CAREsearch Day

Keynote Address

"Convergence of Biological Circuits and Machine-Learning Toward Precision Rehabilitation"

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Consequent to a multitude of inter-individual differences, rehabilitation efficacy varies widely across individuals. Even among individuals receiving a uniform demand (i.e., prescription), response heterogeneity is prevalent with its underpinnings spanning from molecular circuitry to phenotypic traits. In this lecture, Dr. Bamman will describe strategies for leveraging differential responses among people to advance toward precision rehabilitation. Use cases will include rehabilitation trials in Parkinson's disease, aging muscle atrophy, and end-stage osteoarthritis leading to total joint arthroplasty.

Dr. Marcas M. Bamman catalyzes high-impact research development and leads clinical and translational research to advance knowledge across the spectrum from elite performers to chronic disease populations, and from biological underpinnings to clinical outcomes. He has a history of leading clinical trials focused on dose-response optimization, combinatorial treatment interactions, and biological underpinnings of inter-individual response heterogeneity, supported by federal funding since the 1990s from NIH, VA, NASA, and DoD. He is a Fellow of the American College of Sports Medicine (ACSM), former member of the ACSM Board of Trustees, and served as Chair of the 2021 ACSM World Congress on the Basic Science of Exercise in Regenerative Medicine. He has served on more than 90 federal grant review panels and site visit teams, as Associate Editor of three peer-reviewed journals, and has published over 160 research papers.

Friday, March 3, 2023   4:00 p.m. – 5:15 p.m.
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