

Fiscal Year:	FY 2009	Task Last Updated:	FY 09/01/2009
PI Name:	Lee, Stuart M.C. Ph.D.		
Project Title:	Hypovolemia as a model of space flight: cardiovascular exercise effects and countermeasures		
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) Aerobic: Risk of Reduced Physical Performance Capabilities Due to Reduced Aerobic Capacity		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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PI Organization Type:	NASA CENTER	Phone:	281-483-3726
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City:	Houston	State:	TX
Zip Code:	77058-2749	Congressional District:	36
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	Directed Research
Start Date:	06/01/2009	End Date:	06/30/2010
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:	Meck, J@n	Contact Phone:	281-244-5405
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Flight Program:			
Flight Assignment:	NOTE: End date changed to 6/30/2010, per JSC info (08/2010) NOTE: End date changed to 05/14/2010 per JSC info; previous end date was 12/15/2009 (2/26/2010) NOTE: End date changed to 12/15/2009 per JSC info; previous end date was 11/16/09 (11/17/09)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	Directed Research		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Reduced exercise capacity, orthostatic tolerance, and plasma volume are common observances following space flight and bed rest. Dr. Steve Platts of the Johnson Space Center Cardiovascular Laboratory will investigate the relationship between orthostatic hypotension and plasma volume by pharmacologically inducing hypovolemia in 48 normal subjects. The Exercise Physiology and Countermeasures (ExPC) Project and the Cardiovascular Discipline seek to extend this information to understanding the factors involved in decreased exercise capacity. Following orthostatic testing in normal and hypovolemic conditions, subjects recruited by Dr. Platts' team may volunteer to perform a graded cycle exercise test to volitional fatigue to determine peak oxygen consumption (VO ₂ pk). Oxygen consumption, heart rate, rating of perceived exertion, and blood pressure will be measured per standard laboratory protocols. Additionally, echocardiographic measures of stroke volume, systolic and diastolic function, blood lactate, plasma catecholamines, and peripheral muscle metabolism by near infrared spectroscopy will be measured. Data from these testing sessions will assist in understanding of the factors associated with reduced exercise capacity after space flight; will serve as a basis of comparison for responses to similar tests after space flight and bed rest; and will aid in the continued development of near infrared spectroscopy as a noninvasive metabolic measurement system for space flight and extravehicular activities.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2009.
Bibliography Type:	Description: (Last Updated: 02/22/2024)