Fiscal Year:	FY 2018	**Task Last Updated:**	FY 11/09/2017
PI Name:	Bershad, Eric M. M.D.		
Project Title:	SPACE-CENT: Studying the Physiological and Anatomical Cerebral Effects of CENTrifugation and Head Down Tilt Bed Rest		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Biomedical countermeasures		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **SANS**:Risk of Spaceflight Associated Neuro-ocular Syndrome (SANS) (2) **Sensorimotor**:Risk of Altered Sensorimotor/Vestibular Function Impacting Critical Mission Tasks		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	bershad@bcm.edu	**Fax:**	FY 713-798-3091
PI Organization Type:	UNIVERSITY	**Phone:**	713-504-0223
Organization Name:	Baylor College of Medicine		
PI Address 1:	Department of Neurology, 1 Baylor Plaza		
PI Address 2:	Section of Vascular Neurology and Neurocritical Care		
PI Web Page:			
City:	Houston	**State:**	TX
Zip Code:	77030-3411	**Congressional District:**	9
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2015-16 HERO NNJ15ZSA001N-AGBR. Appendix G: Physiological & Behavioral Responses in Humans to Intermittent Artificial Gravity during Bed Rest
Start Date:	01/09/2017	**End Date:**	01/08/2019
No. of Post Docs:	1	**No. of PhD Degrees:**	
No. of PhD Candidates:		**No. of Master' Degrees:**	
No. of Master's Candidates:		**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:		**Monitoring Center:**	NASA JSC
Contact Monitor:	Norsk, Peter	**Contact Phone:**	
Contact Email:	Peter.norsk@nasa.gov		
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Clark, Jonathan M.D. (Baylor College of Medicine) Cohen, Helen Ed.D. (Baylor College of Medicine) Kramer, Larry M.D. (University of Texas, Houston) Marshall-Bowman, Karina M.S. (Deutsches Zentrum Fuer Luft- Und Raumfahrt E.V.) Rittweger, Joern M.D. (Deutsches Zentrum Fuer Luft- Und Raumfahrt E.V.) Sangi-Haghpeykar, Haleh Ph.D. (Baylor College of Medicine) Stern, Claudia M.D. (German Aerospace Cente (DLR)) Strangman, Gary Ph.D. (Massachusetts General Hospital) Suarez, Jose M.D. (Baylor College of Medicine) Venkatasubba Rao, Chethan M.D. (Baylor College of Medicine)		
Grant/Contract No.:	NNX17AE04G		

Performance Goal No.:	
Performance Goal Text:	
Task Description:	This project will assess the physiological and anatomical effects of two different regimens of intermittent centrifugation induced artificial gravity (AG) with focus on the brain, eye, and vestibular system responses. The specific aims include: 1. Integrative evaluation of the cerebral physiological effects of AG during the 60 day bed rest period using between group and within group comparisons, and 2. Assessment of the acute dynamic changes in the human body systems related to the centrifugation regimen. The methods and techniques used to achieve these objectives include: non-invasive assessment of ICP (intracranial pressure), cerebral blood flow, cerebral blood volume, CSF (cerebrospinal fluid) flow and volumes, ocular anatomy and physiology, and neurovestibular function. This proposal will deliver an integrated view of the physiological, anatomical, and functional effects of intermittent centrifugation (artificial gravity) on the cerebrovascular, ocularm, and vestibular systems. This will provide important insights into the effectiveness of this form of artificial gravity to counteract the headward fluid shifting of head down tilt, which may yield important knowledge about the future utility of this method as a countermeasure for the space-flight induced headward fluid shifts and the Spaceflight Associated Neuro-ocular Syndrome (SANS).
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	This project will implement a wide array of non-invasive monitoring technologies for the brain, vascular system, eye, and sensorimotor system. Some of these technologies are commercially available for Earth based medicine in a variety of health care settings including the intensive care unit, emergency room, and may be implementable in rural and/or remote settings, and could be monitored by clinicians via telemedicine.
Task Progress:	The study received research board approval by the NASA Institutional Review Board (IRB) as well as the Baylor IRB. Integration of this study with other US and European teams is proceeding well, and efficiencies between studies integrated into the uniform platform at enhivab (German Aerospace Center) are being identified. The study methodology will be presented at NASA Human Research Program Investigators' workshop in Jan 2018. Dry run is tentatively scheduled for late spring/early summer 2018 in Cologne, Germany.
Bibliography Type:	Description: (Last Updated: 11/05/2023)