

Fiscal Year:	FY 2014	Task Last Updated:	FY 11/20/2014
PI Name:	Norcross, Jason M.S.		
Project Title:	Metabolic Assessment of Suited Mobility using Functional Tasks		
Division Name:	Human Research		
Program/Discipline:			
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) EVA :Risk of Injury and Compromised Performance due to EVA Operations (IRP Rev F)		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	77058-3711	Congressional District:	36
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	2013 HERO NNJ13ZSA002N-Crew Health OMNIBUS
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	McFarland, Shane M.S. (NASA Johnson Space Center)		
Grant/Contract No.:	Internal Project		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	<p>Existing methods for evaluating EVA suit mobility and verifying requirements have typically relied on measurement techniques such as motion capture and joint torque measurements looking at several isolated joint range of motions. These methods are straightforward and can be clearly defined, but they have little to do with how well a crewmember can actually perform in an EVA suit. EVA tasks often rely on the movement of several joints concurrently to complete the task. This proposal seeks to evaluate alternate methods of evaluating suited mobility through measurement of metabolic rate and time to completion of functional tasks.</p> <p>The product of this research will be inputs to suit mobility requirements, possibly new suit requirements based on metabolic assessment of functional task, and risk characterization inputs for the IRP gap EVA 7.</p>		

Traditional joint torque and isolated joint range of motion measurements may be quantifiable and measurable, but they do not provide information that describes how the EVA suit as a whole allows the crewmember to function. We propose that by focusing on crewmember physiological performance of functional tasks, we can define metrics that verify that a suit is meeting suit mobility requirements.

Rationale for HRP Directed Research:**Research Impact/Earth Benefits:** 0**Task Progress:** New project for FY2014.**Bibliography Type:** Description: (Last Updated: 01/06/2022)