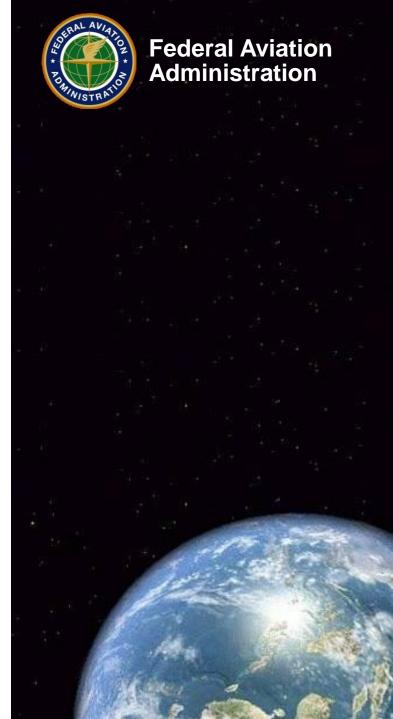
COE CST Second Annual Technical Meeting:

256: Tolerance of Centrifugeinduced G-force by Disease State

James Vanderploeg, MD







Overview

- Team Members
- Purpose of Task
- Research Methodology
- Results
- Conclusions
- Next Steps
- Contact Information





Team Members

- PI: Jim Vanderploeg, MD (UTMB Aerospace Med.)
- Co-I: Richard Jennings, MD (UTMB Aerospace Med)
- Student: Becky Blue, MD (UTMB Aerospace Med.)
- Student: James Pattarini, MD (UTMB Aerosp. Med.)
- Student: David Reyes, MD (UTMB Aerosp. Med.)
- Brienna Henwood (NASTAR Center)
- Christine Smith (Wyle Laboratories)



Students at NASTAR













NASTAR Center





Purpose of Task

Purpose:

- Evaluate subjects with defined disease states under the G-loads expected during commercial space flights using centrifuge-induced G-forces
- Disease States
 - Controlled cardiovascular/coronary disease
 - Controlled hypertension
 - Controlled diabetes
 - Pulmonary disease
 - Spinal disease or injury



Objectives

- Train & evaluate test subjects with a range of medical conditions to characterize their responses to the acceleration environment
- Evaluate biomedical monitoring equipment under the G profiles of commercial space flights
- Develop optimal acceleration training protocols for passengers



Goals

- Expected benefits from this project:
 - Characterization of responses of individuals with several common medical conditions
 - Development of risk mitigation strategies for individuals with those medical conditions
 - Validation of wearable biomedical monitoring equipment for use during commercial space flights.



Completed Milestones

- Completed IRB approval
- Developed online screening medical questionnaire
- Defined medical monitoring protocol
- Secured agreement from Virgin Galactic and XCOR to solicit volunteers for study from their customer lists
- Initiated subject recruitment





Next Steps

- Continue subject recruitment and medical clearance
- Conduct training and evaluation using the NASTAR centrifuge
- Evaluate biomedical monitoring equipment from task 255
- Perform data analysis
- Publish results
- Obtain no-cost extension from FAA AST



Quad Chart – Task 256

MAJOR MILESTONES - PAST

- Completed IRB approval
- Developed online screening medical questionnaire
- Defined medical monitoring protocol
- Secured agreement from Virgin Galactic and XCOR to solicit volunteers for study from their customer lists
- Initiated subject recruitment

MAJOR MILESTONES - FUTURE

- Continue subject recruitment and medical clearance
- Conduct training and evaluation using the NASTAR centrifuge
- Evaluate biomedical monitoring equipment from task 255
- Perform data analysis
- Publish results

SCHEDULE

- November January 2012: Subject recruitment and medical screening
- December 2012 March 2013: Subject testing and evaluation
- April 2013 Data analysis
- May 2013 Final report

BUDGET

- FY13 FY14 FY15 FY16 FY17
- \$42K* \$0 \$0 \$TBD \$TBD
- *Funding augmented by \$20,000 from grant from NSBRI





Contact Information

Jim Vanderploeg, MD, MPH

2.102 Ewing Hall, UTMB

301 University Blvd.

Galveston, Texas 77555-1110

Phone: 1-409-747-6131

Fax: 1-409-747-6129

Email: jmvander@utmb.edu

