Fiscal Year:	FY 2021	**Task Last Updated:**	FY 01/29/2021
PI Name:	Schubert, Michael Ph.D.		
Project Title:	Ground Validation of Self-Administered Incremental Rehabilitation Tool to Mitigate Motion Sickness and Enhance Sensorimotor Recovery		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:			
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **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		
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Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2019-2020 HERO 80JSC019N0001-HHCBPSR, OMNIBUS2: Human Health Countermeasures, Behavioral Performance, and Space Radiation-Appendix C; Omnibus2-Appendix D
Start Date:	01/01/2021	**End Date:**	12/31/2023
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:**	NASA JSC
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Wood, Scott Ph.D. (NASA Johnson Space Center) Migliaccio, Americo Ph.D. (Neuroscience Research Australia)		
Grant/Contract No.:	80NSSC21M0057		
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Performance Goal Text:			

Task Description:	Astronauts returning from long duration spaceflight suffer from motion sickness, vertigo, and postural imbalance that risk their safety during and after landing. Vestibular patients typically suffer from similar problems that risk their safety during activities of daily living. For both groups, rehabilitation using head motion is the key to recovering from these symptoms but current methods are uncontrolled and non-quantified. Our team has successfully implemented a self-administered rehabilitation protocol that can be performed by patients at home to improve vestibular function. Our current system measures head and eye movements to improve vestibulo-ocular reflexes. We propose to modify our system to provide additional feedback on head motion to reduce motion sickness for both astronauts and patients as they undergo rehabilitation. We will compare motion sickness and recovery following +3Gx centrifugation (spaceflight vestibular analog) in two groups: a treatment group given feedback to guide their head motion and a control group with no specific head movement strategy. We will also perform similar measurements in patients recovering from acute vestibular loss. We hypothesize this approach will result in a greater ability to tolerate head movements with fewer motion sickness symptoms. In addition to mitigating motion sickness and improving recovery when returning to Earth, our self-administered approach will enable astronauts to be more autonomous without the aid of their reconditioning experts during exploration missions.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2021.
Bibliography Type:	Description: (Last Updated: 12/07/2023)