PUNCH HARDER

4 STEPS TOWARDS A HARDER PUNCH

- SCIENCE BEHIND THE PUNCH
- INTRODUCTION TO STRENGTH & MOVEMENT TRAINING
- 4 WEEK S&C PROGRAMME

BOXING SCIENCE

4 STEPS TO A HARDER PUNCH

Most boxers and combat athletes crave the ability to punch / strike harder. Having the knockout power to dominate their opponents or have the ability to change the fight in a single blow.

Many believe that you're born with it or you're not… there is an element of truth in that punching relies on genetics. However, the skill and technique of punching is the biggest contributor to a hard punch. This is developed from hours of learning your craft in the boxing gym…

HOWEVER, ARE YOU MAXIMISING YOUR POTENTIAL?

As well as technique and skill, there are physical characteristics that contribute to a hard punch. We can help improve our punch force by developing characteristics using optimal strength and conditioning training methods….

- Improve the physical qualities which contribute to a hard punch
- Improve the speed and quality of movement
- Reduce the likelihood of injury and improve robustness.

Over the past four years at Boxing Science, we've invested our time to research what physical qualities contribute to a hard punch, and the different types of training that help. Using our **battery of fitness tests**, we are able to compare physical characteristics of boxers and determine key contributors to boxing performance.

We found that **lower limb force production had a strong relationship with estimated punch force** and that lower-limb force production also had strong relationships with age and body mass, however **weak relationship with competitive experience**.

Our data analysis suggested that traditional boxing methods are ineffective at getting boxers forceful and fast, and **that there's a need for strength training to assist in the development of punch force**. **This guide will help you** make a few changes and adding a few things to your training to help power up your punch.

SIGN UP HERE!

MASTER THE THINGS THAT TAKE NO TALENT

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WILL WEIGHTS MAKE ME SLOW?

Traditional boxing coaches state that adding weights to a boxers' training regime will slow them down. Whilst contemporary S&C coaches believe in the benefits of strength, speed and explosiveness.

Both beliefs are correct – doing bodybuilding and powerlifting training methods can result in unnecessary muscle mass and slow contractile properties. However, S&C can be massively beneficial for Boxing when done correctly.

At Boxing Science, we carefully structure our programmes so our boxers are avoiding bulking up and becoming slow as we aim for adaptations in strength, speed and explosiveness. Here is the science that sets the foundations for our strength programmes.

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THE SCIENCE BEHIND THE PUNCH

Punching hard is highly dependent on fantastic technique, skill, and timing, forged by thousands of hours of practice, as well as optimal genetics.

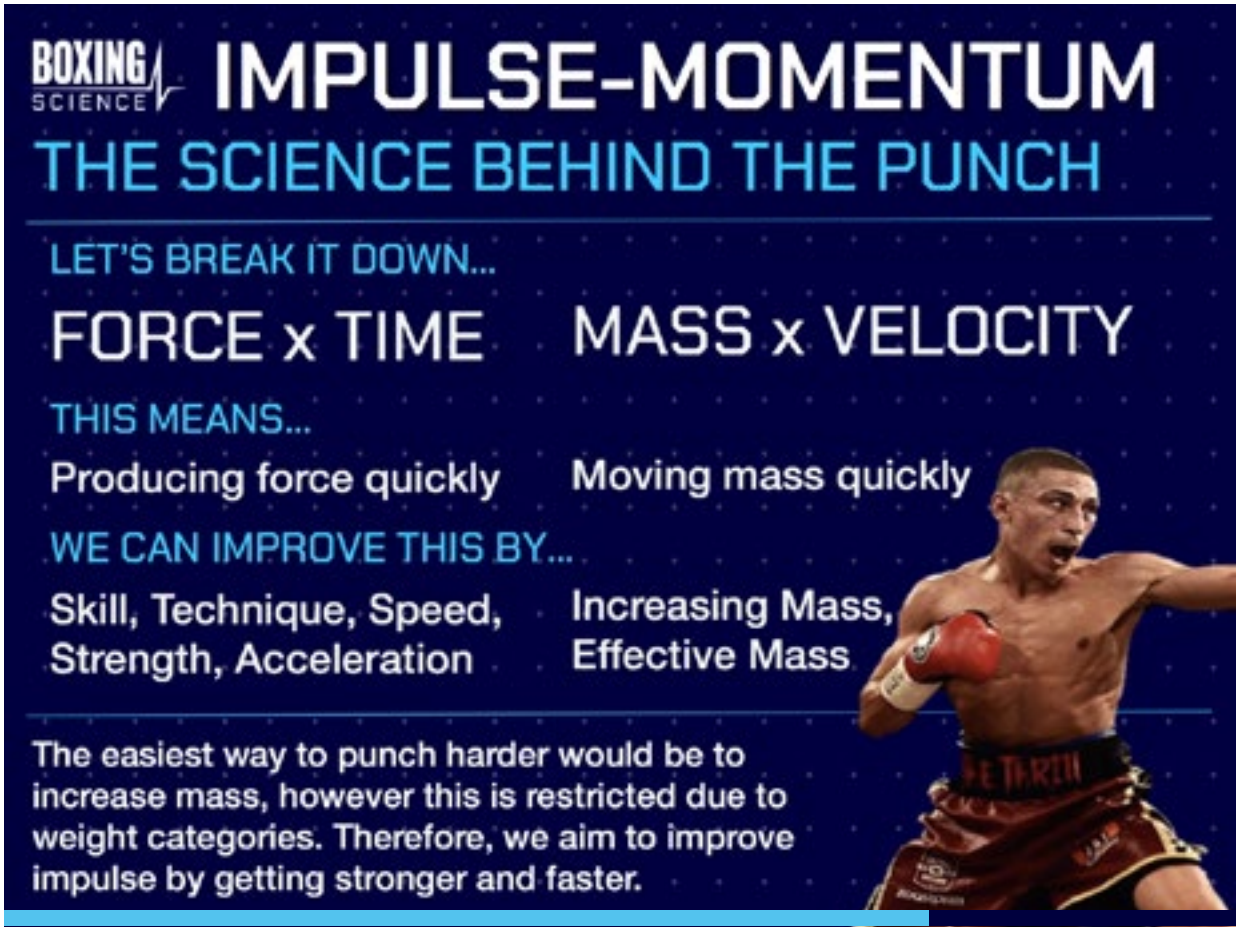
Studies have suggested that punching forces in amateur boxing are around 2500 N… If you weigh 70 kg (11 stone or 154 lbs), you'll exert about 700 N of force just stood still. That makes punching force about 3.5 times body mass. To make that even more impressive your punch takes around six-hundredths of a second (~60 ms) to throw.

Furthermore, nearly all boxing coaches will coach you to use your lower-body and rotation of your core to deliver punches – and there is a backlog of research that supports this.

So in order to produce fast and explosive punches… we need to develop force and transfer it through the body as fast as possible!

HOW IS THIS FORCE GENERATED?

Punching hard relies on the Impulse-Momentum relationship- which states that Impulse (Force x Time) is equal to Momentum (Mass x Velocity). To punch harder, a boxer must increase their momentum. Broken down, it looks like this:



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A boxer can improve their momentum by increasing their mass, however, a boxer is limited by the amount of mass they can gain, due to weight category restrictions.

In consideration, we primarily aim to improve IMPULSE and increase the rate of force development (RFD). This is often developed through skill, technique and genetic factors. However, these are physical characteristics that can be developed through a range of strength and conditioning training methods.

Our testing shows a strong relationship between lower-limb force production and estimated punch force – this was determined through jump tests and medicine ball throws. Suggesting the higher you jump, the harder you can punch! This becomes a key factor in our training aims.

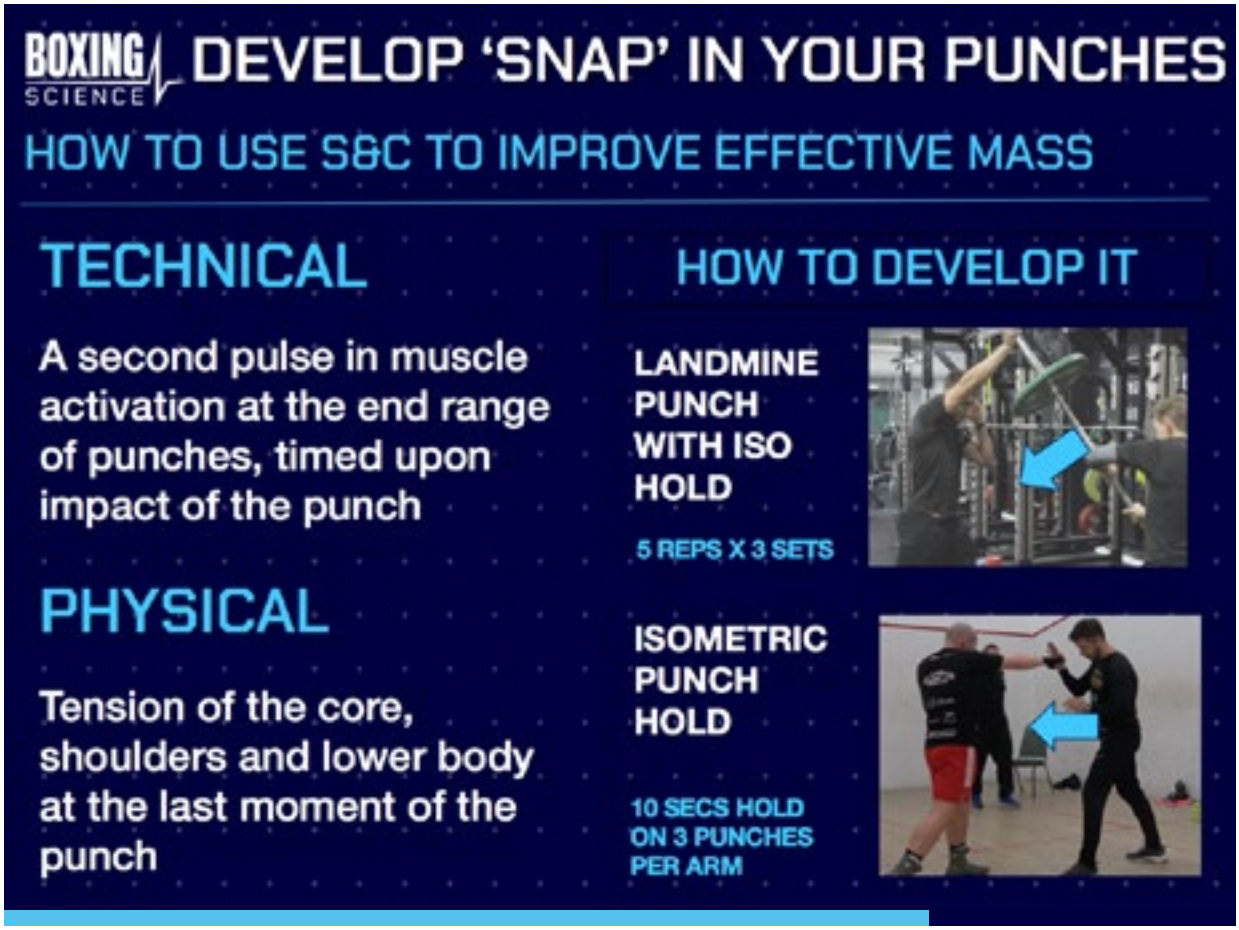
This not as simple of just lifting weights to get stronger. At Boxing Science, we carefully structure our programs using a range of methods across different training phases. This includes resistance training, movement drills, maximal strength training, Olympic lifting, plyometrics and sprint protocols

CAN WE STILL IMPROVE MOMENTUM?

Despite being limited to weight categories, boxers can still increase the momentum of the punch through improving 'Effective Mass'.

Effective mass is a full body SNAP on punching impact, and the creation of massive amounts of force and tension through the core, shoulders and arms.

This is often developed through skill and technique of a punch, but S&C training methods such as Olympic lifting, plyometrics and core training can help improve this.



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HOW IS THIS FORCE TRANSFERRED?

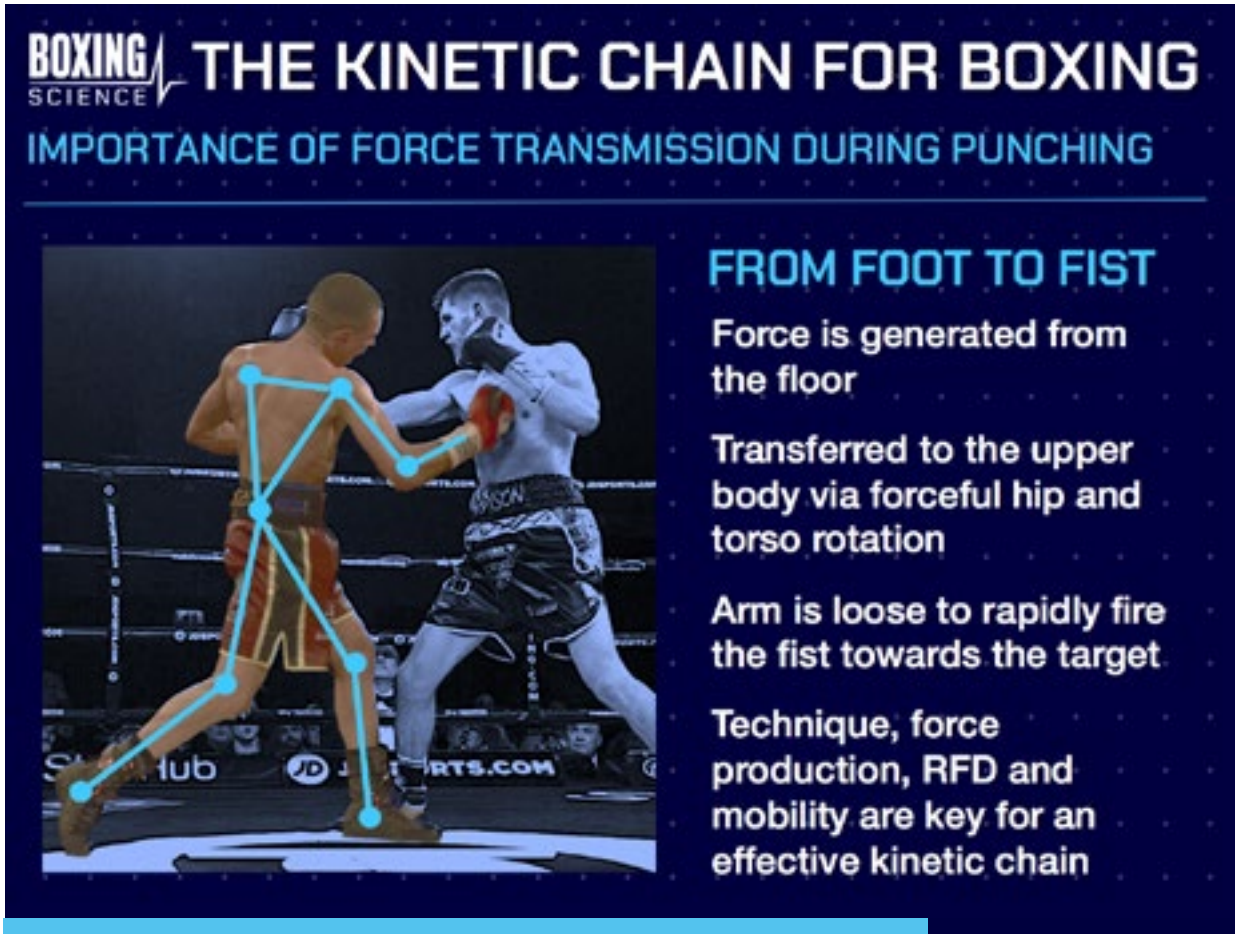
From research, we know that force is generated from the floor, and transferred through the core, shoulders, arms and finally to the fist and the target. The transfer of force through the body is known as the Kinetic Chain.

In the kinetic chain, hip and torso rotation are key, and a boxer must have sufficient movement, strength and mobility to achieve this.

The most important link in the Kinetic Chain is arguably the core muscles – as core rotation plays a big role in transferring force from the lower-body through to the fist.

In fact, our testing results suggest that the lean muscle of the core is the biggest contributor to punch force – meaning the stronger your core, the harder your punch!

Core strength also plays an important role in generating effective mass, this is known as the 'snap' of a punch. This makes developing lean muscle, strength and stability of the core is a key focus point to our S&C programs at Boxing Science.



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IN CONSIDERATION OF THE RESEARCH, BOXING SCIENCE PLACE IMPORTANCE ON THE FOLLOWING AREAS:

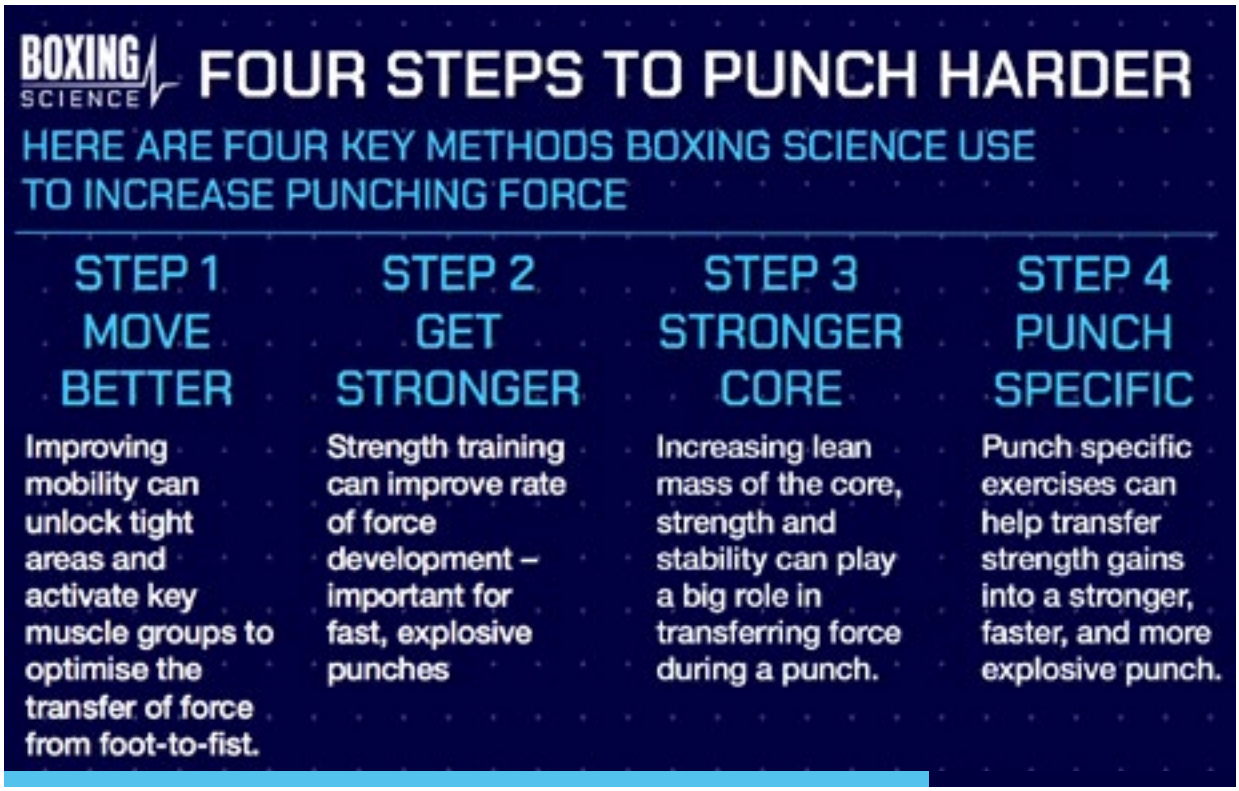
Having excellent movement and mobility, allowing for fluid and rapid rotation of the lower and upper body.

Improving the rate of force development through a range strength and conditioning training methods.

Improving strength and speed of the lower-body.

Increasing the strength, stability and lean mass of the core muscles. Improving Effective Mass to achieve an effective SNAP on impact, at the end range of punches.

Now we know the key things that contribute to a hard punch, let's explore some of the key ways we can quickly and easily build a harder punch…



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STEP 1
MOVE BETTER

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BOXING SCIENCE

STEP 1 - MOVE BETTER

For every athlete that we work with, mobility and movement training will be the very first step on their Boxing Science journey. Before we even lift a weight, we need to ensure that athletes have the foundational movement skills to perform exercises correctly. This makes sure we achieve better results and avoid injury.

However, it's not just for the beginning of a program - mobility training plays a big role throughout all of our programs as it carries many benefits…

- It allows for better, more fluid and faster rotation through the kinetic chain.
- It allows the lower body to produce more force during punching motion, leading to a harder punch.
- It can help to reduce and prevent injury in boxers, which is important for long term development.

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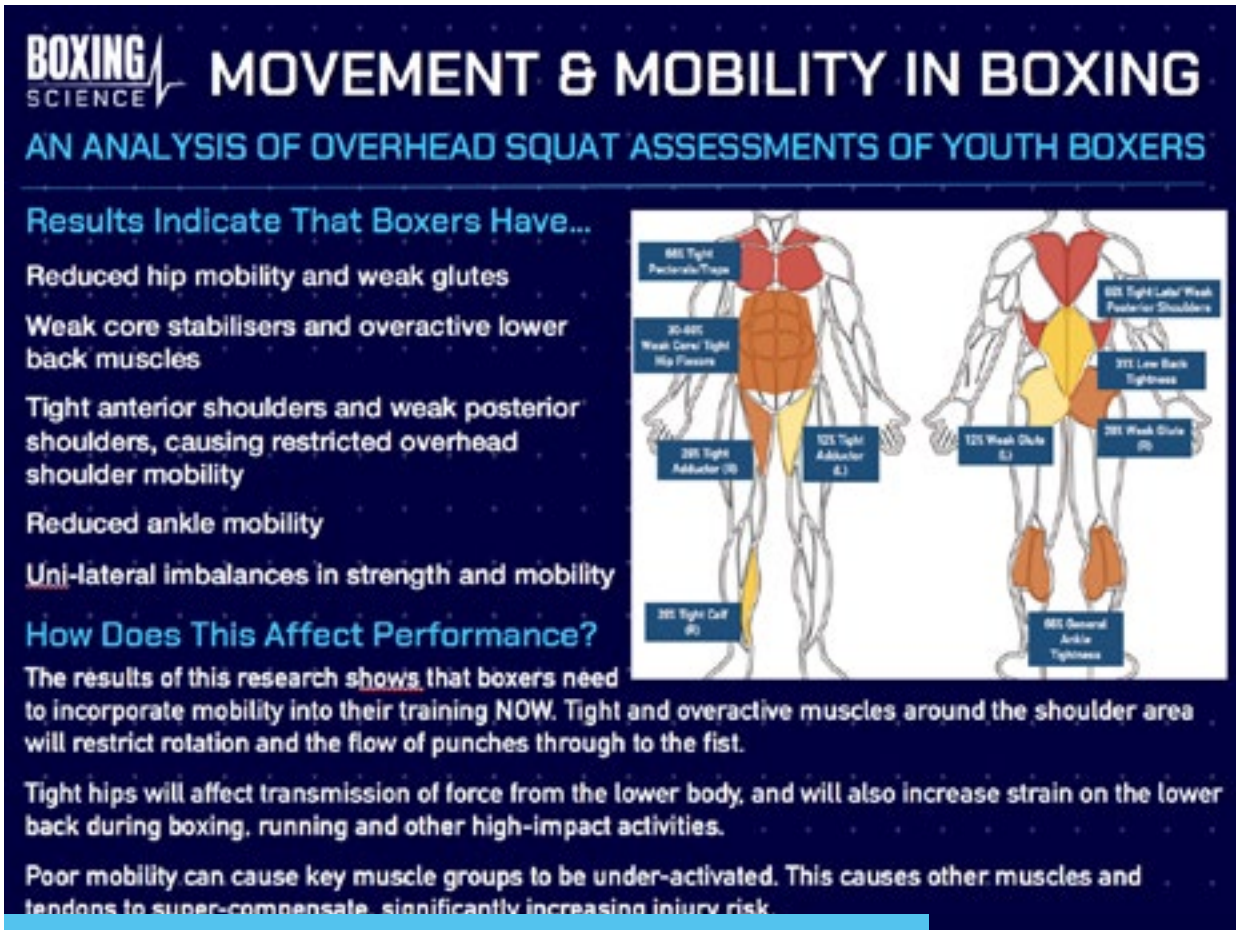
MOBILITY ISSUES IN BOXING

Due to the intense and repetitive nature of Boxing, and sport in general, athletes become tight in certain muscle groups and underactive in others. This can create muscular imbalances, that can negatively affect performance and even cause injuries.



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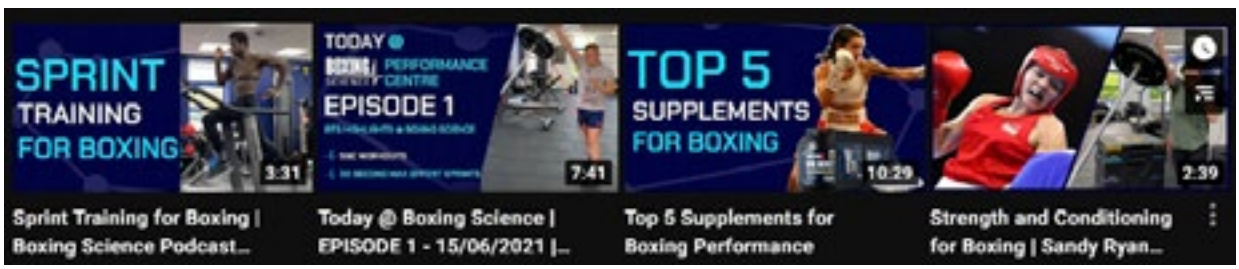

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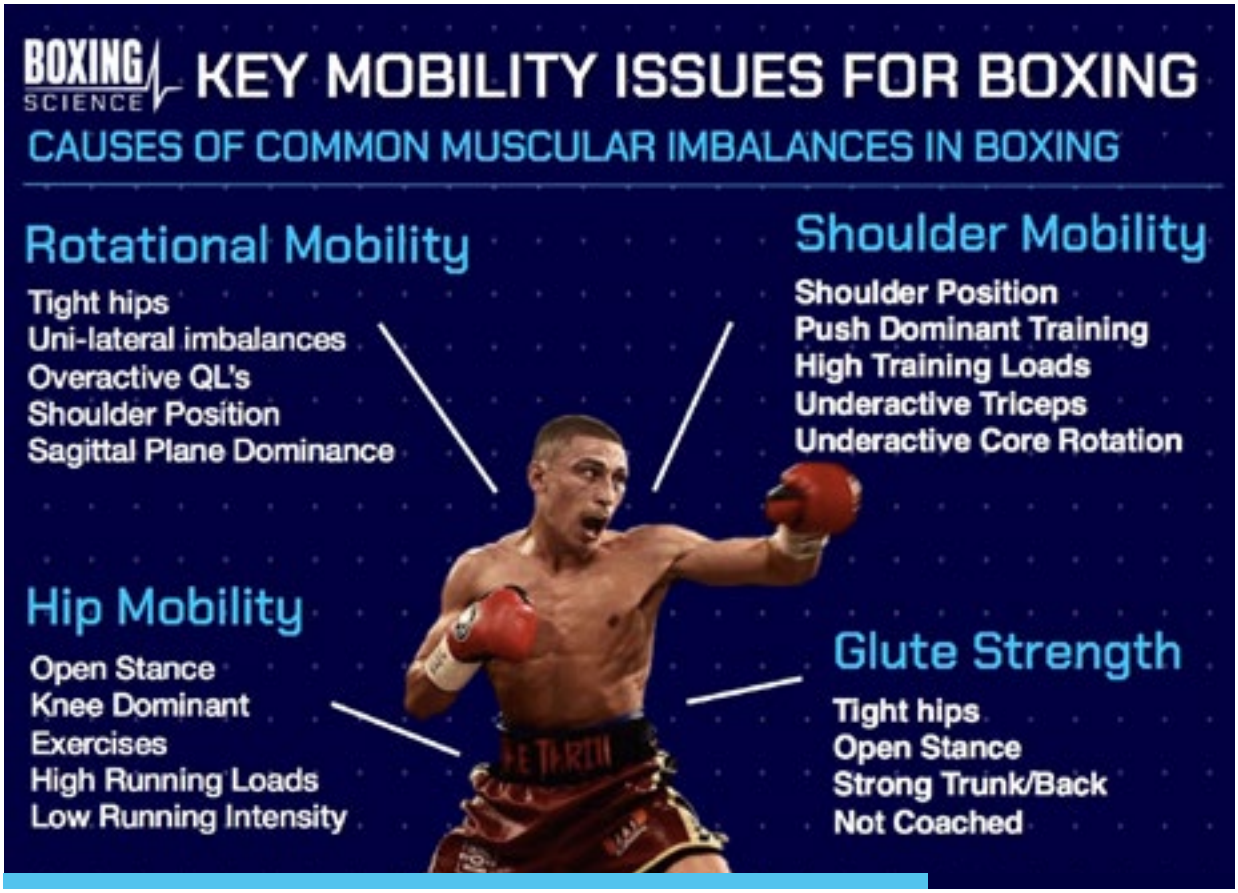

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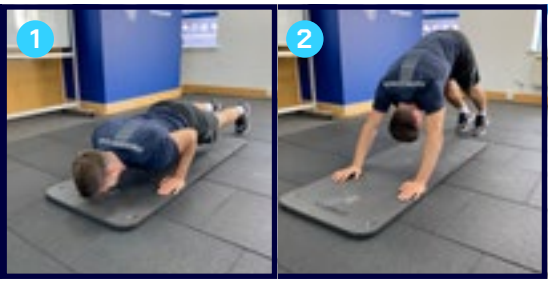
ADD THIS STEP TO YOUR TRAINING

Below are a series of exercises that target the key focus areas of mobility training in boxing. These exercises are easy to do, require no equipment and can be done anywhere – so can be integrated into various areas of your training. Ideally, we'd advise you to put these exercises in your warm-up routine.

EAGLES

- Lay on your side with arms and legs straight.
- Rotate the upper body to open up the chest and bring the top shoulder to the floor.
- At the same time, bring the top knee close to the floor on the opposite side. Pause and return to start position.

YOGA PRESS UP



- Begin in a press up position, with the handsunderneath the shoulders, and the core tight.
- Descend whilst keeping the elbows in, and core tight.
- Pike the hips to the ceiling, and aim to alternately touch the heels to the floor 2-3 times, before repeating the cycle.

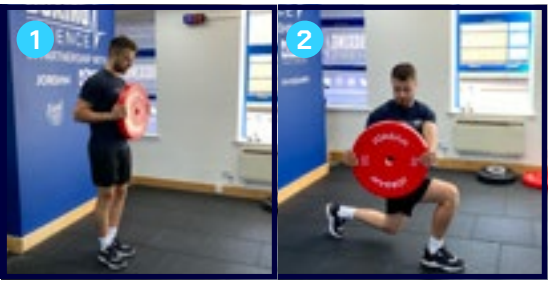
SPIDERMAN TO TWIST

- Begin in a press up position, with the handsunderneath the shoulders, and the core tight.
- Descend whilst keeping the elbows in, and core tight.
- Pike the hips to the ceiling, and aim to alternately touch the heels to the floor 2-3 times, before repeating the cycle.

SQUAT TO PRESS

- Hold a small weight (2.5 – 5 kg) at the chest.
- Descend slowly into a squat, keeping the chest up, knees wide, and heels on the ground, pressing the weight out at the same time.
- Pause, then stand back up, bringing the weight back in.

LUNGE AND ROTATE



- Stand with feet roughly hip width apart. Take a big step forward, at the same time as flexing at both knees.
- Rotate the upper body over the front knee, keeping the lower body still, and the hips, knees and feet in line.

SIGN UP HERE!

STEP 2
GET STRONGER

SIGN UP HERE!

BOXING SCIENCE

STEP 2 - GET STRONGER

We have already stated that punching hard relies on producing high amounts of force in very short amount of time. Therefore, a boxer's priority should be to improve the amount of force that they can produce, and the rate at which they can produce it.

Our strength training methods are simple, effective and evidence based. In our research; we know that the lean mass of the core and lower-limb force production are important contributors to the punch. We also understand the importance of the upper-body, and the limitations caused by functional movement issues of boxers.

This provides the generic training aims of our strength and conditioning programs.

You might have seen on our social media some of the advanced training methods we use to help improve a boxers' strength, speed and explosiveness; including plyometrics, velocity based training and Olympic lifting. However, all athletes start with the basic S&C methods to improve foundational strength – and this is what we will introduce to you in this e-book.

Our traditional S&C programs include the foundational movements for strength; Squat, Hinge (Deadlift variations), Upper body Push and Pull, and Single Leg Exercises.

SIGN UP HERE!

ADD THIS STEP TO YOUR TRAINING

Here is the start of the Boxing Science strength and conditioning journey – and will provide the foundations for strength training. We use the exercises below to unlock your movement potential and activate the desired muscle groups to prepare more intense strength training. Spend 3-4 weeks on these exercises following boxing sessions before moving onto more advanced exercises in separate S&C sessions.

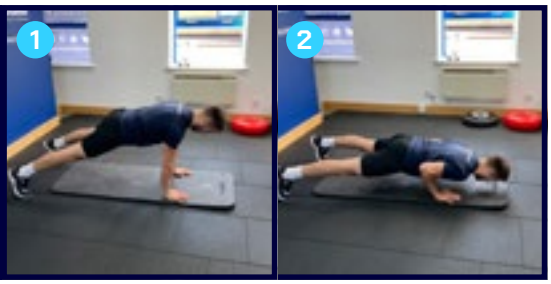
GOBLET SQUAT

- Hold a dumbbell at contact with the chest and upper body, feet shoulder width apart.
- Descend into the squat until hips are below knees – balance on the heels, push knees wide whilst keeping an upright torso.
- Stand back up quickly, driving through the heels.

DUMBBELL ROMANIAN DEADLIFT

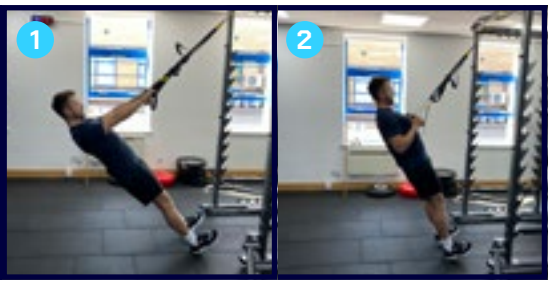
- Stand upright with feet shoulder width apart and knees slightly flexed, and hold the Dumbbell between your legs.
- Flex at the hips whilst maintaining a neutral posture and legs in a slightly flexed position. Keep the Dumbbell between the legs throughout the movement.
- Drive through heels and forcefully extend hips by squeezing glutes at top of lift.

STRICT PRESS UPS



- With hands slightly wider than shoulder width apart, squeeze the shoulder blades together, and engage the core to maintain a straight back.
- Press up, keeping the elbows in to the ribcage and the core engaged, before slowly lowering back down to the start position.

TRX ROW



- Set up with the feet, hips and shoulders all in a straight line, grabbing on to the TRX handles.
- Row and rotate the hands in towards the armpits, squeezing the shoulder blades together, before slowly lowering back down to the start position.

GOBLET REVERSE LUNGE

- Feet hip width apart before pushing one leg back, weight on the heels and use the hips.
- Slowly lower as you put the leg back, then descend into a split squat position.
- Drive through the front heel to return to a standing position.

STEP 3
STRONGER CORE

SIGN UP HERE!

BOXING SCIENCE

STEP 3 - STRONGER CORE

From our research – we know that the lean mass of the core is the biggest physical contributor to punching force. The core must also be strong enough to transfer energy from the floor, through the trunk and into the fist during a punch, and must be strong enough to allow a boxer to fully rotate their hips and torso into a punch and optimally transfer force, through the kinetic chain.

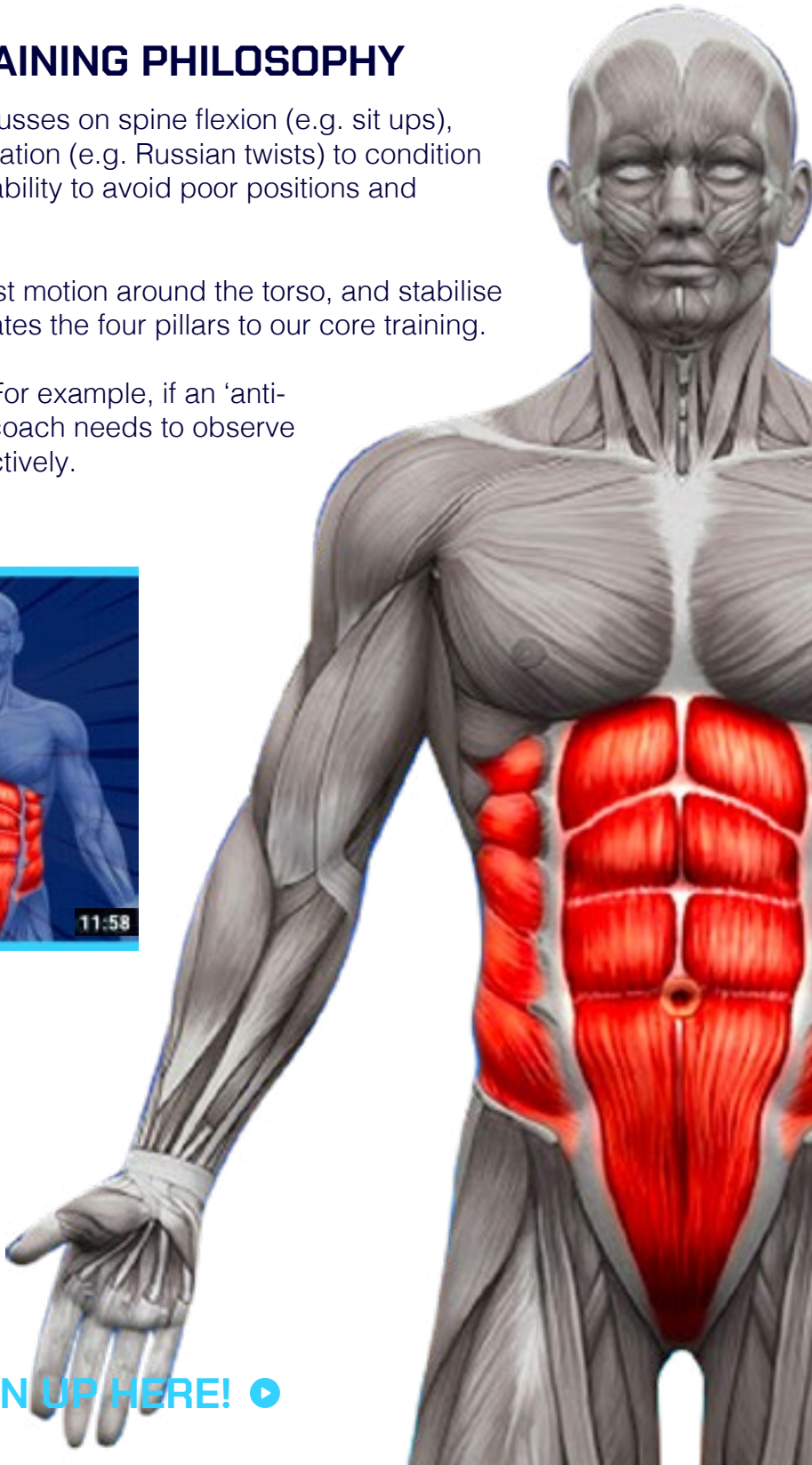
The most effective way to improve this is through compound lifts such as squats and deadlifts. However, there are muscular imbalances within the core musculature created by the demands of boxing. Therefore, we focus on exercises specific to improve and challenge core strength, stability, stretch-shortening cycle and speed.

BOXING SCIENCE CORE TRAINING PHILOSOPHY

Traditional boxing core training usually focusses on spine flexion (e.g. sit ups), slight extension (e.g. dorsal raises) and rotation (e.g. Russian twists) to condition the core. However, we want to focus on stability to avoid poor positions and potential increased stress on the spine.

The main role of the core is to actually resist motion around the torso, and stabilise the trunk. The picture on the left demonstrates the four pillars to our core training.

Always keep the 'exercise focus' in mind. For example, if an 'anti-rotation' exercise is being performed, the coach needs to observe whether athletes are resisting rotation effectively.



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CORE TRAINING FOR BOXING

FOUR PILLARS INSPIRED BY THE 21ST CENTURY CORE TRAINING

Anti-Lateral Flexion

Actively resisting lateral flexion of the lumbar spine

Anti-Extension

Actively resisting extension of the lumbar spine

Hip Flexion with Neutral Spine

Controlled hip flexion without flexing the spine

Anti-Rotation

Actively resisting rotation of the lumbar spine

BOXING SCIENCE

CORE TRAINING FOR BOXING

FOUR PILLARS INSPIRED BY THE 21ST CENTURY CORE TRAINING

Anti-Lateral Flexion

To punch without side bending, then to recover when rotating back for combos or head movement.

Anti-Extension

Protecting the back when performing large amounts of punching

Hip Flexion with Neutral Spine

Resisting forward lean when attacking or moving forward

Anti-Rotation

Stronger rotation of the core utilising the stretch-shortening cycle when performing combinations

ADD THIS STEP TO YOUR TRAINING

These four core exercises below will be a fantastic addition to your training. Each exercise develops a different pillar of the Boxing Science core training philosophy, and similar to the movement program, requires little / no equipment and can be easily done anywhere. We'd suggest to perform this as a circuit and add this at the end of your boxing sessions.

- In a press up position, with the hands slightly wider than shoulder width, perform slow touches of the opposite hand to the opposite shoulder.
- Ensure that the entire body remains still, and the core remains tight.

- With the core engaged, feet together, and hands up towards the ceiling, sit up, while keeping the spine neutral.
- Slowly descend for 3 seconds, before repeating the movement. This can be progressed by the addition of weight, as shown here.

- Start in a plank position, with elbows under shoulders and arms perpendicular to the body. Pivot on the feet and rotate the body outwards.
- Raise arm to the ceiling and resist the hips from lowering to the floor.

- With the core engaged, and the lower back against the floor, lower the legs and the arms out slowly, pause, then return to the start position, challenging the core through extension.
- This exercise can be progressed by the addition of weight, as shown here.

STEP 4
PUNCH SPECIFIC EXERCISES

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BOXING SCIENCE

STEP 4 - PUNCH SPECIFIC EXERCISES

The majority of our S&C program is quite generic as we look to focus on the physical adaptations. We want exercises that require us to generate the most force in a short amount of time; therefore we need a higher external load in order to achieve these adaptations.

That's why we use exercises such as the Squat and the Deadlift as we know that these are the most effective exercises to help improve rate of force development.

However, this is just producing force through these movements. At Boxing Science, we want our athletes to benefit these improvements in RFD through the punching action. Therefore, we use punch specific exercises.

POWER UP YOUR PUNCH

At Boxing Science, we use punch specific exercises as part of an explosive warmup and core supersets during S&C sessions, as well as becoming a key exercise during the taper phase. We also use them in technical training, sparring and competition warm up routines to help fire a boxer up and make them feel strong, sharp and powerful.

The desired outcomes of punch specific training are improved hand speed, punching strength and effective mass. We select exercises that promote the kinetic chain sequencing from foot to fist – coaching and cueing forceful hip and core rotation.

TOP 6 PUNCH SPECIFIC EXERCISES

At Boxing Science, we use punch specific exercises as part of an explosive warmup and core supersets during S&C sessions, as well as becoming a key exercise during the taper phase. We also use them in technical training, sparring and competition warm up routines to help fire a boxer up and make them feel strong, sharp and powerful.

Check out the video demo by Danny Wilson as he explains the benefits of the range of punch specific exercises we use at Boxing Science.

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ADD THIS STEP TO YOUR TRAINING

The best thing about punch specific S&C training is that it can be integrated into your program at various points for a range of benefits. Mostly, we use them as part of our extended warm-up – pairing them with an explosive jump exercise. We also do pair them up with a rotational core exercise to fire up the core muscles before punch specific movements. You can also add these to your warm-ups for technical training and competition.

MEDICINE BALL PUNCHES

- Use a 3-5 kg medicine ball, start in a boxing stance with the ball in your back hand, held close to your shoulder.
- Drive through the floor, rotating the foot, hip and torso and extend the shoulder and arm to throw the ball in a punching motion.
- Make sure feet stay fixed to the ground and avoid from leaning over the front foot.

BANDED SHADOW BOX

- Place a mini-band around the knees, and encourage a boxer to work on multidirectional movement, pushing out with their knees against the band.
- The resistance band increases recruitment of the legs and hips, allowing them to get more involved to produce more force in rotation, creating a harder punch.
- When the bands are taken off, the boxer can punch harder, and move faster.

LANDMINE PUNCHES

- Set up a landmine, and stand in a boxing stance, holding the bar in the backhand, so that the top of the barbell is just above the rear shoulder.
- Drive through the floor, rotating the foot, hip and torso and extend the shoulder and arm to accelerate the barbell in a punching motion.
- Snap and hold the bar for two seconds at the top, with tension through the entire body, before slowly lowering the bar and resetting.

THAT IS THE FINAL STEP ON YOUR WAY TO PUNCH HARDER...

NOW IT'S ABOUT PUTTING IT ALL TOGETHER INTO A PROGRAMME...

YOUR 4-WEEK KICKSTART PROGRAMME

Here we have put together your kick start S&C programme for Boxing. This will help you build the strength and movement foundations in any training environment, preparing you for a full S&C programme…

MOBILITY WARM-UP – 5 MINS

EAGLES	10 Reps Each Side
YOGA PRESS UPS	10 Reps
SPIDERMAN TO TWIST	8 Reps Each Side
SQUAT TO PRESS	10 Reps
LUNGE AND TWIST	8 Reps Each Side

STRENGTH PROGRAMME – 30 MINS

Perform these exercises as supersets (two exercises paired) or trisets (three exercises). Rest 45-60 secs after each superset. Note down what weight you perform on each lift, try to progress steadily each week.

	WEEK 1	WEEK 2	WEEK 3	WEEK 4
GOBLET SQUAT	10 x 3	10 x 4	12 x 3	12 x 4
LANDMINE PUNCH (MB Punch As Alternative)	6 e.s. x 3	6 e.s. x 4	6 e.s. x 3	6 e.s. x 4
DUMBBELL ROMANIAN DEADLIFT	12 x 3	12 x 4	15 x 3	15 x 4
PLANK ROW	8 e.s. x 3	10 e.s. x 4	10 e.s. x 3	12 e.s. x 4
STRICT PRESS UPS	10 x 3	10 x 4	12 x 3	12 x 4
STRAIGHT LEG SIT UPS	10 x 3	10 x 4	12 x 3	12 x 4
GOBLET REVERSE LUNGE	8 e.s. x 3	10 e.s. x 4	12 e.s. x 3	12 e.s. x 4
ROTATIONAL PLANK	6 e.s. x 3	6 e.s. x 4	8 e.s. x 3	8 e.s. x 4
LEG LOWERS	10s. x 3	10. x 4	12. x 3	12. x 3

SIGN UP TO OUR ONLINE MEMBERSHIPS TODAY

The wait is finally over... and the Boxing Science Online Membership is HERE! We've worked so hard to put 100's of hours of world class content together and can't wait to share it with you all...

WHY HAVE WE STARTED THIS MEMBERSHIP?

Our methods are evidence-based and super-effective. However, many coaches and athletes may find difficulty in integrating them into training schedules.

This maybe down to people feeling under-confident , or not having the facilities, time or money to perform these training methods.

In our BRAND NEW online membership services, we give YOU the guidance, education and information for you to utilise the Boxing Science methods in YOUR training environment.

SIGN UP HERE!

Access to a range of coaching workshops in S&C, Nutrition, Physiology and Psychology, delivered by the Boxing Science team and leading practitioners in Boxing and MMA.

Access to our exercise library with over 70 video demonstrations, as well as receiving a weekly workout to help you get fitter, faster and stronger.

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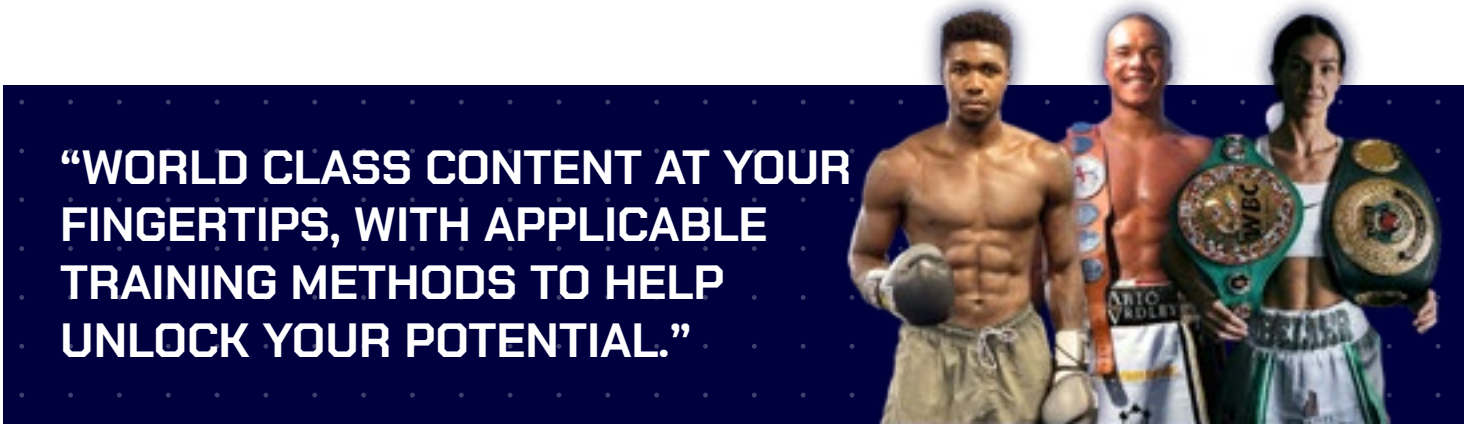

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This includes 10-week strength, running, movement and nutrition programmes, and will support you on your journey to world level fitness.

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Training tips, exercise tutorials, boxing updates, previews, training highlights and in depth articles are all available, for free, from the following sources.

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We're always happy to answer any of your training questions, If you have anything in particular you want help with, please don't hesitate in getting in touch via our e-mail.

info@boxingscience.co.uk

See you soon,
Danny Wilson | Co-Founder - S&C Coach

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