

Mark G. Bowden, PhD, PT
Curriculum Vitae

Mailing address:

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EDUCATION:

2013-2014: Fellow, Education Leadership Institute, American Physical Therapy Association
2004-2009: PhD, Rehabilitation Science Doctoral Program, University of Florida
Emphasis: Movement Science
1993 to 1995: MS, Duke University, Durham, North Carolina.
Major: Physical Therapy
1987 to 1991: BS, Duke University, Durham, North Carolina.
Major: Psychology

EMPLOYMENT:

1991 – 1993 Research Assistant, Rehabilitation Medicine Service, Department of Veterans Affairs Medical Center, Durham, NC.
1995 – 1998 Physical Therapist, Charlotte Institute of Rehabilitation, Charlotte, NC.
1998 – 2002 Therapy Manager, Spinal Cord Injury Program, Methodist Rehabilitation Center, Jackson, MS.
1999 – 2002 Spinal Cord Injury Research Coordinator, Center for Neuroscience and Neurologic Recovery, Methodist Rehabilitation Center, Jackson, MS.
2002 – 2009 Courtesy Visiting Associate in Physical Therapy. University of Florida Department of Physical Therapy, College of Public Health and Health Professions.
2002 – 2010 Research Physical Therapist/Research Health Scientist, Brain Rehabilitation Research Center, Malcom Randall VA Medical Center, Gainesville, FL.
2009 – 2010 Research Assistant Professor, Department of Physical Therapy, University of Florida, Gainesville, FL.
2007 – 2018 Adjunct Associate Professor in Physical Therapy. Shenandoah University, Winchester, VA.
2008 – Present Adjunct Faculty, Brooks Neurologic Residency program, Jacksonville, FL.
2010 – Present Research Health Scientist, Ralph H. Johnson VA Medical Center, Charleston, SC.
2010 – 2016 Assistant Professor, Department of Health Science and Research and Division of Physical Therapy, Medical University of South Carolina, Charleston, SC.
2012 – 2016 Director, Neurologic Residency Program, Division of Physical Therapy, Medical University of South Carolina, Charleston, SC.
2016 – Present Associate Professor, Department of Health Science and Research and Division of Physical Therapy, Medical University of South Carolina, Charleston, SC.
2017 – Present Director, Division of Physical Therapy, College of Health Professions, Medical University of South Carolina, Charleston, SC.
2018-Present Visiting Professor, Third Affiliate Hospital of Sun Yat-sen University, Guangzhou, China.

HONORS:

1994 Faculty Recognition Award, Duke University Graduate Program in Physical Therapy, for outstanding achievement in academic and clinical education, leadership and service

- 1997 Administrator's Award for Leadership, Charlotte Institute of Rehabilitation
- 2002 Spring Employee of the Quarter, Methodist Rehabilitation Center
- 2004 Poster Award, University of Florida College of Public Health and Health Professions Research Day
- 2006 Poster Award, University of Florida College of Public Health and Health Professions 2nd Annual Neuromuscular Plasticity Symposium
- 2008 Post-Professional Student Award, American Physical Therapy Association, Neurology Section, presented at the Feb 2008 Combined Sections Meeting, Nashville, TN
- 2009 Dean's Scholar Award, University of Florida College of Public Health and Health Professions
- 2013 Eugene Michels New Investigator Award, American Physical Therapy Association
- 2014 Elite Reviewer Award, *Archives of Physical Medicine and Rehabilitation*
- 2014 Nominee, MUSC Health Sciences Foundation's Developing Teacher Award
- 2015 Developing Scholar of the Year, MUSC College of Health Professions
- 2018 Nominee, MUSC Educator-Mentor Teaching Excellence Award

LICENSURE:

Physical Therapist, South Carolina License #6572

RESEARCH FUNDING:

Current Projects:

Incline Training to Personalize Motor Control Interventions after Stroke

Agency: Veterans Administration RR&D N2665-R

Date: 07/01/2018-6/30/2022

Direct Costs: \$1,085,500

Role: PI (5/8ths of VA FTE)

This proposal tests a framework created to identify the most effective intervention based on a participant's specific motor control problems and determine the effect on self-selected walking. We will determine the best intervention for each motor control problem and identify predictors of response. Selecting the correct intervention for personalized motor control problems, as opposed to applying a one-size-fits-all strategy for rehabilitation, is likely to improve walking function in Veterans after stroke.

South Carolina Research Center for Recovery from Stroke (SCRCRS)

Agency: NIH 5 P20 GM109040-02

Date: 04/01/2019-03/31/2024

Direct Costs: \$1,500,000 annually

Role: Co-Director of the Pilot Project Program (7.5% effort)

The overall objective of this project is to establish a sustainable thematic multidisciplinary translational research center focused on investigating ways to understand the mechanisms of recovery from stroke in order to individualize effective therapies and improve outcomes.

National Center of Neuromodulation for Rehabilitation (NC NM4R)

Agency: NIH/NICHHD P2C HD086844 (PI: Steve Kautz)

Date: 09/01/15-06/30/20

Direct Costs: \$703,415

Role: Navigator – Collaborative Opportunities (1% effort)

This center is 1 of 6 sites nationwide in the National Center for Medical Rehabilitation Research (NCMRR) Rehabilitation Research Infrastructure Network. It provides training, collaborations and pilot funding for investigators interested in research in non-invasive brain stimulation and operant conditioning of brain and spinal networks integrated with rehabilitation principles.

Tech Development Project, NC NM4R: Optimization of TMS assessment after stroke

Agency: NIH/NICHD P2C HD086844 (Parent Project, PI: Steve Kautz)

Date: 8/1/2019 – 6/30/2020

Direct Costs: \$29,150

Role: PI

The goal of this project is to determine if assessing lower extremity TMS measures while standing provides greater insights into the neurophysiological mechanisms of altered gait performance post-stroke.

Completed Projects

Excitatory and Inhibitory rTMS as Mechanistic Contributors to Walking Recovery

Agency: NIH 1P20GM109040-01

Date: 6/2/2014-3/31/2019

Direct Costs: \$652,185

Role: PI of sub-project

(Project in *NIH P20 GM109040*, “South Carolina Research Center for Recovery from Stroke”

(PI: Steve Kautz)

\$10,823,405 (total costs)

The purpose of this proposal was to address systematically the gaps in the understanding of rTMS for the lower extremity. This project involved multidisciplinary research linking rTMS with state-of-the-art neurophysiological assessment, neuromuscular/motor control assessment, and assessment of the neuromechanical contributors to impaired walking.

Mechanism-based Strategies to Restore Post-Stroke Gait Stability through Targeted Motor Adaptation

Agency: NIH/NCMRR R21 HD088869 (PI: Jesse Dean)

Date: 03/08/17-02/28/19

Direct Costs: \$130,419

Role: Co-Investigator

The goal of this study was to determine whether promoting motor adaptation through either an optimal challenge point framework or an error-driven adaptation framework had the potential to improve post-stroke gait stability.

Augmentation of Locomotor Adaptation Post-Stroke

Agency: Department of Veterans Affairs Rehabilitation Research & Development

Date: 04/01/2013 to 03/31/2018

Type: Career Development Award-2 RR&D N0787-W

Direct Costs: \$923,700

Role: PI

The purpose of this project was to establish the optimal configuration of electrodes to excite neural circuits involved in post-stroke locomotion, identify effective strategies for training a specific locomotor adaptation, and improve adaptations via adjunctive non-invasive brain stimulation.

S.C.O.P.E. Systematic Collection of Objective, Progressive Exercise

Agency: HealthSouth Corporation

Date: 11/1/16-10/31/17

Direct Costs: \$8728

Role: PI

The purpose of this study was to determine the efficacy of an intensity-based, standardized approach to inpatient physical therapy rehabilitation as compared to usual care. We investigated the effects of the intensity-based program on functional outcomes at discharge from inpatient rehabilitation and on

participation, quality of life, falls efficacy, falls frequency, stroke-related secondary health conditions, and re-admissions at 90 days after stroke.

Propulsive Training in Incomplete Spinal Cord Injury

Agency: South Carolina Spinal Cord Injury Research Fund

Date: 12/1/2010 to 11/30/2013

Type: SCIRF 10-003

Direct Costs: \$125,000

Role: PI

The overall purposes of this proposal were to 1) assist in the development of an infrastructure necessary to adequately assess walking performance and underlying impairments of those with iSCI; and 2) provide a platform by which laboratory findings may be translated to clinical research interventions.

Do spinal and cortical tDCS suggest distinct and synergistic neuromechanical mechanisms for post-stroke walking recovery?

Agency: American Heart Association

Date: 01/01/2012 to 12/31/2013

Type: Innovative Research Grant (PI: Steve Kautz)

Total Costs: \$150,000

Role: Co-I

The purpose of this project was to examine whether single sessions of a task-specific physical intervention strategy combined with tDCS could improve rehabilitation outcomes by facilitating increased and more appropriate motor output of the paretic leg motoneuron pools when stimulating the cortex and/or the lumbosacral spinal cord.

Development of a Passive Exoskeleton for Gait Rehabilitation

Agency: NICHD

Date: 4/15/2011 to 3/31/2013

Type: 1R21HD064964-01A1 (PI: J. Dean)

Direct Costs: \$246,178

Role: Co-I

The overall aim of this project was to optimize the design of a passive elastic exoskeleton, and determine if healthy human subjects were able to adapt their walking patterns to incorporate the resultant mechanical assistance.

tDCS For Walking Recovery after Stroke: Comparison of Cortical and Spinal Stimulation

Agency: South Carolina Clinical and Translational Research Institute

Date: 12/01/2011 to 11/30/2012

Type: Discovery Pilot Grant (PI: Steve Kautz)

Total Costs: \$50,000

Role: Co-I

The purpose of this project was to examine whether five sessions of combination of a task-specific locomotor rehabilitation combined with tDCS over the brain and spinal cord can improve outcomes by facilitating increased and more appropriate motor output of the paretic leg motoneuron pools compared to stimulating the cortex alone.

ZeroG: Dynamic Over-Ground Body-Weight Support System

Agency: NIH/NICHD

Date: 04/05/2011 to 3/31/2013

Type: SBIR 2R44HD061131-02A1 (PI: J. Hidler, PhD)

Total Costs: \$407,491

Role: Co-I

The purpose of this project was to develop and test an adaptive controller which monitors a subject's walking performance in real-time and the automatically adjusts the level of body weight support and walking speed in order to optimize this walking metric.

Evaluation of Walking Specific Motor Learning in Chronic Stroke

Agency: Department of Veterans Affairs Rehabilitation Research & Development

Dates: 02/01/2010 to 01/31/2012

Type: Career Development Award-1 RR&D B7177M

Direct Costs: \$209,044

Role: PI (8/8ths VA effort)

The purposes of this grant were to 1) identify variables to distinguish changes in behavior that imply motor learning associated with a locomotor rehabilitation program; and 2) develop a portable biomechanical assessment system to be used outside of a traditional biomechanics laboratory.

Rehabilitation Research Career Development Program

Agency: NIH/NICHD

Date: 11/20/2009 – 06/30/2010

Type: K12 HD055929 (PI: K Ottenbacher)

Direct Costs: \$9,100 of salary support

Role: Phase II Scholar

The overall objective of this proposal was to mentor physical and occupational therapists to become independent investigators committed to a career in translational rehabilitation research.

Rehabilitation Research Career Development Program

Agency: NIH/NICHD

Date: 07/01/2010 – 6/30/2012

Type: K12 HD055929 (PI: K Ottenbacher)

Direct Costs: NA

Role: Phase II Scholar (No salary support)

The overall objective of this proposal was to mentor physical and occupational therapists to become independent investigators committed to a career in translational rehabilitation research.

Task-specific Propulsion Training after Neurological Injury

Agency: NICHHD/NINDS (funded through the Capitol Area Rehabilitation Research Network)

Date: 9/1/2010 to 8/31/2011

Type: R24 HD050845 (PI: B. Bregman)

Direct Costs: \$25,000

Role: PI on Subcontract

The purpose of this faculty development grant was to: 1) quantify the immediate effects of applying a translational force to the CoM anteriorly while subjects walk on a treadmill and 2) test if there is an adaptation effect of short bouts of training after the perturbation stimulus is removed.

PEER REVIEWED PUBLICATION:

1. Middleton A, Simpson KN, Bettger JP, Bowden MG. Pandemics and Beyond: Considerations and Costs of Telehealth Exercise Programs for Older Adults With Functional Impairments Living at Home--Lessons Learned from a Pilot Case Study. *Phys Ther.* IN PRESS
2. Bowden MG, Monsch ED, Middleton JA, Daughtry C, Powell T, Kraft SV. Lessons Learned: The Difficulties of Incorporating Intensity Principles into Inpatient Stroke Rehabilitation. *Archives of Rehabilitation Research and Clinical Translation.* IN PRESS.

3. Dean JC, Bowden MG, Kelly AL, Kautz SA. Altered post-stroke propulsion is related to paretic swing phase kinematics. *Clin Biomech.* 2019 Nov 29;72:24-30. doi:10.1016/j.clinbiomech.2019.11.024
4. Vistamehr A, Kautz SA, Bowden MG, Neptune RR. The influence of locomotor training on dynamic balance during steady-state walking post-stroke. *J Biomechanics.* 2019 Apr 6. pii: S0021-9290(19)30248-9. doi: 10.1016/j.jbiomech.2019.04.002.
5. Kindred JH, Kautz SA, Wonsetler EC, Bowden MG. Single Sessions of High-Definition Transcranial Direct Current Stimulation do not Alter Lower Extremity Biomechanical or Corticomotor Response Variables Post-Stroke. *Front. Neurosci.*, 11 April 2019 | doi.org/10.3389/fnins.2019.00286
6. Charalambous CC, Liang JN, Kautz SA, George MS, Bowden MG. Bilateral assessment of the corticospinal pathways of the ankle muscles using frameless stereotaxic transcranial magnetic stimulation. *JoVE.* 2019 Feb 19;(144). doi: 10.3791/58944.
7. Seif GA, Kraft SV, Bowden MG, Boissonnault JS. Intra-rater Reliability of the ECHOWS Tool for Real-time Assessment of Physical Therapy Student Interviewing Skills: A Pilot Study. *Health Professions Education.* <https://doi.org/10.1016/j.hpe.2018.05.001>.
8. Roelker S, Bowden MG, Neptune RR, Kautz SA. Paretic propulsion as a measure of walking performance and functional motor recovery post-stroke: a review. *Gait and Posture.* 2018 Oct 25;68:6-14. doi: 10.1016/j.gaitpost.2018.10.027. [Epub ahead of print].
9. Brough LG, Kautz SA, Bowden MG, Gregory CM, Neptune RR. Merged Plantarflexor Muscle Activity is Predictive of Poor Walking Performance in Post-Stroke Hemiparetic Subjects. *J Biomech.* 2019 Jan 3;82:361-367. doi: 10.1016/j.jbiomech.2018.11.011. Epub 2018 Nov 15. PMID: 30528553.
10. Charalambous CC, Dean JC, Atkins DL, Hanlon CA, Bowden MG. Characterizing the Corticomotor Connectivity of the Bilateral Ankle Muscles during Rest and Isometric Contraction in Healthy Adults. *J Electromyography and Kinesiology.* 2018 Apr 24;41:9-18.
11. Wonsetler EC, Miller EL, Huey KL, Frye SE, and Bowden MG. The association between altered hip extension and kinetic gait variables: A brief report. *Am J Phys Med Rehabil.* 2018 Feb;97(2):131-133.
12. Wonsetler BC and Bowden MG. A systematic review of mechanisms of gait speed change post-stroke. Part 1: Spatiotemporal parameters and asymmetry ratios. *Top Stroke Rehabil.* 2017 Sep;24(6):435-446.
13. Wonsetler BC and Bowden MG. A systematic review of mechanisms of gait speed change post-stroke. Part 2: Exercise capacity, muscle activation, kinetics, and kinematics. *Top Stroke Rehabil.* 2017 Jul;24(5):394-403.
14. Aaron SE, Hunnicutt JL, Embry AE, Bowden MG, and Gregory CM. Power Training for Chronic Stroke Individuals: Differences between Responders and Non-responders. *Topics in Stroke Rehabilitation.* 2017 May 8:1-7.
15. Aaron SE, Hong I, Bowden MG, Gregory CM, Embry AE, and Velozo CA. Use of the Rasch Measurement Model to Investigate Measurement Properties for the Dynamic Gait Index in Chronic Stroke. *Edorium Journal of Disability and Rehabilitation.* 2016; 2:105–114.
16. Balasubramanian CK, Chih-Ying L, Bowden MG, Duncan PW, Kautz SA, Velozo CA. Dimensionality and item-difficulty hierarchy of the lower-extremity Fugl-Meyer assessment in individuals with sub-acute and chronic stroke. *Arch Phys Med Rehabil.* 2016 Apr;97(4):582-589.e2. doi: 10.1016/j.apmr.2015.12.012.
17. Vistamehr A, Kautz SA, Bowden MG, Neptune RR. Correlations between Measures of Dynamic Balance in Individuals with Post-Stroke Hemiparesis. *J Biomech.* 2016 Feb 8;49(3):396-400. doi: 10.1016/j.jbiomech.2015.12.047.
18. Charalambous, C. C., Bowden, M. G., & Adkins, D. L. (2015). Motor Cortex and Motor Cortical Interhemispheric Communication in Walking After Stroke: The Roles of Transcranial Magnetic Stimulation and Animal Models in Our Current and Future Understanding. *Neurorehabilitation and Neural Repair.* 2016 Jan;30(1):94-102. doi: 10.1177/1545968315581418.

19. Hunnicutt J, Aaron S, Embry AE, Cence B, Morgan P, Bowden MG, and Gregory CM. The Effects of POWER Training in Young and Older Adults Poststroke. *Stroke Research and Treatment*. 2016;2016:7316250. doi: 10.1155/2016/7316250.
20. DiPiro ND, Holthaus KD, Morgan PJ, Embry AE, Perry LA, Bowden MG, Gregory CM. Lower extremity strength is correlated with walking function after incomplete SCI. *Topics in SCI Rehabilitation*. 2015;21(2):133–139. doi: 10.1310/sci2102-133
21. Gregory CM, Embry A, Perry LA, Bowden MG. Quantifying human movement across the continuum of care: from lab to clinic to community. *J Neuroscience Methods*. 2014;231:18-21.
22. Dobkin B, Nadeau S, Behrman AL, Wu S, Rose D, Bowden MG, Studenski S, Lu X, Duncan PW. Baseline prediction of responders for interventions of the Locomotor Experience Applied Post Stroke trial. *JRRD*. 2014;51(1):39-50.
23. Charalambous CC, Bonilha HS, Kautz SA, Gregory CM, and Bowden MG. Rehabilitating Walking Speed Post-Stroke with Treadmill-based Interventions: A Systematic Review of Randomized Controlled Trials. *Neurorehabilitation and Neural Repair*. 2013;27(8):709-721.
24. Routson RL, Clark DJ, Bowden MG, Kautz SA, Neptune RR. Module quality and walking performance pre and post locomotor rehabilitation in adults post-stroke. *Gait & Posture*. 2013;38:511–517.
25. Bowden MG, Behrman AL, Neptune RR, Gregory CM, Kautz SA. Locomotor rehabilitation of individuals with chronic stroke: difference between responders and non-responders. *Arch Phys Med Rehabil*. 2013;94:856-62.
26. Bowden MG, Woodbury ML, Duncan PW. Promoting neuroplasticity and recovery after stroke: future directions for rehabilitation clinical trials. *Current Opinion in Neurology*. 2013;26(1):37-42.
27. Behrman AL, Bowden MG, Rose DK. Clinical trials in Neurorehabilitation. *Handbook Clin Neurol*. 2013;110:61-6.
28. Feng W, Bowden MG, Kautz SA. Transcranial direct current stimulation: a potential tool to enhance post-stroke recovery. *Topics in Stroke Rehabilitation*. 2013;20(1):68-77.
29. Hall AL, Bowden MG, Kautz SA, Neptune RR. Biomechanical variables related to walking performance 6-months following post-stroke rehabilitation. *Clinical Biomechanics*. 2012;27(10):1017-22.
30. Bowden MG, Embry AE, Perry LC, Duncan PW. Rehabilitation of walking after stroke. *Current Treatment Options in Neurology*. 2012;14(6):521-30.
31. Bowden MG, Behrman AL, Woodbury ML, Gregory CM, Velozo CA, Kautz SA. Advancing measurement of locomotor rehabilitation outcomes to optimize interventions and differentiate between recovery versus compensation. *J Neurol Phys Ther*. 2012 Mar;36(1):38-44.
32. Kautz SA, Bowden MG, Clark DJ, Neptune RR. Comparison of motor control deficits during treadmill and overground walking post-stroke. *Neurorehabilitation and Neural Repair*. 2011;25(8):756-764.
33. Bowden MG, Embry AE, Gregory CM. Physical therapy adjuvants to promote optimization of walking recovery post stroke. *Stroke Research and Treatment*. Volume 2011 (2011), Epub 2011 Oct 12.
34. Trinastic JP, Kautz SA, McGregor, Gregory CM, Bowden MG, Benjamin MB, Kurtzman M, Chang YL, Conway T, Crosson B. An fMRI study of the differences in brain activity during active ankle dorsiflexion and plantarflexion. *Brain Imaging and Behavior*. 2010;4(2):121-31.
35. Bowden MG, Clark DJ, Kautz SA. Evaluation of Abnormal Synergy Patterns Post-Stroke: Relationship of the Fugl Meyer Assessment to Hemiparetic Locomotion. *Neurorehabilitation and Neural Repair*. 2010;24(4):328-37.
36. Bowden MG, Behrman AL. Invited commentary on: “Daily stepping in individuals with motor incomplete spinal cord injury.” *Phys Ther*. 2010;90:235–237.
37. Phadke CP, Thompson FJ, Kukulka CG, Nair PM, Bowden MG, Nair PM, Madhavan S, Trimble MH, Behrman AL. Soleus H-reflex modulation after motor incomplete spinal cord injury: Effects of body position and walking speed. *J Spinal Cord Med*. 2010;33(4):371-8.

38. Bowden MG, Stokic DS. Clinical and Neurophysiological Assessment of Strength and Spasticity during Intrathecal Baclofen Titration in Incomplete Spinal Cord Injury: Single-Subject Design. *J Spinal Cord Med.* 2009;32(2):183-90.
39. Bowden MG, Hannold EM, Nair PM, Fuller LB, Behrman AL. Beyond gait speed: a multidimensional approach to locomotor rehabilitation outcomes. *J of Neurologic Phys Ther.* 2008;32(3):129-138.
40. Bowden MG, Balasubramanian CK, Behrman AL, Kautz SA. Validation of a speed-based classification system using quantitative measures of walking performance post-stroke. *NeuroRehabilitation and Neural Repair.* 2008 Nov-Dec;22(6):672-5.
41. Behrman AL, Nair PM, Bowden MG, Dauser RC, Herget BR, Martin JB, Phadke CP, Reier PJ, Senesac C, Thompson FJ, Howland DR. Locomotor training restores walking in a non-ambulatory child with severe, chronic, cervical spinal cord injury. *Physical Therapy.* 2008 May;88(5):580-90.
42. Jayaraman A, Shah P, Gregory C, Bowden M, Stevens J, Bishop M, Walter G, Behrman A, Vandenborne K. Locomotor training and muscle function after incomplete spinal cord injury: case series. *J Spinal Cord Med.* 2008;31(2):185-93.
43. Zehr EP, Klimstra M, Dragert K, Barzi Y, Bowden MG, Javan B, and Phadke C. Enhancement of arm and leg locomotor coupling with augmented cutaneous feedback from the hand. *J Neurophysiol.* 2007 Sep;98(3):1810-4.
44. Gregory CM, Bowden MG, Jayaraman A, Shah P, Behrman AL, Kautz SK, Vandenborne K. Resistance training and locomotor recovery after incomplete spinal cord injury: A case series. *Spinal Cord.* 2007 Jul;45(7):522-30.
45. Balasubramanian CK, Bowden MG, Neptune RR, Kautz SA. Relationship between step length asymmetry and walking performance in subjects with chronic hemiparesis. *Arch Phys Med Rehabil.* 2007 Jan;88(1):43-9.
46. Bowden MG, Behrman AL. Step Activity Monitor: accuracy and test-retest reliability for persons with incomplete spinal cord injury. *J Rehabil Res Dev.* 2007 44(3): 355-62.
47. Hannold EM, Young ME, Rittman MR, Bowden MG, Behrman AL. Locomotor Training: Experiencing the Changing Body. *J Rehabil Res Dev.* 2006 Nov-Dec;43(7):905-16.
48. Jayaraman A, Gregory CM, Bowden MG, Stevens JE, Shah P, Behrman AL, Vandenborne K. Lower extremity skeletal muscle function in persons with incomplete spinal cord injury. *Spinal Cord.* 2006 Nov;44(11):680-7.
49. Behrman AL, Bowden MG, Nair PM. Neuroplasticity After Spinal Cord Injury and Training: An Emerging Paradigm Shift in Rehabilitation and Walking Recovery. *Physical Therapy.* 2006 Oct;86(10):1406-25.
50. Martin J, Plummer P, Bowden MG, Fulk G, Behrman A. Body Weight Support Systems: Considerations for Clinicians. *Physical Therapy Reviews.* 2006;11:143-52.
51. Shah PK, Stevens JE, Gregory CM, Jayaraman A, Bickel SC, Bowden MG, Behrman AL, Walter GA, Dudley GA, Vandenborne K. Lower extremity Muscle Cross-sectional area after Incomplete Spinal Cord Injury. *Arch Phys Med Rehabil.* 2006 Jun;87(6):772-8.
52. Bowden MG, Balasubramanian CK, Neptune RR, Kautz SA. Anterior-Posterior Ground Reaction Forces as a Measure of Paretic Leg Contribution in Hemiparetic Walking. *Stroke.* 2006 Mar;37(3):872-6.
53. Behrman AL, Lawless AR, Davis SB, Bowden MG, Nair P, Phadke C, Hannold EM, Harkema SJ. Locomotor Training Progression and Outcomes after Incomplete Spinal Cord Injury: Case Study. *Phys Ther.* 2005 Dec;85(12):1356-71.
54. Schenkman M, Hughes MA, Bowden MG, Studenski SA. A Clinical Tool For Measuring Functional Axial Rotation: Technical Report. *Phys Ther.* 1995; 75 (2):151-156.
55. Bowden MG, Crawford J, Cohen HJ, Noyama O. A Comparative Study of Monoclonal Gammopathies and Immunoglobulin Levels in Japanese and United States Elderly. *J Amer Geriatr Soc.* 1993; 41:11-14.

BOOKS and BOOK CHAPTERS:

- Behrman AL, Druin E, Bowden MG, Harkema SJ. Ambulation training after spinal cord injury. In Sisto S, Druin E, Sliminski MM eds. *Spinal Cord Injuries: Management and Rehabilitation*. St. Louis: Mosby Elsevier; 2008:380-406.
- Fulk GD, Bowden MG, and Behrman AL. Traumatic Spinal Cord Injury. In: *Physical Rehabilitation* (7th Revised Edition). Editors: O'Sullivan S, Schmitz T, and Fulk GD. 2017, FA Davis Company.

CONFERENCE PROCEEDINGS/PRESENTATIONS:

1. Bowden MG, Madhavan S, Bhatt T, Kesar TM, and Lang C. Emerging Interventions for Improving Post-Stroke Functional Mobility: Current Evidence and Barriers to Translation. Symposium presented at the APTA Combined Sections Meeting. Denver, CO, February 16, 2020.
2. Angles RS, Kindred JH, Bowden MG. Ankle motor control and balance post stroke: are they related? MUSC Student Research Day, 2019, Charleston, SC.
3. Ergle JB, Kindred JH, Charalambous CC, Wonsetler EC, Bowden MG. Refining hotspot identification methods in the lower extremities using a double-cone TMS coil post stroke: MEP amplitude vs. latency. MUSC Student Research Day, 2019, Charleston, SC.
4. Kindred JH, Kautz SA, Cence BJ, Chesnutt A, Bowden MG. Repetitive transcranial magnetic stimulation of the lower extremities: can we improve current physical rehabilitation practices post-stroke? Department of Veterans Affairs VISN7 Research Symposium, 2019, Birmingham, AL.
5. Kindred JH, Wonsetler EC, Charalambous CC, Bowden MG. Putting one foot in front of the other: using TMS to advance understanding of lower extremity motor control. *Brain Stimulation* 2019; 12(2):494
6. Bowden MG. The use of rTMS to augment walking recovery after stroke. Symposium presented at the International Brain Stimulation Conference. Vancouver, CA, February 25, 2019 (as part of a symposium with Madhavan S, Kesar T, and Perez M. Non-invasive brain stimulation targeting neural drive to the lower limb.)
7. Madhavan S, Page S, and Bowden MG. Walk This Way: Infusing Neuroplasticity Findings to Improve Gait Outcomes. Symposium presented at annual international meeting of the American Congress of Rehabilitation Medicine, Dallas, TX, September 30-October 3, 2018.
8. Vistamehr A, Kautz SA, Bowden MG, Neptune RR. The Influence of Locomotor Training on Dynamic Balance During Steady-state Walking Post-stroke. Poster presented at annual international meeting of the American Congress of Rehabilitation Medicine, Dallas, TX, September 30-October 3, 2018.
9. Birley BG, Kindred JH, Bowden MG. Changes in muscle length reduce lower extremity corticomotor response to transcranial magnetic stimulation. MUSC Student Research Day, 2018, Charleston, SC, USA
10. Kindred JH, Wonsetler EC, Monsch E, Cence B, and Bowden MG. HD-tDCS combined with self-selected cycling does not alter resting motor thresholds evoked by transcranial magnetic stimulation in stroke. Poster presented at annual international meeting of the American Congress of Rehabilitation Medicine, Dallas, TX, September 30-October 3, 2018.
11. Phadke C, Rose DK, and Bowden MG. From System Impairments to Participation Barriers: Gait Rehabilitation across the Spectrum. Symposium presented at annual international meeting of the American Congress of Rehabilitation Medicine, Dallas, TX, September 30-October 3, 2018.
12. Middleton JA, Monsch E, and Bowden MG. Lessons Learned from an Implementation Trial in the Inpatient Rehabilitation Setting. Symposium presented at annual international meeting of the American Congress of Rehabilitation Medicine, Dallas, TX, September 30-October 3, 2018.
13. McGowan S and Bowden MG. The research lab as a classroom: An Integrated case based experience. Poster presentation at the ATPA Education Leadership Conference, Jacksonville FL, October 14-18, 2018.

14. Bills S, Bordenave L, Bowden MG, Coleman-Salgado B, Mercuris K, and Chesbro S. Prepare for *Holistic Admissions* Take-off: Perspectives from 5 Physical Therapy Programs. Platform presentation at the ATPA Education Leadership Conference, Jacksonville FL, October 14-18, 2018.
15. Kindred JH, Cence BJ, Kautz SA, Wonsetler EC, Monsch ED, Bowden MG. A single session of high definition transcranial direct current stimulation does not alter lower extremity neurophysiological variables in stroke. Carolina Neurostimulation Conference, 2018, Chapel Hill, NC, USA
16. Dean JC, Bowden MG, Kautz SA. Post-Stroke Stiff Knee Gait is Linked to Mis-timed Braking Forces. Thematic poster presentation at the American Society of Biomechanics, Rochester, NY, August 8-11, 2018.
17. Keller C, Dodds C, Bowden MG, Gregory CM. Strategies for Addressing Physical Activity in Children with Autism Spectrum Disorder. Poster Presented at SCAPTA Annual Meeting, Charleston, SC, April 13-14, 2018.
18. Awad LC, Bowden MG, Franz J, and Lewek M. Diagnosing and Treating Deficits in Propulsion to Improve Walking after Stroke. Symposium presented at Combined Section Meeting of the American Physical Therapy Association, New Orleans, LA, February 22, 2018.
19. Darms MW, Bowden MG, Eddy JS, Cence BJ, Wonsetler EC. Effects of Upper Extremity Weight-Bearing on Lower Extremity Neuromotor Excitability. Poster presented at Combined Section Meeting of the American Physical Therapy Association, New Orleans, LA, February 23, 2018.
20. Wonsetler EC, Lynch AM, Czaus SL, Bowden MG. Within Session and Between Session Reliability of Cortical Hotspots Using Motor Evoked Potentials and Normalized Latencies. Poster presented at Combined Section Meeting of the American Physical Therapy Association, New Orleans, LA, February 24, 2018.
21. Bowden MG, Monsch E, Kraft SV, Hammond S. Systematic Collection and Objective Progressive Exercise. Poster presented at Combined Section Meeting of the American Physical Therapy Association, New Orleans, LA, February 24, 2018.
22. Kesar T, Bowden MG, Thompson A, and Lyle M. Neuroplasticity and Neuro-Modulation Targeted to Lower Limb Rehabilitation: Animal, Human, and Clinical Studies. Symposium presented at annual international meeting of the American Congress of Rehabilitation Medicine, Atlanta, GA, October 26, 2018.
23. Awad LC, Bowden MG, Franz J, and Lewek M. Diagnosing and Treating Deficits in Propulsion to Improve Walking after Stroke: Clinical and Technological Advances. Symposium presented at annual international meeting of the American Congress of Rehabilitation Medicine, Atlanta, GA, October 28, 2018.
24. Vistamehr A, Kautz SA, Bowden MG, and Neptune RR. The Influence of Locomotor Training on Mediolateral Dynamic Balance in Individuals with Post-Stroke Hemiparesis. Poster Presentation at the American Society of Biomechanics Annual Meeting. August 8-11, 2017, Boulder, CO.
25. Kraft S, Ballares K, Bowden M. Mentorship Across the Practice Continuum. South Carolina Chapter of the American Physical Therapy Association Annual Spring Conference Education Session April 1 2017.
26. Wonsetler EC, Kautz SA, Bowden MG. Effects of Excitatory and Inhibitory rTMS on Neurophysiological and Neuromotor Outcomes. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 15-18, 2017, San Antonio, TX.
27. Huschart J, Wonsetler E, Embry AE, Kautz SK, and Bowden MG. The Effect of Incline versus Decline Walking in Chronic Stroke. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 15-18, 2017, San Antonio, TX.
28. Miller E, Wonsetler E, and Bowden MG. The Effect of Altering Hip Extension on Kinetic Gait Variables. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 15-18, 2017, San Antonio, TX.

29. Frye S, Wonsetler E, and Bowden MG. The Variability of Kinetic Parameters with Altered Walking Speed. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 15-18, 2017, San Antonio, TX.
30. Huey K, Wonsetler E, and Bowden MG. T The Effect of Changing Speed on Kinetic Gait Variables. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 15-18, 2017, San Antonio, TX.
31. S Aaron, MG Bowden, CM Gregory, S Kautz & C Velozo. Measurement Properties of the Dynamic Gait Index in Chronic Stroke: Use of the Rasch Measurement Model. American Physical Therapy Association-Combined Sections Meeting, San Antonio, TX, 2017.
32. Bowden MG, Wonsetler EC, Monsch E, Kraft SV. Transforming Physical Therapy Residencies: Integrated Models and Innovative Partnerships. Educational Session to be given at Education Leadership Conference, October 7-9, 2016, Phoenix, AZ.
33. Sabatier M, Phadke C, Bowden M, Thompson A. Strides in Gait Rehabilitation: Walking as a Source and a Target of Neural Plasticity. Symposium presented at annual international meeting of the American Congress of Rehabilitation Medicine, Chicago, IL.
34. Peters H, Bowden M, Bockbrader M, Page SJ. Non-Invasive Brain Stimulation (NIBS) in Stroke Motor Rehabilitation. Symposium to be presented at annual, international, meeting of the American Congress of Rehabilitation Medicine, Chicago, IL; November 3, 2016.
35. Charalambous CC, Bowden MG, Dean JC. Associations between Motor Corticospinal Excitability and Task-Specific Neuromechanics of the Paretic Soleus and Tibialis Anterior. Poster presentation at the American Society of Biomechanics Annual Meeting, Raleigh, NC, August 2-5, 2016
36. Kraft S, Bowden M. Evidence Based Practice Made Easy In Neurorehabilitation. Educational session presented at the South Carolina Chapter of the American Physical Therapy Association Annual Spring Conference, Charleston, SC. May 7, 2016.
37. Wonsetler E, Gregory CM, Kautz SA, and Bowden MG. Effects of Self-Selected and Fastest-Comfortable Walking Speeds on Gait Asymmetries. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 17-20, 2016, Anaheim, CA.
38. VanDerwerker C, Gregory CM, and Bowden MG. The Short-Term Effects of Incline Treadmill Walking on Braking, Propulsion, and Ankle Power in Individuals with Chronic Spinal Cord Injury. Poster presentation to be presented at the American Physical Therapy Association Combined Sections Meeting, February 17-20, 2016, Anaheim, CA.
39. VanDerwerker C, Embry AE, Ross R, Aaron SE, Cence B, Newton J, Bowden MG, and Gregory CM. The Effects of Aerobic Exercise on Poststroke Depression, Functional Mobility, and Metabolic Capacity in Individuals with Chronic Stroke. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 17-20, 2016, Anaheim, CA.
40. Hunnicutt JL, Aaron SE, Embry AE, Morgan PJ, Cence B, Bowden MG, and Gregory CM. Effects of POWER Training in Young and Older Adults Post-Stroke. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 17-20, 2016, Anaheim, CA.
41. Aaron SE, Hunnicutt JL, Embry AE, Morgan PJ, Cence B, Bowden MG, Gregory CM. Differences Between Responders and Nonresponders with POWER Training in Individuals With Chronic Stroke. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 17-20, 2016, Anaheim, CA.
42. Kraft S, Seif G, Coker-Bolt P, Dean J, Giles A, Woodbury M, Bowden M. Translating Evidence Into Practice: An Effective Educational Model. Poster presented at the American Physical Therapy Association Combined Sections Meeting, February 17-20, 2016, Anaheim, CA.
43. McKinney Margaret, Miller Sarah, Kraft S, Seif G, Coker-Bolt P, Giles A, Velozo C, Giles A, Bowden M. Classroom to the Clinic: Integrating Intensity Principles into The Student-Run Free Clinic. Poster presentation at the Student Society of Free Medical Clinics Conference Phoenix, AZ, January 30, 2016.

44. Bowden MG, Wonsetler EC, Charalambous CC, George MS, and Kautz SA. Excitatory and Inhibitory rTMS as Mechanistic Contributors to Walking Recovery. Poster Presentation for the Southeastern Regional IDeA Conference, November 11-13, 2015. Biloxi, MS.
45. Atwater S, Wonsetler EC, Bowden MG. The variability of kinetic parameters with altered walking speed. Poster presentation at the 2015 MUSC Student Research Day, November 12, 2015.
46. Huey K, Wonsetler EC, Bowden MG. The effect of changing speed on kinetic gait variables. Poster presentation at the 2015 MUSC Student Research Day, November 12, 2015.
47. Huschart J, Wonsetler EC, Embry AE, Kautz SA, and Bowden MG. The effect of incline versus decline walking in chronic stroke. Poster presentation at the 2015 MUSC Student Research Day, November 12, 2015.
48. Miller E, Wonsetler EC, and Bowden MG. The Effect of altering hip extension on kinetic gait variables. Poster presentation at the 2015 MUSC Student Research Day, November 12, 2015.
49. Aaron SE, Hong I, Bowden MG, Gregory CM, Embry AE, and Veloza CA. Use of the Rasch measurement model to investigate measurement properties for the Dynamic Gait Index in stroke. Poster presentation at the 2015 MUSC Student Research Day, November 12, 2015.
50. Charalambous CC, Dean JC, Bowden MG. Motor corticospinal excitability of plantarflexors: Is it the same among muscles and hemispheres in healthy adults? Poster presentation at the Satellite Meeting of the Society for the Neural Control of Movement, Charleston, SC, April 20, 2015
51. Bowden MG, Morgan PJ, Embry AE, Perry LA, and Gregory CM. Alterations of Center of Mass Acceleration Resulting from Lower Extremity Muscle Power Training. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 4-8, 2015, Indianapolis, IN.
52. Charalambous CC, Bowden MG. Bilateral Assessment of the Motor Corticospinal Excitability of the Plantarflexors and Dorsiflexors in Healthy Adults. Poster Presentation at the DE-CTR ACCEL Annual Meeting, Charleston, SC, February 18, 2015.
53. Feng W, Hui ES, Johnson JL, Helpert JA, Jensen J, Tabesh A, Bonilha L, Bowden MG, Kautz SA, Adams RA. Acute Damage to Corticospinal Tract Detected by Diffusional Kurtosis Correlates with Motor Outcome at 3 Months After Stroke - A Preliminary Report. International Stroke Conference, February 6-8, 2013, Honolulu, HI.
54. Phadke C, Nair P, Madhavan S, Bowden MG, Thompson, Behrman AL. Soleus H-reflex modulation after motor incomplete spinal cord injury: Effects of locomotor training. American Physical Therapy Association Combined Sections Meeting, January 21-24, 2013, San Diego, CA.
55. Raja B, Bowden MG, Kautz SA. Longitudinal assessment of walking speed and step symmetry during locomotor rehabilitation in chronic stroke. American Physical Therapy Association Combined Sections Meeting, January 21-24, 2013, San Diego, CA.
56. Bowden MG, Behrman AL, Neptune, RR, Gregory CM, Kautz SA. Locomotor Rehabilitation of Individuals with Chronic Stroke: Difference between Responders and Non-Responders. American Physical Therapy Association Combined Sections Meeting, January 21-24, 2013, San Diego, CA.
57. Routson FL, Bowden MG, Kautz SA, Neptune RR. (2012). Comparison of module quality and walking performance of hemiparetic subjects pre and post locomotor rehabilitation therapy. American Society of Biomechanics, August, Gainesville, FL.
58. Bowden MG, Gregory CM, Kautz SA. Center of mass acceleration as a surrogate for force production after neurological injury: effects of inclined treadmill walking. Society for Neuroscience, October 2012, New Orleans, LA.
59. Embry AE, Bowden MG, Gregory CM, Behrman AL, Neptune RR, and Kautz SA. Relationship between personal factors and behavioral outcomes after locomotor rehabilitation intervention post-stroke. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February, 2012, Chicago, IL.
60. Bowden MG, Behrman AL, Gregory CM, Patten C, Kautz SA. Translational Biomechanics: Development of Portable Quantitative Measurement. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February, 2011, New Orleans, LA.

61. Bowden MG, Clark DJ, Neptune RR, Kautz SA. Restitution of muscle activation patterns in chronic stroke. Poster presentation at the Society for the Neural Control of Movement. April, 2010. Naples, FL.
62. Bowden MG, Klimstra M, Zehr EP, Kautz SA. Modulation of cutaneous reflexes poststroke: relationship to walking performance and interlimb coordination. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February, 2010, San Diego, CA.
63. Clark DJ, Neptune RR, Ting LH, Bowden MG, Zajac FE, Kautz SA. Locomotor training enhances the complexity of lower extremity muscle activation in persons with chronic post-stroke hemiparesis. Southeast Regional Conference of the American Society of Biomechanics. April, 2009, Gainesville, FL.
64. Bowden MG, Clark DJ, Kautz SA. Evaluation of Abnormal Synergy Patterns Post-Stroke: Relationship of Clinical Examination to Hemiparetic Locomotion. Platform presentation at the APTA Combined Sections Meeting, February, 2009, Las Vegas, NV.
65. Gregory C, Bowden MG, Patten C, Vandenborne K, Kautz SA. Improved Metabolic Efficiency Post Stroke is Associated with Increased Walking Velocities. American Physical Therapy Association Combined Sections Meeting, February, 2009, Las Vegas, NV.
66. Riesterer K, Beaulieu AN, Gregory C, Bowden MG, Kautz SA, Vandenborne K. Lower-Extremity Strength and Activation Deficits Correlate with Maximum Gait Speed Following Incomplete Spinal Cord Injury. American Physical Therapy Association Combined Sections Meeting, February, 2009, Las Vegas, NV.
67. Gill L, Day KV, Bowden MG, Stickles S, Behrman AL. Quantifying Locomotor Adaptability After Spinal Cord Injury: Clinic vs. Community-Based Performance. American Physical Therapy Association Combined Sections Meeting, February, 2009, Las Vegas, NV.
68. Allen JL, Bowden MG, Kautz SA and Neptune RR. Mechanisms underlying increased walking speed after rehabilitation in persons with post-stroke hemiparesis. *North American Congress on Biomechanics (NACOB)*. August 5-9, 2009. Ann Arbor, MI.
69. Bowden MG, Balasubramanian CK, Behrman AL, Kautz SA. Validation of a Speed-Based Classification System Using Quantitative Measures of Walking Performance Post-Stroke. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February, 2008, Nashville, TN. Awarded the Post-Professional Student Award by the APTA Neurology Section.
70. Kautz SA, Balasubramanian CK, Bowden MG, Neptune RR. Comparison of treadmill and overground walking at self-selected speed in persons with post-stroke hemiparesis. International Society for Posture and Gait Research Conference. July, 2007, Burlington, VT.
71. Balasubramanian CK, Bowden MG, Neptune RR, Kautz SA. Gait variability after a stroke and its relationship to hemiparetic severity and walking balance. International Society for Posture and Gait Research Conference, Burlington, VT, July, 2007.
72. Behrman AL, Nair PM, Bowden MG, Day KV, Friedman E, Herget B, Phadke CP, Senesac C, Tester N, Thompson FJ, Reier PJ, Howland DR. Isolated, voluntary leg movement: is it a necessity for restoration of walking after spinal cord injury? International Society for Posture and Gait Research Conference, Burlington, VT, July, 2007.
73. Behrman AL, Fuller LB, Stickles S, Day KV, Nair PM, Phadke CP, Bowden MG, Kautz SA. Differential effects of robotically- versus manually-assisted locomotor training on stepping performance after incomplete spinal cord injury. International Society for Posture and Gait Research Conference, Burlington, VT, July, 2007.
74. Bowden MG, Behrman AL, Kautz SA. Mechanisms of response to locomotor training post-stroke: systematic assessment of motor pattern restitution. Poster presentations at the University of Florida College of Health Professions Plasticity Symposium, December, 2006; and International Society for Posture and Gait Research Conference, Burlington, VT, July, 2007. Awarded the UF College of Public Health and Health Professions 2nd Annual Neuromuscular Plasticity Symposium Poster Award.

75. Bowden MG, Behrman AL, Kautz SA. Joint power response to locomotor training post-stroke: preliminary findings. Poster presentation at the Innovations 2007: International Society for Posture and Gait Research Pre-Conference, Montreal, Canada. July, 2007.
76. Bowden MG, Balasubramanian CK, Behrman AL, Kautz SA. Does self-selected walking speed stratify hemiparetic walking ability? Poster presentation at the University of Florida College of Health Professions Research Day. May, 2007.
77. Balasubramanian CK, Bowden MG, Neptune RR, Kautz SA. EMG in stroke subjects with abnormal synergies: implications for walking rehabilitation, poster. American Physical Therapy Association Combined Sections Meeting, February 16, 2007.
78. Behrman AL, Bowden MG, Day K, Herget B, Nair P, Phadke C, Reier PJ, Thompson FJ, Senesac C, Howland DR. Evidence for a human spinal pattern generator: insights from a pediatric SCI case study 1-year after restoration of walking. Society for Neuroscience Meeting, Atlanta, GA. 2006.
79. Duncan PW, Kautz SA, Bowden MG. Quantifying Restitution Vs Compensation in Poststroke Rehabilitation: Implications for Clinical Outcomes. Educational program presented at the APTA Annual Meeting. June 22, 2006, Orlando, FL.
80. Bowden MB, Turns LJ, Neptune RR, Balasubramanian CK, Knight R, Peterson C, Kautz SA. Paretic Leg Contribution in Hemiparetic Walking: Mechanisms of Paretic Propulsion. Poster presentation at the Neural Control of Movement Meeting, May 2006.
81. Balasubramanian CK, Bowden MG, Neptune RR, Kautz SA. Relationship between asymmetrical step lengths and hemiparetic walking performance. Poster presentation at the Neural Control of Movement Meeting, May 2006.
82. Bowden MG, Hannold E, Nair PM, Fuller LB, Behrman AL. Beyond Gait Speed: An Interdisciplinary Approach To Locomotor Outcomes. Poster presentation at the UF College of Public Health and Health Professions Research Day, April, 2006.
83. Kautz SA, Bowden MG, Balasubramanian CK, Neptune RR. A New Measure of Paretic Leg Contribution in Hemiparetic Walking. International Stroke Conference, February 2006.
84. Behrman AL, Nair PM, Bowden MG, Fuller L, Herget B, Phadke C, Senesac C. Locomotor training: Recovery of walking in non-ambulatory 4.5 year old child with chronic, cervical SCI. American Physical Therapy Association Combined Sections Meeting, February 2006.
85. Bowden MG, Behrman AL. Step Activity Monitor: Validity and Test-Retest Reliability for Persons with Incomplete Spinal Cord Injury. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, February 2006.
86. Behrman AL, Bowden MG, Herget B, Howland DR, Martin J, Nair P, Phadke C, Reier PJ, Senesac C, Thompson FJ. Locomotor training and recruitment of developmental neuroplasticity: Insights from a pediatric SCI case study. Society for Neuroscience Meeting, Washington DC, 2005.
87. Kautz SA, Balasubramanian CK, Bowden MG, Neptune RR. Paretic Leg Contributions to Walking Speed in Persons With Post-Stroke Hemiparesis. American Society of Mechanical Engineers, 2005.
88. Gregory C, Jayaraman A, Knight R, Bowden MG, Kautz S and Vandenborne K. Resistance training and locomotor recovery after incomplete spinal cord injury. American Paraplegia Society, 2005
89. Jayaraman A, Shah P, Gregory CM, Stevens J, Bowden MG, Walter G, Behrman AL, Vandenborne K. Mechanisms of muscle dysfunction in persons after incomplete spinal cord injury. American College of Sports Medicine, 2005.
90. Gregory CM, Jayaraman A, Bowden MG, Behrman AL Vandenborne K. Resistance training and muscle function in persons after incomplete spinal cord injury. American College of Sports Medicine, 2005.
91. Shah P, Stevens JE, Jayaraman A, Pathare NC, Bowden MG, Phadke C, Nair PM, Ko M, Walter G, Behrman AL, Vadenborne K. Effect Of Locomotor Training On Skeletal Muscle Size In Individuals With Incomplete Spinal Cord Injury. American Physical Therapy Association Combined Sections Meeting, New Orleans, LA. February, 2005.

92. Nair P, Phadke C, Bowden MG, Davis SB, Lawless AR, Behrman AL. Clinical Gait Outcomes after Locomotor Training in Persons with Chronic, Incomplete Spinal Cord Injury. American College of Rehabilitative Medicine, 2004.
93. Jayaraman A, Gregory CM, Bowden MG, Stevens J, Shah P, Behrman AL, Vandenborne K. Skeletal muscle function in persons after incomplete spinal cord injury. Society for Neuroscience, 2004.
94. Balasubramanian CK, Bowden MG, Kautz SA. Relationship Between Paretic Pre-swing and Functional Walking Ability in Stroke Subjects. Poster presentation, UF College of Health Professions Research Day. April, 2004.
95. Lawless AR, Davis S, Phadke C, Nair P, Bowden MG, Woodbury M, Flynn S, Hannold L, Ko M, Senesac C, Behrman A. Locomotor Training, Progression, and Outcomes After Incomplete Spinal Cord Injury: A Case Study. American Physical Therapy Association Combined Sections Meeting, Nashville, TN. February, 2004.
96. Bowden MG, Woodbury ML, Behrman AL. Step Activity Monitor: Quantifying Community Ambulation Outcomes After Incomplete Spinal Cord Injury. Poster presentation at the UF College of Health Professions Research Day. April, 2004. Awarded the UF College of Public Health and Health Professions Research Day Poster Award.
97. Behrman AL, Lawless AR, Woodbury ML, Bowden MG, Nair P, Davis SB; Phadke C, Duncan PW. Recovery of walking after neurologic injury: From spinal cord injury to stroke. Poster presentation: NASPSPA, Savannah, Georgia. June, 2003
98. Peyton KS, Bowden MG, Stokic DS. Effect of Wheelchair Footrest Height on Static Sitting Pressures. Neurology Report. Neurology Section, American Physical Therapy Association Combined Sections Meeting, Boston, MA 2002.
99. Huff AC, Bowden MG, Hayes A, Stokic DS. Neurophysiological Evaluation of Strength and Spasticity During Intrathecal and Oral Baclofen Titration in Incomplete SCI. American Physical Therapy Association Combined Sections Meeting, San Antonio, TX, February 2001.
100. Bowden MG, Huff AC, Stokic DS. Clinical Evaluation of Strength and Spasticity During Intrathecal and Oral Baclofen Titration in Incomplete SCI. Poster presentation at the American Physical Therapy Association Combined Sections Meeting, San Antonio, TX, February 2001.
101. Lee E, Bowden MG. Multidisciplinary Patient Assessment and Discharge Documentation Process. Platform presentation at the Region 3, Association of Rehabilitation Nurses Conference. April 8, 2000. Charlotte, NC.
102. Stokic DS, Bowden MG, Horn TS, Winkelmann M, Mueller S, Wernig A: Partial Weight Supported Treadmill Training Six Months After Incomplete Spinal Cord Injury (SCI): A Single Subject Design. American Journal of Physical Medicine and Rehabilitation Vol. 79(2) pg. 214, 2000.
103. Bowden MG, Ware TH, Winkelmann M, Muller S, Wernig A, Stokic DS: Long-term Clinical Outcome of Body Weight Supported Treadmill Training in Chronic SCI. Poster presentation at the American Physical Therapy Association Annual Meeting, New Orleans, February 2000.
104. Stokic DS, Bowden MG, Horn, TS, Winkelmann M, Wernig A: Walking Performance of Two Spinal Cord Injured Patients After 6 weeks of Body-Weight Supported Ambulatory Training on Treadmill. Archives of Physical Medicine and Rehabilitation, Vol. 80, pg. 1196, 1999.
105. Horn TS, Bowden MG, Winkelmann M, Wernig A, Stokic DS: Effect of Body Weight Supported Treadmill Training On Lower Extremity Joint Kinematics and EMG Patterns in Chronic SCI Patients. Society for Neuroscience Abstracts, Vol. 25, pg. 1153, 1999.
106. Stokic DS, Bowden MG, Winkelmann M, Muller S, Wernig A: Clinical Outcome of Body-Weight Supported Treadmill Training on Outpatient Basis in Chronic SCI Patients. Society for Neuroscience Abstracts, Vol. 25, pg. 1153, 1999.
107. Bowden MG, Hughes MA, Bowden MG, Studenski SA. Total Spinal Rotation: A New Measure of Axial Skeleton Flexibility. Poster presentation at the AGS/AFAR Annual Conference, November, 1992, Washington, D. C.

108. Bowden MG, Crawford J, Cohen HJ, Noyama O. A Comparative Study of Monoclonal Gammopathies and Immunoglobulin Levels in Japanese and United States Elderly, Platform. Platform presentation at the AGS/AFAR Annual conference, May, 1990, Atlanta, GA.

INVITED PRESENTATIONS:

- July 19, 2018. Neurorehabilitation: Looking to the Future through the Rearview Mirror. Research Seminar presented at the University of North Carolina – Chapel Hill.
- October 6, 2017. The Business Case for an Innovative High-Value Continuing Professional Development Initiative in Physical Therapy. Presented at the National Academy of Science Global Forum on Innovation in Health Profession Education. Washington, D.C.
- October 1, 2015. Development of a clinical assessment tool for kinetic gait outcomes. Presented at University of Delaware BIOMS Seminar, Newark, DE.
- May 1, 2015. Strength training after stroke: make muscles, not excuses. Presented with Sara Kraft, DPT, NCS, ATP at the SCAPTA Spring Conference in Greenville, SC
- November 15, 2013. Stroke Recovery Research Update. Presented at the Comprehensive Stroke and Cerebrovascular Update, Charleston, SC.
- February 5, 2011. Advancing Locomotor Rehabilitation Measurements in Physical Therapy Practice. South Carolina Aging Research Network Aging Research Day. Columbia, SC.
- January 25, 2011. Locomotor Recovery after Incomplete SCI: Balancing Innovation and Expectation. Spinal Cord Injury Grand Rounds, Medical University of South Carolina, Charleston, SC.
- October 24, 2007. Evaluation of Abnormal Synergy Patterns Post-Stroke: Relationship of Clinical Examination to Hemiparetic Locomotion. Fall 2007 University of Florida Rehabilitation Research Seminar Series. Gainesville, FL.
- December 2, 2006. Locomotor Rehabilitation, Post-Stroke: Then, Now, and When. Stroke of Hope Club, Inc. West Palm Beach, FL.
- March 1, 2003. Gait Symposium: Evaluation and Treatment Strategies for Neurologic and Amputee Gait. Methodist Rehabilitation Center. Jackson, MS.
- April, 2002. Durable Medical Equipment for Spinal Cord Injuries. Gulf Coast Rehab, Inc. Spring Seating Symposium. Jackson, MS.
- February, 2002. University Medical Center, Jackson, MS. Neurologic Assessment of the Spinal Cord Injured Patient. Presented to the UMC physical therapy department.
- April, 2001. Greater Jackson Area Critical Care Consortium, Jackson, MS. Functional needs assessment for interdisciplinary critical care practitioners.

NATIONAL SERVICE:

- 2017 to present: Scientific Reviewer, NIH Sensory and Motor Neuroscience, Cognition and Perception Fellowship Study Section
- 2016 to 2017: Member, PLOS ONE Editorial Board
- 2016 to present: Scientific Reviewer, VA Rehabilitation Research & Development Merit Review Study Section.
- 2015 to 2016: Associate Editor, Journal of Rehabilitation Research and Development
- 2013 to present: Scientific Reviewer, Defense Medical Research and Development Program (DMRDP)
- 2013 to present: Scientific Review Committee for APTA's Clinical Practice Guideline development process.
- 2012 to present: MUSC representative to the American Physical Therapy Association Consortium of Research Intensive Physical Therapy Programs.
- January 13-14, 2011. Invited participant in the "Plasticity Workshop for the NICHD Vision Process", NIH, Bethesda, MD.

MANUSCRIPT REVIEWER:

American Journal of Physical Medicine and Rehabilitation
Archives of Physical Medicine and Rehabilitation
Brain Stimulation
Clinical Biomechanics
Clinical Neurophysiology
Drug and Alcohol Dependence
Experimental Brain Research
Frontiers in Neuroscience
Gait and Posture
International Journal of Neuroscience
Journal of Biomechanics
Journal of Neuroengineering and Rehabilitation
Journal of Neurophysiotherapy
Journal of Neurologic Physical Therapy
Journal of the Neurological Sciences
Journal of Rehabilitation Research and Development
Medical Engineering and Physics
Neuromodulation Technology at the Neural Interface
Neurorehabilitation and Neural Repair
Physical Medicine and Rehabilitation
Physiotherapy Theory and Practice
Physical Therapy Journal
Spinal Cord
Stroke
Stroke Research and Treatment
Topics in Spinal Cord Rehabilitation
Topics in Stroke Rehabilitation
Transactions on Neural Systems and Rehabilitation Engineering

TEACHING:

MUSC Physical Therapy Curricula

2010 to present. Medical University of South Carolina

- PT 755. Neuromuscular I
- PT 755L. Neuromuscular I Lab
- PT 756. Neuromuscular II
- PT 756L. Neuromuscular I Lab
- PT 764. Evidence Based Practice I
- PT 765. Evidence Based Practice II
- PT 766. Evidence Based Practice III
- PT 767. Evidence Based Practice IV

Other Physical Therapy Curricula

2008 to 2017. Spinal Cord Injury Rehabilitation, part of the Brooks/UNF Physical Therapy Neurologic Residency. Jacksonville, FL.

2007 to 2018. Spinal Cord Injury Rehabilitation, part of PT 771, Adult Neurotherapeutics in the DPT curriculum, Shenandoah University. Winchester, VA.

Fall 2002-2010. Lab Assistant and Guest Lecturer, PHT 6319C, Adult Neurological Rehabilitation. University of Florida Physical Therapy Program. Topics include:

- Introduction to Rehabilitation
- Early Management of the SCI Patient
- Bracewalking
- Standardized Evaluations
- Introduction to Wheelchair Prescription
- Walking Interventions Post Stroke

Fall, 2000. University Medical Center School of Physical Therapy, Current administrative topics in rehabilitation. Jackson, MS.

Occupational Therapy Curricula

2010 to present: Medical University of South Carolina

- OT 530 Occupational Performance for Neurological Conditions I (guest lecturer)

MUSC Health and Rehabilitation Science Doctoral Program Curricula

- HRS 730 and 725. Independent Study
- HRS 805. Introduction to Health and Rehabilitation Theories (guest lecturer)
- HRS 830. Introduction to Biostatistics. Coordinate the SPSS laboratory and several lectures.
- HRS 900. Doctoral Dissertation

Other Curricula

2004 to 2009. Guest Lecturer, RSD 6110, Introduction to Rehabilitation Science. History of Physical Therapy Practice. UF RSD Program. Gainesville, FL.

2004 to 2009. Guest Lecturer, US Health Care System. Introduction to Rehabilitation. UF Health Sciences Program. Gainesville, FL.

Continuing Education Courses:

September 15, 2012. Post-Stroke Locomotor Rehabilitation: Evidence-Based Frameworks for Clinical Decision Making. Florida Physical Therapy Association Annual Meeting, Daytona Beach, FL.

April 13-14, 2012. Intensive Mobility Training and Functional Assessment Post-Stroke. South Carolina Chapter of the American Physical Therapy Association Annual Meeting, Greenville, SC.

March 31, 2012. Post-Stroke Locomotor Rehabilitation: Evidence-Based Frameworks for Clinical Decision Making. Colorado Chapter of the American Physical Therapy Association Annual Meeting, Aurora, CO.

February 25-26, 2012. Acute Management of the Patient Post Spinal Cord Injury. Baptist Hospital Network, Pensacola, FL.

June 25-26, 2011. Body Weight Support/Locomotor Training. Brooks Rehabilitation Hospital, Jacksonville, FL.

Improving Walking Recovery for Patients with Stroke and Spinal Cord Injury. Co-developed and presented with Pamela Duncan PhD, FAPTA, FHA

- October 10-11, 2009. Virginia Physical Therapy Association Annual Meeting, Richmond, VA.
- October 24-25, 2009. Columbia University, New York, NY.
- November 13-14, 2009. Duke University, Durham, NC.
- June 26-27, 2010. Pinehurst, NC.
- December 5-6, 2011. Elon University, Elon, NC.

November 16, 2002. Fundamentals of Wheelchair Seating and Positioning. Methodist Rehabilitation Center. Jackson, MS. 1-day seminar.

June 1, 2002. Fundamentals of Seating and Positioning. Meridian Community College. Meridian, MS. 1-day seminar.

Spring, 2000. Methodist Rehabilitation Center, Jackson, MS. Management of Spasticity. Laboratory instructor.

Development

Audited HRS 814, Basic Academic Teaching Skills (BATS), Spring 2012, Medical University of South Carolina, College of Health Professions.

2011 to 2016: Participant, College of Health Professions, Leadership Development Series.

2011 to present: Volunteer faculty leader CARES Therapy Clinic.

UNIVERSITY COMMITTEES AND SERVICE:

2010 to 2016: MUSC Faculty Senate
2010 to 2016: MUSC Faculty and Institutional Relationship Committee
2013 to 2016: Chair, MUSC Faculty and Institutional Relationship Committee
2011 to 2014: CHP, Department of Health Science and Research Faculty Search Committee.
2011 to 2015: Symposia Judge, Student Research Day
2012 to present: CHP, Health and Rehabilitation Science Doctoral Program Admissions Committee
2012 to present: Volunteer Faculty Mentor, student run CARES pro bono clinic
2011: CHP Dean Search Committee
2012: CHP, Department of Health Professions, Occupational Therapy Division Director Search Committee
2013 to 2016: Member, CHP Scholarship Committee
2013 to 2016: Member, University Faculty Handbook Review Committee
2013 to 2015: Member, CHP ad hoc Interim Review Committee
2013 to 2016: Member, CHP Faculty Council
2014 to present: Member, MUSC Research Conflict of Interest Committee
2016 to 2017: Vice Chair, MUSC Research Conflict of Interest Committee
2017 to present: Chair, MUSC Research Conflict of Interest Committee
2014 to present: Member, CHP Strategic Planning Committee
2015 to 2016: CHP Curriculum Committee
2015 to present: Division of Physical Therapy Curriculum Committee
2016 to Present: CHP Clinical Integration Committee
2017 to present: Division of Physical Therapy Admissions Committee
2017 to present: Division of Physical Therapy Professional Development Committee
2017 to 2018: CHP Dean Search Committee
2018 to 2019: Chair, CHP Cardiovascular Perfusion Search Committee
2019 to present: Chair, Faculty Assembly: MUSC College of Health Professions

CERTIFICATION:

2001 to 2006: Assistive Technology Provider. Rehab Engineering Society of North America
03/2001: Certified Clinical Instructor. American Physical Therapy Association.

MEMBERSHIP:

1995 to present: American Physical Therapy Association
Neurology Section
Section on Research
Education Section
2016 to present: Member, American College of Rehabilitation Medicine
2012 to 2013: Member, Society for Neuroscience
2008 to 2011: Member, Society for the Neural Control of Movement
2007 to 2009: Member, International Society for Posture and Gait Research

2005 to 2009: Secretary, APTA SCI Special Interest Group
2003 to 2005: APTA Neurology Section, Telecommunications Committee

COMMUNITY SERVICE:

2014-2016: Member, Dunes West Swim Team Board of Directors (Treasurer)
2016 to present: Member, Board of Directors, Palmetto Scholars Academy
2016 to present: Chair, Facilities Committee, Palmetto Scholars Academy
2018 to present: Vice-Chair, Board of Directors, Palmetto Scholars Academy