Hao-Yuan Hsiao
Email: hhsiao@austin.utexas.edu.
532 Bellmont Hall, 2109 San Jacinto Blvd., Austin, TX /Department of Kinesiology and Health Education

EDUCATION

Ph.D., Biomechanics and Movement Science, University of Delaware, Newark, DE 2015
Mechanisms for Increasing Propulsive Force during Walking in Individuals Poststroke;
Advisors: Stuart Binder-Macleod, Jill Higginson

M.Eng., Biomedical Engineering, Cornell University, Ithaca, NY 2011
Incorporating Ultrasound Blood Flow Monitoring Device to Da Vinci Surgical Robot;
Advisor: Jack Thompson

M.S., Electrical Engineering, National Taiwan Ocean University, Keelung, Taiwan 2005
Multi-bit Delta-Sigma Analog to Digital Modulator; Advisor: Wan-Ron Liu

B.S., Electrical Engineering, National Taiwan Ocean University, Keelung, Taiwan 2003

PROFESSIONAL APPOINTMENTS

Associate Professor, Department of Kinesiology and Health Education, The University of Texas at Austin 2025 - Present

Assistant Professor, Department of Kinesiology and Health Education, The University of Texas at Austin 2018 - 2025

Post-Doctoral Research Fellow, Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore, Baltimore, MD 2016 – 2018
Advisor: Mark Rogers

Research Assistant, Department of Physical Therapy, University of Delaware, Newark, DE 2011 – 2015

Engineer, Holtek Semiconductor, Hsinchu, Taiwan 2005 – 2010

PUBLICATIONS [mentees' name in italics, ᵗindicates corresponding author.]

Peer-Reviewed Journal Articles

- *Prible D*, *Shen KH*, **Hsiao H**†**.** [2025] Closed-loop control of split belt treadmill speed induces targeted bilateral adaptations in ankle kinetics. Journal of Biomechanics. 194:113033.
- Lowe T, **Hsiao H**, Griffin L†. (2025). Prolonged hamstrings vibration reduces limb stiffness following anterior cruciate ligament reconstruction. Journal of Orthopaedic Research. 43:1442–1453.
- *Shen K*, Lee R, **Hsiao H**†. [2025]. Temporal evolution of frontal plane body transfer asymmetry in post-stroke gait. IEEE Transactions on Neural Systems & Rehabilitation Engineering, 33:1427–1438.
- *Foroughi F, Sadeh S*, **Hsiao H**†. [2025]. Effect of vertical ground reaction force biofeedback on knee and hip neuromechanical characteristics during walking in older adults. Applied Sciences, 15:2945.
- *Smith J,* Siddicky S, **Hsiao H**†. (2025). Wearable visual biofeedback of vertical ground reaction force enables more symmetrical force production during deadlifting and squatting. Biomechanics, 5:6.
- *Smith J, Jackson T*, Liu W, **Hsiao H**†. (2025). Combined effects of Tai-Chi gait with mediolateral ground support perturbation on dynamic balance control. Sports Medicine and Health Science, 7:208-213.
- *Sadeh S, Shen K, Foroughi F*, Rogers MW, **Hsiao H**†. (2024). Biomechanical responses following compelled forward versus backward body shift: how aging and perturbation direction alter balance recovery? Human Movement Science, 98:103303.
- *Smith J*, Parikh D, Tate V, Siddicky SF, **Hsiao H**†**.** (2024). Validity of Valor inertia measurement unit for upper and lower extremity joint angles. Sensors. 24:5833-40.
- *Shen K*, Gray VL, Borrelli J, Rogers MW, **Hsiao H**†. (2024). Lower limb vertical stiffness and frontal plane angular impulse during perturbation-induced single leg stance and their associations with gait in individuals post-stroke. Journal of Biomechanics, 163:111917-26.
- *Sadeh S*, *Shen K, Foroughi F*, **Hsiao H**†. (2024). Leading limb biomechanical response following compelled forward and descending body shift in old versus young adults. Clinical Biomechanics, 112:106169-77.
- *Foroughi F, Prible D*, **Hsiao H**†. (2024). Age-associated changes in lower limb weight-bearing strategy during walking. Gait and Posture, 107:162-168.
- Dunlap E, Alhalimi T, McLaurin N, *Foroughi F*, **Hsiao H**, Tanaka H†. (2024). Aquatic cognitive-motor exercise for cognition, balance, and functional mobility in older adults. Translational Journal of the American College of Sports Medicine, 9(3):e000257- 65.
- Odanye PO, Steffensen E, Hedrick EA, Bierner S, **Hsiao H**, Knarr BA†. (2023). Treadmill handrail-use increases the anteroposterior margin of stability in individuals post-stroke. Journal of Motor Behavior, 23:1-10.
- *Sadeh S*, Gobert D, *Shen K, Foroughi F*, **Hsiao H**†. (2023) Biomechanical and neuromuscular control characteristics of sit-to-stand transfer in young and older

adults: A systematic review with implications of balance regulation mechanisms. Clinical Biomechanics, 109:106068-76.

- Jeon W ǂ, Borrelli J, **Hsiao H**. (2023). Effect of visual input absence on balance recovery responses to lateral standing surface perturbations in older and younger adults. Journal of Applied Biomechanics, 39(3):184-192.
- Pew C ǂ, *Sadeh S*, **Hsiao H**, Neptune R. (2023). Development of a novel perturbation platform system for balance response testing and rehabilitation interventions. Journal of Medical Devices, 17(2): 021001-8.
- *Pribble D*, Fey N, **Hsiao H** ǂ. (2022). Biomechanical mechanism of peak braking force modulation during increased walking speed in healthy young adults. Journal of Biomechanics, 144:111311-6.
- *Shen K*, Prajapati SK, Borrelli J, Gray VL, Westlake KP, Rogers MW, **Hsiao H** ǂ. (2022). Neuromechanical control of impact absorption during induced limb loading in individuals post-stroke. Scientific Reports, 12(1):19104-16.
- Hinton EH, Likens A, **Hsiao H**, Binder-Markey BI, Binder-Macleod SA, Knarr BA ǂ. (2022). Ankle stiffness modulation during different gait speeds in individuals post-stroke. Clinical Biomechanics, 99:105761-70.
- Jeon W, Griffin L, **Hsiao H** ǂ. (2021). Effects of initial foot position on postural responses to lateral standing surface perturbations in younger and older adults. Gait & Posture, 90:449-56.
- Jeon W, **Hsiao H**, Griffin L ǂ. (2021). Effects of different initial foot positions on kinematics, muscle activation patterns, and postural control during a sit-to-stand in younger and older adults. Journal of Biomechanics, 117:110251-9.
- Hedrick EA, Parker SM, **Hsiao H**, Knarr BA ǂ. (2021). Mechanisms used to increase propulsive forces on a treadmill in older adults. Journal of Biomechanics, 115:110139-46.
- **Hsiao H**, Creath RA, Sanders OP, Inacio M, Beamer BA, Rogers MW ǂ. (2020). Acoustic pre-stimulation modulates startle and postural reactions during sudden release of standing support surface in aging. Human Movement Science, 74:102715-23.
- **Hsiao H** ǂ, Gray VL, Borrelli J, Rogers MW. (2020). Biomechanical control of paretic lower limb during imposed weight transfer in individuals post-stroke. Journal of Neuroengineering and Rehabilitation, 17(1):140-149.
- Awad L ǂ, **Hsiao H**, Binder-Macleod SA. (2020). Central drive to the paretic ankle plantarflexors affects the relationship between propulsion and walking speed after stroke. Journal of Neurologic Physical Therapy, 44(1):42-48.
- Sanders OP, **Hsiao H**, Savin DN, Creath RA, Rogers MW ǂ. (2019). Aging changes in protective balance and startle responses to sudden drop-perturbations. Journal of Neurophysiology, 122(1):39-50.
- Sanders OP, **Hsiao H**, Savin DN, Creath RA, Rogers MW ǂ. (2019). Aging effects of motor prediction on protective balance and startle responses to sudden drop perturbations. Journal of Biomechanics, 91:23-31.

- Borrelli J, Creath RA, Pizac D, **Hsiao H**, Sanders OP, Rogers MW ŧ. (2019). Perturbation-evoked lateral steps in older adults: why take two steps when one will do? Clinical Biomechanics, 63:41-47.
- **Hsiao H**, Gray VL, Creath RA, Binder-Macleod SA, Rogers MW ŧ. (2017). Control of lateral weight transfer is associated with walking speed in individuals post-stroke. Journal of Biomechanics, 60:72-78.
- Palmer JAŧ, **Hsiao H**, Wright T, and Binder-Macleod SA, (2017). Single session of FES-assisted walking produces changes in corticomotor symmetry that are related to changes in post-stroke walking mechanics. Physical Therapy, 97(5):550-560.
- **Hsiao H** ŧ, Zabielski T, Palmer JA, Higginson JS, and Binder-Macleod SA. (2016). Evaluation of measurements of propulsion used to reflect changes in walking speed in individuals post-stroke. Journal of Biomechanics, 49(16):4107-4112.
- **Hsiao H** ŧ, Higginson JS, and Binder-Macleod SA. (2016). Baseline predictors of treatment gains in propulsive force in individuals poststroke, Journal of Neuroengineering and Rehabilitation, 13:2-7.
- **Hsiao H** ŧ, Awad LN, Palmer JA, Higginson JS, and Binder-Macleod SA, (2016). Contribution of paretic and non-paretic limb peak propulsive forces to changes in walking speed in individuals poststroke, Neurorehabilitation and Neural Repair, 30(8):743-52.
- **Hsiao H** ŧ, Knarr BA, Higginson JS, and Binder-Macleod SA. (2015). Mechanisms used to increase propulsive force following 12-weeks of gait training in individuals poststroke, Journal of Biomechanics, 49(3):388-95.
- Palmer JA ŧ, **Hsiao H**, Awad LN, and Binder-Macleod SA, (2015). Symmetry of corticomotor input to plantarflexors influences the propulsive strategy used to increase walking speed post-stroke, Clinical Neurophysiology, 127 (3):1837-44.
- **Hsiao H** ŧ, Knarr BA, Higginson JS, and Binder-Macleod SA. (2015). Mechanisms to increase propulsive force for individuals poststroke, Journal of Neuroengineering and Rehabilitation, 12:40-47.
- **Hsiao H** ŧ, Knarr BA, Higginson JS, and Binder-Macleod SA. (2015). The relative contribution of ankle moment and trailing limb angle to propulsive force during gait, Human Movement Science, 39 :212-21.

Manuscripts Under Review

- Lanza MB, Lateef S, Frakes N, **Hsiao H**, Gray V ŧ. (Submitted). Changes in early activation and step performance after a stroke: A comparison between paretic and non-paretic legs. Clinical Neurophysiology.
- *Foroughi F, Smither M,* **Hsiao H** ŧ. (Submitted). Contributions of hip abduction moment and foot placement to lower extremity loading during walking in healthy older adults. Biomechanics.
- *Jannesar T,* **Hsiao H** ŧ. Locomotor recovery following gait training with treadmill lateral oscillation: A case study in an individual with chronic stroke. Journal of Neurologic Physical Therapy.

Manuscripts in Preparation

- *Sadeh S, Shen K*, **Hsiao H**[t]. Lower limb biomechanical and neuromuscular adaptation following repeated unilateral low-intensity limb loading perturbation in older adults. Medicine & Science in Sports & Exercise.
- *Nakamura S, Sadeh S,* Rogers MW, **Hsiao H**[t]. Biomechanical determinants of lateral step initiation time following unilateral ground support drop perturbation in older adults. Journal of Biomechanics.
- *Shen K*, *Prible D*, Beck O, **Hsiao H**[t]. The origin of non-zero centroidal angular momentum in human walking. Proceedings of the National Academy of Sciences.
- *Shen K*, Lee R, Beck O, **Hsiao H**[t]. Stroke survivors prefer less mediolateral assistance at higher walking speeds. Science Robotics.
- *Tsai J, Shen K,* Rogers MW, **Hsiao H**[t]. Immediate effect of treadmill lateral oscillation on weight transfer characteristics during walking in individuals post-stroke. Journal of Biomechanics.
- *Tsai J, Shen K,* Lee R, Rogers MW, **Hsiao H**[t]. Changes in clinical gait and balance outcomes following 6 weeks of treadmill oscillation gait training in persons with chronic stroke. Neurorehabilitation and Neural Repair.
- *Prible D, Shen K,* **Hsiao H**[t]. Unilateral phase-specific treadmill belt speed modulation induces adaptive changes in ankle kinetics in healthy adults. Experimental Biology.
- *Zachary Z, Prible D,* **Hsiao H**[t]. Mechanical work demand during split-belt treadmill walking. Journal of Biomechanics.
- *Zhang W, Tsai J,* **Hsiao H**[t]. Baseline predictors of treatment gains in balance and gait outcomes following treadmill oscillation walking training in persons with chronic stroke. Topics of Stroke Rehabilitation.
- Alighanbari M, **Hsiao H,** Griffin L[t]. Balance and neuromuscular control in older adults with diabetic peripheral neuropathy using deep learning, coordinate-ascent optimization, and wavelet analysis. Diabetes Care.
- Alighanbari M, **Hsiao H,** Griffin L[t]. Effect of peripheral neuropathy on common synaptic input in type II diabetes patients. Journal of Diabetologia.

PATENTS

- Chen and **Hsiao,** Power configuring device and method thereof, *Taiwan Patent.* Patent No. 201113693, Publication Date: 04/16/2011
- Chen and **Hsiao,** Low Voltage Offset Comparator with Hysteresis. *Taiwan Patent.* Patent No. I299617, Publication Date: 08/01/2008

RESEARCH FUNDING

External Research Funding

Current:

Sponsor: Department of Defense, AFWERX (Air Force).
Project Title: Advanced Robotic-Assisted and Customized Rehabilitation Technology for Improving Recovery from Musculoskeletal and Stroke Conditions.
Funding period: 2024-2026
Principal Investigators: Kim B (Founder & CEO of Roboligent); Sentis L (Department of Aerospace Engineering and Engineering Mechanics at UT Austin).
Co-Is: **H. Hsiao.**
Total funding: $1,799,035

Completed:

Sponsor: NIH;
Project Title: Neuromuscular and Biomechanical Control of Weight Transfer in Individuals Post-Stroke.
Funding period: 2022-2025
Principal Investigator: H. Hsiao.
Co-Is: Lee, R. (St. David's Rehabilitation Hospital); Westlake, K. (Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore); Gray, V. (Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore); Gobert, D. (Department of Physical Therapy, Texas State University).
Total funding: $420,475

Sponsor: NIH.
Project Title: Neuromuscular and Biomechanical Control of Lower Limb Loading in Individuals with Chronic Stroke
Funding period: 2018-2020
Principal Investigator: Gray, V. (Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore).
Co-I: **H. Hsiao**; K. Westlake. (Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore).
Total funding: $424,875
Total amount to UT: $66,251

Sponsor: VA.
Project Title: Biomechanical Mechanisms of Lower Limb Loading During Forced Rapid Weight Transfer in Individuals Post-stroke
Funding period: 2017-2018
Principal Investigator: H. Hsiao.
Co-I: Rogers MW. (Post-doctoral mentor. Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore); Gray V. (Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore); Savin D. (Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore).
Total funding: $10,000

In Review:

Sponsor: NSF
Project Title: Video Understanding for AI-Assisted Human Skill Learning
Funding period: 2026-2030
Principal Investigator: Pavlakos G. (Department of Computer Science University of Texas at Austin)
Co-I: **H. Hsiao**.
Total funding: $400,000

Sponsor: Lyda Hill Philanthropies (Hill Prize in Artificial Intelligence)
Project Title: Physics-based Perception of 3D Human-World Interactions
Funding period: 2026-2027
Principal Investigator: Grauman K. (Department of Computer Science University of Texas at Austin)
Co-I: Pavlakos G. (Department of Computer Science University of Texas at Austin); Pavel. A. (Department of Electrical Engineering and Computer Sciences, University of California, Berkeley); **H. Hsiao**.
Total funding: $500,000

Sponsor: NIH
Project Title: Sensor-based Tactical Risk Index for Variable Environments
Funding period: 2026-2027
Principal Investigator: Graham M. (Founder of iV Logik, Inc.)
Co-I: **H. Hsiao**; Sefton J. (School of Kinesiology, Auburn University)
Total funding: $296,126.

Sponsor: National Science and Technology Council, Taiwan.
Project Title: 3-D Printed Self-Powered Tactile Sensors for Badminton Applications
Funding period: 2026-2029
Principal Investigator: Chen PC. (Mechanical Engineering, National Taiwan University of Science and Technology)
Co-I: **H. Hsiao;** Peng SY. (Department of Electrical Engineering, National Taiwan University of Science and Technology)
Total funding: $63,000.

<u>Internal Research Funding</u>

Current

Sponsor: University of Texas College of Education Small Grant Award;
Project Title: Pairing Vagus Nerve Stimulation with Treadmill Oscillation Walking to Improve Balance and Gait Function in persons with Chronic Stroke
Funding period: 2025-2026
Principal Investigator: H. Hsiao.
Co-PI/Co-Is: Lee, R. (St. David's Rehabilitation Hospital).
Total funding: $ 10,000

Completed

Sponsor: University of Texas College of Education Small Grant Award.
Project Title: Combining Tai-Chi Exercise with Perturbation to Improve Balance Function in Aging
Funding period: 2023-2024
Principal Investigator: H. Hsiao.
Co-PI/Co-Is: Liu, W. (Department of Physical Therapy, UT Health Science Center San Antonio); Gelfond, J. (Department of Population Health Sciences, UT Health Science Center San Antonio).
Total funding: $ 5,000

Sponsor: University of Texas College of Education Small Grant Award.
Project Title: Improving Weight Bearing during Gait via Biofeedback in Individuals Post-stroke
Funding period: 2020
Principal Investigator: H. Hsiao.
Total funding: $ 10,000

Sponsor: University of Texas College of Education Summer Research Assignment.
Project Title: Medio-lateral treadmill perturbation during gait in persons with chronic stroke
Funding period: 2019
Principal Investigator: H. Hsiao.
Total funding: $ 19,000

Sponsor: University of Texas College of Education Small Grant Award.
Project Title: Reactive limb loading responses during diagonal stance in individuals post-stroke
Funding period: 2019
Principal Investigator: H. Hsiao.
Total funding: $ 10,000

AWARDS AND HONORS

2025 Joe R. & Teresa Lozano Long Endowed Faculty Fellows
2022 Research Reboot Award, Provost's Office.

PRESENTATIONS

Invited Talks

"Sagittal and frontal plane movements related to forward progression in individuals post-stroke." Department of Biomedical Engineering, Florida Institute of Technology. Melbourne, FL. November 2017.

"Relationships between lateral weight transfer and walking speed during gait in individuals post-stroke." Department of Physical Therapy and Rehabilitation Science, University of Maryland Baltimore. Baltimore, MD. May 2016.

Local Talks

"How to reduce the risk of falls as you age?" Texas Exes, University of Texas at Austin. Austin, TX. October 2024.

"Empowering Independence. Yes, I'll be there!" College of Education, University of Texas at Austin. Austin, TX. April 2024.

Conference Presentations

Podium/Oral Presentations

Prible D, Shen K, **Hsiao H**, "Increasing belt speed across stance phase evokes adaptive increases in ankle plantarflexor torque*."* South Central American Society of Biomechanics, Fort Worth, TX, April 2025. (*Oral Presentation Award*)

Zachary Z, Prible D, **Hsiao H**, "Modulation of Ankle and Knee Joint Work During Split-Belt Treadmill Walking*."* South Central American Society of Biomechanics, Fort Worth, TX, April 2025 (*Promising Scientist Award*).

Tsai Z, Shen K, Lee R, **Hsiao H**, "Effect of treadmill oscillation walking on gait in post stroke patients*."* CARE Research Day, Austin, TX, March 2025.

Prible D, Shen K, **Hsiao H**, "Increasing belt speed across stance phase evokes adaptive increases in ankle plantarflexor torque*."* CARE Research Day, Austin, TX, March 2025.

Zachary Z, Prible D, **Hsiao H**, "Modulation of ankle and knee joint work during split-belt treadmill walking*."* CARE Research Day, Austin, TX, March 2025.

Hsiao H, *Tsai J, Shen K*, Lee R, "Locomotor rehabilitation in individuals post-stroke." International Conference on Neurorehabilitation, La Granja, Spain, November 2024.

Tsai J, Shen K, **Hsiao H**, "Effect of six weeks of treadmill oscillation walking training on balance and gait characteristics in stroke survivors." South Central American Society of Biomechanics, Fort Worth, TX, April 2024. *(Best Graduate Presentation Award)*

Shen K, Prajapati S, Borrelli J, Gray V, Rogers MW, **Hsiao H**, "Changes in stepping biomechanics after 6-week perturbation-induced weight transfer training post-stroke." Annual Meeting of the American Society of Biomechanics, virtual, August 2021.

Shen K, Borrelli J, Gray V, Rogers MW, **Hsiao H**, "Control of vertical support and frontal plane stability during perturbation-induced single support in individuals post-stroke." World Congress of Biomechanics, virtual, August 2021.

Prible D, **Hsiao H**. "Frontal plane thoracolumbar and pelvis kinematics are associated with force production in hemiparetic gait." Annual Meeting of the American Society of Biomechanics, Atlanta, GA, August 2020.

Hsiao H, Gray VL, Borrelli J, Rogers MW. "Lower limb loading control during rapid impact force in individuals post-stroke." American Physical Therapy Association Combined Sections Meeting, Washington, DC, January, 2019.

Hsiao H, Knarr BA, Higginson JS, and Binder-Macleod SA. "The relative contribution of trailing limb angle and ankle moment to changes in propulsive force during walking in individuals poststroke." Center for Biomedical Engineering and Research Symposium, University of Delaware, Newark, DE, May, 2015.

Palmer JA, **Hsiao H**, and Binder-Macleod SA. "Asymmetrical corticomotor input to the plantarflexors influences the biomechanical strategy of speed modulation in Individuals post-stroke." Center for Biomedical Engineering and Research Symposium, University of Delaware, Newark, DE, May, 2015.

Hsiao H, Knarr BA, Higginson JS, and Binder-Macleod SA. "A biomechanical-based model for predicting propulsive forces during able-bodied gait." Center for Biomedical Engineering and Research Symposium, University of Delaware, Newark, DE, May, 2014.

Brandis CE, Awad LN, **Hsiao H**, Marion MS, Kesar TM, Knarr BA, Higginson JS, Binder-Macleod SA, "The effects of fatigue on post-stroke muscle force production and center of mass acceleration: a musculoskeletal simulation analysis." Computer methods in biomechanics and biomedical engineering, Salt Lake City, Utah, April, 2013.

Poster Presentations

Tsai Z, Shen K, **Hsiao H**, "Treadmill oscillation walking enhances paretic limb loading in individuals post-stroke*."* American Society of Biomechanics Annual Meeting, Pittsburg, PA, August 2025.

Zhang W, Tsai J, Shen K, **Hsiao H. "** Baseline predictors of improvements in clinical balance and gait outcomes after treadmill oscillation walking training in individuals post-stroke*"*, Rehabilitation Engineering and Assistive Technology Society of North America Rehabweek, Chicago, IL, May 2025.

Tsai Z, Shen K, Lee R, **Hsiao H**, "The effect of treadmill oscillation walking on gait in post stroke patients*."* South Central American Society of Biomechanics, Fort Worth, TX, April 2025 (*Poster Presentation Award*).

Zhang W, Tsai J, Shen K, **Hsiao H. "** Predictors *of changes in gait and balance gains following treadmill oscillation walking (TOW) training in stroke survivors"* CARE Research Day, Austin, TX, March 2025.

Zachary Z, Prible D, **Hsiao H**, "Modulation of ankle and knee joint work during split-belt treadmill walking*."* CARE Research Day, Austin, TX, March 2025.

Tsai J, Shen K, **Hsiao H** "Effect of six weeks of treadmill oscillation walking training on balance and gait characteristics in stroke survivors." American Society of Biomechanics, Madison, WI, August 2024.

Foroughi F, Sadeh S, Beck O, **Hsiao H**, "Effect of real-time vertical ground reaction force biofeedback on hip and knee joint moments during walking in older adults." Gait and Clinical Movement Analysis Society (GCMAS) Annual Meeting, Atlanta, GA, June 2024. *(Best 3-minute Presentation Award).*

Hsiao H, *Shen K, Tsai J*, Lee R, "Effects of a 6-week lateral treadmill oscillation walking (TOW) training on balance and gait functions in chronic stroke survivors." World Congress for Neurorehabilitation, Vancouver, Canada, May 2024.

Smith J, **Hsiao H**. "Wearable visual biofeedback of vertical ground reaction force enables symmetrical force production during deadlifting and squatting." CARE Research Day, Austin TX, April 2024

Smith J, Jackson T, Liu W, **Hsiao H**, "Combined effects of tai-chi gait with lateral ground support perturbations on dynamic balance control: a pilot study in younger and older adults." American Society of Biomechanics Annual Meeting, Knoxville, TN, August 2023

Jeon W, Borrelli J, **Hsiao H**, "Effects of visual input absence on balance recovery responses to lateral standing surface perturbations in older and younger adults." ACSM Annual Meeting and World Congress, Denver, CO, June 2023.

Nakamura S, Sadeh S, **Hsiao H**, "Biomechanical determinants of lateral step initiation after unilateral ground support drop perturbation." South Central American Society of Biomechanics, Fort Worth, TX, April 2023.

Nakamura S, Sadeh S, **Hsiao H**, "Biomechanical determinants of lateral step initiation after unilateral ground support drop perturbation." CARE Research Day, Austin, TX, April 2023.

Jannesar T, Shen K, **Hsiao H**, "Effect of treadmill oscillation walking on weight transfer characteristics in individuals post-stroke: A Case Report." CARE Research Day, Austin, TX, April 2023

Lowe T, **Hsiao H**, Dong XN, Griffin L, "Effects of hamstring vibration on limb stiffness following anterior cruciate ligament reconstruction." Orthopaedic Research Society Annual Meeting, Dallas, TX, February 2023.

Sadeh S, *Shen K*, *Foroughi F*, **Hsiao H**, "Biomechanical response following compelled forward weight shift in old versus young adults." American Congress of Rehabilitation Medicine 99th Annual Meeting, Chicago, IL, November 2022.

Odanye OP, Steffensen EA, Hinton EA, Bierner S, **Hsiao H**, and Knarr BA. "Treadmill handrail use increases paretic side margin of stability in individual's post-stroke." North American Congress on Biomechanics, Ottawa, Canada, August 2022.

Hsiao H, *Sadeh S*, *Shen K*, "Biomechanical determinants of lateral step initiation speed immediately after ground support perturbation in healthy adults" International Society of Posture and Gait Research, Montreal, Canada, July 2022.

Foroughi F, *Smither M*, Hedrick EA, Parker SM, Knarr BA, **Hsiao H**. "Age-associated changes in vertical support strategy with increasing walking speed." Annual Meeting of The Gait & Clinical Movement Analysis Society (virtual), June 2022.

Jackson T, *Prible D*, Liu W, **Hsiao H**. "Effects of Tai Chi with perturbation on balance control in old and young adults." CARE Research Day, Austin, TX, April 2022 *(Best Poster Award)*.

Sadeh S, *Shen K*, *Foroughi F*, **Hsiao H**, "Lower limb biomechanical response following compelled forward weight shift in old and young adults." CARE Research Day, Austin, TX, April 2022.

Shen K, Borrelli J, Gray V, **Hsiao H**, "Deficits in paretic hip abduction torque production may reduce vertical support and stability during perturbation-induced sudden single stance in individuals post-stroke." CARE Research Day, Austin, TX, April 2022.

Foroughi F, *Prible D*, **Hsiao H**. "Age-associated changes in limb loading strategy with increasing walking speed." CARE Research Day, Austin, TX, April 2022.

Prible D, Binder-Macleod SA, **Hsiao H**. "Trunk movement during single-limb support predicts paretic peak propulsive force in individuals with hemiparesis." American Physical Therapy Association Combined Sections Meeting, San Antonio, TX, February 2022.

Foroughi F, *Smither M*, Hedrick EA, Parker SM, Knarr BA, **Hsiao H**. "Frontal-plane biomechanical model for predicting weight bearing during walking in older adults." Annual Meeting of the American Society of Biomechanics (virtual), August 2021

Jackson T, Parker SM, Hedrick EA, Knarr BA, **Hsiao H**. "Lateral balance regulation on self-paced and fixed speed treadmills in aging." Annual Meeting of the American Society of Biomechanics (virtual), August 2021

Shen K, Prajapati S, Borrelli J, Gray V, Rogers MW, **Hsiao H**, "Changes in stepping biomechanics after 6-week perturbation induced weight transfer training post-stroke." CARE Research Day, Austin, TX, April 2021.

Sadeh S, **Hsiao H**. "Lower limb biomechanical and neuromuscular habituation response following repeated perturbation-imposed weight transfer in older adults." CARE Research Day, Austin, TX, April 2021.

Smither M, **Hsiao H**. "Frontal plane biomechanical model to predict vertical ground reaction force in individuals post-stroke." CARE Research Day, Austin, TX, April 2021.

Prible D, Shen K, **Hsiao H**. "A portable biofeedback system to augment peak vertical ground reaction force while walking." CARE Research Day, Austin, TX, April 2021.

Jackson T, Parker SM, Hedrick EA, Knarr BA, **Hsiao H**. "Mediolateral sway of center of mass in older adults on self-paced and fixed speed treadmills." CARE Research Day, Austin, TX, April 2021.

Foroughi F, **Hsiao H**. "The relative contribution of the frontal-plane gait biomechanics to increases in vertical ground reaction force." CARE Research Day, Austin, TX, April 2021.

Hedrick EA, **Hsiao H**, Binder-Markey BI, Binder-Macleod SA, Knarr BA, "Ankle stiffness modulation during different gait speeds in individuals post-stroke." Human Movement Variability Conference, Omaha, NE, February 2021.

Shen K, Prajapati S, Borrelli J, Gray V, Rogers MW, **Hsiao H**, "Clinical motor recovery assessment reflects biomechanical features in different phases during imposed weight transfer post-stroke" American Physical Therapy Association Combined Sections Meeting (virtual), February 2021.

Prible D, Binder-Macleod SA, **Hsiao H**. "Trunk lateral flexion is associated with force production in hemiparetic gait." American Physical Therapy Association Combined Sections Meeting (virtual), February 2021.

Shen K, Prajapati S, Borrelli J, Gray V, Rogers MW, **Hsiao H**, "Neuromechanical control of ankle joint during forced lower limb loading in individuals with chronic stroke." Annual Meeting of the American Society of Biomechanics (virtual), August 2020.

Williams E, *Shen K*, **Hsiao H**, "Front and hind limb landing mechanics of the ankle joint during forced limb loading in a split stance." Annual Interprofessional Health Showcase, Austin, TX, May 2020. *(Best in Research Award; 3rd place People's Choice Award)*

Borrelli JR, Creath RA, Pizac D, **Hsiao H**, Sanders O, Rogers MW. "Center of mass control differentiates single step and multistep lateral balance recovery responses." ACRM Annual Conference, Progress in Rehabilitation Research, Chicago, IL, November 2019.

Jeon W, **Hsiao H**, Wreford B, Coronado C, Griffin L. "Effects of aging on muscle activation patterns and postural control during a sit-to-stand with different initial foot positions." Annual Meeting of the Society for Neuroscience, Chicago, IL, October 2019.

Hsiao H, Gray VL, Borrelli J, Rogers MW. "Control of lower limb loading in individuals with chronic stroke." Annual Meeting of the American Society of Biomechanics, Calgary, Canada, August 2019.

Ahamed SJ, Gupta D, Abraham L, **Hsiao H**. "Effects of kinesio tape on ankle moment and muscle activation in individuals with flat foot during the stance phase of walking: Preliminary Study." CARE Research Symposium, Austin, TX, April 2019.

Borrelli JR, Creath RA, Pizac D, **Hsiao H**, Sanders O, Rogers MW. "Center of mass control differentiates single and multistep lateral protective stepping reactions in older adults." Aging Research Symposium, Baltimore, MD, May 2019.

Galgiani JE, Pohlig RT, Morton SM, Alcântara CC, **Hsiao H**, Higginson JS. "Timed up and go performance moderates the relationship between trailing limb angle and walking speed in stroke survivors." American Physical Therapy Association Combined Sections Meeting, New Orleans, LA, February, 2018.

Sanders O, Singh H, **Hsiao H**, Creath R, Rogers MW "Motor prediction modulates protective balance and startle responses to sudden drop perturbations in standing humans." International Society of Posture and Gait Research, Fort Lauderdale, FL, June, 2017

Hsiao H, Creath RA, Gray VL, Binder-Macleod SA, Rogers MW. "Relationships between lateral weight transfer and walking speed during gait in individuals post-stroke." Annual Meeting of the American Society of Biomechanics, Raleigh, NC, August, 2016.

Hsiao H, Higginson JS, and Binder-Macleod SA. "Baseline predictors of treatment gains in propulsive force in individuals poststroke." Stroke Education Conference, Delaware Academy of Medicine, Newark, DE, October, 2015. *(Best Poster Presentation Award)*

Zabielski T, **Hsiao H**, and Binder-Macleod SA. "Peak vs. force-time Integral: Which measurement is most appropriate in assessing gait in individuals post-stroke?" Undergraduate Summer Scholars Research Symposium, Newark, DE, August, 2015.

Gordon C, Palmer JA, **Hsiao H**, and Binder-Macleod SA "The role of cortical input to the lower extremity in walking performance in individuals post-stroke." Undergraduate Summer Scholars Research Symposium, Newark, DE, August, 2015.

ADVISING AND STUDENT-RELATED SERVICE

Dissertation Committees

ZeKun Liu, Movement and Cognitive Rehabilitation Science, 2025-present. (Chair).
Jason Tsai, Movement and Cognitive Rehabilitation Science, 2024-present. (Chair).

Soroosh Sadeh, Movement and Cognitive Rehabilitation Science, 2019-2024. (Chair).

- Graduated in August 2024. Current position is Assistant Professor of Instruction at the Department of Integrative Biology at UT Austin.

Keng-Hung Shen, Movement and Cognitive Rehabilitation Science, 2019-2024. (Chair).

- Graduated in August 2024. Post-doctoral fellow in the Department of Neuroscience at Washington University in St. Louis.

Forouzan Foroughi, Movement and Cognitive Rehabilitation Science, 2020-2024. (Chair).

- Graduated in August 2024. Current position is physical therapist at Texas Physical Therapy Specialists.

Donald Prible, Movement and Cognitive Rehabilitation Science, 2019-2025 (Chair).

- Graduate in August 2025.

Rahmawati Rahmawati, Movement and Cognitive Rehabilitation Science, 2025-present. (Co-Chair).

Uttara Khatri, Movement and Cognitive Rehabilitation Science, 2023-present. (Member).
Shabnam Lateef, Physical Therapy and Rehabilitation Science (University of Maryland Baltimore), 2023-present (Member)
Mohsen Alighanbari, Movement and Cognitive Rehabilitation Science, 2019-present. (Member).

Ruth Akinlosotu, Ph.D. in Physical Therapy and Rehabilitation Science (University of Maryland Baltimore), 2025. (Member)
Huiying Zhu, Movement and Cognitive Rehabilitation Science, 2024. (Member).
Emily Dunlap, Ph.D. in Exercise Physiology, 2023. (Member).
Wentao Li, Ph.D. in Biomedical Engineering, 2023. (Member).
Timothy Lowe, Ph.D. in Movement and Cognitive Rehabilitation Science, 2022. (Member).
Xin Yu, Ph.D. in Movement and Cognitive Rehabilitation Science, 2022. (Member).
Ross Newman, Ph.D. in Biomedical Engineering, 2022. (Member).
Venkata Suresh Rayudu, Ph.D. in Electrical and Computer Engineering, 2022. (Member).
Sz-Yan Wu, Ph.D. in Movement and Cognitive Rehabilitation Science, 2021. (Member).
Zhong Wang, Ph.D. in Movement and Cognitive Rehabilitation Science, 2020. (Member).
Woohyoung Jeon, Ph.D. in Movement and Cognitive Rehabilitation Science, 2020. (Member).
Christie Powell, Ph.D. in Movement and Cognitive Rehabilitation Science, 2019. (Member).

Master's Thesis Committees

Anthony Ziegler, Movement and Cognitive Rehabilitation Science, 2027. (Chair).
Zachary Zegub, Movement and Cognitive Rehabilitation Science, 2026. (Chair).
Sonu Mharjan, Movement and Cognitive Rehabilitation Science, 2026. (Chair).
WenXi Zhang, Movement and Cognitive Rehabilitation Science, 2025. (Chair).
Shun Nakamura, Movement and Cognitive Rehabilitation Science, 2024. (Chair).
Jacob Smith, Movement and Cognitive Rehabilitation Science, 2024. (Chair).
Talieh Jannesar, Movement and Cognitive Rehabilitation Science, 2024. (Chair).
Troilyn Jackson, Movement and Cognitive Rehabilitation Science, 2022. (Chair).
Mariah Smither, Movement and Cognitive Rehabilitation Science, 2021. (Chair).
Aaron Simmons, Movement and Cognitive Rehabilitation Science, 2021. (Chair).

Philippe Brosselin Perez Palma, Exercise Physiology, 2024. (Member).

Jie Yang, Movement and Cognitive Rehabilitation Science, 2023. (Member).
Jonah Rosner, Exercise Physiology, 2021. (Member).
Christina Mihova, Movement and Cognitive Rehabilitation Science, 2021. (Member).
Key Nahan Movement and Cognitive Rehabilitation Science, 2021. (Member).
Lingfeng Chen, Movement and Cognitive Rehabilitation Science, 2020. (Member).

Masters Report

Edward Williams, Movement and Cognitive Rehabilitation Science, 2021. (Chair).

Master of Education

Terrick Johnson, Movement and Cognitive Rehabilitation Science, 2023.

Undergraduate Honors Theses

Alec Alden, Department of Biomedical Engineering, 2025 (Co-Supervisor).
Arnav Monhanty, Health Science, 2022. (Supervisor).

Qualifying/Comprehensive Exam Committee

Donald Prible, Movement and Cognitive Rehabilitation Science, 2024. (Chair).
Keng-Hung Shen, Movement and Cognitive Rehabilitation Science, 2023. (Chair).
Forouzan Foroughi, Movement and Cognitive Rehabilitation Science, 2023. (Chair).
Soroosh Sadeh, Movement and Cognitive Rehabilitation Science, 2022. (Chair).

NingZhen Zhou, Movement and Cognitive Rehabilitation Science, 2025. (Member)
XinYu Li, Movement and Cognitive Rehabilitation Science, 2025. (Member)

Ruth Akinlosotu, Physical Therapy and Rehabilitation Science (University of Maryland Baltimore), 2023 (Member)
Kyoungsoon Kim, Mechanical Engineering, 2022. (Member).
Huiying Zhu, Movement and Cognitive Rehabilitation Science, 2022. (Member).
Mohsen Alighanbari, Movement and Cognitive Rehabilitation Science, 2022. (Member).

Timothy Lowe, Ph.D. in Movement and Cognitive Rehabilitation Science, 2021. (Member).
Xin Yu, Ph.D. in Movement and Cognitive Rehabilitation Science, 2021. (Member).
Sz-Yan Wu, Ph.D. in Movement and Cognitive Rehabilitation Science, 2020. (Member).
Zhong Wang, Ph.D. in Movement and Cognitive Rehabilitation Science, 2019. (Member).
Woohyoung Jeon, Ph.D. in Movement and Cognitive Rehabilitation Science, 2019. (Member).

Mentee honors and awards

Scholarships
Tsai J. Teresa Lozano Long Endowed Graduate Fellowship. 2024, 2025
Foroughi F. Dissertation Writing Fellowship. 2024

Tsai J. Engineering and Science Scholarship Award. 2024
Shen K. Graduate School's Continuing Fellowship. 2023-24.
Shen K. College of Education Graduate Student Research Award. 2021.

Teaching Awards
Tsai J. Alexander Caswell Ellis Fellowship in Education. 2025
Shen K. Mary Buice Alderson Scholarship for Teaching Excellence. 2022
Shen K. Mary Buice Alderson Scholarship for Teaching Excellence. 2021
Shen K. Mary Buice Alderson Scholarship for Teaching Excellence. 2020

Travel Awards
Zhang WX, Graduate student travel grant. 2025
Tsai J. Graduate student travel grant. 2024, 2025
Foroughi F. Graduate student travel grant. 2024
Smith J. Graduate student travel grant. 2023

Conference Presentation Awards
Oral Presentation Award at 2025 South Central American Society of Biomechanics Meeting:
Prible D, Shen K, **Hsiao H**, "Increasing belt speed across stance phase evokes adaptive increases in ankle plantarflexor torque" South Central American Society of Biomechanics, Fort Worth, TX, April 2025.

Promising Scientist Award at 2025 South Central American Society of Biomechanics Meeting:
Zachary Z, Prible D, **Hsiao H**, "Modulation of Ankle and Knee Joint Work During Split-Belt Treadmill Walking*."* South Central American Society of Biomechanics, Fort Worth, TX, April 2025.

Poster Presentation Award at 2025 South Central American Society of Biomechanics Meeting:
Tsai Z, Shen K, Lee R, **Hsiao H**, "The effect of treadmill oscillation walking on gait in post stroke patients*."* South Central American Society of Biomechanics, Fort Worth, TX, April 2025.

Best 3-minute Presentation Award at 2024 Gait and Clinical Movement Analysis Society (GCMAS) Annual Meeting:
Forouzan F, Sadeh S, Beck O, **Hsiao H**. "Effect of real-time vertical ground reaction force biofeedback on hip and knee joint moments during walking in older adults." Gait and Clinical Movement Analysis Society (GCMAS) Annual Meeting, Atlanta, GA, June 2024

Best Oral Presentation Award at 2024 South Central American Society of Biomechanics Meeting:
Tsai J, Shen K, Lee R, **Hsiao H**. "Effect of six weeks of treadmill oscillation walking training on balance and gait characteristics in stroke survivors." South Central American Society of Biomechanics, Fort Worth, TX, April 2024.

Best Poster Award at 2022 CARE Research Day:
Jackson T, Prible D, Liu W, **Hsiao H**. "Effects of Tai Chi with perturbation on balance control in old and young adults." CARE Research Day, Austin, TX, April 2022.

Best in Research Award and 3rd place People's Choice Award at 2020 Annual Interprofessional Health Showcase:
Williams E, Shen K, **Hsiao H**. "Front and hind limb landing mechanics of the ankle joint during forced limb loading in a split stance." Annual Interprofessional Health Showcase, Austin, TX, May 2020.

ADMINISTRATIVE AND PROFESSIONAL SERVICE

Departmental Service

Movement and Cognitive Rehabilitation Science Program Area Lead, 2025-present
Muscle Mechanics Faculty Search Committee, 2025
Movement and Cognitive Rehabilitation Science Lecturer Search Committee, 2025
Graduate Studies Committee, 2018-present
Movement and Cognitive Rehabilitation Science Program Area Committee, 2018-present
Alderson Lecture and Awards Celebration Committee, 2024
Exercise Physiology Faculty Search Committee, 2023
McCraw Lecture Series (Chair), 2022-2024.
Health Behavior and Health Education Faculty Search Committee, 2022
Subvention Committee, 2020-2022
Faculty Merit Committee, 2020
Movement and Cognitive Rehabilitation Science Faculty Search Committee, 2021
Movement and Cognitive Rehabilitation Science Faculty Search Committee, 2020
Movement and Cognitive Rehabilitation Science Faculty Search Committee, 2019

College Service

Dean's Promising Scholars Committee, 2024 - 2026

University Service

Institutional Review Board, 2020-present. We have monthly meetings for the review of studies that are submitted for full board review. This is considered as a heavier load service.
Faculty Council, 2024-present.

Professional Service

Grant Reviewing
NIH P50 National Institute of Child Health and Human Development. 2025

NIH R01 National Institute on Aging Special Emphasis Panel. 2025

NIH R15 Academic Research Enhancement Award (AREA) and the Research Enhancement Awards Program (REAP), Musculoskeletal, Oral and Skin Sciences IRG. 2023.

External scientific grant reviewer for the University of Maryland, Baltimore's (UMB), Institute for Clinical and Translational Research (ICTR) Accelerated Translational Incubator Pilot (ATIP) Grant Program. 2022.

International Conference Special Session Organizer
Organizer, special session: Locomotor Rehabilitation in Individuals Post-stroke. International Conference on Neurorehabilitation, La Granja, Spain, 2024.

Editorial Service
Frontiers in Rehabilitation Sciences (Associate Editor, 2023-present)
Journal of Biomechanics (Reviewer, 2018-present)
Gait and Posture (Reviewer, 2018-present)
PLoS One (Reviewer, 2022-2023)
Journal of Aging and Physical Activity (Reviewer, 2023)
Archives of Physical Medicine and Rehabilitation (Reviewer, 2023)
Journal of NeuroEngineering and Rehabilitation (Reviewer, 2018-2022)
Brain Sciences (Reviewer, 2020-2022)
Clinical Neuroscience (Reviewer, 2022)
Journal of Neurologic Physical Therapy (Reviewer, 2022)
IEEE Transactions on Neural Systems and Rehabilitation Engineering (Reviewer, 2021)
Medicine & Science in Sports & Exercise (Reviewer, 2021)
Neurorehabilitation and Neural Repair (Reviewer, 2020)

Professional Memberships
American Society of Biomechanics (2019, 2021, 2025)
International Society of Posture and Gait Research (2021-2023)
American Heart Association (2018-2019)