undercut holds to start and slowly work towards smaller and smaller holds on a roof. You will have to push harder and be more accurate with your feet in order to maintain contact with the holds.
- **Bicycles** - Bicycling a hold means having one foot on the front of the hold pushing and one foot behind the hold toehooking and pulling. One foot pushing, the other pulling, like riding a bike. This is very useful for pulling your body up towards the roof since you have locked your lower body in place with your feet. This can be done on one hold (the typical definition) or different holds where one foot is toeing in and the other is

toehooking.

- **Heel-Toes** - A heel-toe is when you have your heel on a hold and you are pressing your toes against the roof, or another hold. This will lock your foot in place by camming it using your heel and toe, thus the name. Once again this is very effective for locking your lower body in place and allowing you to pull with your legs.
- **Push toward the holds** - Use your feet to push your hands into the holds. Generally on a roof an undercling is the easiest thing to hold onto and move off of. You can turn sidepulls into underclings by moving your feet around to either side of you. In this way you can extend your reach by keeping your arms straight and pushing your hips in the direction of the next hold.
- **Kneedrops and flagging** - On a roof kneedrops and flagging are used to pull your hips up towards the roof. Twisting your knee in and flagging the other foot will pull your hip up against the roof. The foot placement is similar to that on lower angles. If you are reaching with your right arm you want your right foot on and turn your right knee in. By flagging your left foot out you will centre your weight under your left arm and allow you to use your left arm as a lever. Simply push in the direction you wish to go. This will only work when you are pushing on a foothold.

Using your upper body efficiently on a roof is critical to saving energy through those steep sections. The skills listed above for your lower body will help to reduce the amount of energy you are using but if you lock off every move then no amount of foot technique can help you.

When climbing on a roof try the following with your upper body:

- **Keep Your Arms Straight** - On a roof if you bend your arms you are reducing the amount of reach you have. Try and keep your arms straight and use your feet to push you as much as possible.
- **Centre your weight** - As you move along a roof you should try and hang straight down from your arms. Use your legs to move your hips so that your chest is centred below your arms, try not to use your arms for this. This is especially important when clipping or trying to rest on a roof but may not work when moving (unless each move is only one foot in length).

6.6 Pulling Lips and Bulges

Lips and bulges are either a routesetter's dream or their worst nightmare. It is extremely hard to make a route consistent when pulling lips and bulges so they will either be easier than the previous moves or harder. Generally they are hard because you have to be more powerful.

Here are some things to consider when pulling lips or bulges:

- **Read the Route** - A good sequence is incredibly important when approaching a lip or a bulge. It is generally the case that you will want to move quickly through these sections but look for rests as well. If the routesetter is using large holds to pull the lip then you can move slower and when you are above it you will have big foot holds. If the routesetter is using small holds to pull the lip the you will want to move quickly and surely through the small holds. Changes in angles will usually produce a crux or a rest so decide what it is and prepare yourself for it.
- **Heel hooks** - If you can get your feet around the lip to one side or the other you may be able to pull most of your weight with your legs. When placing a heel hook try to turn your foot slightly out, place your heel on the hold and twist your toes towards the wall to get a better hook. Pull with your legs first then with your arms and try to rock onto the heel hook. Heel hooks are very effective means of resting at a lip even it you cannot use them to move with.
- **Remember handholds** - As you start to move over a lip it will be harder and harder to see under it. If you do not remember where your handholds were you will either spend time searching for feet, missing feet altogether, or have to lean out to look under the lip. Leaning out may not be possible if the holds are very bad slopers.
- **Figure Four** - Most people have tried figure fours and dismissed them as a circus trick. In truth there is a very limited number of moves that a figure four will help but pulling lips is one of them. If you have to do a big move over a lip and you have a good hold then this is the perfect opportunity to try out a figure four. To do a figure four put your opposite leg through your arms and hook the bend of your knee on either your wrist or your elbow. Hooking on your elbow is easier but hooking on your wrist will allow you much greater reach. Once you have hooked your knee you can rock up on it and reach up with the free hand.

For example if you are holding onto a jug with your left hand at a lip take your right leg and pass it over your left arm. Try hooking your knee on either your elbow or your wrist and use your right arm to help rock your body up and over the lip. You should be able to reach up with your right hand once you have moved your body up.

- **Campus** - Campusing as a technique?? Sometimes it may be more efficient to simply let your feet come off and campus over a lip. To be able to do this you must be confident in your campusing ability and know that keeping your feet on will require too much energy. For instance if your foot holds are a long ways away and it requires a lot of body tension to stay in place it may be easier to cut your feet and do the move. Another thing to consider is if your feet will stay on once you have completed the move. If your feet are going to cut loose then they may pull you off the holds, so it may be beneficial to cut them off before making the move.

The best way to determine what the best way to pull a lip or a bulge is to have experience. Climb different lips and different bulges and try out the techniques introduced here.

6.7 Summary

A big help for technique is flexibility. Greater flexibility will increase the options that you have for your feet, and therefore create more opportunities for rests, clipping stances, or even skipping crux moves.

Remember the easiest way to learn technique is to climb lots of varying styles of climbing. You will be able to identify your weaknesses and learn many different techniques.

Watch other climbers. Try to identify why they make moves look easy or why they are struggling with certain moves. If someone makes a move look easy and you struggle with it then you should try to recreate their foot, hip and hand placements. Who knows maybe they are smarter climbers than your are.

7 Resting

Resting is the ability to recover energy/strength while still climbing. It is a skill that is learned and should be trained. Many top climber attribute their success not to their strength but to their ability to rest and recover on a route. In general the steeper and harder the route the harder it is to find a resting position. This chapter will deal with finding resting positions, how to maximize the resting position and how to train your resting technique.

7.1 Finding a Resting Position

Resting positions are places where you can relax one arm then the other for at least a short period of time. The best rests are obviously no hands rests where all your weight is on your feet. When looking for a resting position try to find somewhere where you can take as much weight as possible off your hands (stems, heel, hools, big footholds...) and where the handholds are close enough together to switch back and forth. The reason that you need to switch back and forth easily is that you do not want to be wasting energy moving between the resting holds.

7.2 Maximize the Rest

When resting it is important to try and relax your arms as much as possible. The quality of the resting position, the amount that your arms are pumped, the difficulty of the next series of moves and how far you are from the top will all factor into how long you choose to stay in the rest. If the rest is a slightly strenuous one then you will have to think about how much you can recover before the rest itself starts to tire you out. Even a quick shake between holds can be enough to recover a little bit of strength.

As you enter the rest position try to place your feet well first. This does not mean that your feet have to stay where they are as you switch hands, in fact in most cases you will have to adjust your feet and certainly your weight distribution as you alternate hands. If you are pumped going into the rest start by alternating your hands quite quickly. As you start to lose your pump a little bit you can start holding on with each hand slightly longer, giving the other arm a longer time to recover. The hand that is holding on should be as relaxed as possible but there are lots of options for what to do with the arm that is hanging. Concentrate on your breathing and force yourself to take long slow breaths, this will again help you relax and slow down your heart rate. As you rest continue to evaluate your feet and determine if they are in the best spot, or can you improve them.

Eric Horst talks about a method of depumping in his article <http://www.trainingforclimbing.com/ht> called G-tox. This method uses gravity to help drain the used blood from your forearms to allow new blood with more oxygen into them. The trick is to hold your forearms above your head as you shake out. You do not have to hold your arms up the whole time but it

does help to do this for about 10 seconds at a time.

Try to relax the resting arm as much as possible, try stretching your forearm out against the wall, against your thigh or against your hips if necessary. This will open up the arteries and veins in your forearm and allow you to recover faster.

As you alternate hands concentrate on shifting your weight directly below the hand hold and onto your feet as much as possible. If you are matching on a hold and your feet are directly below you a little shuffle of the hips should be all that is necessary to help you relax. If the resting holds are not equal in quality (one is harder to hold than the other) then minimize the amount of time spent holding onto the bad hold.

A good tip is to use the rope itself to take the weight off your hands. If it is possible to make a clip above you and downclimb to the rest without too much difficulty then you should do this. Once the rope is clipped above you and you are back in the resting position try and weight the rope a little. The weight of the rope and rope drag going down to your belayer should be able to take some weight off of your arms. As you shift between hands you may need to shift your hips higher every time and then sit back down on the rope. Your belayer will not notice the difference at their end of the rope.

When you decide that it is time to leave the rest start breathing harder again and alternating your hands back and forth quicker. Concentrate on the next series of moves coming up. This will better prepare you for any hard moves coming up that you need to pull down on.

7.3 Learning to Rest and Training

Most people when first told to rest will complain that the rest tires them out too much. It is more work to rest than the strength that they recover. Resting is a skill and there is a technique to it. You have to force yourself to rest in order to learn how it feels.

7.3.1 Resting Drills

To learn how to rest set a boulder circuit or routes on slightly overhanging walls. At the start of the circuit, or at the bottom of the routes, place two holds that are not huge but that you can hold onto quite easily. If you are just starting this drill give yourself very generous feet, as you become more comfortable resting use smaller and smaller feet.

Climb the circuit until you start to feel pumped then get to the rest. Force yourself to stay in the rest for a fixed amount of time even (say five minutes) even if it seems too long. Make sure that the rest allows you to switch your arms back and forth and doesn't allow a no hands rest. Concentrate on the points listed above such as centre your weight, weight your feet as much as possible and concentrate on your breathing.

After awhile you should be able to make the rest harder. Make it more difficult to switch your hands back and forth, make one hand harder to rest on than the other, give yourself only one foothold, etc... After time you should be able to find rests easier and know how much recovery you can get from a rest. You should also be able to determine when you are too pumped to recover and when you need to rest. Play around with this drill at the end of an endurance session.

8 Competition Preparation

Note: This section is not complete and needs more work.

How you prepare for a competition is as important as all the strength, power endurance, and endurance training that you have done for just climbing. It doesn't matter how strong you are if you are so nervous that you shake yourself off the wall. Mental training is the hardest thing to coach so this chapter will just introduce some different approaches that you can take to competing and let you decide which ones work for you. Individual sports such as climbing put a lot of pressure on athletes and the ones that excel are the ones that can cope and excel with this pressure. If you are interested you should read some literature on sports psychology.

In addition to mental training there are also different physical approaches you can take to make sure that you are peaking at the right time. This is something that has been studied in many different sports and you can find all kinds of literature on learning how to peak at the right time. This chapter will introduce some basic approaches to competitions that will help you time when you peak.

8.1 Mental Preparation Training

Each of the following mental exercises can be done on your own and have been shown to increase the performance of an athlete.

8.1.1 Previewing a Route

Previewing a route properly can mean the difference between moving smoothly through a section and wasting energy matching hands, searching for feet or downclimbing to fix sequences. This is a skill and one that should be practiced. There are several things to consider when previewing a route such as rests, clipping stance, cruxes, alternate sequences, pacing, and distances between holds.

Here are a few tips that will help when previewing:

- **Know the Start of the Route**

One of the worst things that can happen is to not know where the start of your route is, or to preview the wrong route. Make sure you know where you have to start and that you are looking at the correct route. If no one else from your category is there then chances are you are not looking at the right route.

Some competitions do not specify the starting holds and you can start on what you can reach. Make sure that you choose starting holds that will put you in the correct

sequence.

- **Work Down Through Confusing Sequences**

If you get to a section of the route where you can not determine the sequence look ahead and find the next hold that you know how to grab and work backwards. For instance if you find a confusing sequence and you see that five feet above is a hold that you know you have to grab with your left hand then you can find the previous hold that your right hand would have to be on and work the sequence down. Once you have worked back down through the sequence go back up it and continue on the route.

- **Judge the Distance Between Holds**

Know the distance between holds and what you are capable of. If you know a wall has 4'x8' panels or 3'x3' panels then it is much easier to measure the distance between holds, look at the panel sizes and approximate the distance. This will help when looking to skip a move or when you are worried about a large move.

- **Walk Around**

Most routes at larger competitions will be on very high steep walls. It is almost impossible to see the entire route from one location. Walk around and look at the route from numerous angles.

This does more than just allow you to see the whole route. If you are wondering how large or incut a hold is then stand back and get a different look at it, or walk way off to the side and try to see behind it. How much you can walk around will depend on the size of the area that you are given for the preview. In some competition you may be allowed to walk into the crowd or at least ask them to move.

- **Dance the Sequence**

When you are previewing it may help to move your hands and feet in the sequence that you are previewing. There are two reasons for this one is to help you memorize the sequence and the other is to make sure that you are not missing any moves. By moving your body in sequence of the route you will be able to remember the moves easier in isolation, similar to dancing. To be told a dance and then have to do it is a lot harder than doing the dance as you are learning it.

- **Talk to Others**

Other competitors in your category will have different opinions on sequences. This may be due to height, strengths or perceptions on the quality of the holds. In addition some people are better at reading a sequence than others. Talk to others and figure out what they are doing. It may be that you are reading it wrong or that you are assuming a hold is better than it is. This will also help so that when you go back to isolation you have the same terms for holds.

- **Identify Crux Clips and Sequences**

If you can identify the crux of a route from the ground then that will allow you to get

set up for it better. Cruxes are not necessarily moves but can be clips as well. If you identify a crux clip then you can decide where the best place to clip it will be. It may be that you have to climb past it a little ways before clipping, or you may have to reach way up to clip it to avoid clipping in the middle of the crux.

- **Plan Your Pace**

It is just as important to identify the easy sections of a route as it is to see the cruxes. If you can spot the easier moves then you will know to move slower, chalk up and rest through these sections. You will also know where to move quickly to avoid wasting energy fooling around in the harder sections. Practice this on routes that you are onsighting. Try and move slow through the easy sections and quickly through the harder ones.

- **Helpful Instruments**

ICC rules state that you are allowed to use any non electronic device to help preview or record the route. Basically this means that you can sketch the route or use binoculars to help preview the route. It is probably best to practice sketching a route numerous times at home or in local competitions before doing this at a large competition. It can take a long time to sketch an entire route. Drawing out small sections to discuss with others may help though.

- **Use Your 40 Seconds**

Before stepping onto the route you are given 40 seconds to do whatever you want. It is best if you get into a routine where you do the same thing every competition but here are a few suggestions.

- Look at the confusing sequences. Chances are you have talked to someone in isolation about these sequences so make sure that what you decided to do will actually work.
- Look at the first few moves. Make sure that you know the first moves on the route. You can get very nervous on a route if you do not know the sequence leaving the ground.
- Massage your forearms and chalk up. Just stand there looking at the route and keeping your forearms loose and relaxed.
- Be focused. Do what you have to do in order to be focused. This will be different for different people so try and perfect this at local competitions.

It also helps to be able to adapt on a route. If the sequence you saw in preview will not work you should be able to identify this on the route and quickly change your sequence to a better more efficient one. To do this it helps to always be looking two or three moves ahead. If you know you have to get your left hand on a hold that is a couple of moves away then you know that you must climb a certain sequence that will end with you left hand on that hold. A good drill for this is to get on routes that you would normally onsight and not preview. Every move look ahead and call out your next two moves. This forces you to be looking ahead and constantly knowing the next few moves without knowing them from the

ground.

8.1.2 Identifying How You Feel

Being nervous and scared is not necessarily a bad thing. Being scared of being nervous and scared is a bad thing. If you know that you are always nervous in comps then you can prepare yourself to deal with that. It may be that you have to accept it and learn to relax on the route.

You should also know whether you climb better being confident of your ability to do a route or when you are scared on a route. If you know that you must be confident then make sure that you are not over confident, coming across and unexpected hard move may freak you out. It may be easier to be scared of a route and think that it is hard. That way if the route is easier you will grow more confident as you move up the route.

The big thing is to try and remember how you felt on the days where you have climbed and competed the best, and then try and recreate that.

8.1.3 Visualization

One of the major differences between great competitors and good competitors is their ability to visualize a route. Good competitors visualize from a third person angle, watching themselves as if they were looking through a camera. Great competitors visualize from a first person angle looking at each move through their own eyes. Try and visualize yourself climbing a route. Now try and visualize each move as though you can see your hand moving towards a hold, your foot reaching for each foothold. Can you see the difference?

By visualizing in first person mode you are preparing yourself for what the route will actually look like when you get on it.

8.1.4 Scripting

Scripting is the practice of rehearsing everything about the competition before it actually happens. This may help you to be more focused on the day of the competition. Some people will script the entire week before the comp, some people just the day of the comp or once they enter isolation.

If you have never written a script before then try this:
Start with the night before. What are you going to have for dinner? What time? What activities will you do before bed? What time are you going to bed? Are you going to prepare your climbing stuff the night before or the morning of?
What time do you have to get up? When does Isolation open and close for your category? What is your position in the running order? What are you having for breakfast? Are you having a shower before the comp? When are you leaving for the comp? How long will it take to drive there?

How much time do you have to warm up in isolation? How many people are expected to be in isolation? What is your warm up routing? What are you doing 45 minutes to 1 hour before you climb, 30 minutes...?

Scripting will allow you to know what is happening and be comfortable with it. Write out a script and read it in the weeks before a comp. As the days of the competition approach start into your script. You should try and follow the script as much as possible but don't get too nervous if things are not exact.

Scripting may not work for everyone and you should try and decide if it will work for you.

8.2 Physical Preparation Training

There are many different approaches to competitions that you can do to help your body get ready. The following sections outline a few different approaches that you may or may not have tried.

8.2.1 Staging

In the weeks leading up to a big competition you will usually be trying to climb many competition style routes and trying to build your endurance. That is great and staging assumes that you have a specific training routing that you can follow leading up to the competition.

In the last 7-10 days before a competition keep the number of workouts the same but lower the intensity. Try and warm up the same way for each of these workouts as if you were preparing your body for the usual intense workout but then take it easier than usual. Try to climb easier routes doing short bursts of fast climbing. Concentrate on stretching out and your climbing movement.

This method is used in many other sports such as swimming. For the last week before a competition the swimmers will only do one or two laps in a row with short periods of sprinting, but more time spent just swimming and stretching out.

A simple explanation for why this works is that your body will prepare for a hard workout since you are warming up normally and will begin to draw the nutrients and oxygen to the muscles. You will not do a hard workout so some of the nutrients and energy remains in the muscles, and your muscles will be more stretched out than if you had worked them and filled them with lactic acid. That way when the day of the competition arrives you will have all this stored up energy, you will be stretched out and ready to climb hard.

8.2.2 Routine

Most athletes are superstitious to some degree. They have their favorite shirt, their favorite music, their lucky chalk bag, or even lucky underwear. All of this superstition is about routine, doing again what has worked for you in the past. It helps to have these routines to help you take the competition more seriously.

If you think back can you identify your routine? If you do not have a routine can you think about your best day of competition and remember what you did? Have you tried to repeat that day?

These routines can be built into your scripts and become a part of every competition. Once again you should be prepared for some flexibility especially if you are competing in a gym or city where you have never been. It may not be possible to recreate the routine exactly.

8.2.3 Comfort Foods

Most athletes have a favorite pre-competition dinner and breakfast, and a favorite snack/lunch for the day of the competition. If you have your favorite foods then you should research where you are going and make sure that you can get something similar or something that will allow you to gain the same amount of nourishment.

For instance say you are used to cereal and orange juice in the morning. You're travelling to Eastern Europe where the breakfasts usually consist of more meats and heavier meals. You may want to bring along a bag of cereal that you would normally eat so that you can be ready for the competition.

8.2.4 Warming Up in Isolation

Every competition will have a different isolation and may force you to warm up slightly differently. One thing that all competitions will have in common is at least a little boulder wall to do traverses on. This means that in the weeks leading up to a competition you should start your practices with a similar warm up that you will expect in the competition. If you know the gym where the competition is then you may not have to just boulder, they may allow you to do routes to warm up as well.

Try and get a warm up routine that will allow you to get ready to pull really hard moves. This means that when you are done your warm up you will want to be ready to compete or try a project that you are working. If you find that you are not warmed up enough then you will need to adapt your warm up routine to include more climbing.

Near the end of your warm up you will want to pull harder moves than you will find on the route. This will accomplish two things: one you will know that the muscles required to pull hard moves are warmed up; two you will leave isolation knowing that you have pulled super hard moves and when you get on the competition route you will be pulling easier

moves and that may increase your confidence on the route.

Climbing a few hard boulder problems in isolation to warm up should not tire you out. In fact it should do the opposite and help get your body ready to climb hard. Make sure that you are not doing boulder problems where you could injure yourself, or long hard boulder problems that will tire yourself out.

You may want to get slightly pumped in warmup so that you do not flash pump on the competition route. A flash pump is the pump that can occur early in a workout where all of a sudden you can't squeeze and it takes a long time to recover from. There is a physical difference between a pump after lots of climbing and a flash pump.

Here is a simple description of the difference between a normal pump and a flash pump: Your body has two different types of circulatory stages commonly called *Rest and Recovery*(RAR) and *Fight or Flight*(FOF). When your body is in RAR most of your blood is near the internal organs getting cleaned, renourished etc. This means that the arteries to your arm muscles are not as expanded and are not carrying that much blood. When your body is in FOF your blood is being pumped more rapidly to your extremities and your muscles. the arteries are larger and are carrying more blood to your muscles. A flash pump occurs when you try to use your muscles too quickly and your body is still in RAR. Your muscles are not getting enough blood and are actually starting to expand and constrict the flow of blood through already small arteries. This also means that it takes longer to recover from a flash pump. The blood supply to your forearms is greatly reduced which means that it will take longer for the lactic acid to be removed and the nutrients to be replaced. That's why it is important to warm up and prepare your body to start pulling hard rather than just launching into it. As well that is why you want to have your body already in the FOF mode before you get on the wall to compete.

9 Cross Training and Other Issues

This chapter deals with non-climbing aspects of training that are very important to becoming a better climber. Things such as general fitness, nutrition, flexibility and lifestyle all affect your performance at a competition and should be thought of as part of your training.

9.1 Fitness and How it Affects Climbing

In difficulty climbing you can expect to be on the wall anywhere from 2-8 minutes climbing on various angles and difficulty. In addition you may be expected to do quite a few routes in a single day.

Early in 2002 a study was done on climbers to determine how the aerobic fitness of a climber affected their climbing. The climbers were asked to do three routes of varying difficulty. The hardest route was supposed to be one number grade below their hardest redpoint and the second and third routes were two and three number grades below the hardest redpoint. The climbers were asked to wear a heart rate monitor and a device that would measure the amount of air (oxygen) being consumed by the climber. The device was a backpack and weighed about five pounds, with a mask that fit over the climbers mouth.

The climbers were also asked to complete a V02 max test which involved going to a lab and riding a bike while wearing a heartrate monitor and a much more complex oxygen and carbon dioxide measuring system. A V02 max test is designed to measure what your maximum heartrate is and what the maximum amount of oxygen per breath your body and consume.

The results of the study showed that when climbers were climbing the "easy" route they reached about 50% of V02 max and 65-70% of maximum heartrate. On the "difficult route" climbers reached 55-60% of V02 max and 75-80% of maximum heartrate.

This study would suggest that your overall aerobic fitness (V02 max) does affect your ability to climb on longer more difficult routes. If on a route you reach 80% maximum heartrate then you will not be able to maintain that level for long. If you are more fit then on a difficult route you may only achieve 65% maximum heartrate which is much easier to maintain for an extended period of time.

Being fit will also allow you to recover faster in between routes. If you reach 80% of your maximum heartrate then it will take longer to recover than if you only reach 65% of your maximum heartrate.

You should try and do a minimum of three 20 minute cardio workouts per week in addition to your regular climbing training.

9.2 Nutrition

Nutrition may not be as important to young climbers as it is to older climbers but it should be taken very seriously. This section is not designed to restructure how you eat since many of you already have some idea of nutrition and what you like to eat. This section will introduce some basic tips that are easy to follow and will help you train harder for a longer period of time.

9.2.1 Watch What You Eat

If you are interested you should log what you eat over the period of two weeks and record how your training sessions were during those two weeks. Which days felt better than others? Was there any really low energy days? Are there any factors other than what you ate to take into account (lack of sleep, extra schooling...)?

Watching what you eat will help you decide which foods make you feel good and which foods provide enough energy for training. Here are a few simple suggestions:

- Eat throughout the day - Start with a moderate breakfast and snack on fruits or nuts throughout the day. Most nuts have natural fats that your body can digest easily and they tend to fill you up more than snacking on junk foods. Try and stay away from salted or flavoured nuts. Fruits are a great source of quick energy (sugar) without the starches or fats associated with most snacks. Eat a smaller proper lunch (sandwich, fruit, maybe yogurt...) and a smaller dinner. The trick is to keep your body supplied with smaller amounts of food but throughout the day. In the end you should be consuming the same amount of calories as three large meals but spread out over the course of the day.
- Stay away from starches combined with fats - Buttered popcorn is one of the worst snacks you can eat. The starch of the popcorn is turned into glucose and your body will look for fat to store when it consumes the glucose. Voila the butter is right there. Instead snack on vegetables, a fruit salad or nuts if you are more hungry.
- Try not to eat a large dinner right before bedtime - If you have not had dinner yet, and it is late, then have something small and eat a larger breakfast the next morning. Having a large dinner right before bedtime will not allow your body to digest the food properly and may not allow you to have a proper nights sleep.

9.2.2 Stay Hydrated

Water serves numerous purposes for your body when exercising. First of all blood is mostly water so if you become dehydrated your body can not carry the nutrients to your muscles as efficiently which can lead to cramping and injuries. Secondly water acts as a lubricant for your tendons and helps maintain the durability of connective tissues such as ligaments. Staying hydrated is very important to maintaining high levels of activity and

lowering your risk of injury.

9.2.2.1 How do I know if I am dehydrated?

In general most people are chronically dehydrated, it is very hard to stay hydrated and almost impossible to become over hydrated. Here are some tips to determine your hydration level:

- If you are thirsty you are dehydrated - Generally by the time you feel thirsty you are already dehydrated.
- Look at your urine - If it is clear then you are hydrated, if it is dark with a strong odour then chances are you are dehydrated.
- If you stop sweating or stop producing saliva - If you reach this stage of dehydration then you will start to run the risk of heat stroke. If you stop sweating and producing saliva then chances are you are very dehydrated. This is assuming that you are doing an activity where you would normally be sweating but you are not.

9.2.2.2 Staying Hydrated

Here are some tips to staying hydrated:

- Drink lots of water - Unless you are planning on exercising for a long period of time and need to replace your energy, water should be enough. Other drinks may contain unnecessary calories and sugar that you do not need to stay healthy and hydrated.
- Avoid caffeine filled beverages - Caffeine is a diuretic which can actually dehydrate you. While coffee is better than nothing it is by no means healthy or adequate to keep yourself hydrated.
- Carry a water bottle - Carry one to class, one on the bus, one to training and just sip from it constantly.

9.2.3 What to Eat During Training

During a training session it helps to have a healthy snack at some point to maintain your energy level. Fruits such as bananas or oranges are a great source of energy and bananas contain a lot of potassium that will help prevent your muscles from cramping. During a training session you do not want to eat foods that will take a long time to digest such as power bars, foods high in fibres, foods high in complex carbohydrates, or foods that are high in fats. Keep it simple.

9.2.4 Nutritional Supplements

Currently there are no conclusive studies that show the value of supplements such as Creatine for climbers. If you are worried that you are not getting enough protein or vitamins in your diet then see a nutritionist or dietitian for more information.

9.3 Flexibility

Flexibility will allow you to do more than just find funky rests and tricky sequences, it also allows your muscles to be stronger with a greater range of motion and will help prevent injuries. Your muscles are a series of interconnecting fibres that contract and relax in order to move. If your fibres are very tight then the length of the contraction will be small meaning that you have less strength. If the length of the contraction is larger then you have more contraction ability by the fibres meaning greater strength through a larger range of movement.

Here are some tips to increasing your flexibility:

- Warm up before stretching - Get your heart pumping so that as you stretch your muscles are already warm and your blood is flowing.
- Stretch before and after each workout - Stretching before a workout will help to prevent injuries and allow you to gain the level of flexibility you had at the end of a previous workout. Stretching after a workout will help reduce the tightening of muscles as you recover. Try to hold each stretch for at least 30 seconds and concentrate on relaxing your muscles while breathing deeply and smoothly.
- Hold stretches for 10 minutes - In order to truly increase flexibility of your tendons and muscles you must hold stretches for between 10 and 20 minutes. This is best done while watching tv, doing homework, or some other activity where you are not active and can sit for a period of time.
- Other sports/exercises - Other sports and exercises such as martial arts or yoga require that you become more flexible. If you find it difficult to force yourself to stretch then find a sport that forces you to stretch. Most sports will actually decrease your level of flexibility if you do not stretch properly.

9.4 Lifestyle

There are many factors in your day to day life that can affect your climbing performance. Most of these depend on how serious you plan on taking climbing.

9.4.1 Making Sacrifices

If you plan on taking any sport seriously then other aspects of your life will have to take less priority. This could mean less time socializing, watching tv, or even less time sleeping in on the weekends. What you choose to sacrifice will depend on each individual climber so you have to decide how important climbing is to you. Proper time management and

scheduling will allow you to train hard, compete and still have time for school, work, family and friends.

9.4.2 Adequate Rest Periods

Sleep and rest days are very important for recovery and proper training. Make sure that you schedule rest days and an adequate amount of sleep into your weekly schedule.

9.4.3 Adopt the Athletic Mentality

In order to become a competitive climber you must live and breath the fact that you need to be an athlete. This means eating healthy, staying healthy, climbing as much as possible, and scheduling your life to fit everything together.

10 Summary

This chapter provides a summary of the rest of the manual as well as an introduction to a basic training cycle that you can use when preparing for a competition, or any other climbing related goal that you may have.

10.1 Preparing a Training Cycle

Difficulty competitions require you to be fit, strong and mentally prepared. This manual introduces several topics which can prepare you in each of those areas. There are several important things to remember when creating a training cycle:

- **What is Your Goal**

Your goal will help define what type of training cycle you should prepare. If you are preparing for a bouldering competition it will be different than preparing for a difficulty competition which is different than training for a outdoor redpoint.

- **Strength vs Endurance**

Strength takes longer to build but stays around longer. Endurance can come quickly and goes away even faster. Strength is generally more fun to train, while endurance is just plain work. If you are preparing for a difficulty competition you will probably want to start your cycle with strength training and work towards endurance training.

- **Competition Preparation**

In your cycle you will want to make sure you create time for competition preparation such as visualization training, or extra long warmups. This may affect your training schedule but should not harm it or hinder your training for the comp, just prepare for it.

10.2 A Sample Training Cycle

The training cycle presented here is based on a six month lead up to a difficulty competition. It assumes that you are climbing at least four days a week and for approximately three hours at a time. The cycle will start with core body strength training and move towards power training, then power endurance and finish with a month of endurance.

Each day begins with a warm up and cool down. If you cannot fit all the exercises into the time allotted make sure that you do not skip out on the warm up or cool down. Try to minimize the transition time between exercises and the timing should be okay. Remember this is just a sample training cycle and you may have to adapt it to suit your time schedule.

Here it is assumed that you climb two days on, one day off, one day on, one day off, one day on, one day off. Day one and two are assumed to be the two days on. If you climb more

than that make sure that you do not train strength two days in a row. Try and spread out the strength training and focus on technique or just climbing on the fifth or sixth day.

You may also notice that the next series and the previous series of the cycle are incorporated into the exercises to try and make the transition smoother.

10.2.1 Month One

In the first month you want to concentrate on pure strength training, not necessarily climbing strength but general strength training. You should create a circuit of 8-10 strength exercises. These exercises can be taken from the strength section of this manual. A weekly training schedule could look like this:

- **Day One - Strength**

Warm up with 10-15 minutes cardio

Stretch for 10 minutes

Start circuit with 2 minutes rest in between exercises. (approx 60 minutes)

Do some technique boulder drills (30 minutes)

Boulder for 30 minutes

Cool Down and Stretch (30 minutes)

- **Day Two - Climbing Strength**

Warm up with 10-15 minutes cardio

Stretch for 10 minutes

Warm up climbing 10-15 minutes

Work single moves on boulder problems (60 minutes). Try many problems.

Work entire boulder problems (45 minutes). Start from the beginning every time.

Do 4-5 core strength and upper body exercises (30 minutes)

Cool down and stretch (15-30 minutes)

- **Day Three**

Same as day one.

- **Day Four**

Same as day one.

If you wish you can modify the exercises after three weeks or so and try to reduce the amount of rest between exercises.

10.2.2 Month Two

Month two will focus on climbing strength training and start power training. You will want to create a circuit of 8-10 climbing strength exercises and 4-5 power exercises.

- **Day One - Climbing Strength**

Warm up cardio and stretch (25-30 minutes)

Warm up your climbing muscles (20 minutes)

Start circuit with climbing strength exercises. Hand strength and upper body strength.

(60 minutes)

Do technique drills 4 or 5 of them. These drills should be done on a steeper wall and involve using strength (rock ons, flagging...) (30 minutes)

Cool down and stretch (30 minutes)

- **Day Two - Power and Climbing**

Warm up cardio and stretch (25-30 minutes)

Warm up climbing on a rope (30 minutes)

Work single moves on a boulder problem. Concentrate on larger dynamic moves and learning timing (45-60 minutes)

Work boulder problems from the ground. (30 minutes)

Cool down should involve exercises to strengthen opposing muscles and stretching (30 minutes).

- **Day Three - Power**

same as day one

- **Day Four - Strength and Climbing**

Warm up cardio and stretch (25-30 minutes)

Core body strength training exercises similar to month one(30 minutes).

Warm up climbing muscles (20 minutes).

Work boulder problems (30 minutes).

Create a circuit of three boulder problems and try and do all three in a row (15 minutes).

Rest 2-3 minutes between attempts

Work routes to the top, hang for 1 minute at a time. (30 minutes)

Cool down and stretch (20-25 minutes).

10.2.3 Month Three

This month you will start to concentrate on longer boulder problems and power training. Set up a circuit of 4-5 power problems. Set up boulder problems that are 8-12 moves in length. Set routes that are direct and 15-25 moves in length.

- **Day One - Power**

Warm up cardio and stretch (20-25 minutes)

Warm up climbing muscles (25-30 minutes)

Work boulder problems single moves(30 minutes)

Do power circuit (30-45 minutes)

Work boulder problems from the ground (30 minutes)

Cool down. This should include exercises for opposition muscle strength.

- **Day Two - Boulder Circuits**

Warm up cardio and stretch (25-30 minutes)

Warm up climbing on ropes (20 minutes)

Create boulder circuit 2-3 problems that are very hard. Try climb the boulder problems in a row, run between them and rest 2-3 minutes between attempts (45 minutes).

Work boulder problems from the ground (30 minutes)

Technique or new movement drill (deadpoints, dynos...) (30 minutes)

Cool down and stretch (30 minutes)

- **Day Three - Power**

same as day one

- **Day Four - Climbing**

Warm up cardio and stretch (20-35 minutes)

Warm up on ropes (25 minutes)

Redpoint routes, always work to the top (45-60 minutes)

Do three or four routes that you have already done but that are hard for you. (15-20 minutes)

Do a core body strength workout (30 minutes)

Cool down and stretch (30 minutes)

10.2.4 Month Four

This month will start to focus more on power endurance and longer boulder problems still. Set boulder problems that are 8-12 moves in length and routes that are 20-30 moves in length. Create a new power training circuit or use the one from the previous month.

- **Day One - Bouldering**

Warm up cardio and stretch (20-25 minutes)

Warm up climbing muscles (20 minutes)

Work boulder problems single moves (30 minutes)

Work boulder problems from the ground (45 minutes)

Technique or new movement drills (30 minutes)

Cool down and stretch (30 minutes)

- **Day Two - Routes**

Warm up cardio and stretch (20-25 minutes)

Warm up on routes (20 minutes)

Work routes to the top and try to redpoint (60 minutes)

Work boulder problems from the ground (30 minutes)

Try routes you have already done (20 minutes)

Cool down and stretch (30 minutes)

- **Day Three - Bouldering**

same as day one

- **Day Four - Strength**

Warm up cardio and stretch (25-30 minutes)

Warm up climbing muscles bouldering (20 minutes)

Boulder (45 minutes)

Do a upper body/hand/core strength circuit of 8-10 drills. (60 minutes)

Climb routes that you have already redpointed (20 minutes)

Cool down and stretch (15-20 minutes)

10.2.5 Month Five

This month will focus mainly on power endurance and redpointing longer hard routes. For this period you will want to have longer routes 25-35 moves long and try to make them as consistent as possible. You will want to set boulder problems on varying angles and make them 10-15 moves long. In addition to this you should try and set a circuit of boulder problems that you can run laps on without getting off the wall. Look at the power endurance chapter or the chapter on resting for a more thorough description of a boulder circuit.

- **Day One - Redpoints and Power**

Warm up cardio and stretch (25-30 minutes)

Warm up climbing on ropes (25 minutes)

Redpoint from the ground every time. If you fall lower back to the ground rest and start again. Pick a route that you are doing at least 10 moves on and can do more with a little work. (45 minutes)

Move to routes you have already done. Start with the last route that you have redpointed and start moving down the routes. Do at least three routes. (30 minutes)

Do three different power drills. Sets of three with 2-3 minutes rest in between drills. (15 minutes)

Cool down and stretch (15-20 minutes)

- **Day Two - Redpoints and Power Endurance**

Warm up cardio and stretch (25-30 minutes)

Warm up climbing muscles on ropes (25 minutes)

Redpoint routes but work them if necessary. Try not to rest too much at each hang. (45 minutes)

Try and work the longer boulder problems. Rest 2-3 minutes between each boulder problem. (25 minutes)

Move to the boulder circuit and try it three times to failure with little or no resting on the circuit. Rest five minutes between attempts. (25 minutes)

Cool down and stretch (25-30 minutes)

- **Day Three - Redpoints and Power**

Same as day one.

- **Day Four - Redpoints and Volume**

Warm up cardio and stretch (25-30 minutes)

Warm up climbing muscles on ropes (20 minutes)

Redpoint routes from the ground every time. (45 minutes)

Pick five hard boulder problems that you can do or almost do. Attempt or do each problem three times in a two minute period. Rest two minutes before moving onto the next problem. (20 minutes)

Pick routes that you have already done and try to do two in a row, you can lower to the ground after completion or if you fall. (30 minutes)

Cool down and stretch (20-25 minutes)

10.2.6 Month Six

This is the final month before the competition. In this month you will focus on power endurance, endurance and competition preparation.

- **Day One - Power Endurance and Volume** Warm up cardio and stretch 20-25 minutes
 Warm up climbing as if you were in isolation at a competition. Try and boulder to warm up and do a different warm up each day. You want to follow the same routine but not the same routes. Concentrate on how warm you feel and how you perform on your first redpoint (next exercise) compared to your second. If your second is better then you are not warming up enough. Remember after your warm up you want to be ready to compete, to pull hard moves after lots of climbing. (25-30 minutes)
 Sit down in front of your route that you are going to redpoint it and try to focus. Try to recreate how you would feel sitting in a chair in a competition getting ready to climb. Focus not only on the route that you are about to do but how to control your feelings and get into your own **Zone**. (5 minutes)
 Try the route twice with at least 10 minutes rest in between attempts. (20 minutes)
 Try to do three routes that you have already redpointed with 2-3 minutes rest in between attempts. (20 minutes)
 Go to a boulder circuit as described in the power endurance chapter and do this three times to failure. Rest for five minutes in between attempts. (30 minutes)
 Pick five longer boulder problems that are hard for you and try to do them all in a row. You can chalk up and rest for 30 seconds in between problems (10-15 minutes)
 Cool down and stretch (30 minutes)
- **Day Two - Endurance** Warm up cardio and stretching (20-25 minutes)
 Warm up climbing as if you were in isolation as described above in day one. (25-30 minutes)
 Sit down in front of a route and focus as if you were in a competition as described in day one. (5 minutes)
 Try to redpoint the route twice. (20 minutes)
 Do *One and Ones* as described in the endurance chapter. Do at three sets of these. Make sure they are done on overhanging walls. (30 minutes)
 Create a boulder circuit similar to the one described in the resting chapter and do the circuit and practice resting. Stay on the wall for 10 minutes. Do this exercise twice with a ten minute rest in between attempts. (30 minutes).
 Pick two of the longer boulder problems and run laps on them until failure. Take 5 minutes rest in between problems. (15 minutes)
 Cool down and stretch (20-25 minutes)
- **Day Three - Power Endurance and Volume** same as day one.
- **Day Four - Endurance** Same as day two.

10.2.7 Maintenance

During the competition season there may be a 1-2 month period where you need to be in competition shape the whole time. This is a period called maintenance where you may not

be getting stronger, may not be getting more endurance, but where you are maintaining your competition fitness.

During these times I suggest trying to structure your days to incorporate several aspects of climbing. Have days where you start out bouldering and finish with redpointing, or days where you start with redpointing go to bouldering and finish with endurance training. The key during these stages is to climb lots and keep the volume of hard moves high.

10.3 Final Words

This manual was created with youth competitors in mind. If you have any questions about this manual or would like to add a drill or chapter please contact Mike Doyle (mike_at_idelix.com, replace the ' _at_ ' with the sign). Please feel free to use and distribute this manual as you see fit.

11 References

The following references can be found on the internet:

<http://trainingforclimbing.com>, Eric Horst's training page

<http://www.timeoutdoors.com> Time Outdoors Webpage

<http://www.mikedoyle.ca> My home page contains more recently updated links.

The following books are good training reference guides:

12 Changes

The following changes have been made:

- Aug 12, added changes chapter
- Dec 09, first round of editing done.

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