

Scholarly Activities
Department of Physical Medicine and Rehabilitation
March-April-May 2019

REGULAR FACULTY

Daniel Blatz, MD

Invited Lectures

American Medical Society for Sports Medicine (AMSSM) Annual Conference
Houston, TX. April 2019. *Participation in Sports with Underlying Neurologic Conditions*

American Academy of Physical Medicine and Rehabilitation (AAPMR) Next Step Ultrasound
Course
Chicago, IL. 2019. *Knee Anatomy*.

Books and Book Chapters

Blatz D, Ross B, Dadabo J. *Cervical Spine Trauma Evaluation*. Handbook of Clinical
Neurology: Sports Neurology. Edited by Brian Hainline & Robert A. Stern. Volume 158, Pages
2-490 (2018).

Colin Franz, MD

Manuscripts

Franz, C.K., Joshi, D., Daley, E.L., Grant, R.A., Dalamagkas, K., Leung, A., Finan, J.D.,
Kiskinis, E. The Impact of Traumatic Brain Injury on Amyotrophic Lateral Sclerosis – From
Bedside to Bench. *Journal of Neurophysiology (in press)*.

Accepted Abstracts

Rugel, C., **Franz, C.K.**, Lee, S.M. Effect of Limb Position on Nerve Shear Wave Velocity In Situ.
Peripheral Nerve Society Meeting.

Sibley, L., **Franz, C.K.**, Domenighetti A.A. Establishing a co-culture model of human induced
pluripotent stem cell-derived motor neurons and primary stem cell-derived myotubes from
patients with cerebral palsy. Society for Neuroscience.

Franz, C.K., Phillips, J.K., Cotton, K.Y., Grafman, J., Quezada, M.J., Finan, J.D. The influence of
the val66met polymorphism of the brain derived neurotrophic factor gene on pathology in
an isogenic human in vitro model of neurotrauma. Society for Neuroscience.

Quezada, M.J., Cotton, K.Y., **Franz, C.K.** Phenotypic characterization of human iPSC-derived
motor neurons that carry the common val66met single nucleotide polymorphism of brain

derived neurotrophic factor gene using multielectrode array and an in vitro stretch injury system. Society for Neuroscience.

McGregor, C., Phillips, J.K., Finan, J.D., **Franz, C.K.** Increased neurite outgrowth in iPSC-derived neurons carrying the Met allele of the Val66Met BDNF polymorphism. Society for Neuroscience.

Invited Presentations

Northwestern Neurology Neuromuscular Division Rounds: “Advances in Peripheral Nerve Repair”

SRAlab/NU Peripheral Nerve Group Meeting: “The Role of BDNF in Peripheral Nerve Regeneration: Activity-Dependent Treatments and Val66Met”

Teaching

Lecturer, Schwab PM&R Residency Program Academic Half Day: “ALS and other Motor Neuron Diseases”

Lecturer, SRAlab/McGaw PM&R Residency Program Advanced Lecture Series: “Electrodiagnostics for Motor Neuron Diseases”

Instructor at “The 11th Annual Scott Primack MSK Ultrasound Course”: Neuromuscular Ultrasound Topics

Deborah Gaebler, MD

Black L, Foster C, Shaunfield S, Zavos P, Gaebler-Spira D. Physical and Environmental Barriers to Mobility and Participation in Children with Medical complexity. Pediatric Academic Societies (PAS) Meeting 2019 - The Baltimore Convention Center, Baltimore, MD – April 29, 2019.

Pouppirt N, Gaebler-Spira D, deRegnier R. Implementation of Early Detection and Intervention for Cerebral Palsy and Transition to Rehabilitation Services in a Neonatal Follow-Up Program. Implementation of Early Detection and Intervention for Cerebral Palsy Conference - Nationwide Children’s Hospital - Columbus OH - April 11-13, 2019

Physical and Environmental Barriers to Mobility and Participation in Children with Medical Complexity - Pediatric Academic Societies (PAS) 2019 Meeting - Baltimore, Maryland - April 27- 30, 2019

Speaker – Cerebral Palsy/Early Detection – Rush University Medical Center– Chicago, IL – March 15, 2019

Jennifer Goldman, MD

Publications

Peterson B, Armstrong M, Galasko D, Galvin JE, **Goldman J**, Irwin D, Paulson H, Kaufer D, Leverenz J, Lunde A, McKeith IG, Siderowf A, Taylor A, Amodeo K, Barrett M, Domoto-Reilly K, Duda J, Gomperts S, Graff-Radford N, Holden S, Honig L, Huddleston D, Lippa C, Litvan I, Manning C, Marder K, Moussa C, Onyike C, Pagan F, Pantelyat A, Pelak V, Poston K, Quinn J, Richard I, Rosenthal LS, Sabbagh M, Scharre D, Sha S, Shill H, Torres-Yaghi Y, Christie T, Graham T, Richards I, Koehler M, Boeve B. Lewy Body Dementia Association's Research Centers of Excellence Program: Inaugural Meeting Proceedings. *Alzheimers Res Ther*. 2019 Mar 13;11(1):23. doi: 10.1186/s13195-019-0476-1. PMID: 30867052

Abstracts presented

Goldman JG, Merkitch D, Bernard B, Negrón A, Stebbins GT. Trajectories of cognitive and functional decline in Parkinson's disease. American Academy of Neurology, Philadelphia – May 2019

Cooper C, **Goldman JG**, Mata I, Zabetian C, Leverenz J. SNCA G51D Missense Mutation Causing Juvenile Onset Parkinson's Disease. American Academy of Neurology, Philadelphia – May 2019

Presentations

Invited speaker, "Lewy Body Dementias – Clinical trials and longitudinal antemortem characterization of LBD," Alzheimer's Disease and Related Dementias Summit, NIH – March 2019

Invited speaker, "Cognition and Parkinson's Disease," Mind, Mood, Motion Symposium, Parkinson's Foundation, Illinois – March 2019

Invited speaker, Allied Team Training for Parkinson's Disease Course, Parkinson's Foundation, Iowa City, Iowa – March 2019

Invited speaker, "Lewy Body Dementias (DLB and PDD): New Strategies for Diagnosis and Management," Lewy Body Dementias Course, American Academy of Neurology, Philadelphia – May 2019

Course director, Nonmotor Manifestations of Parkinson's Disease I and II, American Academy of Neurology, Philadelphia – May 2019

Invited speaker, "Cognitive impairment in Parkinson's Disease," Nonmotor Manifestations of Parkinson's Disease I and II, American Academy of Neurology, Philadelphia – May 2019

Invited speaker, "Cognitive impairment in Parkinson's Disease," Better Hearing and Speech course, Shirley Ryan AbilityLab – May 2019

Service Activities

Chair, Scientific Advisory Committee for the Lewy Body Dementia Association, 2019-

Daniel Goodman, MD

Mathews, A, Goodman, DA, Rydberg, L, “Outcomes of Acute Inpatient Rehabilitation of Patients with Left Ventricular Assist Devices and Subsequent Stroke”, *American Journal of Physical Medicine and Rehabilitation*, April 16, 2019, Publish ahead of print – Issue- p
Doi: 10:1097/PHM0000000000001200

Levi Hargrove, PhD

Papers Published

Tian L, Zimmerman B, Akhtar A, Jun Yu K, Moore M, Wu J, Larsen RJ, Lee JW, Li J, Liu Y, Metzger B, Qu S, Guo W, Mathewson KE, Fan JA, Cornman J, Fatina M, Xie Z, Ma Y, Zhang J, Zhang Y, Dolcos F, Fabiana M, Gratton G, Bretl T, **Hargrove LJ**, Braun PV, Huang Y, Rogers JA. “Large-area MRI-compatible epidermal electronic interfaces for prosthetic control and cognitive monitoring” *Nature Biomedical Engineering*; published online Feb. 19, 2019. DOI 10.1038/s41551-019-0347-x

Kopke JV, **Hargrove LJ**, Ellis MD. “Applying LDA-based pattern recognition to predict isometric shoulder and elbow torque generation in individuals with chronic stroke with moderate to severe motor impairment” *Journal of NeuroEngineering and Rehabilitation* 16:35, March 5, 2019. <https://doi.org/10.1186/s12984-019-0504-1>

Papers submitted

Earley EJ, **Hargrove LJ**. “Modeling Steady-State Error and Behavior for Motor Adaptation During Reaching” Submitted to EMBS, March 2019

Patents awarded:

Lenzi T, **Hargrove L**, Sensinger, J. Minimum jerk swing control for assistive device. US10US213324B2. Granted Feb. 26, 2019.

Conference Presentation

Hargrove LJ. “Intuitive Control of Powered Legs” Orthotic and Prosthetic Innovative Technologies Conference, May 16-17, 2019. University of Michigan.

Allen Heinemann, PhD

Peer-Reviewed Publications

Botticello, A. L., Tulskey, D., Heinemann, A., Charlifue, S., Kalpakjian, C., Slavin, M., Byrne, R., & Rohrbach, T. (2019). Contextualizing disability: a cross-sectional analysis of the association between the built environment and functioning among people living with spinal

cord injury in the United States. *Spinal Cord*, 57(2), 100-109. doi:10.1038/s41393-018-0186-8

Committee on Functional Assessment for Adults with Disabilities. (2019). *Functional Assessment for Adults with Disabilities* (P.A. Volberding, C.M. Spicer, & J.L. Flaubert Eds.). Washington, DC: National Academies Press.

Hall, O. T., McGrath, R. P., Peterson, M. D., Chadd, E. H., DeVivo, M. J., Heinemann, A. W., & Kalpakjian, C. Z. (2019). The Burden of Traumatic Spinal Cord Injury in the United States: Disability-Adjusted Life Years. *Arch Phys Med Rehabil*, 100(1), 95-100. doi:10.1016/j.apmr.2018.08.179

Heinemann, A.W. (in press). Orthotists' and Physical Therapists' Perspectives on Quality of Care Indicators for Persons with Custom Ankle-Foot Orthoses. *Assistive Technology*. doi:10.1080/10400435.2019.1610814

LaVela, S. L., Etingen, B., Miskevics, S., & Heinemann, A. W. (2019). What determines low satisfaction with life in individuals with spinal cord injury? *J Spinal Cord Med*, 42(2), 236-244. doi:10.1080/10790268.2018.1466480

Wong, A. W. K., Chen, C., Baum, M. C., Heaton, R. K., Goodman, B., & Heinemann, A. W. (2019). Cognitive, Emotional, and Physical Functioning as Predictors of Paid Employment in People With Stroke, Traumatic Brain Injury, and Spinal Cord Injury. *Am J Occup Ther*, 73(2), 7302205010p7302205011-7302205010p7302205015. doi:10.5014/ajot.2019.031203

Funded Proposals

NIDCD: Defining Trajectories of Linguistic, Cognitive-Communicative and Quality of Life Outcomes in Aphasia R01 DC017174-01A1 with Leora Cherney (co-PIs), April 10, 2019-April 9, 2024. Total award \$3,100,072.

AHRQ: Co-PI with Scott Dresden (Emergency Medicine), A Randomized Controlled Trial of Geriatric Emergency Department Innovations R01- HS026489. May 1, 2019-April 30, 2024. Total award \$1,973,250.

Proposal under Review

NIDILRR, DRRP on KT to Promote Patient-Centered Care Through Use of Standardized Assessments (co-PI with Linda Ehrlich-Jones)

Service Activities

Member, Advisory Panel, NIDILRR Project on Opioid Use Disorder among People with Disabilities, AIR, 2019-2022.

Member, Psychosocial Review Panel, Craig H. Neilsen Foundation, 2014 – present

Member, Consensus Committee on Functional Assessment for Adults with Disabilities, National Academies of Sciences, Engineering, and Medicine's, 2017 – 2019

Member, Standing Committee of Medical and Vocational Experts for the Social Security Administration's Disability Programs, 2016 - present

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

Advisory Board, Craig H. Neilsen Award, Larry Vogel, PI. Shriner's Hospital, Chicago, IL, 2018-2021

Member, NINDS Stroke v2.0 Outcomes and Endpoints Subgroup, 2018 – present

Presentations

Heinemann, AW, Fatone S., Soltys, N. Exploring Quality-of-Care Topics for Users of Custom Ankle-Foot Orthoses. Symposium presented at the 45th Academy Annual Meeting and Scientific Symposium of the American Academy of Orthotists Prosthetists, 7 March 2019, Orlando, FL.

Heinemann, AW, Jayaraman, A., Mummidisetty, C.K., Mann, K., Pinto, D., Charlifue, S., Tefertiller, C., Taylor, H.B., Chang, S.H., Stampas, A., Furbish, C.L., Field-Fote, E.C. Experience of Robotic Exoskeleton Use at Four Spinal Cord Injury Model Systems Centers. Poster/lecture presented at the 2019 Summit of the American Spinal Injury Association, April 4, 2019, Waikiki, Hawaii.

Arun Jayaraman, PhD

Keynote Speaker

Jayaraman A. "Wearable Sensors, Smart Phones, and Machine Learning: Impact on Clinical Care and Clinical Trials" IEEE EMBS International Conference on Biomedical Health Informatics (BHI- 19). May 21st, University of Illinois, Chicago, 2019.

Invited Talk

Jayaraman A. "Sensors to quantify prosthetic and orthotic technology development." 2019 Orthotic and Prosthetic Innovative Technology Conference (OPTech). University of Michigan, Ann Arbor, May 2019.

Papers Published

Shawen N, Knott J, Lee J, Simuni T, Daeschler D, **Jayaraman A.** "Automatic Scoring of Parkinson's Disease Motor Symptoms Using a Smartwatch. *Neurology* 92(15S): P2.8-001 April 9, 2019.

Jayaraman C, Mummidisetty CK, Loesch A, Kaur S, Hoppe-Ludwig S, Staat M, **Jayaraman A.** "Postural and metabolic benefits of using a forearm support walker in older adults with impairments." *Archives of Physical Medicine and Rehabilitation* 100(4):638-647

Radharishnan S, Kohler F, Gutenbrunner C, **Jayaraman A**, Pieber K, Li J, Schiappacasse C. "Mobility in persons with lower extremity amputations and influencing factors: Using the International Classification of Functioning, Disability and Health to quantify expert views" *Prosthetics and Orthotics International* 43(1):88-94

Conference presentation

Jayaraman A. "Wearable Technologies to Enhance O&P Outcome Measurement". Orthotic

and Prosthetic Innovative Technologies Conference, May 16-17, 2019. University of Michigan.

Grants Submitted

NIH-R01 (PI) *SIESTA (Sleep of Inpatients: Empower Staff to Act) for Acute Stroke Rehabilitation*. Submitted 3/29/2019.

NIDILRR Rehabilitation Engineering Research Center (RERC) (Co-PI) *Sensor Technologies Applied to Rehabilitation in Stroke (STARS)*. Submitted 3/18/19.

Conference Presentations

Hoppe-Ludwig S, Jayaraman C, McGuire M, Mummidisetty CK, Deems-Dluhy S, Lawson BE, Goldfarb M, Gordon KE, **Jayaraman A** "A Preliminary Case Series to Investigate the Use of Powered Knee-Ankle Prosthesis on Gait Performance and Potential to Minimize Low Back Pain in a Transfemoral Population." 45th AAOP Annual Meeting & Scientific Symposium, March 6-9 2019.

Shawen N Knott J, Lee J, Simuni T, Daeschler D, **Jayaraman A**. Automatic Scoring of Parkinson's Disease Motor Symptoms Using a Smartwatch. Poster presentation. American Academy of Neurology Annual Meeting, Philadelphia, 4-10 May, 2019.

Todd Kuiken, MD, PhD

Papers Published

Dumanian GA, Potter BK, Mioton LM, Ko, JH, Cheesborough JE, Souza JM, Ertl WJ, Tintle SM, Nanos GP, Vaerio IL, **Kuiken TA**, Apkarian AV, Porter K, Jordan SW. "Targeted muscle reinnervation treats neuroma and phantom pain in major limb amputees: a randomized clinical trial." *Annals of Surgery* epub ahead of print; doi: 10.1097/SLA.0000000000003088 4/4/19

Patents Awarded

Kuiken TA, Lipsey J, Lenzi T, Cempini M. "Powered and Passive Assistive Device and Related Methods" Application # 14/962,982 Filed 12/8/15, allowed 3/8/19.

Christina Marciniak, MD

Abstract

Kilvikian, E and **Marciniak, C**. Pseudo Rheumatoid Arthritis in Early Parkinson's Disease. AAP Annual Meeting in Puerto Rico, February 21, 2019. American Journal of Physical Medicine & Rehabilitation Volume 98(3) Supplement March 2019.

Publication

Pradines M, Ghedira M, Portero R, Masson I, **Marciniak C**, Hicklin D, Hutin E, Portero P, Gracies JM, Bayle N. Ultrasound Structural Changes in Triceps Surae After a 1-Year Daily Self-stretch Program: A Prospective Randomized Controlled Trial in Chronic Hemiparesis. *Neurorehabilitation and Neural Repair*. 2019 Mar 22:1545968319829455.

Laura Miller, CP, PhD

Grants Awarded:

DoD/CDMRP (PI) *The Functional Importance of Powered Wrist Flexion for Transradial Prosthesis Users*. 4/4/19

Orthotics and Prosthetics Education and Research Foundation (OPERF) 2019 Small Grant Award. (PI) *A Pilot Investigation to Determine whether Pathogens are Present on Gel Liners Worn by Amputees*. 4/4/19

Vivian Roy, MD

V. Roy, L. Lee, M. Uihlein, I. Roy & K. Lee (2019): Ultrasonographic Comparison of the Lateral Epicondyle in Wheelchair-user (and able-bodied) tennis players: A pilot study. *Journal of Spinal Cord Medicine*, DOI: 10.1080/10790268.2019.1603898

Diane Dudas Sheehan, ND, APRN, FNP-BC

Sheehan, D.D. & Chapman, K. (2019) Management of Skin & Wound Care in the Muscular Dystrophy Patient Population. *Today's Wound Clinic*, 13 (5) 10-15.

4/11/19 APP-PC WSS Book club: Co- Presented TIPS on Publishing CHILDREN'S Books –LC APPs/staff

Spring 2019 Small group Leader for Ethics in Action Class – M1 medical students, NU
3/12/19 “Neuromuscular Scoliosis Evaluation and Management” PM&R residents at SRAL
4/16/19 Comprehensive Evaluation and Practical Treatment of Children with Wounds” PM&R residents during Pediatric rotation at the SRAL

Gayle Spill, MD

Ethical Legal Topic: Futility in Rehabilitation

Gayle R. Spill, MD, Teresa Vente, DO, MPH, Joel Frader, MD, MA, Sean Smith, MD, Joseph Giacino, PhD, Ross Zafonte, DO, Brenda Coppard, PhD, OTR/L, FAOTAC, Gail Jensen, PhD, PT, FAPTA,

Feature Editor: Debjani Mukherjee, PhD, PM&R, April 2019

RESEARCH FACULTY

Anne Deutsch, PhD

Deutsch A Heinemann AW, Cook KF, Foster L, Miskovic A, Goldsmith A, Cella D. Inpatient Rehabilitation Quality of Care from the patient's Perspective: Impact of Data Collection Timing and patient Characteristics. Archives of Phys Medicine and Rehabilitation. In Press.

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.

Deutsch A. Functional Abilities and Goals. Presentation at the Centers for Medicare and Medicaid Services' Home Health Quality Reporting Program Training, Baltimore, MD; November 6, 2018.

Deutsch A. Healthcare Research. Presentation to high school students about careers in health care research. Course: Introduction to Health Occupations, Naperville Central High School, Naperville, IL; November 16, 2018.

Presentations: Conference

Deutsch A, Palmer L, Vaughan M, Marino M, McMullen T, Levitt A, Mandl S. Association of Functional Status and Discharge Destination for Patients Discharged from Inpatient Rehabilitation. Innovation in Aging. 2018 Nov 16;2(suppl_1):894-5

Li Q, Deutsch A, Seibert J, Barch D, Livingstone I, McMullen T, Mandl SR. National Data on The First Set of Assessment-Based Quality Measures Publicly Reported In SNF QRP. Innovation in Aging. 2018 Nov;2(Suppl 1):27.

Ptaszek A, Deutsch A, Li Q, Cool A, Smith L, McMullen T, Pratt M. Policy and Quality: The IMPACT Act of 2014 and Development Of The Skilled Nursing Facility Quality Reporting Program. Innovation in Aging. 2018 Nov;2(Suppl 1):26.

Barch D, Seibert J, Kandilov A, Bernacet A, Deutsch A, McMullen T, Mandl S, Smith L. Evaluation of Risk-Adjustment Models for a Pressure Ulcer Quality Measure. Innovation in Aging. 2018 Nov;2(Suppl 1):196.

Deutsch A. Academic Salon: CARE and the Policy of Integrated People-centered Health Services. Hefei University of Technology. Hefei, China. December 10, 2018.

Deutsch A. Post-Acute Care and Rehabilitation in the United States. Geriatric Care and Health Informatics Branch of the Chinese Aging Well Association. Beijing International Conference Center, Beijing, China. December 12, 2018.

Deutsch A. Development and Implementation of the CARE Function Data Elements in the United States. Geriatric Care and Health Informatics Branch of the Chinese Aging Well Association. Beijing International Conference Center, Beijing, China. December 13, 2018.

Service Activities

Chair, Research Committee, Association of Rehabilitation Nurses

Chair, Research Committee, Association of Rehabilitation Nurses (continuing as Chair for CY 2019)

NU Teaching

Deutsch A. Ethical Issues with Large Database Research. Lecture for Ethical Issues in Health Services Research (HSR 460) course, Northwestern University Feinberg School of Medicine. Chicago, IL, February 6, 2019. Graduate course.

Linda Ehrlich-Jones, PhD

Publication:

Kulhawy-Wibe, S., Zell, J., Michaud, K., Yazdany, J., Davis, A., Ehrlich-Jones, L., Thorne, C., Everix, D., Cappelli, L., Suter, L., Limanni, A., & Barber, C. (accepted for publication). A systematic review and appraisal of the cross-cultural validity of functional status assessments measures in rheumatoid arthritis. *Arthritis Care & Research*.

Presentations:

Ehrlich-Jones L, Pedersen J., Crown D, Kallish N, Wafford QE, & Heinemann A. Roles of peer mentors in assisting employment for persons with physical disabilities: A scoping review, presented at National Association of Rehabilitation Research and Training Centers Annual Conference, 4/23/19, Arlington, VA.

Tann B, Deike D, Stang K, Ehrlich-Jones L, & Gaebler-Spira D. Understanding children with cerebral palsy and bullying: A mixed methods approach, poster presentation at American College of Physicians, 3/29/19, New Orleans, LA.

Proposal Under Review

NIDILRR, DRRP on KT to Promote Patient-Centered Care Through Use of Standardized Assessments (co-PI with Allen Heinemann)

2. 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

Work with MD/MPH student from University of Vermont, Allison Greene

Jessica Pedersen, PhD

Peer-Reviewed Publications

Smith, C., Presperin Pedersen, J., Henry, M., McKenzie, K., Yingling, L., Roussel, H., Dahlin, M., Jones, J. (2019). Proving what we know: Clinical evidence of spinal curve support. In *Proceeding of the 35th International Seating Symposium: Bridging the Gap from Data to Value*, March 20-22 Pittsburgh, PA University of Pittsburgh

Presentations Educational Sessions

Smith, C., Presperin Pedersen, J., Henry, M., McKenzie, K., Yingling, L., Roussel, H., Dahlin, M., Jones, J. (2019). Proving what we know: Clinical evidence of spinal curve support. In *Proceeding of the 35th International Seating Symposium: Bridging the Gap from Data to Value*, March 20-22 Pittsburgh, PA University of Pittsburgh

Presperin Pedersen, J., Smith, C. (2019). The Efficacy of Using Back Supports that Support the Spinal Curves. *Canadian Mobility and Seating Conference*, April 30, 2019, Toronto, Ontario

Presperin Pedersen, J (2019) Leaving on a Jet Plane: What Professionals in the Wheelchair Industry Need to Know. *Canadian Mobility and Seating Conference*, May 1, 2019 Invited Plenary Speaker

Service Activities

Member, Board of Directors, Devices for the Disabled

Member, Advisory Board, Governors State University OT Program

Member, RESNA Assistive Technology for Air Travel Standards

Committee Member, Designs for America Advisory Committee

Member, Access Living DME Committee

NORTHWESTERN UNIVERSITY PROSTHETICS & ORTHOTICS CENTER

Publications:

Dillon M, **Fatone S**, Hafner BJ, Ramstrand N (2019) Keeping Pace with the Ever-Growing Orthotic and Prosthetic Profession: New Faces and Changes at Prosthetics and Orthotics International. *Prosthetics and Orthotics International*, 43(2): i-iii.

Heinemann A, **Fatone S**, LaVella S, Slater B, Deutsch A, Peterson M, Soltys N, McPherson V (in press) Orthotists' and Physical Therapists' Perspectives on Quality of Care Indicators for Persons with Custom Ankle-Foot Orthosis Orthoses. *Disability and Rehabilitation Assistive Technology*.

Major MJ, Zavaleta JL, and **Gard SA** (2019). Does Decreasing Below-Knee Prosthesis Pylon Longitudinal Stiffness Increase Prosthetic Limb Collision And Push-Off Work During Gait? *Journal of Applied Biomechanics*.

Presentations:

Matthew Major, PhD, was interviewed by Professor Alan Jette for the Physical Therapy Journal's Podcast to discuss Dr. Major's recent publication titled "Fall prevalence and contributors to the likelihood of falling in persons with upper limb loss."

Kaluf B, **Major M**, **Fatone S** (2019) Using the Amputee Mobility Predictor to Predict K-Level. American Academy of Orthotists and Prosthetists Webinar Series, February 6.

Duncan, J.C. (2019). Perspectives on effective communication: Behavioral Science Certificate Track. 45th Academy Annual Meeting & Scientific Symposium, American Academy of Orthotists and Prosthetists. Orlando, FL March 6-9.

Duncan, J.C. (2019). Methods for assessing quality of life: Behavioral Science Certificate Track. 45th Academy Annual Meeting & Scientific Symposium, American Academy of Orthotists and Prosthetists. Orlando, FL March 6-9.

Rosenblatt N, **Major MJ**. (2019). Balance confidence in adults who use a prosthesis: integration of virtual reality gaming into physical therapy and initial evidence. Annual Meeting & Scientific Sessions of the Society of Behavioral Medicine, Washington, DC, March 6-9.

Heinemann A, **Fatone S**, Soltys N (2019) Exploring Quality-of-Care Topics for Users of Custom Ankle-Foot Orthoses. Symposium, 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.

- Dillon M, Quigley M, **Fatone S** (2019) Informing decisions about dysvascular partial foot amputation using a shared decision-making approach. Invited Presentation, 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.
- Quinlan J, Baer G, Subramanian V, Yohay J, Poziembo B, Richardson R, **Fatone S.** (2019) Tensile and Coefficient of Friction Testing of Textured Prosthetic Socket Specimens Provide Insights on Strength and Friction. American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, March 6-9, 2019, Orlando, Florida. *Journal of Prosthetics and Orthotics*, 31(S2):32.
- Major MJ.** (2019). How a priori Knowledge of a Perturbation Impacts Proactive and Reactive Locomotor Strategies of Below-Knee Prosthesis Users. 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.
- Major MJ, Shirvaikar T, Stine R, Gard SA.** (2019). Effects of upper limb loss and prosthesis use on standing balance. 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.
- Gard SA, Chang SR, Major MJ, Cavanaugh ML.** (2019). Characterization of prosthetic feet to estimate roll-over shape radii for clinical prescription. 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.
- Gard SA,** Geil M (2019) The 3 R's of JPO: Reading, Writing and Reviewing. 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.
- Kaluf B, **Major MJ** (2019). Amputee mobility predictor scores for persons with recent lower limb amputation. 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.
- Hodgson MH, Major MJ (2019).** The effects of training on the functional performance of upper limb prosthesis users: a review. 45th American Academy of Orthotists & Prosthetists Annual Meeting & Scientific Symposium, Orlando, Florida, March 6-9.
- Cavanaugh, M., Duncan, J.C., Carnahan, K., Brinkmann, J., & Robinson, C.** (2019). PA Students with Prosthetics and Orthotics (P&O) Faculty, Students and Model Demonstrators, Feinberg School of Medicine Northwestern University
March 19.
- Turner K, Moore E, Spells A, **Major, MJ** (2019). Relationships between upper limb prosthesis use, embodiment, and balance confidence. ISPO Trent International Prosthetics Symposium (TIPS) 2019, Salford, United Kingdom, March 20-23.

Major MJ, Stine RL, Gard SA (2019). Falls and balance control of persons with upper limb loss. ISPO Trent International Prosthetics Symposium (TIPS) 2019, Salford, United Kingdom, March 20-23.

Major MJ, Stine RL, Gard SA. (2019). Falls and balance control of persons with upper limb loss. Presented at the 2019 Gait and Clinical Movement Analysis Society Annual Conference, Frisco, TX, March 26-29.

Gard, SA (2019). Do Persons with Transtibial Amputations Require Prosthetic Shock Absorbing Components During Gait. Ohio AAOP Chapter Meeting in Columbus, OH, March 30.

Quinlan, J. and **Fatone, S.** (2019) Tensile and Coefficient of Friction Testing of Textured Socket Specimens. 15th Annual Lewis Landsberg Research Day, Northwestern University, April 4, Chicago, IL.

Casanova, O. and **Major M.** (2019) EMG Signal Processing of Muscle Activations during Transtibial Prosthetic Gait. 15th Annual Lewis Landsberg Research Day, Northwestern University, April 4, Chicago, IL.

Rosenblatt N, **Major MJ, Duncan JC,** Schneider K, Calamari J, Henderson R, Reddin C, Stachowiak A. Integrated PT & CBT To Enhance Prosthesis Users' Balance Confidence. 15th Annual Lewis Landsberg Research Day, Northwestern University, April 4, Chicago, IL.

Kent JA, Arelekatti VNM, Petelina NT, Johnson WB, Winter AG, **Major MJ.** (2019) The effect of prosthetic knee resistance on gait dynamics. 15th Annual Lewis Landsberg Research Day, Northwestern University, April 4, Chicago, IL.

Amkie Dichi E, Major, MJ. (2019). 2D motion analysis for bench testing measuring prosthetic hand motion. 15th Annual Lewis Landsberg Research Day, Northwestern University, April 4, Chicago, IL.

Wang, L. and **Major M.** (2019) Agent Orange Effects on Sensorimotor Function of Transtibial Prosthesis Users. 15th Annual Lewis Landsberg Research Day, Northwestern University, April 4, Chicago, IL.

Maun A, **Gard SA, Major MJ,** Takahashi KZ (2019). The effect of shock-absorbing pylon stiffness on prosthetic mechanical work during walking. 9th Annual Meeting of the Rocky Mountain American Society of Biomechanics, Estes Park, CO, April 5-6.

Fatone S (2019) The Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket: Development, Research and Dissemination. Invited presentation, Iowa Prosthetic, Orthotic and Pedorthic Association, Des Moines, IA, April 6.

Perry, D., Schiro-Geist, C., **Duncan, J.C.**, Jenkins, B., Robertson, R., Siu, F. & Wilmering, P. (2019). Site Visit and Undergraduate Coordinator Training. Committee on Rehabilitation Accreditation (CoRA), Commission on Accreditation of Allied Health Education Programs (CAAHEP). San Diego, CA April 7.

Lipschutz, R., Siegel, R., and Dvis, L. (2019). Fitting of a Child with Bilateral Knee Disarticulation Amputations Secondary to Burns. Association of Children's Prosthetic-Orthotic Clinic Annual Meeting, May 2nd.

Lipschutz, R., Svetosalv, T, and Zisk, J. (2019). Silicone Design of an Ankle Disarticulation Prosthesis on a Child with Gigantism Case Study. Association of Children's Prosthetic-Orthotic Clinic Annual Meeting, May 2nd.

Maun A, **Gard SA, Major MJ**, Takahashi KZ. (2019). The effects of shock-absorbing pylon on mechanical work. 4th Annual Human Movement Variability Conference, Omaha, Nebraska, May 16, 2019.

Fatone S (2019) The Northwestern University Flexible Sub-Ischial Socket Technique: Development, Research, and Dissemination. Invited presentation in the session "Innovations in Socket Design and Manufacturing," Orthotic and Prosthetic Innovative Technologies Conference (OPTech), Ann Arbor, MI, May 16-18.

Awards:

Matthew Major, PhD, was awarded a Specialized Certificate in Biostatistics from the University of California, San Diego.

Meetings:

Matthew Major, PhD attended the 45th Academy Annual Meeting and Scientific Symposium held in Orlando, FL, March 6-9, 2019. Dr. Major served as the symposium chair, organizer, and coordinator for an organized session "Gaining a Foothold on our Understanding of Falls and Locomotor Stability in Lower Limb Prosthesis Users".

Matthew Major, PhD, attended the ISPO Trent International Prosthetics Symposium (TIPS) 2019 held in Manchester, UK, on March 20-22, 2019. Dr. Major served on the Technical Program Committee and contributed to the organization and content for this conference. Dr. Major presented his research, co-authored with Stine and Gard "Falls and Balance Control of Persons with Upper Limb Loss."

Stefania Fatone, PhD, BPO(Hons) and **Jessica Yohay** attended the Iowa Prosthetics, Orthotics and Pedorthics Association (IPOPA) Meeting held in Des Moines, Iowa on Saturday April 6, 2019. Dr. Fatone opened the all day program with her invited presentation, "The

Northwestern University Flexible Sub-Ischial Vacuum (NU-FlexSIV) Socket: Development, Research and Dissemination."

Stefania Fatone, PhD, BPO (Hons), a member of the ISPO World Congress Scientific Committee, met with committee members in London, UK, on April 12-13, 2019 to compile the scientific program for the 17th ISPO World Congress to be held in Kobe Japan on October 5-8, 2019. The committee selected from among 700 abstract submissions for symposia, instructional courses and free papers.

Laboratory Visits/Events:

Christopher Robinson, MS, MBA, CPO, and NUPOC contributed to the interdisciplinary learning day sponsored by the Physical Therapy and Human Movement Sciences for second-year Doctor of Physical Therapy students on April 11, 2019. Direct interaction with community volunteers who live with neuromuscular conditions helped familiarize students with the clinical skills required to work as part of an interdisciplinary healthcare team.

Stefania Fatone's recently funded study was highlighted in the April issue of the O&P Almanac, "Principal Investigator: Improving Post stroke Mobility"
<https://www.aopanet.org/publications/op-almanac-magazine/>

Stefania Fatone, PhD, BPO(Hons), and **Ryan Caldwell, CP**, taught the 2 day hands-on NU-FlexSIV Socket Course to 20 prosthetists at Kobe College of Medical Welfare in Sanda, Japan on May 23-26, 2019.

Recent Appointments:

Matthew Major, PhD, was Associate Editor for the 2019 IEEE Conference on Rehabilitation Robotics (ICORR), Toronto, Canada, June 24-28, 2019.

J. Chad Duncan, PhD, CRC, CPO is an Abstract Reviewer for the 17th World Congress of the International Society for Prosthetics and Orthotics (ISPO) October 5-8, 2019 at the Kobe Convention Center in Kobe, Hyogo, Japan.

Grant Awards:

Stefania Fatone, PhD, BPO (Hons) was recommended for funding by the DOD Orthotics and Prosthetics Outcomes Research Program for the projects "Comparative Effectiveness of Socket Casting Methods: Improving Form and Fit" on which she is PI and for the project "Consequences of socket design for hip muscle function among unilateral transfemoral amputees" on which she is a co-investigator (PI: Andrew Sawers, PhD, University of Illinois at Chicago).

Steven Gard, PhD is PI on a project that was recommended for funding by the DOD Orthotics and Prosthetics Outcomes Research Program entitled, “Optimal Selection of Prosthetic Knee and Foot Combination for Improving Walking and Standing Performance in Transfemoral Prosthesis Users.”

Matthew Major, PhD, is PI on a Northwestern University Women’s Health Research Institute Shaw Family Pioneer Award to fund a proposal titled “Characterizing the gait biomechanics of women with leg amputation for improving evidence-based rehabilitation practice”.

Matthew Major, PhD, is a Co-Investigator on a DoD DHA SBIR proposal recommended for funding in response to the RFA for an “Automated framework for the design of Passive prosthetic and Orthotic Interfaces.”

Grant Submissions:

Steven Gard, PhD, was PI on an application entitled, “Kids Exceed” that was submitted to the Disability and Rehabilitation Research Projects (DRRP) Program: Community Living and Participation (Development) of the National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR).

Matthew Major, PhD, is PI on a collaborative proposal submitted with MIT to the NIH (R21 Exploratory Research Grants) titled “Personalized Prosthesis Stiffness to maximize comfort and mobility using human-in-the-loop optimization.”

Matthew Major, PhD is PI and **Steven Gard, PhD**, is a Co-I on a proposal submitted to the VA RR&D (SPiRE) titled “Locomotor Response of Persons with Upper Limb Loss to Treadmill Perturbations.”

Grant LOI Submissions:

Steven Gard, PhD, submitted a letter of intent for a Research Career Scientist Award to the Department of Veterans Affairs, Rehabilitation Research & Development Service, on May 1, 2019.

Steven Gard, PhD, and **Matty Major, PhD**, submitted a letter of intent for a Merit Review proposal entitled, “Effect of Shoes on Prosthetic Foot Function During Standing and Walking” to the Department of Veterans Affairs, Rehabilitation Research & Development Service, on May 1, 2019.

Matthew Major, PhD, is PI and **Stefania Fatone, PhD**, is Co-I on an LOI submitted to the VA RR&D (Merit) titled “Hybrid Electrical-Mechanical pump for Vacuum Suspension of Prosthetic Sockets.”

