

Scholarly Activities
Department of Physical Medicine & Rehabilitation
December 2015 – February 2016

REGULAR FACULTY

Brenna Argall:

Grant Awards:

NSF/RI-1552706: CAREER: Robot Learning from Motor-Impaired Instructors and Task Partners

NIH/NICHD-1R43HD085317-01: SBIR: Semi-autonomous Robotic Powered Wheelchair Functionality

Sudarshan Dayanidhi:

Dayanidhi S, Buckner EH, Chambers HG, Schenk S, Lieber RL. Reduced mitochondrial enzyme activity in skeletal muscle in children with cerebral palsy. 5th *International Conference on Cerebral Palsy and other Childhood-onset Disabilities*, June 2016, Stockholm, Sweden. (Podium)

Dayanidhi S, Kinney MC, Dykstra P, McCarthy JJ, Peterson CA, Lieber RL. Reduced muscle stem cell number impairs serial sarcomere addition and causes muscular contractures. 5th *International Conference on Cerebral Palsy and other Childhood-onset Disabilities*, June 2016, Stockholm, Sweden.

Dayanidhi S, Cerebral palsy, muscular contractures and muscle stem cells, *Clinical Research Grand Rounds, Rehabilitation Institute of Chicago*, January 2016.

Dayanidhi S. Reduced muscle stem cell number and contracture development, *Rehabilitation Institute of Chicago- Motion Analysis Center, 24th Visiting Professor Seminar*, December 2015.

Course Faculty, Kinesiology-2 for DPT 1st year, Winter 2016, Department of PTHMS, NU

Deborah Gaebler:

Graham H. Kerr, Rosenbaum P, Paneth N, Dan B. Lin J, Damiano D, Becher J, **Gaebler-Spira D**, Colver A, Reddihough D, Crompton K, Lieber R. Cerebral Palsy. *Nature Reviews: Disease Primers*, 2016: 2

Presentations, First Mexican Academy of Cerebral Palsy, Mexico City, February 25-18:
Aging in CP – problems and process; Technologies to improve outcomes in CP

Accepted for publication – *Journal of Pediatric Neurology*: Validation of the 0-10 Numeric Rating Scale Measure of Spasticity in Children with Cerebral Palsy.

Andrea (Andy) Domenighetti:

Tropomodulin 1 directly controls thin filament length in both wild-type and tropomodulin 4-deficient skeletal muscle". Gokhin DS, Ochala J, **Domenighetti AA**, Fowler VM. *Development*. 2015 Dec 15;142(24):4351-62. doi: 10.1242/dev.129171. Epub 2015 Nov 19. PMID: 26586224

Presented: "Investigating New Muscle Stem Cell-Based Therapies for Cerebral Palsy (CP) and Stroke", #2 Peripheral Nerve Group Meeting, RIC, 12/1/15

Presented: "Investigating New Muscle Stem Cell-Based Therapies for Cerebral Palsy (CP) and Stroke", Clinical Research Grand Rounds, RIC, 2/8/16

Jordan Grafman:

Cristofori, I, Zhong, W., Chau, A., Solomon, J., Krueger, F., and **Grafman, J.** White and Gray Matter Contributions to Executive Function Recovery after Traumatic Brain Injury. *Neurology*, 84 (14), 1394-1401, 2015.

Kouri, N. et al. Genome-wide association study of corticobasal degeneration identifies risk variants shared with progressive supranuclear palsy. *Nature Communication*, Jun 16;6:7247. doi: 10.1038/ncomms8247, 2015

Brioschi Guevara, A., Demonet, J.-F., Polejaeva, E., Knutson, K.M., Wassermann, E.M., Krueger, F., and **Grafman, J.** Association between long-term cognitive decline in Vietnam Veterans with TBI and Caregiver Attachment Style. *Journal of Head Trauma Rehabilitation*, 30 (1), E26-33, 2015.

Pugh MJ, Orman JA, Jaramillo CA, Salinsky MC, Eapen BC, Towne AR, Amuan ME, McNamee SD, Kent TA, McMillan KK, Hamid H, Roman GC, **Grafman JH.** The Prevalence of Epilepsy and Association with Traumatic Brain Injury in Veterans of the Afghanistan and Iraq Wars. *Journal of Head Trauma Rehabilitation*, 30 (1), 29-37, 2015.

Cristofori, I., Viola, V., Chau, A., Zhong, W., Krueger, F., Zamboni, G., and **Grafman, J.** The Neural Bases for Devaluing Radical Political Statements Revealed by Penetrating Traumatic Brain Injury. *Social Cognitive and Affective Neuroscience*. 10 (8), 1038-1044, 2015.

Knutson, K., Dal Monte, O., Schintu, S., Wassermann, E.M., Raymont, V., **Grafman, J.**, and Krueger, F. Areas of Brain Damage Underlying Increased Reports of Behavioral Disinhibition. *Journal of Neuropsychiatry and Clinical Neuroscience*, 27 (3), 193-198, 2015.

Brioschi Guevara A., Knutson, K.M., Wassermann, E.M., Pulaski, S., **Grafman, J.**, and Krueger, F. Theory of Mind Impairment in Patients with Frontotemporal Dementia (bv-FTD) Increases Caregiver Burden. *Age Ageing*, 44 (5), 891-895, 2015.

Lewis, J., Krueger, F., Ryamont, V., Solomon, J., Knutson, K., Barbey, A., Poore, J., Wassermann, E., and **Grafman, J.** Anhedonia in Combat Veterans with Penetrating Head Injury. *Brain Imaging and Behavior*, 9 (3), 456-460, 2015.

Chau, A., Salazar, A.M., Krueger, F., Cristofori, I., and **Grafman, J.** The Effect of Claustrum

Lesions on Human Consciousness and Recovery of Function. *Consciousness and Cognition*, 36 (Nov), 256-264, 2015.

Huey, E.D., Lee, S., Brickman, A.M., Manoochehri, M., Griffith, E., Devanand, D.P., Stern, Y., and **Grafman, J.** Neuropsychiatric Effects of Neurodegeneration of the Medial Versus Lateral Ventral Prefrontal Cortex in Humans. *Cortex*, 73 (Dec), 1-9, 2015.

Pardini, M., Cordano, C., Guida, S., **Grafman, J.**, Krueger, F., Amore, M., Mattei, C., Cocito, L., and Emberti Gialloreti, L. Prevalence and Cognitive Underpinnings of Isolated Apathy in Young Healthy Subjects. *Journal of Affective Disorders*, 189 (Jan), 272-275, 2016.

Cristofori, I., Bulbulia, J., Shaver, J.H., Wilson, M., Krueger, F., and **Grafman, J.** Neural Correlates of Mystical Experience. *Neuropsychologia*, 80 (Jan), 12-20, 2016.

Zacks, J.M., Kurby, C.A., Landazabal, C.S., Krueger, F., and **Grafman, J.** Effects of Penetrating Traumatic Brain Injury on Event Segmentation and Memory. *Cortex*, 74 (Jan), 233-246, 2016.

In press (9)

Brioschi Guevara, A., Demonet, J-F., Polejaeva, E., Knutson, K.M., Wassermann, E.M., **Grafman, J.**, and Krueger, F. Association Between Traumatic Brain Injury Related Brain Lesions and Long-term Caregiver Burden. *Journal of Head Trauma Rehabilitation*, .

Glass, L., Moody, L., **Grafman, J.**, and Krueger, F. Neural Signatures of Third-Party Punishment: Evidence from penetrating traumatic brain injury. *SCAN*, in press.

Zacks, J.M., Kurby, C.A., Landazabal, C.S., Krueger, F., and **Grafman, J.** Effects of Penetrating Traumatic Brain Injury on Event Segmentation and Memory. *Cortex*, in press.

Operskalski, J.T., Paul, E.J., Colom, R., Barbey, A.K., and **Grafman, J.** Lesion Mapping the Four-Factor Structure of Emotional Intelligence. *Frontiers in Human Neuroscience*, in press.

Hogeveen, J., Hauner, K.K., Chau, A., Krueger, F., and **Grafman, J.** Impaired Valuation Leads to Increased Apathy Following Ventromedial Prefrontal Cortex Damage. *Cerebral Cortex*, in press.

Cristofori, I., Bulbulia, J., Shaver, J.H., Wilson, M., Krueger, F., and **Grafman, J.** Neural Correlates of Mystical Experience. *Neuropsychologia*, in press.

Salvi, C., Cristofori, I., **Grafman, J.**, and Beeman, M. The Politics of Insight. *Quarterly Journal of Experimental Psychology*, in press.

Hogeveen, J., Bird, G., Chau, A., Krueger, F., and **Grafman, J.** Acquired alexithymia following damage to the anterior insula. *Neuropsychologia*, in press.

Cristofori, I., Zhong, W., Mandoske, V., Chau, A., Krueger, F., Strenziok, M., and **Grafman, J.** Brain Regions Influencing Implicit Violent Attitudes: A Lesion Mapping Study. *Journal of*

Neuroscience, in press.

Chapters and Books

2015 (5)

Salazar, A.M. and **Grafman, J.H.** Posttraumatic Epilepsy: Clinical clues to pathogenesis and paths to prevention. In: J. Grafman and A.M. Salazar (Eds.) *Traumatic Brain Injury (Handbook of Clinical Neurology)*, Amsterdam: Elsevier, 525-538, 2015.

Grafman, J. and Salazar, A.M. *Traumatic Brain Injury, Parts 1 & 2*, Handbook of Clinical Neurology. Amsterdam: Elsevier, 2015.

Grafman, J. and Salazar, A.M. The Ebb and Flow of Traumatic Brain Injury Research. In: J. Grafman and A.M. Salazar (Eds.) *Traumatic Brain Injury (Handbook of Clinical Neurology)*, Amsterdam: Elsevier, 795-802, 2015.

Plassman, B. and **Grafman, J.** Traumatic Brain Injury and Late-Life Dementia. In: J. Grafman and A.M. Salazar (Eds.) *Traumatic Brain Injury (Handbook of Clinical Neurology)*, Amsterdam: Elsevier, 711-722, 2015.

2016 (1)

Grafman, J. and D'Esposito, M. The Frontal Lobes (*Handbook of Clinical Neurology*), in preparation.

Anita Halper: Received the 2015 Honors of the Academy of Neurological Communication Disorders and Sciences for Outstanding Contributions in Research, Teaching and Service in the area of neurologic communication disorders, ASHA Annual Meeting

Levi Hargrove:

Ingraham KA, Fey NP, Simon AM, **Hargrove LJ.** "Assessing the Relative Contributions of Active Ankle and Knee Assistance to the Walking Mechanics of Transfemoral Amputees Using a Powered Prosthesis." *PLoS One*. 2016 Jan 25;11(1):e0147661.

Simon AM, Fey NP, Ingraham KA, Finucane SB, Halsne EG, and **Hargrove LJ.** "Improved weight-bearing symmetry for transfemoral amputees during standing up and sitting down with a powered knee-ankle prosthesis". *Archives of Physical Medicine and Rehabilitation*, in press, December 2015 <http://dx.doi.org/10.1016/j.apmr.2015.11.006>

Earley EJ, **Hargrove LJ**, Kuiken TA. "Dual window pattern recognition classifier for improved partial-hand prosthesis control" *Frontiers in Neuroscience*. 10:58. doi: 10.3389/fnins.2016.00058

Peng J, Fey NP, Kuiken TA, **Hargrove LJ.** "Anticipatory kinematics and muscle activity preceding transitions from level-ground walking to stair ascent and descent" *Journal of Biomechanics* Accepted Dec 2015.

Allen Heinemann

Peer reviewed publications

Heinemann A, Ehrlich-Jones L, Connelly L, Semik P, Fatone S. Enhancing Quality of Prosthetic Services with Process and Outcome Information. *Prosthetics & Orthotics International* 2016;in press.

Bombardier CH, Williams RT, Fann JR, Neumann H, **Heineman AW**. Evaluating the Psychometric Properties and Responsiveness to Change of Three Depression Measures in a Sample of Persons with Traumatic Spinal Cord Injury and Major Depressive Disorder. *Archives of Physical Medicine & Rehabilitation*. in press.

Hahn EA, Garcia SF, Lai JS et al. Measuring Access to Information and Technology: Environmental Factors Affecting Persons with Neurological Disorders. *Archives of Physical Medicine & Rehabilitation*. in press.

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*. 2015:1-20.

Wilson CS, Forchheimer M, Warren AM, McCullumsmith C, **Heinemann AW**. Assessment of the Relationship of Spiritual Well-being to Depression and Quality of Life For Persons with Spinal Cord Injury. *Disability and Rehabilitation*. 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.

Marquine, MJ, Johnson, N, Baum, C, Wong, A, **Heinemann, A.**, Magasi, S., & Heaton, R.K. (February 16, 2016). Racial differences in neurocognitive outcomes post-stroke: The role of health literacy. Invited presentation at the American Stroke Association/Bugher Symposium, International Stroke Conference. Los Angeles, CA.

Grants Funded:

Implementing SCI-QOL into Clinical Practice to Enhance Patient Engagement. Craig H. Neilsen Foundation. FY16-17 total costs \$300,000.

Grant submitted

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

Grants in development

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

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

Honor

Keynote address: Influences of Environmental Factors on Participation of Persons Living with Disabilities. National Symposium: Parks and Recreation in Public Health. Bloomington, IN, February 11, 2016.

Arun Jayaraman:

Lynch M, Duffell L, Sandhu M, Srivatsan S, Deatsch K, Kessler A, Mitchell GS, Jayaraman A, and Rymer, WZ. "Effect of acute intermittent hypoxia on motor function in individuals with chronic spinal cord injury following ibuprofen pretreatment: A pilot study". *The Journal of Spinal Cord Medicine*. 2016. February 09. doi:10.1080/10790268.2016.1142137.

Presented: Wearable Robotics Association, NIST Workshop 4: "Ergonomic issues for Wearable Robotics", RIC, February 12

Ki (Alex) Kim (with **TJ Schnitzer**, J Marks, R Yeasted, N Simonian and **D Chen**): Zoledronic Acid Treatment After Acute Spinal Cord Injury: Results of a Randomized, Placebo-Controlled Pilot Trial, accepted for publication, PMR

Todd Kuiken:

Earley EJ, Hargrove LJ, **Kuiken TA**. "Dual window pattern recognition classifier for improved partial-hand prosthesis control" *Frontiers in Neuroscience*. 10:58. doi: 10.3389/fnins.2016.00058

Peng J, Fey NP, **Kuiken TA**, Hargrove LJ. "Anticipatory kinematics and muscle activity preceding transitions from level-ground walking to stair ascent and descent" *Journal of Biomechanics* Accepted Dec 2015.

Grant Proposals:

"Refinement and Testing of a Novel Direct Skeletal Attachment System to Improve the Lives of Wounded Warriors" Frankel Foundation, submitted December 12, 2015

"Medial Thighplasty to Improve Prosthesis Fit and Function in Overweight Transfemoral Amputees" National Institutes of Health, R01, submitted February 5, 2016

"Acquisition of an advanced 3D Printer" National Science Foundation; Major Research Instrumentation proposal, submitted January 13, 2016

Eric Larson:

Presentations:

Naylon, K., Dederer, J., & **Larson, E**. (February, 2016). The Impact of Cognitive Fatigue on Reported Post-Concussive Complaints in mTBI Patients. Poster presented at the Annual Meeting of the International Neuropsychological Society, Boston, MA.

Dederer, J., Naylon, K., & **Larson, E**. (February, 2016). Self-reported Fatigue and Cognition in Veterans with History of Concussion and PTSD. Poster presented at the Annual Meeting of the International Neuropsychological Society, Boston, MA.

Buchholz, A., **Larson, E., & Ripley, D.** (February, 2016). Actual and Perceived Performance on Cognitive Tasks as Correlates of Subjective Fatigue in Traumatic Brain Injury. Poster presented at the Annual Meeting of the International Neuropsychological Society, Boston, MA.

Laura Miller: presented "Current Research in Upper Limb Prosthetics at the Center for Bionic Medicine"; US ISPO Pacrim meeting in Hawaii, via Skype. January 23, 2016.

Debjani Mukherjee:

Publications:

Blauwet C, Greenfield BH, Ham EL, Spill G, Mukherjee D. [The Team Physician: Ethical and Legal Issues](#). PMR. 2015 Oct;7(10):1089-94.

Brashler R, Finestone HM, Nevison C., Marshall SC, Deng G, Bismark M, Mukherjee D. Time to Make a Call? The Ethics of Mandatory Reporting. PM R. 2016 Jan; 8(1):69-74.

Courses:

Course Instructor, MH&B 406: The Practice of Medical Humanities and Bioethics. Winter Quarter 2016. MA in Medical Humanities and Bioethics Program, Northwestern University The Graduate School.

Course Instructor, GH 390. Disability and Global Health. Fall Quarter 2015. Northwestern University Weinberg College of Arts and Sciences.

Invited Seminar: The Institute for Research on Women and Gender at the University of Michigan Feminist Research Seminar.

"The Problem of Intersex Frogs: A Seminar on Feminism, Disability, and Environmental Justice" Ann Arbor, MI. October 2015.

Presentations:

"On Being a Human Subject." Medical Humanities and Bioethics Montgomery Lecture Series. October 2015. Medical Humanities and Bioethics Program, Northwestern University.

"On Being a Human Subject." RIC Ethics Grand Rounds. December 2015. Department of PM&R. Northwestern University Feinberg School of Medicine.

Teaching:

Ethics Oral Examiner for M1 students at Northwestern University Feinberg School of Medicine. December 2015.

"Ethics and Traumatic Brain Injury." Lecture for Loyola University Chicago students in the course PSYC 552. Neuropsychology. December 2015.

Ethics faculty co-facilitator for M4 students at Northwestern University Feinberg School of Medicine. PTP Phase 3 Everyday Ethics. January 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]

Oza S, **Rho M**. Bone complications after pelvic radiation: an unusual case of hip pain. *Annual meeting of the Academic Association of Physiatrists. Sacramento, CA. February 2015*

Rho M, Makovitch S, Nigl F. The effect of a mirror on preferential loading of the lower extremities during a double legged squat: a pilot study. *Annual meeting of the Academic Association of Physiatrists. Sacramento, CA. February 2015*

Elliot Roth: Appointed to the Board of Directors of Access Living, the major independent Living Center of metropolitan Chicago, December 2015

Elliott Rouse:

Grant Proposal: "Towards the development of an automated biomechanical assessment tool for the prediction and quantification of musculoskeletal injury risk" Office of Naval Research Young Investigator Program proposal, submitted December 3, 2015.

Presented: "Current challenges in whole-leg wearable robotics"; Breakout session at Wearacon16, Design Challenges in Interfacing and Controlling Wearable Robots, February 12, 2016.

Lesley Rydberg:

Posters:

Altenberg M. **Rydberg, L**. Rehabilitation After Bilateral Medullary Stroke and Cervical Syringomyelia of Unknown Etiology in an 18 Year Old Woman: A Case Report. Proceedings of the Association of Academic Physiatrists Annual Assembly, Sacramento, CA. Feb 2016.

Maneyapanda, M. **Rydberg L**. Satisfaction with a Formal Mentorship Program in Physical Medicine & Rehabilitation. Proceedings of the Association of Academic Physiatrists Annual Assembly, Sacramento, CA. Feb 2016.

Zev Rymer:

December 10. Presented "Acute intermittent hypoxia as long-term therapy for incomplete spinal cord injury" at Miami Project, University of Miami, FL

January 2016. Published "Use of shear wave ultrasound elastography to quantify muscle properties in cerebral palsy," by Lee SS, Gaebler-Spira D, Zhang LQ, **Rymer WZ**, Steele KM in *Clin Biomech.* PMID: 26490641

February 14. Presented "Acute Intermittent Hypoxia (AIH) As Therapy For Incomplete Spinal

Cord Injury: Exploratory Findings" at 19th Indian Association Cardiovascular Thoracic Anesthesiologist (IACTACON 2016) in Chennai, India

February 9. Published "Effect of acute intermittent hypoxia on motor function in individuals with chronic spinal cord injury following ibuprofen pretreatment: A pilot study," by Lynch M, Duffell L, Sandhu M, Srivatsan S, Deatsch K, Kessler A, Mitchell GS, Jayaraman A, **Rymer WZ** in *J Spinal Cord Med*. PMID: 26856344

S. Shahpar, PV Mhatre, ME Huang: Update on Brain Tumors: New Developments in Neuro-oncologic Disorders and Treatment.....; PM&R 11/2015; DOI:10.1016/j.pmrj.2015.10.012

Alexander Sheng:

Lecture/Course Chairman: Lumbar Spine Interventions – Indications and Efficacy. SSRC Interventional Spine Course, December 12

Regional Editor / faculty supervisor: Rehab in Review

Diane Dudas Sheehan:

Presented "Comprehensive Evaluation and Practical Treatment of Children with Wounds" I PM&R residents during Pediatric rotation at the Rehabilitation Institute of Chicago, December 9, 2015

Presented "Limb Length Discrepancies" to Orthopaedic Team: APNs, RNs at Lurie Children's, February 9, 2016

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

RESEARCH FACULTY

Anne Deutsch

Peer reviewed Publications:

Kumar A, Graham JE, Resnik L, Karmarkar AM, Deutsch A, Tan A, Al Snih S, Ottenbacher KJ. Examining the Association Between Comorbidity Indexes and Functional Status in Hospitalized Medicare Fee-for-Service Beneficiaries. *Physical Therapy Journal* 2016;96(2):232-240.

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* In Press.

Book Chapters:

Deutsch A, Farrell J. Economics and Health Policy in Rehabilitation. In: Cheryl Lehman, editor. *The Specialty Practice of Rehabilitation Nursing: A Core Curriculum, 6th edition*. Rehabilitation Nurses' Foundation, 2015.

Black T, Deutsch A. Quality and Accountability in Rehabilitation. In: Cheryl Lehman, editor. *The Specialty Practice of Rehabilitation Nursing: A Core Curriculum, 6th edition*. Rehabilitation Nurses' Foundation, 2015.

Presentations

Deutsch A. Functional Abilities and Goals. Presentation at the Centers for Medicare and Medicaid Services' Long-Term Care Hospital Quality Reporting Program Training, Baltimore, MD; November 18, 2015.

Deutsch A. Ethical Issues with Large Database Research. Lecture for Ethical Issues in Health Services Research (HSR 460) course, Northwestern University Feinberg School of Medicine. Chicago, IL, January 20, 2016. Graduate course.

Deutsch A. McMullen T. Functional Abilities and Goals. Webinar presentation at the Centers for Medicare and Medicaid Services' Long-Term Care Hospital Quality Reporting Program Training, February 3, 2016.

Heinemann, A., Deutsch, A., Loft, J., & Smith, L. Quality Measure Developments in Medical Rehabilitation. American Congress of Rehabilitation Medicine, October 30-November 4, 2016, submitted.

Ongoing service

Member, National Quality Forum: Attribution Expert Panel (2015-2016)

Linda Ehrlich-Jones

Peer reviewed publications

Heinemann AW, Ehrlich-Jones L, Connelly L, Semik P, & Fatone S. (accepted for publication). Enhancing quality of prosthetic services with process and outcome information. *Prosthetics & Orthotics International*.

Grants in development

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

Ongoing service

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

Ann Simon:

Ingraham KA, Fey NP, Simon AM, Hargrove LJ. "Assessing the Relative Contributions of Active Ankle and Knee Assistance to the Walking Mechanics of Transfemoral Amputees Using a Powered Prosthesis." *PLoS One*. 2016 Jan 25;11(1):e0147661.

Simon AM, Fey NP, Ingraham KA, Finucane SB, Halsne EG, and Hargrove LJ. "Improved weight-bearing symmetry for transfemoral amputees during standing up and sitting down

with a powered knee-ankle prosthesis". *Archives of Physical Medicine and Rehabilitation*, in press, December 2015 <http://dx.doi.org/10.1016/j.apmr.2015.11.006>

Northwestern University Prosthetic and Orthotic Center (NUPOC)

Publications:

Fatone, S., Dillon, M. and Quigley, M. (2016) Describing the outcomes of dysvascular partial foot amputation and how these compare to transtibial amputation: a systematic review protocol for the development of shared decision making resources. *Systematic Reviews*, 5(1) <http://systematicreviewjournal.biomedcentral.com/articles/10.1186/s13643-015-0161-9>

Heinemann A, Connelly L, Ehrlich-Jones L, **Fatone S** (in press) Enhancing Quality of Prosthetic Services with Process and Outcome Information. *Prosthetics Orthotics International*.

Major MJ, Twiste M, Kenney LPJ, Howard D. (2016) The effects of prosthetic ankle stiffness on stability of trans-tibial amputee gait. *Journal of Rehabilitation Research & Development*.

Presentations:

Matthew Major, PhD. "Exploring the Relationships between Lower-limb Prosthesis Mechanical Properties and User Performance for Clinical Prescription and Prosthesis Design Optimization". Invited speaker, Exercise Science Doctoral Seminar Series at the University of Nebraska, Omaha, NE, December 4, 2015.

Matthew Major, PhD. "Exploring the Relationships between Lower-limb Prosthesis Mechanical Properties and User Performance for Clinical Prescription and Prosthesis Design Optimization". Invited speaker, RIC Friday Research Seminar, January 8, 2016.

Ramstrand N, **Fatone S**, Dillon M, Hafner B (2015) Applications of best available evidence in O&P: What can we learn from systematic reviews? *American Academy of Orthotists and Prosthetists Webinar Series*. Archived online at http://www.oandp.org/olc/course.asp?course_id=F5C11B02-A8DA-492A-AE48-B122705B21F8

Caldwell R, Fatone S "NU-FlexSIV Socket" presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Curran T, Gard S. "Effects of Varying Prosthetic Ankle and Keel Stiffness on Gait and Balance" presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Gard S "Overview of NUPOC Research" presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Gottipati P, Fatone S “Segmental Spinal Motion before and after Spinal Reconstruction Surgeries” presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

McConn S, Major M “Fall Risk & Prosthetic Influence on Gait Biomechanics in Upper Limb Amputees” presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Major M “Lateral stability and recovery strategies among persons with below-knee amputation” presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Stine R, Gottipati P, Dillon M, Fatone S “Pelvic and Spinal Motion during Walking in Persons with Transfemoral Amputation with and without Low Back Pain” presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Tran L, Caldwell R, Quigley M, Fatone S “Stakeholder Input on Development of a Residual Limb Health Monitoring System” presented on February 25, 2016 at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Wu, Y “Innovative Techniques for Managing Residual Limbs and Fabricating Orthoses / Sockets” presented on February 25, 2016, at the NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93.

Awards:

Matthew Major, PhD, was spotlighted as Researcher of the Month at the Jesse Brown VA Medical Center (Research Services Newsletter, February 2016). Dr. Major is Assistant Professor in the Department of PM&R at Northwestern University and a Research Health Scientist at the VA. With the support of a VA Career Development Award (CDA-2), Dr. Major is conducting “Sensory-Motor Mechanisms Underlying Fall Risk in Transtibial Amputees”, a research project that considers the sensory-motor mechanisms that underlie postural control and balance in individuals with neuro-musculoskeletal injury.

Meetings:

Stefania Fatone, PhD, BPO (Hons), participated as a faculty mentor in the Training in Grantsmanship for Rehabilitation Research (TIGRR) workshop held January 12-16, 2016 in Charleston, SC. Dr. Fatone joined a nationally recognized group of mentors and consultants, including representatives of federal funding agencies, as faculty for this workshop.

Stefania Fatone, PhD, BPO (Hons), was invited to participate as an International Referee for the proposed Prosthetics and Orthotics program in the College of Applied Medical Sciences, University of Majmaah, Saudi Arabia. Dr. Fatone is providing feedback on program and curriculum development.

Stefania Fatone, PhD, BPO (Hons), participated as a reviewer in the Rehabilitation Research and Development Service (RR&D) Scientific Merit Review Board subcommittee for Rehabilitation Engineering and Prosthetics/Orthotics in Washington, D.C. on February 25, 2016.

Laboratory Visits/Events:

NUPOC hosted the 2016 NUPOC Biennial Symposium for the German-Speaking Travel Fellows of Initiative '93, a day-long research conference, on Thursday, February 25, 2016. Fellows were Tymoteusz (Timo) Borys Budny, MD, Cornelia Marianne Putz, MD, Patrick Schröter, MD, Felix Wilhelm Waibel, MD, and Maike Truelsén, Orthotist. Each of the German-speaking Travel Fellows and NUPOC researchers presented current research topics. R. J. Garrick, PhD, developed the 2016 NUPOC Biennial Symposium.

The Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket developed by Stefania Fatone, PhD, BPO (Hons) and Ryan Caldwell, CP, with funding from the DOD, was highlighted in an article by M Fairley (2016) "Rehabilitative Care for Wounded Warriors Meets Unique Challenges" O&P Edge, February 2016, 15(2):28, http://www.oandp.com/articles/2016-02_02.asp.

The new online archive "Capabilities" was highlighted in "Capabilities Archive Available Online," O&P Edge, February 2016, 15(2):16. http://www.oandp.com/articles/2016-02_02.asp Capabilities is a resource that was published as part of the NIDRRR funded NU-RERC for P&O from 1991 through 2013. Each issue details research and development activities at the NU-RERC. Access it on www.DRFOP.org

Grant Awards:

Steven Gard, PhD, was notified that his proposal entitled, "Design of a Smart Prosthetic Liner Controlled by Muscle Activation Feedback" will be funded by the Department of Veterans Affairs, Rehabilitation Research & Development Service.

Grant Submissions:

Steven Gard, PhD, submitted an application entitled "Development and Evaluation of an Improved Prosthetic Foot/Shoe Interface" to the National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR) Field-Initiated Projects Program (Research) on February 22, 2016.

Matthew Major, PhD, was co-investigator on an NIH Indo-US Collaborative Program on Affordable Medical Devices (R03) proposal titled "High-performance, low-cost, passive prosthetic knees optimized to replicate physiological gait in multiple mobility scenarios" submitted on January 22, 2016.

OTHER FACULTY

Ross Arena:

Peer Reviewed Publications

1. Guazzi M, Arena R, Pellegrino M, Bandera F, Generati G, Labate V, Alfonzetti E, Villani S, Gaeta MM, Halle M, Haslbauer R, Phillips SA, Cahalin L. Prevalence and characteristics of exercise oscillatory ventilation in apparently healthy individuals at variable risk for

cardiovascular disease: a subanalysis of the EURO-EX trial. *European Journal of Preventive Cardiology*. 2016;23:328-334.

2. Lavie CJ, Forman DE, Arena R, Bulking Up skeletal muscle to improve heart failure prognosis. *JACC-HF*. 2016;67:13-15.
3. Canada JM, Fronk DT, Freeman L, Carbone S, Erdle CO, Abouzaki NA, Melchior RD, Thomas CS, Christopher S, Turlington JS, Trankle CR, Thurber CJ, Evans RK, Dixon DL, Van Tassell BW, Arena R, Abbate A. Usefulness of C-reactive protein plasma levels to predict exercise intolerance in patients with chronic systolic heart failure. *American Journal of Cardiology*. 2016;117:116-120.
4. Pantoni C B F, Tommazo L, Mendes RG, Simoes RP, Caruso, FC, Arena R, Catai AM, Borghi-Silva A. Continuous positive airway pressure application during exercise improves walking time in patients undergoing inpatient cardiac rehabilitation following coronary artery bypass graft surgery: an open-label randomized controlled trial. *Journal of Cardiopulmonary Rehabilitation and Prevention*. 2016;36:20-27.
5. Lavie CJ, Arena R, Franklin BA. Cardiac rehabilitation and healthy lifestyle interventions: Rectifying program deficiencies to improve patient outcomes. *Journal of the American College of Cardiology*. 2016;67:13-15.
6. Arena R, Lavie CJ, Hivert MF, Williams MA, Briggs PD, Guazzi M. Who will deliver comprehensive healthy lifestyle interventions to combat non-communicable disease? Introducing the Healthy Lifestyle Practitioner. *Expert Review of Cardiovascular Therapy*. 2016;14:15-22.
7. Arena R, Lavie CJ, Cahalin LP, Briggs PD, Guizilini S, Daugherty J, Chan W, Borghi-Silva A. Transforming cardiac rehabilitation into broad-based healthy lifestyle programs to combat non-communicable disease. *Expert Review of Cardiovascular Therapy*. 2016;14:23-36.
8. Bien Udós, Souza G, Campos R, Santoro I, Costa A, Arena R, Sampaio L. Maximum inspiratory pressure and rapid shallow breathing index as predictors of successful ventilator weaning. *Journal of Physical Therapy Science*. 2015;27:3723-3727..
9. Carvalho LP, Thommazo-Luporini L, Aubertin-Leheudre M, Bonjorno Jr JC, de Oliveira CR, Luporini R, Mendes RG, Zangrando KT, Trimer R, Arena R, Borghi-Silva A. Prediction of cardiorespiratory fitness by the six-minute step test and its association with muscle strength and power in sedentary obese and lean young women: a cross-sectional study. *PlosOne*. 2015;10e0145960.

Active Funded Projects

Comparing aerobic training to combined aerobic and inspiratory Muscle training in patients with pulmonary arterial hypertension: A Randomized controlled trial. Brazilian National Council for Scientific and Technological Development, 346,000 Reals (Visiting Professor Exterior).

Peripheral Muscle Oxygenation and Ventilation During Dynamic Exercise High Intensity Players in Football: A randomized trial of the effects of the Respiratory Muscle Training Improves Exercise Tolerance clinical trial. Brazilian National Council for Scientific and Technological Development, 518,186 Reals (Investigator).

Feasibility of urgent care partial pressure of end-tidal carbon dioxide measurement for heart failure patients: prognostic and randomized controlled study. Special program of international cooperation, Brazilian National Council for Scientific and Technological Development, 536,000 Reals (Special Visiting Researcher).

Interleukin-1 blockade in recently decompensated heart failure. NHLBI, \$677,769 (co-investigator)

Heart failure substudy: A randomized, double-blind, placebo-controlled, event driven trial of quarterly subcutaneous canakinumab in the prevention of recurrent cardiovascular events among stable post-myocardial infarction patients with elevated hsCRP (CANTOS). Novartis Pharmaceuticals, 150,000 (Co-investigator)

Exercise therapy to reduce heart failure symptoms; sorting mechanisms and benefits. VA Merit Award, \$1,100,000 (Co-investigator)

Invited Speaker Presentations

- Using No-Cost Tools & Resources to Enhance Your Health Improvement Efforts. 4th Annual Employee Wellness Forum: Midwest Business Group on Health. Chicago, IL, January 2016.
- The Future of Noncommunicable Disease Prevention and Treatment: Creating the Healthy Lifestyle Healthcare System. Grand Rounds, Department of Preventative Medicine, Rush University Medical Center, Chicago, IL, January 2016.
- Exercise is Medicine. Second International Congress of Cardiorespiratory Kinesiology – Argentina Society of Cardiorespiratory Kinesiology, Buenos Aries, Argentina, December 2015.
- Assessment of Exercise as a Vital Sign. Second International Congress of Cardiorespiratory Kinesiology – Argentina Society of Cardiorespiratory Kinesiology, Buenos Aries, Argentina, December 2015.
- Second International Congress of Cardiorespiratory Kinesiology – Argentina Society of Cardiorespiratory Kinesiology, Buenos Aries, Argentina, December 2015.
- Cardiac Rehabilitation: Current Applications and Future Considerations. Second International Congress of Cardiorespiratory Kinesiology – Argentina Society of Cardiorespiratory Kinesiology, Buenos Aries, Argentina, December 2015.

Special Appointments/Distinctions

Fellow, European Society of Cardiology

Vice Chairman/Director, European Society of Preventive Medicine
Member of the European Union Platform for Action on Diet, Physical Activity and Health.

Guest Editor, Progress in Cardiovascular Disease: 2013 Global Congress on Physical Activity - All Hearts Need Exercise: A Global Call to Action by the AHA

Guest Editor, Heart Failure Clinics: Exercise and Rehabilitation in Heart Failure: A Physiologic and Clinical Perspective

Guangdong Center Research Advisory Committee, Guangdong Work Injury Hospital in Guangzhou, China

Editorial Board Member, Progress in Cardiovascular Diseases

Clinical Research Expert Committee Member, University of California Irvine Institute for Clinical and Translational Science.

Sylvia Duraski:

The Importance of Monitoring Patients' Responses to Medications: Increased Arousal after Administration of Zolpidem in Those with Hypoxic Ischemic Encephalopathy – A Case Study. Accepted for publication, Rehabilitation Nursing.

Lecture: Traumatic Brain Injury. Department of Physical Therapy and Human Movement Sciences' Doctor of PT Education Program, Neuroscience III course, Winter 2016

Chandramouli Krishnan:

Greve JM, Alonso AC, Mochizuki L, Lucareli PR, Krishnan C, Baker R. Motor Functional Evaluation from Physiology and Biomechanics to Clinical and Training Application. Biomed Res Int. 2015;2015:542496. doi: 10.1155/2015/542496. Epub 2015 Dec 1.

Peterson MD, Krishnan C. Growth Charts for Muscular Strength Capacity With Quantile Regression. Am J Prev Med. 2015 Dec;49(6):935-8. doi: 10.1016/j.amepre.2015.05.013.

Schroeder MJ, Krishnan C, Dhaher YY. The influence of task complexity on knee joint kinetics following ACL reconstruction. Clin Biomech (Bristol, Avon). 2015 Oct;30(8):852-9. doi: 10.1016/j.clinbiomech.2015.06.003.

Lee Miller:

Grants

Received 12% on a new multiple PI grant with Duke and University of Chicago through NINDS: "Biomimetic Somatosensory Feedback through Intracortical microstimulation"

Papers

Best, M. D., K. Takahashi, A. J. Suminski, C. Ethier, L. E. Miller and N. G. Hatsopoulos (2016). "Comparing offline decoding performance in physiologically defined neuronal classes." *Journal of Neural Engineering* 13(2): 026004.

Sachs, N. A., R. Ruiz-Torres, E. J. Perreault and L. E. Miller (2015). "Brain-state classification and a dual-state decoder dramatically improve the control of cursor movement through a brain-machine interface." *Journal of neural engineering* 13(1): 016009.

James Patton:

Horowitz, JR, Madhavan T, Massie C, **Patton JL** (2016) "Reaching is Better When You Get What you Want: Realtime Feedback of Intended Reaching Trajectory Despite an Unstable Environment" *Frontiers in Behavioral Neuroscience*, fnbeh-09-00365

Patton JL, and Huang, F (2016) "Error Augmentation and the Role of Sensory Feedback", in *Neurorehabilitation Technology*, 2nd Ed, Dietz, Nef and Rymer, Editors. Springer.

Horowitz JR, **Patton JL** (2015) "I meant to do that: Determining the Intentions of Action in the Face of Disturbances" *PLOS ONE* 10(9): e0137289

Wright Z, MacKinnon C, Carlson A, **Patton JL** (2015) "Degraded Expression of Learned Feedforward Control in Movements Released by Startle", *Experimental Brain Research*, 233(8), 2291-2300. EXBR-D-14-00234R1

Parmar, PN, Huang, F, **Patton JL** (2015) "Evidence of Multiple Coordinate Representations during Generalization of Motor Learning", *Experimental Brain Research*, DOI 10.1007/s00221-014-4034-6 (13 pages)

Abdel Majeed Y, Abdollahi F, Shah A, Patton J (2015) "Multivariate Outcomes in a Three Week Bimanual SelfTelerehabilitation with Error Augmentation Post-Stroke" *Proceedings of the IEEE-International Conference of the IEEE Engineering in Medicine and Biology Society*, Milan, Italy

Shah A, Patton J (2015) "Distribution Learning within Boundaries" *Proceedings of the IEEE-International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Milan, Italy

Robert Scheidt (with JY Lee, Y Oh, SS Kim, and N Schweighofer): *Optimal Schedules in Multi-task Motor Learning*. Accepted for publication at *Neural Computation* and in *PLoS One*.