

Post Flight Reconditioning for US Astronauts Returning from the International Space Station

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Background: Prior to spaceflight, each astronaut undergoes medical requirement testing to establish a preflight baseline for physiologic functions. Astronauts returning from the International Space Station can experience deficits in all or some of the following areas: aerobic capacity, muscular strength, power, endurance, stamina, bone, balance, agility, coordination, orthostatic tolerances, proprioception, neurovestibular function and flexibility. These losses occur from living in microgravity and are consistent with deficits seen in terrestrial, de-conditioning individuals. Since 2001, the Astronaut Strength, Conditioning and Rehabilitation (ASCR) specialists have administered a reconditioning program, focusing on all deficits, which improves the physical condition of all returning astronauts. In most cases, astronauts have reached or surpassed their preflight physical condition. **Purpose:** This presentation will describe and explain the postflight reconditioning program for returning astronauts. **Methods:** The postflight reconditioning program is designed to stress the body systems that affect the following: aerobic capacity, muscular strength, power, endurance, stamina, bone, balance, agility, coordination, orthostatic tolerances, proprioception, neurovestibular function and flexibility. Postflight reconditioning begins on landing day, is scheduled for two hours per day, 7 days a week for 45 days and is tailored to the specific needs of the astronaut. Initially the program focuses on basic ambulation, cardiovascular endurance, strength, balance, flexibility and proprioception. The program advances through 45 days and specific attention is given to each astronaut's overall condition, testing results, medical status, and assigned duties after their mission. **Conclusion:** Astronauts will experience noticeable deficits in their physical condition after living in microgravity for an extended length of time. After completing postflight reconditioning, it is shown that astronauts have regained, and in most cases improved upon, their preflight baseline condition.