Fiscal Year:	FY 2010	**Task Last Updated:**	FY 06/24/2010
PI Name:	Barstow, Thomas Ph.D.		
Project Title:	Standardized 'Pre-flight' Exercise Tests to Predict Performance during Extravehicular Activities in a Lunar Environment		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Biomedical countermeasures		
Joint Agency Name:		**TechPort:**	Yes
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **Aerobic**:Risk of Reduced Physical Performance Capabilities Due to Reduced Aerobic Capacity (2) **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		
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Zip Code:	66506-0109	**Congressional District:**	1
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2009 Crew Health NNJ09ZSA002N
Start Date:	07/01/2010	**End Date:**	06/30/2013
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:**	
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Lewis, Chris (Kansas State University) Warren, Steven (Kansas State University)		
Grant/Contract No.:	NNX10AK60G		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	The original Apollo missions and more recent extravehicular activities on the International Space Station have provided basic information that can be applied to activities that may occur during future long-duration lunar missions. However, despite these previous efforts, significant gaps remain in our understanding of the more complex physiological costs of different activities in a true lunar environment. Recently a ground-based simulation of a 10-kilometer Lunar Walkback was conducted to better understand the physical capabilities of a suited astronaut in partial gravity. Unfortunately, this study was limited because of the use of a stationary treadmill that did not accurately simulate the lunar environment (i.e. landscape and terrain). To date this overall lack of physiologic data collected during true lunar activities or their accurate simulation has limited the ability of NASA physicians and scientists to predict if an astronaut candidate is physically capable of completing the multiple lunar activities that may be required during long-duration missions. Therefore, the		

	goals of this proposal are to 1) develop a mobile testbed to accurately simulate partial-gravity lunar activities, and 2) determine subject performance and the concomitant physiological responses to these activities, which will allow us to 3) create a series of standardized tests that can be performed in a pre-flight setting to determine the readiness of the astronaut to perform physically demanding activities during a lunar mission.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2010.
Bibliography Type:	Description: (Last Updated: 01/23/2020)