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VALIDATION AND VERIFICATION OF A CONTINUOUS GLUCOSE MONITOR IN A
PRESSURIZED IVA SUIT IN MICROGRAVITY**Abstract**

There is growing evidence that long-duration spaceflight induces insulin-resistance, a pre-diabetogenic state, and there are still gaps as to how quickly these changes are induced. Implantable sensors that can continuously sample blood glucose and be read with a standard smartphone or reader are a relatively new technology that offer a less-invasive way to easily and continuously monitor blood glucose levels for populations in need, including astronauts. The Freestyle Libre and Freestyle Libre 2 are examples of one such device, can be self-implanted at the posterior aspect of the upper arm by the user, whereupon it will continuously measure and store glucose readings with an update frequency of 60 seconds, and storage capacity of 8 hours at a time, in 15-minute intervals. The device can be worn for up to 14 days.

In the present study, we describe our experiences with testing, verification and validation of a continuous glucose monitor in microgravity and hypergravity conditions, during a parabolic flight during suited and unsuited conditions in an intravehicular activity spacesuit (IVA), including in a pressurized state.