

**Scholarly Activities**  
**Department of Physical Medicine and Rehabilitation**  
**December 14- February 15**

***REGULAR FACULTY***

**James Atchison:**

Lectures:

12/16/14- Fellowship lecture- NMH Topic: Functional Measures

2/6/15- CME- NMH Lake Forest Hospital Topic: Optimizing Strategies to Manage Chronic Musculoskeletal Pain

2/9-2/10- Grand Rounds at Stanford University (CA) Topic #1: CRPS- Anesthesia Pain Center  
Topic #2: Rational Pharmacology- Division of PMR&R

2/17/15- Fellowship Lecture- NMH Topic: WC/ SSI/ Disability/ Impairment

Presentations:

2/19/15- The Chicago Bar Association- presentation Topic: Treating Pain in the 21<sup>st</sup> Century

**Randy Calisoff:**

Lecture:

1/13/15- Fellowship Lecture- NMH Topic: Fibromyalgia/ Myofascial Pain

**Chih-Hung Chang:**

Grant Review:

Nursing and Related Clinical Sciences Study Section (NRCS) (permanent member), Center for Scientific Review, National Institutes of Health

**Leora Cherney:**

Publications:

Carpenter, J. & **Cherney, L. R.** Increasing aphasia treatment intensity in an acute inpatient rehabilitation program: A feasibility study. *Aphasiology*, Accepted for publication.

Presentations:

**Cherney, L. R.** (2015, February). Aphasia treatment across the modalities. Workshop presented at the University of Wisconsin – Eau Claire, Eau Claire, WI.

**Cherney, L. R.** (2015, February). Aphasia: Neural plasticity and treatment intensity. Seminar presented at the Annual Mid-South Conference on Communicative Disorders, Memphis, Tennessee.

Ruzicka, R., Doyle, A., Ruzicka, R., Pitts, L.L., & **Cherney, L.R.** (2015, February). Dysphagia therapy: Are there guidelines in prescribing exercise-based treatments? Seminar presented at the Annual Convention of the Illinois Speech-Language-Hearing Association. Rosemont, IL.

**Deborah Gaebler:**

Accepted for Publication:

Campbell, S.K., Cole, W., Boynewicz, K., Zawacki, L.L., Clark, A., **Gaebler-Spira, D.**, DeRegnier, R.A., Kuroda, M.M., Kale, D., Bulanda, M., Madhavan, S. (2015, January) PED-PT-D-14-00068R3, entitled "Behavior During Tethered Kicking in Infants with Periventricular Brain Injury" Pediatric Physical Therapy

Grant Awards:

**Gaebler, D.**, Marciniak, CM., Co-I, Cerebral Palsy International Research Foundation, "Women with Disabilities: Promoting Patient-Centered Care in Mammography Screening" 3 year grant awarded

**Gaebler, D.**, Investigator, Phase 3 Site, "Engagement in the Pediatric Rehabilitation Intervention Process: Its Nature, Measurement, and Role in the Determination of Outcomes" 5 year grant awarded to Holland Bloorview Kids Rehabilitation Hospital(Toronto) Canadian Institutes of Health Research.

**Gaebler, D.**, Co-I, Canadian Institutes of Health Research, "Evaluation of the effectiveness of robotic gait training and gait-focused physical therapy programs for children and youth with cerebral palsy: A mixed methods RCT" 5 year grant awarded to Holland Bloorview Kids Rehabilitation Hospital(Toronto).

**R. Norman Harden:**

Reviews:

Connolly SB, Prager JP, **Harden RN**. A Systematic Review of Ketamine for Complex Regional Pain Syndrome. Pain medicine. 2015 Jan 13. PubMed PMID: 25586192. Epub 2015/01/15. Eng.

Abstracts:

Agnihotri J, Connolly SB, Kirsling A, Khazey KM, **Harden RN**. The Relationship between Performance on Functional Tests and Self-Reported Pain, Anxiety, and Disability among Low Back Pain Patients. Poster to be presented at American Academy of Pain Medicine Academic Conference. National Harbor, MD. March, 2015.

**Harden RN**, Khoury AJ, Carroll EE, Abousaad E, Burns JW, Connolly SB, Kirsling A, Walega DR. Opioid-Induced Hyperalgesia (OIH) in Patients with Chronic Low Back Pain? Poster to be presented at American Academy of Pain Medicine Academic Conference. National Harbor, MD. March, 2015.

Conference:

Abstract: Connolly SB, Trevelas N, Kirsling A, **Harden RN**. Opioids Do Not Improve Function. Connolly SB, Aitken N, Kirsling AK, Harden RN. The Influence of Demographics on Psychophysical Testing in the Knee Osteoarthritis Population. Poster to be presented at American Academy of Pain Medicine Academic Conference. National Harbor, MD. March, 2015.

**Allen Heinemann:**

Peer reviewed publications:

Tulsky DS, Kisala P, Victorson D, Carlozzi N, Bushnik T, Sherer M, Choi S, **Heinemann AW**, Chiaravalloti ND, Sander A, Englander J, Hanks R, Kolakowsky-Hayner S, Roth E, Gershon R, Rosenthal M., & Cella D. TBI-QOL: Development and Calibration of item banks to measure patient reported outcomes following traumatic brain injury. *Journal of Head Trauma Rehabilitation*, in press.

Garcia S, Hahn E, **Heinemann AW**, Lai J-S, Hammel J, Magasi S, Semik P. Development of Self-Report Measures of Social Attitudes that Act as Environmental Barriers and Facilitators for People with Disabilities, *Arch Phys Med Rehabil*, in press.

Hart T, Kozlowski A, Whyte J, Poulsen I, Kristensen K, Nordenbo K, **Heinemann AW**. Functional Recovery After Severe Traumatic Brain Injury: An Individual Growth Curve Approach. *Arch Phys Med Rehabil*, 2014;95:2103-10.

Fann JR, Bombardier CH, Richards JS, Wilson C, **Heinemann AW**, Warren AM, Brooks L, McCullumsmith C, Temkin N, Warms C, Tate D for the PRISMS Investigators. Venlafaxine XR for Depression following Spinal Cord Injury: A Multi-Site Randomized Controlled Trial, *JAMA Psychiatry*. Published online January 21, 2015. doi:10.1001/jamapsychiatry.2014.2482.

Forchheimer M, Tate DC, Bombardier CH, **Heinemann AW**, Neumann HD, Fann JR. Differences in Quality of Life Outcomes among Depressed Spinal Cord Injury Trial Participants. *Arch Phys Med Rehabil*, in press.

Tulsky DS, Kisala P, Victorson D, Carlozzi N, Bushnik T, Sherer M, Choi S, **Heinemann AW**, Chiaravalloti ND, Sander A, Englander J, Hanks R, Kolakowsky-Hayner S, Roth E, Gershon R, Rosenthal M, Cella, D. TBI-QOL: Development and calibration of item banks to measure patient reported outcomes following traumatic brain injury. *Journal of Head Trauma Rehabilitation*, in press.

Richards JS, Wilson C, Chiodo A, Brooks L, Tate D, Temkin N, Barber J, **Heinemann AW**, McCullumsmith C, Fann J. Efficacy of venlafaxine XR for the treatment of pain in patients with spinal cord injury and major depression: a randomized, controlled trial. *Archives of Physical Medicine and Rehabilitation*, in press.

Magasi, Wong A, Gray DB, Hammel J, Baum C, Wang CC, **Heinemann AW**: Theoretical Foundations for the Measurement of Environmental Factors and their Impact upon Participation among People with Disabilities. *Archives of Physical Medicine and Rehabilitation*, in press.

Hammel J, Magasi S, **Heinemann AW**, Gray DB, Stark S, Kisala P, Carlozzi N, Tulsky D, Garcia S, Hahn E. Environmental Barriers & Supports to Everyday Participation: A Qualitative Insider Perspective from People with Disabilities. *Archives of Physical Medicine and Rehabilitation*, in press

Presentations:

**Heinemann AW**. Relationships between NIH Toolbox Cognition and Emotion Measures and Indicators of Participation for Community-Dwelling Persons with Stroke, Spinal Cord Injury and Traumatic Brain Injury. Paper presented as part of a symposium at the International Neuropsychological Society, Denver, CO, February 6, 2015.

Professional Service:

International Spinal Cord Society, Member, 2014-

Expert Panel Member, American Physical Therapy Association's Clinical Practice Guideline Panel: Core Set of Outcome Measures for Patients with Neurologic Conditions. May, 2014-December, 2016.

Member, Institute of Medicine Standing Committee on Medical Experts to Assist Social Security on Disability Issues, 2014- present

**Arun Jayaraman:**

Grant Proposal:

4 year CDMRP DOD grant proposal entitled " Impact of Powered Knee-Ankle Prosthesis on Everyday Community Mobility and Social Interaction in Individuals with Transfemoral Amputations " , Co-I Michael Goldfrab Vanderbilt University

**Eric B. Larson:**

Publications:

Kondiles, B.R., Starr, **C.R., Larson, E.B.** & Zollman, F. (2015). Method of assessment and symptom reporting in veterans with mild traumatic brain injury. Health Psychology & Behavioral Medicine, 3, 1-68.

Presentations:

Cothran, T.P. & **Larson, E.B.** (February, 2015). The Relationship Between Sleep Variability and Reaction Time Performance Across CPT-II Blocks in Traumatic Brain Injury Inpatients. Poster presented at the Annual Meeting of the International Neuropsychological Society, Denver, CO.

**Christina Marciniak:**

Publications:

**Marciniak, CM**, Toledo,S, Lee,J, Jesselson,M, Bateman,J, Grover,B, Tierny, J. Lubiprostone vs *Senna* in postoperative orthopedic surgery patients with opioid-induced constipation: A double-blind, active-comparator trial. *World Journal of Gastroenterology: WJG* 11/2014 20(43):16323-33.

**Marciniak, CM**. Li X. Zhou P. An Examination of Motor Unit Number Index in Adults with cerebral Palsy. Accepted for publication. *Journal of Electromyography and Kinesiology*

Grants Awards:

Gaebler, D., **Marciniak, CM.**, Co-I, Cerebral Palsy International Research Foundation, "Women with Disabilities: Promoting Patient-Centered Care in Mammography Screening" 3 year grant awarded

**Debjani Mukherjee:**

Courses:

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

Lectures:

**Mukherjee, D.** Ethics and researcher-participant relationship: On being a human subject. SMPP seminar series, RIC. December 5, 2014.

**Mukherjee, D.** Rehabilitation and Disability Ethics. Lecture-discussion for delegates visiting Northwestern Radiology from Ibadan, Nigeria as part of an NIH Fogarty Grant to improve research capabilities. December 15, 2014.

In January 2015, **Debjani Mukherjee, Ph.D.** assumed the role of Ethical/Legal editor of the official journal of the American Academy of Physical Medicine and Rehabilitation - PM&R: The journal of injury, function and rehabilitation.

**Christopher Reger:**

Abstracts:

McCormick Z., Chu SK., Goodman D., Oswald M., **Reger C.**, Sliwa J. PMR Jan 21, 2015: An appropriate population for acute inpatient rehabilitation? A case series of three patients with advanced heart failure on continuous inotropic support

Lectures:

NUPOC lecture January 28, 2015. Guidelines for physician referral

Conference:

American academy of orthotists and prosthetists- Hanger Education fair: Thursday February 5. Las Vegas ,NV; Prosthetic management of the medically complex patient

**Elliott Roth:**

Publications:

Regina S. Eum,<sup>1</sup> Ronald T. Seel,<sup>2</sup> Richard Goldstein,<sup>3</sup> Allen W. Brown,<sup>4</sup> Thomas K. Watanabe,<sup>5</sup> Nathan D. Zasler,<sup>6</sup> **Elliot J. Roth**,<sup>7</sup> Ross D. Zafonte,<sup>3</sup> and Mel B. Glenn<sup>3</sup>  
"Predicting Institutionalization after Traumatic Brain Injury Inpatient Rehabilitation"  
JOURNAL OF NEUROTRAUMA 32:280–286 (February 15, 2015) DOI: 10.1089/neu.2014.3351

**Diane Rowles:**

Presentations:

Guest Lecture: Grand Rounds Vanderbilt Medical School, Department of Physical Medicine and Rehabilitation Vanderbilt Stallworth Rehabilitation Hospital, Nashville, TN. " Sexual Functioning and Fertility Following Spinal Cord Impairment" ., November 20, 2014

**Zev Rymer (with other PM&R Faculty):**

Publications:

Roh J, **Rymer WZ**, Beer RF (2015). Evidence for altered upper extremity muscle synergies in chronic stroke survivors with mild and moderate impairment. Front. Hum. Neurosci. | doi: 10.3389/fnhum.2015.00006

Lee SS, Spear S, **Rymer WZ**; "Quantifying changes in material properties of stroke-impaired muscle," *Clin Biomech* (Bristol, Avon). PMID: 25638588, January 21, 2015.

Jahanmiri-Nezhad F, Li X, **Rymer WZ**, Zhou P; "A practice of caution: spontaneous action potentials or artifactual spikes?" *J Neuroeng Rehabil*. PMID: 25582549, January 13, 2015.

Presentations:

Mentor for Training in Grantsmanship for Rehabilitation Research (TIGRR) Workshop in Charleston, SC. January 13-16, 2015.

**Vineeta T Swaroop:**

Publications:

Outcomes of Tibial Derotational Osteotomies Performed in Patients With Myelodysplasia. Mednick RE, Eller EB, Swaroop VT, Dias L.>*J Pediatr Orthop*. 2014 Dec 9. [Epub ahead of print] PMID:25494030[PubMed - as supplied by publisher]

**Li-Qun Zhang:**

Publications:

Lee, S. J., Ren, Y., Kang, S. H., Geiger, F., and **Zhang, L.-Q.**, 2015. Pivoting neuromuscular control and proprioception in females and males. *Euro J Appl Physiol*. in ePrint.

**RESEARCH FACULTY**

**Randal Beer:**

Publications:

Roh J, Rymer WZ, **Beer RF** (2015). Evidence for altered upper extremity muscle synergies in chronic stroke survivors with mild and moderate impairment. *Front. Hum. Neurosci.* | doi: 10.3389/fnhum.2015.00006

**Anne Deutsch:**

Poster Presentation/abstract:

Kolski MC, O'Connor A, Van Der Laan K, Lee J, Kozlowski AJ, **Deutsch A**. Validation of a pain mechanism classification system (PMCS) in physical therapy practice. Poster Presentation at the American Physical Therapy Association Combined Sections Meeting. Feb 4, 2015. Indianapolis, IN.

Professional Service:

Chair, Rehabilitation Nursing Foundation Research Fund Committee, 2015

**Assaf Dvorkin:**

Presentations:

Can I get your attention for a minute? Visuo-haptic environments for assessment and training of attention following brain injury. Department of Psychology, Interdisciplinary Center Herzliya, Israel, December 11, 2014

Giving the brain a (virtual) hand: Visuo-motor function following brain injury. Department of Physical Therapy, Temple University, Philadelphia, PA, January 15, 2015

**Linda Ehrlich-Jones:**

Peer reviewed publications:

Hahn B, Baum C, Moore J., **Ehrlich-Jones L**, Spoeri S, Doherty M, & Wolf T. (2014). Development of additional tasks for the Executive Function Performance Test. *American Journal of Occupational Therapy*, 68, 730 (online at <http://otjournal.net>).

Grants in development:

NIH/NIAMS U01Ehrlich-Jones/Ramsey-Goldman (Principal Investigators)  
Activity and Nutrition Trial in Lupus to Energize and Renew (ANTLER)

Ongoing service:

Co-Chair WFO, Northwestern University  
Rheumatology Research Foundation, Member, Board of Directors

**Marylou Guihan:**

Publication:

"A Multi-Site Quality Improvement Project to Standardize the Assessment of Pressure Ulcer Healing in Veterans with Spinal Cord Injuries/Disorders" (*Advances in Skin & Wound Care*)

Grants:

Implementing a Checklist to Improve Skin Health in Outpatients with SCI (SCI QUERI)April, 2015

Grant Proposals:

"Rates and Outcomes of Pressure Ulcer Surgery for Veterans with SCI/D" (VA HSR&D pilot) December, 2014

"Patterns of health care use for male vs female Gulf War Veterans" (VA HSR&D Investigator Initiated Research) December, 2014

**Mehdi Mirbagheri:**

Publications:

**Mirbagheri, M.M.**, Kindig, M., and Niu X. (2014). Effects of robotic-locomotor training on reflex function and muscular properties in patients with spinal cord injury, *Clinical Neurophysiology*, 2014 Sep 22. pii: S1388-2457(14)00495-7. doi: 10.1016/j.clinph.2014.09.010. [Epub ahead of print], PMID: 25449559

Duffell, L.D., Brown, G.L., and **Mirbagheri, M.M.** (2014), "Interventions to reduce spasticity and improve function in people with chronic incomplete spinal cord injury." *Neurorehab Neural Repair*, in press, 2014 Nov 14. pii: 1545968314558601. [Epub ahead of print], PMID: 25398727

Varoqui, D., Niu, X., and **Mirbagheri, M.M.** (2014). Ankle voluntary movement enhancement following robotic-assisted locomotor training in individual with spinal cord injury, *J Neuroeng Rehabil*, 11(46):1-11, PMID: 24684813

Niu, X., Varoqui, D. Kindig, M. and **Mirbagheri, M.M.** (2014). Prediction of gait recovery in spinal cord individuals trained with a robotic gait orthosis, *J Neuroeng Rehabil*, 11(42):1-9, PMID: 24661681

Duffell, L.D., Niu, X., Brown, G.L., and **Mirbagheri, M.M.** (2014), "Variability in responsiveness to interventions in people with spinal cord injury: do some respond better than others?", *Conf Proc IEEE Eng Med Biol Soc*

**Mirbagheri, M.M.**, Niu, X., Varoqui, D., and Kindig, M. (2014), "Therapeutic Effects of Pharmacological-Robotic training on Functional Impairment in Spinal Cord Injury: Identification of Recovery Patterns", *Conf Neural Control Movement*

L Duffell, X Niu, M Kindig, D Varoqui, L Ness and **M M Mirbagheri** (2014), "Does anti-spasticity medication facilitate locomotor training in people with chronic Spinal Cord Injury?", *World Conf Biomechanics*

**Mirbagheri M.M.**, *Rogers L.M., Duffell L.D. and Kotsapouikis, D.* (2014), "Reciprocal Inhibition becomes Facilitation after Spinal Cord Injury: Clinical Application of a System Identification Approach, *Conf Proc IEEE Eng Med Biol Soc*

Brown, G.L., Duffell L.D., and **Mirbagheri M.M.** (2014), "Classifying and predicting endurance outcomes of  $\alpha_2$ -adrenergic agonist intervention in spinal cord injury, *Conf Proc IEEE Eng Med Biol Soc*

#### **Nina L. Suresh:**

Publications:

Submitted to Journal of Neurophysiology: "Changes in motor unit behavior following isometric fatigue of the first dorsal interosseous muscle" by Lara McManus, Xiaogang Hu, William Z. Rymer, Madeleine M. Lowery, **Nina L. Suresh**. [Feb 13, 2015](#)

Submitted to Stroke journal: "Increased opacity of ultrasound images in stroke-impaired hand muscles" by Sudarshan Srivatsan, BS, William Zev Rymer, MD, PhD, **Nina L Suresh, PhD**. [Feb 19, 2015](#)

Grants Submitted:

American Heart Association Scientist Development Grant : Tracking the evolution of spasticity in acute stroke. Jan 22, 2015( **Submitted as Principal PI**)

NIH R21 Exploratory Grant: Tracking the evolution of spasticity in acute stroke. Feb 19, 2015(Submitted as Principal PI)

For Andrew Lai, Doctoral Candidate, Department of BioEngineering Northwestern University. Midwest Affiliate MWA Winter 2015 Predoctoral Fellowship, application number 15PRE25780004.Jan 14, 2015(**Submitted as Co-Sponsor**)

For Jourdan Ewoldt, Undergraduate, Department of Bioengineering, Johns Hopkins University. Midwest Affiliate Winter 2015 Undergraduate Student Research Program. "Quantification of the Spastic Response to the Modified Ashworth Test in Acute Stroke Subjects." . Feb 3, 2015 (**Submitted as Supervisor**)



Conferences:

Accepted / IEEE EMBS conference on Neural Engineering (Conference paper) : "Fatigue-Related Alterations to Intra-Muscular Coherence" Lara M. McManus\*, Student Member, IEEE, Xiaogang Hu, William Z. Rymer, **Nina L. Suresh** and Madeleine M. Lowery, Member, IEEE Jan 2015.

Meetings:

Research Grand Rounds, Rehabilitation Institute of Chicago "It takes a village to track spasticity, acute to chronic changes post-stroke". Feb 9, 2015

**ADJUNCT / OTHER FACULTY**

**Ross Arena:**

Peer Reviewed Publications:

Ramos R, Oliveira F, Borghi-Silva A, Costa P, Correa JCF, Costa D, Santos VLA, Donner CF, Stirbulov R, **Arena R**, Sampaio LM. Peripheral muscle strength and functional capacity in patients with moderate to severe asthma. *Multidisciplinary Respiratory Medicine*. 2015;10:3.

**Arena R**, Harrington RA, Despres JP. A message from modern-day healthcare to physical activity and fitness: Welcome home! *Progress in Cardiovascular Disease*. 2015;57:293-295.

Harrington RA, **Arena R**, Despres JP, Ciarochi A, Croll E, Bloch KD. More than 10 million steps in the right direction: results from the first American Heart Association Scientific Sessions walking challenge. *Progress in Cardiovascular Disease*. 2015;57:296-298

Myers J, McAuley P, Lavie C, Despres JP, **Arena R**, Kokkinos P. Physical activity and cardiorespiratory fitness as major markers of cardiovascular risk: their independent and interwoven importance to health status. *Progress in Cardiovascular Disease*. 2015;57:306-314

Abbate A, **Arena R**, Abouzaki N, Van Tassell BW, Canada J, Shah K, Biondi-Zoccai G, Voelkel NF. Heart failure with preserved ejection fraction: refocusing on diastole. *International Journal of Cardiology*. 2015;179C:430-440

**Arena R**. Exercise and rehabilitation in heart failure. *Heart Failure Clinics*. 2015;11:i.

**Arena R**. Functional capacity and exercise training have earned a primary role in the assessment and treatment of patients with heart failure. *Heart Failure Clinics*. 2015;11:xv-xvii

Borghi-Silva A, Trimer R, Mendes RG, **Arena R**, Schwartzmann PV. Rehabilitation practice patterns for patients with heart failure: the South American perspective. *Heart Failure Clinics*. 2015;11:73-82

Abbate A, Van Tassell BW, Canada JM, Dixon DL, **Arena R**, Biondi-Zoccai G. Pharmacologic and surgical interventions to improve functional capacity in heart failure. *Heart Failure Clinics*. 2015;11:117-124

Cahalin LP and **Arena R**. Breathing Exercises and Inspiratory Muscle Training in Heart Failure. *Heart Failure Clinics*. 2015;11:149-172

Ramadi A, Haennel RG, Stone JA, **Arena R**, Threlfall TG, Hitt E, Aggarwal SG, Haykowsky M, Martin BJ. The sustainability of exercise capacity changes in home versus center-based cardiac rehabilitation. *Journal of Cardiopulmonary Rehabilitation and Prevention*. 2015;35:21-28

Ritt LE, Myers J, Stein R, **Arena R**, Guazzi M, Chase P, Bensimhon D, Ashley E, Cahalin LP, Forman DE. Additive prognostic value of cardiopulmonary exercise test score in patients with heart failure and intermediate risk. *International Journal of Cardiology*. 2015;178:262-264

Pantoni CB, Mendes RG, Di Thommazo-Luporini L, Simoes RP, Amaral-Neto O, **Arena R**, Guizilini S, Gomes WJ, Catai AM, Borghi-Silva A. Recovery of linear and nonlinear heart rate dynamics after coronary artery bypass grafting surgery. *Clinical Physiology Functional Imaging*. 2014;34:449-456

Franco RL, Bowen MK, **Arena R**, Privett SH, Acevedo EO, Wickham EP, Sex RK. Differences in Pulmonary Oxygen Uptake Kinetics in Obese Adolescents. *The Journal of Pediatrics*. 2014;165:1161-1165

#### 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:

Creating the Ideal Exercise Training Program for the Patient with Heart Failure: Aerobic, Resistance and Beyond. 30<sup>th</sup> Uruguayan Cardiology Congress, Montevideo, Uruguay, December 2014.

New Indications for Cardiac Rehabilitation Programs. 30<sup>th</sup> Uruguayan Cardiology Congress, Montevideo, Uruguay, December 2014.

Worksite Health and Wellness Programs as a Model for Primary Prevention Cardiac Rehabilitation. 30<sup>th</sup> Uruguayan Cardiology Congress, Montevideo, Uruguay, December 2014.

Special Appointments/Distinctions:

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.

**William Armstrong:**

Presentations:

William Armstrong is currently in Cambodia from January 31<sup>st</sup> through February 26<sup>th</sup>. He is there to conduct the World Health Organization's Wheelchair Service Training Program – Intermediate Level (<http://www.who.int/disabilities/technology/en/>), a 10 day training program, at Veterans International – Cambodia (<http://www.ic-vic.org/>) in Phnom Penh. This program will be attended by physical therapists, technicians and physicians from Phnom Penh and many other areas in Cambodia. These activities are supported by United States Aid for International Development (USAID).

William Armstrong is also a primary contributor in the development of an online, pre-learning training-of-trainers program relative to the WHO wheelchair training programs. The online program will prepare potential trainers for their in-person attendance at a training-of-trainers course. This work is conducted in collaboration with Management Sciences for Health (MSH) (<http://www.msh.org/>) and UCP (<http://www.ucpla.org/programs/services/>). These activities are also supported by United States Aid for International Development (USAID).

**Rosemarie King:**

Grant Reviewer:

Grant reviewer, January, 2015. Stroke Association, United Kingdom, London, England

Conference:

AHA Sessions, Chicago, 11/18/2015. Moderator, Symposium on Recognition and Risk of depression in stroke survivors and their caregivers

Paper presentation International Stroke Assoc. Feb. 10, 2015: Do family caregiver and dyad interventions improve stroke survivor outcomes? Nashville, TN.

**Chandramouli Krishnan:**

Publications:

**Krishnan C**, Washabaugh EP, Seetharaman Y. A low cost real-time motion tracking approach using webcam technology. *J Biomech.* 2015 Feb 5;48(3):544-8. doi: 10.1016/j.jbiomech.2014.11.048. Epub 2014 Dec 10. PubMed PMID: 25555306; PubMed Central PMCID: PMC4306621.

**Krishnan C**, Santos L, Peterson MD, Ehinger M. Safety of Noninvasive Brain Stimulation in Children and Adolescents. *Brain Stimul.* 2015 January - February;8(1):76-87. doi: 10.1016/j.brs.2014.10.012. Epub 2014 Oct 28. Review. PubMed PMID: 25499471.

**Krishnan C**, Williams GN. Effect of knee joint angle on side-to-side strength ratios. *J Strength Cond Res.* 2014 Oct;28(10):2981-7. doi: 10.1519/JSC.0000000000000476. PubMed PMID: 24714535.

**Krishnan C**, Ranganathan R, Kantak SS, Dhaher YY, Rymer WZ. Anodal transcranial direct current stimulation alters elbow flexor muscle recruitment strategies. *Brain Stimul.* 2014 May-Jun;7(3):443-50. doi: 10.1016/j.brs.2014.01.057. PubMed PMID: 24582369.

**Sangeetha Madhavan:**

Accepted for Publication:

Campbell, S.K., Cole, W., Boynewicz, K., Zawacki, L.L., Clark, A., Gaebler-Spira, D., DeRegnier, R.A., Kuroda, M.M., Kale, D., Bulanda, M., **Madhavan, S.** (2015, January) PED-PT-D-14-00068R3, entitled "Behavior During Tethered Kicking in Infants with Periventricular Brain Injury" *Pediatric Physical Therapy*

## **NORTHWESTERN UNIVERSITY PROSTHETIC - ORTHOTIC CENTER**

### Publications:

**Boutwell, E., Stine, R., Gard, S.A.** (2015). A Novel in Vivo Impact Device for Evaluation of Sudden Limb Loading Response. *Medical Engineering & Physics*, 37(1), 151-155.

**Fatone S, Dillon M, Stine R, Tillges R.** (2014) Coronal plane stability during gait in persons with unilateral Transfemoral amputation: a pilot study. *Journal of Rehabilitation Research and Development*, Vol. 51, No. 8, pp. 1217-1228.

**Fatone S, Stine R.** (2015) Capturing quality clinical videos for 2D motion analysis. *Journal of Prosthetics and Orthotics* Vol. 27, No. 1, pp. 27-32.

Choi H, Bjornson K, **Fatone S**, Steele K. (2015) Using musculoskeletal modeling to evaluate the impact of ankle foot orthosis footwear combination on musculotendon dynamics. *Disability and Rehabilitation Assistive Technology*, Early Online: 1–6, DOI: 10.3109/17483107.2015.1005030.

**Major, M.J., Stine, R.L., Heckathorne, C.W., Fatone, S., Gard, S.A.** (2014). Comparison of range-of-motion and variability in upper body movements between transradial prosthesis users and able-bodied controls when executing goal-oriented tasks. *Journal of Neuroengineering and Rehabilitation*, 11, 132.

**Robinson C, Major M**, Kuffel C, Hines K, Cole P (2015). Orthotic Management of the Neuropathic Foot: An Interdisciplinary Care Perspective. *Prosthetics & Orthotics International* Vol. 39, No. 1, pp. 73-81.

Sletto, L.; **Robinson, C., Wu, Y.** Dilatancy-Based Impression and Fabrication Technique for Custom Foot Orthoses. *Prosthetics and Orthotics International* (in press).

**Major, M., Ragahavan, P., Gard, S.** Assessing a Low-cost Accelerometer-Based Technique to Estimate Spatial Gait Parameters of Lower-Limb Prosthesis Users. *Prosthetics & Orthotics International* (in press).

### Presentations:

Esposito ER, **Fatone S**, Wilken J, **Caldwell R**, Ferguson J (2015) Sub-Ischial Prosthetic Sockets Improve Hip Range of Motion and Performance for Individuals with Transfemoral Amputations. 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, February 18-21, New Orleans, Louisiana.

**Fatone S**, McGovern D, Clancy T, Conaway P, **Gaebler-Spira D** (2015) Effect of two orthotic approaches on activity level, balance & satisfaction in children with cerebral palsy. 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, February 18-21, New Orleans, Louisiana.

Choi H, Steele K, Bjornson K, **Fatone S** (2015) Changes in Gastrocnemius Length with AFO-FC Tuning. 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, February 18-21, New Orleans, Louisiana.

**Fatone S**, Dillon M (2015) Invited presentation, Improving the gait of partial foot amputees: emerging evidence in support of above-ankle interventions. 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, February 18-21, New Orleans, Louisiana.

**Boutwell E, Stine R, Gard S.** (2015) Influence of Longitudinal Prosthetic Stiffness Modification on Ground Reaction Forces during Transtibial Gait. 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, February 18-21, New Orleans, Louisiana.

**Boutwell E, Stine R, Gard S.** (2015) Influence of Longitudinal Stiffness Modification on Impact Forces within the Transtibial Prosthesis. 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium, February 18-21, New Orleans, Louisiana.

**Nepomuceno A., Major M., Stine R., Gard S.** (2015) Effect of Ankle Immobilization on Able-Bodied Gait as a Model for Understanding Bilateral Transtibial Amputee Gait. Accepted for presentation, the 41st Annual National Meeting of the American Academy of Orthotists and Prosthetists, New Orleans, LA, February 18 - 21, 2015.

Borrenpohl D., **Major M.** (2015) A Survey-Based Investigation of the Role of Outcome Measures in the Assignment of Medicare Functional Classification Level for Persons with Lower Limb Amputation. Presented as part of the Lower Limb Prosthetic Society and Gait Society Forum, the 41st Annual National Meeting of the American Academy of Orthotists and Prosthetists, New Orleans, LA, February 18 - 21, 2015.

Craig Heckathorne, Kathryn Waldera, Margaret Parker, **Stefania Fatone** and **Steven Gard** contributed a webinar, "[Prostheses for Farmers and Ranchers: What Is Used, What Is Needed](#)" (2014), available free of charge (or with a fee to receive 0.75 Continuing Education Credit if desired) on the Paul E. Leimkuehler Online Learning Center of the American Academy of Orthotists & Prosthetists. The webinar examines prosthetic components used by agricultural workers; determines work activities that are helped or hindered by prosthesis use; identifies prosthetic components that cause problems; and suggests further research and development.

Meetings:

**Dr Stefania Fatone**, PhD, was invited to moderate a free paper session on orthotics at the 41st American Academy of Orthotists and Prosthetists Annual Meeting & Scientific Symposium held on February 18-21, New Orleans, Louisiana.

Laboratory Visits/Events:

The **Northwestern University Prosthetics-Orthotics Center (NUPOC)** hosted a site visit and educational program, “Innovative Approaches to Rehabilitation” by Yeongchi Wu, MD, for a delegation of 12 healthcare professionals in rehabilitation from the Shandong Province, China, on December 17, 2014.

Ms. Suzanne McConn, BA, has joined NUPOC as a student investigator who will conduct research on “Fall Risk and Prosthetic Influence on Gait Biomechanics in Upper Limb Amputees” under the mentorship of Matthew Major, PhD, Principal Investigator of the study. Ms. McConn is a master’s degree student in biomedical engineering at Northwestern University and her research at NUPOC will be conducted in partial fulfillment of her MS degree. She completed her Bachelor of Arts Summa Cum Laude at Concordia (Moorhead, MN), where she majored in mathematics and Spanish with a minor in chemistry.

Felix Starker, Group Manager for Applied Biomechanics, Department Biomechatronic Systems at Fraunhofer Institute for Manufacturing Engineering and Automation (Stuttgart, Germany), returned to visit the new NUPOC research and education facilities on January 14, 2015, facilitated by **Matthew Major, PhD**. As a graduate student at Stuttgart University, Mr. Starker had been a Visiting Scholar at NUPOC, where he modified the Mauch Hydraulic Ankle in partial fulfillment of his *diplom ingenieur*, the German equivalent of a Master’s degree in engineering. Read more about [Felix Starker and the Mauch Hydraulic Ankle](#) in *Capabilities* 18(1)1-3, 2010.

Juan Fernando Ramirez-Patino, PhD, Associate Professor in Mechanical Engineering at the Universidad Nacional de Colombia, Sede Medellin, visited NUPOC on January 16, 2015, facilitated by **Stefania Fatone, PhD**. Drs Ramirez-Patino and Fatone are seeking collaborative opportunities.

#### Grant Submissions:

**Stefania Fatone, PhD**, and Deborah Gaebler-Spira, MD, were CoPIs on an application titled “Contribution of Footwear to Effectiveness of Leg Braces Used by Children with Cerebral Palsy to Assist Standing and Walking” submitted December 29, 2014 to The Auxiliary Board of NMH FY2016 Grant Initiative.

**Stefania Fatone, PhD**, and Pranitha Gottipati, PhD (post-doctoral fellow) were co-investigators on an application titled “Effects of surgery on gait and balance in patients with cervical spondylotic myelopathy” (PI: Nader Dadaleh, MD) submitted December 29, 2014 to The Auxiliary Board of NMH FY2016 Grant Initiative.

**Gard, S.** “Development and Evaluation of a Shock Absorbing Prosthetic Ankle Mechanism.” Submitted to the Department of Veterans Affairs, Rehabilitation Research & Development Service, December 10, 2014.

**Gard, S.** “Development and Evaluation of a Shock Absorbing Prosthetic Ankle Mechanism.” Submitted to the Department of Defense (DoD) Orthotics and Prosthetics Outcomes Research Program (OPORP), January 16, 2015.

#### Letters of Intent:

**Stefania Fatone, PhD**, was a collaborator on a letter of intent titled “Numerical Model Protocol to Validate Skin-Like Sensors for Use in of Prosthetic Sockets” (PI: Juan Fernando Ramirez-Patino, PhD) submitted January 6, 2015 to the National Academy of Sciences Partnerships for Enhanced Engagement in Research (PEER).

**Gard, S.** “Design of a Smart Prosthetic Liner Controlled by Muscle Activation Feedback.” Submitted to the Department of Veterans Affairs, Rehabilitation Research & Development Service, February 1, 2015.

**Major, M.** “Design of a Low-Cost Prosthetic Foot with Physiological Roll-Over and Push-Off.” Submitted to the Department of Veterans Affairs, Rehabilitation Research & Development Service, February 1, 2015.