

# When it comes to warm-up, less is more

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New study in the *Journal of Applied Physiology* suggests that low intensity warm-ups enhance athletic performance.

University of Calgary Faculty of Kinesiology researcher Elias Tomaras says the idea came to him while watching track and field sprinters warm-up for a race. "If you watch sprinters, short distance speed skaters or cyclists before their race, they will often warm-up for one to two hours, including several brief bouts of high intensity exercise. From an exercise physiology point of view, it seemed like it might be pretty tiring."

Many coaches and physiologists believe that a longer warm up provides an increase in muscle temperature, acceleration of [oxygen uptake](#) kinetics, increased anaerobic metabolism and a process called postactivation potentiation of the muscles. However, very few studies have studied if warm ups has a detrimental effect on performance.

As it turns out, the warm-up is one of the more contentious issues in high-performance sport. Different coaches have different theories and not a lot of quality research has been done to identify the optimal warm-up. Tomaras' study, published recently in the prestigious [Journal of Applied Physiology](#) suggests that at the very least, athletes may want to lower the intensity and reduce the amount of time that they warm up.

"Our study compared a standard warm-up, with what we termed an experimental warm-up," explains Tomaras. "We interviewed a number of coaches and athletes to come up with the traditional warm-up."

The experiment involved high performance sprint [cyclists](#) performing a traditional warm-up lasting about 50 minutes with a graduated intensity that ranged from 60 to 95 per cent of maximal heart rate before ending with several all-out sprints. The experimental warm-up was much shorter at about 15 minutes, and was performed at a lower intensity, ending with just a single sprint. The researchers conducted a number of tests following each warm-up to accurately measure the athlete's power output and fatigue.

"What we found, was that the shorter warm-up resulted in significantly less muscle fatigue and a peak power output that was 6.2 per cent higher. This represents a substantial improvement for an elite athlete," says Tomaras. "On the basis of this study I would suggest that sprint athletes should start thinking about adopting a shorter and less strenuous warm up for better performance."

**More information:** Less is More: Standard Warm-up Causes Fatigue and Less Warm-up Permits Greater Cycling Power Output, *J Appl Physiol* May 5, 2011 jap.00253.2011; published ahead of print May 5, 2011. [doi: 10.1152/jap.00253.2011](https://doi.org/10.1152/jap.00253.2011)

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