

Natural High

Did you know that you have an intimate drugs cabinet hidden within you and that exercise unlocks the doors? Sarah Stirling investigates how you can maximise the natural highs you get from running, cycling and swimming.

THE BODY'S MORPHINE

"I suddenly felt fully in balance and powerful, like I was entering a dream-state. I could feel it in my face, the creases - I was smiling. It was elation out of nowhere." Trail runner Carlton Rowlands is telling me about experiencing a runner's high, on a technical ridge at sunset, 100km into the 120km TDS® race in the Alps. There are some clues in there. So what causes it?

The feeling isn't reserved for those pounding on foot: "runner's high" is more generally known as "flow state". It's when you're so engaged in the present that you feel really alive - to the point of euphoria sometimes. Intuition increases. Eureka moments happen. Time does funny things: flying by effortlessly, or slowing to help you think. Whatever you are doing, you do it better in flow state.

You can achieve flow in all kinds of activities, but my aim here is to focus on what happens in the body chemically, strand by strand, when you access the state of mind through sports. We'll start with the famous endorphins, but these are only one ingredient in a powerful flow-inducing cocktail that your body releases when you exercise.

Humans have long known that taking drugs works - fossilised poppy seeds suggest that Neanderthals took opiates - but it's only in recent decades that we've discovered how drugs work, and this is key. They mimic, block or enhance chemicals produced naturally, by your brain.

Think about that for a second. It's enormous. You and I - anyone reading this magazine - we're all addicted to natural highs, supplied in the form of neurotransmitters: "messenger molecules" sent by your brain to encourage you to do more or less of whatever you're doing. Gradually, scientists have discovered more and more of them. Endorphins, for example, were isolated by American scientists in 1973. The name is a blend of "endogenous" (in the body) and "morphine".

Endorphins reduce perceptions of pain and stress, and make you feel happier and more relaxed, much as opiates like morphine and heroin do. Near the end of a long race, Carlton had been pushing extra-hard and for an extra-long time, and was receiving a good dose of these to help him continue despite fatigue.

The depth of Carlton's workout is the first clue to getting enough natural highs to access flow state. Lance Dalleck, Associate Professor of Exercise and Sport Science at Colorado University, told me the body produces similar neurotransmitters whether you are swimming, running or cycling, for example, and that how high you get is "typically related to intensity of activity." It's how you're doing whatever you're



engaged in, not what you're doing that's key.

Does that mean you have to push yourself really hard to access flow? Sort of, but my research suggests that "intensity" is more ambiguous than it might seem.

For example, not long after the TDS race, everything changed for Carlton Rowlands. He turned pro, and entered his most demanding race yet: the infamous Ultra Trail du Mont Blanc. Lining up with the other elites, he stared down the start line barrel surrounded by huge crowds. He'd made the big time. He'd trained for this. He had to do well, for his sponsors, Vibram.

The thought added pressure. As he stood there, waiting, his body began flooding him with more and more stress hormones. The 29-year-old raised his wrist to look at his heart-rate. His watch was measuring 146 beats per minute. Before he'd even taken a step, he'd gone above his fat-burning zone and was burning sugar.

Within ten miles he felt like he'd run 100. The setback made him turn inwards, worrying about getting a poor result. He was pushing his body as hard as he could. But he just couldn't immerse himself in the race. It started me thinking: the intensity required to access flow is mental rather than physical. How deeply you can immerse your mind is more important than how far you can push your body.

Musing on the subject, I tell competitive cyclist Harry Wickham that I can't get into the flow on a bike, it's too boring. He replies "Yes, I know a lot of runners who have picked up a bike and gone at it with a runner's attitude, then written it off."

Runner's attitude? Excuse me? Intrigued, I quiz him, and Harry explains that he loves the saddle for two reasons. Firstly, "An hour running equals two on the bike; maybe more. Cycling doesn't shock the muscle fibres, which allows for longer sessions."

What's good about that? Sounds like an inefficient recipe for a sore bottom to me. But, "From the moment our subconscious is breached by the morning alarm, it's hounded,"

he argues. "Cycling's time to effort exchange rate is king!"

Instead of pounding his body as hard as it will go, Harry softens the impact so he can spend more time exercising, and this means he gets more time in the flow. But I still don't get it. "Four hours on a bike is dull, though," I argue. "How can you immerse yourself in that in the first place?" Harry wags his finger at me. He has a trick up his sleeve.

CANNABIS-LIKE

The other interesting thing about cycling, Harry tells me, is that in no other sport is the sharing of effort so tangible, and real: "A solo rider is a weird thing, like a lone sardine or a solo swift." He paints a picture of whipping along chatting, sharing food, stopping for a coffee and looking out for each other. Immersing yourself in the social aspect of feeling part of something. "Humans want to work together and road cycling fires this primal human part of our brain," he concludes.

Then my reading turns up something really interesting: apparently, as well as helping you push on, endorphins encourage feelings of attachment to other people. So does dopamine, which we'll get to shortly. And there's another neurotransmitter in the flow cocktail which has a sociable side effect, too.

In the 1990s, a team at the Hebrew University of Jerusalem isolated anandamide, also known as the bliss molecule ("ananda" is Sanskrit for "bliss"). As well as making you feel happy, as any pot smoker will attest, cannabinoids make you more open and empathetic.

Why do these exercise-related neurotransmitters have this side effect? From an evolutionary perspective, trust and working together when hunting or travelling would have been very important for survival. When you socialise while exercising, you mimic this effect. Cyclists, it seems, can be a rolling tribe, intensely immersed in each other.

NATURAL SPEED

In a similarly tribal way, working against people can get you into the flow too. "The race I really remember, in terms of everything coming together and the buzz lasting for weeks, was last February," psychologist and runner Cat St Clair tells me. "It was snowing and I'm not very good at descents." However, Cat found herself flying down Box Hill like never before. The competitive urge took over, and she simply decided: "If I put myself in hospital, well I'm going to do it anyway."

It's why we compete, isn't it? Psychological brakes of any sort - not feeling in the mood, being scared to push it - manifest themselves as physical ones. Race pressure increases focus on