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DEVELOPMENT OF A LOW-COST APPARATUS TO ASSESS AUDITORY COGNITIVE
RESPONSES IN MICROGRAVITY FLIGHTS**Abstract**

A varying gravitational environment provides a fundamental tool to understand how cognitive processes are affected by such variable. These conditions are usually achieved by resorting to parabolic flights wherein distinct accelerations can be felt, such as Martian and Lunar gravitational pull, microgravity, and hypergravity. The progression between different acceleration regimes also provides the opportunity to study the transient effects of changing acceleration in the human body.

This study presents the development of an experimental apparatus to measure finger dexterity triggered by auditory stimuli in an adaptation of the auditory Psychomotor Vigilance (aPVT) test. Resorting to readily available consumer-grade off-the-shelf components, the hardware was used and validated in a microgravity flight in May 2022. A summary of the preliminary results obtained and research possibilities enabled by this apparatus are presented for further use of this tool.