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## SPACEFLIGHT, IMMOBILIZATION AND AGING (“SPACEFLIGHT MEETS GERIATRICS”)

**Abstract**

Orthostatic challenge could lead to dizziness upon standing up, especially if adequate brain perfusion is not able to be maintained by the cardiovascular system. This condition occurs quite frequently in older persons and returning astronauts. Spaceflight environment of microgravity, for example, influences several physiological systems, including cardiovascular system, cerebral autoregulation, and musculoskeletal function; some of these factors alone, and in combination, could contribute to post spaceflight orthostatic intolerance. This presentation provides an overview of these microgravity induced physiological effects (deconditioning) and then discusses important similarities and connections to the aging process. Bedrest immobilization often occurs due to aging-associated illness and/or falls-related injuries. During hospitalization, older persons are confined to long periods of bedrest, which can result in substantial physical deconditioning. As bedrest is routinely used by space agencies to model and research the effects of spaceflight de-conditioning due to microgravity, bedrest experimental protocols can increase insight and knowledge regarding both the de-conditioning impact of bed confinement in older persons and the deconditioning occurring in astronauts during spaceflight. This information can be applied synergistically to design and improve appropriate deconditioning countermeasures for bed-confined older persons and astronauts. In particular, for older persons, such countermeasures can help break the negative spiral of bed confinement leading to deconditioning, dizziness upon standing up, and consequently, falls, resulting in recurring hospitalization and increased frailty.