

<b>Fiscal Year:</b>	FY 2007	<b>Task Last Updated:</b>	FY 09/12/2013
<b>PI Name:</b>	Platts, Steven H. Ph.D.		
<b>Project Title:</b>	Evaluation of Compression Garments as Countermeasures to Orthostatic Intolerance		
<b>Division Name:</b>	Human Research		
<b>Program/Discipline:</b>	HUMAN RESEARCH		
<b>Program/Discipline--Element/Subdiscipline:</b>	HUMAN RESEARCH--Biomedical countermeasures		
<b>Joint Agency Name:</b>	<b>TechPort:</b>	Yes	
<b>Human Research Program Elements:</b>	(1) <b>HHC:</b> Human Health Countermeasures		
<b>Human Research Program Risks:</b>	None		
<b>Space Biology Element:</b>	None		
<b>Space Biology Cross-Element Discipline:</b>	None		
<b>Space Biology Special Category:</b>	None		
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<b>Zip Code:</b>	77058	<b>Congressional District:</b>	36
<b>Comments:</b>			
<b>Project Type:</b>	GROUND	<b>Solicitation / Funding Source:</b>	Directed Research
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<b>No. of Post Docs:</b>	<b>No. of PhD Degrees:</b>		
<b>No. of PhD Candidates:</b>	<b>No. of Master' Degrees:</b>		
<b>No. of Master's Candidates:</b>	<b>No. of Bachelor's Degrees:</b>		
<b>No. of Bachelor's Candidates:</b>	<b>Monitoring Center:</b> NASA JSC		
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<b>Flight Program:</b>			
<b>Flight Assignment:</b>			
<b>Key Personnel Changes/Previous PI:</b>			
<b>COI Name (Institution):</b>	Stenger, Michael ( Wyle Laboratories, Inc./NASA Johnson Space Center ) Martin, David ( Wyle Laboratories, Inc./NASA Johnson Space Center ) Richardson, Letetia Ph.D. ( Wyle Laboratories, Inc./NASA Johnson Space Center )		
<b>Grant/Contract No.:</b>	Directed Research		
<b>Performance Goal No.:</b>			
<b>Performance Goal Text:</b>	Previous work in our laboratory demonstrated that the NASA Anti-Gravity Suit and the Russian Kentavr compression garment were effective countermeasures to orthostatic intolerance in subjects whose plasma volume was reduced pharmacologically to a similar degree as experienced by astronauts. While these compression garments were effective in these conditions, two observations led to the evaluation of other compression garments/conditions. First, although the AGS and Kentavr appeared to be equally effective in the initial study, the level of compression provided by the two garments were very different. The Kentavr provided compression of ~30 mmHg but the AGS was inflated to a pressure of ~78 mmHg. Thus, one objective of this study was to determine whether the AGS could provide a similar level of protection as the Kentavr when the AGS was inflated to provide a similar level of compression (~26 mmHg). Second, astronauts have reported uncomfortable levels of abdominal compression while using the AGS, which may be		

Task Description:	<p>particularly problematic after completing the pre-landing fluid loading protocol. Therefore, the second objective of this study was to determine the efficacy of a thigh-high compression garment, which might be more effective than either the AGS or the Kentavr because it provided a gradient compression to promote venous return. Both the AGS and Kentavr apply approximately the same level of compression across the entire length of the garment, but a commercially-available garment provides the highest pressure at the ankle, and the pressure decreases up the leg to the top of the thigh. Both garments were evaluated in normal healthy subjects who were hypovolemic due to the infusion of furosemide (Lasix), as has been previously used in our laboratory.</p> <p>The specific aims of this study were:</p> <ol style="list-style-type: none"><li>1. Evaluate the effectiveness of thigh-high compression garments to prevent orthostatic intolerance in hypovolemic subjects.</li><li>2. Evaluate the effectiveness of the Anti-Gravity Suit (AGS) at 1 “click” (0.5 psi) to prevent orthostatic intolerance in hypovolemic subjects.</li><li>3. Compare the effectiveness of the two garments which provide similar average levels of compression across their respective lengths but provide different levels of coverage (thigh-high vs. abdomen-high).</li></ol>
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	<p>New project for FY2007. [Ed. note 9/12/2013: added to Task Book when received information from HRP]</p>
Bibliography Type:	<p>Description: (Last Updated: 03/01/2018)</p>