Washington University in St. Louis
School of Medicine

# Moving Ahead

## Program in Physical Therapy

ANNUAL REPORT 2023

# Contents



## Program in Physical Therapy

**2023** by the Numbers

**Ranked #1**
PT Program by U.S. News & World Report

**84**
incoming DPT students for the class of 2026

**$600,000+**
awarded in scholarships

**100%**
employment of WUPT22 graduates

**30**
active grants

**6**
clinical practice sites

**50,000+**
patient visits from January 1 – November 1, 2023

# Welcome

Movement has many definitions, one of which is the process of being transported from one place to another. As a physical therapist, I normally think of this as the process of physically moving from point A to point B. However, one can also be transported to another place by a story. In fact, a person can lose all track of time when engrossed in a great story. That happened to me this year as I have been surrounded by the story of WUPT moving forward and, in what seems like the blink of an eye, fall has arrived. I am pleased to share with you the latest chapter in our story through the 2023 annual report. I hope you enjoy it.

**Gammon Earhart, PT, PhD, FAPTA,**
Associate Dean for Physical Therapy
Director, Program in Physical Therapy
Professor of Physical Therapy, Neuroscience, and Neurology

## New Faculty Spotlight

**Mary Crumley, PT, DPT, NCS, CBIS, MSCS**
Assistant Professor of Physical Therapy & Neurology

**Kristopher Gordon PT, DPT**
Assistant Professor of Physical Therapy & Orthopaedic Surgery

**Kiaana Howard PT, DPT**
Assistant Professor of Physical Therapy & Orthopaedic Surgery

**Corey Woldenberg PT, DPT**
Assistant Professor of Physical Therapy & Orthopaedic Surgery


# Education

The mission of the Education Division is to prepare exceptional practitioners and researchers who contribute to the practice of physical therapy and to the research of movement science.

Learners in the Washington University Program in Physical Therapy become skilled and capable as they demonstrate competencies to faculty. But there's more to becoming a well-rounded professional than skill alone, and the program is now taking the curriculum a step further by assessing learners on Entrustable Professional Activities (EPAs).

One of the first physical therapy programs in the nation to incorporate EPAs, Dr. Carey Holleran, Associate Professor and Assistant Director of Student Assessment and Program Evaluation, received internal grant funding to pilot and study the efficacy of using EPAs as a tool to create formative change and enhance clinical performance. "We asked, 'If you provide avenues for narrative rich formative assessment on meaningful units of clinical work, does it improve performance over time?' And the answer is, 'Yes.'"

Clinical supervisors already assess learners' skills, but the addition of EPAs asks the supervisor to use an entrustment scale detailing how much they will trust the learner in the next patient encounter. This scale is paired with a framework that supports the provision of narrative feedback necessary for ongoing learning and performance improvement. The framework, known as ARICH, was developed through medical education research. The framework provides the instructors with the opportunity to provide learners with ongoing feedback on learner attributes including Agency, Reliability, Integrity, Capability and Humility.

"The EPA process is formative," says Dr. Tammy Burlis, the program's Director of Clinical Education, who helped oversee the introduction of EPAs in the clinical education component of the curriculum. "We implemented the EPA tool across all four clinical experiences and saw that the tool could differentiate between levels of learners, and that learners grew within each clinical experience." The EPA tool was employed to assess learners' skills with units of work for the physical therapy profession: performing a history and physical exam and implementing and modifying a plan of care.

Clinical instructors use a seven-point scale to assess EPAs with an ordinal scale ranging from "not trusted to practice" to "trusted to practice with mentorship". "As the learners receive narrative

comments structured by ARICH area, they know what they need to work on in order to become more trusted as a clinician," Burlis says. "We're helping develop them into master adaptive learners." She also notes that the EPA tool does not contribute to learners' progression decisions.

"The value of describing units of work for our profession and learning more about trust is important if we are to ensure graduates are trustworthy and safe for independent practice," she says. "In clinic, the supervisors are considering if they would trust the learners to work with their own families. It provides a more holistic data that we didn't have before."

Dr. Steven Ambler, Division Director of Education, explains that adding the EPAs to the already competency-based educational framework is designed to help better prepare graduates to become leaders in a changing professional landscape. "Allowing them to adapt and improve based on feedback without fear of 'failing' is a huge paradigm shift. Once our learners are here, they're part of the profession, and they understand that the program is helping them become their best for their patients."

Ambler notes that the Program's recent curriculum renewal always intended to include EPAs as the final component of the overall vision. With a pilot project complete and data on its success being analyzed for publication, he anticipates that EPAs will soon be rolled out to all learners in every clinical rotation.

"The curriculum renewal in the DPT program continues to be an incredible process," he says. "It's been amazing to see how much we're learning, how the faculty are helping to develop the program, and how our current learners are taking on the challenge. It continues to be a collaboration that culminates in better patient care."

# Research

The mission of the Research Division is to understand how the movement system is affected by disease, injury, lifestyle, development and aging, and how movement can be used to promote health by enhancing physical function, activity and participation across the lifespan.

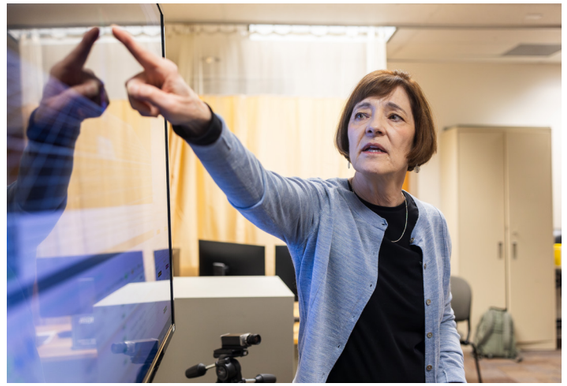
Back and hip pain are among the most common complaints presented to physical therapists for treatment. Besides educating outstanding new professionals to treat these issues, faculty in the Washington University Program in Physical Therapy are moving the profession forward with new research.

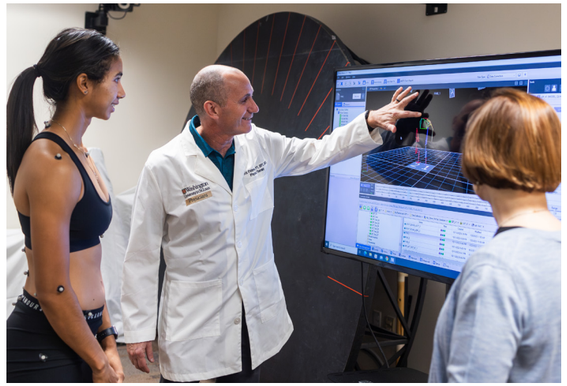
In the past year, the National Institutes of Health awarded two faculty researchers prestigious RO1 grants to fund projects aimed at improving treatment of acute low back pain and recovery from hip dysplasia surgery.

Dr. Linda Van Dillen, Professor and Division Director of Research, is beginning a study that focuses on acute low back pain and how movements and postures may influence these episodes. Her previous work examined multiple approaches to treating chronic back pain, particularly in terms of sensory-motor behavior and how movements and postures contribute.

"When experiencing chronic low back pain, people often exhibit a narrow range of movements and postures," she says. "It appears that these develop into strategies that are used across the person's daily activities. Now, instead of focusing on the chronic phase, we are going to look at acute episodes of low back pain and how these movements and postures may or may not be associated with recovery."

Van Dillen's previous research tested a treatment protocol in which a group of study participants with chronic low back pain learned how to change their movements and postures in daily activities. This group was compared with a group that received traditional strength and flexibility exercises. Both groups had one hour-long physical therapy sessions each week for six week, and both groups' function and pain improved, but the group receiving the movement and posture protocol improved more and maintained that improvement. "If you teach people who have chronic low back pain to move differently during their routine daily activities, they can learn new ways to do things. It's a similar process to improving in a sport – you change your movement based on the positive outcome of that adjustment," she says.





The new grant will allow Van Dillen to apply the same research structure to people with acute low back pain episodes. She will begin by observing whether individuals experiencing acute pain exhibit the movements and postures identified in people with chronic low back pain. Then she will follow patients to see who recovers and who develops chronic low back pain.

"We're asking whether the movements and postures associated with chronic pain are the same as those people exhibit when experiencing acute pain and at what point in the progression of acute to chronic pain those movements and postures develop," she says. "The information we glean from the observational phase of the study will help us determine if person-specific movements and postures used during function might be a treatment target for those who have acute pain in order to speed recovery and avoid developing chronic pain."

For those who experience pain of a different sort, Dr. Michael Harris' $2.9 million grant to study hip dysplasia may provide information that will help cut recovery time after surgery. For the past five years, Harris, an Assistant Professor in Physical Therapy, Orthopedic Surgery and Mechanical Engineering, and a group of researchers from around the globe collaborated to study how hip dysplasia's telltale bony abnormalities affect the muscles attached to the joint. Study participants were awaiting corrective surgery.

The new grant allows the group to continue their work by focusing on surgical patients. "We want to know why some people do well after surgery to correct their hip dysplasia yet others experience ongoing pain when, in fact, their X-rays look similar," Harris says.

Harris will follow patients during their first year following surgery. Using both motion-capture technology to conduct a post-surgical biomechanical analysis of movements and MRI images to create 3D models of bones and muscles, the team will be able to analyze muscle forces in the hip joint. "We're going to see if factors like movement and muscle force can differentiate those who are doing well from those who aren't," he says.

The research team also will collect data regarding study participants' activity levels. Participants will wear a fitness tracker to log their steps and heart rate. Researchers will then analyze that data to determine how activity varies among post-operative patients and create profiles of those with varying degrees of ongoing pain. A final set of variables will consider the psychosocial elements of recovery by recording patients' own perceptions of pain and anxiety.

Taking all the data together to determine what influences recovery, the goal is to have a better idea of the optimal biomechanical forces for patients with specific profiles and use that information to better inform surgical approaches and rehabilitation strategies. "We can use computational modeling to simulate surgical scenarios and resulting forces in the hip joint. We can also tease out which factors after surgery, when physical therapy is crucial, can lead patients down optimal paths of recovery," Harris says. "It's a lot of data. It's a big grant and a big team. And we're partnering across disciplines to comprehensively treat patients and improve outcomes."

# Program Establishes Orthopedic Residency

The Washington University Program in Physical Therapy continues to offer more opportunities for professionals to specialize with the establishment of an Orthopedic Residency. Dr. Dale Thuet joined the faculty in July 2022 to serve as Residency Coordinator, and the first resident began work in September.

The residency curriculum was developed utilizing published standards, guidelines and the Description of Residency Practice provided by the American Board of Physical Therapy Residency and Fellowship Education and was modeled on the program's existing Women's Health Residency.

"We want to expand our specialty areas, and with orthopedics being the broadest physical therapy practice area, the residency was a natural next step," says Dr. Steve Ambler, Division Director of Education. "Dr. Thuet developed the residency using our competency-based framework so learners can move through the DPT program and into post-professional education as a continuum."

The Residency features extensive one-on-one mentoring with Thuet, Dr. Sylvia Czuppon, Associate Professor, and Jennifer Dubbert, Washington University Physical Therapy Clinical Practice Manager. The mentors will move through patient care domains with residents, using the established movement system framework combined with manual therapy. "It's a very holistic view of orthopedics using movement science as the backbone, no pun intended, and drawing on evidence-based practice," Thuet says.

The curriculum is specific to the skills and knowledge needed to pass the specialty board exam, he adds. Training also includes participation as a lab instructor and lecturer in the DPT Program, seminars, weekend courses, manual therapy practice, small group sessions, and opportunities for clinical rounding, surgery observation, and journal clubs with health providers and other residents. Residents will also participate in independent study culminating in a scholarly product.

"We're planning to welcome two orthopedic residents a year, and we're excited to offer this Program," Ambler says.


# Alumni Award

## Sahrmann Receives Distinguished Alumni Award

Shirley Sahrmann has seen a lot of change in her 54 years as a Physical Therapy professional, educator and researcher. "The contrast couldn't be more stark," she muses, looking back to the beginning of her storied career. A 1958 graduate of Washington University with a degree in Physical Therapy and a faculty member since 1961, Sahrmann was recently honored with a Washington University Founders Day Distinguished Alumni Award.

"When I started my education in physical therapy at Washington University, we had 18 students and three faculty," Sahrmann says. "We were in a bachelor's degree program with two years of general studies and two years in physical therapy. No one had a doctorate, and the faculty were passing on information but not generating it. It wasn't the profession it is today."

Sahrmann hasn't just watched the profession change – she's been a significant figure in that change. "She's had an incredible career and is one of the most famous physical therapists in the world," says Dr. Gammon Earhart, Associate Dean and Director of the Washington University Program in Physical Therapy, who nominated Sahrmann for the award.

In fact, Sahrmann was an instrumental figure in Earhart's own development as a student, educator and professional. "Shirley is a key reason I came to Washington University as a doctoral student in physical therapy," Earhart says. "She was Director of the Movement Science PhD Program at the time, and I knew of her work through my undergraduate program on the east coast. I was a bit intimidated to meet her, to be honest, but I quickly saw that Shirley was down to earth and that she would be there if I needed her as a student and a professional."

Sahrmann's career accolades are too many to list, but she may be best known as the founder of the Movement System concept. Her work creating a systemic and organized framework for analyzing movement, how it contributes to pain, how to identify problems and manage symptoms is practiced worldwide, and her texts on the approach are printed in seven different languages.

Realizing she wanted more knowledge after working as a physical therapist at Barnes Hospital for nine years, Sahrmann earned a doctorate in neurobiology, which ushered her into the research realm. She continued to push the profession forward as a researcher and educator at Washington University, where she was nurtured in both aspects of her career.


"The culture here was always collaborative, not competitive," she says. "I had so many opportunities to work with people who wanted to push the boundaries, and the most exciting thing about this honor is not just what I've done over the years but the recognition of how much this Program has made an impact."

# Class Notes and Program Honors

Division Director of Education and **Professor Steve Ambler** was selected for a 2023 Dean's Impact Award from the School of Medicine. These awards recognize faculty members whose superior efforts in the face of the COVID-19 pandemic have had lasting impact, who demonstrated the highest level of professionalism, and who delivered exceptional results across the missions of the School of Medicine. Recipients of the Dean's Impact Awards represent the determination and adaptability, compassion and innovation required to lead us through unprecedented times. Steve was commended not only for keeping our DPT curriculum going with minimal disruption throughout the pandemic, but also for keeping us moving forward with a robust curriculum renewal that has kept us at the forefront of DPT education nationally.

PhD student **Maria Bandres** was awarded an F99/K00 research grant from the NIH. The Predoctoral to Postdoctoral Fellow Transition Award (F99/K00) is to encourage and retain outstanding graduate students who have demonstrated potential and interest in pursuing careers as independent researchers. The award facilitates the transition of talented graduate students into successful research postdoctoral appointments. Maria's F99/K00 is entitled, "Integrative spinal physiology to restore neural control of sensorimotor functions after neurological injury".

**Abrie Berkowitz** and **Emily Kaszyk** of PT24 received scholarships from the Exxat Scholarship Committee. Abrie was selected for the 2023-2024 Exxat Student Scholarship in the area of Care for Underserved Communities. Emily was selected for the 2023-2024 Exxat Student Scholarship in the area of Scholarly Productivity.

WUPT staff member **Jenny Brown** received a 2023 Outstanding Staff Award from the Washington University Graduate Student Senate.

Assistant Professor **Meg Burgess** was interviewed for the AAOMPT Podcast: Physical Therapy Interviews with Content Experts. The podcast episode focuses on a case report Meg developed called "Don't forget the hip! Analysis of femoracetablular movement faults in patients with coccydynia".

**Assistant Professor Meg Burgess** received the Rising Star Award from the Academy of Educators at WUSM. This award recognizes outstanding contributions to health and basic science education by faculty members who are within six years of completing their final training program. Additionally, the faculty member shows exceptional promise as an educator through contributions in one or more domains of educational service, leadership or scholarship.

PT25 students **Menghan Chen** (orchestra) and **Kristen Tarsala** (ensemble) represented WUPT in the WUSM musical "Grease". Faculty members **Jen Zellers** and **Mary Hastings** made cameo appearances.

Associate Professor **Suzy Cornbleet** received the Lifetime Achievement Award from the Academy of Educators at WUSM. This award recognizes outstanding contributions to health and basic science education by faculty members who have at least 20 years as faculty in an academic setting. Additionally, the award honors faculty members who have shown a lifelong commitment to education and demonstrate excellence in one or more domains of educational service, leadership or scholarship.

**Professor Beth Crowner** was selected as a new member of the WUSM Academy of Educators. This achievement acknowledges individuals who have made significant contributions to education within the School of Medicine.

Assistant Professors, **Mary Crumley** and **Kiaana Howard**, were accepted into the Foundations in Teaching Skills Program offered through the WUSM Academy of Educators.

**Professor Gammon Earhart** and the **Movement & Neurodegenerative Disease Lab** received an NIH R33 award entitled, "Sing for Your Saunter: Using Self-Generated Rhythmic Cues to Enhance Gait in Parkinson's". This award will fund a clinical trial comparing use of music training vs. singing training to enhance walking in people with Parkinson's disease.

Postdoctoral Fellow **Elinor Harrison** was selected to present at the Linda and William Hamilton Annual Dance Wellness Symposium at the annual meeting of the International Association for Dance Medicine & Science.

Professor **Mary Hastings** is part of the research team for a new grant from the American Orthopaedic Foot & Ankle Society, entitled, "Long term outcomes for modified oblique Keller capsular interposition arthroplasty (MOKCIA) for the treatment of hallux rigidus".

**Professor Mary Hastings** receive a 5-year competing continuation of her NIH R01. "Chronic Kidney Disease-Mineral Bone Disorder (CKD-MBD) Syndrome in the Diabetic, Neuropathic Foot".

Assistant Professor **Mike Harris** received an NIH R01 grant for "Longitudinal Biomechanics and Patient- Reported Outcomes after Periacetabular Osteotomy for Developmental Dysplasia of the Hip."

Professor **Marcie Harris-Hayes** was selected to serve as an NIH Study Section Chair. Marcie will lead the Function, Integration, and Rehabilitation Sciences Study Section, Eunice Kennedy Shriver National Institute of Child Health and Human Development Initial Review Group (CHHD K).

Professor **Catherine Lang** was interviewed by Wired for an article on deep brain stimulation for stroke survivors.

Associate Professor **Vanessa Lanier** was elected as Program/Division Representative to the Executive Committee of the Faculty Council (ECFC) for Washington University. The ECFC is an elected group of faculty who represent faculty interests to the administration of the university.

Employee Wellness Champion and WUPT staff member **Sherry Lohmann** secured a grant for the Program in Physical Therapy's Walk & Talk Challenge through Washington University.

**Ern Payan, Brandon Garcia, and Kevin Lee** (PT24) led the 2023 Run for Research, raising $2770 for the Foundation for Physical Therapy Research.

**Nicolas Lewis**' (PT13) business Enlighten Movement Therapy & Wellness, celebrated its one year anniversary.

**Mary Beth Fiser Lewis** (PT11) helped create Ochsner's pelvic health residency and will welcomed the first resident in October 2023.

**Sara Reardon** (PT07) was featured in Time Magazine for her work as a pelvic floor therapist and the success of her Instagram account @the.vagina.whisperer.

Movement Science PhD student **Molly Shepherd**, was awarded a $2000 Graduate Student Grant-in-Aid from the American Society of Biomechanics.

Professor **Tracy Spitznagle** and a team of biomedical engineering students and faculty won first place at the Rice 360 Global Health Technologies Design Competition. Their design would allow the 2 to 3 million women worldwide living with obstetric vesicovaginal fistulas (VVF) to reenter society without experiencing humiliation, isolation, and stigma due to uncontrollable leakage of urine through the genital tract. The proposed solution is a biker short with a built-in collection cup.

Clinical service representative **Joanie Steibel** was selected for the Kelley Mullen Clinical Service Award from WUSM. The Kelley Mullen Clinical Service Award recognizes a clinical support staff member who consistently demonstrates ongoing acts of caring that go beyond the normally expected levels of courtesy, responsiveness, and customer service and creates a positive work environment.

## Faculty Promotions

**Steve Ambler**
Professor of Physical Therapy and Orthopaedic Surgery

**Maggie Bland**
Professor of Physical Therapy, Neurology and Occupational Therapy

**Vanessa Lanier**
Associate Professor of Physical Therapy and Orthopaedic Surgery

**Gretchen Meyer**
Tenured and is Associate Professor of Physical Therapy, Neurology and Orthopaedic Surgery

# Class Notes and Program Honors Cont.

Movement Science PhD Student **Lauren Tueth** was elected Co-President for the WU Graduate Student Senate. The Graduate Student Senate represents graduate students from programs granting PhD degrees at Washington University. The Senate provides a forum for graduate student concerns, fostering connections between graduate students, and facilitating communication with the Vice Provost for Graduate Education.

**Razeena Umrani** (PT18) was selected for the 2023 APTA Association Leadership Scholars Program.

Division Director of Research, **Professor Linda Van Dillen** was named Principal Investigator for a new NIH R01 grant on "Significance of Spinal Movement Impairments in Acute Low Back Pain." The goals of this project are to (1) understand the prognostic value of movement impairments known to be important in people with chronic LBP, to the course of recovery in acute LBP and (2) examine the value of treating the impairments in people with acute LBP presenting to the Emergency Department.

**Shira (Greenberg) Weiss** (PT05) recently left her job to open her own practice with a focus on TMD, called NoVaMotion Physical Therapy in northern VA.

**Stephanie Weyrauch** (PT15) and her husband Deland gave birth to their second child Vivienne on May 25, 2023. In July 2023, they relocated from New Haven, CT to Billings, MT. Deland is now working as the Deputy Medical Examiner for the State and Stephanie has started her own mobile pelvic health and orthopedic practice through MovementX. Stephanie continues to be active with the APTA and is currently serving as Chair of the APTA Nominating Committee.

**Shi Yan** (PT23), wrote an online article entitled "Staying Active Can Be Simple" during his clinical education experience at Boone Health.

Assistant Professor **Jen Zellers** received a Musculoskeletal Research Center grant for "Human Diabetic Tendon Composition: A Data-Driven Approach." The aim of this study is to take a wide net approach at characterizing how diabetes effects tendon composition in order to identify potential future treatment targets.

**Assistant Professor Jen Zellers** received the Excellence in Service Award from the Foot & Ankle Special Interest Group of the Academy of Orthopaedic Physical Therapy.




# APTA Awards

Professor **Beth Crowner** was selected to receive the Lucy Blair Service Award from APTA. This award honors physical therapist members whose contributions to APTA are of exceptional quality. Qualifying contributions can pertain to association components, through work on appointed or elected positions, and/or in other capacities at the association and component levels.

**Jen Dubbert**, WUPT Site Coordinator of Clinical Education, received the 2023 Outstanding SCCE Award from APTA Academy of Education. This award recognizes an outstanding Site Coordinator for Clinical Education (SCCE) who consistently demonstrate exceptional skills in the supervision and education of Clinical Instructors through mentoring as well as serving as a role model for Clinical Education.

Associate Dean for Physical Therapy **Gammon Earhart** received the Marian Williams Award for Research in Physical Therapy. This APTA award honors an individual who has sustained outstanding research pertaining to the physical therapy profession for at least 10 years through published scientific studies and has demonstrated continuity of professional commitment to physical therapy.

**Professor Catherine Lang** was selected to receive the Helen J. Hislop Award for Outstanding Contributions to Professional Literature. This APTA award honors a PT who has been actively engaged in writing and publishing professional literature pertaining to the physical therapy profession for at least 10 years.

Assistant Director of Diversity, Equity and inclusion and Assistant Professor, **Julian Magee** received the 2023 Lynda D. Woodruff Scholarship Award from the Physical Therapy Learning Institute. This award will support his participation in the 2023 Grant Writing and Mentoring in Education Research workshop.

**Professor Tracy Spitznagle** was selected to receive the APTA Societal Impact Award. This award specifically recognizes individuals who exemplify the compassionate nature of the physical therapy profession by exhibiting a distinguished commitment toward philanthropic initiatives, raising public awareness on key societal issues, and demonstrating how physical therapy can be applied to address these issues.

**Cameron Swick** of PT24 received the AOPT Outstanding Physical Therapist Student Award. This award recognizes a student physical therapist with exceptional scholastic ability and potential for contribution to orthopaedic physical therapy.

## Congratulations

### Newly Certified Clinical Specialists

**Jennifer Dubbert, PT, OCS**
Orthopaedic Clinical Specialist

**Sarah Flood, PT, DPT, CLT, WCS**
Women's Health Clinical Specialist

**Kristopher Gordon, PT, DPT, OCS**
Orthopaedic Clinical Specialist

**Carlee Hill, PT, DPT, WCS**
Women's Health Clinical Specialist

**Sydney Schack-Farnell, PT, DPT, OCS**
Orthopaedic Clinical Specialist


# Clinical Practice

The mission of the Clinical Division is to provide high-quality, evidence-based care with compassion. As movement system experts, our clinicians strive to diagnose movement impairments and deliver individualized treatment to optimize function, health and wellness across the lifespan.

The Washington University Program in Physical Therapy isn't just an outstanding educational and research program. It's an important part of the health care landscape on the university campus and beyond.

Washington University faculty, staff and families now have a convenient option for physical therapy services with the addition of Washington University Physical Therapy 4444 Forest Park Avenue. One of the WUPT Central West End locations, the clinic recently joined the WUDirect Network of health care providers.

The clinic is conveniently located on the eastern end of the Medical School Campus at the southwest corner of Forest Park and Newstead Avenues. Within this space, providers are joining clinicians who provide specialized services in pelvic health and lymphedema therapy.

"This was a good opportunity to further expand our clinical footprint and give Washington University employees and dependents priority access in a specific location," says

Dr. Greg Holtzman, WUPT Clinical Practice Director. The clinic is modeled after existing WUCare primary care clinics and is easily accessible to WUDirect members.

With care available five days a week, the clinic's WUDirect schedule filled quickly after its August 14th opening. In fact, Holtzman says the clinic already needs additional staff to meet demand. "Its success has been really remarkable in terms of access to care," he says.

Patients now have direct access to physical therapy. Missouri SB 51, passed at the end of August, allows qualified physical therapists to treat patients without the need for a prescription or referral from a physician. "We value our referral relationships, and we're pleased to take both referrals and direct access patients," Holtzman notes.

The physical therapists who provide services to WUDirect patients focus primarily on musculoskeletal issues related to pain and injury as well as treating concussions and focus primarily on musculoskeletal issues related to pain and injury, but can also address some neurological issues that can affect balance and stability. "We treat everything from foot pain to TMJ," Holtzman says. "We specialize in addressing a spectrum of concerns, ranging from foot pain to neck discomfort and everything in between. Our focus extends to post-operative care, injury recovery, pain management, and enhancing functional activities. Should there be a need beyond the scope of this clinic, we have the capability to seamlessly refer patients to physical therapy specialists across any of our other locations.."

Eight new DPT program graduates joined on the WUPT staff across all WUPT clinics this year. Holtzman notes that one of the benefits of an academic practice is the ability to retain outstanding graduates as clinicians. Typically, the Program hires only one or two new graduates each year, but there were more openings in 2023 as the demand for physical therapy services increased and additional physical therapists were needed to meet the needs of the community.

"We are excited that we have had the opportunity to expand our clinical footprint and hire additional providers to optimize our ability care for patients needing high quality, one on one physical therapy." Holtzman says. Appointments are available by calling 314-286-1940 or visiting WashU Physical Therapy online at pt.wustl.edu/patient-care/.

# Community Engagement

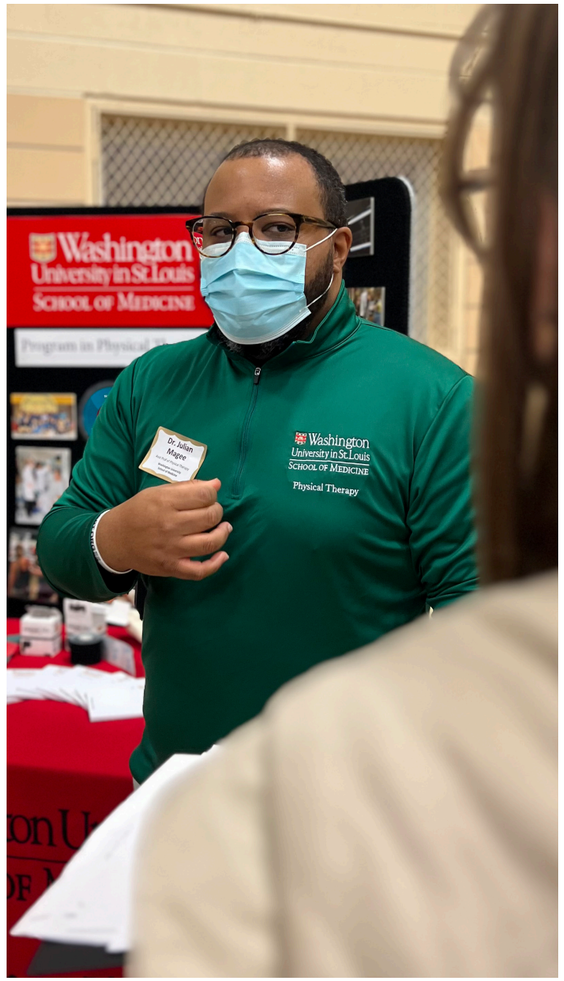
Since joining the Washington University Program in Physical Therapy faculty in 2021, Dr. Julian Magee, Assistant Director of Diversity, Equity and Inclusion, is proud of the Program's progress, and one of the aspects he feels most positive about are the intentional relationships being formed in the broader community.

To help support his efforts both within the Program beyond, Dr. Marcie Harris- Hayes and Dr. Kiaana Howard, new to the DPT faculty, are working closely with Magee to bolster diversity, equity and inclusion (DEI) efforts, including broader community programming. "We've done some great things already, but I'd like to move even faster to create a more long-term, sustainable community presence," Magee says.

Magee points out that the WUPT's participation in the inter-professional clinic that serves low-income individuals is a start in providing assistance to underserved populations. Now he wants to sharpen focus on reaching out into the community to bring information and clinical services to underrepresented and marginalized groups through strategic partnerships.

In a series of thought-provoking sessions held from April 6 to April 27, 2023, the Program in Physical Therapy successfully conducted its Biannual Clinical Instructor Meeting. The event unfolded as a dynamic exploration of Diversity, Equity, and Inclusion (DEI) and its profound impact on clinical success. Kicking off with a compelling panel discussion on April 6, speakers dissected the intricate facets of DEI, dispelling myths and highlighting its pivotal role in shaping clinical outcomes.

As the weeks progressed, the meeting featured sessions led by professionals in the field. Jen Dubbert, Washington University Clinical Practice Manager, initiated the dialogue on April 13, focusing on the creation of supportive and inclusive spaces within clinical settings. Subsequently, on April 20, Dawn Brown and Kiaana Howard, Assistant Professor of Physical Therapy navigated the equilibrium between fostering a sense of belonging and avoiding assimilation in clinical environments. Sylvia Son, Washington University Physical Therapy Clinical Associate, brought the series to a close on April 27, offering insights into effective communication, particularly for individuals with English as a Second Language (ESL).




Throughout these sessions, a common thread emerged—the undeniable link between DEI and clinical excellence. The discussions illuminated how embracing diversity, ensuring equity, and fostering an inclusive environment contribute significantly to the success of students, patients, and clinicians alike.

"As physical therapists, we want to improve community health outcomes, and to do that we need to understand what affects access as well as determine what the community needs and how best we can help," Magee says. To begin the process, he is exploring partnerships with religious and community organizations that serve underrepresented and marginalized populations.

For example, Magee envisions working with the St. Louis Integrated Health Network. The organization's president and CEO is Dr. Andwele Jolly, a Washington University DPT alumnus, and the mission is "through collaboration and partnership, strive for quality, accessible and affordable health care services for all residents of metropolitan St. Louis, with an emphasis on the medically underserved."

"We want to be at the table with decision makers and earn their trust so we can participate in health screenings, health fairs and other types of education about physical therapy," Magee says.

Another potential community partner is Generate Health, which strives to "build collective power to advocate for racially equitable policies and practices that center, support and celebrate Black families throughout their pregnancy and parenthood journeys." "Generate Health hosted some of our faculty on a health tour, and they were then able to inform colleagues and learners about what they learned regarding the social and structural determinants of community health needs," he says. "We can use that kind of understanding and information to help formulate new policies and practices."

Magee is also aware that expanding LGBTIA+ initiatives is part of his work. He notes that several groups serving this population have designated safe health care providers, and Program clinicians could be among them.

"My core tenet as a health professional and educator and DEI practitioner is to see, hear and value the people around you," he says. "We have to live this and also prove it to the community. We have to think about things from a societal perspective, listening and paying attention to all our constituencies. We're moving toward that all the time through professional development, increased participation and becoming a truly transformational organization in the health care environment. It seems aspirational, but I believe we can do it."

# Newly Awarded Grants

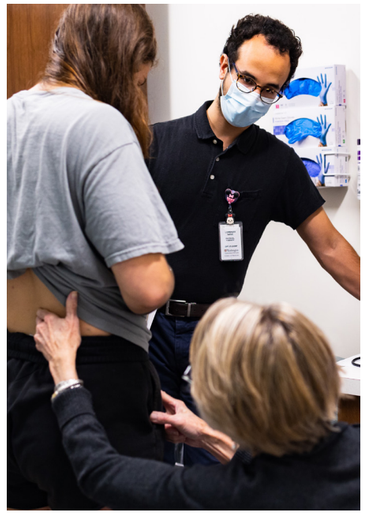
## Funded in Fiscal Year 2022 – 2023

### Marcie Harris-Hayes, PT, DPT, MSCI

**TURNING THE TIDE: TRAINING DIVERSE CLINICIAN SCIENTISTS IN REHABILITATION RESEARCH**

*Funded by NIH R25 Subaward*

TiDe (Training in Diversity education) is transforming biomedical science by reshaping research culture and fostering clinician scientists from underrepresented populations. Through strategic partnerships, the program provides faculty trainees, who must have a proven track record of federal research funding and a commitment to diversity mentoring, with the skills to mentor diverse clinician scientists effectively. TiDe faculty trainees extend their mentorship in rehabilitation research to student trainees in occupational and physical therapy graduate professional programs (MOT, MSOT, OTD, DPT). TiDe student trainees, from underrepresented groups, include individuals from selected racial or ethnic groups, those with disabilities, and those from disadvantaged backgrounds as defined by NIH.



### Mary Hastings, PT, DPT, MSCI, ATC

**LONG-TERM FUNCTIONAL AND CLINICAL OUTCOMES FOLLOWING THE MODIFIED KELLER WITH INTERPOSITION ARTHROPLASTY.**

*Funded by American Orthopedic Foot and Ankle Society*

In advanced hallux rigidus patients are left with few viable motion sparing surgical treatment options. The current surgical "gold standard" is a first metatarsophalangeal joint fusion. This is a robust solution for pain relief once bony union is achieved; however, this procedure can result in nonunion, malunion, shortening of the first ray, and transfer metatarsalgia. The Modified Keller resection arthroplasty with interposition tissue (MOKCIA) is an alternative procedure that can allow for retention of motion at the metatarsophalangeal joint without the use of synthetic materials. Mid-term outcomes indicate significant improvements in pain relief and biomechanical function with maintenance of a modest amount of joint motion. There is limited long-term data on the results of this procedure. The purpose of this study is to determine the long-term efficacy of the MOKCIA procedure at alleviating pain, providing range of motion of the first metatarsophalangeal joint, and avoiding future surgical intervention compared to the gold standard of fusion.

### Laura McPherson, PT, DPT, PhD

**NEURAL MECHANISMS OF MOTOR HETEROGENEITY IN MULTIPLE SCLEROSIS**

*Funded by NIH KL2*

Multiple sclerosis (MS) results in central nervous system lesions that alter neural communication between the brain and the spinal motoneurons that activate muscles to execute movement. In the intact nervous system, these voluntary motor commands consist of three components that must be appropriately balanced to produce skilled motor control: excitation, inhibition, and neuromodulation. Disruption of the balance of these components has deleterious effects on motor output. Unlike the spinal cord injury and hemiparetic stroke populations, in MS, we have no knowledge about how voluntary motor commands are disrupted, or how these disruptions relate to motor deficits. In part, this is because MS is so heterogeneous, making systematic research of neurophysiological correlates of motor dysfunction difficult. Together, these factors prevent the development of novel, targeted therapies. The goal of this study is to determine how voluntary motor commands are disrupted in a heterogeneous sample of patients with multiple sclerosis with all severities of motor deficits. We will determine whether subgroups of patients can be identified and determine whether components of voluntary motor commands predict clinical motor symptoms.

### Mike Harris, PhD

**LONGITUDINAL BIOMECHANICS AND PATIEND-REPORTED OUTCOMES AFTER PERIACETABULAR OSTEOTOMY FOR DEVELOPMENTAL DYSPLASIA OF THE HIP**

*Funded by NIAMS R01*

Developmental dysplasia of the hip dramatically increases the risk for early hip osteoarthritis in young adults, and is usually treated surgically with a periacetabular osteotomy. The current project will rigorously investigate how periacetabular osteotomy changes hip biomechanics and how those changes are associated with patients' activity levels and self-reports of function, pain, and quality of life during the first year after surgery. Determining the longitudinal effects of surgery on biomechanics and how they relate to patients' own perceptions of their recovery will inform new strategies to increase the proportion of patients with DDH who experience better quality of life and delayed osteoarthritis.

### Rebekah Lawrence, PT, PhD

**INVESTIGATING THE MULTI-FACTORIAL ETIOLOGY OF ROTATOR CUFF PATHOLOGY IN HUMAN SUBJECTS**

*Funded by NIH R00*

A rotator cuff tear is a common condition that affects approximately 40% of individuals over the age of 60. Despite their prevalence, the factors that lead to tendon tearing are not fully understood, nor are those that influence whether an individual with a tear experiences shoulder dysfunction or is able to maintain a high quality of life. In this grant, we are developing and validating a multivariable model to understand the biomechanical, anatomical, exposure, and personal factors that underly tendon pathology, symptom manifestation, and functional decline.

### Jacob McPherson, PhD

**TARGETED SPINAL CORD PLASTICITY FOR ALLEVIATING SCI-RELATED NEUROPATHIC PAIN**

*Funded by DoD Translational Research Award*

Up to 70% of people living with spinal cord injury develop neuropathic pain (SCI-NP). Unfortunately, current management strategies for SCI-NP rarely afford satisfactory relief, and often cause bothersome side effects that can lead people to discontinue therapy. This translational project proposes a new approach to managing debilitating SCI-NP. By leveraging the remarkable intrinsic ability of the central nervous system to reorganize and repair, we propose to 'train' the spinal cord to reduce neural transmission in the overactive pain pathways that contribute to SCI-NP. The will project utilize a parallel animal-human design in which invasive electrophysiological studies in animals will evolve in parallel with a (non-invasive) pilot clinical trial in people living with SCI-NP. This study design enables real-time reciprocal flow of knowledge between bench and bedside, facilitating both mechanistic understanding and clinical translation.

### Linda Van Dillen, PT, PhD, FAPTA

**SIGNIFICANCE OF SPINAL MOVEMENT IMPAIRMENTS IN ACUTE LOW BACK PAIN**

*Funded by NIH R01*

Non-specific low back pain is a highly prevalent and costly medical condition that is often characterized by recurrent, fluctuating or persistent pain and limitations in function over time. In this project we are working to understand the role of impairments in spine movement on the course of recovery of pain and functional limitations after a person experiences acute low back. We also will conduct a study treating the impairments during pain-provoking functional activities in people with acute low back pain seeking care in an emergency department setting.

# Newly Awarded Grants Cont.

## Funded in Fiscal Year 2022 – 2023

### Jennifer Zellers, PT, DPT, PhD

**HUMAN DIABETIC TENDON COMPOSITION: A DATA-DRIVEN APPROACH**

*Funded by Musculoskeletal Research Center, Pilot & Feasibility Award (supported by NIH P30 AR074992)*

Diabetes is known to increase the risk of tendon injury and impaired tendon healing. The current theoretical framework is that glycation of diabetic tendon is the mechanism behind tendon dysfunction. The central hypothesis is that the presence of diabetes results in a characteristic tendon fibrotic signature, which is also affected by aging and high body mass index. Further, transcription of tenogenic factors will be reduced in diabetic tendons with regional dependence.

### Ryan Duncan, PT, DPT, MSCI

**LOW BACK PAIN IN PARKINSON DISEASE**

*Funded by NIH K23*

### Gammon Earhart, PT, PhD, FAPTA

**WALKING AND MHEALTH TO INCREASE PARTICIPATION IN PARKINSON DISEASE (WHIP-PD)**

*Funded by NIH RO1*

**SING FOR YOUR SAUNTER: USING SELF-GENERATED RHYTHMIC CUES TO ENHANCE GAIT IN PARKINSON'S**

*Funded by NIH R61*

**SPARX STUDY IN PARKINSON DISEASE OF EXERCISE PHASE 3 CLINICAL TRIAL: SPARX3**

*Funded by NIH U01*

**GRACEFUL GAIT: COMMUNITY-BASED BALLET TO IMPROVE GAIT AND BALANCE IN OLDER ADULTS**

*Funded by National Endowment for the Arts*

### Kerri Rawson, PhD, MS and Gammon Earhart, PT, PhD, FAPTA

**MOVING MINDFULLY: A MBSR-CENTERED APPROACH TO FREEZING IN PARKINSON DISEASE**

*Funded by NIH R34*

### Michael Harris, PhD

**MUSCLE GEOMETRY AND ITS INFLUENCE ON FUNCTION IN PATIENTS WITH DEVELOPMENTAL DYSPLASIA OF THE HIP**

*Funded by NIH K01*

### Catherine Lang, PT, PhD FASNR, FAPTA

**TRANSLATION OF IN-CLINIC GAINS TO GAINS IN DAILY LIFE AFTER STROKE**

*Funded by NIH RO1*

**VARIATION IN EARLY MOTOR FUNCTION IN AUTISM, CEREBELLAR INJURY AND NORMAL TWINS**

*Funded by NIH RO1*

### Jacob McPherson, PhD

**TARGETED SPINAL CORD PLASTICITY FOR INTRASPINAL MICROSTIMULATION FOR MULTI-MODAL REHABILITATION**

*Funded by NIH RO1*

**RESTORATIVE NEUROPLASTICITY IN BRAINSTEM MOTOR PATHWAYS TO ENHANCE REHABILITATION**

*Funded by American Heart Association*

### Laura McPherson, PT, DPT, PhD

**SUPERCOMPUTER-BASED MODELS OF MOTONEURONS FOR ESTIMTING THEIR SYNAPTIC INPUTS IN HUMANS**

*Funded by NIH R01*

**CRCNS: US-FRENCH RESEARCH PROPOSAL: IMPROVED SELECTIVITY FOR BIOELECTRONIC THERAPIES WITH INTRAFASCICULAR STIMULATION**

*Funded by NIH Subawar*

### Gretchen Meyer, PhD

**PROMOTING MUSCLE REGENERATION THROUGH ADIPOSE SIGNALING**

*Funded by NIH R01*

**MEDIATED REGULATION OF SKELETAL MUSCLE FUNCTION AND METABOLISM**

*Funded by NIH RO1 (Sah)*

**TARGETED DELIVERY OF A PROANGIOGENIC AND PROMYOGENIC PROTEIN FOR REGENERATION OF DIABETIC ISCHEMIC LIMBS**

*Funded by RO1 (Guan)*

### Linda Van Dillen, PT, PhD, FAPTA

**IMPACT OF HIP STRUCTURE AND FUNCTION ON THE CLINICAL PRESENTATION OF LOW BACK PAIN**

*Funded by the American Physical Therapy Association*

### Jennifer Zellers, PT, DPT, PhD

**DIABETES-RELATED TENDON CHANGES: INTEGRATING EX VIVO AND IN VIVO APPROACHES**

*Funded by NIH F32*

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# Named Scholarships

**The Barton Family Scholarship is awarded to students based on need and merit who have interest in Endurance Sports Rehabilitation. Kiera Olson, PT 24**

*This scholarship is possible through a gift from the Kari and Fred Barton Charitable Foundation.*

**The Timothy B. Burnight Scholarship is awarded to a student who demonstrates exceptional academic promise. Krystal Panagiotaros, PT 26**

*This scholarship is possible through a gift from: Mr. Tom Burnight*

**The Susan and Robert Deusinger Scholarship is awarded to a student who has demonstrated exceptional and enduring leadership in the classroom, clinic and/or community. Lauren Froehlich, PT 25**

*This scholarship is possible through a gift from: Dr. Robert H. Deusinger Dr. Susan Schaefer Deusinger GR80 SW87*

**The Kathleen K Dixon Scholarship is awarded to students based on need and merit Abigael Thier, PT 25**

*This scholarship is possible through a gift from: Dr. Shirley Sahrmann*

**The Karen Donahue Scholarship is awarded to a student with a record of consistent and outstanding service to the profession and/or the community. Lauren Froehlich, PT 25**

*This scholarship is possible through a gift from: Dr. Shirley A. Sahrmann, Dr. Robert Shigemi Ohashi and Dr. Theresa Monaco Spitznagle*

**The Gina Prescott Earnest Scholarship is awarded to a student who demonstrates both exceptional academic and clinical performance, and outstanding professional growth and promise. Leo Jacobs, PT 25**

*This scholarship is possible through a gift from: Mrs. Gina Prescott Earnest PT68 Mr. James M. Earnest*

**The Leonard Eastman Scholarship is awarded to a student who demonstrates innovative, initiative- driven leadership that has a meaningful impact on their academic, clinical practice and community environments. Jason Lee, PT 25**

**The Anne Furlong Scholarship is awarded to a student who demonstrates outstanding academic performance in their undergraduate work. Paige Thompson, PT25**

*This scholarship is possible through a gift from: Ms. Marie K. Furlong Mrs. Cathy Schindler Mr.George Schindler*

**The Guebert/Lake Scholarship is awarded to a student who demonstrates success in the areas of scholarship, clinical promise, class leadership and service to the community. Jalyn Griffith, PT 25 and Hannah Lillioja, PT 25**

*This scholarship is possible through a gift from: Mrs. Marilyn Kirkham Mr. John Kirkham*

**The Anita Hefti Frumson Scholarship is awarded to students who demonstrates need and merit. Aislinn Parish, PT 25, and Parker Seachrist, PT 25**

*This scholarship is possible through a gift from: Mrs. Anita Hefti Frumson*

**The Robert J. Hickok Scholarship is awarded to a student who has demonstrated exemplary personal integrity, consistent professional commitment, leadership and excellence in clinical work. Lauren Froehlich, PT 25, and Manon Milczynski, PT 25**

*This scholarship is possible through a gift from: Mrs. Lisa M. Waeckerle Mr. William R. Waeckerle*

**The Nancy Palumbo Scholarship is awarded to a student who shows Passion and enthusiasm for the Program in Physical Therapy inside and out. Anna Watts, PT 25**

*This scholarship is possible through a gift from Mr. Ray E. Pool III and Mrs. Jayne Fleck Pool*

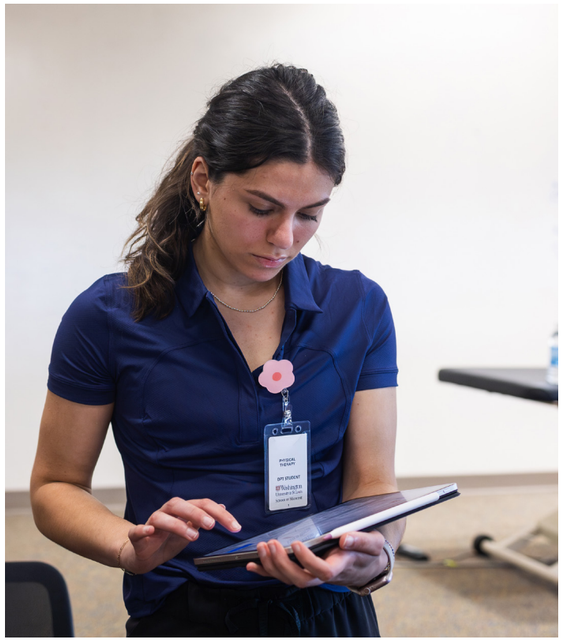
**The PT Scholars Scholarship is awarded to students who excel in their first Clinical Education experience. Ella Bess, PT 25; Amy Kang, PT 25; Samantha Pauli, PT 25; Emory Perlman, PT 25; Kaylin Sommer, PT 25; and Madeline Stach, PT 25**

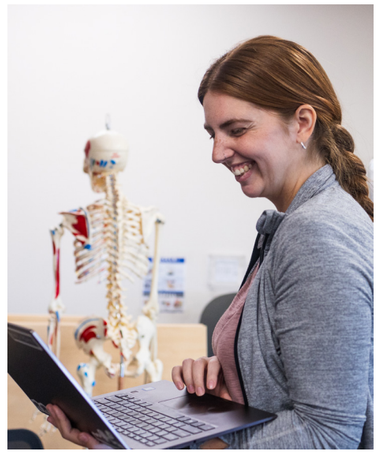
**The Steven J. Rose Diversity Development Award is awarded to students who have demonstrated academic excellence and contributed to educational diversity in the Program in Physical Therapy. Janae' Simoneaux, PT 24; Heather Cabeza, PT 24; Mikaela Griechen, PT 25; Amy Kang, PT 25; Isabella Suffian, PT 26; and Alexis Schillinger, PT 26.**

*This scholarship is possible through a gift from: Ms. Carol Lynne Enkoji Dr. Richard Scott Nelson*

**The Sahrmann Assistantship provides funding for a student to conduct research related to musculoskeletal impairments. Krystal Panagiotaros, PT 26**

*This scholarship is possible through a gift from: Elsevier and Dr. Shirley A. Sarhmann*



# Publications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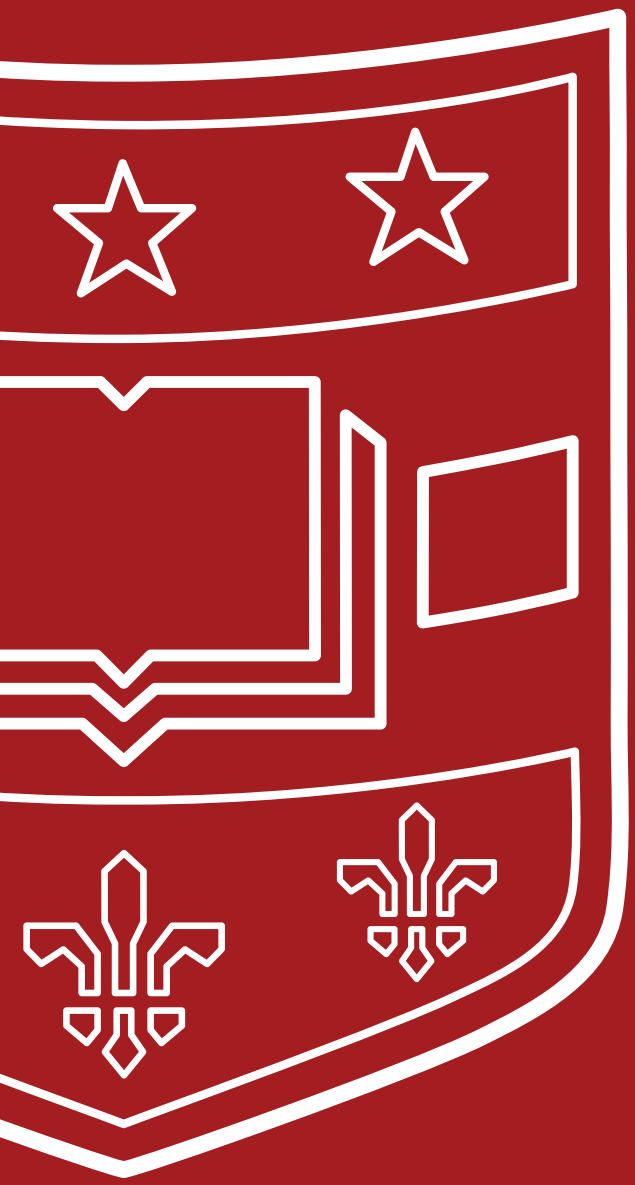

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