

Nicole E. Logan, MSc

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EDUCATION

Doctor of Philosophy (PhD) in Psychology 2017 – Present

Northeastern University, Boston, MA, USA

Advisor: Prof. Charles Hillman & Prof. Art Kramer

Dissertation: *Obesity, Physical Activity, Cognition and Brain Function in Preadolescent Children*

Master of Science (MSc) in Psychology 2016-2017

First Class Honours

The University of Auckland, Auckland, New Zealand

Advisor: Prof. Paul Corballis

Thesis: *Investigating the Relationship between Individual Correlates of Physical Activity and Cognitive Function*

Bachelor of Science Honours (BSc Hons) in Psychology and Exercise Sciences 2011-2015

First Class Honours

The University of Auckland, Auckland, New Zealand

Advisor: Prof. Paul Corballis

Thesis: *Investigating How Immersive Exercise and Exer-Gaming Influences Cognitive Function in Sedentary Young Adults*

PROFESSIONAL EXPERIENCE

Graduate Research Assistant: Northeastern University 2017 – Present

- **Psychology Department:** Center for Cognitive and Brain Health
- **Principal Investigators:** Prof. Charles Hillman & Dr. Arthur Kramer
- **Involvement in NIH Funded Research Projects:** FITKids, IGNITE, SNEACY. Oversight and administration of the IGNITE randomized controlled trial data collection at Northeastern University: neurocognitive testing, neuroimaging, fitness assessment, biospecimen samples, and physical function testing.
- **Lab responsibilities:** Data collection, data reduction, data analysis, creating experimental protocols, implementation of task design, database management, IRB development, and equipment preparation and oversight; for many studies within the lab which focus on investigating the relationship between lifestyle factors and cognitive function, including

physical activity, exercise interventions, fitness, hydration, obesity and adiposity, electroencephalography measurement, neurocognitive testing, and neuroimaging.

- **Mentoring:** Teaching, training, coordinating, and mentoring of undergraduate volunteers, research assistants and technicians, and incoming graduate students and post-docs on all lab protocols.

Graduate Research Assistant: The University of Auckland

2017

- **Center for Brain Research:** Cognitive Neuroscience Lab
- **Principal Investigator:** Prof. Ian Kirk
- **Lab responsibilities:** Data collection, data reduction, data analysis, creating experimental protocols, implementation of task design, database management, and equipment preparation and oversight; for the MovinCog studies which utilize electroencephalography measurement and neurocognitive testing.

Graduate Research Assistant: The University of Auckland

2016 – 2017

- **School of Psychology:** Developmental Neuroscience Lab & Brain Dynamics Lab
- **Principal Investigators:** Prof. Karen Waldie & Dr. David Moreau
- **Involvement in Funded Research Projects:** MovinCog
- **Lab responsibilities:** Data collection, data reduction, data analysis, creating experimental protocols, implementation of task design, database management, and equipment preparation and oversight; for the MovinCog studies which utilize electroencephalography measurement, exercise interventions, and neurocognitive testing.
- **Mentoring:** Teaching, training, and mentoring of research assistants and incoming graduate students on all lab protocols.

RESEARCH INTERESTS

My primary research interest and expertise is in cognitive neuroscience, examining the relationships between health behaviors, cognitive function, mental health, and brain health, throughout the lifespan. Specifically, I am interested in investigating the effects of physical activity and childhood obesity on cognition, mental health, and brain function in preadolescent children and older adults. My aim is to create interdisciplinary health research with the intention of improving quality of life in targeted populations throughout the lifespan.

PEER REVIEWED PUBLICATIONS (* invited, *denotes undergrad mentee, ¹denotes equal author contribution)

In prep:

Logan, N.E., ¹Occidental, N., Raine, L.B., Kramer, A.K., & Hillman, C.H. (in prep). The Association between Health Behaviors and Mental Well-Being in Children with Obesity.

Logan, N.E., Raine, L.B., Kramer, A.K., & Hillman, C.H. (in prep). The Transient Effects of Acute Aerobic Exercise in Children with Obesity and Their Normal Weight Peers on Cognitive and Brain Function.

Logan, N.E., ¹Occidental, N., ¹Makarewycz, E., & Hillman, C.H. (in prep). The Effects of Adiposity and Fitness on Functional Brain Connectivity: A Systematic Review.

Submitted:

Logan, N.E., Westfall, D.R., Raine, L.B., Anteraper, S.A., Chaddock-Heyman, L., Whitfield-Gabrieli, S., Kramer, A.F., & Hillman, C.H. (under review). The Differential Effect of Fitness and Adiposity on Functional Brain Connectivity in Preadolescent Children.

Logan, N.E., Henry, D. A., Hillman, C.H., & Kramer, A.K. (under review). Trained Athletes and Cognitive Function: A Meta-Analysis.

*Raine, L.B., **Logan, N.E.**, Watrous, J.N., Hillman, C.H., & Kramer A.K. (under review). Training your Brain and Mind through Exercise. *Frontiers for Young Minds*.

Published:

Raine, L. B., Watrous, J.N., McDonald, K., **Logan, N.E.**, Khan, N. A., Kramer, A.F., Hillman, C. H. (2022). Aerobic Fitness, B-Vitamins, and Weight Status Are Related to Selective Attention in Children. *Nutrients*. <https://doi.org/10.3390/nut14010201>

*¹Hillman, C.H., ¹McDonald, K.M., & ¹**Logan, N.E.** (2020). A Review of the Effects of Physical Activity on Cognition and Brain Health Across Children and Adolescence. *Nestlé Nutrition Institute Workshops Series*, 95. <https://doi.org/10.1159/000511508>

Logan, N.E., Raine, L.B., Drollette, E.S., Castelli, D.M., Khan, N.A., Kramer, A.F., & Hillman, C.H. (2020). The Differential relationship of an afterschool physical activity intervention on brain and cognition in children with obesity and their normal weight peers. *Pediatric Obesity*. <https://doi.org/10.1111/ijpo.12708>

*¹Hillman, C.H., ¹**Logan, N.E.**, & ¹Shigeta, T.S. (2019). A Review of Acute Physical Activity on Brain and Cognition in Children. *American College of Sports Medicine: Translational Journal*. DOI: [10.1249/TJX.0000000000000101](https://doi.org/10.1249/TJX.0000000000000101)

Westfall, D.R., **Logan, N.E.**, Khan, N.A., & Hillman, C.H. (2019). Cognitive Assessments in Hydration Research in Children: Methods and Considerations. *Annals of Nutrition and Metabolism*. <https://doi.org/10.1159/000500341>

Raine, L.B., Kao, S.C., Pindus, D., Westfall, D.R., Shigeta, T.T., **Logan, N.E.**, Cadenas-Sanchez, C., ¹Li, J., Pontifex, M.B., Khan, N.A., Kramer, A.K., & Hillman, C.H. (2018). A Large-Scale Reanalysis of Childhood Fitness and Inhibitory Control. *Journal of Cognitive Enhancement* 2(2), 170-192. <https://doi.org/10.1007/s41465-018-0070-7>

ORAL CONFERENCE PRESENTATIONS ([#]cancelled due to COVID-19)

- Logan, N.E.** (2020). Obesity, Physical Activity, Cognition and Brain Function in Preadolescent Children. *Oral Defense: Northeastern University Psychology Dissertation Proposal*. Boston, MA, USA
- Logan, N.E.** (2019). Acute Exercise, Adiposity & Brain Function in Preadolescent Children. *Oral Defense: Northeastern University Psychology Masters Convention*. Boston, MA, USA.
- [#]**Logan, N.E.**, Raine, L.B., Kramer, A.F., Hillman, C.H. (2020). Excess body mass influences the effects of acute exercise on preadolescent brain function and cognition. *Active Brain*. Canberra, New South Wales, Australia.
- Logan, N.E.**, Moreau, D., & Corballis, P.M. (2018). Individual Correlates of Physical Activity and Cognitive Function. *European College of Sports Science*. Dublin, Ireland.

CONFERENCE POSTERS ([#]cancelled due to COVID-19; ^{*}denotes undergraduate mentee)

- Logan, N.E.**, Westfall, D.R., Raine, L.B., Anteraper, S.A., Chaddock-Heyman, L., Whitfield-Gabrieli, S., Kramer, A.F., & Hillman, C.H. (2022). The Differential Effects of Fitness and Adiposity on Functional Connectivity in Preadolescent Children. *American College of Sports Medicine*. San Diego, California (*submitted*).
- Watrous, J.N.H., Raine, L.B., McDonald, K.M., ^{*}Padilla, A.B., ^{*}Bernard-Willis, Y., **Logan, N.E.**, Kramer, A.K., & Hillman C.H. (2022). The Influence of the COVID-19 Pandemic Lockdown on Children's Physical Health. *American College of Sports Medicine*. San Diego, California (*submitted*).
- Logan, N.E.**, Westfall, D.R., Raine, L.B., Anteraper, S.A., Chaddock-Heyman, L., Whitfield-Gabrieli, S., Kramer, A.F., & Hillman, C.H. (2021). The Differential Effect of Adiposity on Functional Connectivity in Preadolescent Children. *Society for Neuroscience*. Chicago, Illinois, USA.
- [#]**Logan, N.E.**, Raine, L.B., Kramer, A.F., Hillman, C.H. (2020). Excess body mass influences the effects of acute exercise on preadolescent brain function and cognition. *American College of Sports Medicine*. San Francisco, California, USA.
- ^{*}Agrawal, S., Hopman, R.J., **Logan, N.E.**, Ai, M., Hillman, C.H., & Kramer, A.F. (2020). Exploring Nature in Virtual Reality through Exercise and Teleportation: Effects of Working Memory. *Northeastern University RISE*. Boston, Massachusetts, USA.
- ^{*}Shorin, R.J., **Logan, N.E.**, Raine, L.B., & Hillman, C.H. (2019). The Effect of the FITKids Intervention on Fitness and Adiposity in Overweight and Obese Children. *Northeastern University RISE*. Boston, Massachusetts, USA.
- Logan, N.E.**, Raine, L.B., ^{*}Shorin, R.J., Kramer, A.F., & Hillman, C.H. (2019). Acute Exercise, Adiposity and Brain Function in Preadolescent Children. *Society for Psychological Research*. Washington D.C., USA.

- Logan, N.E.**, Raine, L.R., *Shorin, R.J., Khan, N.A., Kramer, A.F., & Hillman, C.H. (2019). The Differential Relationships between Physical Activity and Adiposity with Cognitive Function in Preadolescent Children. *American College of Sports Medicine*. Orlando, Florida, USA.
- Logan, N.E.**, Raine, L.B., Khan, N.A., Kramer, A.F., & Hillman, C.H. (2018). Differential Relationships of Fitness and Adiposity on Cognitive Function. *Society for Psychological Research*. Quebec City, Quebec, Canada.
- Raine, L.B., Kao, S.C., Pindus, D., Westfall, D.R., Shigeta, T.T., **Logan, N.E.**, Cadenas-Sanchez, C., *Li, J., Pontifex, M.B., Khan, N.A., Kramer, A.K., & Hillman, C.H. (2018). A Large-Scale Reanalysis of Childhood Fitness and Inhibitory Control. *Society for Psychological Research*. Quebec City, Quebec, Canada.
- Logan, N.E.**, Moreau, D., & Corballis, P.M. (2016). Fitness Levels Influence Cognitive Control. *Australasian Cognitive Neuroscience Society*. New Castle, New South Wales, Australia.
- Logan, N.E.**, Moreau, D., & Corballis, P.M. (2016). Fitness Levels and the P300. *Australasian Winter Conference on Brain Research*. Queenstown, New Zealand.
- Logan, N.E.**, Buckley, J., & Corballis, P.M. (2015). Immersive Exer-Gaming and Cognitive Function in Sedentary Young Adults. *Australasian Cognitive Neuroscience Society*. Auckland, New Zealand.
- Logan, N.E.**, Buckley, J., & Corballis, P.M. (2015). Immersive Exer-Gaming and Cognitive Function in Sedentary Young Adults. *Kiwi Cognition and Memory*. Wellington, New Zealand.
- Logan, N.E.**, Buckley, J., & Corballis, P.M. (2015). Immersive Exer-Gaming and Cognitive Function in Sedentary Young Adults. *Australasian Winter Conference on Brain Research*. Queenstown, New Zealand.

INVITED LECTURES, COLLOQUIUMS AND SYMPOSIA (*cancelled due to COVID-19)

- Invited Presentation:** 2021
Childhood Obesity, Physical Activity and Brain Function.
Goran Laboratory, Children's Hospital LA
- Panel:** 2021
Panelist on the “Ask A Scientist!” event for Brain Awareness Week, hosted by the NUCLEUS organization.
- Panel:** 2021
Panelist on the “Focus on Your Focus” event, hosted by NEURABLE
- Lecture:** 2020
The Influence of Exercise on Brain Function in Childhood Obesity.
“Hopscotch, Soccer, and Broccoli: Implications of Neuroscience for Promoting Children’s Brain Health”, Honors Program, Northeastern University

Lecture: 2020

The Methodology behind Cognitive and Brain function.

"Core Concepts in Rehabilitation Science and Research", Department of Physical Therapy, Movement and Rehabilitation Sciences, Northeastern University

Lecture: 2020

Cognitive and Brain Health: Research Methods and Lifestyle Factors.

AP Research Class, Needham High School

Lecture: 2020

Cognitive and Brain Health: Research Methods and Lifestyle Factors.

Youth Summer Program, Northeastern University

'Colloquium: 2020

The role of lifestyle factors on cognitive and brain function across the lifespan.

School of Curriculum and Pedagogy, Department of Physical Education, The University of Auckland

Colloquium: 2018

Exercise Improves Cognitive Functions... But how does it do it? The mechanisms behind the effects of chronic exercises on the brain.

Cognition Area Meeting, Psychology Department, Northeastern University

TEACHING EXPERIENCE

Guest Lecturer:

Northeastern University 2017-Present

- PSYC 4628: Research Ethics in Developmental Psychology (*Psychology Department*)
- PT 7001: Core Concepts in Rehabilitation Science and Research (*Doctor of Physical Therapy Program*)
- HONR 3310-15: Hopscotch, Soccer, and Broccoli: Implications of Neuroscience for Promoting Children's Brain Health (*Honors Program*)

The University of Auckland 2015-2017

- EXERSCI 100G: Psychology on Sports Injuries (*Department of Exercise Sciences*)
- EXERSCI 100G: Motivation for Movement (*Department of Exercise Sciences*)
- EXERSCI 100G: Motor Skill Acquisition (*Department of Exercise Sciences*)

Graduate Teaching Assistant:

TA Responsibilities:

- Grading quizzes, presentations, homework, lab reports, final exams
- Oversee discussion groups and Zoom breakout rooms
- Administering, creating, and explaining experimental lab sessions

- Providing feedback on lab report writing and research proposals
- Meeting with students one on one to discuss and improve lab report writing
- Delivering guest lectures

Northeastern University 2017-Present

- PSYC 4628: Lab in Developmental Psychology (*1 section total, Psychology Department*)
- PSYC 4612: Lab in Cognitive Psychology (*3 sections total, Psychology Department*)
- PSYC 2320: Statistics in Psychological Research (*2 sections total, Psychology Department*)

The University of Auckland 2015-2017

- EXERSCI 101: Foundations of Exercise and Sport Sciences (*2 sections per year, Department of Exercise Sciences*)
- EXERSCI 100G: Exercise and Fitness: Myths and Reality (*6 sections per year, Department of Exercise Sciences*)

MENTORING RESEARCH ASSISTANTS (*denotes graduate student mentee)

- Mentoring undergraduates **Ethan Makarewycz** and **Nicole Occidental** on an fMRI systematic review manuscript investigating fitness, adiposity, and functional connectivity across the lifespan.
- Mentoring undergraduates **Nicole Occidental**, **Shruti Agrawal**, **Rebecca Shorin**, and **Olivia Rowe** on the data collection, data reduction, data analysis, and writing of Senior Projects, including Senior Honors Theses, Directed Study projects, and Conference Posters.
- Mentoring undergraduates **Nicole Occidental**, **Alisa Posner**, **Eugenia Manrique**, **Michelle Lim**, and **Julia Bertsch** on coding articles for meta-analyses.
- Mentoring, training, teaching and coordination of Northeastern University Undergraduate Research Assistants (URAs) every semester in the Center for Cognitive and Brain Health (CCBH). URAs are trained on all lab 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.
- List of the 46 Northeastern University CCBH URAs (2017 – present) I have personally trained and mentored:

Psychology: Aaron Strong, Alessandra Marinaro, Faith Chan, Michelle Lim, Olivia Rowe (*Directed Study & Senior Thesis*), Zoe Zwerling (*Directed Study*), Zachary Smith, Brittany Keller (Co-op), Tanu Padma, Nikita Seth

Behavioural Neuroscience: Alisa Posner, Annissa DeSilva, Caroline Bennett, Chenelle Jones, Ethan Makarewycz, Jane Li (*Co-author, Co-op & Directed Study*), Julianna Lebron Echandy, Kay Chow (*Co-op*), Kristen Gebhardt, Nicole Occidental (*Senior Thesis*), Sofia Mazuera, Umin Jalloh, Ysabeau Bernard-Willis (*Co-op*), Corvens Depaliste, Niki Janzer, Ryan Luke Sodemann, Kaitlyn Meek, Rachel Lines, Joey Robb

Health Sciences: Abigail Padilla (*Co-op*), Eugenia Manrique, Julia Bertsch, Marika Van Dusen, Rebecca Shorin (*Co-op, Senior Research Project, Co-author*), Shruti Agrawal (*Directed Study*), Kristin Sakoda, Lasya Dutta

Computer Science: Erin Mittman, *Shubham Sharma, *Varun Sriram, Jon Organ (*Berklee College of Music*), Margaret Cook (*Tufts University*)

Other Majors: Alexis Trattler (*Human Services*), Brianna Daphnis (*Biology*), Michael Quinn (*Biochemistry*), Nina Collins (*Tufts University, Psychology*), Catherine Nemeskal (*High School intern*), Kyle Robertson (*Biology*)

PROFESSIONAL DEVELOPMENT

Grant Writing for Young Investigators <i>Northeastern University</i>	2020
Learning the CONN Toolbox for Functional Connectivity Analysis <i>Martinos Center for Biomedical Imaging, MGH</i>	2019
Connectivity Course: Structural and Functional Brain connectivity via MRI and fMRI <i>Martinos Center for Biomedical Imaging, MGH</i>	2018
Certified in American CPR/First Aid (Red Cross)	2017-Present
Certified in New Zealand CPR/First Aid (St John)	2010-2017
EEG Workshop <i>Assoc. Prof. Paul Corballis, The University of Auckland</i>	2016

PROFESSIONAL ORGANIZATIONS

- American College of Sports Medicine
- Active Brain Society
- Australasian Cognitive Neuroscience Society
- Cognitive Neuroscience Society
- European College of Sport Science
- Society for Psychological Research
- Society for Neuroscience

AWARDS & HONORS

- College of Science Travel Grant, Northeastern University 2020
- College of Science Travel Grant, Northeastern University 2019
- College of Science Travel Grant, Northeastern University 2018

- PhD Network Travel Grant, Northeastern University 2018
 - Honoured Teaching Assistant Award, University of Auckland 2017
 - Faculty of Science Masters Award, The University of Auckland 2016
 - First Class Honours in Psychology, The University of Auckland 2015
 - Blue Award in Service and Leadership, The University of Auckland 2015
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MEDIA & INTERVIEWS

Science Rehashed Podcast:

- Episode 33: Bullying in Academia 2021
 - Release Date: June 30th, 2021
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Extracurricular, Service & Volunteer Experience

Science Rehashed Podcast: 2020 - 2021

- International Ambassador (New Zealand)
 - Making science communication accessible all over the world

Massachusetts Institute of Technology: 2018 – Present

- Men's Varsity Water Polo: Volunteer Assistant Coach
 - 2019 USA Water Polo DIII Men's Collegiate National Championships, 3rd Place
 - 2019 Collegiate Water Polo Association DIII Eastern Championships, 1st Place
 - 2018 Collegiate Water Polo Association DIII Eastern Championships, 3rd Place

Northeastern University: 2017 – Present

- Graduate Student Mentoring Program
 - Mentor to psychology undergraduate students
- Psychology Graduate Student Association (Psych GSA)
 - Inaugural President of the Psych GSA: advocating for students, by students
 - Co-Founder: Established the Psychology Graduate Student Association of Northeastern University Constitution
 - Member of the Organizational Committee, liaison to Diversity, Equity & Inclusion Committee, and Resources Committee
- Northeastern University Community Liaisons for Education Using STEM (NUCLEUS)
 - Member, Presenter, Website Developer, Social Media Manager
 - Presenter for Boston High Schools Young Scholars in STEM Program
 - Outreach science communication to youth in high school
- Psychology Department Graduate Student Organization (PDGSO)
 - Vice President

- Northeastern University Women's Club Water Polo
 - Volunteer Head Coach

New Zealand Water Polo:**2013 – 2018**

- NZ National Teams Program: Volunteer Assistant Coach
 - 2018 Youth World Championships: Belgrade, Serbia
 - 2017 World University Games: Taipei, Taiwan
 - 2017 National Women's Team: Auckland, New Zealand
 - 2017 Australian Youth Festival: Sydney, Australia
 - 2015 Australian State Championships: Sydney, Australia
 - 2014 Trans-Tasman Tournament: Auckland, New Zealand

SKILLS**Software:**

CONN Toolbox, SPM12, EEGLab, ERPLab, MATLAB, RStudio, SPSS, UNIX, FSL (structural and functional neuroimaging), CMA (Comprehensive Meta-Analysis), E-prime, Qualtrics

Methodology:

MRI/fMRI, EEG/ERP, VO₂max testing, Virtual Reality (Oculus Rift, HTC Vive), Neuropsych and Cognitive testing, Biospecimen analysis (blood, saliva), Meta-Analysis and Systematic Review, Literature Review, Intervention Assessment, Intelligence Quotient testing

Graduate-Level Courses:

Advanced Neuroscience	Consciousness and Cognition
Advanced Perception	Ethics and Professional Issues in Psychology
Advanced Quantitative Analysis in Meta-Analysis	Movement Neuroscience
Advanced Quantitative Analysis in Multi-Level Modelling	Perception, Cognition and Action
Advanced Quantitative Analysis: Task fMRI Analysis	Personality Psychology
Behavioural Psychology	Political Psychology
Clinical Neuroscience: Methods for Functional Connectivity	Quantitative Methods
Cognitive Psychology	Research Methodologies in Psychology
	Special Topics in Psychology: Grant Writing

PERSONAL INTERESTS

Coaching water polo, playing basketball, surfing, running, yoga, hiking mountains and being outdoors.

REFERENCES

Available upon request