Fiscal Year:	FY 2012	**Task Last Updated:**	FY 10/23/2012
PI Name:	Seidler, Rachael D. Ph.D.		
Project Title:	Bed Rest as a Spaceflight Analog to Study Neurocognitive Changes: Extent, Longevity, and Neural Bases		
Division Name:	Human Research		
Program/Discipline:	NSBRI		
Program/Discipline--Element/Subdiscipline:	NSBRI--Sensorimotor Adaptation Team		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **BHP**:Behavioral Health & Performance (archival in 2017)		
Human Research Program Risks:	(1) **HSIA**:Risk of Adverse Outcomes Due to Inadequate Human Systems Integration Architecture (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:	rachaelseidler@ufl.edu	**Fax:**	FY
PI Organization Type:	UNIVERSITY	**Phone:**	352-294-1722
Organization Name:	University of Florida		
PI Address 1:	Applied Physiology & Kinesiology		
PI Address 2:	FLG 142, P.O. Box 118205		
PI Web Page:			
City:	Gainesville	**State:**	FL
Zip Code:	32611-8205	**Congressional District:**	3
Comments:	NOTE: PI moved to University of Florida in July 2017; previous affiliation was University of Michigan.		
Project Type:	Ground	**Solicitation / Funding Source:**	2011 Crew Health NNJ11ZSA002NA
Start Date:	08/01/2012	**End Date:**	07/31/2015
No. of Post Docs:		**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:**	NSBRI
Contact Monitor:		**Contact Phone:**	
Contact Email:			
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Mulavara, Ajitkumar (Universities Space Research Association) Wood, Scott (NASA Johnson Space Center)		
Grant/Contract No.:	NCC 9-58-SA02802		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	NRA NNJ11ZSA002NA requests NSBRI proposals to “Determine the effects of an analog of long-duration spaceflight on neural structural alterations and assess associated impacts on cognitive and behavioral performance”. In response to this call, we propose to perform structural and functional MR brain imaging to identify the relationship between changes in participants’ neurocognitive function and neural structural alterations following 60 days of head-down tilt bed rest. Our central hypotheses are that measures of brain structure, function, and network integrity will change from pre to post bed rest to a greater extent than in control participants over the same time period (Aim 1). Moreover, we predict that these changes will correlate with indices of cognitive, sensory, and motor function in a structurally selective fashion (Aim 2). This work complements our ongoing NASA funded project NNX11AR02G “Spaceflight Effects on Neurocognitive Performance: Extent, Longevity, and Neural Bases”. With the current proposal, we will be able to determine the neural and neurocognitive effects of unloading, reduced sensory inputs, and increased cephalic fluid distribution. This will enable us to parse out the multiple mechanisms contributing to any spaceflight induced neural structural and behavioral changes that we observe in our ongoing project. Our interdisciplinary approach utilizes cutting edge neuroimaging techniques and a broad battery of sensory, motor, and cognitive assessments to investigate neuroplastic and maladaptive brain changes following long duration bed rest. Success in this endeavor would 1) aid in identification of the underlying neural mechanisms and operational risks of spaceflight-induced changes in behavior using a well established spaceflight analog, and 2) identify whether a return to normative behavioral function following recovery from prolonged bed rest is associated with a restitution of brain structure and function or instead is supported by substitution with compensatory brain processes.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2012.
Bibliography Type:	Description: (Last Updated: 06/05/2024)