

12th International Symposium

GAIT & BALANCE

IN MULTIPLE SCLEROSIS

Neural Control of Mobility in MS: Process to Practice



Saturday, April 15th, 2023

University of Colorado
Anschutz Medical Campus
Denver, Colorado

✉ info@msgaitandbalance.com

🐦 [@MS_GB_Symposium](https://twitter.com/MS_GB_Symposium)

Find more information
on our website:



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MORNING SESSIONS

All times Mountain Standard Time (Denver)

7:30am **Breakfast & Check-in**

8:30am **Introduction and Welcome**
Mark Mañago, PhD, PT, DPT, NCS
*University of Colorado
Anschutz Medical Campus*

Keynote Lecture

8:45am **Neural Mechanisms of Motor Control**
Amy Bastian, PhD
*Johns Hopkins University and
Kennedy Krieger Institute*

9:30am **Clinical Applications Regarding
Mechanisms of Motor Control**
Jen Keller, MS, PT
*Johns Hopkins University and
Kennedy Krieger Institute*

10:00am **Q & A with Dr. Bastian and Jen Keller**

10:15am **Break**

10:30am **Using Neuroimaging to Better
Understand and Treat Gait and Balance
Deficits in People with Multiple Sclerosis**
Daniel Peterson, PhD
Arizona State University

Nora Fritz, PhD, PT, DPT, NCS
Wayne State University

11:45am **Q & A with Dr. Peterson and Dr. Fritz**

12:00pm **Lunch, Networking, and Open Poster
Viewing**



Amy Bastian, PhD
*Johns Hopkins University and
Kennedy Krieger Institute*

Dr. Amy Bastian is a physical therapist and neuroscientist who has made important contributions to the neuroscience of sensorimotor control. She is the Chief Science Officer and Director of the Center for Movement Studies at Kennedy Krieger Institute. Dr. Bastian is also a Professor of Neuroscience, Neurology and PM&R at the Johns Hopkins University School of Medicine. Dr. Bastian is a recognized and highly accomplished neuroscientist whose interests include understanding cerebellar function/dysfunction, locomotor learning mechanisms, motor learning in development, and how to rehabilitate people with many types of neurological diseases.



Jen Keller, MS, PT
*Johns Hopkins University and
Kennedy Krieger Institute*

Jennifer Keller is an Assistant Professor in the Department of Physical Medicine & Rehabilitation at Johns Hopkins School of Medicine and the Center for Movement Studies at Kennedy Krieger Institute. She studies how people with degenerating conditions control movement and interventions to restore their motor function. Her recent studies in MS have focused on identifying biomarkers using accelerometry and metabolomics to quantify disease severity and evaluate responsiveness to intervention. Her intervention studies for adults and children with neurological disease include progressive resistance training, home balance training, adapted tai chi and interactive rehabilitation gaming.



Daniel Peterson, PhD
Arizona State University

Daniel is an Associate professor at Arizona State University in the College of Health Solutions. His research focuses on understanding the interaction between balance, cognitive deficits, brain structure, and falls in neurological populations including people with multiple sclerosis and Parkinson's disease. In particular, he is interested in how gait and balance can be improved by rehabilitation using principles of motor learning. Currently, he is engaged in several projects which aim to better understand deficits in reactive, or protective postural responses after a slip or trip, how these deficits relate to falls, and ways to improve these protective responses to reduce falls. In addition, he seeks to understand ways to predict individuals who will receive the most benefit from motor interventions such as physical therapy.



**Nora Fritz, PhD, PT,
DPT, NCS**
Wayne State University

Nora Fritz, PhD, PT, DPT, NCS is an Associate Professor in the Departments of Health Care Sciences and Neurology at Wayne State University. She serves as the Director of Research for the Department of Health Care Sciences and is the director of the Neuroimaging and Neurorehabilitation Laboratory. Dr. Fritz's research interests include examining the influence of cognition on mobility and exploring exercise interventions to improve function in individuals with neurologic conditions. She is particularly interested in linking clinically observable function to structural imaging and predicting the outcomes of exercise interventions using neuroimaging. Her lab is funded by the National Institutes of Health, The National Multiple Sclerosis Society, TEVA, and the Michigan Physical Therapy Association.

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AFTERNOON SESSIONS

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Trainee Abstract Award Winner

1:30pm **Impaired Voluntary Activation of an Ankle Dorsiflexor Muscle Predicts Walking Capacity in Multiple Sclerosis**
Mitra Rouhani, PT, MS
Marquette University

1:45pm **Mechanisms of Visual Control on Balance in Multiple Sclerosis**
Scott Beardsley, PhD
*Marquette University and
Medical College of Wisconsin*

Application of Visual and Vestibular Control on Balance and Walking in Multiple Sclerosis
Lee Dibble, PT, PhD, ATC
University of Utah

3:00pm **Q & A with Dr. Beardsley and Dr. Dibble**

3:15pm **Break**

3:30pm **Panel Discussion with All Speakers**
Moderator – Kathy Zackowski, PhD, OTR
National Multiple Sclerosis Society

4:30pm **Wrap Up**
Brett Fling, PhD
Colorado State University

5:00pm **Poster Presentations & Networking Session**



Mitra Rouhani, PT, MS
Marquette University

Mitra is a PhD candidate in the Exercise and Rehabilitation Science program at Marquette University, Milwaukee, WI. Born and raised in Iran, she completed her B.S. and M.S. studies in Physical Therapy before joining Dr. Alexander Ng's laboratory in 2018 to begin her PhD. She has a passion for chronic disease management, and her research is in understanding the pathophysiology of Multiple Sclerosis (MS), and how it affects muscle performance in humans. Mitra's long-term career goal is to become an independent investigator conducting translational research on strategies that directly improve the quality of life for people living with MS.



Scott Beardsley, PhD
*Marquette University and
Medical College of Wisconsin*

Scott Beardsley is an Associate Professor in Biomedical Engineering at Marquette University and Medical College of Wisconsin. He is Director of the Integrative Neural Systems Laboratory and Director of Undergraduate Studies for Biomedical Engineering at Marquette University, and he also directs the Photobiology Translational Research Laboratory at Medical College of Wisconsin. He earned bachelor's degrees in Physics and Mathematics from UW-Whitewater in 1995 and his Ph.D. in Biomedical Engineering from Boston University in 2001. His research employs a multi-disciplinary (multi-scale) approach that combines human behavioral studies with multi-modal functional brain imaging and computational modeling to determine how brain areas interact to process and control visually-guided movement. His lab focuses on developing within-subject analyses of sensorimotor function/dysfunction, targeted neuro-rehabilitation strategies to mitigate sensorimotor impairment, and on identifying novel strategies for seamlessly interfacing human visuo-motor control with external devices. He received a National Academies KFI Fellowship in 2006 and the Way Klingler Young Scholar Award in 2012 associated with his work. Over the last 10 years, his research in Multiple Sclerosis has centered on characterizing how subject-specific impairments in the visual processing of movement contribute to upper (reach) and lower (gait) extremity movement dysfunction.



Lee Dibble, PT, PhD, ATC
University of Utah

Lee Dibble, PT, PhD, ATC is a Professor and the Department Chair of the Department of Physical Therapy and Athletic Training at the University of Utah. Dr. Dibble received a MS in Physical Therapy from Duke University followed by a PhD from the University of Utah with a focus on Motor Learning and Motor Control. His research has examined skeletal muscle and functional responses to resistance training in mobility impaired populations. More recently, Dr. Dibble's research has examined postural and gaze stability in persons with neurologic conditions such as Multiple Sclerosis, Parkinson Disease, vestibular hypofunction, and concussion. Funding for this research has come from the NIH, the Department of Defense, the National Multiple Sclerosis Society, the PAC-12, the Michael J Fox Foundation, the Foundation for Physical Therapy Research, and the University of Utah.