Pross et al, 2012 – Influence of progressive fluid restriction on mood and physiological markers of dehydration in women

Introduction

There is a growing body of studies dealing with the effects of dehydration, which is mostly induced in athletes and soldiers using heat and/or exercise. However, these studies do not allow to determine the proper effects of dehydration in everyday life. Using restricting water intake to induce dehydration appears to be a more appropriate method to mimic a normal daily situation. The aim of our study was to measure the effects of a mild dehydration induced by water deprivation over a 24-h period on several subjective mood variables and sensations, such as thirst and sleepiness, and on physiological parameters in urine, blood and saliva in healthy young women.

Key findings

Mood state and sensation were significantly affected by dehydration. The earliest and most important effects of dehydration were increased sleepiness and fatigue, lower levels of vigour/activity and alertness, and increased confusion. There was also evidence of later impairments in calmness and happiness. Regarding physiological parameters, urine specific gravity and urine colour were early markers of dehydration, and saliva osmolality appeared to be an interesting non-invasive later marker of dehydration, whereas plasma osmolality remained within a normal variability interval.

Note that only those subjective variables and urine parameters, which appeared to be clinically different between experimental conditions (hydrated vs dehydrated), were statistically analysed and reported with ANOVAs.

Relevance for healthy hydration

The first deleterious effects of dehydration were observed very early on in this study (i.e.; in the morning after 12–16 hours of fluid deprivation). In other words, these results showed that in everyday life, many people may experience mood impairments due to dehydration (e.g., people going to work or to school without breakfast, or busy working people skipping lunch or forgetting to drink during a busy working day).