CHASE G. ROCK, PHD

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EDUCATION

2017 – 2024 School of Biological Sciences — Georgia Institute of Technology
Ph.D. Applied Physiology
Minor: Motor Control and Perception
Focus area: Neuromechanical Modeling

2015 – 2017 Department of Biomechanics — University of Nebraska at Omaha
M.S. Exercise Science,
Concentration: Biomechanics

2010 – 2014 College of Arts and Sciences — University of Nebraska at Omaha
B.S. Neuroscience
Minors: Biology and Chemistry

RESEARCH

2026 - present **Post-Doctoral Scholar** — **University of Pittsburgh**
Department of Bioengineering — **Advisor: Dr. Gelsy Torres-Oviedo**

2025 Post-Doctoral Researcher — Georgia Institute of Technology
School of Biological Sciences — Advisor: Dr. Young-Hui Chang

2017 – 2024 Ph.D. Student — Georgia Institute of Technology
School of Biological Sciences — Advisor: Dr. Young-Hui Chang

Dissertation Project:
Learning and Transfer of Hypogravity Adaptation Across Motor and Cognitive Systems

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2015 – 2017 Master's Student — University of Nebraska at Omaha
Department of Biomechanics — Advisor: Dr. Kota Takahashi

Thesis Project:
Interaction Between Step-to-Step Variability and Metabolic Cost of Transport During Human Walking

2014 – 2015 Undergraduate Research Assistant — University of Nebraska at Omaha
Department of Biomechanics — Advisor: Dr. Shane Wurdeman

PUBLICATIONS

[in review] **Rock, C. G.,** Yang, X., Luo, A., Kim, H., Singh, T., Dick, J. & Chang, Y.-H. (2026). *Transfer of Gravity Adaptation Between Action and Non-Action Tasks.* Royal Society Interface.

[in review] Kim, H., Dick, J., Chang, Y.-H. & **Rock, C. G.** (2026). *Task-specific expertise, not generalized physical activity level, influences hypogravity adaptation*. Experimental Brain Research

Rock, C. G., Kim, H., Dick, J. & Chang, Y.-H. (2026). *Blindfolded hypogravity adaptation differentially affects motor and cognitive systems.* Frontiers in Psychology, 17, https://doi.org/10.3389/fpsyg.2026.1729003

Rock, C. G., Kwak, S. T., Luo, A., Yang, X., Yun, K., & Chang, Y.-H. (2024). *Realizing the gravity of the simulation: Adaptation to simulated hypogravity leads to altered predictive control.* Frontiers in Physiology, 15, 1397016. https://doi.org/10.3389/fphys.2024.1397016

Herrin, K. R., Kwak, S. T., **Rock, C. G.,** & Chang, Y.H. (2024). *Gait quality in prosthesis users is reflected by force-based metrics when learning to walk on a new research-grade powered prosthesis.* Frontiers in Rehabilitation Sciences, 5, 1339856. https://doi.org/10.3389/fresc.2024.1339856

Herrin, K. R., Kwak, S. T., **Rock, C. G.,** & Chang, Y.H. (2024*). Identifying gait quality metrics sensitive to changes in lower limb constraint.* Cogent Engineering 11:1, https://doi.org/10.1080/23311916.2024.2312697

Rock, C. G., Marmelat, V., Yentes, J. M., Siu, K.-C., & Takahashi, K. Z. (2018). *Interaction between step-to-step variability and metabolic cost of transport during human walking*. Journal of Experimental Biology, jeb.181834. https://doi.org/10.1242/jeb.181834

Rock, C. G., Wurdeman, S. R., Stergiou, N., & Takahashi, K. Z. (2018). *Stride-to-stride fluctuations in transtibial amputees are not affected by changes in push-off mechanics from using different prostheses*. PLOS ONE, 13(10), e0205098. https://doi.org/10.1371/journal.pone.0205098

PRESENTATIONS

Rock, Chase G., Liu, Shuqi, Brantly, Nathan W., Weber, Doug, Thompson, Aiko K., Geyer, Hartmut & Torres-Oviedo, Gelsy. *Automaticity and motor learning: changes in spinal activity and cortical activation during split-belt adaptation.* Annual Meeting of the Society for Neuroscience. Washington, D.C. November 2026. **Poster**

Rock, Chase G, Kim, Hyorim & Chang, Young-Hui. *Going dark: blindfolded hypogravity adaptation differentially affects Motor and Cognitive Systems.* Meeting of the American Society of Biomechanics. Pittsburgh, PA. August 2025. **Poster**

Rock, Chase G, Kim, Hyorim, Singh, Tushar, & Chang, Young-Hui. *Motor learning of a new gravity level transfers to other motor and cognitive tasks*. Meeting of the Society for Integrative and Comparative Biology. Atlanta, GA. Jan. 2025. **Podium**

Rock, Chase G & Chang, Young-Hui. *Towards A Unifying Framework for Cognitive-Motor Systems Sharing Gravity Information*. Meeting of the American Society of Biomechanics. Madison, WI. August 2024. **Poster**

Rock, Chase G. *The Generalizability of Hypogravity Adaptation between Motor and Cognitive Systems*. Physical Intelligence Lab, Carnegie Mellon University. **Invited Talk**

Rock, Chase G. *The Generalizability of Hypogravity Adaptation between Motor and Cognitive Systems*. Action, Computation, and Thinking Lab, Yale University. **Invited Talk**

Rock, Chase G. & Chang, Young-Hui. *Mindful Movement: the Neuromechanical Abstraction of Gravity is Shared Between Motor and Cognitive Systems*. Neural Control of Movement. Dubrovnik, Croatia. April 2024. **Poster**

Rock, Chase G., Luo, Angela, Yang, Xiao, Chang, Young-Hui. *Transfer Of Gravity Adaptation Between End-Effectors: Jumping In Simulated Reduced Gravity Induces Altered Reaching Behavior*. Meeting of the American Society of Biomechanics. Knoxville, TN. August 2023. **Poster**

Rock, Chase G., Luo, Angela, Yang, Xiao, Chang, Young-Hui. *Neuromechanical Locomotor Aftereffects as a Function of Gravity Level*. North American Congress on Biomechanics. Ottawa, CAN. August 2022. **Podium**

Rock, Chase G., Yun, Kristy S., Luo, Angela, Yang, Xiao, Chang, Young-Hui. *Locomotor Adaptation In Hypogravity Relies on A Centralized Control Architecture*. Meeting of the American Society of Biomechanics. August 2021. **Virtual Podium**

Rock CG, Yun KS, Luo A & Chang YH. *Neuromuscular Adaptation of the Lower Body to Simulated Hypogravity*. Neural Control of Movement. 2021 **Virtual Poster**

Rock CG, Luo A, Yun KS & Chang YH. *Neuromuscular Adaptation after Exposure to Simulated Hypogravity*. Virtual Meeting of the American Society of Biomechanics. 2020 **Virtual Podium**

Rock CG, Trejo LH, Sawicki GS, & Chang YH. *How to Hop on Mars: Neuromechanical Model Suggests Low Frequency is Optimal*. Joint Meeting of the International and American Societies of Biomechanics. Calgary, AB, CAN. 2019 **Poster**

Rock CG & Chang YH. *Effects off Reduced Gravity Training on Motor and Cognitive Systems*. ASB – Neuromechanics Satellite Meeting, University of Calgary. Calgary, AB, CAN. 2019 **Poster**

Rock CG, Trejo LH, Sawicki GS, & Chang YH. *How to Run on Mars? Neuromechanical Model Suggests Slow is Optimal*. Career, Research & Innovation Development Conference, Georgia Tech. ATL, GA. 2019 **Poster**

Rock CG, Chang YH. *Head, Shoulders, Knees, and Toes: A Body-wide Representation of Gravity*. Southeast Regional Meeting of the Society for Integrative & Comparative Biology, Clemson, SC. 2018 **Podium**

Rock CG, Marmelat V, Yentes J, & Takahashi KZ. *Relationship Between Step-to-Step Variability and Metabolic Cost of Transport in Human Walking.* 7th Annual Meeting of the Rocky Mountain American Society of Biomechanics, Estes Park, CO. 2017 **Podium**

Rock CG, Wurdeman SR, Stergiou N, & Takahashi KZ. *Relationship Between Prosthetic Push-Off Work And Stride-To-Stride Fluctuations In Transtibial Prosthesis Users.* 40th Annual Meeting of the American Society of Biomechanics, Raleigh, NC. 2016 **Poster**

Rock CG, Marmelat V, Yentes J, & Takahashi KZ. *Metabolic Cost of Transport and the Persistence of Stride-to-Stride Fluctuations in Human Walking.* 6th Annual Meeting of the Rocky Mountain American Society of Biomechanics, Estes Park, CO. 2016 **Poster**

TEACHING EXPERIENCE

Spr. 2023-24	Teaching Assistant, NEUR 4001: Neuroscience Research Capstone, Georgia Tech
Fall 2021-22	Guest Lecturer, APPH 4200: Kinesiology, Georgia Tech
Fall 2020	Teaching Assistant, BIOS 3753: Anatomy, Georgia Tech
Fall 2019	Teaching Assistant, APPH 4200: Kinesiology, Georgia Tech
Summer 2019	Instructor, GT-1000 Freshman Seminar, Georgia Tech
Spring 2019	Associate Certificate, Center for the Integration of Research, Teaching, and Learning
2018 – 2019	Facilitator, APPH 6216: Rehabilitation Research, Georgia Tech
Fall 2018	Guest Lecturer, APPH 4200: Kinesiology, Georgia Tech

AWARDS, HONORS, & MEMBERSHIPS

2026	SfN Trainee Professional Development Award
2026 – Present	Member of the Society for Neuroscience
2026	Certificate in "AI Use in University Academic Knowledge Work" thru Pitt
2026 – Present	Member of the American Society of Neurorehabilitation
2024	Award for Outstanding Teaching Assistant in Biological Sciences
2021 – Present	Member of the Society for the Neural Control of Movement
2019	ASB Student Travel Grant, American Society of Biomechanics
2019	CRIDC Poster Competition - Travel Grant Winner, Georgia Institute of Technology
2018 – Present	Member of the Society for Integrative and Comparative Biology
2016	Delsys 2016 Student Travel Grant, Delsys, Inc.
2016 – Present	Member of American Society of Biomechanics
2014	Magna Cum Laude Graduate, University of Nebraska at Omaha
2010 – 2014	Regents Scholar, University of Nebraska at Omaha

GRANTS & FELLOWSHIPS

T32 in the training of Neurobiology of Neurological Disease National Institutes of Health
Aim: To gain clinically relevant research experience related to the neurobiology of neurological diseases, with a project specifically targeted better understanding the spinal contributions to motor learning with the end goal of predicting the efficacy of stroke neurorehabilitation.
Funding: Stipend for Jan 2026 – Dec 2026

Higher Education Emergency Relief Funding III America Rescue Plan
GRA funding for Ph.D. students whose research has been delayed by Covid-19.
Funding: GRA Stipend for Spring 2021

President's Fellowship Georgia Institute of Technology
Aim: To pursue doctoral research in the Comparative Neuromechanics Laboratory at the Georgia Institute of Technology.
Funding: $5,500/year for up to 4 years, starting August 2017

Graduate Research Fellowship Program National Science Foundation
Aim: To pursue research in the fields of biomechanics, neuroscience, and physiology, via the evaluation of energy expenditure and step patterns of human walking.
Funding: $138,000 from August 2017 – August 2022

NASA Nebraska Space Grant Fellowship NASA Nebraska Space Grant Consortium
Aim: To investigate the relationship between step-to-step variability and metabolic cost of transport during human walking, with implications for rehabilitation of those returning from spaceflight.
Funding: $4,000 from August 2016 – May 2017

Graduate Research and Creative Activity award University of Nebraska at Omaha
Aim: To determine the correlational and causal relationship between human walking and metabolic cost of transport.
Funding: $5,000 from June 2016 – May 2017

UNDERGRADUATE STUDENT MENTEES

Fall 2026 – Present	Alice Csete	
Summer REU 2025	Andrea Cruz	Major: Psychology
Summer REU 2024	Issandro Trenard	Dual Major: Psychology & Neuroscience
Spring 2023 – Present	Lynn Kim	Major: Neuroscience
Spring 2023 – Fall 2024	Tushar Singh	Major: Neuroscience
Spring 2021 – Fall 2022	Xiao Yang	Dual Major: Mathematics & Computer Science
Spring 2020 – Fall 2020	Dhruv Modi	Major: Biomedical Engineering
Spring 2019 – Fall 2022	Angela Luo	Major: Neuroscience
Spring 2017 – Fall 2017	TeSean Wooden	Dual Major: Biomechanics and Exercise Science
Spring 2017 – Fall 2017	Aaron Robinson	Major: Physical Education, conc. in Exercise Science
Summer 2016	Emily Newton	Major: Neuroscience
Fall 2015 – Fall 2017	Angel Gonzalez	Major: Physical Education, conc. in Exercise Science

SERVICE ACTIVITIES

2026	**Invited Panelist,** University of Utah Sayu Lab for Biomechanics & Locomotion
2026	**Reviewer,** Center for the Neural Basis of Cognition - Outstanding Paper Award
2026	**Judge,** Pitt Bioengineering Day poster presentation competition
2026	**Reviewer**, Scientific Reports
2025	**Reviewer,** Frontiers in Psychology
2025	**Moderator**, Session on Comparative Biomechanics at Annual ASB meeting
2025 - present	**Reviewer**, Human Movement Sciences
2024	**Judge,** Annual Art Competition hosted by the Petit Institute for Bioengineering and Bioscience, Georgia Institute of Technology
2023	**Panelist,** First-Generation College Student Panel hosted by the Center for Promoting Inclusion and Equity in the Sciences
2022 - present	**Reviewer**, PLOS One
2022	**Panelist**, Graduate Student Panel for undergraduate students interested in research
2020	**Co-organizer**, ATL Neuromechanics session on Anti-racism and Allyship In Academia
2019 - present	**Reviewer,** Prosthetics and Orthotics International
2019	**Comparative Neuromechanics Workshop leader,** CEISMC Summer Peaks, Georgia Institute of Technology
2019 –2023	**Organizer,** Monthly seminar for ATL Neuromechanics
2019	**Applied Physiology Outreach Presenter,** Atlanta Science Festival, Exploration Expo
2018 – 2022	**Application Reviewer for PURA** (President's Undergraduate Research Award), Georgia Institute of Technology
2018	**Applied Physiology Outreach Presenter,** Institute for Robotics and Intelligent Machines Research Showcase, Georgia Institute of Technology
2018	**Applied Physiology Outreach Presenter,** Graduate Student Research Symposium,

	Department of Biological Sciences, Georgia Institute of Technology
2017 – 2020	**Secretary,** PAPER (Promoting Applied Physiology Education and Research)
2016	**Biomechanics Booth Host,** Mid-America Council Jubilee, Boy Scouts of America, Mahoney State Park, Ashland, NE
2016	**Biomechanics Booth Host,** UNO Lights On Event, Sapp Fieldhouse, University of Nebraska at Omaha
2016	**Biomechanics Booth Host,** Nebraska Science Festival, Strategic Air Command and Aerospace Museum, Ashland, NE
2016	**Biomechanics Instructor,** National Biomechanics Day, Omaha North High Magnet School, Omaha, NE