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Education

PhD, Sociology, Boston University

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Key Interests

Rehabilitation | Physical Therapy | Gait | Locomotion Training | Movement Disorders | Clinical Interventions

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SELECT PUBLICATIONS

- B. T. Neville *et al.*, Effects of performance-based training on gait and balance in individuals with incomplete spinal cord injury. *Arch Phys Med Rehabil* [E-pub ahead of print] (2019).
- A. Guccione *et al.*, Optimization of movement: a dynamical systems approach to movement systems as emergent phenomena. *Phys Ther* 99(1), 3-9 (2019).
- J. M. Gollie & A. A. Guccione, Overground locomotor training in spinal cord injury: a performance-based framework. *Top Spinal Cord Inj Rehabil* 23(3), 226-233 (2017).
- J. M. Gollie *et al.*, Effects of overground locomotor training on walking performance in chronic cervical motor incomplete spinal cord injury: a pilot study. *Arch Phys Med Rehabil* 98(6), 1119-1125 (2017).

Research Focus

The ability to walk underlies a vast array of daily functional activities and can be impaired after neurological injury. Despite the growing prevalence of health conditions that impair mobility and ambulation, we still lack effective interventions to restore function, and rehabilitation efforts are often ended in the current health care system long before an individual's potential for recovery has been exhausted. Moreover, even the best rehabilitation care can fragment treatment by sorting patients by systems or body parts, ignoring recent theoretical developments regarding plasticity and the optimization of movement. My research program focuses on the development and validation of clinical interventions to promote recovery and facilitate walking through task-specific locomotion training emphasizing voluntary movement and full weight-bearing during structured overground movement drills performed under aerobically challenging conditions.

Current Projects

- POSSabilities: Training to promote POver, Stability, and Stepping - Walking economy challenges individuals with Parkinson's Disease. Skeletal muscle changes also contribute to performance fatigability and diminished force production. Interventions to optimize movement must facilitate an individual's response to a complex interplay of constraints that are specific to the individual, the task, and the environmental context. We designed a performance-based overground locomotor training (OLT) program with high repetition movement drills based on the gait cycle performed at an aerobically challenging intensity. Our overall goal is to demonstrate that performance-based OLT can promote walking economy during sustained ambulation with concurrent secondary effects that decrease performance fatigability and increase propulsion.