Scholarly Activities
Department of Physical Medicine and Rehabilitation
Quarter September-November 2015

REGULAR FACULTY

Brenna Argall

Grant Award: NSF/CPS-1544797
CPS: Synergy: Collaborative Research: Learning Control Sharing
Strategies for Assistive Cyber-Physical Systems

Publication / Oral Presentation: S. Jain, K. Barsness and B. Argall. Automated and
Objective Assessment of Surgical Training: Detection of Procedural Steps on
Image Computing: Techniques and Applications (DICTA), Adelaide, Australia,
November 2015.

James Atchison

Presentations, 2015 AAPM&R Academy Meeting:
A round table discussion of the American Pain Strategy Report and its potential effect
on rehabilitation physicians and providers;
Manual Treatment of Sacroiliac and Pelvis Dysfunction; An audience participation style
review of cases to determine ethical and/or safe management of patients; Management
Dilemmas and Pathways in the Treatment of Complex Regional Pain Syndrome; A
Workshop for Active Trials of Desensitization, Graded Motor Imagery, and Mirror
Therapy in Persons with CRPS and Other Upper Limb Sensitization Patterns; Thoracic
Manipulation for Neck, Shoulder, and Thoracic Pain

Presented “The many faces of the widespread pain”, Midwest Pain Society Annual
Meeting, October 16.

Leora Cherney

Publications.
Cherney, L. R. Epidural Cortical Stimulation as Adjunctive Treatment for Nonfluent
Aphasia: Phase 1 Clinical Trial Follow-Up Findings. Neurorehabilitation and Neural
Repair. Accepted for publication.

Invited presentations.
Cherney, L. R. Aphasia rehabilitation: More is not enough. Invited presentation,
Canadian Stroke Conference, Toronto, Canada (September, 2015).

Cherney, L. R. Aphasia treatment across the modalities. Invited workshop. Speech-
Language and Audiologogy Canada, London, Ontario (September, 2015).
Cherney, L. R., Nicholas, M., & Connor, L. Hot Topics in Stroke Rehabilitation. Invited presentation, American Congress of Rehabilitation Medicine Annual Meeting, Dallas, TX (October, 2015).

Peer Reviewed Conference Presentations.


Andy Domenighetti

Grant Proposals:  NIH R03 Title: Investigation of skeletal muscles aging in mice with Tangerin/EHBP1L1-deficient satellite cells)
NIH R03 Title: Investigation of skeletal muscles aging in mice with Tangerin/EHBP1L1-deficient satellite cells)

Manuscript accepted in the journal Development (http://dev.biologists.org/): MS ID#: DEVELOP/2015/129171 - MS TITLE: Tropomodulin1 directly controls thin filament length in both wild-type and tropomodulin4-deficient skeletal muscle - AUTHORS: David S Gokhin, Julien Ochala, Andrea A Domenighetti, and Velia M Fowler

Presentations:
9/11/15: presented a poster entitled "Impaired muscle satellite cells maturation and differentiation in children with cerebral palsy” at the 3rd AMC (Alternative Muscle Club) meeting in Tucson AZ (http://cmm.arizona.edu/AMCM-home). Received “Best Poster Presentation Award”.

10/16/15: invited to present a RIC Research Seminar, entitled "Impaired Muscle Fiber Formation in Children with Cerebral Palsy".

10/24/15: oral presentation at the 69th annual AACPDM meeting in Austin TX (https://www.aacpdm.org/meetings/2015), entitled "Impaired muscle satellite cells maturation in children with cerebral palsy (CP)"

10/28/15: invited to give an oral presentation at the RIC Leadership Team meeting, entitled "Investigating New Muscle Stem Cell-Based Therapies for Cerebral Palsy (CP) and Stroke"

Deborah Gaebler

Posters
Sukal-Moulton T, Gaebler-Spira D, Krosschell K. Reliability of the Test of Arm Selective Control (TASC). AACPDM 69th Annual Meeting – Austin, TX - October 21 to 24, 2015


Rojas A, Gaebler-Spira D.  It Takes a Collaborative Village: The Integration of Early Mobility Experiences in a Community-Based Early Intervention Center. AACPDM 69th Annual Meeting – Austin, TX - October 21 to 24, 2015

**Presentations:**
Clinical validity of a 0-10 Numeric Rating Scale measure of spasticity in children with cerebral palsy - AACPDM 69th Annual Meeting – Austin, TX - October 21 to 24, 2015

Speaker - CP Registers: Past, Present, and Future - 2015 Pediatric Rehabilitation Conference Day - Spaulding Rehabilitation Hospital: Division of Pediatric Rehabilitation, Charlestown, MA
September 30, 2015

**Courses:**
Transforming the Healthcare of Women with Disabilities. AACPDM 69th Annual Meeting – Austin, TX - October 21 to 24, 2015

Safe Territory for Both Patients and Providers. AACPDM 69th Annual Meeting – Austin, TX - October 21 to 24, 2015

**Refereed Journal Articles**

**Levi Hargrove**

**Papers published**

**Papers submitted**
Grant Proposals Submitted

- Department of Defense, Congressionally Directed Medical Research Programs—Clinical Trial Award: "A Pilot Trial to Assess Implantable MyoNodes to Improve Prosthetic Function for Transhumeral Amputees after Targeted Muscle Reinnervation". (Co-I)

- Department of Defense—Congressionally Directed Medical Research Programs, Peer Reviewed Medical Research Program;Technology/Therapeutic Development Award: Development of a Deep Tissue and Full Spectrum Wirelessly Powered Electromyographic (EMG) Signal Recording Device. (P-I)

- Department of Defense—Congressionally Directed Medical Research Programs, Peer Reviewed Medical Research Program;Technology/Therapeutic Development Award: Towards Commercialization of a Pattern Recognition Controlled 2-Degree of Freedom Prosthetic Wrist. (P-I)

Awards:

Adenike Adewuyi, an MD/PhD (MSTP) student working under the mentorship of Levi Hargrove, PhD, won the poster competition at a Summer School in Neuro-Rehabilitation (SSNR), September 13-18, Valencia, Spain with her poster on "Pattern Recognition-Based Myoelectric Control of Partial Hand Prostheses" and will be provided with free to the 2016 International Conference on Neurorehabilitation.

Allen Heinemann

Peer reviewed publications


Presentations


Heinemann AW, Chair and organizer of the symposium: International Activities to Promote Implementation of Standardized Measures in Medical Rehabilitation Practice. Symposium presented at the American Congress of Rehabilitation Medicine Annual Conference. Dallas, TX, October 28, 2015.


Heinemann AW. Presenter during the symposium: Preventing Wheelchair Breakdowns: Is DIY Maintenance the Solution? What's Important and How to Teach It. Symposium presented at the American Congress of Rehabilitation Medicine Annual Conference. Dallas, TX, October 30, 2015.


Bogner J, Whiteneck G, Heinemann AW. Participation Assessment with Recombined Tools-Objective (PART-O) and Mental Health Outcomes After TBI. Poster presented at the American Congress of Rehabilitation Medicine Annual Conference. Dallas, TX, October 28, 2015.


**Grant submitted**

DoD: Enhancing Quality of Orthotic Services with Process and Outcome Information

**Professional Service**


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

**Mark Huang**


Lectures/Courses at Conferences:


Poster Presentations:

**Todd Kuiken**

Papers published

• Smith L, **Kuiken TA**, and Hargrove L, "Evaluation of linear regression simultaneous myoelectric control using intramuscular EMG". *IEEE Trans Biomed Eng*, August 2015 (Epub ahead of print) DOI:10.1109/TBME.2015.2469741

• Smith L, **Kuiken T**, and Hargrove L, "Use of probabilistic weights to enhance linear regression myoelectric control", *Journal of Neural Engineering*, Accepted Oct 2015

**Papers submitted**


**Grant Proposals Submitted**

• Department of Defense, Congressionally Directed Medical Research Programs—Clinical Trial Award: *A Pilot Trial to Assess Implantable MyoNodes to Improve Prosthetic Function for Transhumeral Amputees after Targeted Muscle Reinnervation* (PI)

• Department of Defense—Congressionally Directed Medical Research Programs, Peer Reviewed Medical Research Program; Technology/Therapeutic Development Award: *Development of a Deep Tissue and Full Spectrum Wirelessly Powered Electromyographic (EMG) Signal Recording Device* (Co-I)

• Department of Defense—Congressionally Directed Medical Research Programs, Peer Reviewed Medical Research Program;Technology/Therapeutic Development Award: *Towards Commercialization of a Pattern Recognition Controlled 2-Degree of Freedom Prosthetic Wrist*. (Co-I)

**Richard Lieber**

Grant Award: “Functional Comparison Between Nerve and Tendon Transfer after SCI”, Craig F. Neilsen Foundation, September 2015 – August 2018

**Presentation:** David Kilmer Memorial Lecture, University of California, Davis, September 2015.

**Publications:**

Christina Marciniak

PUBLICATIONS:
Gracies JM, Brashear A, Jech R, McAllister P, Banach M, Valkovic P, Walker H,
Marciniak C, Deltombe T, Skoromets A, Khatkova S, Edgley S, Gul F, Catus F, De Fer BB,
Vilain C, Picaut P; International AbobotulinumtoxinA Adult Upper Limb Spasticity Study Group.
PMID: 26318836

PMID: 26301386

ABSTRACTS:


POSTER PRESENTATIONS:

Joel Press

Gregory E. Lutz, MD Visiting Professor for Physiatry, Hospital for Special Surgery, New York, “The Past, Present and Future of Musculoskeletal Care”, September 18, 2015

Christopher Reger

Poster presentations, AAPM&R Academy 2015:
The teaching habits and perspectives of physical medicine and rehabilitation residents; Unique challenges in rehabilitation of primary autonomic failure: a case report.

Monica Rho

Received the NU FSM Best Teachers of Feinberg Award, October 2015; Named Head Team Physician for the U.S. Men’s Paralympic Soccer Team by U.S. Soccer; Presentations, 2015 AAPM&R Academy Meeting: Current Updates on the Use of Musculoskeletal Ultrasound in Rehabilitation Population and the Utilization of an Inpatient Musculoskeletal Ultrasound Consult Service Course Director; Preventing Musculoskeletal Complications in Peripartum Patients: A Physiatric Approach; Shoulder: Normal Anatomy and Pathology as Seen with Ultrasound Hard Core: Pilates for Physiatrists; Abstract/Poster Presentation: Sundar B, Rho M. Case of thoracic disc with anterior chest and left arm pain mimicking cardiac disease. American Academy of Physical Medicine and Rehabilitation Annual Meeting. San Diego. October 2015

Elliot Rouse

Grant Proposal: Google Faculty Award “Development of a lightweight robotic ankle prosthesis by leveraging a novel catapult mechanism”, October 15

Paul Scholten


Scholten P, Harden NH. Assessing and Treating Patients with Neuropathic Pain. PM R, Pain Supplement, 2015. (accepted for publication)

Diane Dudas Sheehan

Teaching: Fall 2015 NU - Small group tutor for Foundations of Clinical Ethics Class – M1 medical students

Presentations:
October 13 2015 “Neuromuscular Scoliosis Evaluation and Management” PM&R residents on Pediatric rotation at the Rehabilitation Institute of Chicago.

October 20 2015 “Comprehensive Evaluation and Practical Treatment of Children with Wounds” - PM&R residents on Pediatric rotation at the Rehabilitation Institute of Chicago
Gayle Spill


Published "The Team Physician: Ethical and Legal Issues” Guest Editor, PM&R, October 2015

Vineeta Swaroop

Publication:

Instructional Course Lecture:
-Swaroop VT, Thompson R, Dias L. Instructional Course Lecture: Controversies in Orthopaedic Management of Patients with Myelomeningocele. 2015 Annual Meeting of the American Academy of Cerebral Palsy and Developmental Medicine in Austin, TX (October 24, 2015)

Poster:

Preya Tarsney

Presented "Ethics of Social Media and Traumatic Brain Injury", Brain Injury Association Annual Conference

Li-Qun Zhang


Presentations:
Neuroscience, Chicago.


RESEARCH FACULTY

Anne Deutsch

Presentations
Deutsch A. Quality Measures for Inpatient Rehabilitation Facilities (Symposium Director) and Presenter/

Ongoing service
Participant in the Association of Occupational Therapy Association’s Visioning Summit. National Harbor, MD; October 22 and 23, 2015

Member, Brain Injury Association of America TBI Rehabilitation Guidelines Dissemination Advisory Board. Dallas, TX; October 27, 2015.

Award:
Fellow of the American Congress of Rehabilitation Medicine (FACRM); October 29, 2015.

Policy:
Under several CMS contracts and an ASPE contract, Anne led the development of 4 quality measures that are now endorsed by NQF (July 23, 2015):

○ Inpatient Rehabilitation Facility (IRF) Functional Outcome Measure: Change in Self-Care Score for Medical Rehabilitation Patients; STEWARD: Centers for Medicare & Medicaid Services (CMS) - http://www.qualityforum.org/QPS/2633

○ Inpatient Rehabilitation Facility (IRF) Functional Outcome Measure: Change in Mobility Score for Medical Rehabilitation Patients; STEWARD: Centers for Medicare & Medicaid Services (CMS) - http://www.qualityforum.org/QPS/2634

Linda Ehrlich-Jones

Presentations

Ehrlich-Jones, L. Motivational interviewing: Helping patients change their behavior, presented 11/13/15, at Advanced Practice in the New Era of Health Care, NMH, Chicago, IL.


Grants funded
NIDILRR Field Initiated Project: Motivational Interviewing and Physical Activity Change in Parkinson’s disease (Ehrlich-Jones, PI) 9/30/15-9/29/18, $599,730.

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

Ongoing service
Chair WFO, Northwestern University
Rheumatology Research Foundation, member, Board of Directors
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

Anne Simon
Publications:


An article recently published in the Journal of Prosthetics and Orthotics by Major M, Caldwell R, Fatone S on "Comparative effectiveness of electric vacuum pumps for creating suspension in transfemoral sockets" was highlighted by The O&P Edge, “Study Examines Comparative Effectiveness of Electric Vacuum Suspension Pumps” (September 20, 2015). http://www.oandp.com/articles/NEWS_2015-09-20_02.asp

Presentations:


Awards:

Chris Robinson, CPO, MBA, MS, ATC, FAAOP, was named one of the 2015 Best Teachers of Feinberg by Northwestern University’s Feinberg School of Medicine. This award
recognizes FSM faculty members who are exceptional role models, innovators and teachers. Mr. Robinson’s work in service to MPO students and FSM are identified as outstanding. He was formally recognized during Medical Education Day on Friday, September 25, 2015.

NUPOC faculty Stefania Fatone, PhD, BPO(Hons), Steven A. Gard, PhD, John Michael, Med, CPO, FAAOP, Christopher Robinson, MS, MBA, CPO, ATC, FAAOP, and John Brinkmann, MA, CPO/L, FAAOP, were named members of an elite group of 175 leading innovators in the field of orthotics and prosthetics by O&P News (published by SLACK Inc.). The “O&P News 175 Innovators in O&P” recognizes individuals for their positive impact on prosthetics and orthotics through innovation, pursuit of knowledge, and commitment to improving patients’ lives.

Meetings:

Dr Stefania Fatone, PhD, attended the Archives of Physical Medicine and Rehabilitation Editorial Board Meeting held in conjunction with the American Congress of Rehabilitation Medicine annual meeting in Dallas, Texas on November 27, 2015.

Laboratory Visits/Events:

Northwestern University Prosthetics-Orthotics Center (NUPOC) and MPO 2016 students presented an informative panel discussion, “American P&O Training, Perspectives and Experiences” to 28 Pedorthics specialists who visited NUPOC from Lycée d’Alembert (Paris, France) on October 8, 2015. R. J. Garrick, PhD, developed and moderated this program in support of STEM (Science Technology Engineering & Mathematics) education initiatives.

Northwestern University Prosthetics-Orthotics Center (NUPOC) hosted an educational tour for students from Crystal Lake South High School (Crystal Lake, IL) on November 12, 2015. R. J. Garrick, PhD, developed this program in support of STEM (Science Technology Engineering & Mathematics) education initiatives.

The Northwestern University Prosthetics-Orthotics Center (NUPOC) held the third of a series of three hands-on continuing education courses for Certified Prosthetists on the “NU-FlexSIV Socket” (September 11 and 12, 2015). These courses were supported by a grant from the Department of Defense (PI: Stefania Fatone, PhD) and were taught by Stefania Fatone, PhD, and Ryan Caldwell, CP. This course was featured in the Northwestern Research News, “Researchers Showcase Prosthetic Socket Design.” (September, 2015; 8(1):11).

Collaboration between Drs John Rogers, PhD, and Stefania Fatone, PhD, was mentioned in the NBC5 Chicago news story “Human Body Merges with Technology in 'Biohacking' Trend” which aired on September 22, 2015. http://www.nbcchicago.com/investigations/Biohackers-Use-Electronic-Tattoos-to-Create-Sixth-Sense-328557551.html

Grant Awards:

Stefania Fatone, PhD, is sub-contract PI on a Defense Health Program SBIR Phase II application titled “iGRAB: Innovative Glove for Rehabilitation and Assistance using
Biomimicry” with Anjal Sharma (PI) from Lynntech Inc. that has been selected for funding.

Steven Gard, PhD, was notified that his proposal entitled, “Optimization of Prosthetic Foot and Ankle Stiffness for Standing and Walking” will be funded by the Department of Veterans Affairs, Rehabilitation Research & Development Service

Grant Submissions:

Stefania Fatone, PhD, was co-investigator on an NIH R21 application titled “Ankle Foot Orthoses – Footwear Combinations: Biomechanics and Walk” with Kristie Bjornson (PI) from University of Washington submitted on October 16, 2015.

Stefania Fatone, PhD, was invited to submit an application titled “Longitudinal Observation of Myoelectric Upper Limb Orthosis Use among Veterans with Upper Limb Impairment” to the Department of Defense on November 16, 2015, in response to the FY15 Orthotics and Prosthetics Outcomes Research Program (OPORP) Orthotics Outcomes Research Award (OORA).

Stefania Fatone, PhD, was co-investigator on an application titled “Enhancing Quality of Orthotic Services with Process and Outcome Information” (PI: Allen Heinemann, PhD) submitted to the Department of Defense on November 16, 2015, in response to the FY15 Orthotics and Prosthetics Outcomes Research Program (OPORP) Orthotics Outcomes Research Award (OORA).

Steven Gard, PhD, Pranitha Gottipati, PhD, Matthew Major, PhD, and Stefania Fatone, PhD, submitted an NIH R03 application titled “Estimating post-stroke hemiplegic gait stability using nonlinear dynamic analysis” on November 16, 2015.

Steven Gard, PhD, submitted an application entitled “Design of a Smart Prosthetic Liner Controlled by Muscle Activation Feedback” to the Department of Veterans Affairs on September 10, 2015 as a Small Projects in Rehabilitation Effectiveness project.

Steven Gard, PhD, was invited to submit an application entitled “Development and Evaluation of the GroundControl Shoe” to the Department of Defense on November 16, 2015, in response to the FY15 Orthotics and Prosthetics Outcomes Research Program (OPORP) Prosthetics Outcomes Research Award (PORA).

Steven Gard, PhD, and Yeongchi Wu, MD, were invited to submit an application entitled “Comparison of Dilatancy, Plaster and CAD-CAM Approaches for Transtibial Socket Fabrication” to the Department of Defense on November 16, 2015, in response to the FY15 Orthotics and Prosthetics Outcomes Research Program (OPORP) Prosthetics Outcomes Research Award (PORA).

Steven Gard, PhD, was a co-investigator on an application entitled, “Improving Physical Activity Levels Through Prescription of Elevated Vacuum Suspension” that was submitted by Noah Rosenblatt, PhD (PI) to the Department of Defense on November 16, 2015 in response to the FY15 Orthotics and Prosthetics Outcomes Research Program (OPORP) Prosthetics Outcomes Research Award (PORA).
Matthew Major, PhD, was submitted an application titled "Rugged, Low-Cost, Purely Mechanical Prosthetic Knees Optimized to Replicate Physiological Gait for a Variety of Terrains and Cadences" to the Department of Defense on August 17, 2015 in response to the FY15 CDMRP Clinical Rehabilitative Medicine Research Program (CRMRP) Neuromusculoskeletal Injuries Research Award.

Matthew Major, PhD, submitted an application titled "Design of a Low-Cost Prosthetic Foot with Physiological Roll-Over and Push-Off" to the Department of Veterans Affairs on September 10, 2015 as a Small Projects in Rehabilitation Effectiveness project.

**Letters of Intent:**

Stefania Fatone, PhD, submitted an LOI on August 31, 2015 to the Department of Defense titled "Longitudinal Observation of Myoelectric Upper Limb Orthosis Use among Veterans with Upper Limb Impairment."

Allen Heinemann, PhD, and Stefania Fatone, PhD, submitted an LOI on August 31, 2015 to the Department of Defense titled “Enhancing Quality of Orthotic Services with Process and Outcome Information.”

**OTHER FACULTY**

Ross Arena

Grant Awards:
VA Merit Award (Forman): “Exercise Therapy to Reduce Heart Failure Symptoms: Sorting Mechanisms of Benefit”, Co-Investigator

NHI RO1: “Facilitating Functional Independence in Patients Requiring Prolonged Mechanical Ventilation”, Co-Investigator

Publications:


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.* (Accepted 10/5/15).


Thommazo L, Carvalho LP, Luporini R, Trimer R, Pantoni BF, Cati A, **Arena R,** Borghi-Silva A. Are cardiovascular and metabolic responses to field walking tests interchangeable and obesity-dependent? *Disability and Rehabilitation.* (Accepted 8/20/15).


**Presentations**

Making the most of your physical therapy education: taking advantage of the opportunities around you. 13th Annual UC Davis Pre-Medical and Pre-Health Professions National Conference. Sacramento, CA, October 2015.
Addressing the NCD Crisis in China. International Research Advisory Committee Meeting, Guangdong Work Injury Rehabilitation Center, Guangzhou, China, September 2015.

Transforming Cardiac Rehabilitation into Broad-Based Healthy Lifestyle Programs to Combat Non-Communicable Disease. UIC College of Medicine, Division of Cardiology Fellows Conference, September 2015.

Assessing Cardiopulmonary Fitness in Chronic Disease Populations. 9th International Conference on Diet and Activity Methods, Brisbane, Australia, September 2015.

Emerging Assessments of Cardiopulmonary Fitness: Respiratory Muscle Performance. 9th International Conference on Diet and Activity Methods, Brisbane, Australia, September 2015.

**Honors/Awards**

Personality of the Year Award, Department of Physical Therapy of the Sao Paolo State Society of Cardiology, Sao Paolo, Brazil

**Teresa Savage**
