# Kristan A. Leech

Curriculum Vitae
Kleech@pt.usc.edu • 323-442-1583

## CURRENT POSITION

Assistant Professor, Division of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, CA

## EDUCATION

2015 – 2019 Postdoctoral Fellowship, Neuroscience, Johns Hopkins University, Baltimore, MD
2010 – 2015 Doctor of Philosophy, Neuroscience, Northwestern University, Chicago, IL
2007 – 2010 Doctor of Physical Therapy, University of Illinois at Chicago, Chicago, IL
2003 – 2007 Bachelors of Science, Physiology (Chemistry), University of Arizona, Tucson, AZ

## PUBLICATIONS

McHugh LV, Miller AA, **Leech KA**, Martin RH. Feasibility and potential efficacy of TSCS on lower extremity recovery and walking function in patients with iSCI. Under Review.

Rossi C, Chau CW, **Leech KA**, Statton MA, Bastian AJ. The capacity to learn new motor and perceptual calibrations develops concurrently in childhood. Sci Rep. 2019 June 27. PubMed PMID: 31249379

Roemmich RT, **Leech KA,** Gonzalez AJ, and Bastian AJ. Trading symmetry for energy cost during walking. Neurorehabil Neural Repair. 2019 June 18. PubMed PMID: 31208276

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

**Leech KA,** Day KA, Roemmich RT, and Bastian AJ. Movement and perception recalibrate differently across multiple days of locomotor learning. J Neurophysiol. 2018 Sep 5.

**Leech KA** and Roemmich RT. Independent voluntary correction and savings in locomotor learning. J Exp Biol. 2018 Jun 14.

Day KA, **Leech KA**, Roemmich RT, and Bastian AJ. Accelerating locomotor savings in learning: compressing four training days to one. J Neurophysiol. 2018 Mar 14.

**Leech KA**, Roemmich RT, and Bastian AJ. Creating flexible motor memories in human walking. Sci Rep. 2018 Jan 8.

**Leech KA***, Kim HE*, and Hornby TG. Strategies to augment volitional and reflex function may improve locomotor capacity following incomplete spinal cord injury. J Neurophysiol. 2017 Nov 1. *these authors contributed equally to this work

**Leech KA** and Hornby TG. High-intensity locomotor exercise augments serum brain-derived neurotrophic factor in individuals with incomplete spinal cord injury. J Neurotrauma. 2016 Aug 15.

**Leech KA,** Holleran CL, Kahn J, Kinnaird CR, Hornby TG. Effects of locomotor exercise intensity on gait performance in individuals with incomplete spinal cord injury. Phys Ther. 2016 Jun 16

Holleran CL, Rodriguez KS, Echauz A**, Leech KA**, 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.

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 poststroke and potential contributions to mobility outcomes. Neurorehabil Neural Repair. 2015 Feb 26.

**Leech KA**, Kinnaird CR, and Hornby TG. Effects of serotonergic medications on locomotor performance in humans with incomplete spinal cord injury. J Neurotrauma. 2014 Apr 17.

Straube D, **Leech K**, Moore J, Hornby TG. Item analysis of the Berg Balance Scale in individuals with subacute and chronic stroke. Top Stroke Rehabil. 2013 May-Jun;20(3):241-9.

Saraf P, Rafferty MR, Kahn JH, Moore JL, Hendron K, **Leech K**, Hornby TG. Daily stepping in individuals with incomplete spinal cord injury. *Phys Ther*. Feb 2010.

## PRESENTATIONS

*Invited Presentations*

**Leech KA** and Bastian AJ. Creating flexible motor memories during human walking. Rehabilitation Science Research Seminar. University of Maryland. Sept 2018. Baltimore, MD.

**Leech KA** and Bastian AJ. Creating flexible motor memories during human walking. Neurorehabilitation Seminar. University of Southern California. March 2018. Los Angeles, CA.

**Leech KA** Recovery of walking after SCI. Resident Physician Didactic Module: Spine, Department of Physical Medicine and Rehabilitation, Johns Hopkins University, October 2016. Baltimore, MD.

**Leech KA** and Hornby TG. Need for Speed?: Physiological rationale for higher intensity exercise in motor incomplete SCI. American Spinal Injury Association 2016 Annual Meeting. April 2016. Philadelphia, PA.

**Leech KA.** Functional Training Panelist in "Progress in Research from the SCI Model Systems (SCIMS): An Interactive Discussion on Future Directions" American Spinal Injury Association 2016 Annual Scientific Meeting, Pre-Conference meeting. April 2016. Philadelphia, PA.

**Leech KA.** Blood, Spit, and Tears: evaluating the behavioral and molecular effects of high intensity exercise in people with incomplete spinal cord injury. International Center for Spinal Cord Injury Clinical Seminar, Kennedy Krieger Institute. November 2015. Baltimore, MD.

**Leech KA** and Hornby TG. Increasing biomarkers of neuroplasticity with high-intensity exercise in individuals with incomplete SCI. Annual interdisciplinary Spinal Cord Injury Course, Rehabilitation Institute of Chicago Academy. June 2015. Chicago, IL.

**Leech KA** and Hornby TG. High-intensity locomotor exercise augments serum BDNF expression in individuals with incomplete spinal cord injury. NUIN Small Talks, Northwestern University, January 2015, Chicago, IL.

*Oral Presentations*

**Leech KA** and Cherry-Allen K. Mechanisms of Motor Learning and Translation into Clinical Practice. APTA of Maryland Mini Combined Sections Meeting. March 2017. Westminster, MD.

**Leech KA** Roemmich RT, and Bastian AJ. Creating flexible motor memories during human walking. Annual meeting for the American Society for Neurorehabilitation. November 2016. San Diego, CA.

**Leech KA,** Kinnaird CR, Holleran CL, Kahn J, Hornby TG. Immediate and sustained effects of high-intensity locomotor practice on gait performance in individuals with incomplete spinal cord injury. Neuroscience 2014, Society for Neuroscience, November 2014, Washington DC.

**Leech KA** and Horny TG. Augmentation of serum brain-derived neurotrophic factor with high-intensity locomotor exercise in humans with incomplete SCI. Movement and Rehabilitation Science 2014 Training Day, Northwestern University, August 2014, Chicago IL.

**Leech KA** and Hornby TG. Blood, Spit, and Tears: the search for biomarkers of neuroplasticity. NUIN Annual Retreat, Northwestern University, September 2013, St. Charles, IL.

**Leech, KA** and Hornby TG. Behavioral and molecular responses to high-intensity exercise in humans with incomplete spinal cord injury. Chicago Biomedical Consortium Scholars Exchange. April 2013, Chicago, IL.

**Leech KA** and Hornby TG. Blood, Spit, and Tears: the search for biomarkers of neuroplasticity. Neurohike 2012, University of Calgary, September 2012, Calgary, AB, Canada.

## HONORS AND AWARDS

| | |
|---|---|
| 2014 | NUIN Student Travel Award |
| 2014 | GCMAS Best Poster Award |
| 2014 | GCMAS Student Travel Award |
| 2012 – 2014 | Chicago Biomedical Consortium Scholar |
| 2012 | Barnes-Leahy Award, Foundation for Physical Therapy |

2010 College of Applied Health Sciences Achievement Award, University of Illinois at Chicago
2009 Donna K Roach Award, University of Illinois at Chicago

## TEACHING EXPERIENCE

2011 – 2014 **Guest Lecturer and Teaching Assistant**¸ NUPT 513-2 – Neuroscience II (80 students)
Lecture: Supraspinal mechanisms of locomotion (2011 – 2014), Assistantship (2011)
Northwestern University: Dept. of Physical Therapy & Human Movement Sciences

2013 **Continuing Education Faculty**, Practical Stroke Rehabilitation: Staying on the cutting edge
Rehabilitation Institute of Chicago; Chicago, IL

2012, 2013 **Teaching Assistant**, NUIN 440 – Advanced Neuroanatomy (25 students).
Northwestern University: Interdepartmental Neuroscience Program; Chicago, IL

2011, 2013 **Laboratory Assistant**, Medical Neuroanatomy (100+ students)
Northwestern University: Feinberg School of Medicine; Chicago, IL

2009 – 2011 **Guest Lecturer**, Physical Therapy 605: Plasticity of Tissues and Organ Systems (52 students); Lecture: Exercise Physiology
University of Illinois at Chicago: Department of Physical Therapy; Chicago, IL

2007 – 2015 **Physical Therapy Peer Student Tutor**
Northwestern University: Department of Physical Therapy; Chicago IL (2011-2015)
University of Illinois at Chicago: Department of Physical Therapy; Chicago, IL (2007-2010)

## CLINICAL EXPERIENCE

2015 – 2019 **Registry Physical Therapist**, General inpatient rehabilitation
Johns Hopkins Medical Institute

2010 – 2015 **Registry Physical Therapist,** Spinal cord injury and stroke rehabilitation
Rehabilitation Institute of Chicago

## PROFESSIONAL SERVICE

2017 – present **Ad hoc manuscript reviewer**
Journal of Neurologic Physical Therapy
Physical Therapy
PLOS One
Journal of Neurophysiology

2017 – 2019 **Neurologic Physical Therapy Residency**; *Faculty*
Johns Hopkins Medical Institute and University of Delaware; Baltimore, MD

2014 – 2015 **Illinois Physical Therapy Association**; *Eastern District and Research Representative*

2012 – 2015 **Physical Therapy Practice Council**; *Research Representative*
Rehabilitation Institute of Chicago; Chicago, IL

2008 – 2011 **Chicago Breast Cancer Three Day Walk**; *Sports Medicine Crew Captain/Physical Therapist*
Susan G. Komen; Chicago, IL

## PROFESSIONAL LICENSES

Physical Therapist, State of California, Physical Therapy Board of California (Active License: 296626)
Physical Therapist, State of Maryland, Maryland Dept. of Health and Mental Hygiene (Active License: 25570)
Physical Therapist, State of Illinois, IDFPR, Division of Professional Regulation (Inactive License: 070017896)

## PROFESSIONAL MEMBERSHIPS

2016 – present American Society of Neurorehabilitation
2012 – present Society for Neuroscience
2007 – present American Physical Therapy Association, Neurology and Research Sections

**FUNDING**

**Awarded:**

2019 – present NIH K12 Rehabilitation Research Career Development Program
PI: Ottenbacher, Kenneth
Source: Eunice Kennedy Shriver National Institute of Child and Human Development
Amount: 75% Salary support

**Ongoing:**

2018 – 2020 NIH Loan Repayment Program, Clinical Research, Initial Contract
PI: Leech, Kristan
Source: Eunice Kennedy Shriver National Institute of Child and Human Development
Amount: 50% student loan amount

**Previous:**

2015 – 2018 NIH T32 Research Training in Rehabilitation for Brain Injury & Neurological Disability
PI: Bastian, Amy
Source: Eunice Kennedy Shriver National Institute of Child and Human Development
Amount: 100% Salary support

2014 – 2015 Promotion of Doctoral Studies Scholarship II
PI: Leech, Kristan
Source: Foundation for Physical Therapy
Amount: $15,000

2013 – 2015 NIH F31 Ruth L. Kirschstein NRSA Individual Pre-doctoral Research Fellowship
PI: Leech, Kristan
Source: National Institute of Neurological Disorders and Stroke
Amount: stipend support

2013 – 2014 Promotion of Doctoral Studies Scholarship II
PI: Leech, Kristan
Source: Foundation for Physical Therapy
Amount: $15,000

2012 – 2013 NIH T32 Neurobiology of Movement and Rehabilitation Sciences
PI: Dewald, Jules
Source: Eunice Kennedy Shriver National Institute of Child and Human Development
Amount: stipend support

2012 – 2013 Promotion of Doctoral Studies Scholarship I, Foundation for Physical Therapy
PI: Leech, Kristan
Source: Foundation for Physical Therapy
Amount: $7,500

2010 – 2011 Florence P Kendall Doctoral Scholarship, Foundation for Physical Therapy
PI: Leech, Kristan
Source: Foundation for Physical Therapy
Amount: $5,000