

Athletes not slowed by dehydration, study finds

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(Medical Xpress)—New research led by Murdoch University and Edith Cowan University has shed new light on a long-held belief that dehydration causes a decrease in high-level athletic performance.

Recently published in the *British Journal of Sports Medicine*, the study involved 10 high-level cyclists undertaking a 25 kilometre time trial in conditions simulating outdoor conditions they would encounter on a hot day.

The cyclists were first dehydrated to -3.0 per cent of their body mass, which has generally been considered the point where performance decreases.

They were then randomly rehydrated to three levels: fully rehydrated; rehydrated to -2.0 per cent of body mass; and no rehydration, -3.0 per cent of body mass.

Brad Wall from Murdoch's School of Psychology and Exercise Science said the time trial gave an accurate assessment of performance because the [athletes](#) had no idea how hydrated they were.

"We used intravenous infusion of a saline-based solution containing a variety of electrolytes, but the athletes were blinded to how much fluid they were receiving. In fact, only three of the 10 were able to correctly guess their hydration levels after the time trial," Mr Wall said.

"Contrary to what we expected, we found no difference in performance levels for cyclists who were dehydrated to -2.0 or -3.0 per cent of [body mass](#) when we compared them to their fully rehydrated time trial results.

"There was no difference in time-trial [performance](#), heart rate, skin temperature or perceived exertion and the only difference we did find was a slight core body temperature increase (0.3oC) in the last eight kilometres for those at -3.0 per cent as compared to fully hydrated riders."

Mr Wall said a strength of the study was that because [dehydration](#) was blinded, the psychological aspect of dehydration was removed – namely the tendency for athletes to subconsciously regulate their efforts anticipating that they will suffer because of dehydration.

He said the study's use of wind conditions consistent with outdoor conditions was also important, as past studies had been conducted in relatively windless conditions, which could affect results.

Athletes in the current study faced 33oC temperatures, 40 per cent

humidity and wind speed conditions of approximately 32 kilometres per hour.

Participants in the study were instructed on the risks and benefits of their participation and gave written and informed consent; and the study received university ethical approval.

More information: [bjsm.bmj.com/content/early/2013-092417.abstract](https://bjsm.bmj.com/content/early/2013-09-24/2013-092417.abstract)

Provided by Murdoch University

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