Fiscal Year:	FY 2010	**Task Last Updated:**	FY 02/17/2010
PI Name:	Simpson, Richard Ph.D.		
Project Title:	Development of a Submaximal Cycling Protocol to Identify the Ventilatory Threshold in Astronauts: Application to Monitor Changes in Endurance Capacity in Response to Long-Duration Spaceflight Missions		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
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) **Muscle**:Risk of Impaired Performance Due to Reduced Muscle Size, Strength and Endurance		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	rjsimpson@email.arizona.edu	**Fax:**	FY
PI Organization Type:	UNIVERSITY	**Phone:**	713-397-0121
Organization Name:	University of Arizona		
PI Address 1:	College of Agriculture and Life Sciences; College of Medicine		
PI Address 2:	1177 E. Fourth Street, Room 308, Shantz Building		
PI Web Page:			
City:	Tucson	**State:**	AZ
Zip Code:	85721-0001	**Congressional District:**	3
Comments:	NOTE: Formerly at University of Houston until September 2017 move to University of Arizona.		
Project Type:	GROUND	**Solicitation / Funding Source:**	Directed Research
Start Date:	06/01/2010	**End Date:**	12/31/2011
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
Contact Monitor:	Norsk, Peter	**Contact Phone:**	
Contact Email:	Peter.norsk@nasa.gov		
Flight Program:			
Flight Assignment:	NOTE: End date is now 12/31/2011, per NSSC information (Ed., 5/31/2011) NOTE: Period of performance is 06/01/2010-05/31/2011, per NSSC (changed from 10/1/09-1/17/11)--jvp/editor 6/7/2010 NOTE: Period of performance may change as not fully awarded (jvp/editor 2/17/2010)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Paloski, William (University of Houston) McFarlin, Brian (University of Houston)		
Grant/Contract No.:	NNX10AE13G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	The present study will compare the use of two graded exercise tests to identify the ventilatory thresholds (VT1 and VT2) in individuals with similar physical characteristics to astronauts. One test will be a step-wise 2-min stage incremental protocol and the other will be an increasing work rate ramp protocol. All subjects will complete both protocols in a randomized cross-over design, with a period of one-week interspersed between each protocol. Both exercise protocols will be conducted at the same time of day to exclude any effects of diurnal variation. Specific Aims of the Project Aim #1: To develop a submaximal exercise protocol that allows accurate determination of the ventilatory threshold during incremental cycling exercise in subjects with similar physical characteristics to astronauts. Aim # 2: To develop an algorithm and establish a criterion of physiological measures that can be calculated/monitored in “real-time” during a graded exercise test to indicate when the exercising subject has reached the ventilatory threshold.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2010.
Bibliography Type:	Description: (Last Updated: 09/27/2023)