NEAVE N., SCHOLEY AB., EMMETT JR., MOSS M., KENNEDY DO., WESNES KA.

Water ingestion improves subjective alertness, but has no effect on cognitive performance in dehydrated healthy young volunteers.


Few studies have experimentally assessed the effects of dehydration upon mental performance. Decrement in a range of cognitive skills was then reported. However, dehydration was achieved by exposure to heat stress combined to physical exercise, which make the cause of impairment difficult to interpret.

In this article, the possible effects of dehydration on cognitive performance, within normal physiological levels, were assessed. Twenty four volunteers (12 males; 12 females), 20.1 ± 1.1 years old, participated in the study. Each was tested in both water and no water conditions, separated by 7 to 10 days. After an overnight fast, participants in the water condition drank 150 ml of water while those in the control condition drank nothing. A delay of 20 minutes was followed by measurement of attention, memory, mood and thirst. Then, subjects drank again 150 ml of water in the water group (or nothing in the control group). Twenty minutes after drinking, the same cognitive tests were performed again.

The hydration status and the thirst status did not affect significantly the cognitive performance. Subjects who received water showed an increase in body weight over time, as well as a decrease in subjective thirst. They felt more "alert". Participants from both groups felt less "calm" over time but "contented".

Finally, no aspect of cognitive performance appeared to be affected (either positively or negatively) by ingestion of two successive drinks of water despite positive effects on self-assessed alertness.

The authors reported a number of methodological issues that could explain this surprising lack of significance. Future studies should extend the range of cognitive domains assessed, and compare the effects of thirst with and without dietary restriction.

Key Messages: In opposition to previous studies, no aspect of cognitive performance appeared to be affected by the ingestion of two successive drinks of water.