

Curriculum Vitae

Huaqing (Virginia) Liang, MD, PhD
Assistant Professor
School of Physical Therapy
Marshall University
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Huntington, WV 25702
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Education:

Post-Doctoral Research Training
University of Illinois at Chicago
Chicago, IL, USA
Rehabilitation Sciences
October 2018 – August 2020

Doctor of Philosophy
Georgia State University
Atlanta, GA, USA
Kinesiology / Biomechanics and Physical Rehabilitation
August 2013 – July 2018

Doctor of Medicine
Shanghai Medical College at Fudan University
Shanghai, China
Clinical Medicine
September 2008 – July 2013

Licensure / Certification: none

Professional Experience / Employment History:

Assistant Professor
Tenure Track
School of Physical Therapy
Marshall University
Huntington, WV, USA
August 2020 – present

Lecturer
Department of Physical Therapy
University of Illinois at Chicago
Chicago, IL, USA
December 2018 – January 2020

Postdoctoral Research Associate
Department of Physical Therapy
University of Illinois at Chicago
Chicago, IL, USA
October 2018 – August 2020

Graduate Teaching Assistant
Department of Kinesiology and Health
Georgia State University
Atlanta, GA, USA
January 2014 – July 2018

Graduate Research Assistant
Department of Kinesiology and Health
Georgia State University
Atlanta, GA, USA
August 2013 – August 2018

Medical Intern
Zhongshan Hospital of Fudan University
Shanghai, China
July 2012 – June 2013

Peer Reviewed Publications (student trainees are underlined)

1. Johnson, K., **Liang, H.** (2023) Effect of unilateral loading on gait symmetry in young adults. *Gait Posture*. 2023 Jul; 104:120-125. PMID: 37393845. (JIF = 2.75)
2. Ferreira, D. M., **Liang, H.**, Wu, J. (2023) Effect of body position and external ankle load on the pendulum test in adults. *Knee*, Jun; 42: 99-106. PMID: 36963215. (JIF = 2.42)
3. Ademiluyi, A., **Liang, H.**, & Aruin, A. S. (2023). The effect of additional leg supports in control of posture in sitting. *Journal of Motor Behavior*, 55(3):269-277. PMID: 36809855. (JIF = 1.36)
4. **Liang, H.**, Kaewmanee, T., & Aruin, A. S. (2023). The feasibility of using an auditory cue to elicit anticipatory postural adjustments for a posterior perturbation. *Experimental brain research*, 241(1): 289-299. PMID: 36502432. (JIF = 2.40)
5. Kaewmanee, T., **Liang, H.**, Madrid, K. C., & Aruin, A. S. (2022). Older adults utilize less efficient postural adaptations when they are uncertain about the magnitude of a perturbation. *Human Movement Science*, 85, 102996. PMID: 36049269. (JIF = 2.50)
6. Kaewmanee, T., **Liang, H.**, Cruz Madrid, K., & Aruin, A. S. (2022). The effect of the predictability of perturbation magnitudes in older adults with mild cognitive

- impairment. *Aging Clinical and Experimental Research*, 1-9. PMID: 36038812. (JIF = 4.20)
7. **Liang, H., Kaewmanee, T., & Aruin, A. S. (2022).** Older adults can rely on an auditory cue to generate anticipatory postural adjustments prior to an external perturbation. *Experimental brain research*, 240(4), 1279-1292. PMID: 35218409. (JIF = 2.19)
 8. **Ademiluyi, A., Liang, H., & Aruin, A. S. (2022).** Role of angular position of the seat in control of posture in response to external perturbation. *Experimental brain research*, 240(2), 481-490. PMID: 34800142. (JIF = 2.19)
 9. **Kaewmanee, T., Liang, H., & Aruin, A. S. (2022).** The Effect of Predictability of the Perturbation Magnitude on Anticipatory and Compensatory Postural Adjustments during a Bimanual Load-Lifting Task. *Journal of Motor Behavior*, 54(5), 567-576. PMID: 34986736. (JIF = 1.33)
 10. **Kaewmanee, T., Liang, H., & Aruin, A. S. (2021).** The role of predictability of the magnitude of a perturbation in control of vertical posture when catching an object. *Human Movement Science*, 80, 102890. (JIF = 2.16)
 11. **Liang, H. (Virginia), Henderson, G., & Wu, J. (2020).** Neuromuscular response to a single session of whole-body vibration in children with cerebral palsy: A pilot study. *Clinical Biomechanics*, 80, 105170. PMID: 32920250. (JIF = 1.95)
 12. **Kaewmanee, T., Liang, H., & Aruin, A. S. (2020).** Effect of predictability of the magnitude of a perturbation on anticipatory and compensatory postural adjustments. *Experimental brain research*, 238(10), 2207-2219. PMID: 32696073. (JIF = 2.17)
 13. **Liang H., Kaewmanee T., & Aruin A. S. (2020)** The role of an auditory cue in generating anticipatory postural adjustments in response to an external perturbation. *Experimental brain research*, 238(3), 631-641. PMID: 32009192. (JIF = 2.17)
 14. **Henderson, G., Beerse, M., Liang, H., Ferreira, D., & Wu, J. (2020).** Improvement in overground walking after treadmill-based gait training in a child with agenesis of the corpus callosum. *Physical Therapy*, 100(1), 157-167. PMID: 31593234. (JIF = 3.02)
 15. **Alwadani, F. A., Liang, H., & Aruin, A. S. (2020).** Effects of ankle angular position and standing surface on postural control of upright stance. *Motor Control*, 24(2), 291-303. PMID: 31972537. (JIF = 1.32)
 16. **Ferreira, D. M., Liang, H., & Wu, J. (2020).** Knee joint kinematics of the pendulum test in children with and without Down syndrome. *Gait & Posture*, 76, 311-317. PMID: 31887704. (JIF = 2.16)
 17. **Beerse, M., Henderson, G., Liang, H., Ajsafe, T., & Wu, J. (2019).** Variability of

spatiotemporal gait parameters in children with and without Down syndrome during treadmill walking. *Gait & posture*, 68, 207-212. PMID: 30504087. (JIF = 2.02)

18. **Liang, H.**, Ke, X., & Wu, J. (2018). Transitioning from the level surface to stairs in children with and without Down syndrome: Motor strategy and anticipatory locomotor adjustments. *Gait & Posture*, 66, 260-266. PMID: 30223209. (JIF = 2.68)
19. **Liang, H.**, Ke, X., & Wu, J. (2018). Transitioning from level surface to stairs in children with and without Down syndrome: Locomotor adjustments during stair ascent. *Gait & Posture*, 63, 46-51. PMID: 29709722. (JIF = 2.68)
20. **Liang, H.**, Beerse, M., Ke, X., & Wu, J. (2017). Effect of whole-body vibration on center-of-mass movement during standing in children and young adults. *Gait & posture*, 54, 148-153. PMID: 28292716. (JIF = 2.46)
21. Wu, J., Beerse, M., Ajisafe, T., & **Liang, H.** (2015). Walking dynamics in preadolescents with and without Down syndrome. *Physical therapy*, 95(5), 740-749. PMID: 25524874. (JIF = 2.55)

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/1BYjupRG403kf/bibliography/public/>

Peer-Reviewed Scientific and Professional Presentations (student trainees are underlined)

1. McConnaughey H, Krigbaum B, Thomas M, **Liang H**. Explore the Feedforward Mechanism during Gait with Unilateral Loading in Typically Developing Children. APTA Combined Sections Meeting, Boston, MA, February 15-17, 2024. (Poster Presentation)
2. **Liang H**, McConnaughey H, Krigbaum B, Thomas M. Adaptation of Muscle Activities during Walking after Unilaterally Loading the Ankle in Children. APTA Combined Sections Meeting, Boston, MA, February 15-17, 2024. (Poster Presentation)
3. **Liang, H**. Effects of Unilateral Ankle Loading on Muscle Activity during Walking. The 45th American Society of Biomechanics annual meeting, Knoxville, TN, August 8-11, 2023. (Poster Presentation)
4. **Liang, H**, Kaewmanee, T, & Aruin, AS. Auditory Cues can Elicit Anticipatory Adjustments for Posterior Perturbations after Short Training. The 43rd American Society of Biomechanics annual virtual meeting (physical conference cancelled due to the COVID-19 pandemic), August 10-13, 2021. (Virtual Podium Presentation)
5. **Liang, H**, Kaewmanee, T, & Aruin, AS. Role of Auditory Cues on Anticipatory Adjustments to Perturbations Might be Directional Specific. The 43rd American

- Society of Biomechanics annual virtual meeting (physical conference cancelled due to the COVID-19 pandemic), August 10-13, 2021. (Virtual Poster Presentation)
6. **Liang, H, Kaewmanee, T, & Aruin, AS.** Older Adults Could Generate Anticipatory Postural Adjustments Relying on an Auditory Cue Only. The 54th North American Society for the Psychology of Sport and Physical Activity annual virtual meeting (physical conference cancelled due to the COVID-19 pandemic), June 9-11, 2021. (Virtual Podium Presentation)
 7. **Liang, H, Kaewmanee, T, & Aruin, AS.** Young Adults can Learn to Predict Unexpected Posterior Perturbation Using an Auditory Cue. The 44th American Society of Biomechanics annual virtual meeting (physical conference cancelled due to the COVID-19 pandemic), August 4-7, 2020. (Virtual Podium Presentation)
 8. **Liang, H, Kaewmanee, T, & Aruin, AS.** Older Adults Retain the Ability to Predict External Perturbation Using Auditory Cues Only. The 44th American Society of Biomechanics annual virtual meeting (physical conference cancelled due to the COVID-19 pandemic), August 4-7, 2020. (Virtual Poster Presentation)
 9. **Liang, H, Henderson, G, & Wu, J.** Neuromuscular response to a single session of whole-body vibration in children with cerebral palsy. The 53rd North American Society for the Psychology of Sport and Physical Activity annual virtual meeting (physical conference cancelled due to the COVID-19 pandemic), June 11-12, 2020. (Virtual Poster Presentation)
 10. **Liang, H & Wu, J.** Locomotor adjustments during stair ascent in children with Down syndrome: Comparison between walking and crawling strategies. The 51st North American Society for the Psychology of Sport and Physical Activity annual meeting, Denver, CO, June 21-23, 2018. (Podium Presentation)
 11. Ferreira, D, **Liang, H, & Wu, J.** Knee joint kinematics of the pendulum test in children with and without Down syndrome. The 51st North American Society for the Psychology of Sport and Physical Activity annual meeting, Denver, CO, June 21-23, 2018. (Podium Presentation)
 12. **Liang, H, Ke, X, & Wu, J.** Motor strategy and locomotor adjustments in children with and without Down syndrome while negotiating stairs. The 41st American Society of Biomechanics annual meeting, Boulder, CO, August 8-11, 2017. (Poster Presentation)
 13. **Liang, H & Wu, J.** Center of mass control and multi-segment coordination in children during and after whole-body vibration. The 41st American Society of Biomechanics annual meeting, Boulder, CO, August 8-11, 2017. (Poster Presentation)

14. **Liang, H**, Ke, X, & Wu, J. Motor strategy and locomotor adjustments in children with and without Down syndrome. The 7th Southeastern Pediatric Research Conference, Atlanta, GA, June 9, 2017. (Poster Presentation)
15. **Liang, H**, Ke, X, & Wu, J. Effect of whole body vibration on center of mass movement in children and young adults. The 40th American Society of Biomechanics annual meeting, Raleigh, NC, August 2-5, 2016. (Poster Presentation)
16. **Liang, H**, Ke, X, & Wu, J. Spatiotemporal gait pattern in children with and without Down Syndrome while walking from level surface to stairs. The 40th American Society of Biomechanics annual meeting, Raleigh, NC, August 2-5, 2016. (Poster Presentation)
17. **Liang, H** & Wu, J. Effect of whole-body vibration on postural control in young adults. The 39th American Society of Biomechanics annual meeting, Columbus, OH, August 5-8, 2015. (Poster Presentation)
18. Wu, J, Beerse, M, Ajisafe, T, & **Liang, H**. Walking pattern in children with and without Down syndrome via a force-driven harmonic oscillator model. The 39th American Society of Biomechanics annual meeting, Columbus, OH, August 5-8, 2015. (Poster Presentation)
19. Wu, J, Ajisafe, T, Beerse, M, & **Liang, H**. Children display adult-like kinetic pattern in the time domain but not in the frequency domain while walking with ankle load. The 39th American Society of Biomechanics annual meeting, Columbus, OH, August 5-8, 2015. (Poster Presentation)
20. Wu, J, Beerse, M, Ajisafe, T, & **Liang, H**. Walking dynamics in preadolescents with and without Down syndrome. Society for Neuroscience annual meeting, Washington DC, November 15-19, 2014. (Poster Presentation)

Non-Peer Reviewed Presentations (student trainees are underlined)

1. Bowyer, C, Johnson, K, Sinclair, E, & **Liang, H**. Effects of Unilateral Loading on Gait Parameters in Healthy Young Adults. Podium presentation at the Marshall University COHP Research Day, Huntington, WV, April 15, 2022. (Won best oral presentation award.)
2. Kaewmanee, T, **Liang, H**, & Aruin, AS. The effect of predictability of a perturbation magnitude on anticipatory and compensatory postural adjustments. Poster presentation at the AHS Research Day, Chicago, IL, November 6, 2019.
3. Alwadani, F, **Liang, H**, & Aruin, AS. Effect of ankle position, standing surface, and vision on postural balance during quiet standing. Poster presentation at the UIC Impact and Research Day event, Chicago, IL, April 10, 2019.

4. Alsayed, K, Liang, H, & Aruin, AS. Role of applying finger touch to one's contralateral shoulder on body stability. Poster presentation at the UIC Impact and Research Day event, Chicago, IL, April 10, 2019.
5. **Liang, H.** Transitioning from level surface to stairs in children with and without Down syndrome. Poster presentation at the Kinesiology and Health department research symposium, Georgia State University, Atlanta, GA, April 12, 2017.

Grant Activity

Funded

Marshall University, INCO Faculty Development Grant (\$600).
February 2024.

Marshall University, INCO Faculty Development Grant (\$1200).
February 2023.

NIDRR/US Department of Education: "*Advanced Training in Translational and Community-Engaged Scholarship to Improve Community Living and Participation for People with Disabilities.*" The purpose of this grant is to train young scientists in rehabilitation research specific to individuals with disabilities.

Role: Postdoctoral Research Associate; PI: Yolanda Suarez-Balcazar.
September 2018 – September 2020.

Georgia Foundation of Physical Therapy: "*Changes In gait kinematics following treadmill training in children with agenesis of the corpus callosum.*" The purpose of GFPT grant program is to promote the highest quality, scientifically based, and clinically relevant research with priority given to projects with a clinical application.

Role: Research Assistant; PI: Gena Henderson.
October 2016.

Un-funded

Foundation for Physical Therapy Research, Academy of Pediatric Physical Therapy Research Grant: "*Gait training with a unilateral ankle load to improve gait symmetry in children with cerebral palsy.*" (\$58,179)

Role: Co-Principle Investigator; Co-PI: Ashley Mason
August 2023

National Institute of Health, R03-NICHD small research grant program: "*Effect of unilateral loading on gait symmetry in children with and without unilateral cerebral palsy.*" (\$135,282)

Role: Principal Investigator.
October 2022

Glenn Foundation for medical research postdoctoral fellowships: "*The role of an auditory cue in improving postural control in older adults to prevent falls.*" (\$60,000)

Note: Letter of Intent.

Role: Principal Investigator.
January 2020

National Institute of Health, R01-NIA: "*Enhancing gait symmetry in acute stroke.*"

Role: Co-Principal Investigator; PI: Alexander S. Aruin.

February 2019

American Society of Biomechanics graduate student grant-In-aid: "*Effects of different frequencies and amplitudes of whole-body vibration on gait of children with cerebral palsy.*" (\$2000)

Role: Principal Investigator

April 2017

Major Areas of Research Interest

Gait analysis of children, older adults, and people with motor disabilities
Kinematic, kinetic, and muscle activity assessments during human locomotion
Pose estimation of human locomotion using a smartphone camera
Evaluate the effectiveness of rehabilitation protocols

Membership in Scientific/ Professional Organizations

2024 – Member, Gait and Clinical Movement Analysis Society

2021 – Faculty partner, American Physical Therapy Association

2014 – Member, American Society of Biomechanics

2018 – 2022 Member, North American Society for the Psychology of Sport and Physical Activity

2019 – 2020 Executive Board, Postdoctoral Association, University of Illinois at Chicago

Consultative and Advisory Positions Held

Doctoral Student Capstone Projects (Faculty Research Advisor)

1. Justin Grant, Cam Palmer, and Sam Pinkerton. Project title: Validity of dynamic movement analysis using smartphone cameras and human pose estimation algorithm. Marshall University, 2024-2026.
2. Ann Marie Ramey, Dustin Rohde, and Ryan Shrewsbury. Project title: Effects of unilateral ankle loading on gait parameters in young adults and children. Marshall University, 2024-2026.

3. Chase Fisher, Nicole Kester, and Megan Kusler. Project title: Changes in knee proprioception with use of visual and auditory feedback. Marshall University, 2024-2026.
4. Haleigh Weese, Raighan Kelly, Cassidy Lane, and Ciera Wine. Project title: Influencing factors regarding the utilization of pelvic health physical therapy among postpartum women in rural Appalachia. Marshall University, 2023-2025.
 - Mentored this group on a podium presentation at the 2024 Marshall University COHP Research Day and won best podium presentation award.
5. Cameron Ferguson, Bre Gahm, and Sydney Wellman (McComas). Project title: Changes in knee proprioception after exercise training with visual and auditory feedback. Marshall University, 2023-2025.
6. Sydney McCoy, Chloe Scott, and Erika Walt. Project title: Gait adaptation under the disturbance of a unilateral ankle load in children. Marshall University, 2023-2025.
7. Baylee Krigbaum, Haylee McConnaughey, and Morgan Thomas. Project title: Effects of unilateral ankle loading on gait parameters in children. Marshall University, 2022-2024.
 - Mentored this group on presenting two posters in the 2024 APTA-CSM national conference.
8. Catherine Bowyer, Kaylan Johnson, and Emily Sinclair. Project title: Effects of unilateral ankle loading on gait parameters in young adults. Marshall University, 2021-2023.
 - Mentored this group on a podium presentation at the 2022 Marshall University COHP Research Day and won best podium presentation award.
 - Mentored this group on presenting one poster in the 2022 APTA-WV state conference.
 - Mentored Kaylan Johnson on publishing a manuscript in a peer-reviewed journal with the results of this project.

PhD Thesis (Committee Member)

1. Adeolu Ademiluyi (title: The effect of chair design on sitting balance and performance of functional task in older and young adults); PhD in rehabilitation science, University of Illinois at Chicago, 2024

Services to the University / College / School on Committees / Councils / Commissions

Services to the University, Marshall University

2024 – Member of University Creative Works & Scholarly Activities Council, Marshall University, WV

2022 – Member of University Research Committee, Marshall University, Huntington, WV

Services to the College, Marshall University

2022 – Member of College of Health Professions Research Committee, Marshall University, Huntington, WV

Services to the Department, Marshall University

2024 Ambassador of SOPT for high school students' education tours (Tri-State STEM+M 03/15, Spring Valley 05/25)

2023 Ambassador of SOPT for high school students' education tours (Spring Valley 03/24, Chapmanville 04/18, Spring Valley 10/05)

2023 – Member of School of Physical Therapy Curriculum Committee, Marshall University, Huntington, WV

2022 – Member of School of Physical Therapy Academic and Professional Standards Committee, Marshall University, Huntington, WV

2022 – Chair of School of Physical Therapy Research Committee, Marshall University, Huntington, WV

2020 – 2022 Member of School of Physical Therapy Research Committee, Marshall University, Huntington, WV

2020 – 2023 Member of School of Physical Therapy Admission Committee, Marshall University, Huntington, WV

Services to the Scientific Communities

Services to the scientific organizations

2024 – (Invited) Member of the American Society of Biomechanics Awards Committee

2024 – (Invited) Member of the American Society of Biomechanics Diversity Committee

2023 – (Invited) Abstract reviewer for American Society of Biomechanics national conference

Journal Review Editor (Invited)

2020 – 2022 Frontiers in Rehabilitation Sciences

Journal Reviewer

2024 – Scientific Reports

2023 – Journal of Applied Biomechanics

2021 – Frontier

2019 – Clinical Biomechanics

2019 Gait and Posture

2019 – Motor Control

2019 – Topics in Stroke Rehabilitation

2020 Journal of Biomechanics

2020 Physiotherapy Theory and Practice

Honors and Awards

- 2018 Outstanding Doctoral Student Award
Department of Kinesiology and Health
Georgia State University, Atlanta, GA
- 2017 ASB Student Travel Award
American Society of Biomechanics
- 2016 Doctoral Dissertation Support Award
College of Education and Human Development
Georgia State University, Atlanta, GA
- 2016 College of Education and Human Development Scholarship
Doctoral student recipient
Georgia State University, Atlanta, GA
- 2009 National scholarship (awarded to top 1% of the students)
Shanghai Medical School, Fudan University
Shanghai, China

Continuing Education Workshops Attended

NA

Current Teaching Responsibilities in the Entry-Level Program

Year 1

Summer

PT 700 Gross Anatomy for Physical Therapy (5 credit hours)

Fall

PT 711 Kinesiology and Biomechanics in PT (3 credit hours)

Spring

PT 712 Motor Control and Development in PT (3 credit hours)

PT 763 Evidence-Based Practice II (2 credit hours)

Advisor for 13 doctoral students

Year 2

Fall

PT 764 Evidence-Based Practice III – Capstone (2-3 groups)

Spring

PT 765 Evidence-Based Practice IV – Capstone (2-3 groups)

Year 3

Summer

PT 766 Evidence-Based Practice V – Capstone (2-3 groups)

Spring

PT 767 Evidence-Based Practice V – Capstone (2-3 groups)