Fiscal Year:	FY 2011	**Task Last Updated:**	FY 10/12/2011
PI Name:	Crandall, Craig Gerald Ph.D.		
Project Title:	Temperature Regulatory and Cardiovascular Responses to Exercise During Long-Duration Spaceflight		
Division Name:	Human Research		
Program/Discipline:	NSBRI		
Program/Discipline--Element/Subdiscipline:	NSBRI--Cardiovascular Alterations Team		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **Cardiovascular**:Risk of Cardiovascular Adaptations Contributing to Adverse Mission Performance and Health Outcomes		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	craigcrandall@texashealth.org	**Fax:**	FY 214-345-4618
PI Organization Type:	UNIVERSITY	**Phone:**	214-345-4623
Organization Name:	The University of Texas Southwestern Medical Center at Dallas		
PI Address 1:	IEEM-Presbyterian Hospital of Dallas		
PI Address 2:	7232 Greenville Ave		
PI Web Page:			
City:	Dallas	**State:**	TX
Zip Code:	75231-5129	**Congressional District:**	30
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2009 Crew Health NNJ09ZSA002N
Start Date:	05/01/2010	**End Date:**	09/30/2011
No. of Post Docs:	1	**No. of PhD Degrees:**	0
No. of PhD Candidates:	0	**No. of Master' Degrees:**	0
No. of Master's Candidates:	0	**No. of Bachelor's Degrees:**	0
No. of Bachelor's Candidates:	0	**Monitoring Center:**	NSBRI
Contact Monitor:		**Contact Phone:**	
Contact Email:			
Flight Program:			
Flight Assignment:	NOTE: End date changed to 9/30/2011 (from 4/30/2014) as project was descoped, per NSBRI (Ed., 10/11/2011)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Moore, Alan (NASA Johnson Space Center) Levine, Benjamin (The University of Texas Southwestern Medical Center at Dallas)		
Grant/Contract No.:	NCC 9-58-CA02202		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Appropriate temperature regulation is critical for the safety of astronauts performing physically demanding work, particularly that which occurs during extravehicular activities. Work performance is also greatly reduced if impaired temperature regulation results in large elevations in internal temperatures. Using ground-based models of space flight, the prevailing data suggest that temperature control is impaired while astronauts are in space. However, it remains unknown whether these models accurately reflect physiological responses of space flight. Within this context, the proposed study will investigate two key questions: 1) Does space flight impair temperature regulation while astronauts are in a zero gravity environment; and 2) Does prolonged space flight impair temperature regulation during extravehicular activities that may occur in a partial gravity environment of a lunar (1/6 the Earth's gravity) or Mars (3/8 the Earth's gravity) mission? The first objective will be accomplished by evaluating temperature regulatory responses in astronauts during steady-state exercise prior to space flight, on a monthly basis while on the International Space Station, and upon return to Earth. The second objective will evaluate the effects of prolonged space flight on temperature regulatory responses during exercise that simulates an extravehicular activity in a Mars or lunar gravitational environment. For both objectives, the astronauts' temperature regulatory capacity will be evaluated by measuring internal temperature, skin blood flow, and sweat rate responses during the prescribed exercise conditions. The provided information will be extremely valuable to NASA as it will lead to improved safety and perhaps physical work capacity of the astronauts during the indicated exposures. Key Findings: Project defunded prior to onset of data collection.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	Project deselected prior to onset of data collection.
Task Progress:	Project deselected prior to onset of data collection.
Bibliography Type:	Description: (Last Updated:)