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**A pilot study examining the likelihood and the implications
of hypohydration in pilot and air traffic controller**

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ABSTRACT

Adequate fluid consumption is essential for humans to function optimally. However, anecdotal evidence suggests that some aspects of the working environment of air traffic controllers and pilots may encourage hypohydration. In both professions a high level of cognitive performance is required; however, at 2% hypohydration fundamental cognitive abilities such as arithmetic efficiency, working memory, short-term memory and visuomotor tracking involving attention and motor speed are likely to be impaired.

The aim of this thesis was to examine thirst and fluid intake, as a surrogate for hypohydration, in two key areas of the aviation industry (controllers and pilots) where fluid intake may at times be restricted. Also examined are why fluid intake is sometimes restricted and whether thirst is related to affect, psychological stress and fatigue.

A 67-item questionnaire battery was completed by air traffic controllers in Mongolia and the pilot instructors and student pilots from a tertiary training institute in NZ. The battery included 2 measures of thirst, the Samn-Perelli Fatigue scale, the Perceived Stress Scale and a series of demographic questions.

In total there were 101 participants (50 air traffic controllers and 51 pilots), representing an overall return rate of 80%. Thirst related sensations were significantly higher in controllers than in pilots. 14% of pilots restricted their fluid intake before flying to avoid needing to use the toilet and 48% of the reported starting a flight feeling thirsty; 38% of pilots reported having to rush to a toilet to urinate after a flight. Similar, although less pronounced effects were reported by air traffic controllers. Increases in subjective feelings of thirst were correlated with increases in the fatigue scale. Participants who reported higher subjective feelings of thirst and fatigue, also reported higher levels of stress.

In conclusion, the findings in this thesis provide some insights regarding hypohydration in aviation professionals. Most importantly, because of the high numbers of people working in these professions, and the potentially disastrous costs of making mistakes through a lack of concentration, that there were participants who reported restricting their fluid intake, feeling thirsty, under stress and fatigued is cause for some concern. Both regulators and future studies might investigate ways in which workers in these occupations can maintain optimal fluid intake, or, at the very least (in the case of GA pilots), be made aware of the possible effects of restricting fluid intake.

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