

HIGH-PERFORMANCE AIRCRAFT RESPIRATORY STUDY

ÉTUDE RESPIRATOIRE DANS L' AVIONS DE HAUTE PERFORMANCE

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Introduction: In 2014, the 711th Human Performance Wing conducted the High-Performance Aircraft Respiratory Study to assess respiratory symptoms among fighter pilots. Initial results have previously been reported; this effort examined multifactorial symptom etiologies using multiple analysis techniques.

Methods: Data were collected over 1 mo for four different airframes across five flying squadrons. Data collected consisted of (a) a retrospective questionnaire, (b) a prospective questionnaire after each sortie, and (c) environmental and breath sampling; this analysis focuses primarily on the prospective questionnaire. Additionally, flight recorder data was used for some squadrons if available to provide more robust analysis. Multiple analytic methods were used. As an occupational assessment, this study did not require Institutional Review Board approval.

Results: Analysis identified two different types of reported cough, generally split by airframe, duration, and presence or absence of tightness of chest. In certain airframes, the data demonstrate a correlation between cough and altitude and also between cough and heavy G-time in certain airframes. Many variables superficially associated with cough appear to be explained primarily by the variation in exposures between airframes, and the strong variation in rates of cough between airframes, but an in-depth analysis of the squadron with the highest rates of cough revealed that high altitude and low heavy G-time are useful predictors of cough in that airframe. Finally, within-airframe, within-base analysis showed preliminary indications that cough may be negatively correlated with use of the max setting on the oxygen regulator.

Discussion: Preliminary findings from the study were briefed to the U.S. Air Force Air Combat Command in early 2015 and to AsMA in 2016. The results of the current analysis contribute to a more nuanced understanding of respiratory symptoms among high- performance aircraft pilots. These findings inform further study with additional fighter squadrons; this work has been proposed.