1. Record Nr. UNINA9910968315603321

Autore	Newman David G (David Glen), <1965->
Titolo	Flying fast jets : human factors and performance limitations / / David G. Newman
Pubbl/distr/stampa	[Place of publication not identified] : , : CRC Press, , 2017
ISBN	1-315-58254-6 1-317-13471-0 1-317-13470-2 1-4094-6794-5
Edizione	[First edition.]
Descrizione fisica	1 online resource (181 p.)
Collana	Human Factors in Defence
Disciplina	629.132/5
Soggetti	Jet planes - Piloting - Physiological aspects Fighter planes - Piloting - Physiological aspects Airplanes - Piloting - Human factors
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Contents; List of Figures; Abbreviations; Foreword; Preface; Acknowledgements; 1 The Fast Jet Environment; Fighter Operations; Definition of a Fighter Aircraft; Fighter Aircraft Generations; Weapons Systems; Guidance system; Warhead; Propulsion system; Fighter Tactics; Fighter Missions; Fighter sweep; Point defence; Strike escort; Intercepts; Attack Aircraft Operations; Definition of an Attack Aircraft; Weapons Systems; Attack Missions; Attack Aircraft Tactics; Super-Agile Flight; 2 Altitude; Atmospheric Physics; Low Pressure; Hypoxia; Incidence; Signs and Symptoms Tolerance to HypoxiaTime of Useful Consciousness; Training; Cockpit Pressurisation; The Fast Jet Pressurisation System; Cockpit Pressurisation Failure; The Oxygen System; Other Altitude Problems; Decompression Illness; Ebullism; Case Study; 3 Acceleration; The Physics of G; Magnitude of G; Direction of G; Physiological Effects of G; Visual Effects of +Gz; A-LOC; G-LOC; Prevalence of G-LOC; Clinical G Problems; +Gz-induced Neck Injuries; Respiratory Effects; Miscellaneous G Effects; G Tolerance; G Protection Measures; G-Suits; Anti-G Straining Manoeuvre; Positive Pressure Breathing

Centrifuge TrainingA Glimpse into the High G Future; Case Study; 4 Spatial Disorientation; Definitions; Type I (Unrecognised); Type II (Recognised); Type III (Incapacitating); Prevalence of Spatial Disorientation; Underlying Mechanisms; Illusions by Phase of Flight; Take-off; In-flight Phase; Landing; Risk Factors; Pilot Factors; Aircraft Factors; Operational Factors; Countermeasures; Training; Technology; Case Study; 5 Life Support Equipment; The Flight Suit; The Flight Helmet; Impact Protection; Helmet-Mounted Sighting and Display Systems; Advanced Helmet Design Options; The Oxygen Mask
The G-SuitChest Counterpressure Garment; The Survival Vest; The Immersion Suit; The Liquid Cooling Garment; The CBRN Ensemble; Anthropometry; Aircrew Equipment Integration; 6 Situational Awareness; Defining Situational Awareness; The Fast Jet Cockpit; Sensor Systems; Aircraft Performance Sensors; Tactical Situation Sensors; Radar; Infra-red search and track; Targeting FLIR; Threat detection; Displays; Head-Up Displays; Helmet-Mounted Display and Sighting Systems; Joint Helmet-Mounted Cueing System (JHMCS); Night Vision Goggles; Challenges and Limitations; Sensor Fusion; 7 Escape History of Escape from AircraftThe Modern Ejection Seat; Anatomy; Performance Specifications; Typical Ejection Sequence; Ejection Posture; Survival Outcomes; Ejection Injuries; The Catapult Phase; The Aircraft Separation Phase; The In-Seat Flight Phase; The Parachute Descent Phase; The Landing Phase; Post-Ejection Considerations; Next-Generation Seats; Case Study; 8 Selection and Training; Selecting the Fast Jet Pilot; Review of Selection Methodologies; Training the Fast Jet Pilot; Fast Jet Flight Training; Use of Flight Simulators; Human Factors Training; Ejection seat training
Spatial disorientation training

Sommario/riassunto

"This book provides a detailed general overview of the human factors and performance limitations associated with flying fast jets, integrating all the latest available research literature on the demanding operational tasks faced by such pilots and aircrews. As such, it has a strong military focus, dealing with pilots of fighter aircraft, attack aircraft and lead-in fighter trainer aircraft that are traditionally only single or dual pilot operations. The book deals not only with the issue of G force, but discusses ejection and escape/survival, disorientation, high altitude physiology, pilot training and selection, helmet-mounted equipment, situational awareness, data fusion and multi-sensor integration, human machine interface issues and advanced cockpit design. It examines the human performance issues associated with the technological advances made in fast jets, such as increased manoeuvrability, increased use of the pilots head as a mounting platform for sensor and weapons systems, and the complexities involved in the human-machine interface within these aircraft."--Provided by publisher.