

# Study challenges idea of mandatory water intake

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Credit: George Hodan/public domain

A multi-institute study led by Monash University has revealed for the first time the mechanism that regulates fluid intake in the human body and stops us from over-drinking, which can cause potentially fatal water

intoxication. The study challenges the popular idea that we should drink eight glasses of water a day for health.

The study showed that a 'swallowing inhibition' is activated by the brain after excess liquid is consumed, helping maintain tightly calibrated volumes of water in the body.

Associate Professor Michael Farrell from the Monash Biomedicine Discovery Institute oversaw the work by University of Melbourne PhD student Pascal Saker as part of a collaboration with several Melbourne institutes.

"If we just do what our body demands us to we'll probably get it right - just drink according to thirst rather than an elaborate schedule," Associate Professor Farrell said.

Building on a previous study, the researchers asked participants to rate the amount of effort required to swallow water under two conditions; following exercise when they were thirsty and later after they were persuaded to drink an excess amount of water.

The results showed a three-fold increase in effort after over-drinking.

"Here for the first time we found effort-full swallowing after drinking excess water which meant they were having to overcome some sort of resistance," Associate Professor Farrell said.

"This was compatible with our notion that the swallowing reflex becomes inhibited once enough water has been drunk."

Associate Professor Farrell, who works in the Monash University Department of Medical Imaging and Radiation Sciences, used [functional magnetic resonance](#) imaging (fMRI) to measure activity in various parts

of the brain, focusing on the brief period just before swallowing.

The fMRI showed the right prefrontal areas of the brain were much more active when participants were trying to swallow with much effort, suggesting the frontal cortex steps in to override the swallowing inhibition so drinking could occur according to the researchers' instructions.

"There have been cases when athletes in marathons were told to load up with water and died, in certain circumstances, because they slavishly followed these recommendations and drank far in excess of need," he said.

Drinking too much water in the body puts it in danger of [water](#) intoxication or hyponatremia, when vital levels of sodium in the blood become abnormally low potentially causing symptoms ranging from lethargy and nausea to convulsions and coma.

Associate Professor Farrell said elderly people, however, often didn't drink enough and should watch their intake of fluids.

The study, 'Overdrinking results in the emergence of swallowing inhibition: an fMRI study' is published online in the journal *Proceedings of the National Academy of Sciences*.

**More information:** 'Overdrinking, swallowing inhibition, and regional brain responses prior to swallowing, *PNAS*, 2016.

Provided by Monash University

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