

The new exercise HIT: do less

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The usual excuse of "lack of time" for not doing enough exercise is blown away by new research published in The *Journal of Physiology*.

The study, from scientists at Canada's McMaster University, adds to the growing evidence for the benefits of short term high-intensity interval training (HIT) as a time-efficient but safe alternative to traditional types of moderate long term <u>exercise</u>. Astonishingly, it is possible to get more by doing less!

"We have shown that interval training does not have to be 'all out' in order to be effective," says Professor Martin Gibala. "Doing 10 oneminute sprints on a standard stationary bike with about one minute of rest in between, three times a week, works as well in improving muscle as many hours of conventional long-term biking less strenuously."

HIT means doing a number of short bursts of intense exercise with short recovery breaks in between. The authors have already shown with young healthy college students that this produces the same physical benefits as conventional long duration endurance training despite taking much less time (and amazingly, actually doing less exercise!) However, their previous work used a relatively extreme set-up that involved "all out" pedaling on a specialized laboratory bicycle. The new study used a standard stationary bicycle and a workload which was still above most people's comfort zone —about 95% of maximal heart rate — but only about half of what can be achieved when people sprint at an all-out pace.

This less extreme HIT method may work well for people (the older, less



fit, and slightly overweight among us) whose doctors might have worries about them exercising "all-out". We have known for years that repeated moderate long-term exercise tunes up fuel and <u>oxygen delivery</u> to muscles and aids the removal of waste products. Exercise also improves the way muscles use the oxygen to burn the fuel in mitochondria, the microscopic power station of cells.

Running or cycling for hours a week widens the network of vessels supplying muscle cells and also boosts the numbers of mitochondria in them so that a person can carry out activities of daily living more effectively and without strain, and crucially with less risk of a heart attack, stroke or diabetes.

But the traditional approach to exercise is time consuming. Martin Gibala and his team have shown that the same results can be obtained in far less time with brief spurts of higher-intensity exercise.

To achieve the study's equivalent results by endurance training you'd need to complete over 10 hours of continuous moderate bicycling exercise over a two-week period.

The "secret" to why HIT is so effective is unclear. However, the study by Gibala and co-workers also provides insight into the molecular signals that regulate muscle adaptation to interval training. It appears that HIT stimulates many of the same cellular pathways that are responsible for the beneficial effects we associate with <u>endurance training</u>.

The upside of doing more exercise is well-known, but a big question for most people thinking of getting fit is: "How much time out of my busy life do I need to spend to get the perks?"

Martin Gibala says "no time to exercise" is not an excuse now that HIT can be tailored for the average adult. "While still a demanding form of



training," Gibala adds, "the exercise protocol we used should be possible to do by the general public and you don't need more than an average exercise bike."

The McMaster team's future research will examine whether HIT can bring health benefits to people who are overweight or who have metabolic diseases like diabetes.

As the evidence for HIT continues to grow, a new frontier in the fitness field emerges.

Provided by Wiley

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