The Cognitive Effects of Proper Hydration

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Most people have a fairly good understanding of how dehydration affects the body, but not everyone fully understands how it affects the mind.

This is a serious issue. While the ideal fluid intake varies from person to person, **a five-year study of over 15,000 Americans** between the ages of 20 and 50 found that 43% of men and 41% of women failed to meet the daily intake recommendations from the U.S. Institute of Medicine — and that they drank less as they got older.

In this article, we're going to look specifically at the cognitive impact of proper hydration — how it affects the brain, cognitive processes, and mood.

Why the Brain Needs Water

The human body is **anywhere from 45 to 75 percent water**, so it needs proper hydration to function optimally. That's particularly important for the brain, which is **composed of 73 percent water.**

To operate, the brain cells need to maintain a balance between water and a number of other different elements — and when the body loses too much water, it disrupts that delicate balance. As a result, the brain cells become less efficient.

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So, how does this affect someone at work or in day-to-day life?

It can manifest in a few different ways, all of which are signs and symptoms that we generally **associate with dehydration**:

- **Difficulty focusing**
- **Impaired short-term memory**
- **Difficulty recalling long-term memories**
- **Impaired ability to perform mental arithmetic (like making simple calculations)**

Not only are these unpleasant, in the workplace, they can also lead to a higher likelihood of mistakes - and accidents.

The Link Between Cognition and Hydration

Various studies have demonstrated the link between good cognitive function and proper hydration. The affected functions can include:

- **Concentration or attentiveness**
- **Concept learning**
- **Critical thinking**
- **Memory**
- **Reaction time**
- **Accuracy during complex tasks**

In **one study examining the impact of hydration on visual sustained attention**, researchers found that the group that consumed the most water (330 mL) performed best on the visual attention test, while those in the no-water group performed the worst. **Another study** replicated this research while minimizing variability in baseline hydration levels. It found that young adults who were given 200 ml of water saw increased performance from the baseline in a sustained attention task that involved searching for a specific letter within a grid.

Researchers have also found that short-term memory improves after fluid consumption. In three different studies (found **here**, **here**, and **here**), subjects' performance on memory-related tests — such as recalling a list of objects — improved after water consumption compared with their no-water performance. And while these three studies all looked at school-age children, it's likely that the findings would hold true for adults as well.

While more in-depth research is needed regarding how hydration levels affect reaction time, **research published in Frontiers of Human Neuroscience** notes performance differences in reaction time between individuals who were thirsty and those who were not. Non-thirsty individuals showed similar performance in a battery of tests, while

those who were thirsty and did not have water performed significantly worse and had slower reaction times.

In other words, a properly hydrated workforce is a better workforce, no matter what kind of work they're doing. In hot environments that involve physical labor, they're also a much safer workforce.

How Hydration Affects Mood

There are a variety of studies that note the link between dehydration and mood disturbances, but there are also some that have found a positive link between fluid consumption and self-reported mood.

In **one study** reported in the journal Appetite, individuals reported feeling calmer and more alert after consuming water. The results of this study were verified by a number of other studies that reported similar findings.

Researchers have also found that tension, depression, and confusion scores decrease as water intake increases. In contrast, they found that **low water consumption tends to lead to worse moods**, as well as headaches, confusion, and tiredness.

When you consider that dehydration affects the flow of oxygen to the brain and causes the heart to work harder to pump oxygen to the organs, it's not surprising that being under-hydrated - not to mention dehydrated - can make you feel groggy and lacking in energy. That helps explain why when you're feeling this way and then consume a glass or two of water or a **an electrolyte replenishment beverage**, you "*perk up*" and immediately start feeling more alert.

Hydrating to Fuel Your Brain

Unlike other areas of the body, the brain has no way to store water. For this reason, it's important to ensure you're hydrating adequately throughout the day.

The general guideline to follow is one cup of water for every 20 pounds of body weight. However, there are a number of factors that influence hydration requirements, including medications, temperature and humidity levels, and physical activity or exertion. The more fluid you lose, whether it's from sweating under protective equipment or simply from breathing, the more you need to take in.

It's important to remember that all fluids count towards keeping you hydrated. Water or **electrolyte replenishment beverages** like Sqwincher are an excellent choice, but coffee and even food (especially those with high water content) work, too.

If you're rarely feeling thirsty, making regular (but not too regular) trips to the bathroom, and your urine is almost colorless, these are all good signs that you're likely well hydrated and helping to keep your brain at peak performance.