It is an exciting time in Department of Physical Therapy, Movement and Rehabilitation Sciences at Northeastern University at the start of the Academic Year. Two new faculty, Dr. Jessica Maxwell and Dr. Pamela Donlan, have joined the department. Dr. Maura Iversen and Dr. Gene Tunik have extended their service to the University in serving as Associate Deans for the College. Collectively, we have 30 full time faculty, and numerous part time faculty providing expertise across our department. Our faculty continue to make substantial contributions to the local, regional and global community through research, education and service. The department continues translational research in the fields of physical therapy, movement and rehabilitation science. Featured in this issue are Doctors Corkery and Folmar highlighting the collaboration of academic, scientific, and clinical faculty within our department, with the goal of ongoing contributions to the body of science that informs physical therapist practice.

We encourage Alumni and students to share their career stories with us, so that we can share throughout our Northeastern PTMRS social network. Continue to follow us on Facebook and Twitter. We look forward to seeing many of you at our Alumni Reception at APTA Combined Sections Meeting in New Orleans in February. Continue to check back on our website for ongoing details.

On a personal note, as I begin this year as the Interim Department Chair, it is a privilege to teach and learn alongside esteemed faculty and outstanding students at the University where I began. As an alumna and educator, there is no better place to be than Northeastern University.

Sincerely,
Dr. Kristin Curry Greenwood PT, DPT, EdD, MS, GCS

Department of Physical Therapy, Movement and Rehabilitation Sciences

- PT Program Accredited since 1930
- Only U.S. Physical Therapy Program with Co-op Education
- International Academic Experiences
- High-Fidelity Simulation and Inter-Professional Experiences

Programs:

- DPT--Freshman Assurance
- DPT--Post-Baccalaureate
- tDPT--Transitional Doctorate in Physical Therapy
- MS Occupational Ergonomics & Health
- Graduate Certificate Occupational Ergonomics & Health
- CAS Orthopedic Physical Therapy
- Graduate Certificate in Disability Studies
- Sports Physical Therapy Clinical Residency

Research Centers & Labs:

- Neuromotor Systems Lab
- Lab for Locomotion Research
- The ReGameVR Lab
- Movement Neuroscience Lab
- Neurophysiology Lab
- Rehabilitation and Epidemiology Trainee Program
- Occupational Biomechanics and Ergonomics Lab
- Teaching and Learning Innovation Center
- Cadaver Lab
- Neuroscience Wet Lab

Save the Date @ CSM!
Northeastern University Networking Happy Hour
Date: February 23, 2018
Time: 6:00–8:00 PM
Location: TBD
NEW TRANSITIONS

Dr. Maura Iversen was appointed as Bouvé College Associate Dean of Clinical Education, Rehabilitation Sciences and New Initiatives. In this role, Dr. Iversen will be working on initiatives that expand Bouvé's footprint both domestically and globally. This will include negotiating more global opportunities for our students, unifying some clinical education procedures and opportunities, and expanding utilization of the Arnold S. Goldstein Simulation Suite, especially in an interprofessional manner.

Dr. Gene Tunik was appointed as Bouvé College Associate Dean of Research. In this role, Dr. Tunik will be working to improve Bouvé's research infrastructure. This will involve addressing faculty research needs, developing new PhD programs, facilitating procurement and development of improved research instrumentation and computing resources for Bouvé researchers and other related functions.

Dr. Kristin Curry Greenwood is the Interim Chair and DPT program director for the Department of Physical Therapy, Movement and Rehabilitation Sciences. Dr. Curry Greenwood's teaching and scholarship expertise is in advancing entry-level acute care physical therapy and simulation. In addition to her three Physical Therapy degrees she has a Doctorate of Education with a concentration in Curriculum, Teaching, Leadership and Learning, all from Northeastern University.

WELCOME NEW FACULTY

Pamela Donlan, PT, DPT, EdD, CLT-LANA

Dr. Pamela Donlan received a B.S. in Physical Therapy from New York University, a DPT from Widener University, and an Ed.D from Northeastern University. She has practiced in diverse healthcare settings with special clinical interests in the areas of neurologic and geriatric physical therapy and lymphedema management. Dr. Donlan is a certified lymphedema therapist by the Lymphology Association of North America. She began teaching as an adjunct faculty member in our department in 2008. Dr. Donlan’s academic interests include investigating best practices in PT education, and exploring the psychosocial aspects of long-term disease and disability on patients and caregivers.

Jessica Maxwell, PT, DPT, PhD, OCS

Dr. Jessica Maxwell received a Master’s degree in Physical Therapy from Boston University, shortly after completed a full-time residency/fellowship at the Institute of Orthopedic Manual Therapy. She earned her Doctorate of Physical Therapy degree from the Massachusetts General Hospital Institute of Health Professions, and a PhD in Epidemiology from Boston University’s School of Public Health. She is an APTA board certified orthopedic clinical specialist and has spent the majority of her clinical time in outpatient orthopedics. Her scholarly work focuses on functional and participation-level outcomes of knee osteoarthritis and knee replacement.
Over this past summer, one of our alumni fulfilled his lifelong dream of joining the Army and serving his country. Dr. Ramon (Ricky) Tapia, a member of the Class of 2013, was sworn in to the Army last month. Ricky’s family has a strong history of military service, including his brother who served in the United States Marine Corps. Ricky was sworn in by his godfather, Colonel Frank Polis (Retired), who served over 22 years in a combination of services, including the Marine Corps, Army and Air National Guard.

During the summer of 2016, Ricky visited his recruiter, Sergeant First Class Carlos Riojas, who guided him through the process. This rigorous screening process culminated with him being sworn in and Ricky is currently awaiting orders to leave for training. The expectation is that he will leave later this year. After his Army and officer training, Ricky will be commissioned as a Captain. At that time, Ricky will receive orders for his first duty station so he can begin to work with patients that will benefit from his care.

Ricky has spent the past four years working in outpatient orthopedic environments in Virginia and Rhode Island. He is currently working at the Brigham & Women’s Hospital outpatient center in Foxboro, MA, where his practice focuses on the orthopedic and sports medicine populations. Ricky became a board certified Orthopedic Clinical Specialist through the American Board of Physical Therapy Specialties last year. This comprehensive exam is given once a year and by attaining this specialty, Ricky earned a certification that approximately only 6% of all physical therapists attain in the United States. In addition to his orthopedics specialty, Ricky is has received Emergency Medical Responder training and certification through the American Red Cross and has a certification in dry needling. He is also an active member of our professional organization, the American Physical Therapy Association. Ricky is no stranger to volunteering and serving others, as he has served as a medical volunteer at the Boston Marathon since 2012 and at the Marine Corps Marathon in 2015.

Our program is proud to have alumni who have served across all branches of the military. We are very proud of Ricky for joining them and all who choose to serve their country in uniform. We know he will be successful as part of the Army Healthcare Team!
HAVE YOU EVER NEEDED A PHYSICAL THERAPIST?

Perhaps you sprained your ankle or have had some knee pain. Or are you training for a big race and focused on injury prevention? There are many reasons that someone might require the services of a PT. PTs help athletes with injury prevention, treatment and rehabilitation. There are a variety of manual techniques, exercise protocols, soft tissue instruments, taping techniques, and other interventions that PTs utilize to help a patient achieve their goals. How do we know what tools and techniques are most effective? In the evolving world of evidence-based medicine, it is important that clinical interventions are based on sound scientific evidence.

The Department of Physical Therapy, Movement, and Rehabilitation Sciences (PTMRS) is composed of academic, scientific, and clinical faculty whose goals are not only to teach the future therapists of our profession, but to contribute to the body of science that informs physical therapy practice. In particular, our clinical faculty bring a unique perspective to research laboratories. They have the ability to help develop pertinent research questions, conduct research in conjunction with other research faculty, and then implement these findings in the clinic. This provides a very useful bridge between the clinic and lab.

Dr. Eric Folmar and Dr. Marie Corkery are two faculty who are making efforts to bridge this gap. Working with Dr. Sheng-Che (Steve) Yen, Director of the Laboratory for Locomotion Research, Drs. Folmar and Corkery are conducting research on tools that PT’s use in the clinic on a daily basis. Dr. Yen’s research knowledge and his Gait Laboratory provide a collaborative environment to conduct clinically based research. The lab has a 7-camera motion analysis system (Qualisys, Sweden) which allows measurement of joint angles during walking, running and jumping, allowing researchers to focus on very specific outcome measures. Dr. Folmar’s research has focused around the use of a variety of taping techniques and their impact on force, pressure and kinematics of the hip, knee, and ankle. Taping is a useful modality for clinicians as it provides a means of injury treatment and prevention as well as can be used to develop long term treatment strategies for a patient. In addition to some commonly used techniques, he is studying a novel kinesiotaping technique he has developed for use in individuals suffering from ankle instability.

Dr. Corkery’s research has focused on motor control and flexibility in athletes, including the role of lumbo-pelvic and hip neuromuscular control in athletes with patellofemoral pain. She is currently investigating the effects of commonly utilized calf stretching and self myofascial release techniques on ankle kinematics during walking and running in athletes with gastrocnemius muscle tightness.

Doctors Folmar, Corkery, and Yen represent much of the great collaborative efforts that are taking place in the PTMRS Department and throughout Bouvé College. Bridging the gap between science and clinical application has always been an issue in medicine. Continued collaboration between researchers and clinicians brings the evidence to the people that need it most – the patients.
Abstract: This study characterized whole-body vibration exposures in a set of vehicles that operate in open-pit mines and compared three different daily exposure parameters based on the ISO 2631-1:1997 and ISO 2631-5:2004 standards. Full-shift, 6 to 12-hour, continuous whole-body vibration measurements were collected from 11 representative types of vehicles in terms of hours of operation and number of vehicles used. For each type of vehicle, the exposure parameters (A(8), VDV(8), and Sed(8)) were calculated for each axis (x, y, and z), and in addition, shear or horizontal (Σxy) and vector sum (Σyx) whole-body vibration exposure. Findings showed that: (i) substantially higher shear and vector sum whole-body vibration exposures indicated relatively high levels of exposure on the non-predominant axis; (ii) the predominant axis of exposure varied across the different type of vehicles; (iii) there were differences in whole-body vibration exposure parameters regarding the standards-based predictions of potentially adverse health outcomes (the impulsive exposure parameters VDV(8) and Sed(8) were higher and reduced acceptable vehicle operation times by one-half to two-thirds relative to A(8) exposures); and (iv) based on the predominant exposures and the time to reach daily vibration action limits, the operation of most mining vehicles would be limited to less than 8 hours a day. Differences in whole-body vibration exposure parameters impact the prediction of potentially adverse health outcomes and may introduce some uncertainty regarding how to best characterize a vehicle operator’s actual exposure.


FACULTY RECEIVES PRESTIGIOUS GRANT TO FURTHER STROKE REHABILITATION

We wish to congratulate Dr. Gene Tunik and his collaborators on their NIH R01 Grant entitled “Optimizing Hand Rehabilitation Post-Stroke Using Interactive Virtual Environments”. This is a $3.5 million multi-institutional grant with New Jersey Institute of Technology, Rutgers University, Kessler Rehabilitation Center and Northeastern University. This on-going investigation looks into the effects of intensive, high dosage task and impairment based training of the hemiparetic hand, using haptic robots integrated with complex gaming and virtual reality simulations. Currently relatively little is known about the effect of very intensive, progressive VR/robotics training in the acute early period (5-30 days) post-stroke. The group will be integrating the behavioral, the kinematic/kinetic and neurophysiological aspects of recovery to determine: 1) whether early intensive training focusing on the hand will result in a more functional hemiparetic arm; (2) whether it is necessary to initiate intensive hand therapy during the very early inpatient rehabilitation phase or will comparable outcomes be achieved if the therapy is initiated right after discharge, in the outpatient period; and (3) whether the effect of the early intervention observed at 6 months post stroke can be predicted by the cortical reorganization evaluated immediately after the therapy.
**SELECT PUBLICATIONS**


Hasson, C. J. An Interactive Simulator for Imposing Virtual Musculoskeletal Dynamics. *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING.*


**BOOK/BOOK CHAPTERS**


**PRESENTATION AWARD**

Dr. Danielle Levac was awarded Best Presentation at the 2017 International Conference on Virtual Rehabilitation in Montreal, QC for her talk entitled “Is children's motor learning of a postural reaching task enhanced by practice in a virtual environment?” This work was based on research she undertook in her Rehabilitation Games and Virtual Reality Laboratory in the summer of 2016 and for which she recently received a Charles H. Hood Child Health Research Award (2017-2019).
Congratulations to the Psychosocial Aspects of Healthcare Seminar service-learning course partnership for winning one of six Community Engagement Awards at the 5th annual Pancakes and Partnerships event, hosted by City & Community Affairs at Northeastern on Tuesday, May 9, 2017. Dr. Ann Golub-Victor has been leading the course within the Department of Physical Therapy, Movement, and Rehabilitation Sciences in the Bouvé College of Health Sciences for over a decade, and has built meaningful and sustainable partnerships with community-based organizations across the city. Pictured left to right: John Tobin, Derek Lumpkins, Becca Berkey, Lorna Hayward, Hilary Sullivan, Ann Golub-Victor, Colleen Holohan, and Carl Barrows at the 5th annual Pancakes & Partnerships event.

Congratulations to Dr. Leslie Day for being the recipient of the Human Anatomy and Physiology Society and ADInstruments Sam Drogo Technology in the Classroom Award. This international award is given out to educators who have demonstrated innovative use of technology in teaching undergraduates human anatomy and physiology. Dr. Day has always been on the forefront and an earlier adopter of technology usage in the classroom in order to improve active learning and student’s experience. In several courses, including Gross Anatomy, Dr. Day has incorporated the latest technology to help students better engage with the material and to enhance long-term retention of the knowledge gained. Her current research focuses on the effectiveness of different teaching pedagogies, including the flipped-classroom and various technology.

Congratulations to Susie Rehr, PT, HCPS, who received the 2017 Clinical Educator of the Year Award. She is the owner and physical therapist at Special Strides in New Jersey, a clinic that specializes in hippotherapy. This award is presented annually by the Department to a Physical Therapist Clinical Educator who has demonstrated an unusually strong commitment to the clinical education of Northeastern University Physical Therapist students, as well as excellence in clinical education leadership, teaching, and mentoring novice clinical educators. Susie teaches Northeastern DPT students that every moment is a learning opportunity. She emphasizes that each session needs to have a clinical question, interventions tied to specific impairments, and daily goals that are all linked together. She provides feedback on the thought process for every aspect of the treatment. Susie has a wealth of knowledge and experience with patients who have pediatric and neurological conditions and is incredibly generous in her willingness to serve as a mentor to our students.
1: NU PT student volunteers at the 2017 Boston Marathon 2: NU PT at APTA of MA PT Day on the Hill 3: Mass. General Hospital and NEU 2017 Sports Physical Therapy Clinical Residency Graduation 4: Faculty and Students supporting Pan Mass Challenge athletes for the 8th consecutive year 5: Dr. Lorna Hayward receives recognition for 10 years of service in Ecuador 6: Swiss guests from HESAV in Lausanne experiencing the Arnold S. Goldstein Interprofessional Simulation Labs 7: Three PT students on the NU Women’s Powerlifting Team helped secure 3rd place at the 2017 USA Powerlifting Collegiate National Championships in San Antonio, Texas 8: Northeastern University DPT Class of 2017