

Implications for the Medical Policy Board and Medical Policies and Requirements Document

During the year-long deliberations of the Task Force on Countermeasures, the NASA Medical Policies Board has been functioning in parallel in order to formulate a document describing the medical policies, requirements and procedures, and supplemental or interim medical selection and retention standards for the astronaut corps. The Task Force Committee applauds NASA for undertaking this important endeavor and believes that it is taking the appropriate steps in establishing fundamental policies that impact on the homeostasis of the astronaut corps. The Task Force Committee, through its series of recommendations as described in the above sections, has provided some insight and direction that should impact these evolving policies and procedures. For example, two of the primary goals of NASA are to 1) maintain the functional integrity of astronauts in order to perform unaided egress; and 2) to utilize exercise as a strategy to ameliorate deficits in cardiovascular function, aerobic exercise capacity, muscle atrophy, neurosensory dysfunction; and bone atrophy.

In meeting these objectives, NASA, first of all, must better define a standard of “fitness” among the astronauts that is realistic to an acceptable level of performance in the context of unaided egress. Also, NASA is too general in its description of the types of exercise it is using to ameliorate functional deficits in the various systems. Thus, NASA must devise an exercise prescription, incorporating aerobic, high resistance, high impact, and motor specific activities that it will use to counteract specific deficits. Further, NASA must reassess its nutritional standards and look to new strategies to insure that the astronauts are provided the best nutrition possible as the mission duration increases. Finally, in the likelihood that the Countermeasure strategies will be insufficient to meet the program objectives, NASA must invest resources to and a plan to evolve human powered centrifuge devices that may turn out to be the only effective way to maintain a fitness standard commensurate with performing unaided emergency egress after long duration exposure to microgravity.