

Fiscal Year:	FY 2008	Task Last Updated:	FY 07/10/2009
PI Name:	Johannigman, Jay A. M.D.		
Project Title:	Evaluation of Oxygen Concentrators at Altitude		
Division Name:	Human Research		
Program/Discipline:	NSBRI		
Program/Discipline-- Element/Subdiscipline:	NSBRI--Smart Medical Systems and Technology Team		
Joint Agency Name:		TechPort:	No
Human Research Program Elements:	(1) ExMC: Exploration Medical Capabilities		
Human Research Program Risks:	(1) 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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Zip Code:	45267-0558	Congressional District:	1
Comments:			
Project Type:	Ground	Solicitation / Funding Source:	Directed Research
Start Date:	04/01/2008	End Date:	03/31/2009
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:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	NCC 9-58-SMS00005		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	<p>Oxygen is often needed when treating a major illness or injury on Earth. It is likely oxygen will be needed if injury or trauma occurs during a space mission. The question is, though, how to best provide oxygen if it is needed for emergency health care during a spaceflight.</p> <p>Dr. Jay Johannigman is leading a project to determine the feasibility of using oxygen concentrators during an emergency health care situation in space. Oxygen concentrators extract and concentrate oxygen from the air. Oxygen concentrators are commonly available and are often used in home health care of patients with lung disease and other respiratory disorders. There are many potential advantages to the use of oxygen concentrators including the reduction of weight from oxygen tanks, and their ability to supply long term oxygen needs with relatively low power.</p> <p>Dr. Johannigman and his team will test two types of oxygen concentrators that were previously identified as having the highest output of oxygen. These investigations will take place in an altitude chamber to evaluate oxygen concentrator abilities to perform in space or flight environments.</p>
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	<p>Oxygen concentrators are capable of providing oxygen whenever electricity is available. Oxygen concentrators can be used instead of compressed oxygen in cylinders or liquid oxygen in a number of scenarios where transport of oxygen is hazardous or logistically challenging. This work supports the use of oxygen concentrators in far forward situations, in the back of aircraft, in extreme environments (climbing to altitude), and in emergency and mass casualty situations. This work has initiated new research into combining an oxygen concentrator with a ventilator for military and mass casualty operations. The use of concentrators in ground ambulances in the current conflict in the Middle East has been spurred by the success of this project.</p>
Task Progress:	<p>New project for FY2008; project added to Task Book in July 2009 when received information from NSBRI (Task Book editor).</p>
Bibliography Type:	<p>Description: (Last Updated: 07/10/2009)</p>