

**2023 Human Movement Science
Research Symposium**



Friday, May 5, 2023
9:00 AM – 6:00 PM

Blue Zone Concourse Club, Kenan Stadium
The University of North Carolina at Chapel Hill



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Welcome!

The Executive Committee would like to welcome you to the 2023 Human Movement Science Research Symposium (HMSC Day) at the University of North Carolina at Chapel Hill. This research symposium evolved as the result of several smaller research exchanges that joined in the effort to disseminate research to a broader audience and spur collaborations between local institutions.

Held annually since 2004 (small hiatus due to COVID19), students, faculty, researchers, and clinicians from regional institutions have attended the symposium to present and discuss current research in an open and friendly environment. Further aims of the symposium are to encourage collaboration between researchers and to provide vocational information to students. The formal interactions during the presentations and the informal discussions that take place during the luncheon and social are key to fostering continued collaborations.

This symposium is highlighted by a keynote address given by a respected and established researcher in the field of Human Movement Science. We are excited to welcome Dr. James Finley as our keynote for 2023.

We would like to thank the sponsors of this event for their generous support. This gathering of Human Movement Science students, faculty, researchers, and clinicians from regional institutions promises to be an important event for exchanging research ideas and fostering collaborative opportunities and would not have been possible without their support.

We sincerely hope you enjoy this year's symposium!

Ling Beisecker, Caitie Brinkman, Elaine Reiche,
Nick Buoncristiani, Jeff Turner, & Justin Dennis
UNC-CH | Human Movement Science
Executive Committee 2023

2023 Human Movement Science Research Symposium Schedule

- 8:00-8:50: Check-In: Pick up your name tag. If you have not paid yet, please pay for your registration during check-in. ID checks will start later in the day for the reception.
- 8:50-9:00: Opening Remarks: Welcome and thank you; recognition of sponsors.
- 9:00-10:00: Podium Presentation Session 1: 5 podium presentations; presenters will be available for discussion
- 10:00-11:00: Poster Presentation Session 1: 18 poster presentations
- 11:00-12:00: Keynote Presentation: Dr. James Finley
- 12:00-1:00: Luncheon: Build your own burger bar including beef burgers, grilled chicken breasts, assorted cheeses and toppings, mac and cheese, and kettle chips (provided by Rocky Top Catering)



Sponsored by the Graduate and Professional Student Government

- 1:00-2:00: Poster Presentation Session 2: 18 poster presentations
- 2:00-3:00: Podium Presentation Session 2: 5 podiums presentations; presenters will be available for discussion
- 3:00-4:00: Podium Presentation Session 3: 5 podiums presentations; presenters will be available for discussion
- 4:00-5:00: Poster Presentation Session 3: 13 poster presentations
- 5:00-6:00: Closing Remarks and Reception: Thank you all!
The bar will open at 4:30 PM



The University of North Carolina at Chapel Hill



Celebrating the past—Endowing the future

Podium Presentation 1

9:00 AM – 10:00 AM

9:00-9:10 **Jennifer Xu MS, ATC, CSCS (UVA), Dante Goss, Susan Saliba PhD, PT, ATC:** A Novel Intrinsic Foot Muscle Strength Dynamometer Demonstrates Moderate-to-Excellent Reliability in Healthy Individuals

9:10-9:20 **Kimmery Migel (High Point), Michael Gross PT, PhD, Troy Blackburn PhD, ATC, Brian Pietrosimone PhD, ATC, Louise Thoma PT, PhD:** Functional Range of Motion and Postural Control Associate with Center of Pressure Changes During Gait Retraining with Haptic Feedback in People with Chronic Ankle Instability: An Exploratory Analysis

9:20-9:30 **Andrea Eliason SPT (High Point), Nicholas Reilly PhD, ACSM-CEP, Erin Miller PhD, ATC, Amy Weart DPT, Maria Gonnella BA, 1LT Henry Haltiwanger DPT, PT, LTC, Michael Crowell D.Sc, Kevin Ford Ph.D., Donald Goss Ph.D., DPT.** Effectiveness of Telehealth Gait Retraining in Mitigating Kinetic Risk Factors for Musculoskeletal Injuries in Military Populations.

9:30-9:40 **Bryan Taylor (Appalachian State), Alan Needle Ph.D., Jared Skinner Ph.D.** Combined Effects of Transcranial Direct-Current Stimulation and Static Stretching on Hip Range of Motion.

9:40-9:50 **Chelsea Duppen PT, DPT (UNC), Nina Browner MD, Michael Lewek, PT, PhD:** Anticipatory Postural Adjustment Size is not Related to First Step Length and Speed During Gait Initiation for People with Parkinson Disease

Poster Presentation 1

10:00 AM – 11:00 AM

1. **Lauren Mulier DPT, MBA** (High Point University), **Nicholas Reilly PhD, ACSM-CEP**, **Sara Mathews DPT**, **Rhoda Anderson DPT**, **Kelly Leugers DPT**, **Maria Gonnella BS**, **Don Goss DPT, PhD**: Return to run Protocol Reducing Risk of Lower Extremity Musculoskeletal Injury in the Active-Duty Population
2. **Andrew Shelton** (UNC/NCSU), **Jessica Allen PhD**, **Vicki Mercer PhD**, **Jeremy Crenshaw PhD**, **Jason Franz PhD**: Surveys of Self-Perceived Balance Integrity are Poor Predictors of Vulnerability to Balance Perturbations
3. **Constantin W. Beyer** (TU Ilmenau, Germany), **Jordan Feldman**, **Jessica L. Allen PhD**, **Jason R. Franz PhD**: Local Muscle Detection of Treadmill-Induced Slip Perturbations
4. **Aubrey Gray** (UNC/NCSU), **Rebecca Krupenevich**, **Kota Takahashi**, **Jason Franz, PhD**: Age Affects Mechanical Transmission Between Metatarsal Phalangeal Joint Extension and Plantarflexor Muscle Lengthening
5. **Elizabeth Bjornsen MS** (UNC), **David Berkoff MD**, **Troy Blackburn PhD, ATC**, **Hope Davis-Wilson PHD**, **Jason Franz PhD**, **Matthew Harkey PhD, ATC**, **Zachary Horton MS**, **Caroline Lisee PhD, ATC**, **Brittney Luc-Harkey PhD**, **Amanda Munsch PhD**, **Daniel Nissman MD**, **Steven Pfeiffer PhD**, **Brian Pietrosimone PhD, ATC**: Comparing Ground Reaction Force Profiles in Individuals Early Following Anterior Cruciate Ligament Reconstruction to Individuals with Radiographic Knee Osteoarthritis
6. **Ashley Buck** (UNC), **Caroline Lisee PhD, ATC**, **Elizabeth Bjornsen**, **Christin Büttner**, **Natalia Favoreto**, **Jeffrey Spang**, **Troy Blackburn PhD, ATC**, **Brian Pietrosimone, PhD, ATC**: Does Normalizing Walking Speed Normalize Gait Biomechanics in Patients with Anterior Cruciate Ligament Reconstruction?
7. **Isaac Shaw** (High Point), **Lisa Zukowski PhD**, **Paul Kline PT, DPT, PhD**: Correlations of Vision- vs Non-Vision-Based Cognitive-Motor Dual-Task Performance with Patient-Reported Mobility in People with Lower Limb Amputation.
8. **Hunter Geneau** (UNC), **Chelsea Duppen PT, DPT**, **Michael Lewek PT, PhD**: Gait Initiation Dependence on Aspects of Continuous Walking and Postural Control in People with Parkinson Disease
9. **Banks Cisne** (UNC), **Jamison Dorsey BS**, **Caroline Lisee, PhD**, **David Lalush, PhD**, **Cortney Armitano-Lago PhD**, **Elizabeth Bjornsen MS**, **Ashley Buck MS**, **Christin Büttner MSc**, **Jason Franz PhD**, **Brian Pietrosimone PhD, ATC**: Test-Retest, Intra-Rater, and Inter-Rater Reliability of Cartilage Thickness Segmentation for Implementation in Cartilage Strain Assessment
10. **Madison Wissman** (UNC), **Aubrey Gray**, **Rebecca Krupenevich, PhD**, **Kota Takahashi**, **Jason Franz, PhD**: Modeling the Connection Between the Plantar Fascia and Triceps Surae During Fixed-End Contractions
11. **Kurumi Adachi** (UNC/NCSU), **Andrew Shelton**, **Yujin Kwon**, **Jason Franz PhD**: Local Dynamic Instability During Unperturbed Walking Does Not Predict Susceptibility to Balance Perturbations
12. **Jaeho Jang MA** (UNC), **Brian Pietrosimone PhD, ATC**, **Feng-Chang Lin PhD**, **Jason Franz PhD**, **Erik Wikstrom PhD, ATC**: Muscle Contributions and Ankle Joint Contact Forces are Altered During Drop Vertical Jumps Landings in Patients with Chronic Ankle Instability
13. **Justin Dennis MS** (UNC/Cal St, Fullerton), **Kevin Choe PhD**, **Melissa Montgomery PhD**, **Scott Lynn PhD**, **Brock Crews MS**, **Derek Pamukoff PhD**: Lower Extremity Coordination Strategies to Mitigate Dynamic Knee Valgus During Landing in Males and Females
14. **Amber Olson** (Elon), **Amy Smelko**, **Ashlyn Loring**, **Srikant Vallabhajosula**: Cognitive Performance and Dual Tasking in Collegiate Athletes

- 15. Olivia Sallis (UNC), Cortney Armitano-Lago PhD, Elizabeth Bjornsen MS, Alyssa Evans-Pickett PhD, Amanda Munsch MS, Jason Franz PhD, Brian Pietrosimone PhD, ATC:** Preliminary Analysis of Lower Extremity Loading in ACL Reconstructed Individuals Following a Gait Retraining Intervention Using Real-Time Gait Biofeedback
- 16. Alex Nilius (UNC), Derek Dewig PhD, Christopher Johnston PhD, Troy Blackburn PhD, ATC:** Quadriceps Function and Morphology Contribute to Aberrant Downhill Gait Biomechanics in Individuals with ACL Reconstruction
- 17. Hailey Wrona, BS (UNC), Chelsea Duppen, PhD, Austin Mituniewicz, Nina Browner PhD, Michael Lewek, PT, PhD:** Impact of arm swing mechanics on gait stability in people with Parkinson disease
- 18. Devin Kelly, PhD (UNC), Amelia Bruce Leicht PhD, Joe Hart PhD, ATC:** Single leg bent knee balance after ACL reconstruction.

Keynote Speaker
11:00 AM – 12:00 PM

James Finley, PhD

Associate Professor
University of Southern California



Dr. James Finley is an Associate Professor in the Division of Biokinesiology and Physical Therapy, the Department of Biomedical Engineering, and the Neuroscience Graduate Program at the University of Southern California. Dr. Finley and his research team in the Locomotor Control Lab at USC use experimental studies and computational models to understand how mobility is controlled in healthy individuals and individuals with neuromotor impairments such as stroke and Parkinson's disease. This work relies on principles of engineering, neuroscience, game design, biomechanics, and exercise physiology to ultimately design more effective interventions to improve mobility. Dr. Finley is also one of the founding directors of the USC SensoriMotor

Assessment and Rehabilitation Training Center (SMART-VR Center). The Center's mission is to be an interdisciplinary center of excellence harnessing innovative advances in virtual reality to improve motor and cognitive function across multiple clinical populations such as stroke, Alzheimer's, and Parkinson's disease.

Poster Presentation 2

1:00 PM – 2:00 PM

1. **Joel Harden, MS (ODU) Leryn Reynolds PhD:** The Effects of Short-Term Removal of Exercise on Endothelial Function in Older Adults: Preliminary Data
2. **Caroline Guill SPT (Elon), John Magill PT, DPT, Svetlana Nepocatych PhD, RDN:** Establishing Carotid Femoral Pulse Wave Velocity Predictions Based on Metabolic Syndrome in High School Seniors
3. **Alex Ladan (UNC), Hannah Cabre, Sam Moore, Kelly Joniak, Abbie Smith-Ryan, PhD:** Body Composition Measurements Across the Menstrual Cycle
4. **Kelly Joniak (UNC), Sam Moore, Hannah Cabre, Alex Ladan, Abbie Smith-Ryan, PhD:** Menopause Status and Regional Body Composition
5. **Ricky Pimentel, MS (UNC/NCSU), Lindsey Trejo MS, Katherine Saul PhD, Gregory Sawicki PhD, Jason Franz PhD:** The Effects of Biological Tendon and Ankle Exoskeleton Stiffnesses on Walking Metabolic Cost
6. **Margaret Damaré BA (UNC), Lauren Bates-Fraser MA, Emma Cowley PhD, Erik Hanson PhD, Lee Stoner PhD:** Sedentary Behavior Interruption Prescription in Middle- & Older-aged Adults: Identifying the Optimal Dose
7. **Emma Medwedeff (UNC), Margaret Damare BA, Lauren Bates-Frazier MA, Lee Stoner PhD:** Protocol Overview: Early Prediction of Preeclampsia Using Arterial Stiffness in High-Risk Pregnancies (PULSE); a Multinational Study
8. **Amber Schmitz (UNC), Evangeline Soucie, James Merritt, Hayden Giuliani-Dewig, Gena Gerstner PhD, Nicholas Buoncristiani, Eric Ryan PhD:** Test-Retest Reliability of a Novel and Portable Leg Press Assessment in Young and Older Adults
9. **Megan M. O'Brokta (UNCG), Megan N. Johnson, Beth Bacon, Eric S. Drollette:** Why are Children Not Moving in the Classroom? Evaluating Inhibitory Control, Academic Achievement, and Brain Function During Moderate-Intensity Cycling
10. **Jack Potter (Elon), Corey Shedlock, Marco Ramirez, Emilize Momplaisir, Keith Harris, Steven Bailey, Srikant Vallabhajosula:** Impact of Coffee Roast Level on Force Production During the Counter Movement Jump
11. **Matthew Hamlet, Sofia Anthony (Elon), Timothy Crutchfield, Elizabeth Evans, John Magill:** Acute Vital, Hormonal, and Exertional Response to Lower Extremity Blood Flow Restriction Training
12. **Lillian Niehaus, BS, MA (UNC), Margaret Damaré BS, MA, Lee Stoner MPH, FACSM, PhD, Claudio Battaglini FACSM, PhD:** A Scoping Review on Exercise Interventions in Pediatric Oncology
13. **Mark Belio (UNC), Sarah Blount, Lillian C. Niehaus, Lauren C. Bates-Fraser, Young E. Whang MD, PhD, Claudio L. Battaglini PhD, FACSM, Erik D. Hanson PhD, FACSM:** Assessing Physical Function Changes from Androgen Receptor Signaling Inhibitor Treatment Initiation Through 12 Weeks for Metastatic Prostate Cancer
14. **Ashlyn Loring (Elon), Amy Smelko, Amber Olson, Srikant Vallabhajosula, Caroline Ketcham, Eric Hall:** Effects of Gender and Number of Trials on Backward Tandem Gait in Collegiate Athletes
15. **Samantha Webb (UNCC), Trudy Moore-Harrison PhD:** The Trend of HBA1C Levels Pre and Post Pandemic
16. **Jason Cox (UNC/NCSU), Rose Hansen, Katherine Saul PhD, Jacqueline Cole PhD:** Musculoskeletal Modeling of Passive Shoulder Joint Reaction Forces Following Brachial Plexus Birth Injury: Developing a Functional Rat Model
17. **Megan Pierce (UNC), Zachary Yukio Kerr PhD, MPH, Johna Register-Mihalik PhD, MA, Brittany Ingram MA:** Understanding Concussion Reporting Behaviors of Young Adult Athletes when the Concussion is non-sport-related

18. Jamison Dorsey, BA (UNC), Brian Pietrosimone PhD, ATC, Christopher Kuenze PhD, ATC, David Lalush PhD, Matthew Pfeiffer MS, Caroline Lisee PhD, ATC: Changes in Cartilage Composition Post-ACLR after an 8-Week Adaptive Daily Step Promotion Intervention: A Pilot Study

Podium Presentation 2

2:00 PM – 3:00 PM

2:00-2:10 **Jasper Mark (UNC), Rachana Gangwani PT, Jessica Cassidy PT, DPT, PhD:**
Prefronto-motor Cross-frequency Coupling Provides Insight into Upper Extremity Task
Performance During Early Post-Stroke Recovery

2:10-2:20 **Hannah Cabre, PhD (UNC), Sam Moore MS, Kelly Joniak, Alex Ladan,
Abbie Smith-Ryan PhD:** Effects of the Menstrual Cycle and Hormonal Contraception on
Protein Turnover

2:20-2:30 **Praveen A. Pasupathi, MS (UNCG), Eric Drollette Ph.D, Alexis Slutsky-
Ganesh Ph.D, Christopher Wahlheim Ph.D, Jennifer Etnier Ph.D:** Take a Break for
Memory Sake! Effects of Short Physical Activity Breaks on Cognition in Children

2:30-2:40 **Sam R. Moore, MS (UNC), Hannah Cabre MS, Kelly Joniak BS, Alex Ladan
BS, Abbie Smith-Ryan PhD:** Body Composition, Activity, and Nutrition in Menopause

2:40-2:50 **Lauren Bates-Fraser (UNC), Erik Hanson, Victoria Bae-Jump, Lee Stoner:**
Strategies to Integrate 24-Hour Activity Behavior Research into the Gynecology-Oncology
Cancer Clinic Setting

Podium Presentation 3

3:00 PM – 4:00 PM

3:00-3:10 **Chris Lane, PT, DPT (UNC), Adam Lutz, PT, DPT, PhD, Louise Thoma, PT, DPT, PhD:** Examining Racial Disparities in Physical Therapy Delivery among Adults after ACL Injury Accessing a Nationwide Private Practice

3:10-3:20 **Brittany Ingram (UNC), Lauren Hawkinson, Christine Callahan, Madison Chandler PhD, Johna Register-Mihalik PhD, Jessica Wallace PhD:** Young adults' perceptions of healthcare providers and injury care-seeking: a qualitative study

3:20-3:30 **Lexi Kier (UNCG), Eric Drollette, Erin Reifsteck, Jessica McNeil, DeAnne Brooks:** Developing a Culturally Inclusive Approach to Electroencephalography (EEG) Measurement in Black College Students and Athletes.

3:30-3:40 **Lauren Hawkinson MA, ATC (UNC), Timothy Eckard PhD, Darin Padua PhD, Stephen Marshall PhD, Kenneth Cameron PhD, MPH, ATC, Kristen Kucera PhD:** Participation in ACL Injury Prevention Programming and ACL Injury History Over a 17-Year Period Among First-Year Military Cadets

3:40-3:50 **Hope Elizabeth Gamwell Muscarello BS (App State), Alan Needle PhD, Marco Meucci PhD, Olivia Chapman, Jared Skinner PhD:** Enhancing Locomotor Learning with Motor Imagery and Transcranial Direct Current Stimulation

Poster Presentation 3

4:00 PM – 5:00 PM

1. **Matthew Hartshorne, DPT (UNC), Maj Jeffrey Turner DPT, Darin Padua PhD, ATC:** Exploring Predictors of Primary ACL Injury Risk in Military Cadets: The Role of Lower Extremity Strength and Demographics
2. **Jennifer Rentz (Elon), Nicole Ridge, Breanna Lanouette, Brody Ritch, Alys Giordano, Srikant Vallabhajosula:** Impact of Dual Tasking on Lower Extremity Prosthetic Users Function
3. **Alicia Wilson, SPT (Elon), Christopher Go SPT, Alexander Japit SPT, Matthew Lawler SPT, Stacey Walton SPT, Oliver Tuisa SPT, Pratheep Paranthaman PhD, Alys Giordano DPT, Srikant Vallabhajosula PhD:** Mixed and Virtual Reality Obstacle Clearance Behavior in Older Adults
4. **Emily Thomas (UNC), Ling Beisecker, JD DeFreese, PhD:** PAUSE-Cardio: Moderate-intensity cardiovascular exercise intervention for women's sport student-athletes transitioning into college and collegiate sport
5. **Meghan Byers, SPT (Elon), Catherine Fruin SPT, Erin Allen SPT, Haley Becker DPT, Mary Kay Hannah DPT, John Magill DPT:** Healthy Division 1 Athletes are Unable to Accurately Self-Report Dominant Limb
6. **Kayleigh Harwell Beach, SPT (Elon), Logan Deese SPT, Travis Woerner SPT, Haley Becker DPT, Mary Kay Hannah DPT, John Magill DPT:** Collecting Comprehensive Performance Metrics is Possible with a Concise Test Battery
7. **Wesley Hart (Elon), Julia Coenen, Peter O'Connor, Micheal Reiman, Jon Riboh, Jack Magill:** Establishing Age-Specific Strength Norms for Pediatric Return to Sport Testing
8. **Taylor Hughes (UNC), Frances Kincheloe, Margaret Damaré BA, Lee Stoner PhD, Michelle Meyer PhD:** Protocol Overview: The Mother and Infant Determinants of Vascular Aging Study (MIDAS)
9. **Leah Smith, BSAT (UNC), Christine Callahan, Kristen Kucera PhD, Johna Register-Mihalik PhD:** Exploring Relationships Among Burnout, Concussion-Related Outcomes, And Health-Related Quality of Life in Individuals with a Concussion History
10. **Kevin Maia Lima (UNC), Andrew D. Shelton, Jessica Allen PhD, Vicki Mercer PhD, Jason Franz PhD:** Older Adults use a More Cautious Strategy to Navigate Turns While Walking
11. **Dora Rice (NC A&T), Marc Cook, Troy Purdom, Heather Collieran, Lauren San Diego:** Iron Deficiency and High Blood Pressure (HBP) in Division I African American (AA) Athletes
12. **Dominic Willoughby (UNC), Kou Yang MA, LAT, ATC, Cortney Armitano-Lago PhD, ATC, Johna Register-Mihalik PhD, LAT, ATC, FACSM, FNATA, Adam Kiefer PhD:** Assessing Impact of Concussion on Reaction Time Variability During Dual Task Paradigm
13. **Ling Beisecker MS (UNC), Avinash Chandran PhD, J.D. DeFreese PhD:** Transition Planning, Athletic Identity, and Mental Health among Female Former High School Athletes

A Thank You to Our Sponsors

We would like to thank the following sponsors of this event for their generosity. This symposium would not have been possible without them!

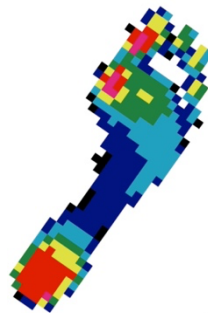


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Finally, thank you to the Department of Health Sciences, the Division of Physical Therapy, the Department of Exercise and Sport Science, the International Health & Occupational Professionals, and students and leadership within the Human Movement Science Curriculum for supporting your students and our symposium!