REGULAR FACULTY

Brenna Argall

Grants awarded:
Brenna Argall (PI), Sandro Mussa-Ivaldi (Co-I) and Elliot Roth (Co-I)
NIH R01: Human and Machine Learning for Customized Control of Assistive Robots
9/1/2018 – 5/31/2022

Todd D. Murphey (PI) and Brenna Argall (co-PI)
NSF CPS: Medium: Information-based Control of Cyber-Physical Systems Operating in Uncertain Environments
9/15/2018 – 9/14/2021

Conference publication and oral presentation:

Randy Calisoff: Abstract “Worsening of Polyarticular Pain by Trazodone: A Case Report”, accepted for poster presentation, Physiatry “19, the AAP Annual Meeting, February 2019

Andrea Alberto Domenighetti

Letter of intent to the Cerebral Palsy Alliance Research Foundation for Application Project
Title: "Rescuing Muscle Stem Cells to Relieve Contractures in Cerebral Palsy", October 9

Submitted manuscript: "Building a Professional Identity and an Academic Career Track in Translational Medicine", van Dijk, Domenighetti, et al., Frontiers in Medicine, section Translational Medicine, October 15

Halo’s Inaugural Award in recognition for translational approach to research, October 25

NIH grant application (PAR-17-465, Bench Testing Therapeutic/Indication Pairing Strategies) titled "Repurposing DNMT inhibitors for drug treatment of muscle contractures in cerebral palsy"

Colin Franz

Invited Presentations:
Franz, C.K. Therapeutic Exercise and Physical Activity Considerations for People with ALS, Northwestern’s First Annual Updates in the Diagnosis and Management of ALS, September 28, 2018
Abstracts

Awards
Franz, C.K. Materson ERF New Investigator Award. Foundation for Physical Medicine and Rehabilitation. Awarded for my work on “Neurotrauma in a Dish: An Induced Pluripotent Stem Cell-based Assay to Determine Patient-specific Factors Affecting Rehabilitation Outcomes”. This was presented on October 25th, 2018 at the Annual Meeting of the Academy for Physical Medicine and Rehabilitation (Orlando, FL).

Media
Dr. Franz was featured in an article just published by “Neuronline” (Society for Neuroscience) about the upcoming SfN annual meeting in San Diego (November 3-7th, 2018): https://neuronline.sfn.org/Articles/Professional-Development/2018/How-to-Build-Your-Schedule-and-Connect-With-Others-at-SfNs-Annual-Meeting

Deborah Gaebler

Posters at the National AACPDM Conference:
Scoping review of Dance Utilized in Rehabilitation for people with cerebral palsy. American Academy of Cerebral Palsy & Developmental Medicine – Cincinnati, OH October 9-13, 2018
Mirror movements in the upper extremities of individuals with unilateral and bilateral cerebral palsy. American Academy of Cerebral Palsy & Developmental Medicine – Cincinnati, OH October 9-13, 2018
I am smarter than they are-Kids with CP-Qualitative responses to Bullying. American Academy of Cerebral Palsy & Developmental Medicine – Cincinnati, OH October 9-13, 2018
The Association of Hepatoblastoma, Cerebral Palsy, and Prematurity: Case Reports. American Academy of Cerebral Palsy & Developmental Medicine – Cincinnati, OH October 9-13, 2018

Levi Hargrove
Papers Published
Hu B, Rouse E, Hargrove L, Fusion of bilateral lower-limb neuromechanical signals improves
prediction of locomotor activities Frontiers in Robotics and AI, 26 June 2018. doi: 10.3389/frobt.2018.00078


Conference Presentations


**Book Chapter**

**Patent**

**Grants submitted**

**Grants Awarded**
NIH-R01 (NICHD) HD079428 05 (renewal): Intuitive Control of a Hybrid Prosthetic Leg During Ambulation. (9/20/18 – 6/30/23)

NIH-R01 (NICHD) HD094861-01: The Functional Importance of Powered Wrist Flexion/Extension and Simultaneous Control for Upper Limb Prostheses (9-12-18 –5/3123).
CDMRP Peer Reviewed Orthopaedic Research Program, Applied Research Award W81XWH-18-1-0668: Flexible epidermal electrodes for intuitive control of powered arm and leg prostheses. (9-15-18 –9/14/21)

NIDILRR—REGE0003 (Kuiken PI): Technologies to Evaluate and Advance Manipulation and Mobility (TEAMM)-Rehabilitation Engineering Research Center award (9/30/18 – 9/29/23).

**Allen Heinemann**
**Peer-Reviewed Publications**

Gerber, Lynn H. et al. A scoping review of burn rehabilitation publications incorporating functional outcomes, 2018


Presentations


Spirituality after SCI: What role does it play, and how can we better incorporate it into rehabilitation practice? International Spinal Cord Society, September 13, 2018, Sydney, Australia


The Rehabilitation Measures Database Taskforce: Advancing Progress in Rehabilitation Research, American Congress of Rehabilitation Medicine annual meeting, Dallas, TX, September 30, 2018

How To Get Published: Authorship, Reporting Guidelines, Reviewing In Medical Rehabilitation, American Congress of Rehabilitation Medicine annual meeting, Dallas, TX, October 1, 2018.

Improving Measurement of Patient Reported Outcomes for Individuals With Traumatic Brain Injury, American Congress of Rehabilitation Medicine annual meeting, Dallas, TX, October 1, 2018.


Invited Talk

Keynote Speaker, Fujian University of Traditional Chinese Medicine, Fuzhou, China, November 9, 2018.
Proposals under Review

NIDCD: Defining Trajectories of Linguistic, Cognitive-Communicative and Quality of Life Outcomes in Aphasia with Leora Cherney
CDC: Injury Control Research Center

Service Activities

Member, Committee on Functional Assessment for Adults with Disabilities, National Academies of Sciences, Engineering, and Medicine’s, 2017 – present.

Member, Advisory Board, National Center for Medical Rehabilitation Research, 2016-2019.

Member, NINDS Stroke CDE v2.0 Working Group, 2018-
Advisory Board, Craig H. Neilsen Award, Larry Vogel, Pl. Shriner’s Hospital, Chicago, IL, 2018-2021

Prakash Jayabalans

Publications:


Conference Presentations:
AAPM&R (Oct 2018), Orlando, FL
- Session Director/Speaker: Working Out and Working Together as a Team: Creating an Innovative Community and Academic Partnership to Optimize Physical Activity in Lung Cancer Survivors
- Speaker: Top Musculoskeletal Papers
- Poster: The Effect of Psychosocial and Socioeconomic Factors on Pain Experience in Patients Receiving Corticosteroid Injection in Knee Osteoarthritis. K Huang, K Mcclary, NSardonovic, PJayabalanc

1st World Congress of Golf and Health, London UK (Oct. 2018)
- Podium presentation ‘Golf and Knee Osteoarthritis’

Committees:
- AMA House of Delegates Representative, AAP (term started Oct 2018)
- Academic Chair, Steering Committee, Alliance for Research in Chicago (term started Oct 2018)
- Healthcare Policy and Legislative Committee, AAPM&R
Arun Jayaraman

**Papers Published**


**Conference Presentation**
“Postural and metabolic benefits of using a forearm support walker in older adults with impairments.” *Archives of Physical Medicine and Rehabilitation* [https://doi.org/10.1016/j.apmr.2018.10.001](https://doi.org/10.1016/j.apmr.2018.10.001)

**Conference Proceedings**

**Grants Submitted**
Falk Medical Foundation Catalyst Award: Wearable sensors to detect cerebral palsy in infants. Submitted July 24, 2018.


**Grants Awarded**


NIDILRR—REGE0003 (Kuiken PI): *Technologies to Evaluate and Advance Manipulation and Mobility (TEAMM)-Rehabilitation Engineering Research Center award* (9/30/18 – 9/29/23).  
NIDILRR—REGE0005 (Patton, PI): *Collaborative Machines Enhancing Therapies (COMET)* (9/30/18 – 9/29/23)

**Allison Kessler** was awarded a teaching pin from Feinberg for her Phase 1 Medical Student lectures.

**Todd Kuiken**

*Keynote Speaker:*


**Papers Published**


Grants Submitted


Grants Awarded
NIDILRR—REGE0003: Technologies to Evaluate and Advance Manipulation and Mobility (TEAMM)-Rehabilitation Engineering Research Center award (9/30/18 – 9/29/23).

Other:
Invited talk "Building Bionics" at Northwestern University, 50th Anniversary of Continuing Education, "Robotics, Artificial Intelligence, and You."

October 4, 2018 Invited to present and demonstrate the manual standing wheelchair at NIDILRR 40th anniversary celebration, Washington DC. October 18, 2018. This was the only NIDILRR-funded product demonstrated at the event.

Presented two posters at NIDILRR 40th anniversary celebration, Washington DC. October 18, 2018:
Development and Evaluation of a Manual Standing Wheelchair (Todd Kuiken)
Pattern Recognition for Improved Control of Upper Limb Myoelectric Prostheses (Levi Hargrove, Ann Simon)

Mitra Lavasani
Grant Submitted
NIH-R01: Stem Cell Mediated Restoration of Aging Neuromuscular Tissues
Role: PI

Professional Activities/Services
Invited Participant at the Chicago Women in Philanthropy
Invited Search Committee, Clinical Chairs Recruitment, Shirley Ryan AbilityLab
Invited speaker for Keystone Board Education & Volunteering Committee, Shirley Ryan AbilityLab
Invited speaker for The American Congress of Healthcare Executive Group, Shirley Ryan AbilityLab
Invited speaker for The National Grantmakers in Health (GIH) Conference, Shirley Ryan AbilityLab
Invited speaker The Northwestern Alumni Relations and Development Team, Shirley Ryan AbilityLab
Invited Speaker for Inside Look: Science of Ability, Shirley Ryan AbilityLab
Northwestern University Interdepartmental Neuroscience Graduate Program (NUIN) Student Recruitment Participant and Interviewer

Bryan Malas


Laura Miller

Papers Published


Grants Submitted

CDMPRP, Orthotics and Prosthetics Outcomes Research Program - Clinical Research Award. A Pilot Investigation to Determine the Presence of Pathogens on Gel Liners Worn by Amputees. Pre-application submitted August 3, 2018


Grants Awarded
NIDILRR—REGE0003 (Kuiken PI): Technologies to Evaluate and Advance Manipulation and Mobility (TEAMM)-Rehabilitation Engineering Research Center award (9/30/18 – 9/29/23).
Jacqueline Neal was recognized for completing the Feinberg Academy of Medical Educators (FAME) certificate program; was inducted into FAME

Matthew Oswald was awarded a teaching pin from Feinberg for his Phase 1 Medical Student lectures.

Leslie Rydberg was awarded the John X. Thomas, Jr. Best Teachers of Feinberg Award

W. Zev Rymer
Keynote presentation: "An Evaluation of the Emerging use of Advanced Technologies in Major U.S. Academic Rehabilitation Hospitals" at 2018 International Symposium on Rehabilitation Engineering (ISRE) in Qinhangdao, China, September 7

Plenary talk: "Novel strategies to enhance neural plasticity after damage to the central nervous system: Applications of acute intermittent hypoxia (AIH)" at SSNR 2018 in Baiona, Spain, September 19


Invited presentation: "Rehabilitation Technologies: Global Experience with Rehabilitation Robotics" at The 14th Rehabilitation Symposium cum the 6th Sir Harry Fang Oration, The Hong Kong College of Orthopaedic Surgeons in Hong Kong, October 13

Invited presentation: "Novel Techniques to Augment Neural Plasticity After Spinal Cord Injury: Applications of Acute Intermittent Hypoxia (AIH)" at The 14th Rehabilitation Symposium cum the 6th Sir Harry Fang Oration, The Hong Kong College of Orthopaedic Surgeons in Hong Kong, October 13

Invited presentation: "How Does Botulinum Toxin Reduce Spasticity?" at The 14th Rehabilitation Symposium cum the 6th Sir Harry Fang Oration, The Hong Kong College of Orthopaedic Surgeons in Hong Kong, October 14

Invited presentation: "Mechanisms of Spasticity after Injury to the Neuraxis - Implications for Novel Therapeutics" at The 14th Rehabilitation Symposium cum the 6th Sir Harry Fang Oration, The Hong Kong College of Orthopaedic Surgeons in Hong Kong, October 14

Invited presentation: "US Clinical Experience with Wearable Exoskeletons as Therapeutic Rehabilitation Devices Following Injury to the CNS: An Evolving Story" during Worldwide Consensus of NeuroRehabilitation at ICNR 2018 in Pisa, Italy, October 16

Invited presentation: "Translational Neural Engineering: Bringing Neurotechnology into the Clinics" at IEEE BRAIN Initiative Symposium on Technology for NeuroRehabilitation, ICNR 2018 in Pisa, Italy, October 16
Invited presentation (Symposium #1): “Translational Neural Engineering: Bringing Neurotechnology into the Clinics” at IEEE Brain Initiative Workshop on Advanced NeuroTechnologies in San Diego, CA, November 1

Invited presentation (Session 1: Contracture & More ): “Changes in muscle architecture after hemispheric stroke can adversely affect efficiency of muscle contraction in pennate muscles” at First International Motor Impairment Conference in Coogee, Sydney Australia, November 27

Diane Dudas Sheehan
Received Outstanding Teacher recognition, NU, September 19, 2018

Teaching
Fall 2018 Small group Leader for Ethics in Action (EIA) Class – M2 medical students, NU

Continue to teach (repeating lecture) PM&R residents / students during Pediatric rotation at Shirley Ryan AbilityLab:
“Neuromuscular Scoliosis Evaluation and Management” on 9/11/18
“Comprehensive Evaluation and Practical Treatment of Children with Wounds” on 8/14/18 & 9/18/18

8/21/18 “SMA & Arthrogryposis” presented to PM&R 3rd year Residents at the Shirley Ryan AbilityLab
10/23/18 “Systems of Care & Chronic Illness in Pediatrics” presented to PM&R 3rd year Residents at the Shirley Ryan Ability Lab (SRAL)

Presented “Spinal Muscular Atrophy” presented to Ortho APNs and Nurses, LC, August 28

RESEARCH FACULTY

Anne Deutsch

Peer-reviewed publications


Presentations Educational Sessions

Deutsch A, Functional Abilities and Goals and Active Diagnoses. Webinar presentation for the Centers for Medicare and Medicaid Services’ Skilled Nursing Facility Quality Reporting Program Training; Sept 12, 2018.


Presentations: Conference


Deutsch A. Award Winning Idea: Doctorate-Prepared Researcher Role Award REACH Session 707). Association of Rehabilitation Nurses REACH Conference. West Palm Beach, FL; October 20, 2018.


Service Activities

Chair, Research Committee, Association of Rehabilitation Nurses

Award

2018 Doctorate-Prepared Researcher Role Award, Association of Rehabilitation Nurses. West Palm Beach, October 17, 2018.

Linda Ehrlich-Jones

Peer-Reviewed Publications


Presentations

PI Seminar Presentation 10/08/18 on Health Services and Health Outcomes Research at the Shirley Ryan AbilityLab.

Song J, Lee J, Lee YC, Chang AH, Semanik PA, Ehrlich-Jones L, Chang RW, & Dunlop, D. Restless sleep trajectories over 8 years: Data from the Osteoarthritis Initiative, poster presentation, American College of Rheumatology Annual Scientific Meeting, 10/22/18, Chicago.

The Rehabilitation Measures Database Taskforce: Advancing Progress in Rehabilitation Research, American Congress of Rehabilitation Medicine annual meeting, Dallas, TX, September 30, 2018

Beginning Motivational Interviewing Class for Physical Therapy Students 9/18-9/21/18

CRRN Review Course lecture on Test-Taking Strategies 10/4/18

**New Awards**

Lupus Intervention Fatigue Trial (LIFT) R01, NIAMS, 8/1/2018-7/31/2023

**Proposals in Development**

PCORI resubmission on EnhanceFitness vs. Walk with Ease: Finding the Best Fit for Older Adults with Chronic Knee Symptoms with Rowland Chang, MD, MPH.

**Service Activities**

US Bone & Joint Initiative Scientific Committee 10/22/18

**Jessica Pedersen**

**Presentations**


Presperin Pedersen J, Smith C. Clinical evidence in supporting spinal curves in seating. Poster ACRM , October 3, 2018, Dallas, TX.

**Accepted**

Participation in TiGRR grant writing session. January 8-12, 2019

**Anne Simon**

Conference Proceedings


Mary Ellen Stoykov
Published Abstracts

Manuscript

Grants Submitted:
Mary Ellen Stoykov, was co-investigator on an R01 submission entitled “Bimanual coordination training for finger individuation to improve fine motor control in both hands after stroke” submitted in October to NCMRR. PIs: Kamper DG & Roth E

Professional Activities

NU PROSTHETICS AND ORTHOTICS CENTER

Publications:

Oswald, G., Huck, G., & Duncan, J. (accepted). The state of undergraduate rehabilitation education: current program coordinator perspectives. Rehabilitation Research, Policy, and Education.

Caldwell R, Fatone S (2018) Technique modifications for a suction suspension version of the Northwestern University Flexible Sub-Ischial Vacuum socket: The Northwestern University


Dr Fatone’s DOD-funded project developing the NU-FlexSIV Socket was highlighted in the DoD Blast Injury Research Program 2017 Science & Technology Efforts & Programs Prevention, Mitigation, and Treatment of Blast Injuries Annual Report to the Executive Agent. Full report: https://blastinjuryresearch.amedd.army.mil/index.cfm/annual_reports Project Summary: https://blastinjuryresearch.amedd.army.mil/assets/docs/reset/fy17/orthotics_and_prosthetics/Prosthetic_Socket_Technology.pdf


Major MJ. Fall prevalence and contributors to the likelihood of falling in persons with upper limb loss. Physical Therapy, 2018 (in press).


Presentations:

Stefania Fatone, PhD, BPO (Hons), was invited to present two lectures at the Nordiske Bandagist Kongres held in Copenhagen, Denmark, on September 6-8, 2018. Dr. Fatone gave presentations on "The NU-FlexSIV Socket: Development, Research and Dissemination," as well as “Informing Decisions about Dysvascular Partial Foot Amputation Using a Shared Decision-Making Approach."


Steven A. Gard, PhD, was invited to speak to researchers at the Orthopaedic & Rehabilitation Engineering Center (OREC), Marquette University, on September 17, 2018, where he presented "Do Persons with Transtibial Amputations Require Prosthetic Shock Absorbing Components during Gait?"


Stefania Fatone, PhD, BPO (Hons), was the keynote speaker at the Australian Orthotic and Prosthetic Association (AOPA) 2018 Congress held in The Gold Coast, Australia from October 4-6. Dr. Fatone gave a presentation on "What We Know, What We Don’t Know, and What We Want to Know." Dr. Fatone also presented a free paper, "Evaluation of the NU-FlexSIV Socket for Persons with Transfemoral Amputation," which received the Guild Best Presentation Award. Dr. Fatone also spoke about her career at a Student Event for Future Leaders held the evening of October 4.

Steven A. Gard, PhD, was invited to speak at the NU IRB Members Retreat on October 19, 2018, where he presented " Medical Device Studies: Significant Risk, Nonsignificant Risk, or Exempt?"


Awards:

Stefania Fatone, PhD, BPO (Hons) received the Guild Best Presentation Award at the Australian Orthotic and Prosthetic Association (AOPA) 2018 Congress for the free paper presentation titled "Evaluation of the NU-FlexSIV Socket for Persons with Transfemoral Amputation" which was co-authored by Ryan Caldwell, Rebecca Stine, Vasanth Subramanian and John Angelico.
Diana Pressney, CO, MPO, a graduate of the NUPOC MPO class of 2016, received the 2018 Orthotic and Prosthetic Education and Research Foundation (OPERF)/American Board for Certification in Orthotics, Prosthetics and Pedorthics (ABC) Resident Travel Award. OPERF’s clinical and scientific reviewers selected her residency project, Effect of Virtual Reality Immersion on Phantom Limb Pain and Phantom Limb Sensation. The award is a $2,500 cash prize that enables her to present her research at the Annual Meeting and Scientific Symposium of the American Academy of Orthotists and Prosthetists in Orlando, FL, in March 2019.

Meetings:

Stefania Fatone, PhD, BPO (Hons), visited Jonkoping University in Sweden from September 8-12, 2018. She visited with her colleague Nerrolyn Ramstrand, PhD, BPO (Hons), working on a symposium application for submission to the 2019 International Society for Prosthetics and Orthotics World Congress as well as acting as an external referee evaluating applicants for an Assistant Professor position at Jonkoping University.

Stefania Fatone, PhD, Ryan Caldwell, CP and John Brinkmann, CP, hosted a visit to NUPOC on November 13 by Keith Kral, a prosthetist from Sweden who was awarded a travel fellowship from the Swedish Orthotic and Prosthetic Association to visit facilities in the US to learn about P&O education and new clinical techniques.

Laboratory Visits/Events:

Stefania Fatone, PhD, BPO (Hons), and Ryan Caldwell, CP, taught the 2 day hands-on NU-FlexSIV Socket Course to:

• 12 prosthetists at Heckert and van Lierop in Eindhoven, The Netherlands, on September 19-20, 2018.
• 18 prosthetists at Ossur Americas in Orlando, Florida on November 9-10, 2018.

Recent Appointments:

Matthew Major, PhD, accepted an invitation to serve on the Technical Programme Committee for the joint Trent International Prosthetics Symposium and UK ISPO National Member Society Conference, Salford, United Kingdom, March 20-23, 2019.

Matthew Major, PhD, accepted an invitation to serve on the American Academy of Orthotists & Prosthetists Outcomes Research Committee.

Grant Submissions:

Stefania Fatone, PhD, was Co-Investigator on an application submitted to the DOD Orthotics and Prosthetics Outcomes Research Program titled “Consequences of socket design for hip muscle function among unilateral transfemoral amputees” submitted on October 25, 2018 (PI: Andrew Sawers, PhD, University of Illinois at Chicago).
Stefania Fatone, PhD, was PI on an application submitted to the DOD Orthotics and Prosthetics Outcomes Research Program titled “Comparative Effectiveness of Socket Casting Methods: Improving Form and Fit” submitted on October 25, 2018.

Steven Gard, PhD, was PI on an application to the DOD Orthotics and Prosthetics Outcomes Research Program for the project entitled, “Optimal Selection of Prosthetic Knees and Feet Combinations for Improving Walking and Standing Performance in Transfemoral Prosthesis Users” submitted on October 25, 2018.

Matthew Major, PhD, was PI and Stefania Fatone, PhD, was a Co-Investigator on a VA Merit Review Application titled “Hybrid Electrical-Mechanical Pump for Vacuum Suspension of Prosthetic Sockets” re-submitted November 15, 2018.

Grant LOI Submissions:


OTHER FACULTY

Lee Miller

New Grants:
IS-1835345 (Pandarinath) 10/1/2018 - 9/30/2021

National Science Foundation
"Discovering dynamics in massive-scale neural datasets using machine learning"
In the fifty years of recorded from neurons in M1, great effort has been devoted to understanding the relation between these individual signals, and movement-related signals collected during highly constrained motor behaviors performed by over-trained monkeys. In parallel, theoreticians posited that the computations performed in the brain depend critically on network-level phenomena: lawful “dynamics” within brain circuits that constrain the activity, and dictate how evolves over time. Our primary goal is to develop a powerful new suite of analysis tools based on cutting-edge machine learning techniques that can reveal these dynamics at unprecedented temporal and spatial scales.

Role: Co-I
"Scalable Electrode Technology for High Resolution Chronic Recording of Brain"

There is a need in neuroscience research for arrays of very small electrodes that are implanted in the brain to provide stable long-term recording and stimulation of neural electrical activity. The neural recordings are used to understand normal brain functions such as learning, adaption, and behavior, as well as to investigate neural dysfunction. We are proposing to develop an electrode technology that meets these needs and uses scalable fabrication processes that will promote dissemination of the technology to the neuroscience community and eventually for clinical applications in brain-computer interfaces for individuals with spinal cord injury, amputation, stroke, and other major neurological deficits.

Role: Co-PI

Publications:


