

From Space to Silicon Valley: The Journey from Experiment to Commercialization

Marsh Cuttino, MD
PhysioWave, Inc (Menlo Park, CA)

Research is part of a journey

When a concept or idea is tested through practical research, it is an iterative journey through many stages. This talk will discuss the evolution of PhysioWave, a Stanford University spinoff that evolved from concept to FDA clearance of a commercial product. In parallel, through the NASA Flight Opportunities Program, a space-flight variant was developed. By discussing the path that this project has taken over the years, researchers will be able to understand the path of developing a research project to the point of commercial development, and the potential to create variants for the very small spaceflight market while continuing to focus on commercial results.

Cardiac Measurement in Microgravity

PhysioWave is a Stanford digital health spinoff that develops medical devices. The team of Kovacs and Giovangrandi, working at Stanford developed a technology to measure pulse wave velocity. Initial patents were filed by Stanford University, and the Intellectual Property (IP) was developed. Realizing

that the technology could be adapted to spaceflight, a research variant of the design was produced and tested in parabolic flight with funding from NASA in an effort led by then-graduate-student Corey McCall.

Creation of PhysioWave

Prior to the NASA work, the research group licensed the IP from Stanford and began to raise funding from private and corporate investors, to develop a clinical device. In the future, flight-adapted versions of the commercial device might be used in long-duration space missions.

FDA Approval and Go To Market

Development continued with investment funding, to refine the medical device prototypes, and after significant engineering the device was submitted to the FDA and approved as the PhysioWave Pro™. With completion of additional refinement, the device will soon be available for medical, and eventual consumer use.



Figure: (L) Parabolic testing of the prototype. (R) Flight prototype (left) and FDA-cleared commercial product (right).