

Moving Ahead

Program in Physical Therapy

ANNUAL REPORT 2021



Washington University in St. Louis

SCHOOL OF MEDICINE

Program in Physical Therapy

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2021

by the
Numbers

**Ranked
#1**

PT Program by
U.S. News & World Report

97

incoming DPT students
for the class of 2024

100%

employment
of WUPT20 graduates

24

active grants

4

clinical practice sites

52,877

patient visits from
Jan. – Dec. 31, 2021

Welcome



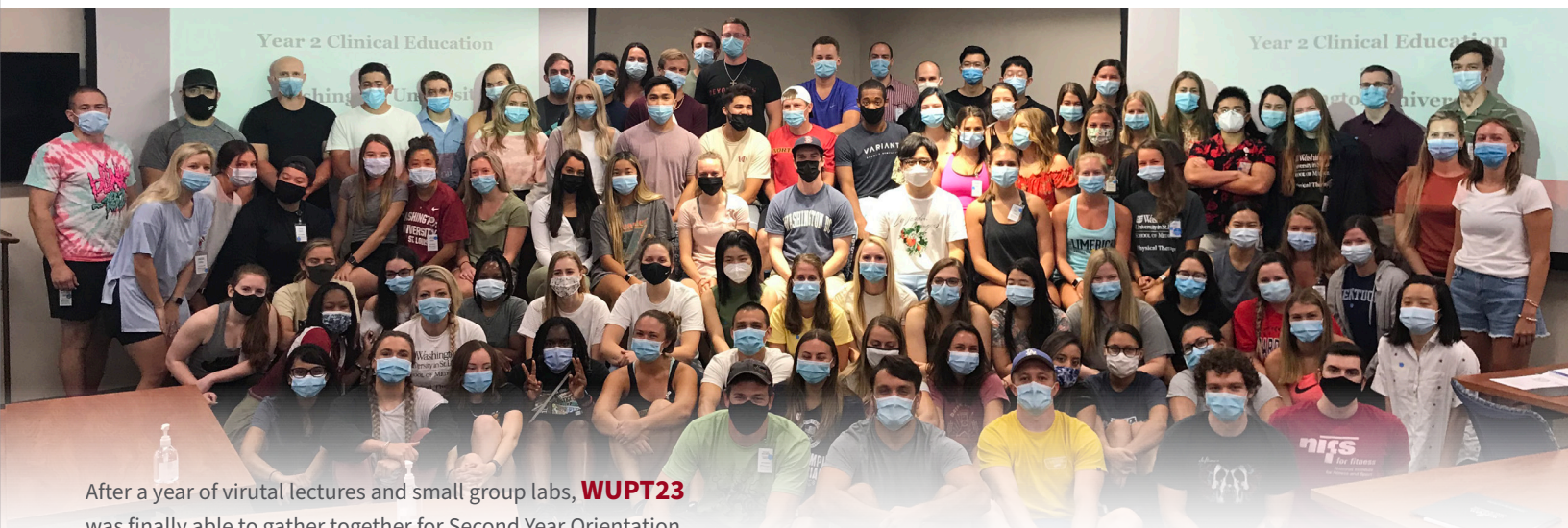
“Keep moving. You’re still here. As long as you’re moving you’re still here.”

Tommy Rivers Puzey



Gammon Earhart,
PT, PhD, FAPTA,
Associate Dean for
Physical Therapy

I’ve lost count of how many hours I have logged on the treadmill, guided by Tommy Rivers Puzey, my favorite iFit trainer and fellow physical therapist. Puzey is an elite athlete, an ultramarathoner. (I am an ultra 5K-er, if you were wondering). During the pandemic, Puzey was confronted with a life-altering cancer diagnosis. From being critically ill in 2020 to completing the NYC marathon in 2021, he has shared his journey openly and honestly on social media. I and many others have marveled at his outlook, his wisdom and his sheer grit. His story is a testament to the power of movement. He put it this way, “Keep moving. You’re still here. As long as you’re moving you’re still here.” What a gift it is to still be here, to still be moving, and to be in such a powerful profession focused on movement. I hope you enjoy reading about how the Washington University Program in Physical Therapy kept moving forward in 2021. And, I wish you all the best in 2022. Keep moving.



After a year of virtual lectures and small group labs, **WUPT23** was finally able to gather together for Second Year Orientation.



Assistant Director for Diversity, Equity and Inclusion, **Dr. Julian Magee**, joined the Program in August 2021.

Inclusion & Diversity

The Program in Physical Therapy is committed to building a diverse community of scholars. Faculty, students, and staff participate in activities and programs that seek to educate, identify, and recruit talented students to the Program and the profession.

Making diversity, equity, and inclusion a priority is more than just a stated goal for the Washington University Program in Physical Therapy. Dr. Julian Magee recently became the Program's first Assistant Director for Diversity, Equity, and Inclusion, firmly positioning the Program as a national leader.

Very few programs in physical therapy currently fund a position dedicated to diversity, equity, and inclusion (DEI). "There are just a few out of more than 200 programs nationwide that have hired someone specifically for that role, but it's definitely the way of the future," notes Dr. Gammon Earhart, Associate Dean and Director of the Washington University Program in Physical Therapy.

The Program has been sharpening its focus on diversity, equity, and inclusion for several years, working to enhance the diversity of its faculty and student populations. Activities to raise awareness include a club whose members read relevant journal and professional articles, and an after-school program at an inner-city high school aimed at increasing students' interest in physical therapy as a career.

"Despite all the progress we've made, our efforts were still primarily extracurricular and volunteer-based," Earhart says. That changed in early 2021 when a search committee selected Magee, formerly a Physical Therapist Assistant Academic Program Director at Daymar College in Nashville, Tennessee, for the new Assistant Director position. Magee, also an Assistant Professor, spends about 60% of his time on DEI work.

Magee's role reaches into every aspect of the Program: teaching, research and practice. "Since I started in August, I've been assessing what aspects the Program is already excelling at and identifying what areas we can work on. I've been doing a lot of listening," he says. "I'm aware of every individual we touch and of making sure our patients, students and faculty have a strong sense of belonging."

Magee is also keenly aware that changes and improvements



Dr. Julian Magee meets with first year student, Nehemiah Colyer.

in DEI are a collaborative effort. "This isn't just my plan," he says. "We're developing *our* plan as a program. I'll be crafting and leading that plan."

Based on early discussion and feedback, Magee recognizes the need to create a more inclusive culture. "We need to look at what we do through the lens of equity and inclusion, making sure we're welcoming and open. It's important to talk about biases, which we all have, and then to talk about not allowing those biases to impact our work. At that point, we can move on to looking more carefully at group and cultural competencies in terms of equity," he says.

Among his earliest activities, Magee presented a lecture to first-year students regarding unconscious bias, explaining that while individuals "may not be responsible for their first thought, they are responsible for their first action." He is also preparing training sessions and resources regarding various other DEI issues and exploring relationships with historically Black colleges and universities for potential collaborations.

Magee hopes to see the Program increase its faculty and clinician diversity by 10 to 15% in the next five years. "It's a lofty goal," he says. "But we need to give our students and patients a chance to see themselves reflected in those who are teaching and caring for them."

Earhart appreciates Magee's attention to detail, professionalism, and intuitive grasp of the issues. "He's wise, warm and easy to talk to, and he's so good at relaying complex ideas in ways that are clear and memorable," she says. "I'm excited to see where Julian will lead us."



Faculty member, **Dr. Suzy Cornbleet**, works with second year students in lab.

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.

On Dec. 8 and 9, 2021, the first-year Program in Physical Therapy learners, the preferred term for students, took their semester final – unlike any final given before in the program. Instead of several subject-specific tests, the learners completed the first semester of the program’s revamped curriculum with an integrated assessment designed to demonstrate their skills in multiple areas optimizing human movement.

The two-day exam, part assessment of hands-on competencies and part written, was the culmination of the first semester, in a new curriculum several years in the making. In consultation with students and alumni, community representatives, representatives from other professions, and experts in the learning sciences, program faculty developed and successfully launched the new curriculum, designed to ensure students are fully prepared to step into practice in an integrated, diverse health care setting.

“It’s everything we were hoping for,” says Dr. Steven Ambler, Division Director of Education. “It’s taken an incredible amount of work to build and deliver this new competency-based framework, and our faculty have been absolutely amazing in bringing this new curriculum to life, especially with the added stress of the pandemic.”

While the COVID-19 pandemic initially created a degree of havoc as faculty scrambled to deploy online coursework and virtual lab experiences in early 2020, the experience highlighted the faculty’s adaptability and resilience as a team and served to jump-start some technical aspects of the new curriculum. Instead of slowing the timeline, the experience simply focused efforts and the faculty pivoted back to the planned curriculum renewal without delay.

Ambler emphasizes the shift in philosophy from grading students based on short-term, subject-specific memorization to a long-term mindset in which faculty assess learners on key competencies needed for professional formation. During each module, learners work as teams with faculty who demonstrate how various aspects come together to optimize the care of patients.

For example, instead of studying the cardiovascular system in one class and the musculoskeletal system in another, learners apply knowledge of both systems to real-world



Faculty member, **Dr. Tammy Burlis**, engages with first year learners.

scenarios. “We know our learners are excellent at academics and test-taking,” Ambler says. “Now they are able to practice in lab settings and receive immediate feedback on what areas they are most competent in and what areas require more practice.” Working with a faculty coach, learners then develop strategies to improve their performance in future assessments. “It’s not a punitive model,” Ambler notes. “The learners focus on continued learning and improvement as they progress through the modules.”

As faculty lead learners on this new path of professional development, old paradigms fall away. Learners and faculty consider themselves a team, and all are on a first-name basis. “Today’s learners will be our colleagues very soon,” Ambler notes. “We recognize that and communicate with that in mind.”

As learners and faculty collaborate to integrate clinical and basic science knowledge, health and equity are a focus throughout. The curriculum build team has worked to look at all aspects of the curriculum through an equity lens. This focus during the curriculum renewal also prompted faculty to add additional content for the learners who joined the program prior to the new curriculum.

A few of those upperclassmen expressed disappointment that they couldn’t experience the new curriculum, but Ambler notes that they still receive an outstanding education. “The new curriculum wasn’t developed because what we had was lacking,” he says. “It was just time to look at the future of the profession from what was already a position of excellence. And I remind our second- and third-year learners that they were a big part of the curriculum renewal process by providing vital feedback and suggestions.”

Ambler’s enthusiasm is evident as he talks about the curriculum renewal and expresses gratitude for the exceptional efforts of the entire faculty. “We’re tired, but we’re excited,” he says. “And we’re down in the weeds of completing the second-year learning modules. But it’s all based on the principles of improving health and equity through movement. Our faculty and learners are working so hard, and we’re realizing that long-term vision of becoming and practicing as true experts in human movement.”



Faculty member, **Dr. Keith Lohse**, meets with PhD student, **Jessica Barth**. Dr. Lohse brings his expertise in Quantitative Methodology and Rehabilitation Informatics to the Research Division.

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.

As Dr. Linda Van Dillen, Division Director of Research for the Program in Physical Therapy, looks across the many skills and specialties represented by faculty researchers, she sees a rich tapestry of expertise. While there aren't many gaps, Van Dillen ensures that the weave is strengthened by recruiting researchers with unique skills.

"We always work to make sure we're covering the whole spectrum of study regarding the human movement system," Van Dillen says. "And we're strategic in filling any gaps so we can provide an even more comprehensive research program."

This year, we were fortunate to welcome two extremely talented young researchers who bring new skills with them."

Dr. Keith Lohse's training crosses research areas, applying to multiple specialties. He's studied neuroscience, cognitive science, psychology, and statistics. "His analytical skills are very broad," Van Dillen notes.

Lohse himself agrees, pausing when asked what his research specialty is and then answering, "It's varied." When pressed, he says his research field could best be defined as "quantitative methodology and machine learning to apply rehabilitative solutions to science-based problems." In other words, Lohse uses statistics and information technology to determine how much therapy individuals need in rehabilitation settings, depending on their abilities when beginning rehab. "His work is aimed at improving our ability to provide personalized, precision rehabilitation," Van Dillen adds.

However, that's just one of the areas in which Lohse applies his considerable breadth of knowledge. His broad range of interests and experience allow him to collaborate with colleagues across the research spectrum. "Keith has the ability to contribute analytically to individual studies, and he has experience analyzing large data sets to understand outcomes," Van Dillen says.

"I don't have a clinical background, so I rely on my clinical

colleagues to access patient populations and help me understand the problems they're facing. Then I bring in the methodological expertise," Lohse says. His ability to crunch numbers and interpret data will be helpful in assessing how well the Program's new curriculum is working and will apply to the analysis of care outcomes at the Program's clinical sites. "His studies will help us move forward in the program and as a profession," Van Dillen says.

Of equal excellence but with a completely different focus, Dr. Jennifer Zellers studies personalized care for individuals who have tendon injuries or dysfunctions. With a background in biology, biomechanics, and rehabilitation science, Zellers' personal experience as a ballet dancer informs her interests.

"I like to say that I was a really great unemployed dancer," Zellers laughs. "I was fascinated by the mechanics of feet and ankles, and as I explored questions about tendons, I realized there's so much we don't know. It's not just an inert rope that connects muscle to bone. It's biologically and metabolically active and capable of repairing and remodeling itself."

Zellers sees her work as a way to give back to the dance community, and she still dances for fun. In the lab, though, she's a serious scientist, focusing her work on improving tendon function for people who have diabetes. The disease can

cause tendons to stiffen, contributing to movement difficulties and complications, such as foot ulcerations.

While Zellers is new to her faculty position, she is not new to the Program. "Jen came here three years ago as a post-doctoral fellow on a training grant in movement science. Then she got her own post-doctoral fellowship here. And now we're welcoming her to our faculty," Van Dillen says. She characterizes Zellers work as "translational science" because it encompasses both human subject studies and basic science research. "By understanding the biology of tendon tissue and identifying specific biomarkers, we can better personalize treatment," she says.

Zellers' fellowship work allowed her to establish collaborations with Program and other university faculty, which she plans to continue. "I'm working with colleagues in orthopedics and mechanical engineering as well as physical therapy, and I'm really impressed by the research support provided by the Program and at the institutional level. We're on the precipice of incredible growth regarding how tendon tissue heals."

And with Lohse and Zellers on board, the Program itself is on the precipice of even greater work that contributes to moving the profession forward for patients' benefit.



Dr. Jennifer Zellers joined the Program three years ago as a postdoc. In October, she joined the faculty and studies personalized care for individuals who have tendon injuries or dysfunctions.

Newly Awarded Grants

Funded in Fiscal Year 2020 – 2021

Gammon Earhart, PT, PhD, FAPTA

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

Funded by National Endowment for the Arts

Dance is known to be a highly effective and motivating form of exercise for older adults, yet very few studies have explored the benefits of ballet, despite its high potential to facilitate coordination and balance. Participants will be randomly assigned to either ballet or a social conversation intervention. Gait, balance, quality of life, and mood will be assessed before and after the intervention.

Michael Harris, PhD

THE BIOMECHANICAL CONSEQUENCES OF FEMORAL VERSION DEFORMITY AND SURGICAL CORRECTION IN PATIENTS WITH HIP DYSPLASIA

Funded by The American Society of Biomechanics (ASB)

Hip dysplasia contributes to early osteoarthritis by altering hip loading. Prior research has shown how deformities of the pelvis contribute to abnormal loads in the hip, but little is

known about the contributions of femur deformities. The goal of this study is to identify how a femur deformity called excessive femoral version (FV), which is common in dysplastic hips, changes muscles forces around the hip. First, we are using musculoskeletal simulations to demonstrate how FV severity and direction alter hip forces during walking and squatting. Next, we are simulating surgery to correct FV deformities and assessing the impact of surgical decisions such as femur cut site and the amount of corrective rotation. Results from this project can help optimize treatment for individual patients by collectively considering femur and pelvis deformities along with the muscle forces surrounding the hip.

Catherine Lang, PT, PhD, FASNR, FAPTA

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

Funded by NIH R01

This project deploys wearable-sensor methodology in infants to identify two

critical neural liabilities contributing to the development of autism: hyperactivity and impairment in motor coordination. These liabilities result in high risk of developing autism, but cannot yet be reliably measured within the first year of life. Identifying and targeting the underlying neural liabilities before autism develops may offer the greatest opportunity for high-impact, personalized, early intervention.

Susan Racette, PhD

ENHANCING THE CALERIE NETWORK TO ADVANCE AGING BIOLOGY

Funded by NIH R33

The overall scope of this project is to create a sustainable resource that promotes use of biological samples and extensive physical, physiological, and behavioral data from the CALERIE trial, a randomized controlled trial of two years of calorie restriction versus ad libitum feeding. The goal is to improve the understanding of aging biology and the potential healthy aging benefits of calorie restriction.



WUPT21
showing off
their resting
hand splints.

Continuing Awards

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 R01

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

Marcie Harris Hayes, PT, DPT, MCSI

COMPARISON OF MOVEMENT PATTERN TRAINING AND MANUAL THERAPY FOR PREARTHITIC HIP DISORDERS: A PILOT RANDOMIZED CLINICAL TRIAL

Funded by the Foundation for Physical Therapy Research

MOVEMENT SYSTEM IMPAIRMENTS IN PATIENTS WITH LOWER URINARY TRACT SYMPTOMS

Funded by the WU Institute of Clinical & Translational Sciences

MOVEMENT PATTERN TRAINING IN PEOPLE WITH INTRA-ARTICULAR, PREARTHITIC HIP DISORDERS

Funded by NIH R21

Michael Harris, PhD

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

Funded by NIH K01

Mary Hastings, PT, DPT, MSCI, ATC

MUSCLE, JOINT AND MOVEMENT DETERIORATION CONTRIBUTING TO NEUROPATHIC FOREFOOT DEFORMITY

Funded by NIH R01

Laura McPherson, PT, DPT, PhD

CRCNS: IMPROVING BIOELECTRIC SELECTIVITY WITH INTRAFASCICULAR STIMULATION

Funded by NIH-Florida International University Subaward

Catherine Lang, PT, PhD FASNR, FAPTA

ISCHEMIC CONDITIONING AS A NEURORECOVERY AGENT FOR STROKE

Funded by NIH R01

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

Funded by NIH R01

Jacob McPherson, PhD

INTRASPINAL MICROSTIMULATION FOR MULTI-MODAL REHABILITATION

Funded by NIH R01

RESTORATIVE NEUROPLASTICITY IN BRAINSTEM MOTOR PATHWAYS TO ENHANCE REHABILITATION

Funded by American Heart Association

Gretchen Meyer, PhD

PROMOTING MUSCLE REGENERATION THROUGH ADIPOSE SIGNALING

Funded by NIH R01

FAT-MUSCLE CROSS-TALK IN THE INJURED ROTATOR CUFF

Funded by NIH R21

ROTATOR CUFF DEGENERATION AND REPAIR

Funded by NIH R01

Susan Racette, PhD

PERSONALIZING EXERCISE FOR PARKINSON'S DISEASE

Funded by The Foundation for Barnes-Jewish

PRIDE SUMMER INSTITUTE IN CARDIOVASCULAR GENETIC EPIDEMIOLOGY

Funded by NIH R25

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



WUPT21 learners in Neuro Lab – High Intensity Gait Training.



WUPT21's **Savannah Martin** represented the Program in Physical Therapy at the 2021 School of Medicine Commencement Ceremony.



WUPT 22 learners in Pediatrics Lab.



Clinical Services Representative,
Megan Hall, greets a patient at the
4444 Forest Park Clinical Practice.

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.

Growth is good, but it can bring challenges. Especially right before and during a pandemic. That's what Dr. Greg Holtzman found as he steered the Program in Physical Therapy's expanding clinical operations through the last couple of years. However, thanks to a team of professionals working within an efficient scheduling and billing system, even COVID-19 didn't stop patients from getting needed in-person or telehealth appointments.

As Clinical Division Director for the Program, Dr. Holtzman recognizes his predecessor, Dr. Beth Crowner, for laying the groundwork for a clinical scheduling and billing operations hub – a centralized department that helps maintain smooth clinical operations at multiple locations, even through the most trying days of the early COVID-19 pandemic.

"I have to credit Dr. Crowner with putting the pieces in place for a centralized scheduling hub several years ago when we began planning for and adding clinical sites to better serve people across the St. Louis area," he says. "She saw the need for dealing with increased call volume and directing patients to the appropriate locations, and she was integral to getting the scheduling and billing hub off the ground."

Diane Backes began working as the Program's practice Office Manager in March 2019, four months before the centralized scheduling hub went live. She oversees office operations for all four Washington University Physical Therapy locations – two in the Central West End, one on the Washington University Danforth Campus, and one in O'Fallon, Missouri. "In July 2019, we were able to begin offering a one-stop-shop for patients who need to call for an appointment, whether it's for physical, occupational, or speech therapy at any of our locations," she says.

Backes is referring to the centralized phone number – (314) 286-1940 – used to make appointments for all clinical sites. Available online and in patient information materials, the number takes callers to the scheduling hub where a team of schedulers who work remotely can make appointments for



Practice Office Manager, **Diane Backes**, **Dr. Greg Holtzman**, Director of Clinical Practice, and **Rosalie Schreckenberg**, Manager of Patient Accounts, in the TRISL Clinical Practice.

any location or transfer callers to the appropriate front desk staff for site-specific questions.

Rosalie Schreckenberg, Manager of Patient Accounts, also appreciates the updated billing and insurance verification system. "Integrating the pre-arrival process into the billing functionality has been very helpful," she says, adding that her team grew from two to six pre-arrival positions. She also oversees the insurance coding team to ensure new patients' diagnosis codes are correct before their first appointment.

The COVID-19 pandemic caused patient volume to decrease in early 2020, but Holtzman says by August of that year, call volume was back to pre-pandemic levels. "Our schedulers transitioned to working from home, and they were very productive. They appreciate the continued flexibility to work remotely as we adapted our model." He notes that some have hybrid roles while other members of the 14-person scheduling team work at the clinical sites.

"The timing was good for going to this centralized system," he says. "Our work as a team in the centralized hub made our pandemic coordination easier, and the scheduling and billing teams were very adaptable when they needed to be."

The phone never stops ringing for the scheduling staff, who handle more than 200 calls each day. Meanwhile, the billing team supports clinical workflow by clarifying any insurance issues before appointments. Backes notes that in June 2021 alone, there were almost 5,500 incoming and outgoing calls from the scheduling and billing hub.

"We simply couldn't sustain our practice without these teams," Holtzman says. "The schedulers are the voice of our practice as the first contact patients make, and the billing team is crucial to making sure our patients have the proper insurance and referral documentation. Nothing happens without these teams and the great managers who work with them."



Members of the WUPT Community as well as the School of Medicine Campus Community participated in the **2021 Virtual Run 4 Research.**



Community Engagement

Our students build leadership skills and improve their community through several outreach efforts. This past year, students, faculty and alumni volunteered to support local, national and international organizations.

When the Washington University Program in Physical Therapy's annual Run 4 Research became a virtual run due to the COVID-19 pandemic in 2020, participants stepped up to contribute photos and mileage logs, raising money for the Foundation for Physical Therapy Research. When the pandemic continued into 2021, the run not only continued its virtual success but expanded to involve Washington University Wellness, helping the campus community go from "Couch to 5K," raising a record amount and improving individual fitness in the process.

The Program has an important role in the Foundation's history, and a subsequent tradition of 25 years of fundraising runs to support it. In 1977, Dr. Steven Rose served as Director of the Washington University Program in Physical Therapy. He served on the first board of directors for the Foundation for Physical Therapy Research, a national organization that funds physical therapy research grants, scholarships, and fellowships. Dr. Michael Mueller, Professor of Physical Therapy, kept Rose's role in mind as he worked with students to support the foundation.

"Our Program as a whole was instrumental in the beginnings of the foundation," he says. "Steve Rose and his colleagues, who had the idea to create an organization that would fund physical therapy research, were really impactful in the field because physical therapy as a profession needed more research to better inform practice. The Foundation has been instrumental in helping us do that."

Mueller himself benefitted from the Foundation, which awarded him a scholarship to help support his doctoral education and then funded some of his early research in the 1980s. "A lot of our faculty and today's new researchers are recipients of Foundation scholarships and grants," he says. "It's an important organization, and it's great that we're able to give back by finding ways to involve the students, faculty, and broader university community in these fun and beneficial fundraising runs."

Since its inception, physical therapy students, with faculty support, spearheaded the annual Run 4 Research, raising money for the Foundation. Mueller remembers the first run in Forest Park, in 1997. "We had about 200 people participate, and we've had at least that much participation every year since," he says. "I've really enjoyed working with the student

organizers every year. They're just tremendous – they're busy with their studies, yet they still take on a lot of additional work in organizing the race."

Second-year student Emily Mueller (no relation to Mike Mueller) helped make the 2021 Run 4 Research a success. "I worked primarily with my classmate Emily Miller, along with Dr. Mueller and Dr. (Linda) Van Dillen on this year's run," she says. "And Lauren Buschhorn, the University's Wellness Coordinator, was really important to our planning this year, too."

When the COVID-19 pandemic forced the 2020 run to become a virtual event, organizers hoped 2021 would allow them to return to a live run in St. Louis' Tower Grove Park. "But COVID wasn't going away, so we decided to stick with the virtual format," Emily says. "By planning and implementing the event mainly through social media, we made it accessible," she adds.

Through Twitter and Instagram, participants could send in screenshots from fitness tracking apps as proof of time and distance, creating an official record that Emily used to compile race results for the 275 participants. "Posting the photos allowed us to keep that sense of community that we had from previous races, and it also allowed us to connect with alumni across the country who could participate, too."

The collaboration with Washington University Wellness took the 2021 run to new levels of success and earned the Foundation's award for the Most Creative event. A "Couch to 5K" employee challenge was already in the works for 2021, and asking participants to complete the challenge by entering the Run 4 Research combined the two initiatives. "Our collaboration had a big impact on our fundraising, and we totaled more than \$10,000 combined for 2020 and 2021, which is our most ever," Emily says.

Both Muellers now are passing the organizing baton on to others. New second-year students in 2022 will work with Van Dillen to keep the event a vital part of the Program's student traditions. Mueller, who retired from the faculty this year, knows the run will continue its success. "This year, with Washington University Wellness getting involved, was really a breakthrough year," he says. "The run is in good hands, and the support it provides continues our Program's tradition of being national leaders."

Named Scholarships

The **Timothy B. Burnight Scholarship** is awarded to a student who demonstrates exceptional academic promise.

Cameron Swick, PT24

*This scholarship 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.

Stacy Chen, PT23

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

The **Kathleen Dixon Annual Scholarship** is a need-based scholarship awarded to a student each year. **Shikha Shah, PT23**

*This scholarship possible through a gift from:
Ms. Kathleen K. Dixon
Dr. Shirley A. Sahrman PT58 GR71 GR73 HS*



WUPT21 in Case Integration 3 Hand Lab.

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

Hannah Murray, PT23

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

The **Leonard A. Eastman Annual Scholarship** is awarded to a student with academic promise. **Abigail Schruppf, PT23**

*This scholarship possible through a gift from:
Dr. Shirley A. Sahrman PT58 GR71 GR73 HS*

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

Kirsten Hizer, PT24

*This scholarship 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.

Tyler Blake, PT23 and **Tessa Roberts, PT23**

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

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. **Alex Huynh, PT23**

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

The **Nancy Palumbo Memorial Scholarship** is awarded to a student who has shown passion and enthusiasm for the Program in Physical Therapy inside and out. **Elizabeth Rexford, PT23**

*This scholarship possible through a gift from:
Mr. Mark Kaufman and Ms. Mary Ann Kaufman
Mr. Fred Palumbo and Ms. Mary Anne Palumbo
Mr. Ray E. Pool III
Ms. Jayne Fleck Pool
Ms. Nancy L. Svenstrup*

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.

Mackenzie Mackenzie, PT22;
Andrew Jazbani, PT22; Adele Looper, PT23; Stacy Chen, PT23; Sydney Jackson, PT 24; Anna Watson, PT24

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

The **Sahrman Assistantship** provides funding for a student to conduct research related to musculoskeletal impairments. **Emily Kaszyk, PT24**

*This scholarship possible through a gift from:
Elsevier
Dr. Shirley A. Sarhmann PT58 GR71 GR73 HS*

The **Shirley Sahrman Scholarship** is awarded to an incoming first-year student with research experience.

Tina Wu, PT23

*This scholarship possible through a gift from:
Dr. Shirley A. Sarhmann PT58 GR71 GR73 HS*

The **Joye Siroky-Baumann Scholarship** is awarded to a student with academic promise. **Stephanie Flores, PT23**

*This scholarship possible through a gift from:
Mrs. Erdumite Baumann
Dr. Gert F. Baumann*

Donor Honor Roll

July 1, 2020 – June 30, 2021

ELIOT BENEFACTOR

Kathleen K. Dixon
Shirley A. Sahrman

ELIOT FELLOW

Gina Prescott Earnest and
James Earnest
Farrehi Family Foundation

ELIOT

Melchora Alexander
Doris Brydon
Steve Sean Cassabaum
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Joseph Crowner
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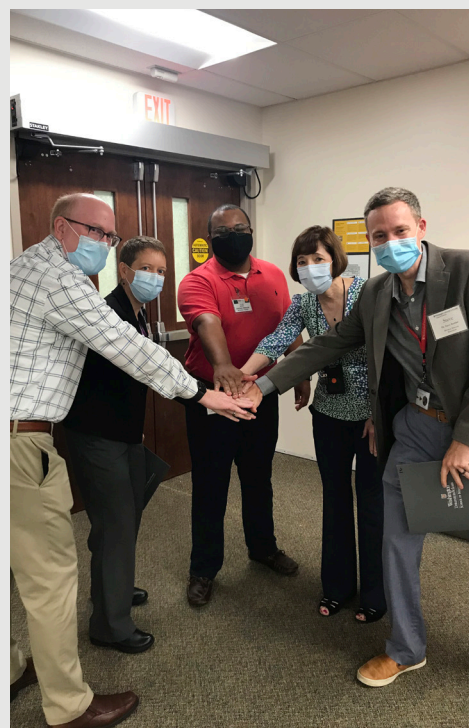
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WUPT Leadership team prepares to welcome WUPT24 on the first day of orientation and launch the renewed curriculum.



WUPT22 learner working on custom orthotics and slipper casts in a foot/ankle lab.



Faculty Member, **Dr. Sylvia Czuppon**, meets with second year learners in DMMCII.



Faculty member, **Dr. Tammy Burlis**, takes a moment to recognize colleague, **Dr. Cheryl Caldwell**, on her final Site Selection Day. Dr. Caldwell retired from the Program at the end of the Fall 2021 semester.

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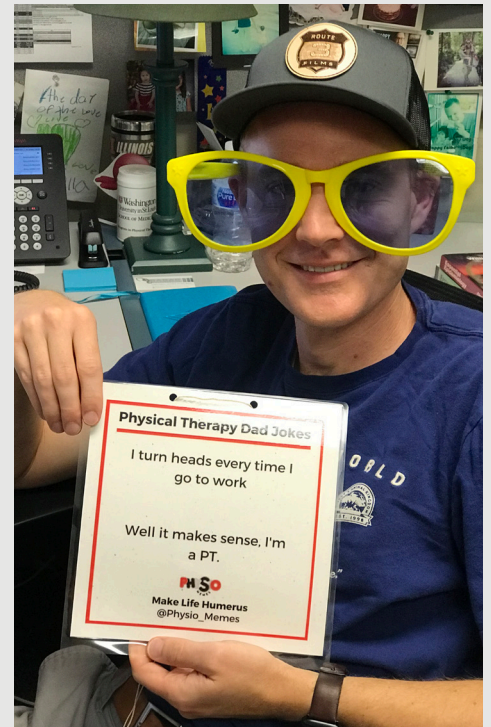
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Faculty member, **Dr. Steve Ambler**, does his best Dad Joke impression on Site Selection Day.



WUPT23 learner practicing testing sensations, coordination and reflexes in a Neurological Examination Lab.

Class Notes and Program Honors



Second year learners

engage with faculty members during lab.



WUPT Faculty and Staff

presented Transforming the Health of Society Through Competency-Based Physical Therapist Education Theory to Practice at this year's American Council of Academic Physical Therapy (ACAPT).

WUPT faculty member **Steve Ambler** received a grant from the WUSM Academy of Educators to support the work entitled, "Return on investment in the doctoral health professions: A systematic narrative review."

Movement Science Ph.D. student **Jessica Barth** received the 2021 **Clinical Research Training Center Outstanding Citizenship Award**. This award is selected based on nominations from CRTC directors, course leaders, and staff.

WUPT faculty member **Tammy Burlis** was selected to participate in WUSM's Learner Assessment for Program Leaders course.

Heather Cabeza of PT24 won the fall semester's **WUPT Tweet for Tuition scholarship**. Students were asked to suggest an innovative idea for moving our profession into the future, and Heather tweeted, "@wustl_pt wouldn't it be nice if schools coordinated a PT visit to assess kids every year similar to the vision screening!? We could start to move towards preventative care and educate students/families on movement health!"

WUPT Faculty Member Cheryl Caldwell received the **University of Colorado Physical Therapy Alumni Achievement Award**.

MSP student **Chao Cao's** recent publication in JAMA Otolaryngology entitled, "Association of Balance Function With All-Cause and Cause-Specific Mortality Among US Adults," garnered **media attention**. The study concludes that balance disorders appear to be associated with a higher risk of death from all causes, cardiovascular disease, and cancer in the long term.

DPT student **Stacey Chen, PT23**, received the WUSM Clinical Research Training Center **Outstanding Citizenship Award**.

WUPT faculty member **Beth Crowner** was selected to serve as **co-chair of the Academy of Neurologic Physical Therapy's Physical Therapist Management of Parkinson Disease Knowledge Translation (KT) Taskforce**. This group is tasked with developing tools, processes, and strategies for disseminating and implementing the forthcoming APTA Clinical Practice Guideline for Parkinson's Disease. Beth's co-chair will be WUPT alumna **Miriam Rafferty (DPT' 06)**.

WUPT faculty member **Dr. Michael J. Mueller**, PT, Ph.D., FAPTA, received the **2021 Charles M. Magistro Distinguished Service Award** from the Foundation for Physical Therapy Research (FPTR)! This award is named in honor of FPTR's first president and chair and recognizes Michael's commitment and outstanding service in promoting the goals of FPTR.

WUPT faculty member **Mike Harris** received a **2022 Orthopedic Research Society Collaborative Exchange Grant**. This grant will allow Mike to travel to the University of Ottawa to work with colleagues on establishing repeatable protocols for quantitative MRI of cartilage structure, patient-specific in-vivo motion capture, and musculoskeletal modeling – three areas that have previously challenged direct comparison of findings among groups studying hip disorders.

WUPT faculty member **Marcie Harris-Hayes** was featured on a **Journal of Orthopedic and Sports Physical Therapy podcast** entitled "Treating hip-related groin pain—which method is best?" <https://podcasts.apple.com/us/podcast/jospt-insights/id1522929437?i=1000536720846>

WUPT faculty member **Dr. Beth Crowner** received the **Excellence in Neurologic Education Award** at the Academy of Neurologic Physical Therapy meeting.

WUPT faculty member **Carey Holleran** was selected to join the **WUSM Academy of Educators**. This achievement acknowledges Carey's significant contributions to education and recognizes her valuable place as a central contributor to the educational mission of the School of Medicine.

After passing the geriatric boards in 2019, **Marie Howell** of PT93, completed her transitional DPT at EIM with a geriatric focus in early January. She is now a partner in a private practice call Peak Fitness and PT in Chattanooga, TN.

Andrew Jazbani of PT22 received the **Exceptional Student Award from Cora Physical Therapy**. This award recognizes students in the top 10% in clinical skills, which serve everyone and treat everyone right to provide an excellent experience with every patient interaction.

After 32 years of working a Baylor Rehab in Dallas **Merri Leigh Johnson**, PT88 & PT11 transitioned to full time teaching in January 2020. She is currently an Assistant Clinical Professor at Texas Woman's University PT Program in Dallas, TX teaching primarily the Neuro content.

Candace Kenyon, PT91, opened a second physical therapy outpatient clinic in Santa Fe, NM last May 2020.

MSP Student **Jeff Konrad** was awarded a **PODS I scholarship** from the Foundation for Physical Therapy Research for the upcoming academic year for his work using wearable sensors to quantify motor traits associated with Autism Spectrum Disorder. He is mentored by Catherine Lang and Natasha Marrus (Psychiatry).

Catherine Lang was appointed to serve a four-year term on the **National Advisory Child Health and Human Development Council** for the Eunice Kennedy Schriver National Institute of Child Health and Human Development (NICHD) of the National Institutes for Health (NIH). Catherine is only the second physical therapist to serve on this council.



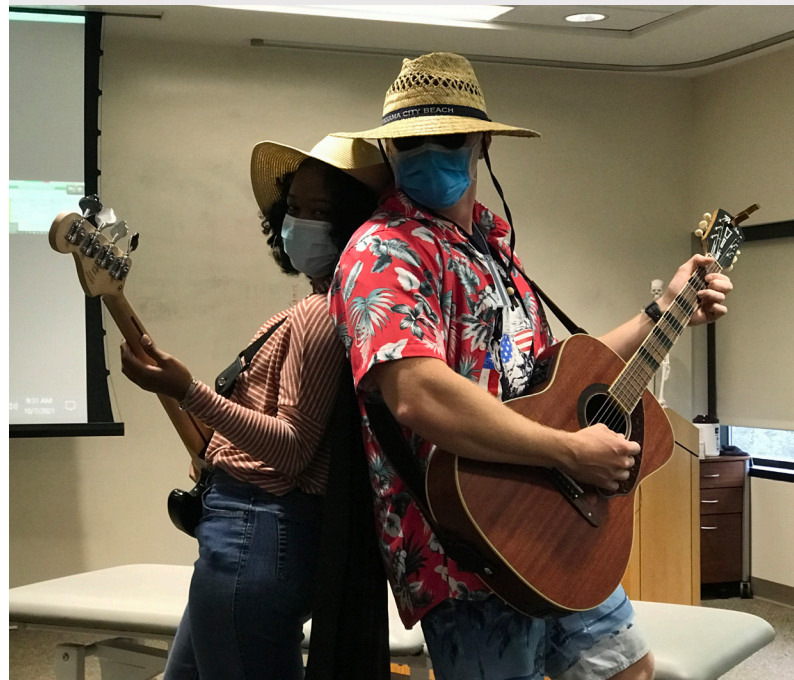
MOVING AHEAD

THE PHYSICAL THERAPY PODCAST

WASHINGTON UNIVERSITY PROGRAM IN PHYSICAL THERAPY

Moving Ahead is a new podcast that shares inspiring stories and highlights the latest news from alumni, faculty and friends of the Program in Physical Therapy.

Listen here by scanning QR Code.



WUPT23 taking time out on **Site Selection Day** for a quick jam session.

Class Notes and Program Honors

Continued



Dr. Cheryl Caldwell, PT, DPT, CHT: After 37 years with the Program, Cheryl Caldwell retired at the end of 2021. Cheryl began her time at WUPT as a student, graduating with a MHS in PT in 1988. Over the course of her career, Cheryl held multiple roles within the Program, ranging from Lecturer to instructor to an Associate Professor of Physical Therapy and Orthopaedic Surgery. Cheryl's Upper Extremity clinical skills and practical jokes will be greatly missed.



Faculty Members **Dr. Patty Navarro McGee** and **Dr. Tammy Burlis** with a new member of WUPT 24 at the 6th Annual White Coat Ceremony.

WUPT faculty member **Catherine Lang** was recognized as a **World Expert in Rehabilitation**, as quantified by publications in the last ten years. Work from her lab places Catherine in the top 0.02% of 295,167 published authors worldwide. <https://expertscape.com/qq?tquery=rehabilitation>.

Elisha Li of PT24 won the **Rizing Tide Crest Scholarship**. This award goes to "star students who are pursuing a physical therapy degree and who come from an underrepresented racial and/or ethnic background." <https://rizing-tide.com/scholarships/>

Anastasia Liu and Erica Liu of PT21 were recognized for their outstanding community service at Good Ground Pantry. Leaders at the pantry noted that Erica and Anastasia "brought a bright and joyful presence with them each time they came. In the pantry, they chose to be a part of the small group that interacts with our guests at the door, assembling the food and other items that each guest chooses from the weekly offering. Their smiling faces enhanced the welcome we try to offer each guest. They came early and stayed late to help clear away the leftover items. On the day the snowfall prevented some of our scheduled workers from getting to the church, they walked over and helped."

Adele Looper of PT23 had an abstract entitled "An MSI Approach and BFR Training Improve Snapping Biceps Femoris Syndrome: A Case Report" accepted as a poster presentation at CSM 2022. This abstract grew out of Adele's CE I experience with her CI, **April Brown (a PT13 alumna)**.

Carrie Mosley and Christina Graves, providers in the Washington University Physical Therapy TRISL clinical practice location, made WUSM's Top 50 Zoom Telehealth Providers list. Carrie and Christina both worked diligently to modify their practice and develop strategies for effective telehealth treatments.

WUPT faculty member **Patty Navarro McGee** was accepted into the Teaching Scholars Program at WUSM. The Teaching Scholars Program is a 12-month certificate program designed to enhance knowledge and skills and develop future leaders in healthcare education, focusing on core components of educational scholarship and curriculum development.

Kristen Strawhacker, PT14, is an APTA Centennial Scholar for the state of Iowa.

WUPT faculty member **Linda Van Dillen** was recognized as an **Expert in Low Back Pain**, ranking among the top 1% of researchers in the field over the last ten years. <https://expertscape.com/ex/low+back+pain>

WUPT DPT Class of 2015 alumna **Stephanie Weyrauch** was elected to the APTA Nominating Committee.

Stephanie Weyrauch (PT '15) and her husband Deland welcomed their first child Zara Ann Weyrauch on Jan 14, 2021. Stephanie continues to serve as the Vice President of APTA Connecticut Chapter and as Chair of the Nominating Committee for the APTA Private Practice Section. She works as a physical therapist at Physical Therapy & Sports Medicine Centers in Orange, CT. Her husband is a PGY-3 pathology resident at Yale University.

WUPT faculty member **Dr. Linda Van Dillen** received the 2021 **John P. Maley Award** from the Academy of Physical Therapy Research (APTR). This award recognizes Linda for "promoting excellence in research through influential manuscript publication, international and national presentations and lectureships, robust scholarship as an investigator, and her instrumental role in faculty career development and mentorship."

WUPT Run for Research Committee received the **Most Creative Award** for the innovative fundraising efforts that went into the Couch to 5K Run for Research. WUPT was recognized with the distinction of Excellence for raising such a substantial sum for the Foundation for Physical Therapy Research.

Jen Zellers was featured in the Orthopaedic Research Society's Member Spotlight. You can check out a brief video spotlight featuring Jen at <https://youtu.be/KBOAdiD2V9Y>.



Jennifer Stith, PT, PhD, LCSW: After 37 years of service to the Program, Dr. Jennifer Stith retired in August. She saw the Program through many changes and was an outstanding leader in our Education Division. She was instrumental in our transition from a Master's level program to a Doctorate level program, graduating our first DPT class in 2004. During her career at WUPT, Jennifer guided the education of more than 2000 students.



WUPT24 learners in Module 3 Movement and Population Health lecture.

Publications



Faculty member **Dr. Katie McDonnell** in lab with WUPT23 focusing on Upper Quarter check outs.



Faculty member, **Dr. Steve Ambler**, presents to learners during orientation for their second clinical education experience.

Barth J, Klaesner JW, Lang CE.

Relationships between accelerometry and general compensatory movements of the upper limb after stroke. *J Neuroeng Rehabil.* 2020 Oct 20;17(1):138.

Holmes CJ, Hornikel B, Sullivan K, Fedewa MV. Associations between Multimodal Fitness Assessments and Rowing Ergometer Performance in Collegiate Female Athletes. *Sports (Basel).* 2020 Oct 15;8(10):136.

Lang CE, Barth J, Holleran CL, Konrad JD, Bland MD. Implementation of Wearable Sensing Technology for Movement: Pushing Forward into the Routine Physical Rehabilitation Care Field. *Sensors (Basel).* 2020 Oct 10;20(20):5744.

Holmes CJ, Fedewa MV, Winchester LJ, MacDonald HV, Wind SA, Esco MR. Validity of Smartphone Heart Rate Variability Pre- and Post-Resistance Exercise. *Sensors (Basel).* 2020 Oct 9;20(20):5738.

Holleran CL, Bland MD, Reisman DS, Ellis TD, Earhart GM, Lang CE. Day-to-Day Variability of Walking Performance Measures in Individuals Poststroke and Individuals With Parkinson Disease. *J Neurol Phys Ther.* 2020 Oct;44(4):241-247.

Yang L, Helbich-Poschacher V, **Cao C**, Klebermass-Schrehof K, Waldhoer T. Maternal altitude and risk of low birthweight: A systematic review and meta- analyses. *Placenta.* 2020 Nov;101:124-131.

Horin AP, Harrison EC, Rawson KS, Earhart GM. People with Parkinson disease with and without freezing of gait respond similarly to external and self-generated

cues. *Gait Posture.* 2020 Oct;82:161-166.

Hornby TG, Henderson CE, **Holleran CL**, Lovell L, Roth EJ, Jang JH. Stepwise Regression and Latent Profile Analyses of Locomotor Outcomes Poststroke. *Stroke.* 2020 Oct;51(10):3074-3082.

Harrison EC, Earhart GM, Leventhal D, Quinn L, Pietro Mazzoni. A walking dance to improve gait speed for people with Parkinson disease: a pilot study. *Neurodegener Dis Manag.* 2020 Oct;10(5):301-308.

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Liu Q, Guo J, Hu L, Veronese N, Smith L, Yang L, **Cao C.** Association between Intake of Energy and Macronutrients and Memory Impairment Severity in US Older Adults, National Health and Nutrition Examination Survey 2011-2014. *Nutrients.* 2020 Nov 20;12(11):3559.

Schwabe MT, Clohisy JC, Cheng AL, Pascual-Garrido C, **Harris-Hayes M**, Hunt DM, **Harris MD**, Prather H, Nepple JJ. Short-term Clinical Outcomes of Hip Arthroscopy Versus Physical Therapy in Patients With Femoroacetabular Impingement: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *Orthop J Sports Med.* 2020 Nov 17;8(11):2325967120968490.

Jeong HJ, Mueller MJ, Zellers JA, Hastings MK. Midfoot and ankle motion during

heel rise and gait are related in people with diabetes and peripheral neuropathy. *Gait Posture*. 2020 Nov 16;84:38-44.

Cade WT, **Bohnert KL**, Bittel AJ, Chacko SJ, Patterson BW, Pacak CA, Byrne BJ, Vernon HJ, Reeds DN. Arginine kinetics are altered in a pilot sample of adolescents and young adults with Barth syndrome. *Mol Genet Metab Rep*. 2020 Nov 4;25:100675. doi: 10.1016/j.jymgmr.2020.100675.

Ambler SB, Jette DU, Nordstrom T. Return on Investment in Physical Therapy: Professional Tension. *Phys Ther*. 2020 Dec 7;100(12):2227-2230.

Barco PP, Wallendorf M, Blenden G, Rutkoski K, **Dolan K**, Carr D. Caregiver Prediction of Driving Fitness in Older Adults with Dementia. *Clin Gerontol*. 2021 Jan 17:1-8.

Harris-Hayes M, Steger-May K, M Bove A, **Mueller MJ**, Clohisy JC, Fitzgerald GK. One-year outcomes following physical therapist-led intervention for chronic hip-related groin pain: Ancillary analysis of a pilot multicenter randomized clinical trial. *J Orthop Res*. 2021 Jan 17. doi: 10.1002/jor.24985.

Bland MD, Barco P, **Lang CE**, Lenard E, Kallmi S, Pennock S, Lenze EJ. Activity Level and Intensity of Older Adults in Skilled Nursing Rehabilitation Measured via Actigraphy. *J Geriatr Phys Ther*. 2021 Jan/Mar 01;44(1):45-50.

Collins KH, Lenz KL, Pollitt EN, Ferguson D, Hutson I, Springer LE, Oestreich AK, Tang R, Choi YR, **Meyer**

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Faculty member, **Dr. Gretchen Meyer**, presents to first year learners on Muscle Elasticity.



Faculty member, **Dr. Nancy Bloom**, guides learners in an upper extremity lab.

Publications *Continued*



Site Selection Day 2021's theme was Dad Jokes.



Member of WUPT22 with their newly chosen Commencement Speaker, WUPT faculty member, **Dr. Jill Johnson**.



WUPT Faculty, Staff and Alumni meet up at the Educational Leadership Conference Meeting in Atlanta, GA.

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WUPT21 and WUPT22

volunteering at a Special Olympics of Missouri STL Metro Area Soccer Tournament with FUNFitness.



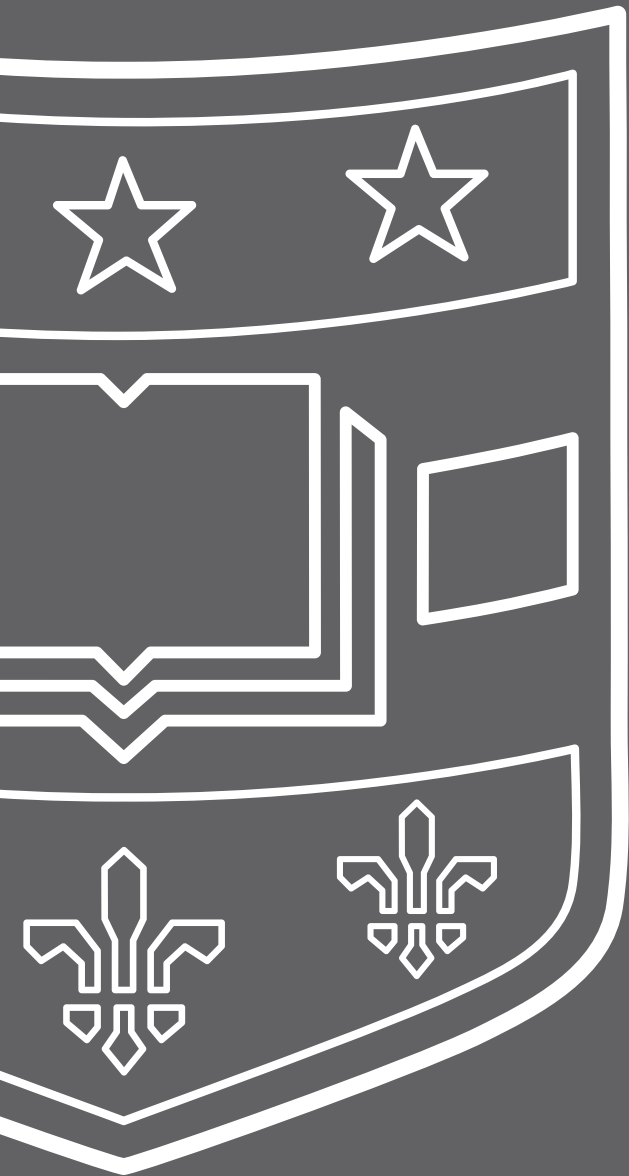
First year learners in Module 4 (Movement and Precision Health) working on Rolling and Supine to Sit.



Congratulations,

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