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Reviews

Newman DG. *Flying Fast Jets: Human Factors and Performance Limitations*.

Ashgate, Farnham, Surrey, England; 2014; 150 pps, £54. ISBN 978-1-4094-6793-9; http://www.ashgatepublishing.com/default.aspx?page=637&calcTitle=1&pageSubject=346&title_id=19421&edition_id=1209347001.

Doctor Newman's concise summary of the stresses in jet fighters is the latest in the Ashgate publishing series, *Human Factors in Defense*, "specially commissioned books from internationally recognised experts... provide in-depth, authoritative accounts of key human factors issues... by the defence industry across the world." Most other books in this series will have great appeal to Human Factor scholars, but limited appeal to most AsMA members. Of the 17 volumes, *Designing Soldier Systems* and *Performance Under Stress* might be recommended with *Flying Fast Jets*.

The cover is illustrative. Is there another workspace in which down is up, up down, and neither man nor machine care? This reviewer has argued that no other endeavor imposes the simultaneous stress of hypoxia, acceleration, orientation, and high-order information processing from multiple sensory inputs simultaneously, with dynamic, continuous changes and a decision time cycle formerly measured in "bullet time-of-flight" (in today's missile arena, fighter pilots have the luxury of a few milliseconds longer). Many AsMA members have had the exhausting privilege of experiencing a 1 vs. 1 "engagement." Bias and hubris disclosure: this reviewer was an instructor pilot in a fourth generation jet and aeromedical physician simultaneously.

David Newman is deservedly well known in aeromedical circles and this book will enhance his stature. Concisely organized in eight chapters (Fast Jet Environment, Altitude, Acceleration, Spatial Disorientation, Life Support Equipment, Situational Awareness, Escape, and Selection), the content of each chapter will be similar to explanations in current aeromedical textbooks. Of 200+ references, at least 90% cite ASEM papers. Flying fast jets is an arcane calling: there are three pages of acronyms!



The author and publisher might be faulted for failing to define the target readership: enthusiast or expert? But there is sufficient basic explanation for the novice and detailed aeromedical psycho-physiology for an aeromedical specialist. Chapter 1, for instance, begins with a definition of air-to-air combat and ends with super agility. The remaining seven chapters on specific topics are complete and accurate, with Dr. Newman's faultless emphasis and explanation. Case studies at the ends of the chapters aptly illustrate the principles taught.

There are a few minor details that might mislead, e.g., the barostat on an ejection seat set at 10,000 ft for auto-opening of the parachute. It must be set a sufficient altitude above likely terrain; hence the U.S. standard of 14,000 ft. A typographical error also might mislead: phases of ejection are numbered starting at 5! And I would include more recent fatalities from flail injuries, such as an F-22.

A major detractor is the paucity of figures and the complete absence of photographs. Only eight figures are published and those are line drawings. This over-dependence on words might be attributable to Ashgate: I note that their recent *Absent Aviators: Gender Issues in Aviation* also has almost no figures and photos. By contrast, my copy of *Loss of Signal, Aeromedical Lessons...from Columbia* from NASA is scientifically correct and complete, but much more appealing and efficient with the use of photographs and graphs (both of these important books will be reviewed soonest!).

There is another potential defect, the potential over-reliance on Western research. The need for increased air-to-air capability derives from the Cold War era, and much Soviet research equaled that of NATO, yet is rarely found or cited. Future authors should be challenged to present more comprehensive, world-wide summaries.

This book is the most useful small volume in years, concisely presenting the stresses of the most demanding aviation environment. It will be of great interest to novice and expert alike, and David is to be congratulated for his worthy effort.

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