

Jonathan B. Clark, M.D., M.P.H.



- **Associate Professor of Neurology**

Baylor College of Medicine

- **Faculty Member, Center for Space Medicine**

Baylor College of Medicine

CONTACT INFORMATION

Jonathan B. Clark, M.D., M.P.H.
Center for Space Medicine
Baylor College of Medicine
BioScience Research Collaborative
6500 Main St., Suite 910
Houston, Texas 77030

Tel: 713-798-8809

Email: jclark1@bcm.edu

CERTIFICATIONS

- National Board of Medical Examiners
- American Board of Psychiatry and Neurology, Neurology
- American Board of Preventive Medicine, Aerospace Medicine

EDUCATION

- M.D., Uniformed Services University of the Health Sciences, Md.
- M.P.H., University of Alabama, Birmingham, Ala.
- Internship, Internal Medicine, Naval Hospital, Bethesda, Md.
- Residency, Neurosurgery, Naval Hospital, Bethesda, Md.
- Residency, Neurology, Naval Hospital, Bethesda, Md.

JOURNAL PUBLICATIONS

1. Faerman A, Clark JB, Sutton JP. Neuropsychological considerations for long-duration deep spaceflight. *Front Physiol.* 2023;14:1146096. PMID: 37275233.
2. Fall DA, Lee AG, Bershad EM, Kramer LA, Mader TH, Clark JB, et al. Optic nerve sheath diameter and spaceflight: Defining shortcomings and future directions. *NPJ Microgravity.* 2022;8(1):42. PMID: 36202836.
3. Asrar FM, Saint-Jacques D, Chapman HJ, Williams D, Ravan S, Upshur R, et al. Can space-based technologies help manage and prevent pandemics? *Nat Med.* 2021;27(9):1489-90. PMID: 34518675.
4. Kramer LA, Hasan KM, Sargsyan AE, Marshall-Goebel K, Rittweger J, Donoviel D, et al. Quantitative MRI volumetry, diffusivity, cerebrovascular flow and cranial hydrodynamics during head down tilt and hypercapnia: The SPACECOT study. *J Appl Physiol (1985).* 2017;122(5):1155-66. PMID: 28209740.
5. Strangman GE, Zhang Q, Marshall-Goebel K, Mulder E, Stevens B, Clark JB, et al. Increased cerebral blood volume pulsatility during head-down tilt with elevated carbon dioxide: The SPACECOT Study. *J Appl Physiol (1985).* 2017;jap 00947 2016. PMID: 28360122.
6. Bershad EM, Anand A, DeSantis SM, Yang M, Tang RA, Calvillo E, et al. Clinical validation of a transcranial Doppler-based noninvasive intracranial pressure meter: a prospective cross-sectional study. *World Neurosurg.* 2016;89:647-53, e1. PMID: 26724629.
7. Garbino A, Nusbaum DM, Buckland DM, Menon AS, Clark JB, Antonsen EL. Emergency medical considerations in a space-suited patient. *Aerosp Med Hum Perform.* 2016;87(11):958-62. PMID: 27779956.
8. Menon AS, Jourdan D, Nusbaum DM, Garbino A, Buckland DM, Norton S, et al. Crew recovery and contingency planning for a manned stratospheric balloon flight - the StratEx program. *Prehosp Disaster Med.* 2016;31(5):524-31. PMID: 27573155.
9. Asrar FM, Asrar S, Clark JB, Kendall DJ, Ngo-Anh TJ, Brazeau S, et al. Help from above: Outer space and the

- fight against Ebola. *Lancet Infect Dis.* 2015;15(8):873-5. PMID: 26227751.
- 10. Garbino A, Blue RS, Papparini JM, Law J, Clark JB. Physiological monitoring and analysis of a manned stratospheric balloon test program. *Aviat Space Environ Med.* 2014;85(2):177-82. PMID: 24597163.
 - 11. Nusbaum D, Clark J, Brady K, Kibler K, Sutton J, Easley RB. Alteration in the lower limit of autoregulation with elevations in cephalic venous pressure. *Neuro Res.* 2014;36(12):1063-71. PMID: 24892946.
 - 12. Nusbaum DM, Antonsen E, Bockhorst KH, Easley RB, Clark JB, Brady KM, et al. Optic nerve sheath diameter measurement techniques: Examination using a novel ex-vivo porcine model. *Aviat Space Environ Med.* 2014;85(1):50-4. PMID: 24479259.
 - 13. Blue RS, Law J, Norton SC, Garbino A, Papparini JM, Turney MW, et al. Overview of medical operations for a manned stratospheric balloon flight. *Aviat Space Environ Med.* 2013;84(3):237-41. PMID: 23513285.
 - 14. Komorowski M, Watkins SD, Lebuffe G, Clark JB. Potential anesthesia protocols for space exploration missions. *Aviat Space Environ Med.* 2013;84(3):226-33. PMID: 23513283.
 - 15. Murray DH, Pilmanis AA, Blue RS, Papparini JM, Law J, Bayne CG, et al. Pathophysiology, prevention, and treatment of ebullism. *Aviat Space Environ Med.* 2013;84(2):89-96. PMID: 23447845.
 - 16. Nusbaum DM, Clark JB, Brady KM, Kibler KK, Sutton JP, Easley RB. Intracranial pressure and optic nerve sheath diameter as cephalic venous pressure increases in swine. *Aviat Space Environ Med.* 2013;84(9):946-51. PMID: 24024306.
 - 17. Papparini JM, Blue RS, Aikins LT, Law J, Walshe AD, Garbino A, et al. Flat spin and negative Gz in high-altitude free fall: Pathophysiology, prevention, and treatment. *Aviat Space Environ Med.* 2013;84(9):961-70. PMID: 24024308.
 - 18. Aerospace Medical Association Commercial Spaceflight Working Group. Suborbital commercial spaceflight crewmember medical issues. *Aviat Space Environ Med.* 2011;82(4):475-84. PMID: 21485408.
 - 19. Clark JB. Crew survival lessons learned from the Columbia mishap. *J Br Interplanet Soc.* 2009;62:246-51.
 - 20. Executive Committee of the Space Medicine Association. International Space Station life science research funding. *Aviat Space Environ Med.* 2008;79(4):440-1. PMID: 18457304.
 - 21. Langell J, Jennings R, Clark J, Ward JB, Jr. Pharmacological agents for the prevention and treatment of toxic radiation exposure in spaceflight. *Aviat Space Environ Med.* 2008;79(7):651-60. PMID: 18619123.
 - 22. Moore ST, MacDougall HG, Lesceu X, Speyer JJ, Wuyts F, Clark JB. Head-eye coordination during simulated orbiter landing. *Aviat Space Environ Med.* 2008;79(9):888-98. PMID: 18785358.
 - 23. Clark JB. Commercial human spaceflight: The new challenge for aerospace medicine. *Aviat Space Environ Med.* 2007;78(5):542. PMID: 17539453.
 - 24. Pisacane VL, Kuznetz LH, Logan JS, Clark JB, Wissler EH. Thermoregulatory models of space shuttle and space station activities. *Aviat Space Environ Med.* 2007;78(4 Suppl):A48-55. PMID: 17511299.
 - 25. Pisacane VL, Kuznetz LH, Logan JS, Clark JB, Wissler EH. Thermoregulatory models of safety-for-flight issues for space operations. *Acta Astronaut.* 2006;59(7):531-46.
 - 26. Viegas SF, Williams D, Jones J, Strauss S, Clark J. Physical demands and injuries to the upper extremity associated with the space program. *J Hand Surg [Am].* 2004;29(3):359-66.
 - 27. Roller CA, Clark JB. Short-duration space flight and hearing loss. *Otolaryngol Head Neck Surg.* 2003;129(1):98-106. PMID: 12869924.
 - 28. Sausen KP, Bower EA, Stiney ME, Feigl C, Wartman R, Clark JB. A closed-loop reduced oxygen breathing device for inducing hypoxia in humans. *Aviat Space Environ Med.* 2003;74(11):1190-7. PMID: 14620477.
 - 29. Clark J. Operational physiology in the U.S. Navy. *Aviat Space Environ Med.* 2001;72(1):82-3. PMID: 11195000.
 - 30. Clark JB, Riley TL. Screening EEG in aircrew selection: clinical aerospace neurology perspective. *Aviat Space Environ Med.* 2001;72(11):1034-6. PMID: 11718508.
 - 31. Sausen KP, Wallick MT, Slobodnik B, Chimiak JM, Bower EA, Stiney ME, et al. The reduced oxygen breathing paradigm for hypoxia training: Physiological, cognitive, and subjective effects. *Aviat Space Environ Med.* 2001;72(6):539-45. PMID: 11396560.
 - 32. Steevens CC, Russell KL, Knafelc ME, Smith PF, Hopkins EW, Clark JB. Noise-induced neurologic disturbances in divers exposed to intense water-borne sound: Two case reports. *Undersea Hyperb Med.* 1999;26(4):261-5. PMID: 10642074.
 - 33. Cho AA, Clark JB, Rupert AH. Visually triggered migraine headaches affect spatial orientation and balance in a helicopter pilot. *Aviat Space Environ Med.* 1995;66(4):353-8. PMID: 7794228.
 - 34. Clark JB. Risk assessment and clinical aeromedical decision-making. *Aviat Space Environ Med.* 1993;64(8):741-7. PMID: 8368988.
 - 35. Clark JB, Rupert AH. Spatial disorientation and dysfunction of orientation/equilibrium reflexes: aeromedical evaluation and considerations. *Aviat Space Environ Med.* 1992;63(10):914-8. PMID: 1417656.
 - 36. Dutka AJ, Mink R, McDermott J, Clark JB, Hallenbeck JM. Effect of lidocaine on somatosensory evoked response and cerebral blood flow after canine cerebral air embolism. *Stroke.* 1992;23(10):1515-20; discussion 1520-1. PMID: 1412590.

37. Clark JB, Bohnker BK, Hayes GB, Morey WA. Navy helicopter pilot with a juxtasellar mass: case report with aeromedical considerations. *Aviat Space Environ Med.* 1990;61(12):1141-4. PMID: 2285405.
38. Clark JB. Cervical dystonia following exposure to high-G forces. *Aviat Space Environ Med.* 1990;61(10):935-7. PMID: 2241735.
39. Clark JB. Policy considerations of human immunodeficiency virus (HIV) infection in U.S. Naval aviation personnel. *Aviat Space Environ Med.* 1990;61(2):165-8. PMID: 2178601.
40. Galdi AP, Clark JB. An unusual case of carnitine palmitoyl transferase deficiency. *Arch Neurol.* 1989;46(7):819-20. PMID: 2742554.
41. Chia JK, Clark JB, Ryan CA, Pollack M. Botulism in an adult associated with food-borne intestinal infection with Clostridium botulinum. *N Engl J Med.* 1986;315(4):239-41. PMID: 3523248.
42. Clark JB, Bellegarrigue RB, Salzman M. Gunshot wound to the pons with functional neuroanatomical and electrophysiological correlation. *Neurosurgery.* 1985;16(5):607-11. PMID: 4000432.
43. Clark JB, Six EG, Early CB. Resection and anastomosis of a cervical vertebral artery aneurysm. *Microsurgery.* 1984;5(3):127-9. PMID: 6493027.
44. Clark JB, Six EG. Epidermoid tumor presenting as tension pneumocephalus. Case report. *J Neurosurg.* 1984;60(6):1312-4. PMID: 6726378.
45. Six EG, Clark JB, Early CB. Subarachnoid hemorrhage and intracranial aneurysms: A review of assessment and early management. *Mil Med.* 1983;148(6):497-501. PMID: 6412160.

BOOK CHAPTERS and OTHER PUBLICATIONS

1. Cohen HS, Clark J. Neuro-otology. In: Kass JS, Mizrahi EM, editors. *Neurology secrets.* 6th ed. Philadelphia: Elsevier; 2016. p. 428-442.
2. Evetts S, Damann V, Clark JB. Overview of bioastronautics. In: Musgrave GE, Larsen A, Sgobba T, editors. *Safety design for space systems.* Oxford, UK: Elsevier; 2009.
3. Clark JB. Acoustic issues in human spaceflight. In: Barratt MR, Pool SL, editors. *Principles of clinical medicine for space flight.* 1st ed. New York: Springer-Verlag; 2008.
4. Clark JB. Clinical neurology of spaceflight. In: Barratt MR, Pool SL, editors. *Principles of clinical medicine for space flight.* 1st ed. New York: Springer-Verlag; 2008.
5. Clark JB. Decompression related disorders II: Pressurization systems, depressurization, barotrauma and altitude sickness. In: Barratt MR, Pool SL, editors. *Principles of clinical medicine for space flight.* 1st ed. New York: Springer-Verlag; 2008.
6. Clark JB. Acoustic issues in human spaceflight. In: Henderson D, Prasher D, Kopke R, Salvi R, Hamernik R, editors. *Noise induced hearing loss: basic mechanisms, prevention and control.* 1st ed. London: NRN Publications; 2001.
7. Correia MJ, Luke BL, McGrath BJ, Clark JB, Rupert AH. The role of linear acceleration in visual-vestibular interactions and implications in aircraft operations: Human performance implications. *Proceedings of the NATO Advisory Group for Aerospace Research and Development (AGARD) CP 579, sec K2;* 1996. p. 1-5.
8. Steevens CC, Sylvester R, Clark JB. Effects of low frequency water-borne sound on Navy divers: Open water trials. *Proceedings of the NSMRL Report 95-04; Naval Submarine Medical Research Laboratory, Groton, CT.* Naval Submarine Medical Research Laboratory, Groton, CT; 1996.
9. Rupert AL, Guedry FE, Clark JB. Medical evaluation of spatial disorientation mishaps. *Proceedings of the NATO Advisory Group for Aerospace Research and Development (AGARD) 532; France.* France: 1992. p. 571-5.
10. Clark JB. The neurologic evaluation of decompression sickness. In: Pilmanis AA, editor. *Proceedings of the 1990 Hypobaric Decompression Sickness Workshop; USAF Armstrong Laboratory.* USAF Armstrong Laboratory: 1991.
11. Francis TJR, Dutka AJ, Clark JB. An evaluation in the treatment of acute experimental spinal decompression sickness. In: Bove AA, Bachrach AJ, Greenbaum LJ, Jr, editors. *Proceedings of the IXth International Symposium on Underwater and Hyperbaric Physiology;* Bethesda, Maryland. Bethesda, Maryland: Undersea and Hyperbaric Medical Society; 1987. p. 999-1013.

POSTER and PLATFORM PRESENTATIONS

1. Bershad EM, Marshall-Goebel K, Laurie SS, Greenwald S, Macias BR, Venkatasubba Rao CP, et al. SPACE-CENT: Studying the physiological and anatomical effects of centrifugation and head down tilt bed rest. Presented at the National Aeronautics and Space Administration (NASA), 2023 Human Research Program Investigators' Workshop in Galveston, Texas (Feb. 7-9, 2023).
2. Williams MA, Bershad EM, Levine BD, Clark J, Furman D, Hu X, et al. Zero G and ICP: Invasive and noninvasive ICP monitoring and sans biomarker identification. Presented at the National Aeronautics and Space Administration (NASA), 2023 Human Research Program Investigators' Workshop in Galveston, Texas (Feb. 7-9, 2023).

3. Bershad EM, Marshall-Goebel K, Laurie SS, Greenwald S, Pardon L, Macias BR, et al. SPACE-CENT: Studying the physiological and anatomical effects of centrifugation and head down tilt — Updated results. Presented at the National Aeronautics and Space Administration (NASA), Virtual 2021 Human Research Program Investigators' Workshop (Feb. 1-3, 2021). [Oral Presentation]
4. Hoffmann F, Moestl S, Hasan KM, Gerlach D, Marshall-Goebel K, Laurie S, et al. Cerebral oxygen delivery and dynamic autoregulation are maintained following 60 days strict head down tilt. Presented at the National Aeronautics and Space Administration (NASA), Virtual 2021 Human Research Program Investigators' Workshop (Feb. 1-3, 2021).
5. Martina S, Nguyen K, Kernagis D, Bershad EM, Clark J. Saccade metrics and visual reaction times are not negatively affected by head down tilt bedrest with or without artificial gravity. Presented at the National Aeronautics and Space Administration (NASA), Virtual 2021 Human Research Program Investigators' Workshop (Feb. 1-3, 2021).
6. Nguyen K, Martina S, Kernagis D, Clark J, Hinricher N, Backhaus C, et al. Effects of repetitive, successive oculometric testing on saccades, smooth pursuit, and visual reaction times for future head down tilt bed rest study applications. Presented at the National Aeronautics and Space Administration (NASA), Virtual 2021 Human Research Program Investigators' Workshop (Feb. 1-3, 2021).
7. Strangman GE, Zhang Q, Ivkovic V, Voss S, Tank J, Wu J, et al. Brain related assessments for investigating the neurophysiology of SANS (BRAIN-SANS). Presented at the National Aeronautics and Space Administration (NASA), Virtual 2021 Human Research Program Investigators' Workshop (Feb. 1-3, 2021).
8. Williams MA, Bershad EM, Levine B, Clark J, Malm J, Eklund A, et al. Zero G and ICP: Invasive and non-invasive ICP monitoring and SANS biomarker identification. Presented at the National Aeronautics and Space Administration (NASA), Virtual 2021 Human Research Program Investigators' Workshop (Feb. 1-3, 2021).
9. Bershad E, Venkatasubba Rao C, Marshall-Goebel K, Damani R, Cohen H, Clark J, et al. SPACE-CENT: studying the physiological and anatomical effects of centrifugation and head down tilt. Presented at the National Aeronautics and Space Administration (NASA), 2019 Human Research Program Investigators' Workshop in Galveston, Texas (Jan. 22-25, 2019).
10. Marshall-Goebel K, Strangman G, Venkatasubba Rao C, Clark J, Frett T, Petrat G, et al. Physiological monitoring of fluid shifts during centrifugation. Presented at the National Aeronautics and Space Administration (NASA), 2019 Human Research Program Investigators' Workshop in Galveston, Texas (Jan. 22-25, 2019).
11. Bershad E, Venkatasubba Rao C, Cohen H, Lazaridis C, Clark J, Sangi-Haghpeykar H, et al. SPACE-CENT: Studying the physiological and anatomical cerebral effects of centrifugation and head down tilt. Presented at the National Aeronautics and Space Administration (NASA), 2018 Human Research Program Investigators' Workshop in Galveston, Texas (Jan. 22-25, 2018).
12. Williams M, Bershad E, Levine B, Clark J, Malm J, Eklund A, et al. Zero G and ICP: Invasive and noninvasive ICP monitoring and VIIP biomarker identification. Presented at the National Aeronautics and Space Administration (NASA), 2018 Human Research Program Investigators' Workshop in Galveston, Texas (Jan. 22-25, 2018).
13. Strangman G, Zhang Q, Stevens B, Clark J, Bershad E. Cerebral blood pulsatility during head-down tilt and CO₂ exposure. Presented at the 16th International Symposium on Intracranial Pressure (ICP) and Neuromonitoring, Boston, Mass. (June 28 - July 2, 2016).
14. Bershad E (Study PI), Venkatasubba Rao C, Suarez JI, Damani R, Calvillo E, Stevens B, et al. SPACE-COT: Studying the physiological and anatomical cerebral effects of carbon dioxide and head down tilt: An international collaborative project with the German Aerospace Center (DLR). Presented at the National Aeronautics and Space Administration (NASA), Human Research Program Investigators' Workshop in Galveston, Texas (Feb. 10, 2016). [Oral Presentation]
15. Bershad EM, Anand A, DeSantis SM, Yang M, Tang RA, Calvillo E, et al. Vittamed intracranial pressure device evaluation study: Final results. Presented at the National Aeronautics and Space Administration (NASA), Human Research Program Investigators' Workshop in Galveston, Texas (Feb. 10, 2016). [Oral Presentation]
16. Williams MA, Bershad E, Levine BD, Clark J, Hamilton DR, Malm J, et al. Zero-G and ICP: Invasive and noninvasive ICP monitoring of astronauts on the ISS & multimodal modeling towards noninvasive assessment of ICP in weightlessness and biomarker identification of predisposition to VIIP syndrome. Presented at the National Aeronautics and Space Administration (NASA), Human Research Program Investigators' Workshop in Galveston, Texas (Feb. 10, 2016).
17. Clark JB. Assessment of neurologic function following short duration spaceflight utilizing a standardized rating scale. *J Vestib Res.* 2001;11:321-2.
18. Richards JT, Clark JB, Oman CM, Marshburn TH. Neurovestibular effects of long-duration spaceflight: a summary of Mir phase 1 experiences. *J Vestib Res.* 2001;11:322.
19. Clark JB, Hopkins III EW. Neuro-otologic evaluation of spatial disorientation and vestibular dysfunction in naval aviation personnel. *Aviat Space Environ Med.* 1997;67:A47.
20. Lawson BD, Mead AM, Clark JB. Case report II. Severe and prolonged drowsiness, fatigue, and mood changes in the aviator referred for air sickness. *Aviat Space Environ Med.* 1997;67:A35.
21. Sausen KP, Chimiak JM, Bower EA, Stiney ME, Clark JB. Cardiovascular responses to a mixed-gas breathing

- paradigm for hypoxia induction. *Aviat Space Environ Med.* 1997;67:A7.
- 22. Clark JB, Ferreira EA, McGrath BJ. Spatial orientation mobile field laboratory assessment of U.S. Navy divers exposed to underwater sound. *Aviat Space Environ Med.* 1996;67:A9.
 - 23. Clark JB, Russell KL, Knaefelc ME, Steevens CC. Assessment of vestibular function of divers exposed to high intensity low frequency underwater sound. *Undersea Hyperb Med.* 1996;23 Suppl:S33.
 - 24. Clark JB, Schuyler CL. Implementation of a marine aircraft wing sustained operations plan during combat (Operation Desert Storm). *Aviat Space Environ Med.* 1996;67:A26.
 - 25. Ferreira EA, McGrath BJ, Clark JB. Assessment of eye movements during high intensity underwater (U/W) sound exposures in U.S. Navy divers. *Aviat Space Environ Med.* 1996;67:A32.
 - 26. Gallagher KL, Hopkins EW, Clark JB, Hawley TA. U.S. Navy experience with type II decompression sickness and the association with patent foramen ovale. *Aviat Space Environ Med.* 1996;67:712.
 - 27. Clark JB, Patterson FR. Human factors in navy/marine fixed and rotary wing class-a mishaps involving 3rd generation night vision goggles (NVG) 1987-1993. *Aviat Space Environ Med.* 1995;66:464.
 - 28. Schindler ES, Clark JB. Atrial fibrillation associated with airsickness. *Aviat Space Environ Med.* 1995;66:483.
 - 29. Clark JB, Hayes GB. Patent foramen ovale and type II altitude decompression sickness. *Aviat Space Environ Med.* 1991;62:445.
 - 30. Kutyna FA, Patrickson JW, Bryant HJ, Kadekaro M, Clark JB. Quantitative 2-DG study of the brainstem of the rat during nystagmus produced by lesion of the lateral semicircular ampulla. *Soc. Neurosci. Abstr.* 1983;13:152.2.
 - 31. Patrickson JW, Kutyna FA, Bryant HJ, Kadekaro M, Clark JB. Central nervous system glucose utilization rate in the nystagmic rat. *Soc. Neurosci. Abstr.* 1982;8:700.