Military operations can be conducted over extended periods of time in varying environments. Pilots also have to overcome vibration, noise, and accelerations. PURPOSE: The purpose of this study is to describe hydration perceptions and practices, perceived stresses, and reaction times of pilots before and after a training flight. METHODS: 14 male pilots (Mean ±SD: 40 ± 6 y, 93 ± 10 Kg) provided subjective and objective data regarding their hydration perceptions and practices. Urine specific gravity (Usg) was used to quantify hydration status. Auditory reaction times were used as a measure of performance RESULTS: There was no change in mean Usg, (Pre 1.014 ±0.009, Post 1.014 ±0.007). Subjective thirst increased among the pilots (Pre 2.45 ±1.33, Post 3.41 ±0.82). Mean reaction time slowed (Pre 0.190 ±0.027 s, Post 0.198 ±0.031 s). The relationship between Usg and reaction time was poor (post R = 0.07). CONCLUSIONS: Differences in reaction time could be explained by flight length and aircraft. Helicopter pilots reported a greater pre to post flight change in mental fatigue which could explain their slowed reaction time. Pilots could be better hydrated at the start of missions.