

Emma M. Tinney

Center for Cognitive and Brain Health
Department of Psychology, Northeastern University
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EDUCATION

Northeastern University, Boston MA

Doctor of Philosophy,

Advisor: Dr. Charles Hillman & Dr. Timothy Morris, to be conferred in 2026

Northeastern University, Boston MA

Master of Science in Psychology, 2023

University of Delaware, Newark DE

Bachelor of Science, May 2021

Major: Neuroscience

Minor: Spanish

GPA: 3.5

RESEARCH

Department of Physical Therapy, Movement, & Rehabilitation Sciences, Northeastern University

Center for Cognitive and Brain Health

June 2022 – Present

Advisor: Timothy Morris, PhD

Project: **The Exercise and Concussion Health Study (TECHS)**

Spearheading an ongoing randomized clinical trial, which involves study design, data collection, study management, participant recruitment, and data analysis to examine the effects of exercise training on cognitive and brain health in patients recovering from concussion.

Department of Psychology, Northeastern University

Center for Cognitive and Brain Health

2021-2024

Advisor: Charles Hillman, PhD & Arthur Kramer, PhD

Project: **Investigating Gains in Neurocognition in an Intervention Trial of Exercise (IGNITE)**

Data collection and participant interaction in a NIH funded randomized clinical trial examining the effects of a year-long exercise training program on cognitive and brain health in older adults.

Department of Biomedical Engineering, University of Delaware

Mechanical Neuroimaging Lab

2019 – 2023

Advisor: Curtis L. Johnson, PhD

Project: **Mechanical Integrity of Memory Systems (MIMS) in Mild Cognitive Impairment**

Performed data collection, analysis, and dissemination, including cognitive testing, neuroimaging, and fitness assessment, which assessed the mechanical integrity of memory systems in older adults with and without mild cognitive impairment, how the mechanical integrity of these systems is associated with memory performance, and whether integrity is modified by aerobic exercise training.

Department of Radiology, Brigham and Women's Hospital
Advisor: Samuel Patz, PhD

2021 – 2022

Project: **Magnetic Resonance Elastography of the Brain**

Data collection and analysis of the implications of functional magnetic resonance elastography, aimed at developing ways to measure viscoelastic response functioning and tissue stiffness with high temporal resolution

GRANTS & AWARDS

College of Science Equity Action Fund

2024

Fund to advance diversity, equity, inclusion, and justice for students within the College of Science at Northeastern University

Interdisciplinary Graduate Student Fellowship

2023

The fellowship requires work on an interdisciplinary research project with faculty members who have different areas of expertise and the research project has entail integrating information from different research domains for successful completion. Fellowship covers stipend and course fees.

Basic Science of Physical Activity and Aging Biology World Congress Award

2023

American College of Sports Medicine

Travel Award

2022

Society for Psychophysiological Research

College of Science Travel Grant

2021-24

Northeastern University

PhD Network Travel Grant

2021-24

Northeastern University

Delaware Rehabilitation Institute Summer Scholars Award

2020

University of Delaware

Senior Thesis Winter Session Award

2020

University of Delaware

PEER REVIEWED PUBLICATIONS

In Prep:

Tinney, E.M., Warren, A.E.L., Ai, M., Odom, H., Obrien, A., Morris, T.P., Kramer, A.F., Erikson, K., Hillman, C.H. (2024). The Relationship Between White Matter, Aerobic Fitness, and Cognition in Older Adults: A Fixel-Based Analysis. (*in prep*)

Submitted:

Tinney, E.M., Warren, A.E.L., Ai, M., Odom, H. *, Obrien, A. *, Morris, T.P., Sutton, B., Kang, C., Hang, H., Wan, L., Oberlin, L, Burns, J., Vidoni, E., McAuley, E., Kramer, A.F., Erikson, K., Hillman, C.H. (2024). Understanding Cognitive Aging through White Matter: A Fixel-Based Analysis. (*under review Human Brain Mapping*)

Tinney, E.M., Sodemann, R.L.*, Espana-Irla, G., Perko, M.* Morris, T.P. Choroid plexus enlargement is not associated with traumatic brain injury. (*under review Neurotrauma Reports*) DOI:

Ai, M., **Tinney, E.M.**, España-Irla, G. M., Hillman, C.H., Kramer, A.F., Morris, T.P. (2024). Brain resting-state functional connectivity mediates the age-associated decline in physical activity engagement. (*under review*) DOI:

Tinney, E.M., Ai, M., España-Irla, G. M., Hillman, C.H., Morris, T.P. (2024). Physical Activity and Frontoparietal Network Connectivity in Traumatic Brain Injury. (*under review Brain & Behavior*) DOI:

Tinney, E.M., España-Irla, G. M., Warren, A.E.L., Whitehurst, L. N., Stillman, A.M., Hillman, C.H., Morris, T.P. (2024). Axonal injury to the anterior internal capsule is associated with sleep disturbances and memory decline following traumatic brain injury. (*MedXriv*) DOI: 10.1101/2024.03.05.24303449

Published:

Cline, T.L., Morfini, F., **Tinney, E.M.**, Makarewycz1, E., Lloyd, K., Olafsson, V., Bauer, C.C.C., Kramer, A.F., Raine, L.B., Gabard-Durnam, L.J., Whitfield-Gabrieli, S., Hillman, C.H. (2024). Resting-State Functional Connectivity Change in Frontoparietal and Default Mode Networks After Acute Exercise in Youth. *Brain Plasticity*, 9, 5-20, DOI: 10.3233/BPL-240003

Tinney, E.M., Loui, P., Raine, L.B., Hiscox, L.V., Delgorio, P.L., Kramer, M.K., Schwarb, H., Martens, C.R., Kramer, A.K., Hillman, C.H., Johnson, C.L. (2023). Influence of mild cognitive impairment and body mass index on white matter integrity assessed by diffusion tensor imaging. *Psychophysiology*, 60, e14306. DOI: 10.1111/PSYP.14306

ORAL CONFERENCE PRESENTATIONS

Tinney, E., Loui, P., Kramer, A., Hillman, C., Johnson, C., Influence of mild cognitive impairment and health markers on white matter integrity assessed by diffusion tensor imaging. New England American College of Sports Medicine Spring Conference, April 2023

Tinney, E., Morris, T., Hiscox, L., Delgorio, P., Martens, C., Kramer, A., Hillman, C., Johnson, C. The associations between cardiorespiratory fitness, hippocampal health, and cognition in mild cognitive impairment. American College of Sports Medicine Conference, May 2022

CONFERENCE POSTERS

Tinney, E.M., Ai, M., Espana-Irla, G., Hillman, C.H., Kramer, A.F., Morris, T.P. Physical activity engagement associated with dorsolateral prefrontal cortex connectivity in traumatic brain injury. American College of Sports Medicine Conference, May 2024

Tinney, E.M., Nwakamma, M., Hackman, L., Espana-Irla, G., Hillman, C.H., Morris, T.P. The Exercise and Concussion Health Study: Feasibility and Preliminary Analyses. Traumatic Brain Injury Conference, May 2024

Tinney, E.M., Nwakamma, M., Hackman, L., Espana-Irla, G., Morris, T.P. TBI Lab Research Highlights. Brain Injury Association of Massachusetts Conference, March 2024

Sodemann, R.L.*, **Tinney, E.M.**, Espana-Irla, G., Perko, M.* Morris, T.P. Choroid plexus enlargement is not associated with traumatic brain injury. Research, Innovation, Scholarship and Entrepreneurship Expo, April 2024

Perko, M.*, Espana-Irla, G., Sodemann, R.L.*, **Tinney, E.M.**, Morris, T.P. Sex differences in functional connectivity following traumatic brain injury. Research, Innovation, Scholarship and Entrepreneurship Expo, April 2024

Ande, K.*, **Tinney, E.M.**, Morris, T.P., Aerobic Exercise as a Tool for Traumatic Brain Injury Recovery. Research, Innovation, Scholarship and Entrepreneurship Expo, April 2024

Ai, M., **Tinney, E.M.**, Hillman, C.H., Spreng, N., Kramer, A.F., Geddes, M. Age-effects on white matter topology in older adults at high risk of Alzheimer's disease. Geriatric Society Association Conference, November 2023

Tinney, E.M., Hillman, C. H., Morris, T.P. The Impact of Traumatic Brain Injury on Sleep, Brain, and Cognition in Older Adults. Society for Psychophysiology Research Conference, September 2023

Espana-Irla, G., Ai, M., **Tinney, E.M.**, Morris, T.P. Functional connectivity patterns following traumatic brain injury. Society for Psychophysiology Research Conference, September 2023

Cline, T.L., **Tinney, E.M.**, Morfini, F., Raine, L., Gabard-Durnam, L., Whitfield-Gabrieli, S., Kramer, A.F., Hillman, C.H. Acute effects of a single bout of exercise on functional brain networks in children. Society for Psychophysiology Research Conference, September 2023

Ai, M., Colina, A.N., **Tinney, E.M.**, Warren, A.E.L., Hillman, C.H., Spreng, N., Kramer, A.F., Geddes, M. The association between APOE4, hypertension, and fixel-based white matter micro-structure in older adults at risk for Alzheimer's disease. Society for Psychophysiological Research, September 2023

Tinney, E.M., Warren, A.E.L., Kramer, A.F., Hillman, C.H., Johnson, C.L. Fixel-based dMRI analysis examining associations of aerobic fitness and white matter in aging and MCI. American College of Sports Medicine Conference, May 2023

Cline, T.L., Watrous, J.N.H., Nwakamma, M., **Tinney, E.M.**, McDonald, K.M., Morfini, F., Raine, L., Gabard-Durnam, L., Kramer, A.F., Whitfield-Gabrieli, S., Hillman, C.H. Multivariate Pattern Analysis of Childhood Functional Brain Network Connectivity After Acute Moderate-to-Vigorous Physical Activity. American College of Sports Medicine Conference, May 2023

Patz, S., Hoge, W.S., Deng, B., O'Donnell, L., Zhang, F., Tie, Y., **Tinney, E.**, Sinkus, R., Breedlove, K., High Heterogeneity of White Matter Observed with short TE Magnetic Resonance Elastography. ISMRM & SMRT Annual Meeting & Exhibition, May 2023

Tinney, E., Loui, P. C., Kramer, A., Hillman, C., Johnson, C. White matter integrity, body mass index, and mild cognitive impairment. Society for Psychophysiology Research Conference, September 2022

Tinney, E., Loui, P. C., Kramer, A., Hillman, C., Johnson, C. The relationship between cognition and white matter integrity in mild cognitive impairment using diffusion tensor tractography. Cognitive Neuroscience Society Conference, April 2022

Hiscox, L., **Tinney, E.**, Delgorio, P., McGarry, M., Lanzi, A., Ellison, J., Cohen, M., Martens, C., and Johnson, C. Hippocampal viscoelasticity is associated with risk of mild cognitive impairment. ISMRM & SMRT Annual Meeting & Exhibition, May 15, 2021

Tinney, E., Characteristics of Mild Cognitive Impairment and the Effects on Brain Health. University of Delaware Undergraduate Senior Thesis, May 4, 2021

Tinney, E., Hiscox, L., Delgorio, P., Martens, C., and Johnson, C. Multimodal Characterization of Hippocampal Integrity in Mild Cognitive Impairment: Combining Volumetry, Diffusion, Perfusion, and Viscoelasticity from Magnetic Resonance Imaging. Society for Neuroscience Annual Conference, January 12, 2021

Tinney, E., Hiscox, L., Delgorio, P., Martens, C., and Johnson, C. Multimodal Characterization of Hippocampal Integrity in Mild Cognitive Impairment: Combining Volumetry, Diffusion, Perfusion, and Viscoelasticity from Magnetic Resonance Imaging. Biomedical Engineering Society Annual Meeting, October 17, 2020

Tinney, E., Hiscox, L., and Johnson, C. Characteristics of Mild Cognitive Impairment and the Effects on Brain Health assessed using Multiple Imaging Modalities. Summer Scholars Celebratory Virtual Symposium, August 13, 2020

*undergraduate student mentee

MENTORSHIP

- Mentoring, training, teaching and coordination of Northeastern University Undergraduate Research Assistants (URAs) every semester in the Center for Cognitive and Brain Health Lab (CBH) and Computational Neuroscience Lab (CNE). URAs are trained on all laboratory protocols to become proficient in data entry, administering neurocognitive, academic performance, and biospecimen testing, assist on fitness testing, lead intervention sessions, and assist in neuroimaging data collection.
 - CBH Lab: Mia Antunovic, Christian Bekalu, Ivy Cao, Yash Chauhan, Jie Chen, Marcos Equiza Gasco, Greta Goldade, Elsa Hanson, Zeena Joseph, Mikayla Karkoski, Ishani Kunadharaju, Arielle Leforest, Alyssa LeBlanc, Katie McLaughlin, Eva Miklos, Niamh Mwafurirwa, Helen Vo, Liesha Yenduri, Brynn Telenko, Charvi Datt, Isabella Rando, Pooja Srinivasan, Jillian Jurczynszak, Chinyere Okereke, Kaitlin Brannon, Edith De-Rosa-Purcell, Gabi Guon, Lizzie Meschisen, Ethan Makarewycz, Matthew Trent, Nikita Seth, Abel Rodriguez, Corvens Depaliste, Britt Keller, Abigail Padilla, Tanu Padma, Kristin Sakoda, Rachel Lines, Nicole Occidental, Rebecca Templeton, Kaitlyn Meek, Abrielle De Veaux, Joey Robb, Sofia Mazuera, Alisa Posner, Lasya Dutta, Ashley Phan, Aaron Strong, Kyle Robertson, Chenelle Jones, Ysabeau Bernard-Willis
 - CNE Lab: Ryan Luke Sodemann, Skye Toral, Colette Chen, Laurel Valente, Hannah Odom, Tanisha Joshi, Khoshna Ande, Madeline Perko, Amanda O'Brien, Amy Wang, Anelise Kim, Catherine Hommel, Erin Orchard, Jeremy Hwang, Joshua Miller, Simran Sohal, Sydney Pollock, Zoe Cotronis
- Member of graduate student mentoring programming to mentor undergraduate students who have an interest in psychology or neuroscience graduate education.
 - Aayna Sehgal, Erin Hanzlik, Amari Turner

TEACHING EXPERIENCE

Graduate Teaching Assistant:

Responsibilities:

- Grade quizzes, presentations, homework, lab reports, final exams
- Oversee discussion groups
- Administer, create, and instruct experimental lab sessions

- Provide feedback on lab report writing and research proposals
- Meet with students to discuss and improve lab report writing
- Deliver guest lectures

Courses: **2023**

- PSYC 4600: Laboratory in Research Design (*1 section, Psychology Department*)

2022

- PSYC 4600: Laboratory in Research Design (*1 section, Psychology Department*)

Guest Lecturer:

HONR 3310: *Neuroscience & Brain Health*, Northeastern University

Guest Demonstrations:

Neuroscience Honors Society: Invited talk for undergraduate students about graduate school and neuroscience

ScienceClub Talk: Invited talk for 4th grade girls interested in learning more about science

Class Lab Tour: Led an honors undergraduate class through a lab tour, demonstrating and explain the various protocols and studies

NSF Lab Tour: Led members of the National Science Foundation through a lab tour, demonstrating and explain the various protocols and studies

STEM Field Trip: Supervised field trip to Northeastern University and assisted in various STEM related activities

BOSTEM Expo: Organized and led activities for children ages 5-18 interested in STEM research

RELEVANT COURSES

Grant Writing For Young Investigators

Northeastern University 2022

Seminar in Clinical Neuroscience

Northeastern University 2022

Physical Activity and Exercise: Prescription, Measurement, and Testing

Northeastern University 2022

Special Topics: EEG

Northeastern University 2023

LEADERSHIP

University of Delaware Division I Swimming and Diving Team

Scholarship Receiving Athlete & Team Captain 2017 – 2021

Developed leadership and team-building skills, comfortable performing under pressure, and a strong work ethic, displaying discipline and commitment through participation in rigorous, year-round training.

Diversity, Equity, and Inclusion Engagement

I prioritize service efforts to make psychology, neuroscience, and academia a supportive and inclusive environment, as well as engage in efforts to promote inclusion and equity outside of academia.

Crisis Text Line

Bilingual Volunteer 2022-present
Handled live chats in English and Spanish with individuals in crisis that texted for assistance

Achilles Boston

Board Member & Volunteer 2022-present
Assist and guide individuals with disabilities and visual impairments on weekly runs and races

Application Statement Feedback Program

Core Team 2021-present
Feedback reviewer and editor, ASFP is an outreach program providing graduate school statement feedback to individuals from underrepresented and marginalized communities applying to psychology PhD programs, helped recruit and coordinate 648 reviews from 184 statement editors for 272 applicants in 2021

Psychologists for Equity and Inclusion Association (PIE)

Northeastern University 2022-present
organizing our colloquium DEI speaker series, maintaining the DEI website, and promoting equity

Psychology Graduate Student Association (Psyc GSA)

Northeastern University 2022-present
Advocating for students, by students

NextGen Psych Scholars

Mentor 2022-present
Providing mentorship and guidance to undergraduate students in psychology related fields

Graduate Student Mentorship Program (GSMP)

Northeastern University 2022-present
Providing mentorship and guidance to undergraduate students in neuroscience

Northeastern University Community Liaisons for Education Using Stem (NUCLEUS)

Northeastern University 2021-present
Outreach science communication to youth in high school

Diversity and Inclusion Committee

University of Delaware 2019 – 2021
Attended education workshops and educated peers on the importance of diversity, equity, and inclusion. Focused on enhancing an environment of the student body and facilitating events surrounding diversity and inclusion.

Student-Athletes against Social Injustice

University of Delaware 2020 – 2021
Inspired by the Black Lives Matter movement, a small group of athletes formed a task force to meet with

various influential people, i.e., Governor Carney, local police force, Players Coalition, and others. The goal was to use resources to create an influential movement within our student-athlete community and impact those around us.

PERSONAL DEVELOPMENT

Grant Writing For Young Investigators

Northeastern University

2022

MEMBERSHIPS

- Society for Psychophysiological Research
- American College of Sports Medicine
- Cognitive Neuroscience Society
- Society for Neuroscience
- Biomedical Engineering Society

SKILLS

- Phlebotomy
- Matlab
- Freesurfer software
- FSL
- EEGLab
- HAPPE software
- MRTrix3
- MRI Level 1 Certified
- IBM SPSS Statistics
- Terminal
- R studio
- REDCAP
- VO₂ Max (treadmill, ergometer, portable)
- Electroencephalography
- Biospecimen analysis
- Neuropsychology & Cognitive Testing
- MRI
- CITI training
- CPR certified
- BODPOD/PEAPOD/DXA
- BioRAFT

WORK HISTORY

Applied Behavioral Analysis Instructor, Continuum Behavioral Health 2019
Greater Philadelphia Area

Counseling Intern, New Castle Elementary School 2019
New Castle, DE

Independent Living Coach, Trinity Services 2018
Naperville, IL

REFERENCES

Charles H. Hillman, Ph.D., Professor
Department of Psychology, Department of Physical Therapy, Movement, & Rehabilitation Sciences,
Northeastern University
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Arthur F. Kramer, Ph.D., Professor
Department of Psychology, Northeastern University
a.kramer@northeastern.edu

Timothy Morris, Ph.D., Assistant Professor

Department of Physical Therapy, Movement, and Rehabilitation Sciences, Northeastern University
t.morris@northeastern.edu

Curtis L. Johnson, Ph.D., Associate Professor

Department of Biomedical Engineering, University of Delaware
clj@udel.edu