

ADVANCED TRAINING TECHNIQUES



**STRENGTH AND
CONDITIONING**
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INTRODUCTION

Advanced training techniques are specific methods used to elicit greater results. This may involve pausing or pulsing during the rep, or attaching bands and chains to the barbell to accommodate resistance.

We have detailed over 50 advanced training techniques, many with numerous variations:

- Intent
- Max & Dynamic Effort.
- Unilateral Loading.
- Backdown Sets.
- Tempo.
- Slow E, Fast C.
- 2 Fast, 1 Slow.
- Constant Tempo.
- Time Under Tension.
- 10/10.
- Partial Reps.
- Progressive Movement.
- Pin Lifts.
- Burns.
- Isometrics (Pauses).
- Loaded Stretches.
- Heavy Supports.
- Pulses.
- Stretch Reflex Reps.
- Double Lockouts.
- Oscillatory Training.
- Wave Loading.
- Contrast Loading.
- Complex Training.
- French Contrasts.
- Max-Overspeed.
- Complexes.
- Variation Sets.
- Breakdowns.
- Forced Reps.
- Negatives.
- Cheat Reps.
- Cluster Sets.
- Drop Sets.
- Pyramid Sets.
- DTP.
- Ladders.
- Rep Targets.
- Rest Pause.
- Pre & Post-Exhaustion.
- Supersets.
- Tri-Sets & Giant Sets.
- Circuit Training.
- Tabata.
- AMRAPs.
- EMOM.
- German Volume Training.
- Optimised Volume Training.
- Staggered Sets.
- Jump Sets.
- 21's
- Blood Flow Restriction.
- Accommodating Resistance.
- Reverse Band Technique.
- Hanging Band Technique.
- Jettison Training.



STRENGTH TRAINING

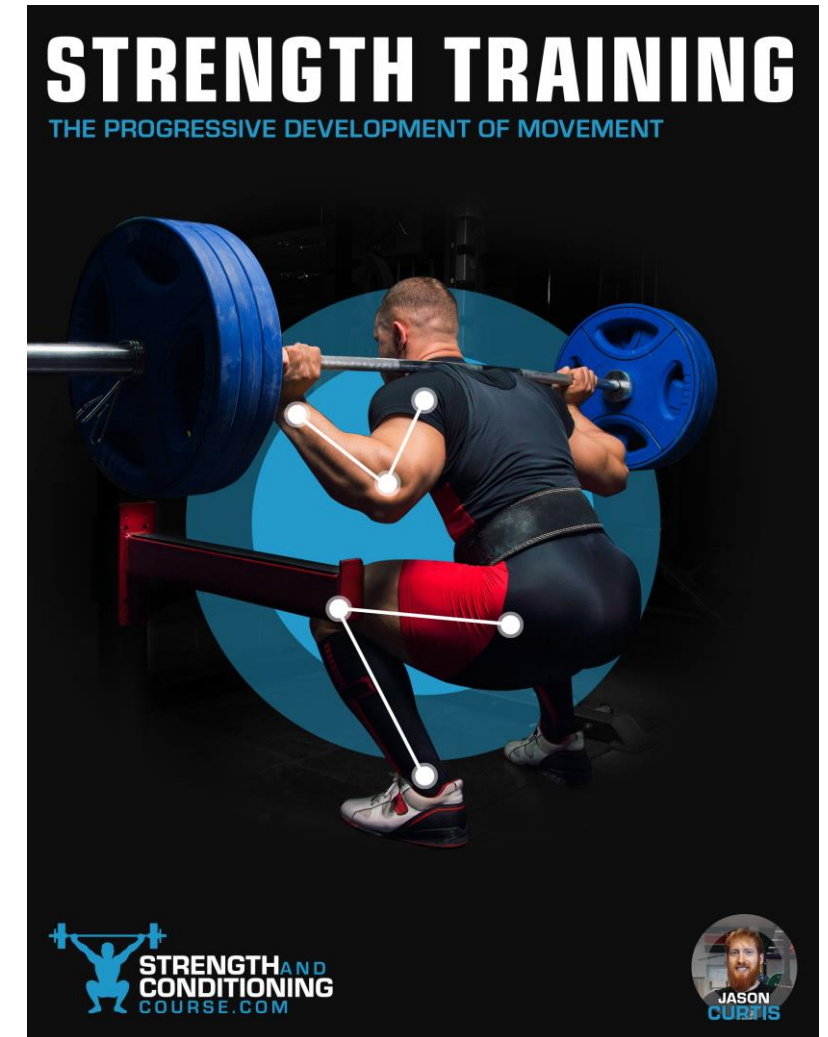
This e-book was developed as an add-on to our strength training course. However, with there being over 50 advanced training techniques, it has turned into a specialism of its own, **ATS: Advanced Techniques Specialist**.

Strength training involves using physical exercise to improve muscular strength and endurance. This can be done isometrically (muscle contractions with no change in length) with exercises such as the plank. However, an eloquent way to describe strength training is “the progressive development of movement”.

When we see strength training simply as the strengthening of movement, it is easy to see why it is the foundation of physical development.

As described in our Corrective Exercise course, we progressively develop 8 key areas:

Brace / Hinge / Squat / Lunge / Push / Pull / Rotate / Gate.





STANDARD SETS & REPS

A repetition or rep is 1 complete motion of an exercise.

Therefore, reps refer to the number of times you are performing an exercise.

A set number of reps before a rest period is referred to as a set. Therefore, a lifter may perform 5 sets of 3 reps (5x3) or 4 sets of 8 reps (4x8), with 2-3 minutes rest between sets.

Optimal Rep Ranges:

- Strength: 3-5 Sets of 1-5 Reps
- Hypertrophy: 3-5 Sets of 6-12 Reps
- Endurance: 3-5 Sets of 12+ Reps

Rest periods usually depend on the intensity of the set:

- >85% of 1RM: 3-5 Minutes
- 70-85% of 1RM: 2-3 Minutes
- <70% of 1RM: 1-2 Minutes

Note: When it comes to strength training, if you need an extra 30 seconds rest, take it – place emphasis on the quality of the set.





INTENT

When lifting weights, intent is absolutely key and is the first step to maximising your results.

Key terms:

- **Mind-Muscle Connection:** This involves making a conscious effort to think about the muscle being worked. This helps to increase its engagement and ultimately stimulates greater muscular development.
- **Compensatory Acceleration:** This involves making a conscious effort to maximise your force and speed throughout the entire range of motion.

Often when you lift a heavy load, you grind out of the bottom (producing maximal force). However, as leverage improves, you make no effort to keep accelerating and often coast through the rest of the lift.





STRENGTH TRAINING METHODS



As we know, strength training involves performing and progressively loading basic movements such as squat, push and pull. However, there is a little more science to how we go about loading the various exercises.

Russian sports scientist Vladimir M. Zatsiorsky described four methods of strength development in his infamous book, *Science and Practise of Strength Training*:

- **Maximal Effort Method:** Lifting maximal loads – 90%+ of 1RM (we tend to class anything above 85% as max effort).
- **Submaximal Effort Method:** Lifting submaximal loads for submaximal reps.
- **Repeated Effort Method:** Lifting submaximal loads to failure.
- **Dynamic Effort Method:** Lifting submaximal weight with maximal speed.





DYNAMIC EFFORT SETS



Most lifters are familiar with lifting maximal loads and submaximal loads for submaximal reps or to failure – the submaximal effort method is pretty much our bread and butter. For example, 5x5 at 75%.

However, the majority of lifters are unfamiliar with the dynamic effort method or the concept of speed lifting.

When using the dynamic effort method, we often perform low reps (1-3) for high sets (8-12), and the rest periods are short (40-60 seconds).

Dynamic effort sets are often performed at 50-60% + accommodating resistance that applies 25% of the lifters 1RM to the top of the movement (band tension can be hard to quantify). However, if accommodating resistance isn't applied, the lifter may add 5-10% extra to presses and 10-15% (or as high as 20%) more to squats and deadlifts.

An interesting concept: Some lifters will aim to match their dynamic effort sets to the time it takes them to perform a 1RM or PR (personal record) on a specific lift. For example, if a 1RM on the bench press takes 3 seconds, they perform the number of dynamic sets that takes 3 seconds (3-4 reps).





UNILATERAL LOADING

Unilateral refers to working one side of the body and is often used when performing isolation exercises like biceps curls.

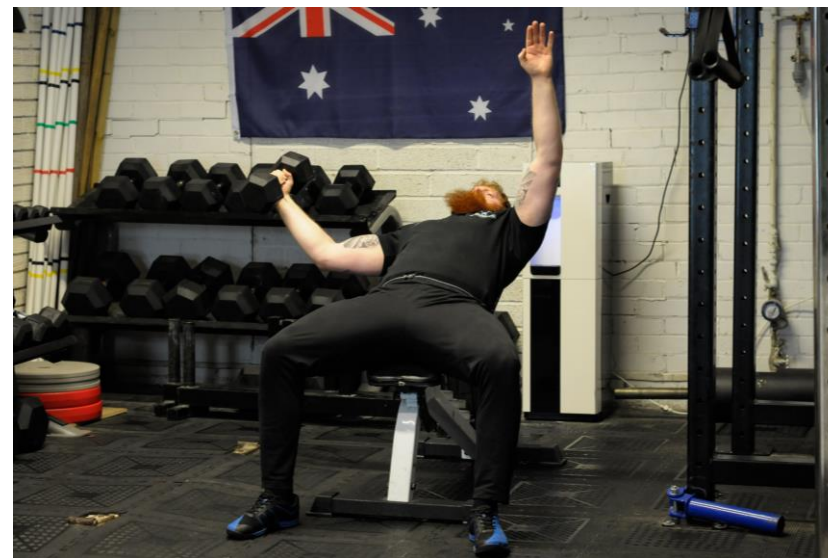
When we apply unilateral loading to compound movement such as a squat, it can apply hugely unbalanced forces which is great for building joint and trunk stability.

Some great examples include:

- Suitcase carry: walking with a weight in one hand.
- Unilaterally loaded squats or lunges: Holding one dumbbell or kettlebell.
- Single arm dumbbell press or flies.
- Loading one side of the barbell.

Related terminology:

- **Bilateral:** Working both sides of the body at the same time.
- **Contralateral:** Working one arm and one leg on opposite sides of the body.
- **Ipsilateral:** Working one arm and one leg on the same side of the body.





BACKDOWN SETS

Backdown sets are sets performed at a lighter weight after the initial sets at a heavier weight are completed.

For example, perform 3x3 at 90% (3 minutes rest between sets), followed by 3x8 at 70% (1-2 minutes rest between sets).

Although the previous heavy sets cause fatigue, they also potentiate the neuromuscular system (prime it). Therefore, the moderate loads used for the backdown sets often feel much lighter than they would if heavier loads were not lifted prior – this is referred to a PAP (Post-Activation Potentiation).

Backdown sets are a great way to add volume, maximise range of motion (ROM) and practice technique.

Backdown sets are by far my favourite training technique!





TEMPO

Tempo refers to the speed of the lift.

When writing the desired tempo for the lift, we can use 4 numbers. It is important that we remember that some lifts start with an eccentric phase (squat), while others start with a concentric phase (deadlift). However, in both circumstances the first number is the first movement.

For example, during a squat we may write 41X2, which means 4 seconds down, 1 second pause at the bottom, the “X” means lift as fast as possible, 2 seconds at the top to reset.

For the deadlift we could write X132, which means fast as you can up, 1 second pause at the top, 3 seconds down and 2 seconds at the bottom to reset.

We can vary tempo in countless ways. However, there are a few of methods that I find really effective – shown in the next slide.





TEMPO METHODS

Slow E, Fast C:

This involves a slow eccentric phase followed by a fast (maximal) concentric phase.

This method can also be flipped so that the eccentric phase is fast and the concentric phase is slow.

2 Fast, 1 Slow:

2 Fast, 1 slow involves performing 2 fast reps before 1 slow rep, generally for 6-12 reps. Both the concentric and eccentric phase are performed at the same tempo.

This method can be adapted in a variety of ways, such as 3 fast, 1 slow or 2 slow, 2 fast etc.

Constant Tempo:

Constant tempo involves the lifter maintaining a smooth tempo with zero breaks (less than a split second) at the top or bottom of the movement – making a conscious effort to do this can make an exercise considerably harder!





TIME UNDER TENSION

Time under tension (TUT) refers to how long you are under load (tension) for.

For example, performing 10 reps which each take 3 seconds results in 30-seconds of TUT.

TUT greatly increases metabolic stress and therefore, is brilliant for building both hypertrophy and muscular endurance.

To maximise TUT, reps are usually performed at a steady tempo. However, rather than performing a given amount of reps, a lifter could also perform reps for time and this can be done at a steady tempo or with max speed.

Performing sets for time is a great way to push yourself. If you were to select a dumbbell you could row for 20 reps, but were then told to do as many as you can in 40 seconds, you would likely double the 20 reps.





10/10



10/10 involves performing exercises with extremely slow tempo – 10 second eccentric (downward) and 10 second concentric (upward) phase.

This training method maximises TUT, even when being performed for moderate rep ranges. This creates huge metabolic stress and will promote hypertrophy and soft tissue health, while improving technique and mental strength.

The high stress nature of the method is great for building both physical and mental work capacity. However, it also makes for a gruelling workout that may result in a lot of DOMS (Delayed Onset Muscle Soreness).

DOMS is the pain and stiffness felt in muscles several hours to days after unaccustomed or strenuous exercise.

The soreness is usually at its worst between 24-72 hours after the exercise.





PARTIAL REPS

Partial reps involve working through a reduced range of motion (ROM). This often involves the top half or quarter of the movement such as a quarter squat, but could also involve deadlifting a barbell to the knees before returning it to the floor.

Partial reps usually allow the lifter to work with much heavier loads with greater speed and therefore, help to overload a specific ROM.

Of course, working through a full ROM increases the mechanical stress and eccentric loading and therefore, generally elicits optimal strength and hypertrophy. However, on the flip side, it is very rare in real life or sporting situations for individuals to be required to lift or jump from a below parallel squat position for example. Hence why partial reps can be great for sports performance.

Partial reps also allow the loads to be kept high, while minimising muscle trauma and therefore, are ideal for tapers where we want to maintain intensity, without causing excessive fatigue and muscle soreness.





PROGRESSIVE MOVEMENT

The lifter starts with a weight that they are unable to lift through a full range of motion, and practises lifting the weight through the last 3-5 inches. From there, over future sessions they increase the range of motion gradually until they are performing the full movement.

This is often referred to the Anderson method after Paul Anderson.

Paul Anderson would squat with a barbell that had a barrel on each end (no rack – barrels on the floor). The barbell was over a hole in his garden and Paul Anderson would stand in the hole and lift the barbell up. From there, he would progressively fill the hole in to increase the squat depth.

Deficits can also be used on some exercises to increase the range of motion. For example, standing on a 3-inch block and deadlifting creates a deficit deadlift.





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PIN LIFTS



Pin lifts involve the lifter squatting, pressing or pulling a barbell from a set of pins or spotter bars – deadlifting a barbell from the pins is known as a rack pull. However, the same technique can be performed on squats and presses in ways that are less often used.

Placing a barbell on a set of low pins, getting underneath it and performing a squat from the bottom is known as an Anderson squat (same guy from the previous slide). However, this can just be referred to as a pin squat – you can start at the bottom, which creates a true concentric only lift, or you can start at the top and unload the weight of the barbell on the pins to take away the stretch reflex (recoil at the bottom) and create a deadstart squat.

During a pin squat, the pins don't have to be set at the bottom of the squat, they can be set towards the top and the lifter can work on overloading the last few inches from a deadstart.

Other examples include what are commonly referred to as “rack lockouts”, where the lifter presses the barbell from the pins to finish the last few inches of a bench press or strict overhead press. Olympic weightlifters may also use this technique to strengthen their overhead position for the jerk. However, rather than lifting the weight with their upper body, they quarter squat underneath the barbell, hold the barbell with straight arms overhead and pick the barbell up off the rack using their legs.

Note: Lifters will often set the pins at a height where they hit a sticking point or 2-3 inches below to work through that range.



BURNS

Burns involve performing both full reps and partial reps within a set or finishing with partial reps as a mechanical drop set.

During a mechanical drop set, rather than making a lift easier by dropping the weight, it is made easier by reducing the biomechanical stress – reducing the ROM or going from a full push up to a kneeling push up for example.

Burn Set 1 - Mixed: The lifter performs a mix of full and partial reps (mixture of ROMs) throughout the set.

Burn Set 2 – Full ROM to Partial ROM: The lifter performs 10 full reps before performing 5 half reps.





ISOMETRICS (PAUSES)

Isometrics (contractions with no change in muscle length) involve holding a position or pausing at a specific point of a lift for a short period of time before finishing the lift.

This is often performed at the bottom of a lift or at a common sticking point for 2-8 seconds (usually 2-3 seconds).

Pauses can also be specifically programmed to occur during the eccentric (downward) or concentric (upward) phase of a lift.

Pausing as the muscles are lengthening (eccentric phase), is extremely stressful on the muscle fibres and therefore, great for maximising muscle trauma. The eccentric phase is also much stronger than the concentric phase and therefore, more weight can be used.

Pausing during the concentric phase takes away the momentum that has been generated and therefore, requires the lifter to have great stability and forces them to maximise rate of force development as the lift progresses – intent is key!





ISOMETRICS: CONTINUED

Isometric contractions can be performed against a solid structure. For example, a deadlift could be pulled up to just above the knees where it meets spotter bars/pins on the rack. From there, the lifter pulls the barbell hard into the spotter bars rather than just holding it in place.

With the right equipment, the same technique can also be applied to squat and press variations. For example, the lifter may lift the barbell off a set of spotter bars set at the bottom of a squat (Anderson squat). From there, they lift the barbell into a second set of spotter bars placed midway though or towards the top of the squat.

A partner can also press on the barbell to apply resistance (easily done on the bench press) and give the lifter something to contract against – the partner must ensure the resistance is balanced.

Note: Pushing down on the barbell during the bench press can also be used to add load to the eccentric phase.





LOADED STRETCHES

Loaded stretches are by far the most unheard-of and underrated way of developing flexibility. However, in my experience, they are the most effective for many muscles groups.

Loaded stretches involve holding a weight at a muscles end range of motion. Essentially this is just a pause or isometric hold at the bottom of a movement. However, the emphasis is on the stretch in the muscle. Therefore, the appropriate loads (low-moderate) should be used when pushing the end range.

During a DB fly, the lifter can increase the ROM slightly at the bottom to create a huge stretch across the chest and shoulders (hold for 5-15 seconds). However, caution should be practised as more stress will be placed on the passive structures of the shoulder joints – once the upper arms are in line with the torso, the shoulder blades are fully retracted and more stress is placed onto the shoulder joints themselves.

One of the best examples of loaded stretching is the overhead squat with a barbell. I have worked with literally dozens of clients with terrible mobility that had spent months doing the same stretching regimes to no prevail. After a couple of weeks of overhead squat work (starting with regressions), their mobility in their lower body, shoulders and thoracic spine improved dramatically.

To regress the overhead squat, I have the lifter stand with their heels on plates. From there, they use a technique barbell (5-10kg) and overhead squat as deep as possible. This is pushed until they achieve a decent ROM. From there, we progressively load the weight and within a few sessions, most people are achieving a decent OHS.



HEAVY SUPPORTS

This technique involves holding a heavy weight at the top of the movement. This may be as heavy as 140% of a lifter's 1RM.

This technique can help to build confidence and is often used to elicit post-activation potentiation (PAP).

PAP refers to the increase of strength in nerve pathways that have been used previously. Which in layman's terms, means that the associated muscles are primed and working at full capacity.

It is highly recommended to have spotter bars in place if performing this technique on the bench press.

I am a big believer in overloading heavy supports and partial movements to help build the confidence to smash plateaus.

Note: Just holding a heavy weight on your back is known as a "back lift".





PULSES

Pulses involve performing reps with small bounces (3-6 inch pulses), usually at the bottom of the movement (1-3 times). These pulses can also be performed on their own. However, this is better described as Oscillatory training.

Pulses are commonly performed as a secondary bounce at the bottom of the movement. However, they can also be performed at the middle of the movement or even at the top (double lockout).

Ultimately, a pulse can be added to any point of the lift and just like pauses, adding them during the concentric or eccentric phase will create different stressors.

Adding a pulse at the bottom of a lift, emphasises the stretch shortening cycle/stretch reflex (rebounding from the bottom). Whereas adding in pulses during the concentric phase requires far more stability and control.





STRETCH REFLEX REPS

Stretch reflex reps, also known as myotatic reps, involve performing the eccentric phase of a movement, raising a quarter of the way up before dropping again to create a second stretch reflex and completing the movement.

This is a great way to develop the stretch reflex and learn how to use it effectively.





DOUBLE LOCKOUTS

Double lockouts involve locking out the weight before lowering the weight 3-6 inches before locking the weight out again.

This is a great technique for building lockout strength, stability and control. For example, on the bench press, the double lockout will add extra development to the triceps which extend the elbows.

The second lockout can be performed with maximal speed or with a slow tempo.

Double lockouts with speed feel particularly good when using accommodating resistance (bands and chains). This is because the added load at the top prevents the joints from being jolted as you finish the lift.





OSCILLATORY TRAINING

Oscillatory training involves moving a light load at high speed through a very small range of motion (3-4 inches / 8-10cm).

This can be performed with free weights or resistance bands.

Resistance bands are particularly good as the lengthening and shortening of the bands helps to reinforce the oscillations and overloads the eccentric phase (bands pull you back down).

Bands also apply accommodating resistance, meaning the load increases towards the top of the oscillation.

Oscillatory training is great for developing reactive strength which is the ability to effectively transition between the eccentric and concentric phases of a movement.

Developing reactive strength is essential for performance and injury prevention.





WAVE LOADING

Wave loading involves increasing and decreasing the weight and/or reps as the sets go on.

For example, 1 set of 5 reps at 75%, 1 set of 8 reps at 65%, 1 set of 3 reps at 85%, 1 set of 5 reps at 80%, 1 set of 3 reps at 90%.

This is a great way to add variety to standard sets and reps.





CONTRAST LOADING

Contrast loading involves alternating between a heavy and lighter weight on the same exercise. This is like wave loading. However, rather than using a variety of different weights, 1 heavier load and 1 lighter load is selected for the given sets.

Contrast loading can be performed in a number of ways:

- Different Weight / Same Reps: 90% of 1RM for 2 reps, followed by 75% for 2 reps (when the reps are not increased, emphasis is placed on rate of force development and compensatory acceleration).
- Different Weight / Different Reps: 90% of 1RM for 2 reps, followed by 75% for 6 reps.

The contrast sets can be performed back to back or with a rest between – usually a short rest of 20 seconds but this can be extended.





COMPLEX TRAINING

Complex Training involves performing a strength exercise with heavy loads (85%+), followed by a plyometric or ballistic exercise performed with bodyweight or low loads that works a similar movement or muscle groups.

Examples:

- Back Squat – Vertical CMJ.
- Front Squat – Drop Jump.
- Deadlift – Box Jump.
- Hex Bar Deadlift – Hex Bar Jump.
- Bench Press – Med-Ball Chest Throw.
- Floor Press – Plyo Push Ups.
- Push Press – Single Arm Med-Ball Throw.

Complex training capitalises on Post-Activation Potentiation (PAP), and allows us to maximise the power produced during the explosive exercise.





FRENCH CONTRASTS

French contrasts involve 4 exercises performed one after another:

- A Heavy Compound Lift (80-90%).
- A Plyometric Jump.
- A Backdown Set or Loaded Jump.
- An Assisted or Accelerated Plyometric (lighter than bodyweight – band assisted).

Rest for 20 seconds between exercises and 2-5 minutes between sets.





MAX-OVERSPEED

Max-Overspeed's involve 4 exercises performed one after another:

- A Max Lift (85%+) – Back Squat / Front Squat.
- A Loaded Jump – Hex Bar Jump / KB Jump.
- A Bodyweight Plyometric Jump – Vertical Jump / Broad Jump.
- An Assisted or Accelerated Plyometric Jump (lighter than bodyweight) – band assisted jump.

Rest for 20 seconds between exercises and 2-5 minutes between sets.





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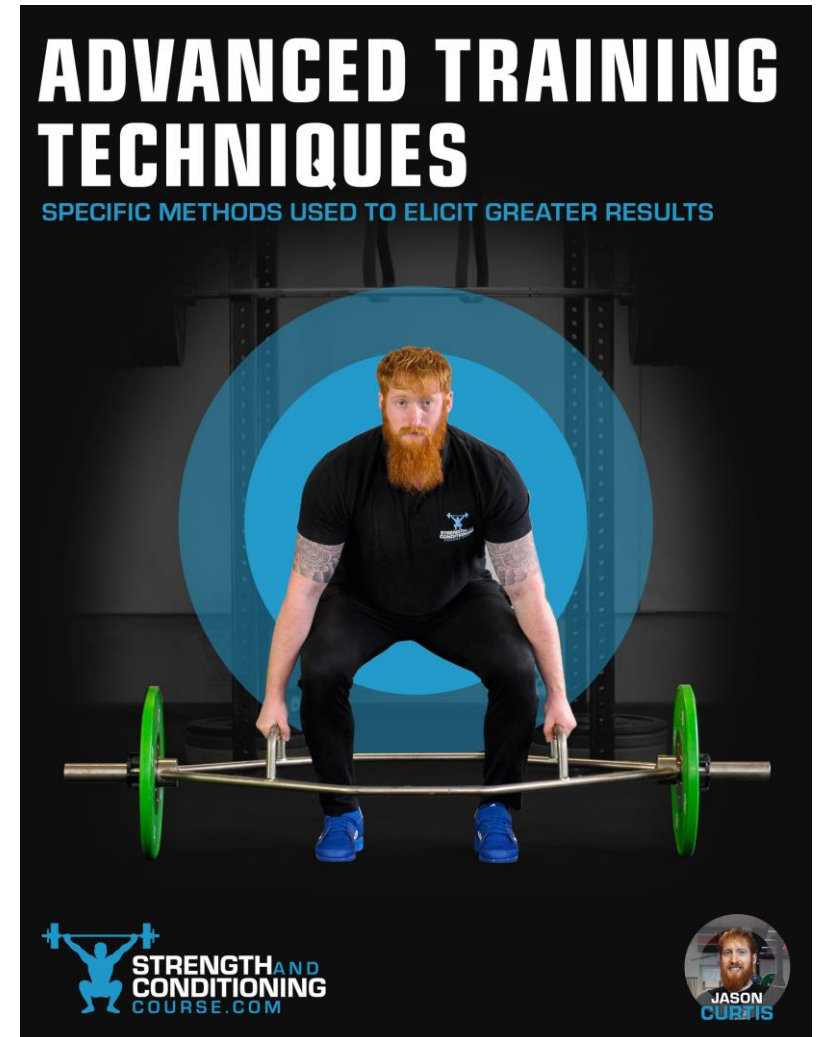
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The Extras:

- Coach Curtis narrating over each slide.
- Video demonstrations.
- Multiple choice exam.
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