



Artificial Organs publishes Libera Fresiello's research

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Realheart is collaborating with a number of international researchers to develop the world's first four-chamber artificial heart. One is Professor Libera Fresiello at Katholieke Universiteit Leuven and University of Twente. The results of her study of the Realheart TAH in a hybrid simulator has now been published by the journal Artificial Organs.

Professor Libera Fresiello has conducted tests of the previous version Realheart TAH (Total Artificial Heart) in a hybrid simulator – a digital model of the human heart, lungs and blood vessels, to which the artificial heart is connected to study its interaction with the body in a variety of scenarios. This information was used to further improve the design of the clinical version currently in production.

"Developing a total artificial heart is a major challenge from both an engineering and a clinical point of view. It must interact safely and effectively with the human vascular system, providing the right support to organs and tissues. By studying it in a simulated environment, we can predict how it would behave in a real human body. I believe this type of methodology will be used more and more as a complement or alternative to animal testing in the future," said Professor Libera Fresiello.

One reason limiting the use of artificial hearts is that the products that have been available often lead to for example blood-related complications. This is why Realheart is focusing on creating an artificial heart that mimics the way the natural heart supplies blood to the body's organs in a pulsating flow.

Prof Fresiello's studies show that the Realheart TAH produces such a pulsatile blood flow, which can be adjusted by stroke volume and pulse rate. The two artificial ventricles work independently and if controlled properly, they can attain a right-left balance.

"This is exactly what we aim to achieve. This research will therefore be of great importance in our work. The fact that it is now also presented in a scientific journal such as Artificial Organs will further contribute to greater awareness, trust, and interest in our artificial heart, which is very positive," said Ina Laura Perkins, CEO of Realheart.

Artificial Organs is a peer-reviewed biomedical journal covering organ replacement technology. The journal was founded in 1977 and is published monthly. Dr Fresiello's article "Hemodynamic characterization of the Realheart total artificial heart with a hybrid cardiovascular simulator" will be published in the next printed issue and has already been published online.

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Scandinavian Real Heart AB develops a total artificial heart (TAH) for implantation in patients with life-threatening heart failure. Realheart TAH has a unique, patented design that resembles that of the natural human heart. The artificial heart consists of a four-chamber system (two atriums and two chambers) which provides the opportunity to generate a physiologically adapted blood flow that mimics the body's natural circulation. A unique concept in the medical technology world.