

Scholarly Activities
Department of Physical Medicine and Rehabilitation
March-May 2017

REGULAR FACULTY

Brenna Argall: featured speaker, State of the Science Conference, Shirley Ryan AbilityLab Rehabilitation Engineering Research Center on Technologies to Support Successful Aging with Disability (RERC TechSAge)

James Atchison:

AAPM 33rd Annual Meeting, Orlando, FL :
How Opioid Prescribing Guidelines May Affect (Help or Hinder) a Primary Care Physician's Ability to Provide Pain Management

Physical and Structural Exams and Treatment of Lumbar Spine, Sacroiliac Joint, Pelvic Dysfunction, and Lumber Spine

Advanced Lecture - FCE, Disability/Impairment, Work Hardening/Conditioning, IMEs (PGY3/PGY4), April 2017

Pathophysiology of Pain Lecture, April 2017

Medical School Health and Society Lecture during the MSK Module entitled: "Opioid Abuse in America." April 2017

SM 281a: Acute vs. Chronic MSK Pain, May 2017

Randy Calisoff:

Atchison, Gagnon, **Calisoff**, Margolis, et al. "Reduction in Opioid Use for Injured Workers Following Completion of a 4 Week Interdisciplinary Pain/Functional Restoration Program." AAPM&R's 2017 Annual Assembly

P. Safaeian, **R. Calisoff**, et al. "Retrospective and Prospective Functional Outcomes of an Interdisciplinary Pain Management Program on Patients with Fibromyalgia," American Academy of Pain Medicine Annual Meeting, 2017.

J. Cara, **R. Calisoff**, et al. "Short-Term Functional and Psychological Outcomes of Comprehensive, Interdisciplinary Pain Management of Chronic Lumbar Radicular Pain," American Academy of Pain Medicine Annual Meeting, 2017.

J. Cara, **R. Calisoff**, et al. "Enhancing Physical Conditioning of Patients with Chronic Lumbar Radicular Pain through a Comprehensive, Interdisciplinary Pain Management Program," American Academy of Pain Medicine Annual Meeting, 2017.

Sam Chu:

Vernese, LF, **Chu, SK**. Spondylolysis: Assessment and Treatment in Youth Athletes. *Curr Phys Med Rehabil Rep* (2017).

Presented: Potential Pain Generators of the Aging Hip. Conservative Management of Hip Pain, Shirley Ryan AbilityLab, April 28-29, 2017

Caryn Feldman: interviewed/quoted in the book "Crooked: Outwitting the Back Pain Industry and Getting on the Road to Recovery" by Cathryn Jakobson Ramin. 2017 Harper/Collins Publication

Deborah Gaebler:

Conference: 29th Annual Meeting of the European Academy of Childhood Disability 2017 – May 17th – 20th, 2017 – Amsterdam, The Netherlands

Abstract: Bullying in Children and Adolescents with Cerebral Palsy and Other Physical Disabilities Course: Transforming Healthcare for Women with Disabilities

Levi Hargrove:

Hu B, Rouse EJ, **Hargrove LJ**. Using bilateral lower limb kinematic and myoelectric signals to predict locomotor activities: A pilot study, *Proceedings of the IEEE Conference on Neural Engineering* 2017. In press.

Johnson RE, Kording KP, **Hargrove LJ**, Sensinger JW. Adaptation to random and systematic errors: Comparison of amputee and non-amputee control interfaces with varying levels of process noise. *PLoS-One*, March 16, 2017. 12(3): e0170473. <https://doi.org/10.1371/journal.pone.0170473>

Adewuyi AA, **Hargrove LJ**, Kuiken TA. Resolving the effect of wrist position on myoelectric pattern recognition control. *Journal of NeuroEngineering and Rehabilitation*, 14:39 May 4, 2017. DOI: 10.1186/s12984-017-0246-x

Allen Heinemann:

Co-PI: Midwest Regional Traumatic Brain Injury Model System, with David Ripley

Heinemann AW, Ehrlich-Jones L, Nitsch K. Implementing SCI-QOL into Clinical Practice to Enhance Patient Engagement. Paper presented at the International

Society of Physical and Rehabilitation Medicine conference, Buenos Aires, Argentina, May 3, 2017

Heinemann AW. Orthotic and Prosthetic Users Survey (OPUS). Symposium presented at the International Society of Prosthetics Orthotics, Cape Town, South Africa, May 9, 2017.

Johnson N, Marquine M, Flores I, et al. Racial Differences in Neurocognitive Outcomes Post-Stroke: The Impact of Healthcare Variables. *J Int Neuropsychol Soc.* in press.

Heinemann AW, Raad JH, Akuthota V, et al. Scoping Review to Develop Common Data Elements for Lumbar Spinal Stenosis. *The Spine Journal.* in press.

Wilson CS, Forchheimer M, **Heinemann AW,** Warren AM, McCullumsmith C. Assessment of the relationship of spiritual well-being to depression and quality of life for persons with spinal cord injury. *Disabil Rehabil.* Mar 2017;39(5):491-496.
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.* Jul 2017;27(5):603-617.

LaVela SL, **Heinemann AW,** Etingen B, Miskovic A, Locatelli SM, Chen D. Relational empathy and holistic care in persons with spinal cord injuries. *The journal of spinal cord medicine.* Jan 2017;40(1):30-42.

Amtmann D, Bocell FD, Bamer A, et al. Psychometric Properties of the Satisfaction With Life Scale in People With Traumatic Brain, Spinal Cord, or Burn Injury. *Assessment.* 2017:107319111769392.

Boninger ML, Field-Fote EC, Kirshblum SC, et al. Research progress from the SCI Model Systems (SCIMS): an interactive discussion on future directions. *The journal of spinal cord medicine.* 2017:1-7.

Holdnack JA, Tulskey DS, Brooks BL, et al. Interpreting Patterns of Low Scores on the NIH Toolbox Cognition Battery. *Arch Clin Neuropsychol.* Apr 17 2017:1-11.

Wong A, 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.* 2017.

Wong AWK, Lau SCL, Cella D, et al. Linking of the quality of life in neurological disorders (Neuro-QoL) to the international classification of functioning, disability and health. *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation.* May 05 2017.

Member: NCMRR Advisory Committee, Rockville, MD, May 1-2, 2017

Mark Huang:

Huang, M.E. Clinical Informatics in Physiatry. PM&R, 2017 9 (5S); S1-3, in press.

Huang, M.E. IT Is From Mars and Physicians From Venus: Bridging the Gap. PM&R, 2017 9(5S): S19-25, in press.

Arun Jayaraman:

Presented "Wearable technology and its impact on modern day rehabilitation." TU Delft, Netherlands, February 2017.

Keynote Speaker. "Enhancing Human Ability: Impact of Advanced Assistive Technology." The 2017 Chittenden Symposium for Assistive Technologies in Health. University of Illinois at Urbana-Champaign, IL, March 2017.

WearRAcon 2017. "Global Market for Exoskeletons." Phoenix, Arizona, April 2017.

Dept. of Defense, CDMRP: *Evaluating the Utilization and Efficiency of Wearable Exoskeletons for SCI Rehabilitation: 8/01/2017-7/31/2019*

Role: Co-PI (Allen Heinemann, PI)

Funding: \$705,000

Grants Submitted

NIDILRR, RERC-MARS4: *Wearable Robotics for Home and Community and BioSensors Analytics Core*, Submitted May 9, 2017

Albert MV, Azeze Y, Courtois M, and **Jayaraman A.** [In-lab versus at-home activity recognition in ambulatory subjects with incomplete spinal cord injury.](#) *Journal of NeuroEngineering and Rehabilitation*. 2017. February 6. Epub. ahead of print. doi: 10.1186/s12984-017-0222-5.

Saeb S, Lonini L, **Jayaraman A**, Mohr DC, Kording KP. [The need to approximate the use-case in clinical machine learning.](#) *GigaScience*. March 15, 2017. Epub. ahead of print. doi: 10.1093/gigascience/gix019.

Little MA, Varoquaux G, Saeb S, Lonini L, **Jayaraman A**, Mohr DC, Kording KP. [Using and understanding cross-validation strategies](#) *GigaScience*. March 17, 2017. Epub. ahead of print. doi: 10.1093/gigascience/gix020.

Lonini L, Reissman T, Ochoa JM, Mummidisetty CK, Kording K, **Jayaraman A.** [Sensor Fusion to Infer Locations of Standing and Reaching Within the Home in Incomplete](#)

[Spinal Cord Injury](#). *American Journal of Physical Medicine and Rehabilitation*. April 5, 2017. Epub. ahead of print. doi:10.1097/PHM.0000000000000750.

Conference Proceedings Submitted / Accepted

Greenoe K, Adamczyk A, Griesenauer R, Mummidisetty K, **Jayaraman A**. Robust fall detection and classification in individuals with amputations and non-injured participants using smart phones. **Poster**. Combined Sessions Meeting, San Antonio, TX, February 2017.

Hohl K, Minarsch R, Scanlan K, Mummidisetty K, **Jayaraman A**. Is a structured exoskeleton overground gait training program superior to traditional care in individuals affected by chronic severe stroke? **Poster**. Combined Sessions Meeting, San Antonio, TX, February 2017.

Tefertiller C, **Jayaraman A**, Forrest G, Hartigan C. Initial Outcomes from a Multi-center Feasibility Study Utilizing the Indego Powered Exoskeleton in Spinal Cord Injury. **Oral Presentation**. ASIA Annual Meeting, Albuquerque, NM, April 2017.

Kohler F, Radhkrishnan S, Schiappacasse C, Guetenbrunner C, Li J, Pieber K, **Jayaraman A**. A multi-nationally validated mobility assessment tool using International Classification of Functionality, Disability, and Health Categories: The IBMAT 10. **Poster** ISPRM, Buenos Aires. April 2017.

Jayaraman A, Deems-Dluhy S, Hoppe-Ludwig S. The Impact of the MPO vs SCO vs KAFO on the Functional Mobility of Individuals with Lower Extremity Weakness due to Neurological or Orthopedic Injury or Disease. **Oral Presentation**. International Society for Prosthetics & Orthotics Conference. Cape Town, South Africa. May 2017.

Deems-Dluhy S, Hoppe-Ludwig S, **Jayaraman A**. Conducting Clinical Trial Research in the Field of Orthotics and Prosthetics: Trials and Tribulations. **Poster**. International Society for Prosthetics & Orthotics Conference. Cape Town, South Africa. May 2017.

Swartz A, Turner K, **Jayaraman A**, Sensinger S. Evaluation of daily use and function of conventional body-powered prostheses and custom vo/vc terminal device. **Podium**. MEC 17, Fredericton, NB, Canada, August 2017.

Todd Kuiken:

Keynote Speaker: "Building Bionics" [Institute of Biomaterials & Biomedical Engineering](#) (iBBME) Annual Research Conference, University of Toronto, Canada, May 10, 2017.

Kuiken TA, Butler BA, Sharkey T, Ivy AD, Peabody TD. Novel intramedullary device for lengthening transfemoral residual limbs. *Journal of Orthopaedic Surgery and Research* 12(1):53, March 31, 2017. DOI: 10.1186/s13018-017-0553-8

Adewuyi AA, Hargrove LJ, **Kuiken TA**. Resolving the effect of wrist position on myoelectric pattern recognition control. *Journal of NeuroEngineering and Rehabilitation*, 14:39 May 4, 2017. DOI: 10.1186/s12984-017-0246-x

Mitra Lavasani:

Schneider A, Matkovich SJ, Saccon T, Victoria B, Spinel L, **Lavasani M**, Bartke A, Golusinski P, Masternak MM. Ovarian transcriptome associated with reproductive senescence in the long-lived Ames dwarf mice. *Mol. Cell Endocrinol.* 2017, 5:43:328-336.

Invited Member of the Search Committees for Clinical Chair, Brain & Spinal Cord Innovation Centers at The Shirley Ryan AbilityLab, Feb 2017-present

Northwestern University Interdepartmental Neuroscience Program (NUIN) Graduate Student Interview and Recruitment, March 2017

Invited Participant, PM&R & RIC Mentoring Consultation Service, Searle Center of Advancing Learning and Teaching, March 2017

Invited Speaker, Shirley Ryan AbilityLab Foundation Board Meeting, March 2017

Invited Lab Host and Tour Guide, Biologics Lab, Shirley Ryan AbilityLab Foundation Board Meeting, March 2017

Invited Lab Host and Tour Guide, Biologics Lab, The American Congress of Healthcare Executives group, March 2017

Invited Lab Host and Tour Guide, Biologics Lab, The Woman's Board of Northwestern Memorial Hospital, April 2017

Bryan Malas: Textbook: Atlas of Spinal Orthotics. Editors: John Fisk, John Lonstein, Bryan Malas

Christina Marciniak:

Bethoux F, Fatemi A, Fowler E, Marciniak C, Mayadev A, Waksman J, Zackowski K, Suarez G, Blight AR, Rabinowicz AL, and Enrique Carrazana E.. Safety, tolerability, and sensorimotor effects of extended-release dalfampridine in adults with cerebral palsy: A pilot study. *Clinical Therapeutics.* 2017 Feb; 39(2) 337-346.

Presented: Association of Rehabilitation Nurses. Webinar. Spasticity Live Event May 19th 2017 Northwestern University Physical Therapy Students: Electrodiagnostic Testing, April 11

Abstracts

1. Rubin B, Kanovsky P, Elovic E, Munin M, M. Althaus M, Hanschmann A, Pulte I, Marciniak C. Duration of Treatment Effect of IncobotulinumtoxinA in Upper Limb Spasticity B. Rubin Poster abstract presentation. American Academy of Neurology

Annual Meeting Boston MA April 26,2017

2. Gracies J, Brashear A, Marciniak C, Jech R, Banach M, Marque P, Grandoulier A, Vilain C, Picaut P. Duration of effect of AbobotulinumtoxinA (Dysport) in Adult Patients with Upper Limb Spasticity (ULS) Post-Stroke or Traumatic Brain Injury. Poster. Presentation. American Academy of Neurology Annual meeting. Boston MA April 26, 2017

Laura Miller: Report: “The promise of Assistive Technology to Enhance Activity and Work Participation” A report of the National Academies of Sciences, Engineering, Medicine, Washington DC. ISBNs: prepublication, 978-0-309-45781-1; Paperback, 978-0-309-45784-2. DOI: <https://doi.org/10.17226/24740>

Sandro Mussa-Ivaldi is one of 5 NU faculty members elected to the American Institute for Medical and Biological Engineering’s College of Fellows. The College comprises the top two percent of medical and biological engineers in the country.

Monica Rho: McCormick K, **Rho M.** Osteopathic Treatment in the Marathon Runner. *American Osteopathic College of Physical Medicine and Rehabilitation Annual Meeting. Hollywood, Florida.* May 2017 McCormick K, **Rho M.** Osteopathic Treatment in the Marathon Runner. *American Osteopathic College of Physical Medicine and Rehabilitation Annual Meeting. Hollywood, Florida.* May 2017

Elliott Rouse:

Grants Submitted:

NSF National Robotics Initiative: *An Open-Source Robotic Leg Platform That Lowers the Barrier for Academic Research*, Submitted 2/2/17

NIDILRR Field-Initiated Project: Novel ankle prosthesis that can dynamically vary energy storage and mechanics across locomotion types, Submitted 2/8/17.

Grant Awarded: ONR DURIP: *Instrument for measuring leg stiffness to detect likelihood for injury*, Role: PI, DC: \$193,715

Shorter AL, **Rouse EJ.** Mechanical Impedance of the Ankle During the Terminal Stance Phase of Walking. *IEEE Transactions on Neural Systems and Rehabilitation Engineering.* In review

Papers Accepted:

Azocar AF, **Rouse EJ.** Stiffness Perception During Active Ankle and Knee Movement. *IEEE Transactions on Biomedical Engineering.* In press.

Shepherd MK, **Rouse EJ**. Design and Validation of a Torque-Controllable Knee Exoskeleton for Sit-to-Stand Assistance. *IEEE Transactions on Mechatronics*. In press.

Lee J, Mooney LM, and **Rouse EJ**. Design and Characterization of a Quasi-Passive Pneumatic Foot-Ankle Prosthesis. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. In press.

Conference Proceedings Submitted / Accepted:

Hu B, **Rouse EJ**, Hargrove L J. Using bilateral lower limb kinematic and myoelectric signals to predict locomotor activities: A pilot study, Proceedings of the IEEE Conference on Neural Engineering 2017. In press.

Shepherd MK, **Rouse EJ**. Design of a Quasi-passive Ankle-Foot Prosthesis with Biomimetic, Variable Stiffness, Proceedings of the IEEE Conference on Robotics and Automation 2017. In press.

Azocar AF, **Rouse EJ**. Stiffness Perception at the Human Ankle and Knee. 2017 Annual Meeting of the American Society of Biomechanics. In press.

Shorter AL, **Rouse EJ**. Estimation of Human Ankle Impedance in Late Stance and Implications in Neuromotor Control. 2017 Annual Meeting of the American Society of Biomechanics. In press.

Shorter AL, **Rouse EJ**. Estimation of Human Ankle Impedance During Late Stance Phase of Walking. 2017 Dynamic Walking Conference. In press.

Invited Talks:

Vanderbilt University, February 2017

The University of Notre Dame, March 2017

The University of Michigan, March 2017

Carnegie Mellon University, April 2017

WearRACon Conference, April 2017

W. Zev Rymer:

Published "Imaging three-dimensional innervation zone distribution in muscles from M-wave recordings" by Zhang C, Peng Y, Liu Y, Li S, Zhou P, **Rymer WZ**, Zhang Y. *J Neural Eng*, 2017 Mar 30;14(3):036011. PMID: 28358718

Published "Spatial Analysis of Multichannel Surface EMG in hemiplegic Stroke" by Rasool G, Afsharipour B, Suresh N, **Rymer WZ**. *IEEE Trans Neural Syst Rehabil Eng*. 2017 Mar 15. PMID: 28320672

Diane Dudas Sheehan:

Spring 2017 Small group tutor for Ethics in Action Class – M1 medical students, NU

3/21/17 & 5/9/17“Neuromuscular Scoliosis Evaluation and Management” I presented to PM&R resident / students during Pediatric rotation at the Rehabilitation Institute of Chicago

4/19/17 “Comprehensive Evaluation and Practical Treatment of Children with Wounds” I presented to PM&R residents, 1 student during Pediatric rotation at the Rehabilitation Institute of Chicago

RESEARCH FACULTY

Anne Deutsch:

“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

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

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.

Technical Report:

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>

Member, Editorial Board of the *Archives of Physical Medicine and Rehabilitation*.

Linda Ehrlich-Jones:

Grants: Midwest Regional Traumatic Brain Injury Model System, Collaborative Module PI. PCORI Broad Funding Announcement: Comparing Walk With Ease and EnhanceFitness in Older Adults with or at Risk for Knee Osteoarthritis

Grants in Development: NIH-NIAMS U01: LIFT Lupus Intervention Fatigue Trial

Heinemann AW, **Ehrlich-Jones L**, Nitsch K. Implementing SCI-QOL into Clinical Practice to Enhance Patient Engagement. Paper presented at the International Society of Physical and Rehabilitation Medicine conference, Buenos Aires, Argentina, May 3, 2017.

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

Song J, Gilbert AL, Chang RW, Pellegrini CA, **Ehrlich-Jones LS**, Lee J, Pinto D, Semanik PA, Sharma L, Kwok CK, Jackson RD, Dunlop DD. Do inactive older adults who increase physical activity experience less disability: Evidence from the Osteoarthritis Initiative. *Journal of clinical rheumatology: practical reports on rheumatic & musculoskeletal diseases*. 2017; 23(1):26-32.

Dunlop DD, Song J, Lee J, Gilbert AL, Semanik PA, **Ehrlich-Jones L**, Pellegrini CA, Pinto D, Ainsworth B, & Chang RW. Physical activity minimum threshold predicting improved function in adults with lower limb symptoms. *Arthritis Care & Research*. 2017;69(4):475-483.

Frontera WR, Bean JF, Damiano D, **Ehrlich-Jones L**, Fried-Oken M, Jette A, Jung R, Lieber RL, Malec JF, Mueller MJ, Ottenbacher KJ, Tansey KE, Thompson A. Rehabilitation Research at the National Institutes of Health: Moving the Field Forward (Executive Summary). *Arch Phys Med Rehabil*. 2017 Apr;98(4):795-803.

Grant Review: NIDILRR field initiated grant proposals

Mary Lou Guihan:

Projects:

Approved for funding: "Community Conversation: Veteran Engagement through Shared Voices" (PVA Education Foundation)

Publications:

1: Hill JN, Guihan M, Hogan TP, Smith BM, LaVela SL, Weaver FM, Anaya HD, Evans CT. Use of the PARIHS Framework for Retrospective and Prospective Implementation Evaluations. *Worldviews Evid Based Nurs*. 2017 Apr;14(2):99-107. PubMed PMID: 28273407.

2: Sohn MW, Epstein N, Huang ES, Huo Z, Emanuele N, Stukenborg G, Guihan M, Li J, Budiman-Mak E. Visit-to-visit systolic blood pressure variability and microvascular complications among patients with diabetes. *J Diabetes Complications*. 2017 Jan;31(1):195-201. PubMed PMID: 27671535.

Abstracts accepted:

ASCIP, August 2017

Hill JN, Guihan M, Khan H, Thomason S, Powell-Cope G, Bates-Jensen BM. Assessing Factors Impacting Extent of Implementation of a Pressure Ulcer Intervention Using an Implementation Framework.

Hines Research Day, May 16, 2017

Haque FI, Guihan M, Kale I, Bonet J, Stuck R and Budiman-Mak E. Veteran and Health System Factors Contributing to Diabetic Foot Complications.

Guihan M, Haque FI, Kale I, Bonet J, Stuck R and Budiman-Mak E. Exploring gaps in the management of diabetic foot ulcers.

Guihan M, Stachyra A, Burkhart L, Gerc S, Desmond MB. Research to Support an Organizational Culture of Spiritual Care in VA Patient Care

NORTHWESTERN UNIVERSITY PROSTHETICS/ORTHOTICS CENTER

Publications:

J. Chad Duncan, "Prosthetic Primer" Disability Handbook (2017), JD Andrew and MJ Andrew, eds, Aspen Professional Services

Dillon, M., Quigley, M. and **Fatone, S.** (2017) "Outcomes of Dysvascular Partial Foot Amputation and How These Compare to Transtibial Amputation: A Systematic Review for the Development of Shared Decision-Making Resources." *Systematic Reviews*, 6:54 DOI 10.1186/s13643-017-0433-7. [This publication was highlighted in the

following article: "AOPA Funded Systematic Review Published in Open Access Journal." O&P Almanac, April 2017, p10.]

Dillon M, **Major M**, Kaluf B, **Fatone S** (in press) How well can the Amputee Mobility Predictor and basic patient demographics predict the Medicare Functional Classification level (K-level) in people with transfemoral and transtibial amputation? Prosthetics Orthotics International.

Dillon M, Quigley M, **Fatone S** (in press) 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.

Koehler-McNicholas SR, **Lipschutz RD**, **Gard SA** (2017). The biomechanical response of persons with transfemoral amputation to variations in prosthetic knee alignment during level walking. J Rehabil Res Dev. 2016; 53(6): 1089–1106.

Nepomuceno A, **Major M**, **Stine R**, **Gard SA** (2017). Effect of foot and ankle immobilization on able-bodied gait as a model to increase understanding about bilateral transtibial amputee gait. Prosthetics and Orthotics International. 2017; 1-8. <http://journals.sagepub.com/doi/10.1177/0309364617698521>

Major MJ, Scham J, Orendurff M. The effects of common footwear on stance-phase mechanical properties of the prosthetic foot-shoe system. Prosthetics and Orthotics International (in press).

Major MJ, Fey NP. Considering passive mechanical properties and patient user motor performance in lower-limb prosthesis design optimization to enhance rehabilitation outcomes. Physical Therapy Reviews (in press).

Sherwood A, **Brinkmann J**, **Fatone S** Review of Benefits to Practitioners of Using Good Patient-Practitioner Communication. Journal of Prosthetics and Orthotics (in press),

Presentations:

Leister K, **Stine R** and **Gard S** (2017). The Effect of Cleat Placement on Force Generation in a Cyclist with a Transtibial Amputation: A Pilot Study. The 43rd American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, March 1-4, Chicago, IL.

Tran L, Han S, Caldwell R, Rogers J, Coleman T, **Fatone S** (2017) Ability of epidermal sensors to measure lower limb temperature during activity with a prosthesis simulator. American Academy of Orthotists and Prosthetists, March 1-4, Chicago, Illinois. [This presentation was highlighted in the following article: Clark V. (March 2017) O&P Research Supports Evidence-based Care. The O&P Edge, 16(3):20-34. http://www.oandp.com/articles/2017-03_01.asp]

Fatone S, Huang Y, Rogers J, Coleman T (2017) Interface Monitoring System to Promote Residual Limb Health. Ignite Talk and poster at the 2017 NSF Smart and Connected Health (SCH) Principal Investigators Meeting, March 20-22, Boston, MA.

J. Chad Duncan, PhD, CPO, CRC, presented the poster, "The effect of having amputation and comorbidity through VR services on employment", at the Northwestern University 13th Annual Lewis Landsberg Research Day, April 6, 2017, Chicago, IL.

Rebecca Stine, MS, and Steven Gard, PhD, presented the poster, "The Jesse Brown VA Medical Center – Motion Analysis Research Laboratory: A Tool for Studying Human Movement and Evaluating Prosthetic and Orthotic Performance", at the Northwestern University 13th Annual Lewis Landsberg Research Day, April 6, 2017, Chicago, IL.

J. Chad Duncan, PhD, CPO, CRC, presented "The effect of having amputation and comorbidity through VR services on employment", at the National Council on Rehabilitation Education (NCRE) Spring conference, April 19-21, 2017, Anaheim, CA.

Lipschutz, RD (2017). Advances in Rehabilitation for the Patient with a Lower Extremity Amputation. Shirley Ryan Ability Lab, May 4-6.

Fatone S, Owen E, Hansen A (2017) The effect of walking in footwear with varying heel sole differentials on shank and foot segment kinematics. World Congress of the International Society for Prosthetics and Orthotics, May 8-11, Cape Town, South Africa.

Dillon M, **Fatone S**, Hoffman T (2017) Symposium: Outcomes of partial foot amputation can inform difficult decisions about amputation surgery using a shared decision-making approach. World Congress of the International Society for Prosthetics and Orthotics, May 8-11, Cape Town, South Africa.

Fatone S, Charlton P, Barnett C, Ramstrand N (2017) Balancing Act: Exploring Clinical, Theoretical and Evidence-Based Perspectives in the Optimization of Balance using Orthoses in Peripheral Neuropathy (symposium). World Congress of the International Society for Prosthetics and Orthotics, May 8-11, Cape Town, South Africa.

Fatone S, Caldwell R, **Major M** (2017) Effect of interface components on residual limb weight-bearing tolerance in the Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket. World Congress of the International Society for Prosthetics and Orthotics, May 8-11, Cape Town, South Africa.

Gard SA, Nepomuceno A, **Stine R**, Boutwell E, **Brinkmann J** (2017). A Model to Explain the Effect of Shock Absorbing Pylons on Gait. World Congress of the International Society for Prosthetics and Orthotics, May 8-11, Cape Town, South Africa.

Dillon M, **Major M**, Kaluf B, **Fatone S** (2017) How well can the Amputee Mobility Predictor and basic patient demographics predict the Medicare Functional Classification level (K-level) in people with transfemoral and transtibial amputation? World Congress of the International Society for Prosthetics and Orthotics, May 8-11, Cape Town, South Africa.

Prost V, Olesnavage V, **Major MJ**, Winter A. Design and testing of a linear ankle stiffness, modular novel passive prosthetic foot. Presented at the 16th World Congress of the International Society for Prosthetics & Orthotics, May 8-11, 2017, Cape Town, South Africa.

Olesnavage V, Prost V, **Major MJ**, Winter A. Clinical validation of predicting lower leg trajectory for prosthetic foot/ankle design and optimization. Presented at the 16th World Congress of the International Society for Prosthetics & Orthotics, May 8-11, 2017, Cape Town, South Africa.

Gard SA, **Major MJ**, Nepomuceno A, **Stine R**. Effect of foot immobilization on able-bodied gait as a model to increase understanding about bilateral transtibial amputee gait. Presented at the 16th World Congress of the International Society for Prosthetics & Orthotics, May 8-11, 2017, Cape Town, South Africa.

Major MJ. Anticipatory and response mechanics of persons with transtibial amputation when subjected to a medial-lateral perturbation. Presented at the 16th World Congress of the International Society for Prosthetics & Orthotics, May 8-11, 2017, Cape Town, South Africa.

Major MJ, **McConn S**, **Stine R**, **Gard SA**. Pilot study on the effects of upper-limb loss and prosthesis use on locomotor stability. Presented at the 16th World Congress of the International Society for Prosthetics & Orthotics, May 8-11, 2017, Cape Town, South Africa.

Major MJ. Falls in persons with upper-limb loss. Presented at the 16th World Congress of the International Society for Prosthetics & Orthotics, May 8-11, 2017, Cape Town, South Africa.

Awards:

Dr. Stefania Fatone and the team who worked on development of the NU-FlexSIV Socket were finalists for the 2017 ISPO Blatchford Award. Sixty-three applications were received for the Award and our work was considered very high quality, making a shortlist of six finalists. The Blatchford Award is made to a team who was an

outstanding record of innovative achievement in the field of prosthetics and/or orthotics.

Meetings:

Dr. Stefania Fatone and Ryan Caldwell were invited to present a 2-hour session on “The NU-FlexSIV Socket for Persons with Transfemoral Amputation: Description of Technique and Preliminary Evaluation” at the Northwest Chapter Meeting of the American Academy of Orthotists and Prosthetists in Bellevue, WA, held on April 20-21, 2017.

Robert D Lipschutz was selected as a Committee Member to review the University of Washington’s DPT, MOT and P&O Programs, April 24-26, 2017.

Dr. Stefania Fatone was invited by the scientific committee of ISPO2017 to co-chair a free paper session on below knee prosthetics – prosthetic feet at the ISPO World Congress in Cape Town, May 8-11, 2017.

J. Chad Duncan was invited to present at the Amputee Coalition’s Limb Loss Education Day (LLED) in Chicago, IL, May 20, 2017.

Laboratory Visits/Events:

Dr. Michael Dillon, PhD, BPO (Hons) visited NUPOC on March 6, 2017 and gave a research seminar on “Shared Decision Making in Dysvascular Partial-Foot Amputation.” This work forms part of a long-term collaboration with **Stefania Fatone**. Dr. Dillon is Head of the Prosthetics and Orthotics program at La Trobe University, Melbourne, Australia.

Dr. Chang-Yong Ko, PhD, visited NUPOC on March 6, 2017 and gave a presentation titled “Introduction to the Rehabilitation Engineering Research Institute of Korea.” Dr. Ko is the Principal Researcher, Korea Rehabilitation Research Institute, formerly, Korea Orthopedic & Rehabilitation Engineering Center (KOREC). He hosted a seminar by **Dr. Stefania Fatone** on the NU-FlexSIV Socket when she visited South Korea in November 2016.

Peter Adamczyk, PhD, Director, University of Wisconsin Biomechanics, Assistive Devices, Gait Engineering and Rehabilitation Laboratory (UW BADGER Lab), visited NUPOC at the invitation of Matthew Major, PhD; and presented “Semi-Active Foot Prostheses for Low-Power Gait Restoration: Shiftable Shapes” on April 10, 2017.

NUPOC presented three consecutive informative and interactive learning events for 45 children of Northwestern University employees on the annual Take Our Daughters and Sons to Work Day on April 27, 2017. Children and their adult chaperones

learned about prosthetics and orthotics. This program was developed by R. J. Garrick, PhD, and included the participation of several MPO 2018 students.

Ortoped, ULC sponsored a “NU-FlexSIV Socket Course” taught by **Stefania Fatone, PhD**, and Ryan Caldwell, CP, held in Montreal Canada on May 26-27, 2017.

Grant Submissions:

Dr. Stefania Fatone was a co-investigator on a submission to the Thrasher Research Foundation titled, “Ankle Foot Orthoses – Footwear Combinations: Biomechanics and Walking” submitted on March 27, 2017 (PI: Kristie Bjornson, PhD, Seattle Children’s Research Institute).

OTHER FACULTY

Sylvia Duraski (2017). The Importance of Monitoring Patients’ Responses to Medications: Increased Arousal After Administration of Zolpidem in Those with Hypoxic Ischemic Encephalopathy: A Case Study. *Rehabilitation Nursing*, 42(2), 75-79. Doi: 10.1002/mj232