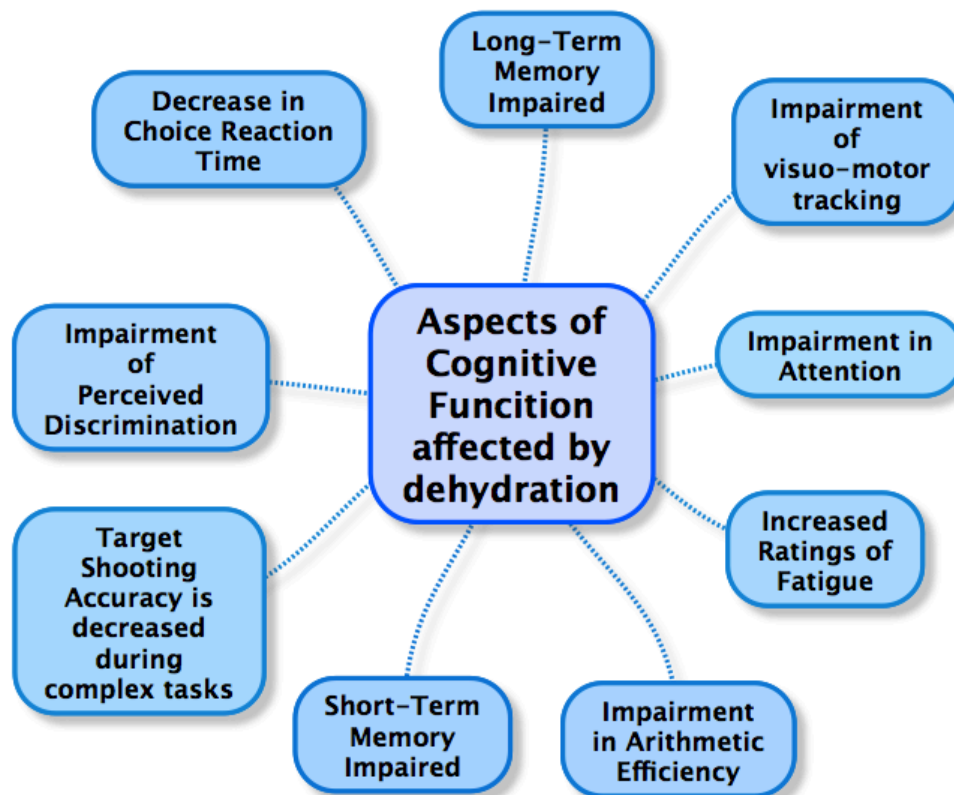


The Influence of Hydration on *Cognition*

Summary of Findings

- Dehydration at a level of 2% body mass loss has been shown to have adverse effects on cognitive function.^{1,2} It has been further postulated that dehydration at a level of 1% can cause deficits in cognitive function.^{1,3}
- Combat-related stress among military personnel has been shown to have deleterious effects on cognitive function⁴⁻⁶ and may be further affected by increasing levels of dehydration.⁴
- Aspects of cognitive function (Concentration, alertness, short-term memory, perceptual discrimination, arithmetic ability, visuomotor tracking, and psychomotor skills) have been shown to be altered with mild dehydration in adults.⁷⁻¹¹
- Maintaining an appropriate level of hydration has been found to prevent decreases in cognitive performance in children when performing various cognitive tasks.^{3,12-15}



Adapted from Grandjean and Grandjean²

Practical Applications

- Maintaining an appropriate level of hydration during exercise, especially in the heat, will attenuate any decreases in cognitive function.
- Appropriate levels of hydration will maximize the performance of physiological functions within the body, including physiological functions that have been found to influence cognitive function.

Looking Ahead

- Future studies need to be performed in which cognitive function can be isolated when examining the influence of hydration on cognition. High ambient temperature, prolonged exercise, and passive dehydration have all been found to affect cognition and it is unknown whether or not dehydration alone will affect cognitive function.
- Intervention studies may provide some answers when examining the effects of hydration on cognitive function. A study looking at whether maintaining an appropriate level of hydration will reverse cognitive impairments in those with documented cognitive impairments that have a low fluid intake.
- Controlled studies implementing various assessments of cognition from basic tasks to complex tasks requiring a higher level order of thinking are necessary to examine at what level dehydration affects cognition and what levels of dehydration produce noticeable effects.
- Due to the limited evidence available, additional research looking at children, older populations, and those who are sedentary need to be performed to assess whether hydration affects cognitive function in these populations.
- Additional studies using a dose-response design looking at the effects of hydration on cognitive function should be performed to gain a better insight into cognitive based performance measures.

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