The RP Fitness Powerlifting Handbook

This handbook is designed for coaches and lifters, both new to the sport and those at the top of the game.

Powerlifting is a simple sport, three attempts at three lifts, biggest total wins. Training for this sport can be anything but simple! I have studied and developed the best ways to build absolute strength since the 90's. I have followed everyone from Arnie to Louie Simmons and been trained directly by many of the worlds best lifters and coaches including Boris Sheiko and Dietmar Wolf, they taught me first hand the how's and why's of their ‘secret’ programmes, the most effective ways to train and combined with my own studies of exercise and injuries the absolute best ways to lift. Because of this, I feel I have privileged information that can benefit many other coaches and lifters. I will share a lot of these so called secrets with you and explain how to design your own training programme, from beginner to advanced.

There are many components to what makes a good lifter, leverages, natural potential etc. But the areas most in a lifters control is technique and programming. Without this a lifter may get far but never be as good as they really could have been. If you follow this handbook you will be the best lifter you can be and if you are a coach you will save yourself a whole load of guesswork.

WHAT IS POWERLIFTING?

Powerlifting challenges a lifters strength in their legs, how much they can press and how much they can pull. Combine these together and you get a total, biggest total wins. A simple sport and brute strength can get you far but the sport can (and should be) much deeper than that.

The squat, bench press and deadlift make up the events and in that order. All of which are demanding exercises but relatively easy movements. I consider them ‘easy’ because the body should stay in a fixed position, they are extremely repeatable and their training can be very specific.
THE RULES
There are many rules to the sport that a coach and lifter should become familiar with but most importantly are the requirements and standards for a lift to pass in competition.

These are the reasons to fail a lift according to current IPF rules:

The Reasons To Fail A Squat
• Not hitting depth, depth is the top surface of the legs at the hip joint must be lower than the top of the knees).
• Failure to assume an upright position with the knees locked at the commencement and at the completion of the lift (because of this, a very low bar position can be problematic in standing fully upright).
• Stepping backwards or forward After the ‘squat’ command or before the ‘rack’ command (do not accelerate into the end of a lift to avoid this).
• Failure to follow commands from the referee.
• Any downward movement during the ascent (including a double bounce at the bottom of the lift).
• Contact with bar or lifter by the spotters/loaders between the Chief referees signals, in order to make the lift easier (this will be the referees opinion not the lifters).
• Contact of elbows or upper arms with the legs (this will be referees discretion).
• Any dropping or dumping of the bar during or after completion of the lift.

The Reasons To Fail A Benchpress
• Bar is not lowered to chest or abdominal area (which is now allowed) This rule mostly effects equipped lifters who need to pull the bar down against the shirt).
• The bar cannot touch your belt if you wear one. (Unless it is to hold down a bench shirt I advise against it).
• Any downward movement of the whole of the bar in the course of being pressed out (this means either end of the bar can move downwards but not the centre of the bar and can be difficult to ref so try to avoid this).
• Heaving, or sinking the bar after it has been motionless on the chest or abdominal area, in such a way as to aid the lifter.
• Failure to press the bar to straight arms length elbows locked at the completion of the lift (locking out unevenly is acceptable).
• Failure to observe the Chief Referees signals at the commencement, during or completion of the lift (for example, pressing or racking early).
• Any change in the elected lifting position during the lift proper, i.e. any raising movement of the head, shoulders or buttocks from their original points of contact with the bench, or lateral movement of the hands on the bar. the whole foot needs to be in contact with the floor throughout the lift but a sideways slide can be acceptable (but not advisable).
• Contact with the bar or the lifter by the spotters/ loaders between the Chief Referees signals, in order to make the lift easier.
• Any contact of the lifters feet with the bench or its supports.
• Deliberate contact between the bar and the bar rest supports during the lift in order to make the lift easier.
• Failure to comply with any of the requirements contained in the general description of the lift, which precedes this list of disqualification.
The Reasons To Fail A Deadlift

- Failure to lock the knees straight at the completion of the lift.
- Failure to stand erect with the shoulders back.
- Any downward movement of the bar before it reaches the final position. If the bar settles as the shoulders come back this should not be reason to disqualify the lift.
- Supporting the bar on the thighs during the performance of the lift. If the bar edges up the thighs but is not supported, this is not reason for disqualification (the referee can only guess so don’t give them any doubt).
- Lowering the bar before receiving the Chief Referees signal.
- Allowing the bar to return to the platform without maintaining control with both hands, i.e. releasing the bar from the palms of the hand.
- Stepping backward or forward or moving the feet laterally. Rocking the feet between the ball and heel is permitted. Foot movement after the command “Down” will not be cause for failure. So standing up too explosively is a common lifting error and can lead to this mistake.
- Failure to comply with any of the requirements contained in the general description of the lift, which precedes this list of disqualification.

Lifting to the letter of the law and lifting in the spirit of the rules is not the same and I consider the above an absolute minimum and require a lot more out of a lifter for me to consider the lifts good enough. In a competition whoever lifts the most wins but may well not be the best lifter.

I think of this as a coffee shop trying to maximise profits. It could

A: Focus on excellent customer service and quality products.
B: Use cheaper ingredients for a better mark up.

Either could make money so by only looking at the bottom line you do not really see which is the best shop.

Getting back to lifting, this does not have to be a choice or compromise. Perfect form by it’s definition is the strongest way to complete a lift safely. This is often overlooked as sometimes a lifter is stronger than their technique and the ego gets trained more than the lift. This way of lifting creates slow progress and a greater chance of injury. If a lifting error happens due to a weight increase then it is not a weak spot or a muscle group lacking. It is simply too heavy and that exercise stops as soon as the form changes for the worse.
PERFECT FORM

This can be subjective and vary amongst lifters based on leverages, injuries, mobility and
general preferences. Many teaching cues are exaggerations of what is needed or simply
the opposite of a common error. Some lifting errors come from a misunderstanding of
when to apply a certain technique (ie. If equipped or raw). However there are many
constants that should be strived for.

The Squat

There is no short cut with squats, good bench pressers and dead lifters can be
born that way but squats take lots of hard work and lots of squats.

Bar position
A lower bar position can be an asset but **ONLY** if the lifter does not have to alter their
torso angle. As soon as a lifter leans over further the advantage of the bar being lower is
lost (besides, the rules state a lifter must be fully upright at the start and finish of the
squat).

Bracing
Bracing is done by keeping the torso completely fixed from when the bar is picked up to
when it finally gets re-racked and a classic case of less is more. The abs do not need to
brace particularly hard (around 30% of maximum). Their main action is spinal flexion and
that is not needed (or wanted in a squat). The glutes cannot contract maximally either as
they will need to allow the hips to flex to initiate the squat. Instead, these muscles should
buzz in the background allowing the movement to happen whilst actively stabilising the
spine and hips. Do not stick the chest up or overarch, the feeling of tightness must not
outrank a neutral spine and head position.

Breathing
This should be done by breathing in to the sides, it allows better oxygenation and stops a
lifter breathing into their chest (which elevates the shoulders lifting the bar higher) and
stops a lifter breathing into their belly (which distends the abs and can cause excessive
lumber extension). The breath itself should be no more than 80% of maximum air intake.

Foot position
Feet should be as wide as flexibility and femur length allows. The feet should not be
spaced wider than the knees can travel otherwise they will cave inwards. Weight should
be distributed equally between the heel and toes with a natural arch of the foot preserved
(this is why lifting in shoes is preferable to barefoot). Feet should typically be turned out
so as to track in the same direction as the knees.

If the heels lift during the lift then you can train around this with lifting shoes that have a
heel or putting weight plates under the heel. However that will not solve the issue, instead
work on mobility and consider placing a weight plate under your toes on one or both feet
during your squats.

The descent
If unequipped (raw) the lifter should squat downwards bending the knee and hip
simultaneously and equally. The knees will travel forward (not outward) relative to the
angle they are pointing in. Squatting ‘backwards’ works best for equipped lifters as they will stretch the lifting suit this way.

**The bottom of the squat**
Depth is when the top of the thigh at the crease of the hip is LOWER than the knee. Make sure this is visible but not excessive. If this range of motion is not possible without the lower back going into flexion (buttwink) then you should refrain from squatting that low (at least until the spine can be held in position throughout the exercise). Some people debate on whether this spinal flexion under load is bad or not but these are usually from people who do not want to admit they have a problem that needs addressing.

**The ascent**
On the way up focus on pushing against the bar, not the floor. If your hips pop up quicker than the bar then your legs are weak (it is not your core or back). Do not accelerate the lift to completion, you will reduce training effect and risk unbalancing yourself or the bar after what would have been a successful lift.
The Bench press

Possibly the most technically demanding of all the lifts. The bench press can benefit from a range of assistance exercises, much more so than the other two lifts but if I cannot stress enough to try to pause as many of your reps as you can to really excel in this movement. Touch and go reps have their place but should never be used when training singles.

Positioning
Creating an arch can put a lifter in a more shoulder friendly position, reduce the range of motion and take advantage of better leg drive.

The arch is to get the chest as high as is possible so should come predominantly from the upper back. This means training your arch by putting a foam roller under your lower back will not help much. Instead work on mobilising the upper back and shoulders.

If the arch shrinks down during the lift do not correct it by putting bands around the bench to stop the slipping. This simply means your arch is does not have the endurance to survive a set and will be the limiting factor until it develops (by practicing it more).

Hand placement
Unless injured EVERYONE should be trying to hold the bar as wide apart as is legal, which is the index finger covering the power rings (81cm apart). If this is wider than you are used to then progress the hands out each week around 1-2cm to get used to the new position.

The weight should rest on the bottom end of the palm so there is relatively little load pulling the hand back. For this position wrist wraps are highly recommended as wrists do not recover quick enough between sessions to ever get used to it.

Shoulder movement
I have always found it a lazy (and inaccurate) teaching cue to say keep the shoulders back and down during the whole lift. Instead the shoulders should be allowed to glide towards each other (but not squeeze together) as the bar is brought to a lifters chest and allowed to separate (but not be stretched forward) as the bar is pressed. This allows the arm to move more naturally around the collar bone and allow the elbow to lock out uninhibited.

Bar path
The bar path is both highly individual and the same for everyone. The elbow should remain directly under the bar thorough the lift and the bar brought down towards the stomach (once not allowed in competition but that rule no longer exists) and pressed directly over the shoulders (not necessarily straight up). This creates more of an arc than a straight line seemingly increasing the distance the bar travels in. In reality the lifter is only working to push the bar upwards so any horizontal bar movement creates little (if any) extra work.

Leg drive
The feet (heels and toes) should remain flat on the ground throughout the lift. The legs must be active to create stability and drive. If this causes the hips to lift then the lifter is probably overextending the lumber and needs to get more arch from the thoracic spine.
For some lifters blocks are necessary and in training a lifter may want to rest their back in which case a flat back and feet up position is perfectly acceptable.

**To spot or not**
The bench press needs a spotter, not when it gets to a weight you are unsure about, but when it gets to a weight that would cause injury if you drop it on yourself. This can be because of a lack in concentration, cramp, unsuspecting fatigue or any number of reasons and as rare as they may be have someone nearby just in case.
The Deadlift

Whilst the best deadlifters are born not made, everyone can benefit from correct positioning and perfect technique.

**Be close, but not too close**

Everyone knows you should get close to the bar in order to lift as heavy as possible. However, this can be misinterpreted. A lifter should be close to the bar when they are about to lift, not when they are standing.

Starting with the bar mid-foot allows the lifter to get in to a more upright position but still have the shins against the bar. This puts less strain on the back and more emphasis on the legs (which are much more trainable and recover far quicker).

For sumo deadlifters the focus is on keeping the hips as close to the bar as is possible throughout the movement.

**How to set up**

The lifter should bend the knees into position first. This means when the hips bend afterwards the lifter only has to lean until the bar is in reach creating a very strong and repeatable position.

It is an advantage to set your shoulders in their ‘finish’ position BEFORE the lift starts, it keeps the bar closer to the hips throughout the lift and is one less thing to move when under load.

A mixed grip is preferable despite the hook grip gaining popularity. Remember when mixing the grip to only turn the hand and forearm. The upper arm and shoulder should not move.

**Time to pull**

Once the lifter is in position and got hold of the bar it is important to take the slack out of the bar and make sure the bar has ‘picked up’ all the plates. Squeeze the bar off the floor instead of jerking at the weights.

Do not ‘pop’ the chest up at the end of the exercise, squeeze the shoulder blades together or try to lean back excessively. The finish should be smooth and not accelerated as there is a risk of losing balance.

**Put the bar down gently**

In both training and competition you should keep hold of the bar until it is fully resting back on the floor. This is a good habit as it is a requirement in competition and stops a lifter instantly going from holding a heavy weight to nothing. The change of pressure can cause fainting, this can still happen when putting a weight down to the floor but at least the lifter is bent over and nearer the ground should they still faint.

When lowering the weights the eccentric (negative) portion of a lift offers a favourable training effect so should not be ignored and instead should be actively trained. The bar should come to a complete stop between reps. These things may reduce some of the reps a lifter is used to achieving at a given weight but the quality over quantity is preferable.
GENERAL TIPS

The devil is in the detail but do not spend a disproportionate amount of time to something that will make little difference. Spend most of your time focusing on form that is ‘good enough’ and aim to get stronger in general.

Do not obsess over precise set up, try to get into your start position as quickly as possible. So long as you are in a safe position and have control of the bar you should attempt the lift without fidgeting.
Do not be too fussy over the bar you use, get used to bars that are different stiffness’s, different thicknesses (within a few mm), smoother and sharper etc. When squatting and deadlifting to not always make a grab for your competition shoes/boots. Regular trainers really are fine most of the time. Knee sleeves should also not be relied on too heavily outside of meets.

Try to not exaggerate areas of the lift but be mindful of which muscles you want to move the weight, control the range of motion and ensure the correct posture is held throughout the movement.

The tempo should be smooth most of the time, however some lifters will end up ‘grinding’ the odd rep which is perfectly acceptable providing the form is held and that it is not happening every set.

Sticking points are when the bar slows not where it stops and more often than not simply down to leverages rather than muscle weakness’s (where the lifter is at mechanically the most disadvantaged position in a movement). Once a lifter gets stronger the same sticking point will often reappear but under a heavier load and often the best way of training is to use a load heavy enough to challenge but light enough to not effect tempo.

Some lifters train ‘instinctively’ listening to the body others blindly follow programmes and routines. Neither of these approaches are optimal. So what is the best way to structure a workout?
PROGRAMMING

First, what is the difference between a programme and a routine? A routine is simply what happens on what day; a plan for the exercises that week and not usually too much more. The programming is all the details that stop the routine being a copy and paste. It is the way you progress, select intensities, divide up the volume and so on. Both are equally important for optimal progress.

As a lifter progresses from beginner to elite athlete, their needs change and the training should reflect that. A beginner would make little progress if they train above their level as would a more accomplished lifter oversimplifying their workouts.

WHAT LEVEL ARE YOU?

For simplicity I class a beginner as someone who is unable to perform the exercises safely and to competition standard. This could be due to strength, balance, mobility issues or simply a lack of technique. Once this level is achieved we look at the difference between intermediate and advanced lifters. Here we draw a line in the sand and divide lifters by ability, intermediate and advanced lifters can be divided by the total weight lifted in the three competition lifts.

Use the chart below to see how you measure up:

<table>
<thead>
<tr>
<th>Weight class (men)</th>
<th>53kg</th>
<th>59kg</th>
<th>66kg</th>
<th>74kg</th>
<th>83kg</th>
<th>93kg</th>
<th>105kg</th>
<th>120kg</th>
<th>120+kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (KG)</td>
<td>337.5</td>
<td>375.0</td>
<td>415.0</td>
<td>452.5</td>
<td>487.5</td>
<td>517.5</td>
<td>545.0</td>
<td>565.0</td>
<td>580.0</td>
</tr>
<tr>
<td>Weight class (women)</td>
<td>43kg</td>
<td>47kg</td>
<td>52kg</td>
<td>57kg</td>
<td>63kg</td>
<td>72kg</td>
<td>84kg</td>
<td>84+kg</td>
<td></td>
</tr>
<tr>
<td>Total (KG)</td>
<td>195.0</td>
<td>210.0</td>
<td>227.5</td>
<td>250.0</td>
<td>265.0</td>
<td>292.5</td>
<td>320.0</td>
<td>337.5</td>
<td></td>
</tr>
</tbody>
</table>

Advanced is far from meaning elite and there is nothing to gain from training at an inappropriate level, this will slow down your progress greatly. Once you know your current level (not desired level) you can prepare your training plan.

BEGINNER PROGRAMMING

A beginner should be focussing on form and working on the flexibility and/ or general strength they will need for the sport.

Working on general strength, the start positions, postural problems, deep stabilising muscles and solid movement patterns should all come first. This can put a lifter off when they are keen to get strong fast but these details are best addressed at this stage.

If you are struggling with form or mobility in one of the main lifts then you are simply not ready to strengthen that movement, you will just reinforce bad habits. That does not mean the muscles required for that move cannot be trained. You can still get a good workout whilst preparing for the main lifts.
You will need to overcome a range of problems in your training but look at solutions that solve the issue, not avoid it. **Common things happen commonly** so do not reinvent the wheel. I use tried and tested methods but do not dogmatically do the same thing if you are not seeing measurable and progressively better results. There will on occasion be an exercise that is inappropriate, it may be down to your body type, medical condition, previous injury but there may be a red flag for you. You can prove you are the exception but if something has to be modified too heavily then consider it the wrong exercise for now and find an alternative.

A beginner powerlifting routine should be varied. Reps should not be taken to failure and sets should fall in the 5-8 rep range. I have put a time limit per lift rather than a maximum amount of sets so a lifter’s conditioning will determine the overall work done. Ideally they should be resting no more than 3 minutes per set on the main lifts and 2 minutes on assistance work.

The main focus should be on the basics. A good body position comes first and never to be compromised. Swapping essential positions and movements for something that is a secondary luxury is a bad idea.

*Beginner workouts can be divided into a few different ways, they are often categorised as follows:*

**Body part splits** Here you pick a muscle group or two each session and typically train each area of the body once a week. This is fine for hypertrophy in particular, good results have been seen by many but they are not my favourite way to structure sessions. A push-pull-leg split comes under this category.

**Upper/ lower splits** This is when workouts are divided between upper body exercises and lower body exercises. These are very good, a bit more frequency than a body part split but still time to get some extra focus on an area.

**Full body workouts** I really like full body sessions but they aren’t for everyone, they can be time consuming if you aren’t careful and sometimes a little tough to fully recover from session to session (although that is not necessarily a problem).
EXERCISE ORDER

The order in which exercises are performed can alter their effect. Unfortunately this can be a highly debatable subject. Some common ‘rules’ are:

- Heaviest to lightest
- Most complicated to simplest
- Big muscles to smallest
- Compounds then isolations

All of this is good general advice, but often contradictory. For example:

A leg press is usually heavier than a squat but squats are usually programmed earlier in a session. Lunges are more complicated than squats but again usually done second.

Instead, I prefer to simply train the competition lifts in the order they appear in a meet, beyond that I go from most important to least important.

For a beginner, learning how to move and developing body awareness and a mind-muscle ‘connection’ would be a priority. In this instance I am happy to have some isolation exercises before a compound movement because the isolation exercise is often more simple and allows the novice to feel which muscle is working and to practice a single joint (or pair of joints) moving whilst the rest of the body remains still. Usually a beginner will not be using the kind of load or have the focus to truly exhaust a muscle and affect any compound exercises that may follow. A more advanced lifter would call this ‘activation’.

If a lifter is more advanced and preparing for a meet they may well perform all the competition lifts first then any isolation exercises afterwards To ensure the main lifts are done when freshest.

In the off season, the same lifter may perform a competition lift followed by assistance work for that movement before going on to the next of the big lifts so as to build muscle or conditioning.
FREQUENCY

This is an important variable. The same amount of work can have a different effect depending how it is spread across a week and ways to change frequency can be subtle.

Using the above examples and assuming all are three or four times a week; each exercise/ muscle group gets trained 25/33/50/100%. This can be pushed further by having a split that runs a different amount of days to how many you train ie. A 3 day split on a four day training week, a five day split training three times a week etc. Then you can make a training split that has each movement at the desired frequency/ ratio and not worry about how it fits into any one week.

For a complete beginner I actually like more variety of exercises and more non specific exercises (isolation movements, machine work etc). Reason being at this level it is unlikely the lifter is either able to extract enough from one movement or to be lifting enough weight to really create a training effect. Usually I want more frequency than an upper/ lower split but more recovery than a full body workout and the focus that comes from a split routine so have combined the three.

I have designed it so that the previous workout will not detract from the next session, this way you can train on consecutive days. Sometimes the same body part will be worked two sessions in a row but always with a ‘less important’ variation of an exercise on the following day. Therefore there may be some muscle soreness you take into the next session but it should not be too detrimental to that workout.

An example of this kind of routine may be the following:

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squats 20mins</td>
<td>Goblet squats 10mins</td>
<td>Bench press 20mins</td>
</tr>
<tr>
<td>Close grip Bench press 15mins</td>
<td>Deadlifts 20mins</td>
<td>Deadlifts from knees 15mins</td>
</tr>
<tr>
<td>Press ups 3-4x5-12</td>
<td>Rows 4-5x8-12</td>
<td>Shoulder press 2-3x8-12</td>
</tr>
<tr>
<td>Tricep push downs 3-4x8-12</td>
<td>Leg press 2-4x8-12</td>
<td>Lat pull downs 3-4x8-12</td>
</tr>
<tr>
<td>Leg curls 2-3x8-12</td>
<td>Back extensions 2-3x6-10</td>
<td>Bicep curls 2-3x6-10</td>
</tr>
</tbody>
</table>

Once full range of motion and proficiency is achieved in the competition lifts then I would class the lifter as an intermediate (there is no expected time frame for this transition).

Do not spend inordinate amounts of time working on ‘mobility issues’. You should especially not waste time foam rolling and lacrosse balling bits that could be ignored with little consequence or never improve from session to session. Without sounding harsh If you are planning on becoming a competitive lifter and need 30 minutes to get under a bar you should switch your priorities for the time being. This is not a sport that needs a great deal of flexibility so if 5-10 minute light cardio warm up (yes we still do that nowadays) and some brisk stretching does not give you the range of motion needed then take that as a sign your mobility should be your main focus before developing strength.
INTERMEDIATE PROGRAMMING

Once a lifter has become an intermediate they will be competent in the competition lifts using full range and holding a correct position throughout.

Frankly, at this stage pretty much everything works; so mindlessly going in the gym, lifting as heavy as possible and eating everything will give results as would obsessively calculating and replicating every set and rep from a cookie cutter routine your favourite lifter has supposedly done or recommends. Any ‘method’ that gives positive results and causes no injury can’t really be called a bad approach but could be a long way from being good.

For the intermediate lifter there are some general ideas to follow such as the intermediate can work harder in less time and get more benefit per exercise than a total beginner. Workouts may counterintuitively become shorter, with a little less variation and more specific exercises being used. However, the total volume will almost certainly have to increase, as will the intensities (the weight used in relation to the lifter’s maximum). It is only at this stage onwards can a lifter find their one rep maxes which gives a valuable training effect and information the lifter and coach can use with regards to weaknesses and progression.

At this stage lower intensities and higher rep ranges will have less of an effect on strength. On the flip side the lifter will benefit from the lower rep ranges than they would have been in the past.

Slightly higher frequency can be introduced in order to fit in the extra volume meaning full body routines may be of more benefit now.

A sample routine may be:

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squat 3-5x3-5</td>
<td>Pause squats 4-6x4-6</td>
<td>Squat 2-3x4-6</td>
<td>Front squats 3-4x5-8</td>
</tr>
<tr>
<td>Rdl 2-3x6-8</td>
<td>Bench press 4-6x3-5</td>
<td>incline bench 2-3x5-8</td>
<td>Bench press 3-4x4-6</td>
</tr>
<tr>
<td>Close grip bench 3-4x6-8</td>
<td>Deadlifts 4-6x3-5</td>
<td>Barbell rows 4-5x8-12</td>
<td>Deadlifts 3-4x4-6</td>
</tr>
<tr>
<td>Dumbell rows 3-4x8-12</td>
<td>Shoulder press 3-4x8-12</td>
<td>Curls 2-3x8-12</td>
<td>Pull ups 4 sets</td>
</tr>
</tbody>
</table>

Here the lifter will start at the higher set and rep ranges and simply add weight each session until they no longer hit the lower recommendations. The weights are then reset and the cycle is repeated with heavier loads. At this level going close to failure is fine but some of the more general exercises for the triceps, hamstrings and lower back have been removed.

Up to this stage we have not included percentages or intensities in the program, even though a lifter may well know their maxes. Working in rep ranges is more suitable as it is less fiddly, more instinctive and not reliant on a lifter knowing their exact maxes or getting caught up in the maths instead of the lifting.
It is very unlikely the lifter would have got hold of anything but a generic percentage routine not considering the lifter's unique leverages, muscle fibre distribution, strength, current fatigue, experience, lifestyle and so on. This means when a cookie cutter program gets followed you will need to adapt it and keep changing it as is needed. If, for example, your maximum is 125kg and your routine says to lift 75% for 4x5 you would need to load 93.75kg I would prefer to get two sets at 92.5kg and two sets at 95kg, I would have the same average intensity and been exposed to two different loads creating more variable practice and a lot less fiddling with fractional plates.

There are many ways to structure your sets and all have benefits and drawbacks. Here are a few of them.

**SETS AND REPS**

**Straight sets**
Probably the one that people are most familiar with. Here a lifter will attempt to do the same weight and reps for each set ie.

4x5
100x5, 100x5, 100x5, 100x5

This is an easy set scheme to follow and great for strength gain. The lifter is exposed to plenty of sub-maximal volume and can work close to failure on the final set(s) if they wish to. The main drawback is that straight sets do not always fit in neatly to the amount of reps a lifter wants to achieve on a day and obvious progression is difficult because the increase in reps, weights or sets you use is multiplied dramatically.

4x5 (weight increase)
105x5, 105x5, 105x5, 105x5 (100kg total increase)

4x6 (rep increase)
100x6, 100x6, 100x6, 100x6 (400kg total increase)

5x5 (set increase)
100x5, 100x5, 100x5 100x5 100x5 (500kg total increase).

Whilst the weight increase makes the least difference to total weight lifted and is potentially also the hardest one to achieve.

**Pyramids (DeLorme method)**
These involve increasing the weight and decreasing the reps on each set ie.

80x6, 90x5, 95x3, 100x2
These are more flexible than straight sets and progressions can be more sophisticated for example;

85x6, 90x5, 95x4, 100x2 (125kg total increase with only one additional rep at 95kg). The lighter sets at the beginning can add volume whilst physically and mentally preparing the lifter for heavier loads.
Reverse pyramid (Oxford method)
This method starts the same as the pyramid technique but then once the muscles are fatigued and can no longer handle the same intensity the weight is then dropped and the reps increased again, for example;

80x5, 90x4, 100x2, 85x4, 75x5

The actual difference in results between this or the regular pyramid is fairly negligible. However, having the option to drop down in intensity later in a workout can be invaluable in order to get the desired total work or reps in. This should be limited to twice per week on squats and bench press, once on deadlifts (if at all) and not the last week before a meet.

Rep wave loading
This is a great way for a lifter to handle days with larger volume. Straight sets and pyramids leave a lifter progressively more tired from set to set which means either a lifter working with large volume will get little from the earlier deliberately lighter sets or struggle with the later sets.

Here the weight may stay constant but the reps will vary allowing ‘rest sets’ between harder sets.

An example may be:

75x6, 75x3, 75x4, 75x2, 75x5, 75x3, 75x6, 75x2, 75x4

Typically such high volume would only be programmed once or twice a week anyway but should not be used on deadlifts.

Pyramid Wave loading
This is basically just several pyramids done in sequence and traditionally a heavier ‘cycle’ each time. An example would be:

65x6, 75x4, 85x2, 70x6, 80x4, 90x2, 75x6, 85x4, 95x2

The idea is it allows ‘post-tetanic potentiation’ a way for your nervous system to prepare for heavier loads and a chance to practice the exercise with lighter ones. This is thought to ‘possibly’ benefit high level athletes but with so many variables difficult (and a little pretentious) to incorporate effectively.

I like to keep an open mind and use a combination of all of the above fairly safe in the belief that how you get the work done is not as important as getting the work done.
SO WHAT NEXT?

Once the lifter becomes more experienced, tested out their maximums and has surpassed the classification chart above they will be ready for more advanced programming. To progress from here the technique being used should be excellent and lifts are not being missed because of form breakdown but purely because of strength limitations. In other words, your maxes should look like your reps.

Some people misunderstand that and during their lighter work try to employ the force needed for their max, psych up and get far too tight. That is making your reps look like your max not your max look like your reps, sounds similar but it is a HUGE difference! Perfect technique is your strongest *safe* option in moving loads so if your form breaks down from this to complete a rep you are in theory moving to a weaker (or less safe) position. That is not the form you are training, working from or counting as a completed lift.

This allows you to practice the lifts more often and keep injury free which, in turn will make you stronger. Lifting maximally is a skill and should be practiced but *if you seek your limits you will find them!* For the most part you need to develop strength not test it.

All of the lifts should be done mindfully, extract as much from each rep as possible, holding position and moving to the best of the lifter’s ability is the best advice I can give. Otherwise, the lifter is simply completing reps hoping for an improvement. This is the same as assuming each time the lifter drives to the gym they become a better driver. Without mindful, deliberate practice the lifter is doing themselves a huge disservice and practicing the sport in the shallowest way which often means a short lifting career due to boredom.

Advanced programming relies on being honest with yourself or having coach who will tell you what you need and not what you want. The smaller details that have been the main focus so far will be assumed rather than forgotten. Now the lifter will need longer periods to create a training effect so patience and faith in the plan is essential. Setting up a program for an advanced lifter can seem daunting but I will break it down, as follows.
ADVANCED (don't pretend you didn't skip to this section first)

The mystique associated with advanced training routines is partly down to lack of understanding how the systems work and the secrecy that comes from some of the more prominent national coaches who use them. You will also have strong people training sub optimally but as long as they speak the same language and are big on social media their sometimes inappropriate advice becomes the most widely used.

There is a system when it comes to training national teams rather than individuals and typically the answer to everything is ‘it depends’ so it is a good idea to have a thorough understanding of the hows and whys before blindly following a routine you find on the internet.

It is at this stage a lifter needs to decide on full time coaching or setting their own routine because cookie cutter programs that blindly spoon feed the lifter every rep for several weeks will simply not be optimal.

THE BIG PICTURE COMES FIRST

Sometimes called a Macrocycle, this year overview will be based around important competitions, it will take into account any known breaks from training and act as the skeleton of the rest of the plan. Most importantly, it is something to deviate from.

If someone does not want to compete I still advise they test maxes at least 3-4 times a year. If they are a national level lifter or lower you should aim for 6-8 meets a year in order to learn their sport. I recommend only really peaking for 3-4 of them. If they become an international level lifter lower this to around 4-6 meets and peak for only three of the most important ones (unless they have won a national title they are not an international level lifter).

Up until now progress would have come relatively easy and from week to week (or possibly month to month) and been using the ‘single factor training theory’ or ‘super-compensation’. Basically, this means they train, cause fatigue, adapt/get stronger, repeat. Eventually the lifter will find they start having good and bad days or suspiciously come back stronger from a week off and then quickly plateau again. At this stage, simply training harder or eating more will not be good enough (or desirable).

Training can be seen as ‘go as hard as possible (to recover from)’ or ‘minimum effective dose’ opposite way of looking at the same thing really. It is a little more complicated than that and can only be ignored for so long. Enter ‘dual factor training theory’. The idea is that exercise causes fitness and fatigue which lasts at a ratio of around 3:1.

To put simply; if training takes 3 days for the lifter to recover (recover means to get back the strength you had), the training effect will last a further 6 days. This does not mean the lifter should necessarily wait until fully recovered, training before this will push fatigue higher and your ‘apparent’ level of fitness down. In reality the training effect is continually being increased but the accruing fatigue is masking the effects. However, this fitness overdraft does not last forever.
To remove fatigue around a third of your training volume and intensity should be at a reduced level. In this style of programming, it means roughly every third session goes no heavier than 80% and one week in four has reduced volume (this week is not always the lightest week, be it in actual weight lifted or average intensity.

With the dual factor training theory in mind I try to divide my year up in to 4 week blocks (sometimes called ‘mesocycles’). Here I can be a little more focused on the details. I will decide the total amount of reps I plan to do, how I will divide them between three main lifts and what the average intensity (AI) of each lift and in total I shall aim for. At this stage you will see what the total reps and average intensity for the year may look like and if you are set to improve on the previous year.

An example of a year with four peaks and a planned week off could look like this:

**Macrocycle 14000 reps Average Intensity 71%**

<table>
<thead>
<tr>
<th>1 week</th>
<th>12 weeks divided into three 4 week mesocycles. Total 3000 reps, Average Intensity 72%</th>
<th>1 Week</th>
<th>16 Weeks</th>
<th>8 Weeks</th>
<th>14 Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 reps</td>
<td>General volume phase (4weeks)</td>
<td>0 reps</td>
<td>5000 reps</td>
<td>2500 reps</td>
<td>3500 reps</td>
</tr>
<tr>
<td>Week off</td>
<td>1000 reps (AI 75%)</td>
<td>1200 reps (AI 73%)</td>
<td>800 reps (AI 71%)</td>
<td>Week off</td>
<td>71%</td>
</tr>
</tbody>
</table>

**MESOCYCLES**

A training block is sometimes referred to as a ‘Mesocycle’. Each Mesocycle should be four weeks long, however when this does not divide in to your competition calendar then repeat or omit the most average of the weeks from the cycle making a three or five week block.

Choose a focus on each mesocycle depending on where in the macrocycle you are. Traditionally in many sports different fitness components will be developed at different times of the competitive year; but in powerlifting we can divide mesocycles into one of the following categories:

- **Volume (specific and general specific)** This will make up 26-30 weeks (50-58%) of your year and typically have the highest AI allowing more work to be done in the optimal strength building intensities. More variation on the main lifts will be used depending on a lifters needs/ weaknesses.

- **Peaking (specific)** This will make up 20-22 weeks (39-41%) of your year. Despite the heaviest weights being lifted the AI will be relatively low and most assistance work will stop or be dropped to a minimum. Focus here is to develop the skill of coordinating the heavier weights used in competition.

- **Active recovery/ deload (general)** By recovery I mean recovery- ‘regaining what was lost’ not rest. I do not recommend much time completely off of lifting exceptions are serious injury or illness so have kept this down to 1-2 weeks a year (1-2%) Ideally some general exercise, walking, bodyweight exercises and stretching will be included during this phase. ‘Easier’ days are generally planned every third session and one week in four is often a recovery week to manage fatigue and not to be confused with a deload.

**Note:** You should not run a peaking cycle after a deload and ideally you would not run a volume phase after a peak (but this can be worked around). You can have two volume or peaking phases back to back but not two recovery blocks.
A mesocycle starts with a total amount of reps to complete. This can be anything from around 300-2000 reps. Checking a lifter’s training logs and counting typical total reps is a good place to see where a lifter is, almost like starting a diet and calorie counting to see where you are initially. If you choose too few total reps you will not induce a big enough training effect. Too many and a lifter will struggle to complete sessions at a high enough intensity to develop strength.

Once you have split your total reps for the mesocycle in to weeks you then divide them between the 3 lifts (and close variations). Typically this will be:

- **28-36% squats**
- **35-41% bench press** (although even higher has been successful for some)
- **26-34% deadlifts**.

Aim for the middle of these recommendations unless you are trying to bring up a lift, in that case aim for the higher end of the range and distribute the remaining reps as required. It is good to bring up weaknesses but not at the expense of your strengths. Reps are then divided into weekly microcycles. Each week can range from 15-40% of the total volume of the mesocycle.

Try to not divide the reps too equally, and one week in four should be a drop in the distribution creating a wave.

For example:

<table>
<thead>
<tr>
<th>Week 1-4</th>
<th>Distribution of 1000 reps</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Average intensity (AI) 75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 reps 75% AI</td>
<td>32%</td>
<td>112 reps</td>
<td>89 reps</td>
<td>71 reps</td>
<td>48 reps</td>
<td>73%</td>
</tr>
<tr>
<td>Squat 35%</td>
<td>38%</td>
<td>134 reps</td>
<td>106 reps</td>
<td>84 reps</td>
<td>57 reps</td>
<td>77%</td>
</tr>
<tr>
<td>Bench 28%</td>
<td>30%</td>
<td>101 reps</td>
<td>79 reps</td>
<td>63 reps</td>
<td>44 reps</td>
<td>75%</td>
</tr>
<tr>
<td>Deadlift 22%</td>
<td>38%</td>
<td>134 reps</td>
<td>106 reps</td>
<td>84 reps</td>
<td>57 reps</td>
<td>77%</td>
</tr>
</tbody>
</table>

Counterintuitively, the volume in a week does not have to dictate the intensity. So a low volume week may be used as a light week allowing the lifter to recover with minimal impact on overall intensity, or it could equally be an opportunity to use heavier loads. Remember the average intensity chosen on a high volume week will have a greater impact on the mesocycles average intensity (more on intensity later).
An example of four week balanced rep distribution could be as follows.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Squat</th>
<th>Bench</th>
<th>Deadlift</th>
<th>Week 3</th>
<th>Squat</th>
<th>Bench</th>
<th>Deadlift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>39</td>
<td>27</td>
<td>32</td>
<td>Day 1</td>
<td>25</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Day 2</td>
<td>34</td>
<td>47</td>
<td>32</td>
<td>Day 2</td>
<td>21</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>20</td>
<td>37</td>
<td></td>
<td>Day 3</td>
<td>13</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>39</td>
<td>40</td>
<td>32</td>
<td>Day 4</td>
<td>25</td>
<td>25</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Squat</th>
<th>Bench</th>
<th>Deadlift</th>
<th>Week 4</th>
<th>Squat</th>
<th>Bench</th>
<th>Deadlift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>31</td>
<td>21</td>
<td>25</td>
<td>Day 1</td>
<td>17</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Day 2</td>
<td>27</td>
<td>37</td>
<td></td>
<td>Day 2</td>
<td>14</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>16</td>
<td>29</td>
<td></td>
<td>Day 3</td>
<td>9</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>31</td>
<td>32</td>
<td>25</td>
<td>Day 4</td>
<td>17</td>
<td>17</td>
<td>14</td>
</tr>
</tbody>
</table>

You then decide how many days you want to train, how often you choose to do each lift and how to distribute the reps between the sessions in each week. Lighter lifters (under 100kg) can usually handle an extra day of training and slightly higher frequencies. Squats and bench presses can be trained 2-5 times a week whilst deadlifts are usually 2-4 times a week.

If you decide lower frequency allows more recovery between sessions or you cannot add more volume to a session then you can split the volume of a lift in to two parts in the same session. This can allow a lifter a break from an exercise whilst performing a different event then return later in the session fresh enough to continue and at least an extra day to recover from what became a bigger session.

Using the same total volume shown in week one this could look like this:

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Squat</th>
<th>Bench</th>
<th>Deadlift</th>
<th>Squat</th>
<th>Bench</th>
<th>Deadlift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td></td>
<td>33</td>
<td>32</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 2</td>
<td>24</td>
<td>40</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td></td>
<td></td>
<td>37</td>
<td>20</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>20</td>
<td>27</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rep distribution per lift can be from 10% of the total reps that week up to 60% depending on amount of days it is being split over. Like the weekly load distributions this should be wave like and not an even split with roughly every third day to be low in volume to manage fatigue.
This can be executed in many ways, the main aim is to hit the desired total reps and at the end of the month to hit the correct average intensity, a sort of ‘so long as it is done in the end’ approach. Some lifters feel liberated, others feel lost without more specific instructions.

The extra details may be of comfort to the lifter but it is nigh on impossible to predict how a lifter will feel on any given day as there are too many variables such as diet, sleep, health and outside commitments that can all have an impact.

I feel this is like a school to university transition. Now the lifter needs to be more self motivated and have less ‘hand holding’, they have more freedom, they are given guidelines rather than rules.
Here is an example of how the squats from rep distribution earlier could be interpreted using pyramids and reverse pyramids. See how each four week block has heavier lifts than the last but a lower AI:

<table>
<thead>
<tr>
<th>Squats</th>
<th>Week 1</th>
<th>Week 5</th>
<th>Week 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>(27)60x5,65x5,70x4x2,80x3x3</td>
<td>(39)60x6,65x6,70x5x2,70x4x2,80x3x3</td>
<td>(44)60x8,65x5,70x5,75x3x3,80x3x3,65x8</td>
</tr>
<tr>
<td>Day 2</td>
<td>(23)60x4x2,70x3x2,80x3x3</td>
<td>(34)60x5,x2,70x5x3,75x3x3</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>(27)60x5,65x5,70x4,75x3,80x3x3</td>
<td>(39)60x6,65x6,70x5x2,70x4x2,80x3x3</td>
<td>(30)60x5,65x4,70x4,75x4x2,80x3x3</td>
</tr>
<tr>
<td>Total</td>
<td>112 reps, AI 69.5%</td>
<td>77 reps, AI</td>
<td>74 reps, AI</td>
</tr>
<tr>
<td>Week 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>(47)60x6,65x5,70x5,75x4,80x4x4</td>
<td>(29)60x5,65x5,70x5,80x4,85x2,2.9x2,92.5x2x2</td>
<td>(21)60x4,70x4,80x3,85x2,90x2,90x2,90x2x2</td>
</tr>
<tr>
<td>Day 2</td>
<td>(43)60x6,65x6,70x5,75x3,80x3x3</td>
<td>(27)60x5,70x5x2,75x4x3</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>(47)60x6,65x5,70x5x2,75x4x2,80x3x3,70x6,65x5</td>
<td>(34)60x6,65x6,70x5x2,80x3x2,85x3x3</td>
<td>(43)60x8,65x5,x3,70x3x4</td>
</tr>
<tr>
<td>Total</td>
<td>90 reps, AI 72.2%</td>
<td>134 reps, AI</td>
<td>65 reps, AI</td>
</tr>
<tr>
<td>Week 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>(36)60x6,65x5,75x4x280x3x3,75x4x2</td>
<td>(25)60x5,70x4,75x4,80x3x2</td>
<td>(32)60x5,70x5x3,75x4x3</td>
</tr>
<tr>
<td>Day 2</td>
<td>(32)60x6,65x5,70x4x2,80x3x3,70x5x2,70x5</td>
<td>(23)60x4,270x3x2,80x3x3</td>
<td>(28)60x4,70x4,270x3x2,80x3x2,90x2</td>
</tr>
<tr>
<td>Day 4</td>
<td>(36)60x6,65x5,70x4x2,80x3x3,70x5x2,70x5</td>
<td>(27)60x5,65x5,70x4,75x3,80x3x2,85x3x3</td>
<td>(32)60x5,65x5x3,70x4x3</td>
</tr>
<tr>
<td>Total</td>
<td>75 reps, AI 72.6%</td>
<td>104 reps, AI</td>
<td>92 reps, AI</td>
</tr>
<tr>
<td>Week 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
<td>(28)60x5,65x5,70x4,80x3x285x2x2,90x2x2</td>
<td>(19)60x4,70x4,80x3,85x2,92.5x2x3</td>
<td>(17)60x5,65x3x2,70x2x2,75x2x2</td>
</tr>
<tr>
<td>Day 2</td>
<td></td>
<td></td>
<td>(11)60x3,65x3x2,70x2</td>
</tr>
<tr>
<td>Day 4</td>
<td>(41)60x5x2,70x5x2,75x4x2,80x3x3,70x4</td>
<td>(29)55x6,65x5,75x4x280x3x2,85x2x2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48 reps, AI 74.5%</td>
<td>69 reps, AI</td>
<td>28 reps, AI</td>
</tr>
<tr>
<td>Month</td>
<td>325 reps, AI 73%</td>
<td>384 (71.87% AI)</td>
<td>259 (69.7%)</td>
</tr>
</tbody>
</table>
INTENSITY

In powerlifting ‘intensity’ is usually referring to the percentage of your 1rm, not how hard a set or weight feels.

So, what reps count? For this program any rep done in a competition style lift or close variation that is 55%+ of the lifters 1rm counts. Average intensity (AI) is relative to the lifters most recent maximums so all the above assumes a lifter knows their 1rm (perfect form and full range of motion ROM). If the lifter has not done a maximum attempt or a recent attempt then predicted maxes can be used.

The table should be used purely for programming as it is not always a reliable predictor of a true 1RM.

<table>
<thead>
<tr>
<th>1RM</th>
<th>2RM</th>
<th>3RM</th>
<th>4RM</th>
<th>5RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1.05</td>
<td>&lt;1.06</td>
<td>&lt;1.12</td>
<td>&lt;1.15</td>
<td>&lt;1.18</td>
</tr>
</tbody>
</table>

Failing lifts should be kept to an absolute minimum, any reps attempted but missed should be counted but the weight dismissed, this will bring your averages down for that set quite dramatically.

For example;

3 reps with 100kg (all successful) = 300kg total, 100kg Average weight lifted.
4 reps attempted only 3 successful = 300kg total but 75kg Average weight lifted

Whilst strength can be improved from intensities as low as 40% this is far from optimal for more experienced lifters. By only considering reps at 50-55% and onwards as a work set means that close variations of lifts can all be based off of the competition lift percentages.

The alternative is you count work sets at 60% of the variation being used. Otherwise basing 60% off the main lifts would mean many variations of the lifts would often not be heavy enough to count despite the lifter building up noticeable fatigue. The downside to this is either needing to know your 1rm of every lift variation or using a formula which may not always be accurate for every lifter and every occasion (this is more relevant to equipped lifters than raw/unequipped).

For optimal strength, most work should be done between 70-85% of your maximum and a four week block should have an AI of 68-75% for the three lifts. There is a range here for several reasons. The bench press usually sits at a higher AI due to the range of motion, the lighter load typically used but mostly because of the system weight (most of the body is not moved during the lift). Other reasons include; women generally perform more reps at the same percentage to men, peaking usually involves higher actual intensities but a lower average intensity and there are differences in muscle fibre type which can influence reps achievable at a given percentage and their baseline recovery ability.

A Typical months intensity should be spread from 55%-97.5% as follows:

<table>
<thead>
<tr>
<th>Intensity</th>
<th>55-69%</th>
<th>70-74%</th>
<th>75-79%</th>
<th>80-84%</th>
<th>85-89%</th>
<th>90%+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volume</td>
<td>14-16%</td>
<td>18-21%</td>
<td>18-21%</td>
<td>18-21%</td>
<td>14-16%</td>
<td>&lt;15%</td>
</tr>
<tr>
<td>Typical rep range</td>
<td>4-8</td>
<td>3-7</td>
<td>3-6</td>
<td>3-5</td>
<td>2-4</td>
<td>1-3</td>
</tr>
</tbody>
</table>
The lower weights have less of a training effect but build up less fatigue. The higher intensities cannot be trained with enough volume to give a training effect. For this reason every third session should not go heavier than 80% to allow recovery.

For this style of programming do not confuse how hard a set was or your emotional state with intensity. In fact ‘psyching up’ for a lift is discouraged. This is because it can have a negative impact on a lifter’s recovery between sessions (partly due to the extra work that may have been achieved) but also because of the increase in stress hormones which can hamper recovery and is linked to various health concerns. It also makes a lifter less mindful over the lifts being performed and, therefore, ‘learn less’ during the set. Every lift should not be simply another rep completed but another chance to improve your lifting.

**REST PERIODS AND SESSION LENGTH**

The intensity will also dictate the rest periods needed. Rest periods should be two minutes for loads under 75%, three minutes rest for 75-85% and up to five minutes for loads over 85% (if you struggle to keep up you are working off too high volume). The reason for the strict rest periods is to ensure recovery on a bigger scale.

If you fully rest from one set to the next you will be stronger for the next set and be able perform more reps. This extra work will need extra recovery time which instead of just being the next set will be the next session or the next week. This has a much bigger impact than simply being a rep or two short because of the shorter rest period.

The relatively short rest periods also keep conditioning up, allow more work to be done in a session and keeps the workout shorter. The maximum a session should last is 90 minutes from getting on to the gym floor to leaving. Again this is to aid recovery, you recover from session to session so the quicker you leave the sooner you prepare for the next session (remember at advanced level it is all about the long game).
KEEPING TRACK OF PROGRESS

New one rep maxes are the obvious sign of progress and the most important. However to track monthly progress with this style of program you will have to divide the total amount of weight lifted (or intensity) on each exercise and divide it by the total amount of reps. This will give you an average weight lifted and a total amount of reps as opposed to tonnage (total kg lifted) which will only give you a total of all the weight lifted but no clue of how it was achieved (lifting 100kg for four reps is much easier than 200kg for two reps but both add up to the same tonnage).

Much more information is needed to compare sessions with the same total reps or tonnage. For example, if a lifter has a 250kg squat and needs to perform 23 reps at 75% the average weight lifted would have to be 187.5kg and the tonnage would have to be 4312.5kg (187.5kg x23reps).

This may be expressed as:

145x6, 185x4, 195x4, 215x2, 230x3, 200x4 (23 reps, 4310kg tonnage, 75%AI)

This also makes ‘rep personal bests’ (pbs) redundant. One set will not make you stronger or indicate a strength increase without seeing the context in which it was completed (was it after a week off, was it during a high volume period etc). It also negates the use for rate of perceived exertion RPE. Because the RPE is as it says ‘perceived’ and you are trying to measure a feeling rather than actual reps and weights.

How a weight ‘feels’ will have little bearing on how strong you are. Webber’s law says people are insensitive to anything less than a 5% shift in weight and Stephen’s power law suggests it only takes around a 45-60% increase in load to ‘feel’ twice as heavy. In fact being sensitive to ratios and differences makes you insensitive to absolutes so trying to do overload work in order to make ‘normal’ weights feel lighter may not be very useful as you will lose the feedback a muscle needs to warrant it contracting maximally when really needed or even what maximum is.

Some people use bar speed as a way of gauging the difficulty of a lift, but tempo will be of little use in helping to determine progress. In fact accelerating the bar excessively is actively discouraged as this can unbalance the lifter, bounce the bar out of position, change the bar behaviour and during training make the bar lighter than it should be during portions of the lift robbing work from the muscles at those particular spots and create weaknesses, as opposed to fixing sticking points which speed work often gets credit for.

USING YOUR MAXES TO DETERMINE INTENSITY

• If you lift above your nominated maxes within a training block do not change the maxes until the end of the cycle.
• If you hit a new max during a training cycle, use this as your new 1RM even if you fail it later in the cycle or at the end.
• If you become injured or ill during a training cycle adjust your maxes until you recover so you can continue to work off of percentages.
VARIATIONS AND ASSISTANCE

Diminishing returns typically associated with high frequency routines such as this are easily avoided by variable practice (the same but different). This can be from manipulating rep ranges, ROM, intensity, loading, various grip and stance widths, tempo and lift variations. You should only use variations if they can be justified or lead to a measurable improvement. The reason you would use a variation of the competition lifts is to emphasise a certain ROM, muscle group or movement pattern that would benefit the lifter.

Once the desired effect has been achieved that variation would then become obsolete for the lifter. The more advanced a lifter becomes the more they can extract from less variety. On the flip side a newer lifter should vary things much more (but again only if it can be justified).

Out of the above, the rep ranges will have the biggest impact on variable practice so even though 4-5 reps per set is generally the preferred rep range for building strength, going as low as 2 or high as 8 reps should be encouraged.

All work sets of squats and deadlifts should be belted. Raw bench pressing does not require a belt and can just cause another reason for a red light in competition if the bar touches the belt so should be avoided. Low bar squatters should keep at least 60-70% of all the squats they do as a high bar variation and sumo deadlifters should perform at least half their deadlifts in a conventional style.

As previously mentioned, moderate tempo should be employed on all lifts unless you are manipulating eccentric speed (negatives) pausing reps at various stages or doing ‘tempo’ work. This will keep the bar in position and not bounce off the lifter on the squat.

Whilst negatives can be done as heavy as 120% or your 1rm it has a better training effect between 80-100% (slower not heavier). Isometric work can be extremely beneficial but has fallen out of fashion over recent years.

Speed work or explosive training does little for unequipped lifting or maximal strength and create more sticking points than it supposedly remedies so I do not include much of it in most programs (there is always an exception though so keep an open mind). For plyometric work having a system weight of around 30% is usually the best intensity so for something like a jump you would need to be squatting at least double body weight to even begin using them.
Triceps, lower back and hamstrings are usually best not trained outside of the main lifts or close variations. You can use shoulder press as a bench press variation but at 45-55% this can bring Al down too far. Behind the neck press is purely a flexibility exercise and not to be used as a strength movement.

Deltoids, lats, biceps can be worked three to four times a week each being trained between 30-70 reps in total per session (this is not counted towards your monthly totals and these exercises stop around two to three weeks out from a meet).
PEAKING

This block of training will include the heaviest loads but the lowest AI. When you are in a peaking phase you can work up to 92.5-95% on each lift (If a lift is particularly weak then even 100% can be acceptable).

These higher intensities are used sparingly in training and not too close to a meet/test. For the deadlift this should be around three weeks out, two weeks for the squat and five to seven days for the bench. You can base your first (and maybe second attempts) on these numbers, this is not really to test your opener but more to expose yourself to near comp numbers.

Continue to train the lifts up to three to five days from the meet.

- Do not drop bodyweight by more than 3% and only do so if absolutely necessary. Body fat should be over 8-20% for men and 15-28% for women. Lower than this can result in injury and above is unnecessary weight.
- After the meet take up to three days off before returning to light general training.
- The plan will always be something to deviate from. The quality of the reps is the most crucial factor followed by the total volume (not tonnage).
- Add the weight lifted during a week (and mesocycle) for each lift to see your tonnage. This number does not give much information until it is divided by the reps completed in that lift.
- Compare the number of reps completed by the average weight lifted to follow progress outside of improved one rep maxes.

COMPETITION/ MEET DAY

Before the competition you would have done yourself a favour if you watch a meet or two first. Seeing it in action will show you what you are actually training for, how, when to warm up and any of the little nuances that may have been on your mind but no one mentioned will all become clear. Watch the meet and chat to people while you are there and to pick up tips on anything you can. Don’t focus on the small details so much that will come with experience.

Most people go straight to the records table to see if they are good enough to compete, this is aiming a little high for a first meet in most cases (especially lifting under competition conditions), begin by asking someone in the gym to at least make sure the lifts would pass, getting an experienced coach would be the best option but until you get on the platform you aren’t a power lifter so walk before you can run.

During the lead up to the meet you should Practice the commands so there are no nasty surprises, this cannot be emphasised enough! Forget ‘touch and go’ bench pb’s or squats that were only a touch high. They are close to worthless if you intend on competing and you must practice how you play.
For the first meet, you really do not want to be making weight so that will be one less variable to worry about (if you are needing a qualifying total either get stronger or aim lower because if you are scraping by the qualifying total you will not be ready for national meets).

There will be rules about clothing, underwear, belts etc. what you can and can’t use varies between federations so don’t assume anything (right down to if talc is allowed).

When lifting, the rules are there for the refs to follow and it is your job to show you are performing lifts within the rules. If the majority of refs give a red light you did not do your job. If a ref does give a red light go ask why by all means but these guys have a split second to see the lifter moving, with spotters in the way, sitting on an uncomfy chair while they give their day up (usually for free) so do not argue with them or show them a video of your lift from a different angle to prove your point.

Ensure you have food (ideally nothing with too much fat or protein), a pen, your own chalk, your own loo roll (the venue will often run out), cash for spectator fees if you have anyone with you, phone charger and any other bits you could need if the meet runs longer than expected.

If you have someone to assist you (a handler) they can help you give attempt cards in, select weights with you, see when you need to warmup (usually the second attempts of the flight before you) basically this person will end up doing more than you on the day so be nice to them afterwards!

When selecting openers aim for either 20-25% or 30-40kg under your best lift (whichever makes the most sense). This may seem cautious but for a first meet at least this is a sensible way to begin. Hitting pb’s in a meet is a bonus and a sign of being well prepared but not a guarantee.
CONCLUSION

Good programming and technique alone cannot guarantee success, always improving, staying injury free, keeping healthy and having a balanced lifestyle are all crucial and one just as important as the next.

Not everyone trains with competitions in mind, some enjoy the journey more than reaching a particular goal. Use powerlifting for what you want to get out of it.

‘I see too many lifters who know the lyrics but never heard the music’. It is a job for a few, a sport for some and a hobby for most, so do not turn it in to a chore. But as far as hobbies go, powerlifting is a fairly cheap one so be a true student to the sport, pay the extra for good coaching when you need it, spend time to learn more about the hows and why’s in what you do. Why invest all that time and not get the very most out of all the effort you put in?

Use the information above to get the very most out of your sessions or see how the next programme you decide to try measures up before you even attempt it.

Most of all have fun and enjoy the wonderful thing that powerlifting can be!