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CHAIN REACTION

To respond with lightning speed, you need more than quick wits, you also need to be physically ready - which means creating strong fast-twitch muscles. And that's why working on your reaction times while training is vital

WORDS SISKI GREEN

Quick-witted or slow, brain or brawn - do you have to choose? No. Because if you focus on improving your reaction times during your workouts, you'll enjoy a whole host of benefits including a sharper mind and stronger muscles.

With faster reaction times, your brain, spinal cord and musculoskeletal system have to work in perfect harmony - and that's something you can train your body to do better.

"Faster reaction times serve all athletes in arming them with the ability to contract their muscles faster," says coach Max Wunderle, of TriMax Fitness (gotrimax.com).

"This contractile potential allows for quicker speed in running and potentially the ability to gain strength faster, as well as overall general physical preparedness. Whether in everyday physical tasks or in professional athletes, faster reaction can benefit everyone."





› With that in mind, reaction time comes down to two things: how quickly your brain receives information and processes it, triggering a reaction, and how well developed your fast-twitch muscles are.

So the first question is whether it's possible to improve how quickly your brain works in response to stimuli. Just a few decades ago, sports scientists thought that reaction times couldn't be improved; they figured that some lucky people are simply born with lightning responses. But several studies have shown this not to be true.

One, for example, from Waynesburg University, Pennsylvania, US, found that while trained athletes – baseball and softball players – did have better visual reaction times than non-athletes when they were first tested, those same non-athletes were able to significantly improve their reaction times with training.

And if you want to test this theory yourself it's easy to do. Play squash, tennis or football for any length of time and you'll see improvements in how quickly you respond.

That might sound pretty straightforward but unfortunately improving reaction times isn't just about practising a move, it's also about experience. Elite sportsmen's reaction times are, to some extent at least, task-specific – their abilities are based on their experiences.

So, for example, being able to respond quickly to a tennis ball coming at you at 120mph won't necessarily mean you'll automatically be as quick to respond to a football.

If you're used to playing tennis rather than football, the details of body movement, ball movement and so on are different so your brain no longer has all that information to rely on when you respond.

For example, research, from McMaster University, Canada, found that field hockey players had quicker visual reaction times partly because they were able to register subtle changes in a player's movement that allowed them to then predict what would happen next – where the ball or the player would go. This is what gave them the edge – the ability to react faster.

This also holds true for sports such as boxing, where learning more about what your opponent is likely to do gives you a better ability to respond quickly. The good news is, though, that while you learn when to dodge or when to punch, your nervous system and

your muscles are also learning to work better together. Furthermore, you'll be building more fast-twitch muscle – the type that responds quickly when you need it.

To understand that there's a difference between fast-twitch and slow-twitch muscle fibre, you need only look at the meat of a chicken. The leg meat, which contains the muscles that chickens use to stand around, walk as they bend and peck at grubs and so on, is dark and doesn't use up much energy. That's the slow-twitch muscle.

The whiter meat, on the wings and breasts, also contains muscle but it's muscle that are only used for flying – which chickens don't

do much of. So that muscle fibre is used for short bursts of high energy – and that's fast-twitch muscle.

Similarly, an Olympic long-distance runner will have different muscle composition to a 100m sprinter. Scientists are figuring out ways to find out how much of each type of muscle different people have, because as yet, they can't say for sure.

What you can be sure of, though, is that by doing exercises that target your slow-twitch muscle fibres giving you greater endurance, and focusing on your fast-twitch muscles fibres too, to give you that explosive force, your body will be in the best shape it possibly can be.

SPEED DRILLS

So, to begin with, focus on ways to improve your brain's response to stimuli. There are many ways to do it. You can focus on improving your reaction time using your ears, your eyes or your skin. You'll be able to respond fastest to a sound as our brains are wired that way. Next up is visual stimuli. Then finally touch.

For visual stimuli, games that involve balls are obviously ideal, and table tennis, with its high-speed action, is perfect. Proving the point, trainer Kim S Gilbert enhances her clients' response times by using table tennis drills and exercises.

Kim isn't just any trainer, she's a CoachUp table tennis coach and US Olympic Festival gold medallist, and she set the record for the fastest reaction time ever recorded at the 1986 US Olympic Festival in Houston, Texas – Kim reacted in 0.14 of a second, a record that still stands today.

She has worked with athletes and professional sports teams to improve their reaction times, and is currently working with the Los Angeles Dodgers, among others.

"In one session alone I was able to increase the reaction time of NHRA racing champion Khalid alBalooshi by 65.3% using one of my favourite techniques," says Kim. "I use this drill to increase speed, reaction times and fast-twitch muscle groups for my clients. It can be done at a ping-

pong or dining room table and all you need is a stopwatch."

Here's what she suggests: first, turn your back to the side of the table but close enough to touch with your backside. Spread your feet and bend your knees enough to where your lower back is touching the table. With your head and eyes looking straight ahead and arms and hands out in front of you, twist your torso only to the right and touch the table surface so that all 10 fingers make contact.

Then repeat this to the left side, all the while keeping the head and eyes straight forward. Each session is timed in 30-second intervals and counts how many times you can touch each side of the table. "I can do it 95 times in 30 seconds," says Kim. "It's a very difficult drill but with coaching has proven invaluable to athletes around the world."

Other options for improving reaction times might even be exercises you already have in your gym regime. "There are dozens that can help develop faster reaction times, but some of our favourites are those which demand quick muscle contraction," says Wunderle.

"Box jumps, explosive compound movements with light weights (like those from Louie Simmons' conjugate method) and most core to extremity movements performed quickly will develop fast-twitch muscle fibre."

Jumping, throwing, running (with stops and starts, and moving in different directions) are all excellent ways to work on building stronger and faster muscles.

Finally, be sure to add some rope to your routine. There's a reason boxers skip regularly. It keeps them quick and light on their feet, but it also improves response times based on sound, touch and sight.

As you see the rope, feel it and hear it when it moves above and below you, skipping helps you nail three senses in one move. Throw in some double unders, criss-cross patterns, and movement and you'll skip your way to being the fastest guy in the gym. ●



TO SPEED UP YOUR BRAIN'S RESPONSE TO VISUAL STIMULI, GAMES THAT INVOLVE BALLS, SUCH AS TABLE TENNIS, ARE IDEAL

SNEAKY TRICKS TO FASTTRACK YOUR RESPONSES

CAFFEINE

A study published in *Medicine in Science in Sports & Exercise* found that study participants who had a caffeine pill (equivalent to six cups of coffee) showed improved response times of 3.9%.



you chewing rather than anything to do with the flavour of the gum. When you chew your jaw muscles help stimulate parts of your brain that control motor performance.

VISUALISING

The better you are at predicting what's coming at you – be it a car, a ball or a cheated lover's hand – the more quickly you'll be able to respond appropriately. Visualise the situations you could find yourself in, so your brain already knows what to do.



CHEWING GUM

A Japanese study discovered chewing gum for just 10 seconds improved visual reaction times by as much as 7%. It's thought that this is a result of



QUICK TIP FROM A PRO

"Faster reaction times will benefit your reflexes first and foremost, but can also improve your decision making abilities in life in general," says Jens Lang, high-performance manager and head coach at Table Tennis Australia (tabletennis.org.au). "And fast reaction times, of course, help dodging the cups and plates your wife might throw at you if you left your dirty socks from the last workout lying around again!"

Here's how to dodge the crockery: hold your hand in a shake hand-like position, with your thumb and pointer approximately 5cm apart. Now have someone else hold a ruler vertically over the gap between the thumb and the pointer, with the '0' at the same horizontal level with your pointer and thumb. The person holding the ruler releases it, and the person doing the test tries to catch it between the pointer and thumb as quickly as possible. Keep practising until the ruler never hits the floor. There'll be no broken glasses in your home!



TOOLS TO USE

REACTION BALLS

Not your average sphere, these lumpy looking balls won't bounce as you expect them to, making them ideal for improving your response times.

VIDEO GAMES

Researchers from the University of Auckland, New Zealand, undertook an overview of all the current research on video games and reaction times and found that playing did improve visual response times in both experienced gamers and those who did not usually play.



REACTION TIMER

A battery-operated device that allows you to test your response to light, sound and touch.



THE SPRINTSTART APP

This allows you to hone your ability to respond to the starter's shot on the race track. Its designers claim: "This classic game is ideal for improving your responses to visual and auditory clues."

But you can just get yourself the ReactionTime app, which does the same thing without all the embarrassing touching your head, nose and so on.

