Scholarly Activities
Department of Physical Medicine and Rehabilitation
June – August 2017

REGULAR FACULTY

Brenna Argall

Journal publications:


Conferences, proceedings publications with oral presentations:


Andrea Domenighetti

Abstract submitted "Development of New 3D-Printed Cell Culture Assays for Biomarkers and Drug Discovery in Cerebral Palsy" (A. Taylor et al.) to the AAP Physiatry 2018 annual meeting in Atlanta GA

Manuscript in press: “Management of Cardiac Involvement Associated with Neuromuscular Diseases - A Scientific Statement from the American Heart Association”. Circulation -
Feingold, Mahle, Auerbach, Clemens, Domenighetti, et al.

Shirley Ryan Abilitylab-CHNF Infrastructure Center Grant application to the Nielsen Foundation: "Genetic and Epigenetic Predictors of Functional Improvement Following Acute Intermittent Hypoxia Therapy in Individuals with Incomplete Spinal Cord Injury" - (Domenighetti, Sandhu, Anatasopoulos, Rymer and Grafman).


- Pre patent filing application: "Methods of treating skeletal muscle contractures, skeletal muscle atrophy, muscle tissue and muscle cell remodeling using cytosine and cytidine analogs, with or without an aurora kinase inhibitor". Domenighetti

**Deb Gaebler**


Effects of an Off-Axis Pivoting Elliptical Training Program on Gait Function in Persons With Spastic Cerebral Palsy: A Preliminary Study
Tsai, Liang-Ching PhD, PT; Ren, Yupeng MS; Gaebler-Spira, Deborah J. MD; Revivo, Gadi A. DO; Zhang, Li-Qun PhD American Journal of Physical Medicine & Rehabilitation: July 2017 - Volume 96 - Issue 7 - p 515–522 doi: 10.1097/PHM.0000000000000632 Brief Reports

Participated in the PICORI cerebral palsy workshop, June 16-17


Participant, Cerebral Palsy Foundation Scientific Advisory Committee, NYC, July 15-16

**Levi Hargrove**

*Papers published*


Conference Proceedings


Grants Submitted

Allen Heinemann
Proposals Submitted:
HHS NIDILRR, Spinal Cord Injury Model Systems (SCIMS) Reinventing Yourself after SCI: A multi-site collaborative randomized controlled trial of an intervention to improve outcomes after spinal cord injury, start date 9/30/17
HHS NIDILRR, Spinal Cord Injury Model Systems (SCIMS) TIRR SCIMS Multisite Collaborative, start date 9/30/2017
HHS NIDILRR, DRRP, TBI Model Systems, start date 10/1/2017
NIH, R18, Dissemination and Implementation of the Emergency Medicine Geriatric Response and Evaluation Tool "EGRET", start date 1/1/18
Spinal Cord Injury Research Program- Qualitative Research Award, Department of Defense, Evaluating the Utilization and Efficiency of Wearable Exoskeletons for SCI Rehabilitation, start date, 9/1/2017

Presentations:

Heinemann, AW. The Rehabilitation Measures Database. Presentation invited as part of the Workshop on Assessments, RehabWeek, London, United Kingdom, July 17, 2017.

Manuscripts:


Service Activities:
Member, Quality Measures Technical Expert Panel, American Academy of Physical Medicine and Rehabilitation, 2017

Arun Jayaraman

Grants Submitted
DARPA: “Smartphone monitoring for health and readiness“ (Subcontract) Submitted June, 2017

Pre-application to CDMRP Peer Reviewed Orthopaedic Research Program, Clinical Trial Award: “Improving Amputee Function through Principles of Motor Control” submitted July 12, 2017.


Pre-application to CDMRP Spinal Cord Injury Research Program, Clinical Trial Award: “Clinical trial of a robotic exoskeleton with functional electrical stimulation as an acute-phase intervention to promote neuromuscular recovery after severe SCI” Submitted August 7, 2017.

Articles Published


Conference Presentations

Todd Kuiken

Patents


Papers published
Kuiken TA, Barlow AK, Hargrove LJ, Dumanian GA. Targeted Muscle Reinnervation for the Upper and Lower Extremity. Techniques in Orthopaedics 32(2):109-1116, June 2017 DOI: 10.1097/BTO.0000000000000194


Conference Proceedings


Grants Submitted
Pre-application to CDMRP Peer Reviewed Orthopaedic Research Program, Clinical Trial Award: “Thighplasty to improve prosthesis fit and function” submitted July 12, 2017.

Mitra Lavasani
Grant Submitted


Presentations
Invited Speaker, Shirley Ryan AbilityLab, 40th Annual Interdisciplinary Spinal Cord Injury Course: The Integration of Research and Clinical Care, June 2017

Laura Miller

Conference Presentations


Grants Submitted

Debjani Mukherjee


W. Zev Rymer
Presented “Pathophysiology of spasticity: new findings and implications for clinical management” at UT Health, Houston, TX, June 14

Pre-Congress Workshop presentation “Towards a next generation of wearable robotic devices for human-oriented assistance and therapy” at RehabWeek in London, UK, June 17

Satellite Program presentation “Transient reductions in oxygen partial pressure in the inspired air promote rapid and substantial increases in voluntary muscle strength in persons with incomplete spinal cord injury” at Progress in Motor Control XI in Miami, FL, July 19

Opening statement, Session 10.4 – Motor Control (Special session honoring Professor Carlo De Luca) at ISB 2017 in Brisbane, Australia, July 26

Chair, Session 11.10 – Neuromechanics at ISB 2017 in Brisbane, Australia, July 27


Presented "Robotic Rehabilitation in post severe head injury sequelae" at 26th Annual Conference of the Neurotrauma Society of India in Ooty, Coimbatore, Tamil Nadu, India, August 12

Presented "Applications of Advanced Technologies in Neurologic Rehabilitation" to doctors and physiotherapists in Chennai, India, August 13

Presented "Applications of Advanced Technologies in Neurologic Rehabilitation" to students at IIT Madras in Chennai, India, August 14

Presented "Use of technology in Rehabilitation" at NIMHANS in Bangalore, India, August 16

Diane Dudas Sheehan
Teaching:
“Neuromuscular Scoliosis Evaluation and Management”, presented to PM&R residents/students during Pediatric rotation on 5/9/17 & 7/18/17 at the Shirley Ryan Ability Lab

“Comprehensive Evaluation and Practical Treatment of Children with Wounds” presented to PM&R residents & students during Pediatric rotation on 5/18/17 at the Shirley Ryan Ability Lab

“Comprehensive Evaluation & Treatment of Orthopaedic Patients with Wounds” to Orthopaedic residents at Ann & Robert H. Lurie Children’s Hospital of Chicago on 6/15/17
Awards:
Received on July 24, 2017 Outstanding Teacher recognition Award/pin for Small group Leader for Ethics in Action Course, M1 medical students, NU

Presentations:
July 14, 2017 “Publishing a Clinical Case Report” APN publication seminar at Lurie Children’s Hospital

July 20, 2017 “Pediatric Disabilities: Visible and Invisible” APN Grand Rounds (ADA Celebration Week) presented with Cindy Budek, MSN at Lurie Children’s Hospital


RESEARCH FACULTY

Anne Deutsch
Proposal submitted:
Multiple Sclerosis Patient-Reported Outcome Performance Measure Development” subcontract to Northwestern University. Proposal submitted to the National Quality Forum.

Presentations

Deutsch A. Measuring Quality: Principles and Methods. University of Texas medical branch, Galveston, TX. March 31, 2017

Manuscripts (in press):


Manuscripts:


Professional Activities: Editorial Board of the Archives of Physical Medicine and Rehabilitation.

Linda Ehrlich-Jones
Proposals submitted:
NIH/NIAMS U01 LIFT: Lupus Intervention Fatigue Trial

Presentations:
Heinemann A., & Ehrlich-Jones L. Rehabilitation Measures Database: How to use the tool to improve patient care and how you can help make it better. Live webinar for American Academy of Orthotists and Prosthetists, July 12, 2017

Manuscripts (in press):
Pellegrini CA, Song J, Semanik PA, Chang RW, Lee J, Gilbert AL, Pinto D, Ehrlich-Jones L, & Dunlop DD. Patients less likely to lose weight following a knee replacement: Results from the Osteoarthritis Initiative. Journal of Clinical Rheumatology. (in press).


Manuscripts:

Professional Activities: American Nurses Foundation, grant reviews

Marylou Guihan
VA HSR&D, 1/1/17-12/31/19. $ 780,595. PI: David Bentrem, MD. Directed evaluation of provider training modules to prevent venous thromboembolism after major cancer surgery. Role: Co-investigator

HSR&D, 1/1/17-12/31/19. $ 635,926. PI: Nasia Safdar, MD. Mentored enhanced implementation and evaluation of national VA mandates to prevent the spread of C Difficile
infection. Role: Co-investigator

VA HSR&D 01/01/2018 12/31/2021 Marylou Guihan, PhD  $1,046,783 Engaging Patients and Providers in Identifying and Addressing Modifiable Risk Factors to Prevent Community-Acquired Ulcers in Veterans with SCI, role: PI

Sherri LaVela
Publications (published; in press, under review):


Presentations:


Grants Funded:

Department of Defense. Perspectives and Preferences for Weight Management after Spinal Cord Injury. PI: LaVela; Co-I(s): Ehrlich-Jones, Heinemann, Applebaum, Pedersen, Pellegrini, Goldstein

Paralyzed Veterans of America Education Foundation. Developing a Curriculum on Grief/Loss due to SCI for Health Providers. PI: LaVela; Co-I(s): Bombardier, Burkhart. [funding period: June 2017-June 2018]

Grants submitted/under review:

National Multiple Sclerosis Foundation. Evaluating the Use of Acute Intermittent Hypoxia to Enhance Motor Function in Persons with Multiple Sclerosis. PI: LaVela; Co-I(s): Rymer, Jayaraman, Sandhu, Motl (submitted 7-11-17)

Craig H. Neilsen Psychosocial Research. Understanding the psychosocial impacts of airport travel through the experiences of persons with SCI. PI: LaVela; Co-I(s): Ehrlich-Jones, Pedersen; Heinemann (submitted 7-17-17)

Theresa Pape is the 2017 recipient of the Early Career Mentoring Award, presented by the American Congress of Rrehabilitation Medicine (ACRM).

Jessica Pedersen

Presentations:

Presperin Pedersen J, Sparacio J, Mullis S. Adult wheelchairs and a seating for the generalist: Enhancing participation and function through the right wheelchair. 6-hour preconference institute 3.31.2017

Presperin Pedersen J., Shea M. Increasing participation in the occupation of commercial airline travel for people who are non-ambulatory. Annual American Occupational Therapy Conference 2017, Philadelphia, PA
**Presperin Pedersen j**, Tips for Flying on a Commercial Airline with a Wheelchair, June 2, 2017 SRALAB

**Presperin Pedersen j**, Wheelchair Seating Panel- June 2, 2017, SRALAB

Service Activities: Volunteer, Board of Directors Meeting- Devices 4 the Disabled (D4D)-June 1, 2017

Volunteer, GoBabyGo with Kiwanis at Shriners Hospital- coordinated by Arun Jayaraman in conjunction with engineers and therapists from SRALAB- June 10, 2017.


Panel Participation: Design for America- Panel discussion on access in urban areas with Karen Tamley- Mayor’s Office for People with Disabilities and Judy Panko Reis, Access Living. Northwestern University Segal Design Center August 4, 2017

Professional Activities: Member, AOTA Distinguished Service Award – June 2017 Wheelchair and Seating Committee work and publication of OT Fact Sheet on Seating and Wheeled Mobility

**Tommi Raji**


**Annie Simon**

*Conference Presentations*


**Ming Wu**


OTHER FACULTY

Teresa Savage


NORTHWESTERN UNIVERSITY PROSTHETICS & ORTHOTICS CENTER

Publications:


Presentations:

Stefania Fatone, PhD, BPO(Hons), and Ryan Caldwell, CP, FAAOP, taught the NU-FlexSIV Socket Course to 10 prosthetists from Quebec, Canada. This course was sponsored by OrtoPed ULC (Canada) and hosted by the Institut de Réadaptation Gingras-Lindsay de Montréal.

Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, FAAOP, taught the NU-FlexSIV Socket Course to 12 prosthetists from Japan. This course was sponsored and hosted by Kobe College of Medical Welfare.

Stefania Fatone, PhD, BPO (Hons), was invited to present at the American Academy of Orthotists and Prosthetists Texas Chapter Meeting on August 5, 2017, in Dallas. She presented “The NU-FlexSIV Socket for Persons with Transfemoral Amputation: Description of Technique and Preliminary Evaluation.”


Awards:

Matthew Major, PhD, was recognized as Researcher of the Month in the “Pre-Clinical Trial Corner” segment in the July edition of the Jesse Brown VA Medical Center R&D Research Program Newsletter.

Roger Rose (MPO 2018) was the winner of the 2017 Dale Yasukawa Award. This award is eligible to currently enrolled students in the Northwestern University Masters of Prosthetics and Orthotics (MPO) program. The Yasukawa Scholarship encourages the awardee to participate in annual meetings of the American Academy of Orthotists and Prosthetists (AAOP).

Meetings:

Matthew Major, PhD, was a faculty participant at the annual Medical Scientist Training Program (MSTP) held June 30-July 2 in Chicago, IL and Delavan, WI. Dr. Major spoke to MD/PhD students about research opportunities in biomedical engineering, prosthetics and orthotics at NUPOC and PM&R.

Stefania Fatone, PhD, BPO (Hons) participated as a reviewer in the VA RR&D’s Scientific Merit Review Board on August 2, 2017, in Washington DC.

Laboratory Visits/Events:

Twenty-five members of the Northwestern University's Prosthetics Orthotics Student Society (NUPOSS) for the MPO class of 2018 participated in the Go-Baby-Go! Workshop held on June 10, 2017 at the Shriners Hospital for Children (Chicago). The event retrofitted and provided battery-operated cars for 12 toddlers. Parents applied to the program to receive a free car for their children with mobility impairments. The program places a special focus on spina bifida, a congenital condition that may cause paralysis in the lower limbs.

The Northwestern University Prosthetics-Orthotics Center (NUPOC) hosted 2 interactive STEM programs and site visits for a total of 80 participants from the National Student Leadership Conference (NSLC)-Biotechnology Group on morning and afternoon of August 8, 2017. R. J. Garrick, PhD, developed and managed these educational programs.

John Heredia, a University of Illinois at Urbana undergraduate student in Biomedical Engineering, is volunteering at NUPOC for the summer. He is working with Steven A. Gard, PhD, conducting structured readings in rehabilitation engineering for P&O.

Grace Jing, an NU undergraduate student in biomed engineering, is volunteering at NUPOC for the summer. She is working with Stefania Fatone, PhD, BPO (Hons) and Rebecca Stine, MS, to complete data analysis on a project assessing the effect of spine surgery on energy expenditure of walking.

Zaki Naqvi, a University of Illinois at Urbana undergraduate student in Kinesiology and Community Health, is volunteering at NUPOC for the summer. He is working with Matthew Major, PhD, to assist with data processing and coordination for several ongoing studies.
Nicholas Nelson, an NU undergraduate student in Biomedical Engineering, is volunteering at NUPOC for the summer. He is working with Matthew Major, PhD, to conduct a study on developing a method for estimating joint angle displacement using inertial measurement sensors.

Ryan Caldwell, CP, was interviewed for the article “Adapting Fabrication Skills with Changing Technology” in the July issue of The O&P Edge. The article featured information on how to fabricate the NU-FlexSIV Socket co-developed by Ryan Caldwell and Stefania Fatone, PhD, BPO (Hons), https://opedge.com/Articles/ViewArticle/2017-06-21/adapting-fabrication-skills-with-changing-technology

Stefania Fatone, PhD, BPO (Hons), was interviewed by the article “Balancing Act” published in the upcoming issue of Lower Extremity Review. The article highlighted a symposium Dr. Fatone chaired at the International Society for Prosthetics and Orthotics World Congress, which was held in Cape Town, South Africa, May 8-11, 2017.

Grant Awards:

Dr. Stefania Fatone, PhD, BPO (Hons), and Dr. Elliot Roth, MD, are Co-PIs for NU on a multi-site study sponsored by Myomo Inc. titled “Functional Assistance provided by Myoelectric Elbow-wrist-hand orthoses (FAME)”.

Kobe College of Medical Welfare in Japan signed an agreement to sponsor a “NU-FlexSIV Socket Course” taught by Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, FAAOP, held in Kobe, Japan on August 25-27, 2017.

Dr. Matthew Major, PhD, is a Co-I on a Department of Defense Peer Reviewed Orthopaedic Research Program Applied Research Award titled “Connecting Mechanical to Biomechanical Performance of Prosthetic Feet to Design Customized, Passive Devices that Provide Improved Mobility”.

Dr. Matthew Major, PhD, is a Co-I on a Department of Defense Orthotics and Prosthetics Outcomes Research Program Prosthetics Outcomes Research Award titled “Targeting Balance Confidence as a Strategy to Increase Integration and Improve Outcomes in Users of Lower-limb Prostheses”.

Dr. Matthew Major, PhD, is a Co-I on a Department of Defense Orthotics and Prosthetics Outcomes Research Program Prosthetics Outcomes Research Award titled “Women’s-Specific Footwear with Prosthetic Feet”.

Dr. Matthew Major, PhD, is a Co-I on a National Science Foundation Faculty Early Career Development Program Award titled “CAREER: Tuning passive prosthetic leg dynamics to create low-cost, robust devices that can replicate physiological gait in multiple activities of daily living”.

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Dr. Matthew Major, PhD, is a PI on a Northwestern University Undergraduate Research Assistant Program Award titled “Locomotor Response of Lower Limb Amputees to a Sudden Lateral Perturbation”.

OIM orthopedie in The Netherlands signed an agreement to sponsor a “NU-FlexSIV Socket Course” taught by Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, FAAOP, to be held in The Netherlands on October 5-6, 2017.

ISPO Norway signed an agreement to sponsor a “NU-FlexSIV Socket Course” taught by Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, FAAOP, to be held in Oslo, Norway on October 11-12, 2017.

Dr. Sarah R. Chang, PhD and Dr. Steven A. Gard, PhD are Co-PIs on a study awarded on July 19, 2017 by the American Orthotic and Prosthetic Association (AOPA) titled, “A pilot study to evaluate the effects of hydraulic ankle-foot prostheses on standing and walking in K2-level ambulators.”

Grant Submissions:

Stefania Fatone, PhD, BPO (Hons), was a co-investigator on an NIH R21 submission titled, “Biomechanics and Walking in Cerebral Palsy: Ankle Foot Orthoses – Footwear Combinations” submitted on June 16, 2017 (PI: Kristie Bjornson, PhD, Seattle Children’s Research Institute).

Steven Gard, PhD, submitted a Merit Review proposal entitled, “Evaluation of a hydraulic prosthetic foot/ankle component to increase swing phase toe clearance in persons with transfemoral amputation” to the Department of Veterans Affairs, Rehabilitation Research & Development Program on June 10, 2017.

Matthew Major, PhD, and Elliott Rouse, PhD, were co-Principal Investigators on a proposal submitted on June 15th for the NUCATS Pilot Program titled “Linking prosthetic foot mechanics to amputee gait performance for enhancing the prosthesis clinical prescription process”.

Matthew Major, PhD, was a co-Investigator on a pre-proposal submitted on July 10th to the Department of Defense Peer Reviewed Orthopaedic Research Program (PRORP) titled “Development of 3D Printed Upper-limb Transitional Prostheses for Veterans and Military Personnel”. (PI: Jorge M. Zuniga, PhD, University of Omaha at Nebraska).

Sarah R. Chang, PhD, submitted a Career Development Award proposal entitled, “Evaluating the effects of hydraulic ankle-foot prostheses on walking and standing in K2-level ambulators with transtibial amputations” to the Department of Veterans Affairs, Rehabilitation Research & Development Program on June 12, 2017.

Sarah R. Chang, PhD, submitted a proposal entitled, “A pilot study to evaluate the effects of hydraulic ankle-foot prostheses on standing and walking in K2-level ambulators” to the American Orthotic and Prosthetic Association (AOPA) on April 26, 2017.