Fiscal Year:	FY 2010	**Task Last Updated:**	FY 06/21/2010
PI Name:	Levine, Benjamin D M.D.		
Project Title:	Cardiovascular Imaging and Strategies to Mitigate the Risk for Cardiac Events in Astronauts During Prolonged Spaceflight		
Division Name:	Human Research		
Program/Discipline:	NSBRI		
Program/Discipline--Element/Subdiscipline:	NSBRI--Cardiovascular Alterations Team		
Joint Agency Name:		**TechPort:**	Yes
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 (2) **Medical Conditions**:Risk of Adverse Health Outcomes and Decrements in Performance Due to Medical Conditions that occur in Mission, as well as Long Term Health Outcomes Due to Mission Exposures		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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PI Organization Type:	UNIVERSITY	**Phone:**	214-345-4619
Organization Name:	The University of Texas Southwestern Medical Center at Dallas		
PI Address 1:	Institute for Exercise and Environmental Medicine (IEEM)		
PI Address 2:	7232 Greenville Ave, Suite 435		
PI Web Page:			
City:	Dallas	**State:**	TX
Zip Code:	75231-5129	**Congressional District:**	5
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2009 Crew Health NNJ09ZSA002N
Start Date:	06/01/2010	**End Date:**	05/31/2014
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:**	NSBRI
Contact Monitor:		**Contact Phone:**	
Contact Email:			
Flight Program:			
Flight Assignment:	NOTE: End date now 5/31/2014 (from 5/31/2011), per NSBRI FY11 report submission (Ed., 6/9/2011)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Lakoski, Susan (The University of Texas Southwestern Medical Center) Radford, Nina (Cooper Institute)		
Grant/Contract No.:	NCC 9-58-CA02201		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	This project will enhance current NASA cardiovascular disease risk-reduction strategies by partnering with investigators with the Aerobics Center Longitudinal Study (ACLS) and the Dallas Heart Study to determine how to minimize the risk of a catastrophic cardiovascular event in asymptomatic astronauts. During an exploration-class space mission, such as a mission to Mars, astronauts will not have access to comprehensive health care services for periods of two years, and possibly longer. Since the majority of experienced astronauts are middle-aged (average age is 46, and the range is 33 to 58 years), they are at risk for developing serious cardiovascular events which are life-threatening for the astronaut and mission-threatening for NASA. The ability to identify "at risk" individuals, who are currently asymptomatic is a topic of intense research within the cardiovascular community that is relevant both for NASA and public health. The primary objective of this project is to determine the risk of coronary events associated with changes in coronary artery calcium (CAC) scores over time and to determine whether this risk can be mitigated by increases in physical fitness or use of lipid-lowering therapy. Hypotheses 1) A change in coronary calcium score over time from <10 to >10 is associated with an increase in risk for coronary events; this risk is most prominent when the CAC score increases above a threshold level of 100. 2) The increased risk associated with increasing CAC scores is mitigated by increasing levels of physical fitness and/or the use of lipid-lowering therapy (statins). Specific Aims 1) Identify all clinical events in the ACLS database. The researchers will identify and verify all myocardial infarctions, new onset angina and revascularization procedures in ACLS patients who fit the astronaut demographics and who have had more than one CAC measurement. 2) Update the ACLS database to include information about timing and dose of statin medications. This information will be linked with treadmill time and the clinical events from Aim 1 to develop robust, risk-prediction models. After completion of these specific aims, the researchers will acquire information that is essential to inform decisions regarding astronaut selection for space exploration and that will allow flight surgeons to minimize the risk for catastrophic cardiovascular events. The project will have widespread implications for public health and cardiovascular risk reduction in the population at large, especially for the asymptomatic individual.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2010.
Bibliography Type:	Description: (Last Updated: 12/13/2023)