



The transition to weightlessness during spaceflight requires adaptation of many physiological processes involving the vestibular system. In about 50-70% of the astronauts this is accompanied by symptoms of the Space Adaptation Syndrome: motion sickness, visual illusions, and disorientation. Interestingly, the same symptoms can also be experienced on Earth, after sustained exposure to a *higher* gravitational load in a human centrifuge. This indicates that it is not weightlessness per se that causes these symptoms, but that there seems to be a general mechanism for adaptation to an altered gravitational environment. In this thesis the paradigm of sustained centrifugation is used to study the vestibular effects of gravity transitions and the underlying adaptation mechanism.