

**Curriculum Vitae
Carey Lane Holleran MPT, DHS
Board Certified in Neurologic Physical Therapy**

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Address and Telephone Numbers:

Office

Program in Physical Therapy
Washington University School of Medicine
4444 Forest Park Avenue
St. Louis, Missouri 63108
Phone: 314-273-6026
Email: cholleran@wustl.edu

Present Position

Associate Professor of Physical Therapy and Neurology
Washington University Program in Physical Therapy, St. Louis, MO
Assistant Director of Student Assessment and Program Evaluation
Washington University Program in Physical Therapy, St. Louis, MO
Physical Therapist, Outpatient Neurologic Physical Therapy
Washington University Physical Therapy at TRISL, St. Louis, MO

Education

2003 Bachelor of Health Science (BS)
Duquesne University, Pittsburgh, PA
2004 Master of Physical Therapy (MPT)
Duquesne University, Pittsburgh, PA
2014 Doctor of Health Science (DHS), Neurology and Higher Education
University of Indianapolis, IN

Academic Positions / Employment

2013-2015	Lecturer Department of Physical Therapy and Department of Kinesiology and Nutrition University of Illinois in Chicago Chicago, IL
2015-2016	Contract Educator Physical Therapy and Human Movement Science Program Northwestern University Chicago, IL
2015-2016	Co-Director for Neurologic Physical Therapy Residency Northwestern University and Shirley Ryan Ability Lab Chicago, IL

University, School of Medicine and Hospital Appointments and Committees

2018-2019	Learning Science Committee Member, DPT Program
2019	Curriculum Renewal Architecture Team Lead, DPT Program
2019-present	Curriculum Design Team, DPT Program
2020	Learner Assessment for Program Leaders, Washington University School of Medicine

2020	Teaching Scholars Program, Washington University School of Medicine
2020-present	Physical Therapy Inclusion and Diversity, Program in Physical Therapy
2021	Academy of Educators, Washington University School of Medicine
2022	Methods in Education Scholarship Certificate Program

Professional Licensure and Certification

2011-present	Physical Therapist License # 2011011358 Missouri Board of Registration for the Healing Arts
2016	Certified Clinical Instructor American Physical Therapy Association
2007-present	Board Certified Specialist in Neurology American Board of Physical Therapy Specialties
2017	Re-Certified Board Certified Specialist in Neurology American Board of Physical Therapy Specialties

Clinical Title and Responsibilities

2004-2006	Physical Therapist University of Pittsburgh Medical Center, Pittsburgh, PA Inpatient Spinal Cord Injury Model Systems Program
2007-2016	Physical Therapist Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab), Chicago, IL Inpatient Spinal Cord Injury Model Systems Program
2009-2016	Clinical Research Coordinator and Research Physical Therapist Locomotor Recovery Laboratory, Sensory Motor Performance Program, Rehabilitation Institute of Chicago, Chicago, IL
2015-2016	Clinical Practice Leader for Neurologic Physical Therapy Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab), Chicago, IL
2017-2019	Physical Therapist The Rehabilitation Institute of St. Louis, St. Louis, MO Inpatient Float Therapist
2019-present	Physical Therapist Washington University Physical Therapy – @4240, St. Louis, MO Outpatient Neurologic Physical Therapist

Teaching Title and Responsibilities

2016-present	Laboratory Assistant and Practical Examiner Professional DPT courses: Essential Clinical Skills I; Diagnosis & Management of Neuromuscular Conditions I; Diagnosis & Management of Neuromuscular Conditions II; Professional Issues & Skills Development I; Professional Issues & Skills Development III
2016-present	Lecturer Professional DPT courses: Diagnosis & Management of Neuromuscular Conditions II; Professional Issues & Skills Development III; Case Integration III
2018-present	Guest Lecturer Undergraduate Department of Biology: Introduction to Health Professions
2017-present	Course Assistant Essential Clinical Skills I
2017-present	Mentor/Advisor Professional DPT courses: Case Integration I; Case Integration II; Case Integration III; Diagnosis, Evidence & Analysis III

2020 Course Assistant
Professional Issues & Skills Development I
2021-present Ethics and Humanities Thread Lead
Program in Physical Therapy, School of Medicine

Honors and Awards

2008-2009 Donnelly Family Disability Ethics Scholar
Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab)
2009 Magnuson Award Finalist
Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab)
2011 Henry Betts Award for Clinical Research Innovation
Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab)
2014 Brown Fellowship Research Award
Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab)
2015 Sarah Baskin Research Excellence Award for Clinician Researcher
Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab)
2015 Chattanooga Research Award for Best Clinical Research Article
Published in Physical Therapy
American Physical Therapy Association
2021 Academy of Educators
Washington University School of Medicine
2021 Excellence in Neurologic Education Award Nominee
Academy of Neurologic Physical Therapy
2022 Medical Education Research Unit Small Grant Awardee
Washington University School of Medicine

Editorial Responsibilities

2015-present Reviewer
Journal of Neurologic Physical Therapy
2018 Invited Review
Journal of Neurologic Physical Therapy
“A Core Set of Outcome Measures for Adults with Neurologic Conditions
Undergoing Rehabilitation - Clinical Practice Guideline”
2019 Invited Review
Consortium for Spinal Cord Medicine
“Clinical Practice Guideline for Mental Health Disorders, Substance Use
Disorders, and Suicide in Adults with Spinal Cord Injury”
2019-present Reviewer
Archives of Physical Medicine and Rehabilitation
2020-present Reviewer
Neurorehabilitation Neural Repair
2020-present Reviewer
The Journal of Spinal Cord Medicine

National Panels, Committees, Boards

2009-2014 Item Writer, Neurologic Certified Specialists Examination
American Board of Physical Therapy Specialties
2014 Standard Settings for Neurologic Certified Examination
National Board of Medical Examiners
Academy of Neurologic Physical Therapy
2017-2018 Critical Appraiser and Data Extractor

2018-2023	Locomotor Clinical Practice Guideline for Chronic Incomplete Spinal Cord Injury, Stroke, and Traumatic Brain Injury Co-Chair Knowledge Translation Task Force for the Locomotor Clinical Practical Guideline
2019-2023	Academy of Neurologic Physical Therapy National Campaign Co-Chair Academy of Neurologic Physical Therapy “Intensity Matters”

National, University, School of Medicine Service

Committees and activities

2017	Interprofessional Education Experiences, Center for Interprofessional Practice and Education, School of Medicine
2018-present	Camp Neuro Washington University School of Medicine
2018-present	Cross-Campus Educational Research Group (C2ERG)
2018-present	Co-Course Coordinator Biennial Clinical Instructor’s Meeting Washington University, Program in Physical Therapy, St. Louis, MO
2019	Poverty Simulation, Center for Interprofessional Practice and Education, School of Medicine
2020-present	Phase 1 Small Group Facilitator Center for Interprofessional Education and Education, School of Medicine
2021	BEST Student Summer Program, Washington University School of Medicine Multicultural high school student shadow program
2022-present	Mentorship Committee Washington University School of Medicine, Academy of Educators

Professional Societies and Organizations

2004-present	American Physical Therapy Association Member
2006-present	Academy of Neurologic Physical Therapy Section Member
2012-2013	Practice Excellence Committee Co-Chair Illinois Physical Therapy Association
2015-present	Academy of Neurologic Physical Therapy Section, Spinal Cord Injury Special Interest Group Member
2016-present	Academy of Physical Therapy Education Section Member
2019-present	Academy of Physical Therapy Research Section Member
2021-present	Consortium for the Humanities, Ethics, and Professionalism (CHEP) American Council of Academic Physical Therapy
2021-present	Alliance for Disability in Health Care Education Member

Invited Professorships and Lectureships

2011-2015	Invited Lectureship and Clinical Workshop Leader “Locomotor Training in patients with spinal cord injury: Using prognostic indicators to structure interventions” Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab), Chicago, IL
2014	Course Chair, Faculty, and Lectureship “Walk the walk: Locomotor Training for patients with spinal cord injury and stroke.” Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab), Chicago, IL

- 2015 Invited Lectureship
 “Community mobility after Motor Incomplete Spinal Cord Injury: Research Updates.”
 Rehabilitation Institute of Chicago (Shirley Ryan AbilityLab), Chicago, IL
- 2015 Invited Lectureship
 “Spinal Cord Injury Rehabilitation”
 Northwestern University Movement and Rehabilitation science Annual
 Clinical Bootcamp for PostDoctoral Fellows
 Feinberg School of Medicine, Chicago, IL
- 2015 CSM Poster Presentation
 Combined Sections Meeting for the APTA
 “Variable Intensive Walking after Stroke (VIEWS Trial)”
- 2016 CSM Neurology Platform Presentation
 Combined Sections Meeting for the APTA
 “Selection and pilot of a core assessment battery for inpatient rehabilitation”
- 2015 Educational Session Speaker
 Combined Sections Meeting for the APTA
 “Walking the Walk: Translating basic and applied findings of methods to improve locomotor recovery post-stroke to the clinical setting”
- 2016 Pre-Conference Educational Session Speaker
 Combined Sections Meeting for the APTA
 “Walking the Walk: Translating Research Evidence to Clinical Practice”
- 2016 CSM Poster Presentation
 “Community mobility method selection in individuals with chronic motor incomplete spinal cord injury: A qualitative analysis”
- 2018 CSM Neurology Platform Presentation
 “Effects of training intensity on locomotor performance in individuals with chronic spinal cord injury.”
- 2018 Workshop Facilitator
 Clinical Instructor’s Meeting
 Washington University, Program in Physical Therapy, St. Louis, MO
- 2018 Invited Lectureship
 “Evidence Informed Care; Translating the Best Evidence Now”
 Anderson Hospital, Maryville, IL
- 2019 Invited Lectureship
 “Learning Styles: Myth-Busted”
 Central Area Consortia Meeting
 Washington University, Program in Physical Therapy, St. Louis, MO
- 2019 Invited Faculty Commencement Address
 Class of 2019
 Washington University, Program in Physical Therapy, St. Louis, MO
- 2019 Invited Lectureship
 “Capacity versus Performance”
 Mary Free Bed Rehabilitation Hospital, Grand Rapids, IA
- 2020 Invited Lectureship
 “Capacity versus Performance: Clinical Implications”
 Institute for Knowledge Translation Residency Programming
- 2020 Invited Lectureship
 “Clinical Implications of Capacity Versus Performance”
 Annual Interdisciplinary Stroke Conference

- 2020 Mary Free Bed Rehabilitation Hospital, Grand Rapids, IA
Invited Lectureship
“Maximizing the Active Ingredients in Neurorehabilitation”
Annual Interdisciplinary Stroke Conference
- 2020 Mary Free Bed Rehabilitation Hospital, Grand Rapids, IA
Education Session Lead Speaker
“Active Ingredients across the Locomotor Training Clinical Practice
Guideline Action Statements”
- 2020 Combined Sections Meeting for the APTA, Academy of Neurologic PT
Invited Podcast Interviewee
“Application of the Clinical Practice Guideline to Spinal Cord Injury
Rehabilitation”
Spinal Cord Injury Special Interest Group, Academy of Neurologic
Physical Therapy
- 2020 Invited Podcast Interviewee
Stroke Special Interest Group, Academy of Neurologic Physical Therapy
- 2020 Education Session Speaker
“Transforming Societal Health through Competency-Based Physical
Therapy Education”
Education Leadership Conference, American Council for Physical
Therapy Education (ACAPT)
- 2021 Education Session Speaker
“Having Difficulty Removing Kid Gloves? Implementing High-Intensity
Training in Neurologic and Geriatric Rehabilitation”
Combined Sections Meeting for the APTA, Academy of Neurologic
Physical Therapy
- 2021 Education Session Speaker
“Re-evaluating Clinical Success: Differentiating Capacity Versus
Performance”
Combined Sections Meeting for the APTA, Academy of Neurologic
Physical Therapy
- 2021 CSM Poster Presentation
“Barriers to and Percentage of Vital Sign Assessment in an Outpatient
Neurologic Physical Therapy Setting”
Combined Sections Meeting for the APTA, Academy of Neurologic
Physical Therapy
- 2021 CSM Neurology Platform Presentation
“Stepwise Regression and Latent Profile Analyses of Locomotor
Outcomes Post-Stroke”
Combined Sections Meeting for the APTA, Academy of Neurologic
Physical Therapy
- 2021 Invited Lectureship
Physical Therapy Learning Institute
“Time-Variable Competency-Based Physical Therapy Education
Disruptive Innovation in Physical Therapist Education; Reimagining
Physical Therapist Education: A Virtual Summit
- 2021 Invited Lectureship
“Transforming the Health of Society through Competency-Based Physical
Therapist Education – Moving from Theory to Practice”
Education Leadership Conference
Atlanta, GA

- 2022 ASNR Poster Presentation
American Society of Neurorehabilitation
“Improving in capacity for activity vs. improvement in performance of activity in daily life during outpatient rehabilitation”.
- 2022 ASNR Annual Meeting, St. Louis, MO
CIRCLE Conference Poster Presentation
“Implementing an Assessment Framework that Supports the Development of Competence and the Master Adaptive Learner in DPT Education”
Integrating Psychology and STEM Education Research to Promote Innovative Teaching Conference, St. Louis MO
- 2022 Educational Session
“Transforming the Health of Society through Competency-Based Physical Therapist Education-Implementing and Adapting”
Milwaukee, WI
- 2022 Educational Session
“Shifting the Culture towards Competence and Lifelong Learning: Case Examples of Implementation”
Milwaukee, WI
- 2023 APTA Poster Presentation
“Comprehensive Assessment of the Activity Domain Using Both Capacity and Performance Measures: A Case Report”
San Diego, CA
- 2023 Educational Session
“Combining motor-learning principles with high-intensity gait training to enhance locomotor outcomes post-stroke: identifying the skill of walking training”
San Diego, CA
- 2023 Invited Lectureship
“Assessment to support the development of the Master Adaptive Learner”
ACAPT Clinical Reasoning Symposium
Phoenix, AZ
- 2023 Interdisciplinary Grand Rounds
BJC Memorial Hospital
“Intensive gait training in Neurologic Populations: Evidence and Safety Considerations”
Belleville, IL

Consulting Relationships and Board Memberships

- 2018-present Advisor
Guidepoint Consultants
New York, NY
- 2019-present Clinical Faculty
Institute for Knowledge Translation Neurologic Residency Training Program

Current Research Support

- 2016-present Clinical Research Coordinator
“Evaluating capacity versus performance during outpatient neurorehabilitation”
Grant #: 2 RO1 HD068290-05
10% effort

Trainee/Mentee/Sponsorship Record

2016-2022	Clinical Education Advisor & Team Member Advisement of one quarter of each class of DPT students (20-22/class), on-site evaluation of practicum sites, coordination of the all clinical education site visits
2018-present	National Clinical Mentor Academy of Neurologic Physical Therapy
2019-present	Clinical Mentor Washington University in St. Louis, Outpatient Therapy Services @4240
2019-present	Neurologic Residency Mentor (Ethics, Humanities, and Spinal Cord Injury) Institute for Knowledge Translation Residency Program

Publications

Original, peer reviewed articles in refereed journals

1. Hornby TG, Straube DD, Kinnaird CR, **Holleran CL**, Echaz T, Rodriguez K, Wagner E, Narducci E. Importance of specificity, amount, and intensity of locomotor training to improve ambulatory function in patients post-stroke. *Topics in Stroke Rehabilitation*. 2011 Jul-Aug;18(4):293-307.
2. Hornby TG, Kinnaird CR, **Holleran CL**, Rodriguez K, Rafferty M, Cain J. Kinematic, muscular, and metabolic responses during exoskeletal-, elliptical-, or therapist-assisted stepping in people with incomplete spinal cord injury. *Phys Ther*. 2012 Oct; 92(10):1278-1291.
3. ***Holleran CL**, Straube DD, Kinnaird CR, Leddy AL, Hornby TG. Feasibility and Potential Efficacy of High-Intensity Stepping Training in Variable Contexts in Subacute and Chronic Stroke. *Neurorehabilitation Neural Repair*. 2014 Sep;28(7):643-51.
4. *Leddy AL, Connolly M, **Holleran CL**, Hennessy PW, Woodward J, Arena RA, Roth EJ, Hornby TG. Alterations in aerobic exercise performance and gait economy following high-intensity dynamic stepping training in persons with subacute stroke. *J Neurol Phys Ther*. 2016 Oct; 40(4):239-48.
5. Brazg G, Fahey M, **Holleran CL**, Connolly M, Woodward J, Hennessy PW, Schmit BD, Hornby TG. Effects of Training Intensity on Locomotor Performance in Individuals with Chronic Incomplete Spinal Cord Injury. *Neurorehabil Neural Repair*. 2017 Oct-Nov; 31(10-11).
6. *Straube DD, **Holleran CL**, Kinnaird CR, Leddy AL, Hennessy PW, Hornby TG. Effects of dynamic stepping training on non-locomotor tasks in individuals post-stroke. *Phys Ther*. 2014 Jul;94(7):921-33.
7. *Hornby TG, **Holleran CL**, Leddy AL, Hennessy PW, Leech KA, Connolly M, Straube DD, Lovell L, Roth E. Feasibility of focused stepping practice during inpatient rehabilitation post-stroke and potential contributions to mobility outcomes. *Neurorehabilitation Neural Repair*. 2015 Nov-Dec; 29(10):923-32.
8. ***Holleran CL**, Rodriguez K, Echaz A, Leech K, Hornby TG. Potential contributions of training intensity on locomotor performance in individuals with chronic stroke. *J Neurol Phys Ther*. 2015 Apr; 39(2):95-102.

9. *Hornby TG, **Holleran CL**, Hennessy PW, Leddy AL, Connolly M, Camardo J, Woodward J, Mahtani G, Lovell L, Roth EJ. Variable Intensive Early Walking Poststroke (VIEWS): A Randomized Controlled Trial. *Neurorehabil Neural Repair*. 2016 Jun; 30(5): 440-50.
10. Mahtani GB, Kinnaird CR, Connolly MA, **Holleran CL**, Hennessy PW, Woodward J, Brazg G, Roth EJ, Hornby TG. Altered sagittal- and front-plane kinematics following high-intensity stepping training versus conventional interventions in subacute stroke. *Phys Ther*. 2016 Sep 15.
11. Leech KA, Kinnaird CR, **Holleran CL**, Kahn J, Hornby TG. Effects of locomotor exercise intensity on gait performance in individuals with incomplete spinal cord injury. *Phys Ther*. 2016 Dec;96(12)-1919-1929.
12. Brazg G, Fahey M, **Holleran CL**, Connolly M, Woodward J, Hennessy PW, Schmit BD, Hornby TG. Effects of Training Intensity on Locomotor Performance in Individuals with Chronic Spinal Cord Injury: A Randomized Crossover Study. *Neurorehabil Neural Repair*. 2017 Oct-Nov;31(10-11): 944-954.
13. ***Holleran CL**, Hennessy P, Leddy A, Mahtani G, Brazg G, Schmidt B, Hornby TG. High intensity variable stepping training in patients with motor incomplete spinal cord injury: a case series. *J Neurol Phys Ther*. 2018 Apr;42(2):94-101.
14. Woodward JL, Connolly M, Hennessy PW, **Holleran CL**, Mahtani GB, Brazg G, Fahey M, Maganti K, Hornby TG. Cardiopulmonary Responses During Clinical and Laboratory Gait Assessments in People with Chronic Stroke. *Phys Ther*. 2019 Jan 1: 99(1):86-97.
15. Hornby TG, Reisman DS, Ward IG, Scheets PL, Miller A, Haddad D, Fox EJ, Fritz NE, Hawkins K, Henderson CE, Hendron KL, **Holleran CL**, Lynskey JE, Walter A; and the Locomotor CPG Appraisal Team. Clinical Practice Guideline to Improve Locomotor Function Following Chronic Stroke, Incomplete Spinal Cord Injury, and Brain Injury. *J Neurol Phys Ther*. 2020 Jan;44(1):49-100.
16. ***Holleran CL**, Blang MD, Reisman DS, Ellis TD, Earhart GM, Lang CE. Day-to-day variability of walking performance measures in individuals post-stroke and individuals with Parkinson disease. *J Neurol Phys Ther*. 2020 Oct;44(4):241-247.
17. Hornby TG, Roth E, Lovell L, Henderson C, **Holleran CL**, Jang J. Stepwise regression and latent profile analysis of locomotor outcomes post-stroke. *Stroke*. 2020 Oct;51(10):3074-3082.
18. *Lang CE, Barth J, **Holleran CL**, Konrad JD, Bland MD. Implementation of Wearable Sensing Technology for Movement: Pushing Forward into the Routine Physical Rehabilitation Care Field. *Sensors (Basel)*. 2020 Oct 10;20(20):5744.
19. Lang CE, Waddell KJ, Barth J, Holleran CL, Strube MJ, Bland MD. Upper Limb Performance in Daily Life Approaches Plateau Around Three to Six Weeks Post-stroke. *Neurorehabil Neural Repair*. 2021 Oct;35(10):903-914.
20. ***Holleran CL**, Fogo J, Miller SA, Hornby TG. Community Mobility Method Selection in Individuals with iSCI: A Qualitative Analysis. *Journal of Humanities in Rehabilitation*. December 17, 2021.

21. Abraham, K., Green-Wilson, J., Hartley, G.W., Deusinger, S., Altenburger, P., Blackinton, M., Byl, N., Nordstrom, T. and Tschoepe, B. Master Adaptive Learning as a Framework for Physical Therapist Professional Education: A Call to Action. *Physical Therapy*. 2022. The authors acknowledge the following individuals who served as speakers during the Summit that provided the [foundation for this Point of View manuscript](#): **Holleran CL**.

22. *Lang CE, **Holleran CL**, Strube M, Ellis T, Newman C, Fahey M, DeAngelis T, Nordahl T, Reisman D, Earhart GE, Lohse K, Bland MD. Improvement in capacity for activity vs. improvement in performance of activity in daily life during outpatient rehabilitation. *J Neurol Phys Ther*. 2023 Jan 1;47(1):16-25.

23. ***Holleran CL**, Bland M, Lang CE. Comprehensive Assessment of the Activity Level of the ICF Using Both Capacity and Performance Measures: A Case Report. *Arch Rehabil Res Clin Transl*. Accepted.

24. *Ambler S, Burlis T, Clark R, Holtzman G, McGee P, Frost J, Randolph J, Norton B, **Holleran CL**. Development of Domains of Competence and Competencies for Physical Therapist Education: Societal and Interprofessional Considerations. Submitted.

Commentary

1. *Hornby TG, **Holleran CL**. Sleep Matters. *J Neurol Phys Ther*. 2014 Jul;38(3):170-1.

2. *Leech KA, **Holleran CL**. Commentary on: Practice Structure and Locomotor Learning After Stroke". *J Neurol Phys Ther*. 2019 Apr; 43(2):94-95.

Blog

1. **Holleran CL**. Don't be afraid to Sweat. Pulse Blog. American Physical Therapy Association. August 2019.

Media

1. **Holleran, CL**, Hornby TG. Academy of Neurologic Physical Therapy Spinal Cord Injury Special Interest Group Podcast. Locomotor Training Clinical Practice Guideline. Episode 4. March, 2020.

2. **Holleran CL**, Bretz M. Academy of Neurologic Physical Therapy Stroke Special Interest Group Podcast. Locomotor Training Clinical Practice Guideline. Episode 11. November, 2020.

3. **Holleran CL**, Goodwin L, Banhos M, Bretz M, Gallo E, Szot L, Gorecki R, Robinson J Clinical Tools for Implementation of Recommended Action Statements from ANPT Knowledge Translation Task force for Locomotor Training Clinical Practice Guideline.

- a. [Clinical Practice Guideline Resources](#)
- b. [Clinician Resources](#)
- c. [Physician Resources](#)
- d. [Patient Resources](#)
- e. [You tube Channel for Clinician Education](#)

4. **Holleran CL**, Goodwin L, Banhos M, Bretz M, Gallo E, Szot L, Gorecki R, Robinson J. Intensity Matters National Campaign. Academy of Neurologic Physical Therapy, 2018-2022. https://www.neuropt.org/practice-resources/best-practice-initiatives-and-resources/intensity_matters