



*“Turning towards understanding
and improving human agility
and mobility”*

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Dr. Antonia Zaferiou is an Assistant Professor in Biomedical Engineering and a Presidential Faculty Fellow at Stevens Institute of Technology, where she directs the Musculoskeletal Control and Dynamics Lab. Dr. Zaferiou began her education studying Mechanical Engineering at The Cooper Union and continued to University of Southern California, where she earned her master’s and doctoral degrees in Biomedical Engineering. She was a postdoctoral fellow at the University of Michigan in the Department of Mechanical Engineering before becoming a faculty member in the Department of Orthopedic Surgery and the Director of Sports Medicine Motion Analysis at Rush University Medical Center. Her research has been funded by an NSF CAREER grant, the Interdisciplinary Rehabilitation Engineering Research Career Development program (NIH-funded K-12 program), and Major League Baseball grants. Throughout her career, she has demonstrated steadfast dedication to her role as an educator and to broaden participation in STEM by hosting learning activities that encourage young students from to identify with and pursue STEM careers.

Seminar Abstract: Turning is a ubiquitous human movement that captivates fascination in athletics and draws considerable attention in clinical practice. The ability to perform agile maneuvers like turns is a fundamental skill that challenges balance regulation as we navigate our environment or swiftly perform athletic maneuvers. While some balance-impaired populations struggle to turn, at the other end of the motor control spectrum, the elite performance of athletes often relies on their abilities to turn with ease. This talk will introduce overarching turning mechanics and how athletes, young, and older adults generate and control the requisite momenta during different types of turns. The presentation will also introduce our recent development of music-based biofeedback technology to improve and preserve mobility. Beyond motivating and engaging users from a psychosocial perspective, embedding music in rehabilitation technology offers a unique and exciting opportunity to leverage neural pathways that swiftly coordinate between auditory and motor systems.

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