

G-induced Visual and Cognitive Disturbances in a Survey of 65 Operational Fighter Pilots

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Abstract

Introduction: Only one previous study has assessed almost loss of consciousness (A-LOC) in operational fighter pilots, reporting an incidence rate of 14%. Research also indicates that 8-13% of pilots have experienced G-induced loss of consciousness (G-LOC). A-LOC can be as insidious as G-LOC due to the associated altered state of awareness and relative incapacitation time, making it a significant risk factor in the high +Gz environment. Royal Australian Air Force (RAAF) pilots currently fly the F/A-18 and Hawk 127, producing +Gz accelerations up to +7.5 Gz, which places these pilots at risk of both A-LOC and G-LOC.

Methods: A survey was administered to 100 active RAAF fighter pilots requesting information on G-induced visual and cognitive disturbances, A-LOC symptoms, and G-LOC. Details regarding type of aircraft, flying maneuvers performed and mission outcome were also sought.

Results: There were 65 RAAF fighter pilots who completed the survey (age 20-53 yr, height 168-193 cm, weight 64-110 kg, jet hours 30-5700 h). Of these pilots, 98% indicated they had experienced at least one visual or cognitive disturbance in the high G environment: gray-out 98%; black-out 29%; and A-LOC symptoms 52%, including abnormal sensation in limbs, disorientation, and confusion. There were 9% who indicated they had experienced G-LOC (50% were the pilot flying the aircraft).

Discussion: These findings indicate that RAAF fighter pilots are experiencing a similar rate of visual disturbances and G-LOC when compared with other air forces. However, RAAF pilots reported a much higher incidence of A-LOC compared with the only other study of operational fighter pilots.