



NASA SBIR 2009 Phase I Solicitation

X11.02 EVA Suit Simulator

Lead Center: GRC

Participating Center(s): JSC

Human space flight is associated with losses in muscle strength, bone mineral density and aerobic capacity. The ability to estimate the physical cost of exploration tasks, monitor crew health and fitness, and to provide effective hardware for exercise countermeasures use will be valuable in supporting safe and successful space exploration.

Exercise Systems is seeking technologies or devices to simulate an Extra Vehicular Activity (EVA) suit on the ground.

A wearable system that simulates the mechanical properties of the current extravehicular activity (EVA) space suit is sought. System should be lightweight (less than 30 pounds), easy to don/doff (especially in the supine position), replicate the mechanical properties of a space suit (in terms of resistance to motion and mass and inertia), and able to be worn during conduct of simulated lunar tasks that last up to 4 hours. Suit system must be adjustable to accommodate individuals of different height and weight. Joints of primary interest to simulate in this system are the shoulder, elbow, trunk, hip, and knee.

Phase 1 Requirements: a fully developed concept, complete with feasibility analyses and top-level drawings. A breadboard or prototype is highly desired.

