

**Scholarly Activities**  
**Department of Physical Medicine and Rehabilitation**  
**June – August 2013**

**CLINICAL**

**Deb Gaebler** and **Citlali Lopez-Ortiz**: Poster presentation “Motor Learning Using Classical Ballet with Feedback of Reduced Dimension in Children with Cerebral Palsy”, Progress in Motor Control IX Meeting, Montreal, July, 2013

**Deb Gaebler** presented at Grand Rounds, Mary Free Bed Rehabilitation Hospital, Grand Rapids, MI, July 12

Sukal-Moulton T, Krosschell KJ, **Gaebler-Spira DJ**, Dewald JP: Motor Impairments Related to Brain Injury Timing in Early Hemiparesis. Part II: Abnormal Upper Extremity Joint Torque Synergies. *Neurorehabil Neural Repair*. 2013 Aug 1. [Epub ahead of print]

**Christina Marciniak:**

Course Faculty

Botulinum Toxins and Spasticity Treatment. Course: Botulinum Toxins in the Treatment of Dystonia and Spasticity. Rush University Medical Center. June 1, 2013.

Publications

Guest Editors: **Marciniak C**, Geiringer SR. Senior Editor: Akutota V. *Electrodiagnostics and Clinical Correlates. PM&R*. Supplement: Vol 5, Issue 5S, May, 2013.

**Marciniak, CM** and Geiringer, SR. Introduction. *PM&R*. Volume 5, Issue 5, Supplement, Pages S1-S2, May 2013.

**Mhatre PV**, Vilare, I, Stibb S, Albert MV, Pickering L, **Marciniak CM**, **Kording K**, **Toledo S**. Wii Fit Balance Board Playing Improves Balance and Gait in Parkinson Disease. *PM&R* published online 13 June 2013.

**Karvelas K**, **Oswald M**, **Rydberg L**. Electrodiagnostics and Clinical Correlates: Polyneuropathy (Acquired). *PMR* 2013;5:S56-S62

**Monica Rho:**

**Rho ME**, Spitznagle T, Van Dillen L, Oza S, Maheshwari V, Prather H. Gender differences in ultrasound imaging of lateral abdominal muscle thickness in asymptomatic adults: A pilot study. *PM&R*. 2013 May 5(5):355-452

Cushman D, **Rho ME**. Exercise-induced Vasculitis in a Walker. *Selected for oral presentation at the American College of Sports Medicine Annual Meeting Indianapolis, IN*. June 1, 2013

Blatz D, **Rho ME**. Chronic Achilles Tendinopathy from Underwater Running. *Selected for oral presentation at the American College of Sports Medicine Annual Meeting, Indianapolis, IN*. June 1, 2013

Shah F, **Rho ME**. Jersey Finger from Running with a Smartphone. *Selected for oral presentation at the American College of Sports Medicine Annual Meeting, Indianapolis, IN.* June 1, 2013

Reese M, **Rho ME**. Calcific Tendinopathy in a Runner. *Selected for oral presentation at the American College of Sports Medicine Annual Meeting, Indianapolis, IN.* June 1, 2013

Musculoskeletal Ultrasound Applications in a Rehabilitation Population. Grand Round Rehabilitation Institute of Chicago. July 10, 2013.

Femoroacetabular Impingement. Illinois Mason Hospital Internal Medicine Grand Rounds. April 3, 2013

Invited Lectureship: Femoroacetabular Impingement. Chicago Sports Medicine Society. May 4, 2013

**Gayle Spill:** "When teams fumble: cancer rehabilitation and the problem of "handoff". In: Ethical Legal Feature, edited by Kristi Kirschner, PM&R, July 2013

**Steven Stanos:**

Presentations:

Annual Spine Summit. Annual meeting of leadership ISIS, NASS, AAPM. Update on Long Acting/Extended Release REMS for long acting opioids. What is happening with training and educational development, August 10, Burr Ridge IL

North American Spine Society Summer Meeting. Presented on lumbar stenosis: Medical Treatment and Medical/Interventional Complications: Avoidance and Management, August 1-2, Naples FL

Dannemiller Pain Review Course. Presented on Functional Anatomy of Upper and Lower Extremities; Extremity Pain: Clinical Diagnosis and Treatment; The Concept of Function, Impairment, Disability and Handicap; Rehabilitation Medicine Approaches to Pain Management: Soft Tissue Injections; and Rehabilitation Medicine Approaches to Pain Management: Interdisciplinary Care and Modalities, July 29-31, Chicago

Primed East, Regional Primary Care Update Course. Presented on Improving care of patients with chronic pain: individualized assessment and mechanism-based multimodal treatment. July 24, New York

Omnia-Prova Education/CME lecture Primary Care. "From guidelines to practice: managing challenging cases in primary care", June 14, Dearborn MI

Outreach, Governmental and Advocacy Projects:

(Consultant/ Invited Working Group Member) The Department of Health & Human Services (DHHS) & Interagency Pain Research Coordinating Committee (IPRCC): as

mandated by the Affordable Care Act. Working group on creating a comprehensive, population health level strategy of pain prevention, treatment, management, education, and research. Public Health: Service Delivery and Reimbursement Working Group. 2013-2014.

(Consultant) Federal Drug Administration (FDA) Center for Drug Evaluation and Research, the Clinical Trials Transformation Initiative (CTTI). Workshop Member. August 12, 2013. Sliver Springs, MD

United States Veterans Affairs. Consultant / Expert Panel Member (2013):  
Debra Weiner, MD. (Principal Investigator) Low back pain study pilot: clinical efficacy studying older veterans with low back pain and outcomes associated with patient-centered comprehensive evaluation and treatment (PCCT) versus imaging-associated usual care.

## **NURSING**

**Diane Rowles** presented “Can I.....? Sexuality and Fertility After Spinal Cord Injury”, 36<sup>th</sup> Annual Interdisciplinary Spinal Cord Course, RIC, June

## **ALLIED HEALTH**

### **Eric Larson:**

**Larson, E.B.**, Kondiles, B., Starr, C. & Zollman, F. (2013). Postconcussive complaint, cognition, symptom attribution and effort among veterans. Journal of the International Neuropsychological Society, 19, 1-8.

Presented “Sleep, Consolidation of New Learning and Neurorehabilitation”, 2013 Sleep and Neuromodulation Symposium. Community Healthcare System, Munster IN, June

## **CENTER FOR APHASIA RESEARCH AND TREATMENT**

### **New Grant Awards:**

Gingrich, L. Treatment of Post-Stroke Dysphagia with Lingual-Strengthening and Noninvasive Brain Stimulation. American Heart Association, National Clinical Research Program. June 1, 2013 – May 31, 2015.

Doyle, A. M., & Ruzicka, R. Efficacy of Intensity-Modulated Dysphagia Treatment in Inpatient Rehabilitation. 2013-2014 Brown Fellowship. Rehabilitation Institute of Chicago. (Mentor – Laura Gingrich Pitts).

### **Publications:**

Lee, J. B. & Sohlberg, M. M. (2013). Evaluation of attention training and metacognitive facilitation to improve reading comprehension in aphasia. *American Journal of Speech Language Pathology*, *22*, S318-333.

Presentations:

**Cherney, L. R.**, Kaye, R. C., Lee, J. B., & van Vuuren, S. (2013, June). Acquisition, Maintenance and Generalization of Script Training: A Comparison of Errorful and Error-Reducing Conditions. Clinical Aphasiology Conference, Tucson AZ.

**Cherney, L. R.** (2013, June). Aphasia Treatment: Implementing Best Practices into the Clinical Setting. Two-day workshop. Providence Health Care. Vancouver, BC.

**Cherney, L. R.** (2013, June). Aphasia treatment: Is more better? Webinar, [www.speechpathology.com](http://www.speechpathology.com)

**Cherney, L. R.** (2013, August). Use of a “virtual therapist” to improve discourse abilities in aphasia. Invited presentation, Eleanor Saffran Cognitive Neuroscience Conference, Philadelphia, PA

Fung, J., Alcañiz, M., Cobb, S., **Cherney, L.**, Colombo, G., & Weiss, P. L. (2013, August). Future directions for translation of virtual technology into the clinical arena. Panel discussion. International Conference on Virtual Rehabilitation (ICVR), Philadelphia, PA. <https://sites.google.com/site/emsaphasiaresearch/>

## **CENTER FOR REHABILITATION OUTCOMES RESEARCH**

Grants Funded since June 2013:

**Heinemann:** Patient-Centered Outcomes Research Institute, Developing Quality Metrics-Reported Outcomes for Medical Rehabilitation; \$654,789 year 1; \$1,093,782 3-year cumulative; 9/2013-8/2016

**Heinemann:** VA, Patient-Centered Care for Persons with Spinal Cord Injuries and Disorders; \$43,500 year 1; \$68,675; 5/2013-8/2013

**Heinemann:** Foundation for Physical Medicine and Rehabilitation, Developing outcomes data management and reporting capacity for musculoskeletal rehabilitation programs; \$30,000 year 1; 9/2013-8/2014

Grants Submitted since June 2013:

**Heinemann:** National Institute on Disability and Rehabilitation Research, Advanced Rehabilitation Research Training Project in Rehabilitation Services Research

**Ehrlich-Jones:** National Institute on Disability and Rehabilitation Research, RRTC Promoting Healthy Aging for Individuals with Long-Term Disabilities (PI: Elliot Roth), R2 Project: Promotion of Physical Activity to Decrease Fatigue and Pain in Persons with Spinal Cord Injury, Multiple Sclerosis, and Cerebral Palsy.

**Ehrlich-Jones/Heinemann:** National Institute on Disability and Rehabilitation Research, RERC for Individual Mobility and Manipulation in Prosthetics and Orthotics (PI's: Stefania Fatone & Steve Gard) Expanding Clinical Outcome Measures for P&O: Development and Dissemination.

**Ehrlich-Jones:** PCORI, Assessment of Prevention, Diagnosis, and Treatment Options (PI: Sherri LaVela) Patient-centered weight management treatment for overweight/obesity in persons with spinal cord injuries.

Wong: Craig H Neilsen Postdoctoral Fellowship (Full grant submission, July 15, 2013)

Grants in Preparation since June 2013:

**Heinemann:** NIDRR, Development of an Online VR Assessment and Service Protocol to Enhance Employment of Individuals with Disabilities

**Ehrlich-Jones:** Paul Ruby Foundation for Parkinson's Research Grants Initiative, Promotion of Physical Activity to Improve Balance and Quality of Life in Persons with Parkinson's disease

Manuscripts published (not in press) since June 2013:

Strauser, D. R., Wong, A. W. K., O'Sullivan, D, & Wagner, S. Developmental work personality among young adult CNS cancer survivors: An exploratory study. *Australian Journal of Rehabilitation Counseling*, 2013;19(1): 39-45.

Pretz CR, Kozlowski AJ, Dams-O'Connor K, Kreider S, Cuthbert J, Corrigan J, **Heinemann AW**, Whiteneck G. Descriptive Modeling of Longitudinal Outcome Measures in Traumatic Brain Injury: A NIDRR Traumatic Brain Injury Model Systems Study *Archives of Physical Medicine and Rehabilitation*, 2013;94:579-588.

Galloway RV, Granger CV, Karmarkar AM, et al. The Uniform Data System for Medical Rehabilitation: report of patients with debility discharged from inpatient rehabilitation programs in 2000-2010. *American journal of physical medicine & rehabilitation*. Jan 2013;92(1):14-27.

Butt Z, Lai J-S, Rao D, **Heinemann AW**, Bill Z, Cella D. (2013) Measurement of fatigue in cancer, stroke, and HIV using the Functional Assessment of Chronic Illness Therapy - fatigue (FACIT-F) scale. *Journal of Psychosomatic Research*. 74(1): 64-68. Backus D, Gassaway J, Smout RJ, Hsieh C-H, Heinemann AW, DeJong G, Horn SD.

The relationship between inpatient and post-discharge services and outcomes one-year post-injury in people with traumatic spinal cord injury, *Archives of Physical Medicine and Rehabilitation* 2013;94(4 Suppl 2):S165-74.

DeJong G, Tian W, Hsieh C-H, Junn C, Karam C, Ballard PH, Smout RJ, Horn SD, Zanca JM, **Heinemann AW**, Hammond FM, Backus D. Rehospitalization in the First Year of Traumatic Spinal Cord Injury After Discharge From Medical Rehabilitation. Archives of Physical Medicine and Rehabilitation 2013;94(4 Suppl 2):S87-97.

Presentations since June 2013:

Fann JR, Bombardier C, Richards JS, **Heinemann A**, Wilson C, Warren AM, Brooks L, Temkin N, Tate D, for the PRISMS Investigators. Venlafaxine XR for major depression and pain after spinal cord injury: a multi-site randomized controlled trial. Annual Meeting of the Academy of Psychosomatic Medicine, 2013, Tucson, AZ

**Ehrlich-Jones, L.**, Fatone, S., Connelly, L., & Heinemann, A.W. Enhancing Healthcare Services with Process and Outcome Measures. RIC Medical Grand Rounds, July 31, 2013.

**Deutsch A.** The Inpatient Rehabilitation Facility Quality Reporting Program. The Uniform Data System for Medical Rehabilitation Conference, Niagara Falls, NY. August 8, 2013.

Technical Reports:

**Deutsch A**, Kline T, Kelleher C, Lines LM, Coots L, Garfinkel D, Mallinson T, Gage B. Analysis of Crosscutting Medicare Functional Status Quality Metrics Using the Continuity and Assessment Records and Evaluation (CARE) item Set. Final Report. November 2012. Available at:

[http://aspe.hhs.gov/health/reports/2013/CrosscuttingMedicare/rpt\\_crossmedi.pdf](http://aspe.hhs.gov/health/reports/2013/CrosscuttingMedicare/rpt_crossmedi.pdf)

Service Activities:

**Allen Heinemann**

Co-Editor-in-Chief, Archives of Physical Medicine and Rehabilitation  
Chair, Outcomes Measurement Networking Group, American Congress of Rehabilitation Medicine

**Linda Ehrlich-Jones**

Judge, Annual PM&R Research Day

## **NUPOC / REHABILITATION ENGINEERING RESEARCH CENTER**

Publications:

**Johnson WB, Fatone S, Gard SA** "Modeling the effects of sagittal-plane hip joint stiffness on Reciprocating Gait Orthosis Assisted gait." Accepted for publication in Journal of Rehabilitation Research and Development.

**Major M, Fatone S, Roth E** "Validity and reliability of the Berg Balance Scale for individuals with lower limb amputation." Accepted for publication in Archives of Physical Medicine and Rehabilitation.

**Heinemann A, Connelly L, Ehrlich-Jones L, Fatone S** "Outcome Instruments for Prosthetics Clinical Applications." Invited Paper submitted to Physical Medicine and Rehabilitation Clinics of North America.

Presentations:

**Masterton, D.** "Predictors of Student Success in a Blended Learning Program. Presented at the 10th Annual Sloan Consortium Blended Learning Conference and Workshop, Milwaukee, WI, July 8-9, 2013.

**Stefania Fatone, PhD**, was co-author of two presentations given at PM&R Grand Rounds: (1) "Do We Pay Heed to the Purported Benefits of Partial Foot Amputation at the Expense of Minimizing Complications?" presented by Dr. Michael Dillon, Ph.D. on July 3, 2013. (2) "Enhancing Healthcare Services with Process and Outcome Information" presented by Dr. Linda Ehrlich-Jones, Ph.D. on July 31, 2013.

Defenses:

**Angelika Zissimopoulos, PhD**, successfully defended her doctoral dissertation, "*An Investigation of Mediolateral Foot Placement during Post-Stroke Gait*" Biomedical Engineering at Northwestern University on May 29, 2013.

Laboratory Visits:

**Northwestern University Prosthetics-Orthotics Center (NUPOC)** hosted a 3-day visit (July 1-3, 2013) by Dr. Michael Dillon, PhD, BPO(Hons), Senior Lecturer at the National Centre for Prosthetics and Orthotics, La Trobe University, Melbourne, Australia. During his visit to NUPOC, Dr. Dillon presented formal and informal presentations about P&O curriculum development, mock classes, and research topics in P&O. Also, he presented the weekly Research Meeting on "Seven Secrets of a Master's Curriculum in Prosthetics and Orthotics."

The **Northwestern University Prosthetics-Orthotics Center (NUPOC)** hosted an educational program and site visit for graduate students of the Rush Occupational Therapy Program on July 10, 2013.

The **Northwestern University Prosthetics-Orthotics Center (NUPOC)** hosted an educational program and site visit for the Biotechnology Group of the National Student Leadership Conference (NSLC) on August 5th, 2013. NSLC students and representatives from the Northwestern University Global Health Initiative learned about biomechanics of human gait and biomedical measurements with respect to prosthetics and orthotics. They also participated in research demonstrations and hands-on biotechnology activities.

Meetings:

**Stefania Fatone, Ph.D., and John Michael, CPO**, were invited to attend a meeting hosted by the American Academy of Orthotists and Prosthetists SSC Planning Conference held in Rosemont IL on July 26-27, 2013.

**Steven A. Gard, Ph.D. and Stefania Fatone, Ph.D., BPO (Hons.)** attended the annual National Institute on Disability and Rehabilitation Research (NIDRR) RERC Project Director's meeting in Alexandria, VA, August 8-9, 2013.

Grant Awards:

**Gard, S. and Major, M.** "Fall risk and prosthetic influence on gait biomechanics in upper limb amputees." Received notification of intent to fund by Department of Veterans Affairs, Rehabilitation Research & Development Service.

Grant Submissions:

**Fatone, S.,** Co-investigator on "Wireless Epidermal Sensing & Control Architecture for Prostheses (WISP)." Defense Health Program SBIR Phase I application, submitted June 2013. PI on the project was Barry Ives at mc10 Inc.

**Fatone, S.,** Co-PI on "Interface Monitoring System to Promote Residual Limb Health." NSF Smart and Connected Health Program application, submitted June 2013.

**Gard, S. and Casanova, H.** "Evaluation of a Vacuum-Based Impression and Alignment Device (V-BIAD)." Submitted to Department of Veterans Affairs, Rehabilitation Research & Development Service, June 2013.

**Gard, S.** "Development and Evaluation of the GroundControl Shoe." Submitted to Department of Veterans Affairs, Rehabilitation Research & Development Service, June 2013.

**Major, M.** "Sensory-motor mechanisms underlying fall risk in Transtibial amputees." Submitted to the Department of Veterans Affairs for the June 15<sup>th</sup> deadline.

**Fatone, S. and Gard, S.** "RERC on Individual Mobility and Manipulation for Prosthetics and Orthotics." Submitted to NIDRR, August 2013.

Letter of Intent Submissions:

**Gard, S.** "Effect of prosthesis stiffness on impact force during in vivo step loads and gait." Submitted to the Department of Veterans Affairs for the Aug 1<sup>st</sup> deadline.

**SENSORY MOTOR PERFORMANCE PROGRAM**

**Dvorkin AY, Pacini S, Hsu N & Larson EB** (2013) Treatment challenges with profound behaviour disturbance after traumatic brain injury: A case report. *Brain Injury*, 27: 957-961.

**Dvorkin, AY:** Presented "Virtual Reality and Robotics Technology in the Assessment and Rehabilitation of Attention Following Brain Injury. Department of O.T, Midwestern University, Downers Grove IL, July 10



**Dvorkin AY**, Ramaiya M, **Larson EB**, Zollman FS, Hsu N, Pacini S, Shah A & **Patton JL**. A “virtually minimal” visuo-haptic training of attention in severe traumatic brain injury. *J Neuroengineering and Rehabilitation*. 2013, 10:92.

A. Goil, M. Derry and **B. Argall**. Blending User and Robot Controls using Machine Learning for Assisted Wheelchair Doorway Navigation. In Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR '13), Seattle, Washington, USA, June 2013.

**Brenna Argall** – Invited Talk at the RSS Robotics Conference 2013 Workshop on Human Robot Collaboration Germany

**Zev Rymer:**

Publications:

“Effects of mechanical vibration of the foot sole and ankle tendons on cutaneomuscular responses in man,” by Smith AC, Mummidisetty CK, Rymer WZ, Knikou M. *Neurosci Lett*. **2013 June 17**; 545:123-6. Epub 2013 May 2; PMID: 23643990

“Spasticity, weakness, force variability, and sustained spontaneous motor unit discharges of resting spastic-paretic biceps brachii muscles in chronic stroke,” by Chang SH, Francisco GE, Zhou P, Rymer WZ, Li S. *Muscle Nerve*. **2013 Jul**; 48(1): 85-92. Epub 2013 Apr 21; PMID: 23605647

“The effect of involuntary motor activity on myoelectric pattern recognition: a case study with chronic stroke patients,” by Zhang X, Li Y, Chen X, Li G, Rymer WZ, Zhou P. *J Neural Eng*. **2013 Aug**; 10(4):046015. Epub 2013 Jul 17; PMID: 23860192

Other Activities:

**June 10-13**. Advisor for BME/Hong Kong Polytechnic University in Hong Kong

**June 17-18**. Hosted R24 Annual Retreat at the RIC

**June 24-25**. Participated at ICORR 2013 in Seattle, WA

**July 2**. Reviewer for Wellcome Trust Innovative Engineering for Health Committee Meeting in London, UK

**July 8-10**. Mentor for Motor Control Summer School MCSS-X in Ligonier, PA

**July 26**. Participated in MARS3 Advisory Council Meeting at the RIC

**July 30-31**. Collaboration Meeting at Ekso Bionics in Richmond, CA

**Zhang, L.-Q.**, Chung, S. G., Ren, Y., Liu, L., **Roth, E. J.**, and **Rymer, W. Z.**, 2013. Simultaneous characterizations of reflex and nonreflex dynamic and static changes in spastic hemiparesis. *Journal of Neurophysiology*. 110, 418-430.

Ren, Y., Kang, S. H., Park, H.-S., Wu, Y.-N., and **Zhang, L.-Q.**, 2013a. Developing a Multi-Joint Upper Limb Exoskeleton Robot for Diagnosis, Therapy, and Outcome Evaluation in Neurorehabilitation. *IEEE Trans Neural Systems Rehab Eng*. 21, 490-499.

Waldman, G., Yang, C.-Y., Ren, Y., Liu, L., Guo, X., **Harvey, R. L.**, **Roth, E. J.**, and **Zhang, L.-Q.**, 2013. Effects of Robot-Assisted Passive Stretching and Active Movement Training of Ankle and Mobility Impairments in Stroke. *Neurorehab Neural Repair*. 32, 625-634.

**Li-Qun Zhang** presented at International Society of Physical Rehab Med, "Robotic offaxis sensory-motor rehabilitation of musculoskeletal injuries and neurological disorders", Beijing, China, June 2013

OTHER FACULTY

**Kirschner KL**, Eickmeyer S, Gamble G, Spill GR, Silver JK. When teams fumble: Cancer Rehabilitation and the problem of the "handoff". PM&R 2013; 5(7): 622-628