

SEMINAR SERIES

Supported by The Department of Biomechanics and
The Center for Research in Human Movement Variability (MOVCENTR)



EFFECTS OF AORTIC BIOMECHANICS ON CARDIAC AND AORTIC PATHOPHYSIOLOGY

Featuring Dr. Anastasia Desyatova
University of Nebraska at Omaha



September 27, 2019 | 12:00 - 1:15 pm | H&K 112
Parking Available in Lot T

ABSTRACT

Aortic elasticity creates a Windkessel effect. That is, aortas distend following ejection of blood from the left ventricle (LV) during systole, and then recoil after aortic valve closure. This feature of ventricular-arterial coupling blunts peak blood pressure and flow waves providing a cushioning effect that protects the heart from pressure injury. In addition, the Windkessel effect helps move blood distally through the coronary arteries and periphery during cardiac relaxation. Commercial aortic stent-grafts are made of stiff materials that artificially stiffen the aorta and diminish the Windkessel effect. This may affect the heart and lead to off-target adverse remodeling of the aorta. In this presentation we will look into the role of the aortic biomechanics on cardiac function, and describe the consequences of Windkessel reduction due to implantation of stiff stent-grafts. We will also propose several computational and manufacturing approaches to develop better aortic devices that would preserve optimal ventricular-arterial coupling.

ABOUT DR. DESYATOVA

Dr. Anastasia Desyatova is an Assistant Professor in the Department of Biomechanics at the University of Nebraska Omaha. She received her PhD in Mechanical Engineering and Applied Mechanics from the University of Nebraska-Lincoln in 2012. Dr. Desyatova's research is focused on understanding and predicting behaviors of biological systems and synthetic biomimetic materials thorough integration of experimental and computational techniques.

more info at cobre.unomaha.edu

*This seminar was supported by the National Institutes of General Medical Sciences of the National Institutes of Health under Award Number P20GM109090
Center for Research in Human Movement Variability. | The University of Nebraska at Omaha shall not discriminate based upon age, race, ethnicity, color,
national origin, gender/identity, sex, pregnancy, disability, sexual orientation, genetic information, veteran's status, marital status, religion, or political affiliation.

UNIVERSITY OF
Nebraska
Omaha

