

Scholarly Activities
Department of PM&R
Quarter: March – May 2016

Regular Faculty

James Atchison:

Teaching:

1. 3/22- Opioids Part 1 Resident Lecture (RIC)
2. 4/5 - Opioids Part 2 Resident Lecture (RIC)
3. 4/19- Functional Capacity Evaluations and Impairment Ratings, Fellow Lecture (RIC)
4. 5/3 – Health & Society Lecture during MSK Module Entitled: “Opioid Abuse in America”. (Daniel Hale Williams Auditorium, Northwestern)
5. 5/4- Acute Vs. Chronic MSK Pain, Lecture- Phase 1A MSK Module (Northwestern)
6. 5/24- Disability, Fellow Lecture (RIC)

Presented “Pain Management”, 10th Annual Joint Spring Conference- Work Place Accidents, Chicago College of Osteopathic Medicine & Illinois Osteopathic Medical Society, May 13

Leora Cherney:

Publications:

Simmons-Mackie, N., Raymer, A., & **Cherney, L. R.** (2016). Communication partner training in aphasia. *Arch Phys Med Rehabil.* 2016 Apr 23. pii: S0003-9993(16)30074-0. doi: 10.1016/j.apmr.2016.03.023. [Epub ahead of print].

Kaye, R. C. & **Cherney, L. R.** (2016). Script templates: A practical approach to script training in aphasia. *Topics in Language Disorders*, 36, 136-153.

Babbitt, E. M., Worrall, L., & **Cherney, L. R.** (2016). Who benefits from an intensive comprehensive aphasia program? *Topics in Language Disorders*, 36, 168-184.

Lee, J. B. & **Cherney, L. R.** (2016). Computer-Based Treatments for Aphasia: Advancing Clinical Practice and Research. *Perspectives of the ASHA Special Interest Groups*, 1(2), 5-17.

Winstein CJ, Stein J, Arena R, Bates B, **Cherney LR**, Cramer SC, Deruyter F, Eng JJ, Fisher B, Harvey RL, et al., (2016). Guidelines for adult stroke rehabilitation and recovery: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 47, XXX–XXX. [Epub ahead of print]

Cherney, L. R. (2016). Epidural Cortical Stimulation as Adjunctive Treatment for Nonfluent Aphasia: Phase 1 Clinical Trial Follow-Up Findings. *Neurorehabilitation and Neural Repair*, 30(2):131-42.

Carpenter, J. & **Cherney, L. R.** (2016). Increasing aphasia treatment intensity in an acute inpatient rehabilitation program: A feasibility study. *Aphasiology*, 30(5), 542-565.

Invited presentations:

Cherney, L. R. Aphasia treatment across the modalities. Invited workshop. University of Louisiana, Monroe, LA (February, 2016).

Peer Reviewed Conference Presentations:

Lee, J. B. & **Cherney, L. R.** Approaches for analysis of single-case experimental design (SCED) data. Round table discussion. 46th Annual Clinical Aphasiology Conference, Charlottesville, VA (May, 2016).

Babbitt, E., Wang, X., Parrish, T., & **Cherney, L. R.** Increased BOLD fMRI activation following repeated intensive comprehensive aphasia treatment: A case study. Poster presented at the 46th Annual Clinical Aphasiology Conference, Charlottesville, VA (May, 2016).

Lee, J. B. & **Cherney, L. R.** Tau-U: A promising index for quantitative analysis of single subject data in aphasia. Poster presented at the 46th Annual Clinical Aphasiology Conference, Charlottesville, VA (May, 2016).

Lee, J. B., Braun, E., Fernandes, H., Hurwitz, R. Kording, K., Van Vuuren, S. & **Cherney, L. R.** Learning in aphasia: The impact of a rest break during treatment. Poster presented at the 46th Annual Clinical Aphasiology Conference, Charlottesville, VA (May, 2016).

Andrea Domenighetti:

5-8 March 2016: attended the ORS (Orthopaedic Research Society) annual meeting in Orlando and presented a talk entitled "Impaired muscle satellite cells maturation in children with cerebral palsy".

24-25 March 2016: attended the NIH Workshop on "Basic and Translational Research in Cerebral Palsy", Rockville MD.

March 2016: Collaborator on an industry grant application entitled "Botulinum Toxin for Improving Nerve Regeneration", submitted to Ipsen (PI, Dr Colin Franz).

27 April 2016: Presented a scientific talk entitled "Epigenetic modifications of muscle in cerebral palsy" at the RIC Leadership Meeting.

Levi Hargrove:

Papers published:

Earley E, **Hargrove LJ**, and Kuiken TA. "Dual Window Pattern Recognition Classifier for Improved Partial-Hand Prosthesis Control." *Frontiers in Neuroscience*, 10:58; Epub Feb 23, 2016; doi: 10.3389/fnins.2016.00058

Smith, LH, Kuiken TA, and **Hargrove, TA**. "Evaluation of Linear Regression Simultaneous Myoelectric Control Using Intramuscular EMG." *IEEE Transactions on Biomedical Engineering* 63(4)L 737-746, April, 2016 (Cover Article)

Papers Accepted:

Bercich R, Wang Z, Mei H, Hammer L, Seburn K, **Hargrove L**, and Irazoqui P. "Enhancing the Versatility of Wireless Biopotential Acquisition for Myoelectric Prosthetic Control", *Journal of Neural Engineering*, Accepted May 2016.

Patent: L. Hargrove and A. Young: Ambulation Prediction Controller for Assistive Device U.S. Patent Application No. 13/925,668

Richard Harvey – coauthor "AHA/ASA Guidelines for Adult Stroke Rehabilitation and Recovery", *Stroke* (Accompanying commentary by Elliot Roth)

Allen Heinemann:

Peer reviewed publications:

Baum CM, Wolf TK, Wong AWK, Chen CH, Walker K, Young AY, Carlozzi NE, Tulsy DS, Heaton RK, **Heinemann AW** (2016): Validation and clinical utility of the executive function performance test in persons with traumatic brain injury. *Neuropsychological Rehabilitation*, 1-15.

Heinemann AW, Ehrlich-Jones L, Connelly L, Semik P, Fatone S. Enhancing quality of prosthetic services with process and outcome information. *Prosthetics and Orthotics International* 1-7, 2016.

Slavin M, Ni P, Tulsy DS, Kisala PA, **Heinemann AW**, Charlifue S, Fyffe DC, Graves DE, Marino RL, Morse LR, Rosenblum D, Tate D, Worobey LA, Dawson MB, Jette AM. The Spinal Cord Injury Functional Index/Assistive Technology Short Forms. *Archives of Physical Medicine and Rehabilitation*, in press.

Worobey L, Kirby RL, **Heinemann AW**, Krobot E, Dyson-Hudson T, Cowan R, Pedersen J, Shea M, Boninger M. Effectiveness of Group Wheelchair Skills Training for People with Spinal Cord Injury: A Randomized Control Trial. *Archives of Physical Medicine and Rehabilitation*, in press.

Boticello A, Boninger M, Charlifue S, Chen Y, Fyffe D, **Heinemann AW**, Hoffman JM, Jette A, Kalpakjian, C, Rohrbach T. To What Extent Do Neighborhood Differences Mediate Racial Disparities in Participation after Spinal Cord Injury? *Archives of Physical Medicine and Rehabilitation*, in press.

Pretz C, Kozlowski A, **Heinemann AW**. Trajectories of Life Satisfaction following Spinal Cord Injury. *Archives of Physical Medicine and Rehabilitation*, in press

Herzer K, **Heinemann AW**, Chen Y, González-Fernández M. Association Between Time to-Rehabilitation and Outcomes Following Traumatic Spinal Cord Injury, *Archives of Physical Medicine and Rehabilitation*, in press.

Heinemann AW. Lai JS, Wong A, Dashner J, Magasi S, Hahn EA, Carlozzi NE, Tulskey DS, Jerousek S, Semik P, Miskovic A, Gray DB. Using the ICF's Environmental Factors Framework to Develop an Item Bank Measuring Built and Natural Environmental Features Affecting Persons with Disabilities. *Heinemann AW*, in press

Presentations:

Johnson N, Marquine M, Baum C, Wong W, **Heinemann AW**, Magasi S, Heaton R. Racial differences in neurocognitive outcomes post-stroke. Cognitive Aging Conference, Atlanta, GA, April 14, 2016.

Wong, A., Papadimitriou, C., Goldsmith, A., Christopher, K., Focht, C., Whiteneck, G., Deutsch, A., Lenze, E., & **Heinemann, A.** (2016). Patient engagement in inpatient rehabilitation: Trajectories, Outcomes, and Barriers. Oral presentation at the Patient Centered Outcomes Research (PCOR) 6th Annual Symposium, St. Louis, MO; April 5-6, 2016.

Locatelli SM, Etingen B, **Heinemann AW**, Neumann HD, Miskovic A, Chen D, LaVela SL. Perceptions of shared decision-making among patients with spinal cord injury/disorders. Orlando, FL. August 30 - September 1, 2016. Paralyzed Veterans of America Summit 2016. Platform.

LaVela SL, Etingen B, Locatelli S, Miskevics S, **Heinemann AW**. Factors associated with patient-reported low satisfaction with life in individuals with spinal cord injuries/disorders. Orlando, FL. August 30 - September 1, 2016. Paralyzed Veterans of America Summit 2016. Platform.

LaVela SL, Etingen B, Locatelli S, Miskevics S, **Heinemann AW**. What Determines Low Satisfaction with Life in Persons with SCI/D? Educational conference of the Academy of Spinal Cord Injury Professionals. Nashville, TN. 2016. September 4-7, 2016. Platform.

Grants Funded:

Department of Defense: Enhancing Quality of Orthotic Services with Process and Outcome Information

Grant submitted:

Midwest Regional Spinal Cord Injury Care System renewal Chen/Heinemann (Principal Investigators)

NIDILRR DRRP Heinemann/Ehrlich-Jones (Principal Investigators)
Knowledge Translation to Promote Use of Standardized Clinical Assessments

Grants in development:

NCMRR: Defining Trajectories of Neurologic and Quality of Life Outcomes Following Stroke

Honor:

Best paper of 2015 award, National Association of Rehabilitation Research and Training Centers, for Hammel J, Magasi S, Heinemann A et al. Environmental barriers and supports to everyday participation: a qualitative insider perspective from people with disabilities. *Arch Phys Med Rehabil.* 2015;96(4):578-588.

Arun Jayaraman:

Grants Submitted;

NIDILRR—Spinal Cord Injury Model Systems grant: *Midwest Regional Spinal Cord Injury Care System.* Submitted May 9, 2016

Papers Published:

Lonini L, Shawen N, Scanlan K, Rymer WZ, Kording KP, and **Jayaraman, A.** Accelerometry-enabled measurement of walking performance with a robotic exoskeleton: a pilot study. *Journal of NeuroEngineering and Rehabilitation*, March 31 2016. doi:10.1186/s12984-016-0142-9.

Todd Kuiken:

Conference hosted:

First International Symposium on Innovations in Amputation Surgery and Prosthetic Technologies; Chicago, May 12-13, 2016.

Papers published:

Earley E, Hargrove LJ, and **Kuiken TA.** Dual Window Pattern Recognition Classifier for Improved Partial-Hand Prosthesis Control. *Frontiers in Neuroscience*, 10:58; Epub Feb 23, 2016; doi: 10.3389/fnins.2016.00058

Smith, LH, **Kuiken TA,** and Hargrove, TA. "Evaluation of Linear Regression Simultaneous Myoelectric Control Using Intramuscular EMG." *IEEE Transactions on Biomedical Engineering* 63(4)L 737-746, April, 2016 (Cover Article)

Grants submitted:

NIH Shared Instrumentation Grant (S10): *Acquisition of Advanced Polyjet Multi-material 3D Printer,* submitted May 16

Eric Larson:

Ripley, D., Lonini, L., **Larson, E.,** Sarkar, K., Patel, S., Maneypanda, M., Cikmirovic, A., Stork, R. (March, 2016). The Physiological Basis of Fatigue after Traumatic Brain Injury. Paper presented at the Eleventh World Congress on Brain Injury, The Hague, Netherlands.

Larson, E.B. (2016). Recognizing Manifestations of PTSD in Patients with TBI. In F.S. Zollman, (Ed.) *Management of Traumatic Brain Injury: Assessment and Management, Second Ed.* New York: Demos Medical Publishing.

Larson, E.B. (2016). Cognitive Impairment: Characterization and Management. In F.S. Zollman, (Ed.) *Management of Traumatic Brain Injury: Assessment and Management, Second Ed.* New York: Demos Medical Publishing.

Zollman, F.S. & **Larson, E.B.** (2016). Sleep Disturbances. In F.S. Zollman, (Ed.) *Management of Traumatic Brain Injury: Assessment and Management, Second Ed.* New York: Demos Medical Publishing.

Richard Lieber:

March 2016: Orthopaedic Research Society Annual Meeting in Orlando, Florida. Organizer and presenter – Musculoskeletal Tissue Physiology and Function.

April 2016: University of Copenhagen Symposium in St. Christoph, Austria. Presenter - Mechanical role of connective tissue in muscle and tendon and Adaptation of intramuscular connective tissue – training, ageing and disease.

May 2016: CP Symposium – University of Delaware. Keynote speaker - Intraoperative and Laboratory Studies of Human Muscle Contractures

May, 2016: NIH Conference - Rehabilitation Research at NIH: Moving the Field Forward. Panelist and moderator - Mechanisms and Markers of Activity and Function and Exercise, Plasticity, and Mechanism: How Is Rehabilitation Happening? And - Central and Peripheral Mechanisms of Rehabilitation.

Christina Marciniak:

Presentations:

McCormick Z, Cushman D, Caldwell M, Marshall B, Ghannad L, Eng C, Patel J, Makovitch S, Chu SK, Babu AN, Walega DR, **Marciniak C**, Press J, Kennedy DJ, Plastaras C . Does Electrodiagnostic Confirmation of Radiculopathy Predict Pain Reduction after Transforaminal Epidural Steroid Injection? A Multicenter Study. *Journal of Nature and Science*, 2015,1(8):e14 PMID:26251843

Marciniak C, Gabet J, Lee J, Ma M, Brander K, Wysocki N. [Osteoporosis in adults with cerebral palsy: feasibility of DXA screening and risk factors for low bone density](#). Osteoporosis International. *Osteoporosis International* April 2016, Volume 27, [Issue 4](#), pp 1477-1484

Elovic, EP, Munin, M, Kaňovský P, Hanschmann A, Hiersemenzel R, and **Marciniak C**. Randomized, placebo-controlled trial of incobotulinumtoxinA for upper-limb post-stroke spasticity. *Muscle Nerve*, 2016. 53: 415–421. doi: 10.1002/mus.24776. PMID

: 26201835

Marciniak C, Babu A, Ghannad L, Burnstine R, Keeshin S. "Unusual Electromyographic Findings Associated with Colchicine Neuromyopathy: A Case Report." *PM&R. accepted for publication. 2016.*

McCormick, Z., Cushman, D., Marshall, B., Caldwell, M., Patel, J., Ghannad, L., Eng, C., Makovitch, S., Babu, A., Chu, S.K. and **Marciniak, C.**, 2016. Pain Reduction and Repeat Injections after Transforaminal Epidural Injection with Particulate versus Non-particulate Steroid for the Treatment of Chronic Painful Lumbosacral Radiculopathy. *PM&R. Accepted for publication 2016.*

Abstracts:

Elovic, E, Allison Brashear A, Munin M, Kaňovský P, Angelika Hanschmann A, Hiersemenzel R, **Marciniak C.** *Sustained Efficacy with IncobotulinumtoxinA in Upper-Limb Post-Stroke Spasticity Over 48 Weeks (a Phase 3, Placebo-Controlled Study with an Open-Label Extension).* American Academy of Neurology Annual Meeting. Vancouver BC Canada. April,2016

Brashear A, **Marciniak C**, Edgley S, Gul F, Hedera P, McAllister P, O'Dell M, Rubin B, Walker H, Vilain C, Mahmood H, Gracies J-M. *Extension Study to Assess the Safety and Efficacy of Repeated AbobotulinumtoxinA Injections in Adults with Upper Limb Spasticity.* American Academy of Neurology Annual Meeting. Vancouver BC Canada. April,2016

Presentations: Rush Regional Botulinum Toxin Course: Botulinum Toxins in the Treatment of Spasticity April 9, 2016

Laura Miller:

Book Chapter

- **Miller LA.** (2016) Outcome measures in upper limb prosthetics. In *Atlas of Amputations and Limb Deficiencies: Surgical, Prosthetic, and Rehabilitation Principles, Fourth Edition.* Volume 1. Krajbich, I, Pinzur, M., Potter, B., Stevens, P., editors. American Academy of Orthopaedic Surgeons, p. 419-426.

Committee Service

- 2016-2017 Member, Institute of Medicine's (IOM's) Committee on the Use of Selected Assistive Devices in Eliminating or Reducing the Effects of Impairments
- March 2016 Chair, Georgia Institute of Technology, Academic Program Review for the Applied Physiology program

Debjani Mukherjee:

Apkon S, Weiss L, Roth EJ, **Mukherjee D.** Cases That "Stick" or Stay with Us. [PM](#)

[R.](#) 2016 Apr;8(4):367-72. doi: 10.1016/j.pmrj.2016.02.007.

Presentations:

Mukherjee, D. Decisional Capacity and Aphasia: A Case Study Cognitive Neurosciences Lecture Series. University of Illinois at Urbana-Champaign, March 2016.

Michelson, K., Spill, G., Stein, R. Wirpsa, M.J., **Mukherjee, D.** Hope Across the Continuum of Cancer Care. RIC, NM, Lurie Joint Ethics Grand Rounds. March 2016

Mukherjee, D. The Emotional Space between Assent and Consent. Paper presentation on a panel entitled Gaining Ground: The Ethical Space between Consent and Assent. with Tarsney, P.S., Kondrat, A, Wasson, K. at the 12th Annual International Conference on Clinical Ethics Consultation. Washington, DC. May 2016.

Webinar: **Mukherjee, D.** Empathy and Connection in Rehabilitation Webinar. Rehabilitation Institute of Chicago. April 2016

Teaching: **Mukherjee, D.** Prenatal Diagnosis and Disability Ethics. Lecture for MS in Genetic Counseling Program, Northwestern University. April 2016.

Service: Member of Technical Expert Panel for Development of Inpatient Rehabilitation Facility Experience of Care Survey, conducted by RTI International on behalf of the Centers for Medicare & Medicaid Services (CMS). 2016.

Monica Rho:

Plastaras C, McCormick Z, Nguyen C, **Rho M**, Nack SH, Roth D, Casey E, Carneiro K, Cucchiara A, Press J, McLean J, Caldera F. Is hip Abduction Strength Asymmetry Present in female runners in the early stages of patellofemoral pain syndrome. *Am J Sports Med.* 2016; 44(1): 105-112

Karvelas K, Ziegler C, **Rho ME.** Resident accuracy of electromyography needle electrode placement using ultrasound verification. *PM&R.* 2015 Dec [Epub ahead of print]

Rho M, Camacho-Soto A, Cheng A, Havran M, Morone NE, Rodriguez E, Shega J, Weiner DK. Deconstructing chronic low back pain in the older adult – step by step evidence and expert-based recommendations for evaluation and treatment: Part IX: Lateral Hip and Thigh Pain. *Pain Medicine [accepted]*

Text Book: Casey E, **Rho ME**, Press J. Sex Differences in Sports Medicine (First Edition). Demos Publishing. (*In Press – release day May 2016*)

Award: May 2016: Feinberg Academy of Medical Educators Outstanding Teacher Award

Elliot Roth (et al): “Risk Factors for Institutionalization after Traumatic Brain Injury Inpatient Rehabilitation”, *J Head Trauma Rehabilitation*, 2016

Elliott Rouse:

Grants Submitted;

NIH R21: *Quantifying leg multi-joint impedance during human walking*, March 16th, 2016

Papers submitted:

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

Invited Talks:

Northwestern University Prosthetics and Orthotics Center: *New strategies for the design and control of wearable robots for the lower extremity*. April 25, 2016

LA Dodgers' Lunch and Learn, *New strategies for the design and control of wearable robots for the lower extremity*, May 6, 2016

Outreach:

New strategies for the design and control of wearable robots for the lower extremity at Pumping Station 1 Makerspace – a local hackerspace. Event attended by hobbyist / enthusiast electrical, mechanical and software engineers, May 9, 2016

Zev Rymer:

Published “Accelerometry-enabled measurement of walking performance with a robotic exoskeleton: a pilot study” by Lonini L, Shawen N, Scanlan K, **Rymer WZ**, Kording KP, and Jayaraman A in *Journal of Neuroengineering Rehabilitation*. March 31, 2016. PMID: 27037035.

Published “Muscle fatigue increases beta-band coherence between the firing times of simultaneously active motor units in the first dorsal interosseous muscle” by McManus LM, Hu X, **Rymer WZ**, Suresh NL, and Lowery MM in *Journal of Neurophysiology*. March 16, 2016. PMID: 26984420.

Published “Learning new gait patterns: Exploratory muscle activity during motor learning is not predicted by motor modules” by Ranganathan R, Krishnan C, Dhaher YY, and **Rymer WZ** in *Journal of Biomechanics*. March 21, 2016. PMID: 26916510.

Member of External Review Committee for Evaluation of the Balgrist University Hospital at the University of Zurich on March 15-18, 2016

Held RERC TIDI External Advisory Board Meeting on March 25, 2016

Published “Ascending vestibular drive is asymmetrically distributed to the inferior oblique motoneuron pools in a subset of hemispheric stroke survivors by Miller DM, Baker JF, and **Rymer WZ** in *Clinical Neurophysiology*. April 2016. PMID: 26971485.

Presented an invited talk on "Origins of Muscular Weakness in Hemispheric Stroke: Applications of Advanced Technologies" at the University of Houston on April 1, 2016

Attended the Neural Control of Movement Conference (NCM 2016) in Montego Bay, Jamaica April 25-29

Attended the Rehabilitation Research Career Development Program 9th Annual Meeting in Los Angeles, CA May 18-19, 201

Attending the NIH Rehabilitation Sciences Conference May 25-26, 2016

Diane Dudas Sheehan:

Lectures:

March 10, 2016 "Neuromuscular Scoliosis Evaluation and Management" I presented to PM&R residents during Pediatric rotation at the Rehabilitation Institute of Chicago

March 10, 2016 "Building your Career and Constructing Your Curriculum Vitae, APNs /Nurses at Lurie Children's

March 15, 2016 "Cerebral Palsy" presented to Orthopaedic Team: APNs, RNs, Administrative Assistants at Lurie Children's

March 24 2016 "Comprehensive Evaluation and Practical Treatment of Children with Wounds" I presented to PM&R residents/medical students during Pediatric rotation at the Rehabilitation Institute of Chicago

Teaching: Spring 2015 class Tutor for M1, Professional Development: Ethics in Action Course, NU

Service: WFO committee member

Annie Simon:

Conference papers accepted:

Simon AM, Spanias JA, Ingraham KA, and Hargrove LJ. "Delaying ambulation mode transitions in a powered knee-ankle prostheses". *Proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Orlando, FL, 2016

Spanias JA, **Simon AM**, Perreault E, and Hargrove LJ. "Preliminary results for an adaptive pattern recognition system for novel users using a powered lower limb prosthesis". *Proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Orlando, FL, 2016

Simon AM, Ingraham KA, Spanias JA, Ingraham KA, and Hargrove LJ. "Development and preliminary testing for a flexible control system for powered knee-ankle prostheses". *Proceedings of the 6th IEEE Robotics and Automation Society*

and Engineering in Medicine and Biology Society International Conference on Biomedical Robotics and Biomechatronics, Singapore, 2016

Vineeta Swaroop:

Swaroop VT. Director, American Academy of Orthopaedic Surgeons Part II 2017 Board Certification Preparatory Webinar (#3247) (March 15, 2016)

Swaroop VT. Director, American Academy of Orthopaedic Surgeons One Day Part II 2016 Board Certification Review Course (#3358), Rosemont, IL (May 13, 2016)

Swaroop VT. Director, American Academy of Orthopaedic Surgeons One Day Part II 2016 Board Certification Review Course (#3359), Rosemont, IL (May 14, 2016)

Swaroop VT. Beyond Typical DDH: Indications for Treatment of Hip Dysplasia/Dislocation – Myelo hip. 2016 Annual Meeting of the Pediatric Orthopaedic Society of North America in Indianapolis, IN (April 29, 2016)

Swaroop VT. Myelomeningocele Fetal Surgery: Does this change orthopaedic findings and treatment down the road? 2016 Annual Meeting of the Pediatric Orthopaedic Society of North America in Indianapolis, IN (April 29, 2016)

Thompson RM, Ihnow S, Dias L, **Swaroop VT.** Comparing Outcomes of Tibial Derotational Osteotomy in Cerebral Palsy vs Myelodysplasia. 2016 Annual Meeting of the Pediatric Orthopaedic Society of North America in Indianapolis, IN (April 29, 2016)

Mary Zeigler: “Use of the Pressure Ulcer Scale for Healing (PUSH) in Inpatient Rehabilitation: A Case Example”. *Rehabilitation Nursing Journal*, February 2016 (Early View)

Research Faculty

Anne Deutsch:

Publications:

Kumar A, Graham JE, Resnik L, Karmarkar AM, **Deutsch A**, Tan A, Al Snih S, Ottenbacher KJ. Comparing Comorbidity Indices to Predict Post-Acute Rehabilitation Outcomes. *American J of Phys Med Rehab* Online.

Presentations:

Deutsch A. Functional Abilities and Goals. Presentation at the Centers for Medicare and Medicaid Services’ Inpatient Rehabilitation Facility Quality Reporting Program Training; Dallas, TX; May 18, 2016.

Deutsch A. Post-Stroke Rehabilitation Quality. Seventh Annual Meridian Health Stroke Symposium. Meridian Health. Eatontown, NJ; April 15, 2016.

Deutsch A. Assessment and Quality in Rehabilitation Hospitals. PKUCare Rehabilitation Hospital, Beijing, China; May 30-31, 2016

Professional Activities

Member, Expert Panel, Medicare Bundled Payment Care Initiative: Heart Failure. Centers for Medicare and Medicare Services and Telligen
Member, External Advisory Committee, Center for Large Data Research & Data Sharing in Rehabilitation (University of Texas Medical Branch, Galveston, TX
Invited Participant, Association of Rehabilitation Nurses Strategic Planning Summit. Chicago, IL
Member, National Quality Forum: Attribution Expert Panel

Linda Ehlich-Jones:

Presentations:

Ehrlich-Jones L, Lee J, Semik P, Cox C, Dunlop D, & Chang RW. Relationship over time between beliefs, motivation, and worries about physical activity and physical activity participation in persons with knee osteoarthritis. Poster presentation at Osteoarthritis Research Society International Meeting, April 1 and 2, 2016, Amsterdam, The Netherlands.

Dunlop DD, Song J, Semik PA, Lee J, **Ehrlich-Jones L,** Pellegrini C, Pinto D Ainsworth B, & Chang RW. Physical activity metrics to predict function in older adults with lower extremity conditions: Evidence from the Osteoarthritis Initiative (OAI). Poster presentation at Osteoarthritis Research Society International Meeting, April 1 and 2, 2016, Amsterdam, The Netherlands.

Ehrlich-Jones L. Individuals, Family and Community. Moderator for this session at the Rehabilitation Research at NIH: Moving the Field Forward, May 25, 2016, Bethesda, MD.

Grants Submitted:

NIH/NIAMS U01Ehrlich-Jones/Ramsey-Goldman (Principal Investigators)
Lupus Intervention for Fatigue Trial (LIFT)

NIDILRR DRRP Heinemann/Ehrlich-Jones (Principal Investigators)
Knowledge Translation to Promote Use of Standardized Clinical Assessments

PCORI Tier 1 Pipeline to Proposal Ehrlich-Jones (Principal Investigator)
Increasing physical activity in persons with systemic sclerosis

Professional Activities:

Chair WFO, Northwestern University
Member, Illinois Society of Advanced Practice Nurses Program Committee
Member, NIH Rehabilitation Scientific Planning Committee
Member, Osteoarthritis Action Alliance, Community engagement (group 2)
Member, American College of Rheumatology Quality Measures Subcommittee

Mary Lou Guihan:

Current funding:

Research to support an organizational culture of spiritual care in VA patient care.

Role: Co-investigator. Funder: VA Office of Nursing Services

SCI QUERI and SCI/D National Office Partner-Centered Care Quality Improvement Program (PI: Evans), Role: Associate Director. Funder: VA QUERI

Pending:

Management of osteoporosis in Veterans with SCI (PI: Carbone and Weaver). Role:

Co-investigator. Funder: Department of Defense.

Publications:

Thomason SS, Powell-Cope G, Peterson MJ, **Guihan M**, Wallen ES, Olney CM, Bates-Jensen B. A Multisite Quality Improvement Project to Standardize the Assessment of Pressure Ulcer Healing in Veterans with Spinal Cord Injuries/Disorders. *Adv Skin Wound Care*. 2016 Jun;29(6):269-76.

Lones K, Ramanathan S, Fitzpatrick M, Hill JN, **Guihan M**, Richardson MS, Evans CT. The Feasibility of an Infection Control "Safe Zone" in a Spinal Cord Injury Unit. *Infect Control Hosp Epidemiol*. 2016 Feb 26:1-3

Budiman-Mak E, Epstein N, Brennan M, Stuck R, **Guihan M**, Huo Z, Emanuele N, Sohn MW. Systolic blood pressure variability and lower extremity amputation in a non-elderly population with diabetes. *Diabetes Res Clin Pract*. 2016 Apr;114:75-82.

Guihan M, Murphy D, Rogers TJ, Parachuri R, SAE Richardson M, Lee KK, Bates-Jensen BM. Documentation of preventive care for pressure ulcers initiated during annual evaluations in SCI. *J Spinal Cord Med*. 2016 Feb 5:1-11.

Northwestern University Prosthetics-Orthotics Center

Publications:

Borrenpohl D, Kaluf B, **Major MJ**. Survey of US practitioners on the validity of the Medicare Functional Classification Level system and utility of clinical outcome measures for aiding K-level assignment. *Archives of Physical Medicine and Rehabilitation* 2016 (in press).

Boutwell E, Stine R, Gard SA (2016). In Vivo Impact Testing of the Residual Limb: System Response to Changes in Prosthetic Stiffness. *Journal of Rehabilitation Research & Development* (In press).

Boutwell E, Stine R, Gard SA (2016). Shock Absorption during Transtibial Amputee Gait: Does Longitudinal Prosthetic Stiffness Play a Role? *Prosthetics & Orthotics International* (In press).

Dillon M and **Fatone S** (2016) Ch. 38: Prosthetics Management after Partial Foot Amputation. In: Krajbich JI; Pinzur MS; Potter BK; Stevens PM (Eds.) Atlas of Amputations and Limb Deficiencies: Surgical, Prosthetic, and Rehabilitation Principles. 4th Edition. American Academy of Orthopedic Surgeons; Rosemont, IL.

Fatone S, Johnson WB, Tucker K (2016) A 3D Model to Assess the Effect of Ankle Joint Axis Misalignments in Ankle-Foot Orthoses. *Prosthetics Orthotics International*, 40(2):240-246. DOI: 10.1177/0309364614543551

Fatone S, Johnson WB, Kwak S (2016) Using a three dimensional model of the Ankle-Foot Orthosis/leg to explore the effects of combinations of axis misalignments. *Prosthetics Orthotics International*, 40(2) 247-252. DOI: 10.1177/0309364614556839

Fatone S, A Heinemann, L Ehrlich-Jones, L Connelly, P Semik (2016) "Enhancing Quality of Prosthetic Services with Process and Outcome Information". *Prosthetics Orthotics International*, 40(2):1-7. DOI: 10.1177/0309364616637957

Koehler-McNicholas S, Lipschutz R, Gard SA (2016). The Biomechanical Response of Persons with Transfemoral Amputation to Variations in Prosthetic Knee Alignment during Level Walking. *Journal of Rehabilitation Research & Development* (In press).

Major MJ, Twiste M, Kenney LPJ, Howard D. The Effects of Prosthetic Ankle Stiffness on Stability of Trans-Tibial Amputee Gait. *Journal of Rehabilitation Research and Development* 2016 (in press).

Major MJ, Alford M. Validity of the iPhone M7 motion co-processor as a pedometer for able-bodied ambulation. *Journal of Sports Sciences* 2016 (in press).

Sletto, L., Wu, Y. and Robinson, C. (2016) "Dilatency-based Impression and Fabrication Technique for Custom Foot Orthoses". *Prosthetics Orthotics International*, 40(3):409-413.

Presentations:

Owen E, **Fatone S**, Hansen A (2016) The effect of walking in footwear with varying heel sole differentials on shank and foot segment kinematics. American Academy of Orthotists and Prosthetists Annual Meeting and Scientific Symposium, March 9-12, Orlando, Florida.

Tran L, Caldwell R, Quigley M, Fatone S (2016) Stakeholder Input on a Residual Limb Monitoring System. American Academy of Orthotists and Prosthetists Annual Meeting and Scientific Symposium, March 9-12, Orlando, Florida.

Sherwood A, **Fatone S, Brinkmann J** (2016) The Benefits to Orthotic & Prosthetic Practitioners of Using Good Patient/Practitioner Communication. American Academy of Orthotists and Prosthetists Annual Meeting and Scientific Symposium, March 9-12, Orlando, Florida.

Fatone S, Stine R (2016) Capturing Quality Clinical Videos for Two-Dimensional Motion Analysis. Invited presentation, Gait Society and Lower Limb Society Forum "Technological Advancements That Promote Practical Application of Outcome Measures." American Academy of Orthotists and Prosthetists Annual Meeting and Scientific Symposium, March 9-12, Orlando, Florida.

Caldwell R, Fatone S (2016) "Development of the Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket for Persons with Transfemoral Amputation." In: Modern Transfemoral Socket Alternatives and Technologies: The Science behind TFAs. 42nd American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, March 9-11, Orlando, FL. This presentation was featured in Kahle J and Highsmith JM (2016) "The Newest Technology in Transfemoral Socket Interfaces." InMotion, March/April, 26(2):38-43. http://www.amputee-coalition.org/inmotion_online/inmotion-26-02-web/

Stefania Fatone, PhD, BPO (Hons), was an invited speaker at the Danske Bandagisters Meeting held in Nyborg, Denmark on April 1 and 2. Dr. Fatone presented two talks, "Subischial Socket with Vacuum Assisted Suspension for Persons with Transfemoral Amputation" and "Orthotic Management of Stroke".

Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, FAAOP, were invited presenters at the Scheck Fair (Lombard IL) on April 8. Scheck Fair is an educational event hosted by Scheck & Siress, one of the largest O&P clinical providers with 15 locations throughout the Chicago area. Mr. Caldwell and Dr. Fatone presented "Socket-Related Research Collaborations at Northwestern University", highlighting three research projects in which NUPOC and Scheck & Siress are collaborating.

Ryan Caldwell, CP, and Stefania Fatone, PhD, BPO (Hons), taught the NU-FlexSIV Socket Course for prosthetists at Medi, mbH in Bayreuth, Germany, on April 29 and 30, 2016. Medi, gmbH, requested and sponsored this course.

Ryan Caldwell, CP, and Stefania Fatone, PhD, BPO(Hons) attended the OT World Congress in Leipzig, Germany, May 3 through 6, 2016. Mr. Caldwell served as co-chair of a session on vacuum technology, "Prosthetics-Vacuum Sockets", where Mr. Caldwell and Dr. Fatone co-presented "Development of the Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket for Persons with Transfemoral Amputation". This presentation was featured in "Just in Time for the Annual Meeting: OTWorld Session Sneak Peeks" in The O&P Edge, April 2016, http://www.oandp.com/articles/2016-04_10.asp

Major MJ. Biomechanical evaluations of locomotor stability in individuals with upper and lower limb amputations: Rehabilitation research at the Jesse Brown VA Motion Analysis Research Laboratory. Invited presentation for National VA Research Week at the Jesse Brown VA Medical Center, Chicago, IL, May 20, 2016.

Major MJ. An introduction to prosthetic legs that led to a career in Biomedical Engineering research. Invited presentation for the Annual Whitaker Grantee Enrichment Seminar, Institute of International Education, Athens, Greece, April 11-15, 2016.

Major MJ, Scham J, Orendurff M. Footwear effects on prosthetic feet mechanical properties with implications for gait biomechanics and clinical recommendations. Presented at the 42nd Academy Annual Meeting and Scientific Symposium, Orlando, FL, March 9 - 12, 2016.

Major MJ, Alford M. Validity assessment of the iPhone 5s as a pedometer for able-bodied persons. Presented at the 42nd Academy Annual Meeting and Scientific Symposium, Orlando, FL, March 9 - 12, 2016.

Thesis Defenses:

Suzanne McConn, successfully defended her Master's thesis on May 10, 2016. The thesis was entitled "Prosthetic Influence on Gait Stability in Individuals with Upper Limb Loss." The study compared subjects' gait stability in two conditions: 1) when wearing an upper limb prosthesis that matched the mass and inertial characteristics of the sound limb; and 2) when walking without a prosthesis or wearing a prosthesis that did not match the sound limb's characteristics. Stability during walking was measured using margin of stability, trunk kinematics, average step width, step length and others.

Awards/Appointments:

Ryan Caldwell, CP/L, FAAOP, received the Clinical Creativity Award at the 42nd Annual Meeting & Scientific Symposium of the American Academy of Orthotists & Prosthetists held in Orlando on March 9 - 12, 2016.

Dr **Stefania Fatone** was appointed as a member of the Department of Veterans Affairs Scientific Merit Review Board, Rehabilitation Engineering and Prosthetics/Orthotics Subcommittee (term: 3/2016-3/2020).

Christopher Robinson, MS, MBA, CPO/L, ATC, FAAOP (D) was recognized as an AAOP Fellow with Distinction at the 42nd Annual Meeting & Scientific Symposium of the American Academy of Orthotists & Prosthetists held in Orlando, FL on March 9 - 12, 2016.

Laboratory Visits/Events:

NUPOC was represented at the Northwestern University 12th Annual Lewis Landsberg Research Day, April 7, 2016, Chicago, Illinois by **Ryan Caldwell** with the poster "Development of the Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket for Persons with Transfemoral Amputation" and **Lilly Tran** with the poster "Stakeholder Input on Development of a Residual Limb Monitoring System." These posters were co-authored by **Dr. Stefania Fatone** and Matthew Quigley. Dr. Fatone also participated in this event as an abstract reviewer and poster judge.

Northwestern University Prosthetics-Orthotics Center (NUPOC) presented an educational program for 50 science students and their science teachers from Parkway South High School (Manchester, MO) on April 21, 2016. R. J. Garrick, PhD, developed this program in support of STEM (Science Technology Engineering & Mathematics) education initiatives.

Northwestern University Prosthetics-Orthotics Center (NUPOC) presented an educational program for NU Science in Society mentors and 25 science students from the Boys and Girls Science Club of Chicago with participants from John T. McCutcheon Elementary and William C. Goudy Elementary Schools and the Walt Disney Magnet School on May 17, 2016. R. J. Garrick, PhD, developed this program in support of STEM (Science Technology Engineering & Mathematics) education initiatives.

Grant Awards:

Dr **Stefania Fatone** is PI of the application “Longitudinal Observation of Myoelectric Upper Limb Orthosis Use among Veterans with Upper Limb Impairment” which was recommended for funding by the Orthotics and Prosthetics Outcomes Research Program (OPORP) Orthotics Outcomes Research Award (OORA).

Dr **Stefania Fatone** is PI of the application “No longer smooth: introducing striations into prosthetic socket construction to improve suspension, rotation, fit and comfort” which was recommended for funding by the CDMRP CRM RP NMSIRA 2015. Dr **Steven Gard** is a sub-PI on this application.

Dr **Stefania Fatone** is co-investigator on the application “Enhancing Quality of Orthotic Services with Process and Outcome Information” (PI: Allen Heinemann) which was recommended for funding by the Orthotics and Prosthetics Outcomes Research Program (OPORP) Orthotics Outcomes Research Award (OORA).

Grant Submissions:

Matthew Major is PI on a proposal titled “A self-report measure to comprehensively assess lower-limb residuum-socket interface comfort” submitted on April 27th, 2016, as a Pilot Grant proposal to the American Orthotic and Prosthetic Association.

Matthew Major is a co-investigator on a proposal titled “Evaluating Lower Leg Trajectory Error: A Novel Metric to Quantify the Mechanical Performance of Prosthetic Feet” submitted with collaborators at the Massachusetts Institute of Technology as an EARly-concept Grants for Exploratory Research (EAGER) proposal to the National Science Foundation.

Yeongchi Wu, MD, submitted an application entitled “Knowledge Translation of Dilatancy Prosthetic Orthotic Technology” to the National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR) Disability and Rehabilitation Research Projects (DRRP) Program on March 14, 2016.

Other Faculty

Chandramouli Krishnan:

Washabaugh EP, **Krishnan C**. A low-cost system for coil tracking during transcranial magnetic stimulation. *Restor Neurol Neurosci*. 2016 Feb 24;34(2):337-46. doi:

10.3233/RNN-150609. PubMed PMID: 26923620.

Ranganathan R, **Krishnan C**, Dhaher YY, Rymer WZ. Learning new gait patterns: Exploratory muscle activity during motor learning is not predicted by motor modules. J Biomech. 2016 Mar 21;49(5):718-25.
doi: 10.1016/j.jbiomech.2016.02.006. Epub 2016 Feb 10. PubMed PMID: 26916510.

Washabaugh EP, Claflin ES, Gillespie RB, **Krishnan C**. A Novel Application of Eddy Current Braking for Functional Strength Training During Gait. Ann Biomed Eng. 2016 Jan 27. [Epub ahead of print] PubMed PMID: 26817456.

Robert Scheidt (et al): “Tactile Proprioceptive Input in Robotic Rehabilitation After Stroke”, 2015 IEEE International Conference on Robotics and Automation, Seattle, WA, May 26-30, 2016