

# Allison Miller, PT, DPT, PhD, NCS

4444 Forest Park Ave, St. Louis, MO 63108

314-273-5661

[miller.allison@wustl.edu](mailto:miller.allison@wustl.edu)

## RESEARCH INTERESTS

My research focuses on the use of wearable sensors and other digital health technologies to improve measurement, clinical decision-making, and patient outcomes in rehabilitation care.

## CURRENT APPOINTMENT

Postdoctoral Research Associate September 2022 - present  
Washington University School of Medicine, St. Louis, MO  
Mentors: Catherine Lang, PT, PhD, FAPTA, FASNR & Keith Lohse, PhD, PStat

## EDUCATION

University of Delaware- Newark, DE August 2018 – August 2022  
Doctor of Philosophy in Biomechanics and Movement Science  
Mentor: Darcy Reisman, PT, PhD, FAPTA  
Dissertation: *Real-World Walking Activity in Individuals with Chronic Stroke*

Kessler Institute for Rehabilitation, West Orange, NJ June 2015 – July 2016  
Residency in Neurologic Physical Therapy  
Certification: Neurologic Clinical Specialist

University of Connecticut- Storrs, CT May 2010 – May 2013  
Doctorate in Physical Therapy

University of Connecticut – Storrs, CT August 2007 – May 2010  
Bachelor of Science: Exercise Science  
Magna Cum Laude

## PROFESSIONAL HISTORY

University of Delaware Neurologic and Older Adult Clinic 01/2019 – 08/2022  
Per Diem Physical Therapist and Clinical Instructor

Kessler Institute for Rehabilitation, Chester, NJ 07/2018 – 08/2018  
Advanced Clinical Specialist Physical Therapist

Kessler Institute for Rehabilitation, West Orange, NJ 07/2017 – 06/2018  
Senior Physical Therapist

Kessler Institute for Rehabilitation, West Orange, NJ 07/2016 – 07/2017  
Proficient Physical Therapist

Kessler Institute for Rehabilitation, West Orange, NJ 12/2013 – 07/2016  
Staff Physical Therapist

West Caldwell Care Center, West Caldwell, NJ 04/2014 – 05/2016  
Per Diem Physical Therapist

## PUBLICATIONS

1. Hornby, TG; Reisman, DS; Ward, IG; Scheets, PL; **Miller, A**; Haddad, D. Clinical Practice Guideline to Improve Locomotor Function Following Chronic Stroke, Incomplete Spinal Cord Injury, and Brain Injury. *J Neurol Phys Ther.* 2020;44(1):49-100.

2. **Miller, A**; Pohlig, RT; Reisman, DS. Social and Physical Environmental Factors in Daily Stepping Activity in Those with Chronic Stroke. *Top Stroke Rehabil.* 2020:1-9.
3. **Miller, A**; Wright, T; Wright, H; Thompson, E; Pohlig, R; Reisman, DS. Readiness to Change is Related to Real-world Walking and Depressive Symptoms in Chronic Stroke. *J Neurol Phys Ther.* 2021;45(1):28-35.
4. **Miller, A**; Pohlig, RT; Wright, T; Kim, HE; Reisman, DS. Beyond Physical Capacity: Factors Associated with Real-world Walking Activity Post Stroke. *Arch Phys Med Rehabil.* 2021 Oct;102(10):1880-1887.
5. **Miller, A**; Reisman, DS; Billinger, SA; Dunning, K; Doren, S; Ward, J; Wright, H; Wagner, E; Carl, D; Gerson, M; Awosika, O; Khoury, J; Kissela, B; Boyne, P. Moderate-Intensity Exercise Versus High-Intensity Interval Training to Recover Walking Post-Stroke: Protocol for a Randomized Controlled Trial. *Trials.* 2021;22(1):457.
6. French, MA\*; **Miller, A\***; Pohlig, RT; Reisman, DS. Depressive Symptoms Moderate the Relationship Among Physical Capacity, Balance Self-efficacy, and Participation in People After Stroke. *Phys Ther.* 2021 Oct 4;pzab224. \*Co first author.
7. **Miller AE\***, Russell E\*, Reisman DS, Kim HE, Dinh V. A Machine Learning Approach to Identifying Important Features for Achieving Step Thresholds in Individuals with Chronic Stroke. *PloS one.* 2022;17(6):e0270105.
8. **Miller, A**; Pohlig, RT; Reisman, DS. Relationships Among Environmental Variables, Physical Capacity, Balance Self-Efficacy, and Real-World Walking Activity Post-Stroke. *Neurorehabil Neural Repair.* 2022 Aug;36(8):535-544.
9. **Miller, A\***; McCartney, K\*; Wright, T; Reisman, DS. Predictors of Non-Stepping Time in People with Chronic Stroke. *Top Stroke Rehabil.* 2022 Aug 22;1-9.
10. **Miller, A**; Collier, Z; Reisman, DS. Beyond Steps per Day: Other Measures of Real-World Walking After Stroke Related to Cardiovascular Risk. *Journal of NeuroEngineering and Rehabilitation.* 2022;19(1):111.
11. Boyne, PE; Billinger, SA; Reisman, DS; Awosika, OO; Buckley, S; Burson, J; Carl, D; DeLange M; Doren, S; Earnest, M; Gerson, M; Henry, M; Horning, A; Khoury, J; Kissela, B; Laughlin, A; McCartney, K; McQuaid, T; **Miller, A**; Moores, A; Palmer, JA; Sucharew, H; Thompson, E; Wagner, E; Ward, J; Wasik, E; Whitaker, AA; Wright, H; Dunning, K. Optimizing the Intensity and Duration of Walking Rehabilitation Post-Stroke: A Randomized Clinical Trial. *JAMA Neurology.* 2023.
12. Thompson, ED; **Miller, A**; Reisman, DS. Characterizing the Impact of Multiple Chronic Conditions on Return to Participation in Chronic Stroke Survivors. *Topics in Stroke Rehabilitation.* 2023:1-7.
13. Boyne, PE; **Miller, A**; Kubalak, O; Mink, C; Reisman, DS; Fulk, G. Moderate to Vigorous Intensity Locomotor Training After Stroke: A Systematic Review and Meta-Analysis of Mean Effects and Response Variability. *Journal of Neurologic Physical Therapy.* 2023.
14. Boyne, PE; **Miller A**; Schwab, SM; Sucharew, H; Carl, D; Billinger, SA; Reisman, DS. Training Parameters and Longitudinal Adaptations that Most Strongly Mediate Walking Capacity Gains from High-Intensity Interval Training Post-Stroke. Submitted. Available as a pre-print at: <https://www.medrxiv.org/content/10.1101/2023.02.20.23286194v1>
15. Thompson ED, Pohlig RT, McCartney KM, Hornby TG, Kasner, SE, Raser-Schramm J, **Miller AE**, Henderson CE, Wrist H, Wright T, Reisman DS. Increasing Activity After Stroke: A Randomized Controlled Trial of High-Intensity Walking and Step Activity Intervention. *Stroke.* 2024;55(1):5-13.
16. **Miller, AE**, Lang CE, Bland MD, Lohse, KR. Quantifying the Effects of Sleep on Sensor-Derived Variables from Upper Limb Accelerometry in People with and without Upper Limb Impairment. *J Neuroeng Rehabil.* 2024.
17. Lang CE, Hoyt CR, Konrad JD, Bell KR, Marrus N, Bland MD, Lohse KR, **Miller AE**. Referent Data for Investigations of Upper Limb Accelerometry: Harmonized Data from Three Cohorts of Typically-Developing Children. *Frontiers in Pediatrics.* 2024.
18. **Miller, AE**, Lohse KR, Bland MD, Konrad JD, Hoyt CR, Lenze EJ, Lang CE. A Large Harmonized Upper and Lower Limb Accelerometry Dataset: A Resource for Rehabilitation Scientists. Submitted. Available as a preprint at: <https://www.medrxiv.org/content/10.1101/2024.08.15.24312066v1>

## PEER-REVIEWED ABSTRACTS AND PRESENTATIONS

1. Hornby, TG; Reisman, DS; Ward, IG; Scheets, PL; **Miller, A**; Haddad, D. Clinical Practice Guidelines for Improving Locomotor Function Following Acute-Onset Neurological Injury. American Physical Therapy Association Combined Sections Meeting (educational session), New Orleans, LA. February 22, 2018.

2. Holleran, C; Goodwin, L; **Miller, A**; Banhos, M. Implementing Active Ingredients for Locomotor Recovery. American Physical Therapy Association Combined Sections Meeting (educational session), Denver, CO. February 13, 2020.
3. **Miller, A**; Pohlig, RT; Reisman, DS. Role of Social and Physical Environmental Factors in Walking Activity in Those with Chronic Stroke. American Physical Therapy Association Combined Sections Meeting (platform presentation), Denver, CO. February 14, 2020.
4. **Miller, A**; St. Andre, K; Ackerman, K; Endersby, K; Ward, I. Implementing a Screening Process for Benign Paroxysmal Positional Vertigo in Inpatient Rehabilitation for Brain Injury. American Physical Therapy Association Combined Sections Meeting (poster presentation), Denver, CO. February 15, 2020.
5. French, MA; **Miller, A**; Reisman, DS; Semrau, J. Moving Beyond the Motor System: Other Factors Influencing Neurorehabilitation After Stroke. American Physical Therapy Association Combined Sections Meeting (educational session, virtual format), February 2021.
6. **Miller, A**; French, MA; Pohlig, R; Reisman, DS. Depressive Symptoms Impact the Relationship between Physical Capacity, Self-efficacy, and Participation in Stroke Survivors. American Physical Therapy Association Combined Sections Meeting (platform presentation, virtual format), February 2021.
7. **Miller, A**; Wright, T; Wright, H; Thompson, E; Pohlig, R; Reisman, DS. Readiness to Change is Related to Daily Stepping, Depressive Symptoms, and Area Deprivation in Stroke. American Physical Therapy Association Combined Sections Meeting (poster presentation, virtual format), February 2021.
8. Russell, E\*; **Miller, A\***; Reisman, DS; Kim HE; Dinh, V. A Machine Learning Approach to Predict Stepping Activity Levels in Individuals with Chronic Stroke. American Society of Neurorehabilitation Meeting (poster presentation, virtual format). April 6, 2021. \*Co first author.
9. **Miller, A**; Pohlig, RT; Reisman, DS. Relationships Among Environmental Variables, Balance Self-efficacy, and Real-world Walking Activity Post-Stroke. American Physical Therapy Association Combined Sections Meeting (platform presentation), San Antonio, TX. February 3, 2022.
10. **Miller, A**; Wright, T; McCartney, K; Wright, H; Thompson, E; Pohlig, RT; Boyne, PE; Reisman, DS. Accuracy of Step Activity Monitoring Devices in the Real-world Setting in Chronic Stroke. American Physical Therapy Association Combined Sections Meeting (poster presentation), San Antonio, TX. February 4, 2022.
11. **Miller, A**; Collier, Z; Reisman DS. Examining the Relationships between Measures of Activity Behavior and Physical Health in Individuals with Chronic Stroke. American Society of Neurorehabilitation Meeting (poster presentation), St. Louis, Missouri. March 31, 2022.
12. **Miller, A**; McCartney, K; Reisman, DS. Methodological Considerations for the Measurement of Real-World Walking Activity in Individuals with Stroke. American Physical Therapy Association Research Retreat (poster presentation), Beverly, Massachusetts. July 12-13, 2022.
13. Kubalak, O; Mink, C; **Miller, A**; Reisman, DS; Fulk, G; Boyne, PE. Moderate-to-High Intensity Locomotor Training After Stroke: A Systematic Review and Meta-Analysis. American Physical Therapy Association Combined Sections Meeting (poster presentation), San Diego, CA. February 2023.
14. Boyne, PE; Billinger, SA; Reisman, DS; Awosika, OO; Buckley, S; Burson, J; Carl, D; DeLange, M; Doren, S; Earnest, M; Gerson, M; Henry, M; Horning, A; Khoury, J; Kissela, B; Laughlin, A; McCartney, K; McQuaid, T; **Miller, A**; Moores, A; Palmer, J; Sucharew, H; Thompson, E; Wagner, E; Ward, J; Wasik, E; Whitaker, A; Wright, H; Dunning, K. A Multicenter Randomized Comparison of High-Intensity Interval Training and Moderate-Intensity Exercise to Recover Walking Post-Stroke. American Physical Therapy Association Combined Sections Meeting (platform presentation), San Diego, CA. February 2023.
15. Thompson, E; McCartney, K; Collier, Z; **Miller, A**; Reisman, DS. Depressive Symptom Impact on the Relationship between Multiple Chronic Conditions and Participation in Chronic Stroke. American Physical Therapy Association Combined Sections Meeting (poster presentation), San Diego, CA. February 2023.
16. **Miller, A**. Harmonizing 10+ Years of Wearable Sensor Data: Lessons Learned. Reproducibility in Rehabilitation Conference (platform presentation), Los Angeles, CA. September 2023.
17. Bansal, K, Rose DK, **Miller, AE**, Holleran CE. Walking Performance in Daily Life: Taking Steps towards Successful Rehabilitation. American Physical Therapy Associated Combined Sections Meeting (educational session). Boston, MA, February 15, 2024.

18. **Miller, A;** Lohse KR; Bland MD; Konrad JD; Hoyt CR; Lang CE. Advancing the Field of Neurorehabilitation through Data Harmonization: Harmonizing 10+ Years of Upper and Lower Limb Accelerometry Data. American Society of Neurorehabilitation Meeting (poster presentation). San Antonio, TX, April 11, 2024

## INVITED PRESENTATIONS/ACTIVITIES

1. **Miller, A;** Denzer-Weiler, C; Younes, M. Implementation of a Comprehensive Interdisciplinary Behavior Management Program in an Inpatient Rehabilitation Facility to Enhance Patient Outcomes and Staff Safety. Arlington, VA. July 18, 2017.
2. Younes, M; **Miller, A.** Brain Injury Rehabilitation. Select Medical Divisional presentation. West Gables, Florida. June 2-3, 2017.
3. **Miller, A.** Seton Hall University CILEHS Symposium. Expert panel member. East Orange, NJ. April 12, 2016.
4. **Miller, A.** Cerebellar Dysfunction: A Patient Case. Neurologic Physical Therapy Professional Education Consortium (presented in webinar format). March 30, 2016.
5. **Miller, A.** Prognostic Indicators for Anoxic Brain Injury. Neurologic Physical Therapy Professional Education Consortium (presented in webinar format). February 24, 2016.
6. **Miller, A.** Spinal Cord Injury Case Presentation. Seton Hall University, East Orange, NJ. December 1, 2015.
7. **Miller, A.** Motor Learning Case Presentation. Rutgers University, Newark, NJ. November 18, 2015.
8. **Miller, A.** Brain Injury Case Presentation. Seton Hall University, East Orange, NJ. October 27, 2015.
9. **Miller, A.** Real-World Walking Activity in Individuals with Chronic Stroke. Washington University School of Medicine, St. Louis, Missouri. February 9, 2022.
10. **Miller, A.** Real-World Walking Activity in Individuals with Chronic Stroke. Virtual presentation for University of Southern California Neurorehabilitation Seminar Series. March 25, 2022.
11. Invited to facilitate a roundtable discussion for the professional development section of the American Society for Neurorehabilitation (ASNR) annual conference in Charleston, SC. March 2023.

## FUNDING

### Active

1. **Miller, AE (PI).** Lang CE, Lohse KR (Mentors). Foundation for Physical Therapy Research: Digital Physical Therapy grant mechanism. Title: Integrating Wearable Sensor Technology into the Rehabilitation Clinical Environment. 2024 – 2026 (\$40,000).
2. **Miller, AE (PI).** Lang CE, Lohse KR (Mentors). National Institutes of Health Loan Repayment Award. Title: Integrating Wearable Sensor Technology into the Rehabilitation Clinical Environment. 2024 – 2026.

### Completed

1. **Miller AE,** Lang CE, Lohse KR. Washington University Institute of Clinical and Translational Sciences, Just-in-Time Core Usage Funding, 2023-2024 (\$4,900).
2. **Miller, Allison (PI).** Reisman, DS (Mentor). Foundation for Physical Therapy Research Florence P. Kendall Scholarship, September 2018-August 2019 (\$5,000)
3. **Miller, Allison (PI).** Reisman, DS (Mentor). University of Delaware Summer Doctoral Fellowship Award, July 2019 (\$2,050)
4. **Miller, Allison (PI).** Reisman, DS (Mentor). Foundation for Physical Therapy Research Promotion of Doctoral Studies I Award, September 2020- August 2021 (\$7,500)
5. **Miller, Allison (PI).** Reisman, DS (Mentor). Foundation for Physical Therapy Research Promotion of Doctoral Studies II Award, 2021-2022 (\$15,000)
6. **Miller, Allison (PI).** Reisman, DS (Mentor). Unidel Distinguished Graduate Scholars Award, 2018-2022 (\$34,000 + tuition/year)

## TEACHING

Neurologic Examination and Treatment

Spring 2016

Rutgers University, Newark, NJ

Teaching Assistance: Responsible for leading groups of 5-6 students in the evaluation

and treatment of individuals with neurologic damage or disease.

- PHYT 804 Neurophysiologic Evaluation and Treatment Fall 2018  
University of Delaware, Newark, DE  
Teaching Assistant: Responsible for leading groups of 3-4 students in the evaluation and treatment of individuals with neurologic damage or disease.
- PHYT 804 Neurophysiologic Evaluation and Treatment Fall 2019  
University of Delaware, Newark, DE  
Teaching Assistant: Responsible for leading groups of 3-4 students in the evaluation and treatment of individuals with neurologic damage or disease.
- EPID 605 Epidemiology Methods I Fall 2020  
University of Delaware, Newark, NJ  
Teaching Assistant: Responsible for responding to student questions related to class materials and delivered lecture on randomized trials and intervention studies.

## PROFESSIONAL SERVICE

- Critical Appraisal Team Member for the Acute-Subacute Locomotor Clinical Practice Guideline sponsored by the Academy of Neurologic Physical Therapy. January 2021 – present.
- Academy of Neurologic Physical Therapy Evidence Based Document Committee. Member: December 2018 – July 2022; Co-Chair: August 2022 – January 2023.
- Academy of Neurologic Physical Therapy Locomotor Clinical Practice Guideline Knowledge Translation Task Force. June 2018 – May 2020.
- Guideline Development Group for the Clinical Practice Guideline: Specific Training Parameters for Walking Recovery in Adults with Chronic Stroke, Spinal Cord Injury, and Traumatic Brain Injury. Sponsored by the Academy of Neurologic Physical Therapy, American Physical Therapy Association. October 2015 – January 2020.
- Academy of Neurologic Physical Therapy Brain Injury Special Interest Group Secretary. July 2018 – March 2020
- Academy of Neurologic Physical Therapy Vestibular Special Interest Group volunteer. June 2017 – July 2018

## HONORS AND AWARDS

- *Stroke Special Interest Group Best Poster Award in Clinical Research*, American Physical Therapy Association Combined Sections Meeting, February 2021
- *University of Delaware Summer Doctoral Fellowship Award*, University of Delaware, July 2019
- *Unidel Distinguished Graduate Scholars Award*, University of Delaware, 2018-2023
- *Early Career Professional Award*, Academy of Neurologic Physical Therapy, 2018
- *Employee of the Month*, Kessler Institute for Rehabilitation, February 2018
- *Service Award*, Kessler Institute for Rehabilitation, April 2018
- *Service Award*, Kessler Institute for Rehabilitation, April 2017

## PROFESSIONAL LICENSURE

- Physical Therapist, Delaware, License number J1-0003925 2018 - present
- Physical Therapist, New Jersey, License number 40QA01533800 2013 - present

## PROFESSIONAL MEMBERSHIPS/CERTIFICATIONS

- American Society of Neurorehabilitation 2020 - present
- Neurologic Clinical Specialist: American Board of Physical Therapy Specialties 2017 - present
- American Physical Therapy Association: Research, Neurology, Leadership & Innovation Sections 2015 - present