



Peter Herzig was not a fast cyclist five years ago. As an undergraduate student at the University of Queensland in Australia, he possessed only a mild interest in competitive cycling. Meanwhile, exercise physiologist Paul Laursen, also at the University of Queensland, was trying to figure out if, among all the programs recommended to cyclists worldwide, there was one interval that stood out as the most effective. Laursen enrolled Herzig in a study group he called T-Max.

Herzig subjected himself to the most brutal training of his life--holding back his vomit while a stereo blared the heavy-metal group Pantera. But after just eight of these interval sessions, Herzig was fast. His maximum power output jumped more than 10 percent. His VO2 max--a measure of how much oxygen your body can absorb and use--increased by three points. And he took four minutes off his 40-kilometer time-trial performance. Herzig is now a domestic pro in Australia.

Laursen's findings, which have been backed by other recent studies, show that the workout he dubbed T-Max can, on average, increase maximum power output by 5 to 6 percent, and raise VO2 max sky-high. The T-Max Interval is effective because it tailors work and rest time, and intensity, to your genetic ability and fitness level, rather than prescribing an arbitrary set of conditions. Here's how it works: T-Max is the length of time you can hold your peak power output before succumbing to exhaustion--or, scientific jargon aside, how long you can ride really, really hard until you feel so much like you're dying that you stop. For most of us, that's about four to six minutes.

Laursen found that cyclists improved the most doing intervals at 60 percent of their T-Max with double that amount of time for recovery between efforts. For instance, someone with a T-Max of four minutes would ride hard for 2:30, followed by five minutes of recovery. In a 2006 study performed at Ithaca College in central New York, members of the collegiate cycling team performed sets of eight intervals twice a week for six weeks; they improved their performance in a 5-kilometer time trial by 7 percent.

Exercise physiologist Andrew Coggan, a preeminent authority on training with power, gives his nod of approval to the T-Max: "It seems like a very logical, pragmatic approach to interval training. Here's the maximum amount of time you can go hard. To do that intensity repeatedly, you have to go hard for a shorter amount of time."

The one catch is obvious. Riding at peak power output is excruciating. "I could never forget the T-Max Intervals," says Herzig. "They were and probably still are the hardest training I've ever completed." In the Ithaca College study, says research project advisor Tom Swensen, "The guys could do about five or six intervals max. I think a goal of eight is too many." In fact, Laursen admits that more than a third of his test subjects failed to complete the prescribed eight efforts, and that some of them gurgled puke by the end of the session. "The stress is quite significant," he deadpans.

Cue the Pantera.

### Find Your T-Max

1. Determine Your Peak Power Output. Using a power-measuring device from PowerTap, Polar, SRM or CompuTrainer, begin riding at 100 watts. Increase power by 30 watts every minute until you reach exhaustion. Laursen deemed test subjects fully exhausted when they could not keep their cadence above 60 rpm. You can use that benchmark, but let's be honest, you'll know when you're done. The number of watts you produce just before collapsing is your peak power output, or PPO.

2. Find Your T-Max. Rest for a day or two. Again using a power meter, ride at your PPO until

you can no longer sustain that level of output. The amount of time you can hold your PPO is your T-Max. For most of us, that's between four and six minutes.

3. Calculate Your Ultimate Interval. Multiply your T-Max time by 0.6. This is the work phase of your interval. Double the work phase to set your recovery time between efforts.

4. Try It Out. The original study prescribed eight hard efforts. But if you'd rather avoid losing your lunch, start with two or three intervals. Do two sessions a week, with at least two days of rest or other easy riding between. Add one interval to each set every week until you achieve five or six intervals per workout. Build up to eight if you can.

**If You Can't Measure Power** Though the results likely won't be as dramatic as with a power-based T-Max Interval, Laursen says unplugged cyclists can reap some of the benefits by performing 2:30-minute intervals at 95 to 100 percent of max heart rate (the point at which you cannot speak), followed by recovery to 60 percent of max, or until you can speak in full sentences. Do two to six sets twice a week, with at least two days of spinning or rest between.

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