

REGULAR FACULTY

Brenna Argall

Journal publications:

A. Erdogan and B. Argall. The Effect Robotic Wheelchair Control Paradigm and Interface on User Performance, Effort and Preference: An Experimental Assessment. *Robotics and Autonomous Systems*, 94, 282-297, 2017.

A. Broad, J. Arkin, N. Ratliff, T. Howard and B. Argall. Real-Time Natural Language Corrections for Assistive Manipulation Tasks. *International Journal of Robotics Research*, 36(5-7), 684-698, 2017.

S. Mohammed, H. W. Park, C. H. Park, Y. Amirat and B. Argall. Special Issue on Assistive and Rehabilitation Robotics. *Autonomous Robots*. 41(3), 513-517, 2017.

P. Beckerle, G. Salvietti, R. Ünal, D. Prattichizzo, S. Rossi, C. Castellini, S. Hirche, S. Endo, H. Ben Amor, M. Ciocarlie, F. Mastrogiovanni, B. D. Argall and M. Bianchi. A Human-Robot Interaction Perspective on Assistive and Rehabilitation Robotics. *Frontiers in Neurorobotics*, 2017.

Conferences, proceedings publications with oral presentations:

A. Broad, T. Murphey and B. Argall. Learning Models for Shared Control of Human-Machine Systems with Unknown Dynamics. Accepted for publication in *Robotics: Science and Systems (RSS)*, Boston, Massachusetts, USA, Jul. 2017.

D. Gopinath and B. Argall. Mode Switch Assistance To Maximize Human Intent Disambiguation. Accepted for publication in *Robotics: Science and Systems (RSS)*, Boston, Massachusetts, USA, Jul. 2017.

A. Erdogan and B. Argall. Prediction of User Preference over Shared-Control Paradigms for a Robotic Wheelchair. Accepted for publication in the *IEEE International Conference on Rehabilitation Robotics (ICORR)*, London, United Kingdom, Jul. 2017.

Andrea Domenighetti

Abstract submitted "Development of New 3D-Printed Cell Culture Assays for Biomarkers and Drug Discovery in Cerebral Palsy" (A. Taylor et al.) to the AAP Physiatry 2018 annual meeting in Atlanta GA

Manuscript in press: "Management of Cardiac Involvement Associated with Neuromuscular Diseases - A Scientific Statement from the American Heart Association". *Circulation* -

Feingold, Mahle, Auerbach, Clemens, Domenighetti, et al.

Shirley Ryan Abilitylab-CHNF Infrastructure Center Grant application to the Nielsen Foundation: "Genetic and Epigenetic Predictors of Functional Improvement Following Acute Intermittent Hypoxia Therapy in Individuals with Incomplete Spinal Cord Injury" - (Domenighetti, Sandhu, Anastasopoulos, Rymer and Grafman).

Manuscript in submission: "Loss of myogenic potential and fusion capacity of satellite cells isolated from contractured muscle in children with cerebral palsy". Development - Domenighetti, et al.

- Pre patent filing application: "Methods of treating skeletal muscle contractures, skeletal muscle atrophy, muscle tissue and muscle cell remodeling using cytosine and cytidine analogs, with or without an aurora kinase inhibitor". Domenighetti

Deb Gaebler

Effects of the Integration of Dynamic Weight Shifting Training Into Treadmill Training on Walking Function of Children with Cerebral Palsy: A Randomized Controlled Study. Wu M, Kim J, Arora P, Gaebler-Spira DJ, Zhang Y. Am J Phys Med Rehabil. 2017 Jun 21. doi: 10.1097/PHM.0000000000000776. [Epub ahead of print]

Effects of an Off-Axis Pivoting Elliptical Training Program on Gait Function in Persons With Spastic Cerebral Palsy: A Preliminary Study
Tsai, Liang-Ching PhD, PT; Ren, Yupeng MS; Gaebler-Spira, Deborah J. MD; Revivo, Gadi A. DO; Zhang, Li-Qun PhD American Journal of Physical Medicine & Rehabilitation: [July 2017 - Volume 96 - Issue 7 - p 515–522](#) doi: 10.1097/PHM.0000000000000632 Brief Reports

Participated in the PICORI cerebral palsy workshop, June 16-17

Presented "Rehab Grand Rounds: Back to Basics-Stretching", Children's Healthcare of Atlanta, July 13

Participant, Cerebral Palsy Foundation Scientific Advisory Committee, NYC, July 15-16

Levi Hargrove

Papers published

Kuiken TA, Barlow AK, **Hargrove LJ**, Dumanian GA. Targeted Muscle Reinnervation for the Upper and Lower Extremity. *Techniques in Orthopaedics* 32(2):109-1116, June 2017 DOI: 10.1097/BTO.0000000000000194

Johnson RE, Kording KP, **Hargrove LJ**, Sensinger JW. EMG versus torque control of human-machine systems: Equalizing control signal variability does not equalize error or uncertainty. *IEEE Trans Neural Syst Rehabil Eng* 25(6):660-667, June, 2017.

Conference Proceedings

Lenzi T, Cempini M, **Hargrove LJ**, Kuiken TA. Actively variable transmission for robotic knee prostheses. Published in: IEEE International Conference on Robotics and Automation (ICRA), July 24, 2017.

Spanias J, Simon AM, and **Hargrove LJ**. Across user adaptation for a powered lower limb prosthesis. The 15th IEEE International Conference on Rehabilitation Robotics (ICORR), London, England. July 17-20, 2017.

Kuiken T, Miller L, **Hargrove L**, Turner K, Sensinger J. A Comparison of Home Trials with Multiple Devices and Controls with a Single TH TMR Subject. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Hargrove L, Miller L, Turner K, Kuiken T. Outcome measures improve following home use with pattern recognition control. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Brantly N, Cummins F, Lock B, **Hargrove L**, Feuser A, Machine Learning to Improve Pattern Recognition Control of Upper-Limb Myoelectric Prostheses. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Cummins F, Brantly N, Lock B, Feuser A, **Hargrove L**. Pattern Recognition Myoelectric Control Calibration Quality Feedback Tool to Increase Function. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Earley E, Kaveny K, Johnson R, **Hargrove L**, Sensinter J. Joint-Based Velocity Feedback Improves Myoelectric Prosthesis Performance. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Grants Submitted

NIH R01: *"The Functional Importance of Powered Wrist Flexion for Upper Limb Prostheses"*. Submitted June, 2017. Role: Principal Investigator.

Allen Heinemann

Proposals Submitted:

HHS NIDILRR, Spinal Cord Injury Model Systems (SCIMS) ReInventing Yourself after SCI:
A multi-site collaborative randomized controlled trial of an intervention to improve
outcomes after spinal cord injury, start date 9/30/17

HHS NIDILRR, Spinal Cord Injury Model Systems (SCIMS) TIRR SCIMS Multisite
Collaborative, start date 9/30/2017

HHS NIDILRR, DRRP, TBI Model Systems, start date 10/1/2017

NIH, R18, Dissemination and Implementation of the Emergency Medicine Geriatric Response
and Evaluation Tool "EGRET", start date 1/1/18

Spinal Cord Injury Research Program- Qualitative Research Award, Department of Defense, Evaluating the Utilization and Efficiency of Wearable Exoskeletons for SCI Rehabilitation, start date, 9/1/2017

Presentations:

Heinemann, AW. The Rehabilitation Measures Database. Presentation invited as part of the Workshop on Assessments, RehabWeek, London, United Kingdom, July 17, 2017.

Manuscripts:

Amtmann D, McMullen K, Kim J, et al. Psychometric Properties of the Modified 5-D Itch Scale in a Burn Model System Sample of People With Burn Injury. *Journal of Burn Care & Research.* 2017;38(1):E402-E408.

Baum CM, Wolf TJ, Wong AWK, et al. Validation and clinical utility of the executive function performance test in persons with traumatic brain injury. *Neuropsychol Rehabil.* 2017;27(5):603-617.

Carlozzi N, Heaton RK, Goldsmith A, **Heinemann AW**, Wong A. Using the NIH Toolbox Cognition Battery (NIHTB-CB) in Individuals with Traumatic Brain Injury Rehabilitation Psychology. *Rehabilitation Psychology.* 2017.

Carlozzi NE, Goodnight S, Casaletto KB, et al. Validation of the NIH Toolbox in Individuals with Neurologic Disorders. *Arch Clin Neuropsychol.* 2017:1-19.

Hahn EA, Magasi SR, Carlozzi NE, et al. Health and Functional Literacy in Physical Rehabilitation Patients. *HLRP: Health Literacy Research and Practice.* 2017;1(2):e71-e85.

Heinemann A, Raad J, Akuthota V, et al. Scoping review to develop common data elements for lumbar spinal stenosis. *Spine J.* 2017;17(7):1045-1057.

Heinemann AW, Deutsch A, Cella D, et al. Feasibility of Collecting Patient-Reported Outcomes for Inpatient Rehabilitation Quality Reporting. *Health Serv Res.* 2017.

Heinemann AW, Ehrlich-Jones L, Connelly L, Semik P, Fatone S. Enhancing quality of prosthetic services with process and outcome information. *Prosthet Orthot Int.* 2017;41(2):164-170.

Holdnack JA, Tulskey DS, Brooks BL, et al. Interpreting Patterns of Low Scores on the NIH Toolbox Cognition Battery. *Arch Clin Neuropsychol.* 2017:1-11.

Magasi S, Harniss M, **Heinemann AW.** An interdisciplinary approach to the development of accessible computer-administered measurement instruments. *Arch Phys Med Rehabil.* 2017.

Mallinson T, Fitzgerald CM, Neville CE, et al. Impact of urinary incontinence on medical rehabilitation inpatients. *NeuroUrol Urodyn.* 2017;36(1):176-183.

Pinto D, Danilovich MK, Hansen P, et al. Qualitative Development of a Discrete Choice Experiment for Physical Activity Interventions to Improve Knee Osteoarthritis. *Arch Phys Med Rehabil.* 2017;98(6):1210-1216 e1211

Wong AWK, Ng S, Dashner J, et al. Relationships between environmental factors and participation in adults with traumatic brain injury, stroke, and spinal cord injury: a cross-sectional multi-center study. *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation.* 2017.

Xiang X, An R, **Heinemann A.** Depression and Unmet Needs for Assistance With Daily Activities Among Community-Dwelling Older Adults. *Gerontologist.*

Service Activities:

Member, Quality Measures Technical Expert Panel, American Academy of Physical Medicine and Rehabilitation, 2017

Arun Jayaraman

Grants Submitted

DARPA: “*Smartphone monitoring for health and readiness*” (Subcontract) Submitted June, 2017

Pre-application to CDMRP Peer Reviewed Orthopaedic Research Program, Clinical Trial Award: “*Improving Amputee Function through Principles of Motor Control*” submitted July 12, 2017.

Falk Medical Trust Catalyst Award: *Walk home with your robot: A continuum of care model.* Submitted July 27.

Pre-application to CDMRP Spinal Cord Injury Research Program, Clinical Trial Award: “*Clinical trial of a robotic exoskeleton with functional electrical stimulation as an acute-phase intervention to promote neuromuscular recovery after severe SCI*” Submitted August 7, 2017.

Articles Published

O'Brien MK, Shawen N, Mummidisetty CK, Kaur S, Bo X, Poellabauer C, Kording K, **Jayaraman A.** Activity Recognition for Persons with Stroke Using Mobile Phone Technology: Toward Improved Performance in a Home Setting *J Med Internet Res* 2017;19(5):e184

Deems-Dluhy SL, Jayaraman C, Green S, Albert MV, **Jayaraman A.** Evaluating the functionality and usability of two novel wheelchair anti-rollback devices for ramp ascent in manual wheelchair users with spinal cord injury, *Phys Med & Rehabil.* 9(5):483-493.

Lynch M, Duffell L, Sandhu M, Srivatsan S, Deatsh K, Kessler A, Mitchell GS, **Jayaraman A,** Rymer WZ. Effect of acute intermittent hypoxia on motor function in individuals with chronic spinal cord injury following ibuprofen pretreatment: a pilot study. *J. Spinal Cord Med* 40(3):295-303.

Jayaraman A, Burt S, Rymer WZ. Use of Lower-Limb Robotics to Enhance Practice and Participation in Individuals with Neurological Conditions. *Pediatric Physical Therapy* 29:S48-S56.

Lonini L, Gupta A, Deems-Dluhy S, Hoppe-Ludwig S, Kording K, and **Jayaraman A** . Activity Recognition in Individuals Walking with Assistive Devices: The Benefits of Device-Specific Models. *JMIR Rehabil Assist Technol* 2017;4(2):e8 DOI: 10.2196/rehab.7317

Conference Presentations

Swartz A, Turner K, **Jayaraman A**, Sensinger J. Evaluation of daily use and function of conventional body-powered prostheses and custom vo/vc terminal device. *Podium*. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Todd Kuiken

Patents

Kuiken T, Huang H. Identification and implementation of locomotion modes using surface electromyography; US9700439 B1, published July 11, 2017.

Kuiken T. Limb lengthening system for residual limb; US 9615864 B2, published April 17, 2017.

Papers published

Kuiken TA, Barlow AK, Hargrove LJ, Dumanian GA. Targeted Muscle Reinnervation for the Upper and Lower Extremity. *Techniques in Orthopaedics* 32(2):109-1116, June 2017 DOI: 10.1097/BTO.000000000000194

Swartz AQ, Turner K, Miller L, **Kuiken TA**. Custom, rapid prototype thumb prosthesis for partial-hand amputation: A case report. *Prosthetics and Orthotics International*, June 22, 2017 DOI: 10.1177/0309364617706421

Conference Proceedings

Lenzi T, Cempini M, Hargrove LJ, **Kuiken TA**. Actively variable transmission for robotic knee prostheses. Published in: IEEE International Conference on Robotics and Automation (ICRA), July 24, 2017.

Kuiken T, Turner K, Miller L, Simon A. A study investigating targeted muscle reinnervation for individuals with transradial amputations. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Kuiken T, Miller L, Hargrove L, Turner K, Sensinger J. A Comparison of Home Trials with Multiple Devices and Controls with a single TH TMR subject. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Hargrove L, Miller L, Turner K, **Kuiken T**. Outcome measures improve following home use with pattern recognition control. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Grants Submitted

Pre-application to CDMRP Peer Reviewed Orthopaedic Research Program, Clinical Trial Award: "Thighplasty to improve prosthesis fit and function" submitted July 12, 2017.

Mitra Lavasani

Grant Submitted

NIH-R01: *Preserving Aging Neuromuscular Junction Structure and Function*, Submitted July 2015

NIH-R01: *Prevention of Distal Muscle Atrophy after Peripheral Nerve Injury*, Submitted June 2015

Presentations

Invited Speaker, Shirley Ryan AbilityLab, 40th Annual Interdisciplinary Spinal Cord Injury Course: The Integration of Research and Clinical Care, June 2017

Laura Miller

Conference Presentations

Kuiken T, Turner K, **Miller L**, Simon A. A study investigating targeted muscle reinnervation for individuals with transradial amputations. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Kuiken T, **Miller L**, Hargrove L, Turner K, Sensinger J. A Comparison Of Home Trials With Multiple Devices And Controls With A Single TH TMR Subject. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Hargrove L, **Miller L**, Turner K, Kuiken T. Outcome measures improve following home use with pattern recognition control. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Grants Submitted

NIH R01: "The Functional Importance of Powered Wrist Flexion for Upper Limb Prostheses". Submitted June, 2017. Role: Co-Investigator.

Debjani Mukherjee

Green MM, Wicclair MR, Wocial LD, Kondrat A, **Mukherjee D**. [Moral Distress in Rehabilitation](#). PM R. 2017 Jul;9(7):720-726.

Gittler M, Thomas JL, Bozza MN, Berlinger N, **Mukherjee D**. [Undocumented Patients and Rehabilitation Services](#). PM R. 2017 Apr;9(4):403-410.

W. Zev Rymer

Presented "Pathophysiology of spasticity: new findings and implications for clinical management" at UT Health, Houston, TX, June 14

Pre-Congress Workshop presentation "Towards a next generation of wearable robotic devices for human-oriented assistance and therapy" at RehabWeek in London, UK, June 17

Satellite Program presentation "Transient reductions in oxygen partial pressure in the inspired air promote rapid and substantial increases in voluntary muscle strength in persons with incomplete spinal cord injury" at Progress in Motor Control XI in Miami, FL, July 19

Opening statement, Session 10.4 – Motor Control (Special session honoring Professor Carlo De Luca) at ISB 2017 in Brisbane, Australia, July 26

Chair, Session 11.10 – Neuromechanics at ISB 2017 in Brisbane, Australia, July 27

Published "Use of Lower-Limb Robotics to Enhance Practice and Participation in Individuals With Neurological Conditions" by Jayaraman A, Burt S, Rymer, WZ. *Pediatr Phys Ther.* PMID: 28654477, July 2017

Presented "Robotic Rehabilitation in post severe head injury sequelae" at 26th Annual Conference of the Neurotrauma Society of India in Ooty, Coimbatore, Tamil Nadu, India, August 12

Presented "Applications of Advanced Technologies in Neurologic Rehabilitation" to doctors and physiotherapists in Chennai, India, August 13

Presented "Applications of Advanced Technologies in Neurologic Rehabilitation" to students at IIT Madras in Chennai, India, August 14

Presented "Use of technology in Rehabilitation" at NIMHANS in Bangalore, India, August 16

Diane Dudas Sheehan

Teaching:

"Neuromuscular Scoliosis Evaluation and Management", presented to PM&R residents /students during Pediatric rotation on 5/9//17 & 7/18/17 at the Shirley Ryan Ability Lab

"Comprehensive Evaluation and Practical Treatment of Children with Wounds" presented to PM&R residents & students during Pediatric rotation on 5/18/17at the Shirley Ryan Ability Lab

"Comprehensive Evaluation & Treatment of Orthopaedic Patients with Wounds" to Orthopaedic residents at Ann & Robert H. Lurie Children's Hospital of Chicago on 6/15/17

Awards:

Received on July 24, 2017 Outstanding Teacher recognition Award/pin for Small group Leader for Ethics in Action Course, M1 medical students, NU

Presentations:

July 14, 2017 "Publishing a Clinical Case Report" APN publication seminar at Lurie Children's Hospital

July 20, 2017 "Pediatric Disabilities: Visible and Invisible" APN Grand Rounds (ADA Celebration Week) presented with Cindy Budek, MSN at Lurie Children's Hospital

Mary Zeigler: article entitled "Ostomy management: Nuts and bolts for every nurse's toolbox", published in the September issue of American Nurse Today

RESEARCH FACULTY

Anne Deutsch

Proposal submitted:

Multiple Sclerosis Patient-Reported Outcome Performance Measure Development" subcontract to Northwestern University. Proposal submitted to the National Quality Forum.

Presentations

McMullen T, Padgett C, Grose C, Clift J, Deutsch A. Implementing the IMPACT Act: Status Update and Activities. American Medical Rehabilitation Providers Association Spring Executive Forum. Washington, DC, March 20, 2017.

Deutsch A. Measuring Quality: Principles and Methods. University of Texas medical branch, Galveston, TX. March 31, 2017

Manuscripts (in press):

Middleton A, Graham JE, Deutsch A, Ottenbacher KJ. Potentially Preventable Within Stay Readmissions Among Medicare Fee-For-Service Beneficiaries Receiving Inpatient Rehabilitation. PM & R. In Press.

Pardasaney P, Deutsch A, Iriondo-Perez J, Ingber M, McMullen T, Measuring Inpatient Rehabilitation Facility Quality of Care: Discharge Self-Care Functional Status Quality Measure. Archives of Phys Med and Rehabilitation. In Press.

Deutsch A, Pardasaney P, Iriondo-Perez J, Ingber M, Porter KA, McMullen T, Development of a Risk Adjustment Model for the Inpatient Rehabilitation Facility Discharge Self-Care Functional Status Quality Measure. Medical Care. In Press.

Manuscripts:

Deutsch A, Palmer L, Kline T, Ignaczak M, Toth M, Lepore M. Technical Expert Panel Summary Report: Development of Functional Outcome Quality Measures for Skilled Nursing Facilities (SNFs). Available at: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/Downloads/SNF-Function-Quality-Measures-TEP-Summary-Report-August-2016.pdf>

Panel Participation: World Health Organization: Rehabilitation 2030, February 6-7, 2017; Geneva Switzerland. Report available: <http://www.who.int/disabilities/care/rehab-2030/en/>

Professional Activities: Editorial Board of the *Archives of Physical Medicine and Rehabilitation*.

Linda Ehrlich-Jones

Proposals submitted:

NIH/NIAMS U01 LIFT: Lupus Intervention Fatigue Trial

Presentations:

Heinemann A., & Ehrlich-Jones L. Rehabilitation Measures Database: How to use the tool to improve patient care and how you can help make it better. Live webinar for American Academy of Orthotists and Prosthetists, July 12, 2017

Manuscripts (in press):

Pellegrini CA, Song J, Semanik PA, Chang RW, Lee J, Gilbert AL, Pinto D, Ehrlich-Jones L, & Dunlop DD. Patients less likely to lose weight following a knee replacement: Results from the Osteoarthritis Initiative. *Journal of Clinical Rheumatology*. (in press).

Pinto D, Song J, Lee J, Chang RW, Semanik PA, Ehrlich-Jones LS, Pellegrini CA, & Dunlop DD. The Association between sedentary time and quality of life from the Osteoarthritis Initiative: Who might benefit most from treatment? *Archives of Physical Medicine and Rehabilitation*. (in press).

Manuscripts:

Maloney, AR & Ehrlich-Jones, L. (2017). Implementing motivational interviewing training: Strengthening the role of the registered nurse. *Journal of Nursing Education and Practice*, 7, 51-56.

Professional Activities: American Nurses Foundation, grant reviews

Marylou Guihan

VA HSR&D, 1/1/17-12/31/19. \$ 780,595. PI: David Bentrem, MD. Directed evaluation of provider training modules to prevent venous thromboembolism after major cancer surgery. Role: Co-investigator

HSR&D, 1/1/17-12/31/19. \$ 635,926. PI: Nasia Safdar, MD. Mentored enhanced implementation and evaluation of national VA mandates to prevent the spread of C Difficile

infection. Role: Co-investigator

VA HSR&D 01/01/2018 12/31/2021 Marylou Guihan, PhD \$1,046,783 Engaging Patients and Providers in Identifying and Addressing Modifiable Risk Factors to Prevent Community-Acquired Ulcers in Veterans with SCI, role: PI

Sherri LaVela

Publications (published; in press, under review):

Etingen B, Locatelli SM, Miskevics S, **LaVela SL**. Examining the relationship between post-traumatic stress disorder and social participation among Veterans with spinal cord injuries and disorders. *Disability and Rehab. In Press*. 2017.

Balbale SN, Lones K, Hill JN, **LaVela SL**. Examining participation among persons with spinal cord injuries and disorders using photovoice. *The Qualitative Report*. 2017;22(7): 1830-1847.

Binns-Calvey AE, Malhiot A, Kostovich CT, **LaVela SL**, Stroupe K, Gerber BS, Burkhart L, Weiner SJ, Weaver F. Validating domains of patient contextual factors essential to preventing contextual errors: a qualitative study conducted at Chicago area Veterans Health Administration sites. *Academic Medicine. Epub ahead of print*. [PMID: 28353498]

Hill JN, Etingen B, Miskevics S, **LaVela SL**. Correlates of self-reported physical function in individuals with spinal cord injuries and disorders: does self-efficacy matter? *Spinal Cord*. In Press. [PMID: 28585558]

Locatelli SM, Miskevics S, Etingen B, **LaVela SL**. Effect of environment on participation in spinal cord injuries/disorders: The mediating impact of resilience, grief, and self-efficacy. *Rehabilitation Psychology. Epub ahead of print*. [PMID: 28581319]

Etingen B, Miskevics S, Malhiot A, **LaVela SL**. Patient engagement in VA health care: does gender play a role? *Defence and Peace Economics*. In Press.

Ramanathan S, Suda KJ, Fitzpatrick M, Poggensee L, **LaVela SL**, Burns SP, Evans CT. Multi-drug resistant Acinetobacter: Risk factors and Outcomes in Veterans with Spinal Cord Injuries and Disorders. *American Journal of Infection Control*. In Press.

LaVela SL, Balbale SN, Hill JN. Experience of using Photovoice in individuals with spinal cord injury. *Topics in SCI Rehabilitation*. In Press.

Fix GM, VanDeusen Lukas C, Bolton RE, Hill JN, Mueller N, **LaVela SL**, Locatelli SM, Bokhour BG. Patient-Centered Care is a way of doing things: How healthcare employees conceptualize patient-centered care. *Health Expectations*. In Press.

LaVela SL, Etingen B, Locatelli SM, Heinemann AW. What determines low satisfaction with life in persons with SCI/D? *Journal of Spinal Cord Medicine*. Accepted with revisions (submitted revision July 2017).

Presentations:

Balbale S, Hill JN, **LaVela SL**. Examining Participation Among Persons with Spinal Cord Injuries and Disorders Using Photovoice. 2017 AcademyHealth Annual Research Meeting, New Orleans, LA Poster Presentation. June 25-27, 2017.

Etingen B, Hill JN, Miller LJ, Schwartz A, **LaVela SL**, Jordan N. Engaging Patients with Post-Traumatic Stress Disorder in Shared Decision-Making for Mental Health Care: A Boots-On-The-Ground Perspective. Military Health System Research Symposium. Kissimmee, FL. Poster Presentation August 27-30, 2017.

Grants Funded:

Department of Defense. *Perspectives and Preferences for Weight Management after Spinal Cord Injury*.

PI: **LaVela**; Co-I(s): Ehrlich-Jones, Heinemann, Applebaum, Pedersen, Pellegrini, Goldstein

Paralyzed Veterans of America Education Foundation. *Developing a Curriculum on Grief/Loss due to SCI for Health Providers*. PI: **LaVela**; Co-I(s): Bombardier, Burkhart. [funding period: June 2017-June 2018]

Grants submitted/under review:

National Multiple Sclerosis Foundation. *Evaluating the Use of Acute Intermittent Hypoxia to Enhance Motor Function in Persons with Multiple Sclerosis*. PI: **LaVela**; Co-I(s): Rymer, Jayaraman, Sandhu, Motl (submitted 7-11-17)

Craig H. Neilsen Psychosocial Research. *Understanding the psychosocial impacts of airport travel through the experiences of persons with SCI*. PI: **LaVela**; Co-I(s): Ehrlich-Jones, Pedersen; Heinemann (submitted 7-17-17)

Theresa Pape is the 2017 recipient of the Early Career Mentoring Award, presented by the American Congress of Rehabilitation Medicine (ACRM).

Jessica Pedersen

Presentations:

Presperin Pedersen J, Sparacio J, Mullis S. Adult wheelchairs and a seating for the generalist: Enhancing participation and function through the right wheelchair. 6-hour preconference institute 3.31.2017

Presperin Pedersen j., Shea M. Increasing participation in the occupation of commercial airline travel for people who are non-ambulatory. Annual American Occupational Therapy Conference 2017, Philadelphia, PA

Presperin Pedersen j, Tips for Flying on a Commercial Airline with a Wheelchair, June 2, 2017 SRALAB

Presperin Pedersen j, Wheelchair Seating Panel- June 2, 2017, SRALAB

Service Activities: Volunteer, Board of Directors Meeting- Devices 4 the Disabled (D4D)- June 1, 2017

Volunteer, GoBabyGo with Kiwanis at Shriners Hospital- coordinated by Arun Jayaraman in conjunction with engineers and therapists from SRALAB- June 10, 2017.

Volunteer, The Kids Equipment Network (TKEN)- pediatric wheelchair clinic – July 15, 2017

Panel Participation: Design for America- Panel discussion on access in urban areas with Karen Tamley- Mayor's Office for People with Disabilities and Judy Panko Reis, Access Living. Northwestern University Segal Design Center August 4, 2017

Professional Activities: Member, AOTA Distinguished Service Award – June 2017
Wheelchair and Seating Committee work and publication of OT Fact Sheet on Seating and Wheeled Mobility

Tommi Raji

Diana M, **Raji T**, Melis M, Nummenmaa A, Leggio L, Bonci A. Rehabilitating the addicted brain with transcranial magnetic stimulation. *Nature Reviews Neuroscience* 2017, Accepted.

Annie Simon

Conference Presentations

Kuiken T, Turner K, Miller L, **Simon A**. A study investigating targeted muscle reinnervation for individuals with transradial amputations. Myoelectric Controls and Upper Limb Prosthetics Symposium (MEC 17), Fredericton, New Brunswick, Canada. August 15-18, 2017.

Spanias J, **Simon AM**, and Hargrove LJ. Across user adaptation for a powered lower limb prosthesis. The 15th IEEE International Conference on Rehabilitation Robotics (ICORR), London, England. July 17-20, 2017.

Ming Wu

Hsu, C-J., Kim, J., Tang, R., Roth, E., Rymer, W.Z., and **Wu, M**. Applying a pelvic corrective force induces forced use of the paretic leg and improves paretic leg EMG activities of individuals post-stroke during treadmill walking, *Clinical Neurophysiology*, 2017, In press.

Wu M, Hsu CJ, Kim J. Motor adaptation to lateral pelvis assistance force during treadmill walking in individuals post-stroke. IEEE Int Conf Rehabil Robot. 2017 Jul;2017:300-303. doi: 10.1109/ICORR.2017.8009263.

OTHER FACULTY

Teresa Savage

Moro, T.T., **Savage, T.A.**, & Gehlert, S. (2017). Agency, social and healthcare supports for adults with intellectual disability at end of life in out-of-home non-institutional community residences in Western nations: A literature review. *Journal of Applied Research in Intellectual Disability*, 00, 1-12. doi: 10.1111/jar.12374

Savage, T.A. (2018). [Review of the book *The good death: An exploration of dying in America*, by Ann Neumann] *Nursing History Review*

NORTHWESTERN UNIVERSITY PROSTHETICS & ORTHOTICS CENTER

Publications:

Boutwell E, **Stine R**, **Gard S.** (2017) Shock absorption during transtibial amputee gait: Does longitudinal prosthetic stiffness play a role? *Prosthetics and Orthotics International*, April; 41(2):178-185.

Caldwell R, **Fatone S.** (2017) Technique for perforating a prosthetic liner to expel sweat. *Journal of Prosthetics and Orthotics*, 29(3):145–147.

Fatone S, **Caldwell R.** (2017) Northwestern University Flexible Subischial Vacuum Socket for Persons with Transfemoral Amputation: Part 1 Description of Technique. *Prosthetics and Orthotics International*, June; 41(3):237-245.

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Dillon M, Quigley M, **Fatone S.** (2017) Helping inform difficult decisions about partial foot amputation using a shared decision making approach. *Amplified, Limbs4Life Magazine*, Australia, Edition 1, p. 21-23.

Sibylle Thies, Laurence PJ Kenney, Mohammad Sobuha, Adam Galpin, Peter Kyberd, **Rebecca Stine, Matthew J Major**. Skill Assessment in Upper Limb Myoelectric Prosthesis Users: Validation of a Clinically Feasible Method for Characterizing Upper Limb Temporal and Amplitude Variability during the Performance of Functional Tasks, *Medical Engineering & Physics* 2017.

Dillon MP, **Major MJ**, Kaluf B, Balasanov Y, **Fatone S**. Predict the Medicare Functional Classification Level (K-level) Using the Amputee Mobility Predictor in people with Unilateral Transfemoral and Transtibial Amputation: A Pilot Study. *Prosthet Orthot Int* 2017 May (doi: 10.1177/0309364617706748. [Epub ahead of print]).

Dillon M, Quigley M, **Fatone S**. (2017) While mortality rates differ following dysvascular partial foot and transtibial amputation, should they influence the choice of amputation level? *Archives of Physical Medicine and Rehabilitation*. pii: S0003-9993(17)30254-X. doi: 10.1016/j.apmr.2017.04.002. [Epub ahead of print].

Owen E, **Fatone S**, Hansen A. (in press) Effect of walking in footwear with varying heel sole differentials on shank and foot segment kinematics. *Prosthetics Orthotics International*.

Major MJ and Fey NP. Considering Passive Mechanical Properties and Patient User Motor Performance in Lower Limb Prosthesis Design Optimization to Enhance Rehabilitation Outcomes. *Physical Therapy Reviews* 2017.

Presentations:

Stefania Fatone, PhD, BPO(Hons), and **Ryan Caldwell, CP, FAAOP**, taught the NU-FlexSIV Socket Course to 10 prosthetists from Quebec, Canada. This course was sponsored by OrtoPed ULC (Canada) and hosted by the Institut de Réadaptation Gingras-Lindsay de Montréal.

Stefania Fatone, PhD, BPO (Hons), and **Ryan Caldwell, CP, FAAOP**, taught the NU-FlexSIV Socket Course to 12 prosthetists from Japan. This course was sponsored and hosted by Kobe College of Medical Welfare.

Stefania Fatone, PhD, BPO (Hons), was invited to present at the American Academy of Orthotists and Prosthetists Texas Chapter Meeting on August 5, 2017, in Dallas. She presented "The NU-FlexSIV Socket for Persons with Transfemoral Amputation: Description of Technique and Preliminary Evaluation."

Arelekatti VNM, Joh Y, Warner JC, Berringer MA, Boehmcke PJ, Fischman JZ, Huang AY, **Major MJ**, Winter A. Modular Design of a Passive, Low-cost Prosthetic Knee Mechanism to Enable Able-bodied Kinematics for Users with Transfemoral Amputation. 2017 International Design Engineering Technical Conference, Cleveland, Ohio, August 6-9, 2017.

Major MJ, Chen X, Serba CK, Reimold N, Ndubuisi-Obi F, Gordon KE. Below-knee amputees make specific anticipatory locomotor adjustments to resist lateral perturbation. 41st Annual American Society of Biomechanics Meeting, Boulder, CO, August 8-11, 2017.

Awards:

Matthew Major, PhD, was recognized as Researcher of the Month in the “Pre-Clinical Trial Corner” segment in the July edition of the Jesse Brown VA Medical Center R&D Research Program Newsletter.

Roger Rose (MPO 2018) was the winner of the 2017 Dale Yasukawa Award. This award is eligible to currently enrolled students in the Northwestern University Masters of Prosthetics and Orthotics (MPO) program. The Yasukawa Scholarship encourages the awardee to participate in annual meetings of the American Academy of Orthotists and Prosthetists (AAOP).

Meetings:

Matthew Major, PhD, was a faculty participant at the annual Medical Scientist Training Program (MSTP) held June 30-July 2 in Chicago, IL and Delavan, WI. Dr. Major spoke to MD/PhD students about research opportunities in biomedical engineering, prosthetics and orthotics at NUPOC and PM&R.

Stefania Fatone, PhD, BPO (Hons) participated as a reviewer in the VA RR&D’s Scientific Merit Review Board on August 2, 2017, in Washington DC.

Laboratory Visits/Events:

Twenty-five members of the Northwestern University's Prosthetics Orthotics Student Society (NUPOSS) for the MPO class of 2018 participated in the Go-Baby-Go! Workshop held on June 10, 2017 at the Shriners Hospital for Children (Chicago). The event retrofitted and provided battery-operated cars for 12 toddlers. Parents applied to the program to receive a free car for their children with mobility impairments. The program places a special focus on spina bifida, a congenital condition that may cause paralysis in the lower limbs.

The Northwestern University Prosthetics-Orthotics Center (NUPOC) hosted 2 interactive STEM programs and site visits for a total of 80 participants from the National Student Leadership Conference (NSLC)-Biotechnology Group on morning and afternoon of August 8, 2017. R. J. Garrick, PhD, developed and managed these educational programs.

John Heredia, a University of Illinois at Urbana undergraduate student in Biomedical Engineering, is volunteering at NUPOC for the summer. He is working with **Steven A. Gard, PhD**, conducting structured readings in rehabilitation engineering for P&O.

Grace Jing, an NU undergraduate student in biomed engineering, is volunteering at NUPOC for the summer. She is working with **Stefania Fatone, PhD, BPO (Hons) and Rebecca Stine, MS**, to complete data analysis on a project assessing the effect of spine surgery on energy expenditure of walking.

Zaki Naqvi, a University of Illinois at Urbana undergraduate student in Kinesiology and Community Health, is volunteering at NUPOC for the summer. He is working with **Matthew Major, PhD**, to assist with data processing and coordination for several ongoing studies.

Nicholas Nelson, an NU undergraduate student in Biomedical Engineering, is volunteering at NUPOC for the summer. He is working with **Matthew Major, PhD**, to conduct a study on developing a method for estimating joint angle displacement using inertial measurement sensors.

Ryan Caldwell, CP, was interviewed for the article “Adapting Fabrication Skills with Changing Technology” in the July issue of The O&P Edge. The article featured information on how to fabricate the NU-FlexSIV Socket co-developed by Ryan Caldwell and Stefania Fatone, PhD, BPO (Hons), <https://opedge.com/Articles/ViewArticle/2017-06-21/adapting-fabrication-skills-with-changing-technology>

Stefania Fatone, PhD, BPO (Hons), was interviewed by the article “Balancing Act” published in the upcoming issue of Lower Extremity Review. The article highlighted a symposium Dr. Fatone chaired at the International Society for Prosthetics and Orthotics World Congress, which was held in Cape Town, South Africa, May 8-11, 2017.

Grant Awards:

Dr. Stefania Fatone, PhD, BPO (Hons), and Dr. Elliot Roth, MD, are Co-PIs for NU on a multi-site study sponsored by Myomo Inc. titled “Functional Assistance provided by Myoelectric Elbow-wrist-hand orthoses (FAME)”.

Kobe College of Medical Welfare in Japan signed an agreement to sponsor a “NU-FlexSIV Socket Course” taught by **Stefania Fatone, PhD, BPO (Hons)**, and **Ryan Caldwell, CP, FAAOP**, held in Kobe, Japan on August 25-27, 2017.

Dr. Matthew Major, PhD, is a Co-I on a Department of Defense Peer Reviewed Orthopaedic Research Program Applied Research Award titled “Connecting Mechanical to Biomechanical Performance of Prosthetic Feet to Design Customized, Passive Devices that Provide Improved Mobility”.

Dr. Matthew Major, PhD, is a Co-I on a Department of Defense Orthotics and Prosthetics Outcomes Research Program Prosthetics Outcomes Research Award titled “Targeting Balance Confidence as a Strategy to Increase Integration and Improve Outcomes in Users of Lower-limb Prostheses”.

Dr. Matthew Major, PhD, is a Co-I on a Department of Defense Orthotics and Prosthetics Outcomes Research Program Prosthetics Outcomes Research Award titled “Women’s-Specific Footwear with Prosthetic Feet”.

Dr. Matthew Major, PhD, is a Co-I on a National Science Foundation Faculty Early Career Development Program Award titled “CAREER: Tuning passive prosthetic leg dynamics to create low-cost, robust devices that can replicate physiological gait in multiple activities of daily living”.

Dr. Matthew Major, PhD, is a PI on a Northwestern University Undergraduate Research Assistant Program Award titled “Locomotor Response of Lower Limb Amputees to a Sudden Lateral Perturbation”.

OIM orthopedie in The Netherlands signed an agreement to sponsor a “NU-FlexSIV Socket Course” taught by **Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, FAAOP**, to be held in The Netherlands on October 5-6, 2017.

ISPO Norway signed an agreement to sponsor a “NU-FlexSIV Socket Course” taught by **Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, FAAOP**, to be held in Oslo, Norway on October 11-12, 2017.

Dr. Sarah R. Chang, PhD and Dr. Steven A. Gard, PhD are Co-PIs on a study awarded on July 19, 2017 by the American Orthotic and Prosthetic Association (AOPA) titled, “A pilot study to evaluate the effects of hydraulic ankle-foot prostheses on standing and walking in K2-level ambulators.”

Grant Submissions:

Stefania Fatone, PhD, BPO (Hons), was a co-investigator on an NIH R21 submission titled, “Biomechanics and Walking in Cerebral Palsy: Ankle Foot Orthoses – Footwear Combinations” submitted on June 16, 2017 (PI: Kristie Bjornson, PhD, Seattle Children’s Research Institute).

Steven Gard, PhD, submitted a Merit Review proposal entitled, “Evaluation of a hydraulic prosthetic foot/ankle component to increase swing phase toe clearance in persons with transfemoral amputation” to the Department of Veterans Affairs, Rehabilitation Research & Development Program on June 10, 2017.

Matthew Major, PhD, and Elliott Rouse, PhD, were co-Principal Investigators on a proposal submitted on June 15th for the NUCATS Pilot Program titled “Linking prosthetic foot mechanics to amputee gait performance for enhancing the prosthesis clinical prescription process”.

Matthew Major, PhD, was a co-Investigator on a pre-proposal submitted on July 10th to the Department of Defense Peer Reviewed Orthopaedic Research Program (PRORP) titled “Development of 3D Printed Upper-limb Transitional Prostheses for Veterans and Military Personnel”. (PI: Jorge M. Zuniga, PhD, University of Omaha at Nebraska).

Sarah R. Chang, PhD, submitted a Career Development Award proposal entitled, “Evaluating the effects of hydraulic ankle-foot prostheses on walking and standing in K2-level ambulators with transtibial amputations” to the Department of Veterans Affairs, Rehabilitation Research & Development Program on June 12, 2017.

Sarah R. Chang, PhD, submitted a proposal entitled, “A pilot study to evaluate the effects of hydraulic ankle-foot prostheses on standing and walking in K2-level ambulators” to the American Orthotic and Prosthetic Association (AOPA) on April 26, 2017.