NUPOC Hosts
Graduation for MPO'22

On Friday, March 25th, NUPOC hosted its first ever Master's graduation ceremony for the 2022 cohort of MPO students. The in-person ceremony included guest speakers Elliot J Roth, MD, Chairman, Department of Physical Medicine and Rehabilitation, as well as Marianne Greene, MD, Vice Dean for Education, Chair, Department of Medical Education. The ceremony was completed with a reception in the beautiful atrium of the Robert H. Lurie Medical Research Center where graduates and guests continued to celebrate their commencement. Congratulations to the class of 2022!
Since the last issue of our newsletter, NUPOC has bid a fond farewell to two of our former employees. Dr. Chad Duncan, former Director of the NUPOC Education Program, departed NUPOC in October, 2021. Chad has accepted a new position as the Chair/Program Director of Orthotics & Prosthetics at Salus University in Newtown, Pennsylvania. There he will develop a new O&P school and continue to educate the next generation of orthotists and prosthetists.

After 21 years at Northwestern University, Dr. Stefania Fatone bids NUPOC farewell. Stefania has decided to pursue a new role as Director of the Prosthetics and Orthotics program at the University of Washington in Seattle. There she will continue to collaborate with her Chicago colleagues while expanding her network and continuing to impact the prosthetics and orthotics industry.

We are delighted to welcome Ms. Sophia Schmidt as our new Communications Coordinator. Ms. Schmidt, a Northwestern alumna, was welcomed by the department last December. Sophia graduated from a Master’s program at Northwestern University that focused on Health Communication. She is eager to utilize the skillset that she developed during her time as a Wildcat. NUPOC staff and faculty have enjoyed meeting and getting to know Sophia, and we look forward to working with her on NUPOC News, Website updates and announcements, social media activities, and other communication initiatives involving our Education and Research Programs.
Another new member we are excited to introduce is Ms. Allison McGinnis. Allie earned her bachelor's degree in Biological Engineering from University of Missouri (Mizzou) in 2013. She then earned her Master's degree in Prosthetics & Orthotics from NUPOC in 2015, as a member of the inaugural class for the Master's program. Allie is an ABC-certified Prosthetist-Orthotist (CPO) and has worked in a variety of clinics in St. Louis MO, Columbus GA, and Savannah GA. After almost 4 years in clinical practice, she transitioned to a unique role as a Clinical Outcomes Analyst for a company that provides integrated prosthetic clinic implementation and management services to vascular surgery centers. This year, Allie is very excited to join the faculty at NUPOC, where she will support the online and onsite curriculum in various capacities.

Among other new members at NUPOC is Renato-Tadeo Delos Reyes MS, MPO, CPO. Renato joined our team this past fall as an instructor for our MPO program. Prior to joining NUPOC, Renato worked on film sets, in videography and photography and helped to run an online citizen journalism platform. He became interested in the field of O&P after a friend started volunteering at a clinic in Grand Rapids, MI. They recommended the field to Renato because they knew he was looking to change career paths. He then started shadowing at a clinic, and the rest is history! Renato was once one of our MPO students. He graduated in our second-ever MPO cohort. We are thrilled to welcome him back to Northwestern.
We are also thrilled to introduce Seth Donahue as our new Postdoctoral Scholar! Seth officially joined the team in April after recently graduating from the University of Oregon in Eugene from the Department of Human Physiology. He specialized in biomechanics, specifically wearable sensors and machine learning applications for running performance. Seth’s interests include applications of clinical measures outside of the clinic/laboratory and utilizing data-driven models for the prediction of human locomotion.

**Student Achievements**

NUPOC is proud to share some of the many achievements and awards our students have earned this past year. We take pride in our renowned educational program, and are consistently amazed by the determination, curiosity, kindness, and skill demonstrated by our MPO students.

Earlier this year, Emily Mueller (pictured) presented her poster at the 2022 Academy Annual Meeting & Scientific Symposium, and was entered into the American Board for Certification in Orthotics, Prosthetics and Pedorthics (ABC) Student Poster Prize contest. ABC partnered with the Orthotic and Prosthetic Education and Research Foundation (OPERF) to administer the contest. The OPERF Research Committee reviewed the submissions of all contestants and has awarded prizes for first, second, and third place; $1,000, $850, and $650, respectively. We are proud to announce that Emily has been awarded first place!
Alliah Turner was announced as the first ever Ken Harris Diversity, Equity, and Inclusion Scholarship recipient. This scholarship was established to honor the 30+ year career, service, and dedication of Ken Harris, and to provide support for students from marginalized backgrounds who are committed to advancing diversity, equity and inclusion. The anonymous donor hopes the scholarship will be added to by others who seek to honor Ken Harris and provide support for students from marginalized backgrounds. We thank Alliah for her commitment to diversity, equity and inclusion within the Northwestern University Feinberg School of Medicine.

Several others of our students were recognized during the graduation ceremony for awards they earned throughout the academic year. Abby Stepnitz, Cerik Carter, and Emily Weidensee received the 2022 Tamarack awards, which was established at NUPOC in 2014 by the generosity of J. Martin Carlson, CPO, FAAOP, owner and chief engineer of Tamarack Habilitation Technologies (Blaine, MN). The Tamarack Award is given to students who demonstrate excellence in orthotics and who consistently prove their dedication to the field.
Additionally, we would like to congratulate Bradley Moore for successfully defending his thesis project. The thesis project itself was an investigation into the effects of upper limb constraint and arm dominance on mechanisms of perturbation recovery. Within this study, Moore wanted to evaluate motor compensations for stability regulation in conditions of restricted arm swing, which was accomplished by binding the non-dominant arm of able-bodied individuals during treadmill-delivered trip perturbation walking trials. Perturbations were delivered to both the dominant and non-dominant sides of the body to identify differences in gait stability.

Results from this study provided insights on the roles of the upper limbs in maintaining locomotor stability and detailed movement patterns contributing to effective balance recoveries. Cases of experimentally restricted arm swing parallel conditions of upper limb loss, neurological deficit (i.e., Parkinson’s disease, cerebral palsy, spinal cord injury, and stroke), and unilateral load carriage (i.e., walking with a handbag, walking and texting, walking with a cup of coffee, etc.) and therefore these findings may hold particular clinical relevance in the design of gait safety interventions and the potential adaptation of current rehabilitation protocols for clinical gait populations.

With the successful thesis defense and completion of his study, Moore is now set to move to Houston, TX, at the end of the month where he will begin working as a Biomechanics Analyst for the Houston Astros LLC. Within this role he will be analyzing player performance and player health while working to optimize the on-field success of the team.

Moore was mentored on his Master's thesis research project by Dr. Matty Major.
Ongoing Research Projects at NUPOC

Dr. Steven Gard and Miguel Vaca Moran are currently collaborating on their study called “Optimal Selection of Prosthetic Knee and Foot Combination for Improving Walking and Standing Performance in Transfemoral Prosthesis Users.” Dr. Gard is the Principal Investigator on a grant from the Department of Defense (DoD) to investigate how different combinations of prosthetic knees and feet affect mobility in persons with transfemoral amputations. Numerous studies involving human subjects testing, mechanical characterizations and computer simulations have been conducted by NUPOC and other research laboratories to separately evaluate and compare different types of prosthetic foot/ankle mechanisms and knee joints to better understand their impact on prosthesis users’ activities of daily living. However, to date there have been no investigations to determine how to best combine a prosthetic knee and foot for improving walking and standing performance in transfemoral prosthesis users. The purpose of this study is to systematically compare different combinations of mechanical prosthetic knee joint and foot-ankle components to determine how walking and standing performance are affected in transfemoral prosthesis users. This study will be conducted through a combination of human subjects testing and computer simulation. Mr. Miguel Vaca Moran, MS, a PhD student in the Department of Biomedical Engineering, is working on this project to fulfill research requirements for his dissertation.

One of our researchers, Ms. Rebecca Stine, is currently working on her VA Rehabilitation Research and Development SPiRE grant entitled: “Are Women at Increased Risk of Developing Secondary Physical Conditions Associated with Lower-Limb Amputation and Long-Term Prosthesis Use?” Ms. Stine’s research work is aimed at understanding the relative risk of transfemoral prosthesis users for developing secondary physical conditions on the basis of gender. She is currently conducting a preliminary investigation to determine if female transfemoral prosthesis users are at increased risk of developing secondary musculoskeletal conditions compared to their male counterparts.
Long-term transfemoral prosthesis users are at an increased risk of developing secondary musculoskeletal conditions compared to the general able-bodied population. These secondary physical conditions of significant concern include low back pain, osteopenia and osteoporosis, and osteoarthritis of the hip and knee. The etiology for the development of these conditions is not entirely known or understood, but in persons with unilateral amputations they are believed to relate to the asymmetries and gait deviations that are typically demonstrated and required to walk with a prosthesis. Significant resources have been devoted to the immediate rehabilitation needs of persons undergoing lower-limb amputation, but there needs to be greater consideration for the early identification and modification of potential risk factors responsible for long-term development of secondary health conditions.

DEI Initiatives

Earlier this year, NUPOC established it’s very first Diversity, Equity, and Inclusion (DEI) Council. The DEI council met this past February for their first event facilitated by Dr. Lopez-Rosado and Leslie Martinez. The event served as an opportunity for NUPOC personnel and Physical Medicine & Rehabilitation Residents to learn more about navigating conversations with Spanish-speaking patients within the Orthotics and Prosthetics field.

Participants were given a variety of educational resources such as Spanish translations of O&P vocabulary, case studies, as well as access to a Spanish Medical Terminology course provided by Dr. Lopez-Rosado. The purpose of this event was to encourage further dialogue between patients and practitioners of differing cultural backgrounds while decreasing language barriers and increasing health care access.

Their second event, lead by Abbigail Stepnitz and members of the Ohio State University faculty, focused on effective communication strategies for interacting with individuals with hearing impairments. This included discussion topics such as ways to be more easily understood and/or heard, and the interprofessional approach to patient care. Additionally, the presenters elaborated on why the use of hearing protection is important when operating noisy machinery in the O&P profession such as cast saws. The aim of this event was to provide valuable tools for promoting communication and inclusivity with patients and colleagues as well as demonstrate the value of interprofessional discourse.
Donor support is essential to our continued success. Your gift can help support emerging researchers, P&O clinicians, and programs that will improve the lives of people who live with amputation or other physical impairments.

Contribute **online**. Or contact FSM Development (T: 312-503-2706)

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NUPOC
680 N Lake Shore Drive, Suite 1100
Chicago, IL 60611
T: 312-503-5700
F: 312-503-5760
www.nupoc.northwestern.edu/