

**CURRICULUM VITAE**  
**OF**  
**Laura Crego Miller McPherson**  
 Department of Physical Therapy  
 Nicole Wertheim College of Nursing and Health Sciences  
 Florida International University  
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Name prior to 08/2015: Laura Crego Miller

**EDUCATION**

<u>Degree</u>	<u>Institution</u>	<u>Field</u>	<u>Dates</u>
Post-doctoral	Northwestern University	Neurophysiology	2014 – 2015
Ph.D.	Northwestern University	Biomedical Engineering	2006 – 2014
D.P.T.	Northwestern University	Physical Therapy	2009 – 2012
B.E.	Vanderbilt University	Biomedical Engineering	2002 – 2006

**FULL-TIME ACADEMIC EXPERIENCE**

<u>Institution</u>	<u>Rank</u>	<u>Field</u>	<u>Dates (Month &amp; Year)</u>
Florida International University	Courtesy Assistant Professor	Biomedical Engineering	April 2017 – present
Florida International University	Tenure-earning Assistant Professor	Physical Therapy	August 2015 – present
Northwestern University	Post-doctoral Research Associate	Neurophysiology	Nov. 2014 – August 2015
Northwestern University	Graduate Research Assistant	Biomedical Engineering	Sept. 2006 – Oct. 2014

**PART-TIME ACADEMIC EXPERIENCE**

<u>Institution</u>	<u>Rank</u>	<u>Field</u>	<u>Dates (Month &amp; Year)</u>
Northwestern University	Contract Educator	Physical Therapy	Sept. 2012 – May 2015
Vanderbilt University	Data Analyst	Cardiovascular Physiology	Sept. 2003 – May 2005

**NON-ACADEMIC EXPERIENCE**

<u>Place of Employment</u>	<u>Title</u>	<u>Dates (Month &amp; Year)</u>
Rehabilitation Institute of Chicago	Physical Therapist (Registry)	June 2012 – June 2015

## EMPLOYMENT RECORD AT FIU

<u>Rank</u>	<u>Dates (Month &amp; Year)</u>
Courtesy Assistant Professor, Biomedical Engineering	April 2017 – present
Dissertation Advisory Status, University Graduate School	February 2017 – present
Graduate Faculty Status, University Graduate School	January 2016 – present
Tenure-Earning Assistant Professor, Physical Therapy	August 2015 – present

## PROFESSIONAL LICENSURE

- 2012 – Physical Therapist, State of Illinois, #070019408
- 2016 – State of Florida, *In process, pending Florida legal exam. Delayed due to issues with name change relative to Illinois physical therapist license.*

## PUBLICATIONS IN DISCIPLINE

### Books

N/A

### Articles

\*Denotes student advisee.

**McPherson LM**, Negro F, Thompson CK, \*Sanchez L, Heckman CJ, Dewald JP, Farina D. Properties of the Motor Unit Action Potential Shape in Proximal and Distal Muscles of the Upper Limb in Healthy and Post-Stroke Individuals. *Conf Proc IEEE Eng Med Biol Soc.*, 2016. doi: 10.1109/EMBC.2016.7590708. PMID: 28268345. No impact factor given.

Wilson JM, Thompson CK, **Miller LC**, Heckman CJ. Intrinsic excitability of human motor units in biceps brachii versus triceps brachii. *Journal of Neurophysiology*. 2015; 113(10):3693-9. doi: 10.1152/jn.00960.2014. PubMed PMID: 25787957; PubMed Central PMCID: PMC4468975. 5-year impact factor: 3.313

**Miller LC**, Thompson CK, Negro FN, Heckman CJ, Farina D, Dewald JPA. High-density surface EMG decomposition allows for recording of motor unit discharge from proximal and distal flexion synergy muscles simultaneously in individuals with stroke. *Conf Proc IEEE Eng Med Biol Soc.* 2014;2014:5340-4. doi: 10.1109/EMBC.2014.6944832. PubMed PMID: 25571200; PubMed Central PMCID: PMC4410846. No impact factor given.

**Miller LC**, Dewald JPA. Involuntary paretic wrist/finger flexion forces and EMG increase with shoulder abduction load in individuals with chronic stroke. *Clin Neurophysiol*. 2012; 123(6): 1216-1225. doi: 10.1016/j.clinph.2012.01.009. PubMed PMID: 22364723; PubMed Central PMCID: PMC3729226. 5-year impact factor: 3.356

Stienen AH, Moulton TS, **Miller LC**, Dewald JPA. Wrist and Finger Torque Sensor for the quantification of upper limb motor impairments following brain injury. *IEEE Int Conf Rehabil Robot*.

2011. doi: 10.1109/ICORR.2011.5975464. PubMed PMID: 22275662; PubMed Central PMCID: PMC4407473. No impact factor given.

**Miller LC**, Ruiz Torres R, Stienen AHA, Dewald JPA. A wrist and finger force sensor module for use during movements of the upper limb in chronic hemiparetic stroke. *IEEE Trans Biomed Eng.* 2009; 56(9): 2312-2317. doi: 10.1109/TBME.2009.2026057. PubMed PMID: 19567336; PubMed Central PMCID: PMC2894619. 5-year impact factor: 2.567

Keller NR, Diedrich A, Appalsamy M, **Miller LC**, Caron MG, McDonald MP, Shelton RC, Blakely RD, Robertson D. Norepinephrine transporter-deficient mice respond to anxiety producing and fearful environments with bradycardia and hypotension. *Neuroscience.* 2006; 139(3): 931-946. PubMed PMID: 16515844. 5-year impact factor: 3.415

### **Proceedings**

**McPherson LCM**, Negro F, Heinichen S, McLerran M, Rose K, Winters A, Schulz K, Thompson CK, Heckman CJ, Farina D, Dewald JPA (2016). "Coherence among motor units of flexion synergy muscles in individuals with chronic hemiparetic stroke." *Journal of Neurologic Physical Therapy.* 2016; 40(1). Online version. 5-year impact factor: 2.711.

Heinichen S, McLerran M, Rose K, Winters A, Thompson CK, **McPherson LCM**, Heckman CJ, Dewald JPA (2016). "Estimation of motor unit discharge characteristics in proximal and distal arm muscles in healthy controls and individuals post-stroke." *Journal of Neurologic Physical Therapy.* 2014; 40(1). Online version. 5-year impact factor: 2.711.

**Miller LC**, Dewald JPA. Effects of shoulder abduction/adduction torque on hand opening and closing in chronic hemiparetic stroke. *Journal of Neurologic Physical Therapy.* 2014; 38(1): 58. Online version. 5-year impact factor: 2.711.

**Miller LC**, McGill KC, Dewald JPA. "Evidence of neural coupling between muscles of the paretic upper extremity in chronic hemiparetic stroke." *Journal of Neurologic Physical Therapy.* 2013; 36(4): 203. Online version. 5-year impact factor: 2.711.

**Miller LC**, Dewald JPA. "Quantification of the flexion and extension synergies at the wrist and fingers of individuals with chronic hemiparetic stroke." *Journal of Neurologic Physical Therapy.* 2012; 35(4): 213. Online version. 5-year impact factor: 2.711.

**Miller LC**, Dewald JPA. "Wrist/finger flexion forces and EMG increase with shoulder abduction loading in chronic hemiparetic stroke." *Journal of Neurologic Physical Therapy.* 2011; 34(4): 228. Online version. 5-year impact factor: 2.711.

### **Chapters in Books**

N/A

### **Government Reports or Monographs**

N/A

### **Book Reviews**

N/A

## **OTHER PUBLICATIONS**

**Miller, LC** (2014). Quantification of Abnormal Coupling Between the Paretic Upper Arm and Hand of Individuals with Chronic Hemiparetic Stroke Using Neurophysiological and Biomechanical Measurements (Doctoral dissertation). ProQuest Dissertations and Theses, No. 3669288.

## **PRESENTED PAPERS AND LECTURES**

\*\*Denotes post-doctoral fellow mentee

\*Denotes Doctor of Physical Therapy student mentee

**McPherson LM**, Rendos NK\*\*, Powers R, Heckman CJ, Thompson CK. Estimation of persistent inward currents in proximal vs. distal muscles in the upper extremity (Submitted for 2017). Society for Neuroscience Annual Meeting, Washington D.C.

**McPherson LM**, Negro F, Thompson CK, Rendos NK\*\*, Farina D, Heckman CJ, Dewald, JPA. Motor Unit Rate Modulation Differs Among Proximal and Distal Muscles of the Upper Limb in Healthy and Post-Stroke Individuals (Accepted for July 2017). Progress in Motor Control Meeting, Miami, FL.

**McPherson LM**, Negro F, Thompson CK, Farina D, Heckman CJ, Dewald JPA (2016). “Motor unit discharge characteristics differ among proximal and distal muscles of the upper limb in healthy and post-stroke individuals.” Society for Neuroscience Annual Meeting, San Diego, CA, poster presentation.

**McPherson LM**, Negro F, Thompson CK, \*Sanchez L, Heckman CJ, Dewald JP, Farina D (2016). “Properties of the Motor Unit Action Potential Shape in Proximal and Distal Muscles of the Upper Limb in Healthy and Post-Stroke Individuals.” IEEE Engineering in Medicine and Biology Society Annual Conference, Orlando, FL, platform presentation.

**McPherson LM**, Negro F, Thompson CK, Heckman CJ, Farina D, Dewald, JPA (2016). “Differences in motor unit discharge characteristics among proximal and distal muscles of the upper limb in individuals with chronic hemiparetic stroke.” International Society of Electrophysiology and Kinesiology Conference, Chicago, IL, invited symposium presentation.

**McPherson LM**, Negro F, Heckman CJ, Farina D, Dewald, JPA (2016). “Evidence for altered sensorimotor integration after stroke: analysis of motor unit behavior.” Society for Brain Mapping and Therapeutics Conference, Miami, FL, invited panel presentation.

**McPherson LM**, Thompson CK, Negro F, Heckman CJ, Farina D, Dewald JPA (2016). “Analysis of motor unit behavior in proximal and distal upper limb muscles in healthy and post-stroke individuals.” Neural Control of Movement Annual Conference, Montego Bay, Jamaica, team platform presentation: *Control of the motoneuron: insights from the discharge of motor unit populations.*

**McPherson LM**, Negro F, Heinichen S\*, McLerran M\*, Rose K\*, Winters A\*, Schulz K\*, Thompson CK, Heckman CJ, Farina D, Dewald JPA (2016). “Coherence among motor units of flexion synergy

muscles in individuals with chronic hemiparetic stroke.” American Physical Therapy Association Combined Sections Meeting, Anaheim, CA, poster presentation in Neurology Section.

Heinichen S\*, McLerran M\*, Rose K\*, Winters A\*, Thompson CK, **McPherson LM**, Heckman CJ, Dewald JPA (2016). “Estimation of motor unit discharge characteristics in proximal and distal arm muscles in healthy controls and individuals post-stroke.” American Physical Therapy Association Combined Sections Meeting, Anaheim, CA, poster presentation in Neurology Section.

**McPherson LM**, Negro F, Heckman CJ, Farina D, Dewald JPA (2015). “Motor unit coherence among muscles of the flexion synergy in individuals with chronic hemiparetic stroke.” Society for Neuroscience Pre-Conference Meeting on Rhythmic Motor Circuits, Chicago, IL. Invited platform presentation.

Thompson CK, Negro F, Johnson MD, Holmes MR, **Miller LC**, Farina D, Heckman CJ (2015). “Decorrelated neural drive to muscle from highly consistent inputs of specific sensory pathways in the *in vivo* cat.” Society for Neuroscience Annual Meeting, Chicago, IL, poster presentation.

Wilson JM, Thompson CK, **Miller LC**, Mackinnon C, Heckman CJ (2015). “Paradoxical changes in intrinsic motoneuron excitability between flexors and extensors in Parkinson’s disease.” Society for Neuroscience Annual Meeting, Chicago, IL, poster presentation.

Hurley DM\*, Hruby SA\*, Joshi I\*, Kang H\*, Thompson CK, **Miller LC**, Sanchez N, Powers RK, Negro F, Farina D, Dewald JPA, Heckman CJ (2015). “Mapping the discharge of motor unit populations in the human lower extremity.” Society for Neuroscience Annual Meeting, Chicago, IL, poster presentation.

**Miller LC**, Negro F, Heckman CJ, Farina D, Dewald JPA (2015). “Motor unit coherence among muscles of the flexion synergy in individuals with chronic hemiparetic stroke.” Society for Neuroscience Annual Meeting, Chicago, IL, poster presentation.

**Miller LC**, Negro F, Heckman CJ, Farina D, Dewald JPA (2015). “Motor unit coherence among muscles of the flexion synergy in individuals with chronic hemiparetic stroke.” Biomedical Engineering Society Annual Conference, Tampa, FL, platform presentation.

**Miller LC** (2015). “Towards improved patient function: how basic science and advanced technologies can inform rehabilitation.” Department of Physical Therapy Seminar Series. Florida International University, Miami, FL. Invited lecture.

**Miller LC**, Dewald JPA (2014). “Associated reactions in paretic wrist and finger flexors are greater in response to activation of proximal vs. distal joints of the non-paretic limb in individuals with chronic stroke.” Society for Neuroscience Annual Meeting, Washington, DC, poster presentation.

**Miller LC**, Thompson CK, Negro FN, Heckman CJ, Farina D, Dewald JPA (2014). “High-density surface EMG decomposition allows for recording of motor unit discharge from proximal and distal flexion synergy muscles simultaneously in individuals with stroke,” IEEE Engineering in Medicine and Biology Society Annual Conference, Chicago, IL, platform presentation.

**Miller LC, Dewald JPA (2014).** “Motor unit firing patterns during abnormal multi-joint coupling in chronic hemiparetic stroke.” Fourth Annual Movement and Rehabilitation Sciences Training Day, Northwestern University Feinberg School of Medicine, Chicago, IL, invited platform presentation.

**Miller LC, Negro F, Heckman CJ, Farina D, Dewald JPA (2014).** “Motor unit firing patterns during abnormal multi-joint coupling in chronic hemiparetic stroke.” International Motoneuron Meeting, Halifax, Canada, platform presentation.

**Miller LC, Negro F, Heckman CJ, Farina D, Dewald JPA (2014).** “Evidence of common motor unit modulation among muscles of the flexion synergy in chronic hemiparetic stroke.” NIH NIBIB Training Grantee Meeting, poster presentation.

**Miller LC, Dewald JPA (2014).** “Effects of shoulder abduction/adduction torque on hand opening and closing in chronic hemiparetic stroke.” American Physical Therapy Association Combined Sections Meeting, Las Vegas, NV, poster presentation in Neurology Section.

**Miller LC, Wilson JM, Gorassini M, Farina D, Dewald JPA, Heckman CJ (2013).** “Estimation of persistent inward currents in proximal vs. distal muscles in the upper extremity.” IEEE EMBS Conference on Neural Engineering, San Diego, CA, poster presentation.

**Miller LC, Negro F, Heckman CJ, Farina D, Dewald JPA (2013).** “Evidence of common motor unit modulation among muscles of the flexion synergy in chronic hemiparetic stroke.” Society for Neuroscience Annual Meeting, San Diego, CA, poster presentation.

**Miller LC, Dewald JPA (2013).** “Effects of shoulder torque on hand function in stroke: implications for control of assistive devices.” Biomedical Engineering Society Annual Meeting, Seattle, WA, platform presentation.

**Miller LC, McGill KC, Dewald JPA (2013).** “Evidence of neural coupling between muscles of the paretic upper extremity in chronic hemiparetic stroke.” American Physical Therapy Association Combined Sections Meeting, San Diego, CA, poster presentation in Neurology Section.

**Miller LC, Dewald JPA (2012).** “Differential effects of shoulder abduction and adduction on involuntary behavior of the paretic hand in chronic hemiparetic stroke.” Society for Neuroscience Annual Meeting, New Orleans, LA, poster presentation.

**Miller LC, Dewald JPA (2012).** “Quantification of the flexion and extension synergies at the hand in chronic hemiparetic stroke.” Second Annual Movement and Rehabilitation Sciences Training Day, Northwestern University Feinberg School of Medicine, Chicago, IL, invited platform presentation.

**Miller LC, Dewald JPA (2012).** “Quantification of the flexion and extension synergies at the wrist and fingers of individuals with chronic hemiparetic stroke.” American Physical Therapy Association Combined Sections Meeting, Chicago, IL, poster presentation in Neurology Section.

**Miller LC, Dewald JPA (2011).** “Wrist/finger flexion forces and EMG increase with shoulder abduction loading in chronic hemiparetic stroke.” American Physical Therapy Association Combined Sections Meeting, New Orleans, LA, poster presentation in Neurology Section.

**Miller LC**, Stienen AHA, Dewald JPA (2009). “Finger/wrist flexor and biceps activity increases as a function of limb loading and reach in chronic hemiparetic stroke.” Society for Neuroscience Annual Meeting, Chicago, IL, poster presentation.

**Miller LC**, Dewald JPA (2009). “Wrist/finger flexion forces and EMG as a function of shoulder abduction loading in chronic hemiparetic stroke.” Robotics: Science and Systems Conference Workshop: Understanding the Human Hand for Advancing Robotic Manipulation, Seattle, WA, poster presentation.

**Miller LC**, Dewald JPA (2008). “Quantification of finger/wrist flexion forces as a function of limb loading in chronic hemiparetic stroke and the effects of finger/wrist extensor stimulation.” Society for Neuroscience Annual Meeting, Washington, DC, poster presentation.

## **CREATIVE WORK**

N/A

## **COMMUNITY PRESENTATIONS**

“Biomarkers, Genetics, Motor Units, and Robotics: The Future of Neuro-Rehabilitation,” Stroke Rehabilitation: Promoting Recovery Across the Continuum of Care. FIU NWCNHS/West Gables Hospital 3<sup>rd</sup> Annual Stroke Symposium. Florida International University, May 14, 2016.

“Introduction to Clinical Research for Physical Therapists,” Memorial West Hospital, Pembroke Pines, FL, December 1, 2015.

## **WORKS IN PROGRESS**

### Under review:

Wilson JM, Thompson CK, **McPherson LM**, Zadikoff C, Heckman CJ, MacKinnon CD. Motoneuron firing properties of elbow flexors and extensors in Parkinson’s disease. Under review at *Clinical Neurophysiology* (5-year impact factor: 3.477).

### Under revision:

Thompson CK, Negro F, Johnson MD, Holmes MR, **McPherson LM**, Powers RK, Farina D, Heckman CJ. Robust and accurate decoding of motoneuron behavior and prediction of the resulting force output. Under revision at *Journal of Physiology* (5-year impact factor: 4.951)

**McPherson LM**, Dewald JPA. Differences between flexion and extension synergy-driven coupling at the elbow and hand of individuals with chronic hemiparetic stroke. Under revision at *Clinical Neurophysiology* (5-year impact factor: 3.477).

### Manuscripts in final preparation:

**McPherson LM**, Dewald JPA. Effect of flexion and extension synergy expression on voluntary wrist and finger activation in individuals with chronic hemiparetic stroke. Awaiting senior author review/approval for submission to *Clinical Neurophysiology* (5-year impact factor: 3.356).

**McPherson LM**, Dewald JPA. Effects of proximal vs. distal upper limb maximal efforts on intra- and inter-limb coupling in individuals with chronic hemiparetic stroke. Awaiting senior author review/approval for submission to *Brain* (5-year impact factor: 10.418)

Manuscripts in preparation:

**McPherson LM**, Negro F, McGill K, Heckman CJ, Farina D, Dewald JPA. Neural coupling between motor unit discharge of flexion synergy muscles in chronic hemiparetic stroke. In preparation for: *Brain* (5-year impact factor: 10.545).

**McPherson LM**, Negro F, Thompson CK, Farina D, Heckman CJ. Motor unit rate modulation differs in proximal and distal muscles of the upper limb. In preparation for: *Journal of Neuroscience* (5-year impact factor: 6.78).

**McPherson LM**, Negro F, Thompson CK, Farina D, Heckman CJ, Dewald JPA. Post-stroke alterations in motor unit firing characteristics differ in proximal and distal upper limb muscles. In preparation for: *Brain* (5-year impact factor: 10.545).

Wilson JM, Thompson CK, **McPherson LM**, Heckman CJ, MacKinnon CD. Paradoxical changes in upper limb motoneuron intrinsic excitability in Parkinson's disease. In preparation for: *Clinical Neurophysiology* (5-year impact factor: 3.356).

Thompson CK, Negro F, Johnson MD, Holmes MR, **McPherson LM**, Powers RK, Farina D, Heckman CJ. Neuromodulation of common synaptic input across motor unit populations in the *in vivo* cat. In preparation for *Frontiers in Human Neuroscience*. (5-year impact factor: 4.040).

Research projects:

- 1) Effect of central nervous system lesions on motor function: examining motor unit discharge in individuals with multiple sclerosis

**McPherson LM**,<sup>1</sup> Rendos N,<sup>1</sup> Sanchez L,<sup>1</sup> Foster K,<sup>2</sup> Subei A<sup>2</sup>

<sup>1</sup> Florida International University, Department of Physical Therapy

<sup>2</sup> Memorial Neuroscience Institute, Memorial Healthcare System, Hollywood, FL

- 2) Altered coupling between cardiovascular and sensorimotor systems in postural control in individuals with multiple sclerosis or following stroke

**McPherson LM**,<sup>1</sup> Rendos N,<sup>1</sup> Sanchez L,<sup>1</sup> Blaber AP<sup>2</sup>

<sup>1</sup> Florida International University, Department of Physical Therapy

<sup>2</sup> Simon Fraser University, Vancouver, BC, Canada

- 3) Examining motor unit behavior in multiple upper limb muscles simultaneously using high-density surface EMG decomposition in individuals with moderate-to-severe chronic hemiparetic stroke.

**McPherson LM**,<sup>1</sup> Negro F,<sup>2</sup> Heckman CJ,<sup>3</sup> Farina D,<sup>2</sup> Dewald J<sup>3</sup>



<sup>1</sup> Florida International University, Department of Physical Therapy

<sup>2</sup> University of Brescia, Brescia, Italy

<sup>3</sup> Imperial College London, London, UK

<sup>4</sup> Northwestern University Feinberg School of Medicine, Department of Physical Therapy and Human Movement Sciences, Chicago, IL

4) Examining how motor unit discharge characteristics differ among proximal and distal upper limb muscles in healthy individuals and individuals post-stroke.

**McPherson LM**,<sup>1</sup> Negro F,<sup>2</sup> Thompson CK,<sup>4</sup> Heckman CJ,<sup>3</sup> Farina D,<sup>5</sup> Dewald J<sup>3</sup>

<sup>1</sup> Florida International University, Department of Physical Therapy

<sup>2</sup> University of Brescia, Brescia, Italy

<sup>3</sup> Northwestern University Feinberg School of Medicine, Department of Physical Therapy and Human Movement Sciences, Chicago, IL

<sup>4</sup> Temple University, Philadelphia, PA

<sup>5</sup> Imperial College London, London, UK

5) Prediction of the source of synaptic input to motoneurons through reverse engineering of motor unit discharge

**McPherson LM**,<sup>1</sup> Danziger Z,<sup>2</sup> McPherson JG<sup>2</sup>

<sup>1</sup> Florida International University, Department of Physical Therapy

<sup>2</sup> Florida International University, Department of Biomedical Engineering

## **FUNDED RESEARCH**

### **Ongoing**

Project title: *Effect of Neural Constraints on Movement in Stroke*

Role: Principal investigator of subcontract

Funding agency: Subcontract from Northwestern University from R01HD039343 (Principal

Investigator: Jules Dewald, PT, PhD, funded by NIH/NICHD)

Total costs: \$84,586

Funding period: 08/19/2015 – 5/31/2018

Project title: *The Human Motor Output Map*

Role: Principal investigator of subcontract

Funding agency: Subcontract from Northwestern University from R01NS098509 (Principal

Investigator: CJ Heckman, funded by NIH/NINDS)

Total costs: TBD, pending funding period

Funding period: TBD, anticipated beginning July 2017

### **Pending**

Project title: *Analysis of motor unit populations to quantify altered motor commands in multiple sclerosis*

Role: Principal Investigator

Funding mechanism: NCMRR Early Career Award

Funding agency: NIH/NICHD/NCMRR  
Funding period: 12/01/2017 – 11/31/2019  
Submission Date: April 2017

Project title: *Medication Adherence in Disability: Assessment of Performance through Technology (MedADAPT)*

Role: Co-Investigator  
Principal Investigator: Jaclyn Schwartz, FIU Department of Occupational Therapy  
Funding mechanism: Field-initiated program

Funding agency: NIDILRR  
Submission Date: February 2017

Project title: *Motor unit discharge characteristics in multiple sclerosis*

Role: Principal Investigator  
Funding Agency: NIH/NICHD Loan Repayment Program  
Submission Date: December 2016

### **Completed**

Title: *American Physical Therapy Association, Section on Research Travelling Fellows Award*

Role: Principal Investigator  
Funding agency: American Physical Therapy Association, Section on Research  
Awarded: April 19, 2016  
Total costs: \$2000 for travel to laboratory of senior research mentor

Title: *Early Career Professional Award*

Role: Principal Investigator  
Funding agency: American Physical Therapy Association, Academy of Neurology  
Awarded: October 2015  
Total costs: \$950 for travel to American Physical Therapy Association Combined Sections Meeting  
Funding period: February 2016

Project title: *Neural coupling between the paretic shoulder and hand in chronic hemiparetic stroke*

Promotion of Doctoral Studies II Scholarship  
Role and effort: PI, 100% FTE  
Funding agency: Foundation for Physical Therapy  
Total costs: \$15,000  
Funding period: 09/01/2013 – 08/31/2014

Title: *Interdisciplinary Graduate Education in Movement and Rehabilitation Sciences*

NIH T32 EB009406  
Role and effort: Pre-Doctoral Trainee, 100% FTE  
Principal Investigators: Julius P.A. Dewald, PT, PhD; Todd Kuiken, MD, PhD  
Funding agency: NIH/NIBIB  
Funding Period: 09/01/2012 – 08/31/2014

Project title: *Overcoming Gravity-Induced Arm and Hand Dysfunction to Restore Functional Reaching Following Stroke*

H133G070089

Role: Graduate Research Assistant

Principal Investigator: Julius P.A. Dewald, PT, PhD

Funding agency: NIDRR

Funding period: 2007 - 2011

## **PROPOSALS SUBMITTED BUT NOT FUNDED**

Project title: *Motor Unit Discharge Characteristics in Multiple Sclerosis: Implications for Disease Monitoring and Rehabilitation*

Role: Principal Investigator

Funding Mechanism: Pilot Research Grant

Funding Agency: National Multiple Sclerosis Society

Submission Date: January 2017

Project title: *CardioPost: a new diagnostic rehabilitation device to monitor astronauts after long duration space flight*

Role: Co-Investigator

Principal Investigator: Kouhyar Tavakolian, University of North Dakota

Funding agency: NASA Human Exploration Research Opportunities: NASA Human Research Program Omnibus Opportunity

Submission Date: September 2016

Project title: *Medication Adherence in Disability: Assessment of Performance through Technology (MedADAPT)*

Role: Co-Investigator

Principal Investigator: Jaclyn Schwartz, FIU Department of Occupational Therapy

Funding agency: NIDILRR

Submission Date: February 2016

Project title: *Artificial gravity protocol evaluation: Effects of bed rest and the use of artificial gravity on the cardio-postural relationship*

Role: Co-Investigator

Principal Investigator: Kouhyar Tavakolian, University of North Dakota

Funding agency: NASA Human Exploration Research Opportunities: Physiological and Behavioral Responses in Humans to Intermittent Artificial Gravity during Bed Rest

Submission Date: January 2016

Project title: *Corticomuscular connectivity-driven control system to enable early robot-assistive therapy in individuals with severe paresis*

Role: Co- Investigator

Principal Investigator: Ou Bai, FIU Department of Electrical Engineering

Funding agency: National Science Foundation, Smart and Connected Health Program

Submission Date: October 2015

Project title: *Altered coupling between cardiovascular and motor systems during postural control following stroke*

Role: Principal Investigator

Funding Agency: NIH/NICHD Loan Repayment Program

Submission Date: October 2015

## **PATENT DISCLOSURES, APPLICATIONS, AND AWARDS**

N/A

## **PROFESSIONAL HONORS, PRIZES, FELLOWSHIPS**

- 2017      Young Alumnus of the Year, Northwestern University Physical Therapy Alumni Association
- 2017      Trainee (competitive application), Training in Grantsmanship for Rehabilitation Research (TIGRR) Workshop, Medical University of South Carolina, Charleston, SC; March 2016
- 2016      Travelling Fellow, American Physical Therapy Association Section on Research
- 2016      Trainee (competitive application), National Center of Neuromodulation for Rehabilitation Level 1 Workshop, Medical University of South Carolina, Charleston, SC; March 2016
- 2015      Early Career Professional Award, American Physical Therapy Association Academy of Neurology
- 2014      International Finalist, Student Paper Competition, International Conference of the IEEE Engineering in Medicine and Biology Society
- 2014      Outstanding Student Presentation, International Motoneuron Meeting
- 2013 – 14 Senior Graduate Student, Department of Physical Therapy and Human Movement Sciences, Feinberg School of Medicine, Northwestern University
- 2012 – 14 NIH Pre-doctoral Trainee, NIH T32, Interdisciplinary Graduate Education in Movement and Rehabilitation Sciences
- 2013      Mary Lou Barnes Award, Outstanding Application in Neurology for the Promotion of Doctoral Studies II Scholarship, Foundation for Physical Therapy
- 2012      Dean of Feinberg School of Medicine DPT/PhD Scholar Award, Feinberg School of Medicine, Northwestern University
- 2012      Conference Travel Grant, The Graduate School, Northwestern University
- 2009      Student Travel Fellowship, United States Naval Research Laboratory

2006 Finalist for the Arnold Palmer Senior Design Project Prize, Department of Biomedical Engineering, School of Engineering, Vanderbilt University

### **OFFICES HELD IN PROFESSIONAL SOCIETIES**

2016 – Research Committee, American Physical Therapy Association Education Section

### **OTHER PROFESSIONAL ACTIVITIES AND PUBLIC SERVICE**

2017 – Member, Media and Public Relations Committee, Department of Physical Therapy, Nicole Wertheim College of Nursing and Health Sciences

2016 – Member, Technology Committee, Nicole Wertheim College of Nursing and Health Sciences

2016 – Attendee, Rehabilitation Research at the National Institutes of Health: Moving the Field Forward Conference, National Institutes of Health, Washington, DC; May 25-26, 2016

2015 – Member, Research Committee, Department of Physical Therapy, Nicole Wertheim College of Nursing and Health Sciences

2015 – 2016 DPT/PhD in Biomedical Engineering Combined Degree Program Initiative Committee, Departments of Physical Therapy and Biomedical Engineering, Florida International University

2015 – 2016 Faculty Advisor for Undergraduate Senior Design Project (Project sponsor: Dr. Mark Rossi), Department of Biomedical Engineering, Florida International University

2015 – 2016 Alumni Mentor for Undergraduate Biomedical Engineering Students, Vanderbilt University School of Engineering

#### *Ad-hoc review of manuscripts:*

Journal of Neurophysiology, Clinical Neurophysiology, Journal of Biomechanics, Experimental Brain Research, Journal of Neural Engineering, Gait and Posture

#### *Ad-hoc review of conference abstracts:*

IEEE Engineering in Medicine and Biology Annual Conference, APTA Combined Sections Meeting: Neurology, APTA Combined Sections Meeting: Education

### **PROFESSIONAL SOCIETY MEMBERSHIPS**

2015 – Florida Physical Therapy Association

2012 – American Physical Therapy Association

2014 – Institute of Electrical and Electronics Engineers

2014 – Engineering in Medicine and Biology Society

2014 – International Motoneuron Society

2008 – Society for Neuroscience