

TIMOTHY PETER MORRIS

t.morris@northeastern.edu

08/2022

EDUCATION

- 2018 Ph.D. (*Cum Laude*) in Neuroscience, Autonomous University of Barcelona, Spain
- 2014 M.S. in Neuroscience, Autonomous University of Barcelona, Spain
- 2012 B.S. (*Hons*) in Sport and Exercise Science, University of Aberystwyth, Wales

PROFESSIONAL APPOINTMENTS AND EMPLOYMENT

- 2022 - Northeastern University, Center for Cognitive and Brain Health, Department of Physical Therapy, Movement and Rehabilitation Sciences, Boston, MA
Assistant Professor
- 2020 - 2022 Northeastern University, Center for Cognitive and Brain Health, Boston, MA
Postdoctoral Research Associate
- 2016 - 2020 Harvard Medical School and Beth Israel Deaconess Medical Center, Boston, MA
Visiting Student (2016) and Postdoctoral Research Fellow
- 2017 - 2018 Guttmann Institute for Neurorehabilitation, Barcelona, Spain
Research Technician

PUBLICATIONS

2022

* Denotes equal contribution to first authorship. ** Denotes equal contribution to senior authorship. *Student mentee.*

21. **Morris, T. P.**, ..., Hillman, C.H., Whitfield-Gabrieli, S., McAuley, E., Kramer, A.F (2022). Brain structure and function predict adherence to an exercise intervention in older adults, In Press, *Med Sci Sport Ex.*
20. Redondo-Camos, M., Cattaneo, G., Perellón-Alfonso, R., ... **Morris, T.P.**, ... Pascual-Leone, A., Bartres Faz, D (2022). Local prefrontal cortex TMS-induced reactivity is related to working memory and reasoning in middle-aged adults. In Press, *Frontiers in Psychology*
19. **Morris, T.P.**, Kuyci, ..., Whitfield-Gabrieli, S., Hillman, C.H., McAuley, E., Kramer, A.F (2022). Resting State Functional Connectivity Provides Mechanistic Predictions of Future Changes in Sedentary Behaviors. *Scientific Reports*, 12, 940. <https://doi.org/10.1038/s41598-021-04738-y>

2021

18. Shigeta, T., **Morris, T.P.**, Henry, D., Kuyci, A., Bex, P., Kramer, A.F., Hillman, C.H (2021). Acute exercise effects on inhibitory control and pupillary response in young adults. *International Journal of Psychophysiology*, 170:218-228. <https://doi.org/10.1016/j.ijpsycho.2021.08.006>
17. España-Irla, G., Gomes-Osman J., , Tormos-Muñoz, J.M., Bartres-Faz, D.** , **Morris, T.P.****, Pascual-Leone, A.** (2021). The associations between cardiorespiratory fitness, cardiovascular risk and

cognition are mediated by structural brain health in midlife. *The Journal of the American Heart Association*, 10(18). <https://doi.org/10.1161/JAHA.120.020688>

16. **Ai***, **M.**, **Morris, T.P.***, Ordway, C., Quinoñez, E., D'Agostino, F., Whitfield-Gabrieli, S., Hillman, C.H., Pindus, D.M., McAuley, E., Mayo, N., Noriega de la Colina, A., Phillips, S., Kramer, A.F., Geddes, M. (2021). The Daily Activity of Health (DASH) Study: A Pilot Randomized Controlled Trial to Enhance Physical Activity in Sedentary Older Adults. In Press. *Contemporary Clinical Trials*, 106, 106405. <https://doi.org/10.1016/j.cct.2021.106405>
15. **Morris, T. P.**, Chaddock-Heyman, L., **Ai, M.**, Arnold Anteraper, S., Nieto Castañon, A., Whitfield-Gabrieli, S., Hillman, C.H., McAuley, E., Kramer, A.F. (2021). Enriching activities during childhood are associated with variations in functional connectivity patterns later in life. *Neurobiology of Aging*, 104, 92-101. <https://doi.org/10.1016/j.neurobiolaging.2021.04.002>
14. **Morris, T. P.**, **Ai, M.**, Chaddock-Heyman, L., McAuley, E., Hillman, C.H., Kramer, A.F. (2021) Relationships between enriching early life experiences and cognitive health later in life are mediated by educational attainment. *Journal of cognitive enhancement*. <https://doi.org/10.1007/s41465-021-00208-5>

2020

13. Hsieh, S.-S., Chueh, T.-Y., **Morris, T. P.**, Kao, S.-C., Westfall, D. R., Raine, L. B., Hopman, R. J., Pontifex, M. B., Castelli, D. M., Kramer, A. F., & Hillman, C. H. (2020). Greater childhood cardiorespiratory fitness is associated with better top-down cognitive control: A midfrontal theta oscillation study. *Psychophysiology*, 57(12), e13678. <https://doi.org/10.1111/psyp.13678>
12. Cattaneo, G., Bartrés-Faz, D., **Morris, T. P.**, Sánchez, J. S., Macià, D., Tormos, J. M., & Pascual-Leone, A. (2020). The Barcelona Brain Health Initiative: Cohort description and first follow-up. *PLOS ONE*, 15(2), e0228754. <https://doi.org/10.1371/journal.pone.0228754>
11. **Morris, T. P.**, Fried, P. J., Maccone, J., Stillman, A., Gomes-Osman, J., Costa-Miserachs, D., Muñoz, J. M. T., Santarnecchi, E., & Pascual-Leone, A. (2020). Light aerobic exercise modulates executive function and cortical excitability. *European Journal of Neuroscience*, 51(7), 1723–1734. <https://doi.org/10.1111/ejn.14593>

2019

10. **Morris, T. P.**, McCracken, C., Baggish, A., Weisskopf, M., Zafonte, R., Taylor, H. A., Nadler, L. M., Speizer, F. E., & Pascual-Leone, A. (2019). Multisystem afflictions in former National Football League players. *American Journal of Industrial Medicine*. <https://doi.org/10.1002/ajim.22992>
9. **Morris, T. P.**, Tormos Muñoz, J.-M., Cattaneo, G., Solana-Sánchez, J., Bartrés-Faz, D., & Pascual-Leone, A. (2019). Traumatic Brain Injury Modifies the Relationship Between Physical Activity and Global and Cognitive Health: Results From the Barcelona Brain Health Initiative. *Frontiers in Behavioral Neuroscience*, 13. <https://doi.org/10.3389/fnbeh.2019.00135>
8. **Morris, T. P.**, Davila-Pérez, P., Jannati, A., Menardi, A., Pascual-Leone, A., & Fried, P. J. (2019). Aftereffects of Intermittent Theta-Burst Stimulation in Adjacent, Non-Target Muscles. *Neuroscience*, 418, 157–165. <https://doi.org/10.1016/j.neuroscience.2019.08.043>

7. Cabral, D. F., Rice, J., **Morris, T. P.**, Rundek, T., Pascual-Leone, A., & Gomes-Osman, J. (2019). Exercise for Brain Health: An Investigation into the Underlying Mechanisms Guided by Dose. *Neurotherapeutics*. <https://doi.org/10.1007/s13311-019-00749-w>

2018

6. Cattaneo, G., Bartrés-Faz, D., **Morris, T. P.**, Sánchez, J. S., Macià, D., Tarrero, C., Tormos, J. M., & Pascual-Leone, A. (2018). The Barcelona Brain Health Initiative: A Cohort Study to Define and Promote Determinants of Brain Health. *Frontiers in Aging Neuroscience*, 10. <https://doi.org/10.3389/fnagi.2018.00321>
5. **Morris, T. P.**, Costa-Miserachs, D., Rodriguez-Rajo, P., Finestres, J., Bernabeu, M., Gomes-Osman, J., Pascual-Leone, A., & Tormos-Muñoz, J. M. (2018). Feasibility of Aerobic Exercise in the Subacute Phase of Recovery From Traumatic Brain Injury: A Case Series. *Journal of Neurologic Physical Therapy: JNPT*, 42(4), 268–275. <https://doi.org/10.1097/NPT.0000000000000239>
4. **Morris, T. P.**, Gomes-Osman, J., & Pascual-Leone, A. (2018). Author Response: Exercise for cognitive brain health in aging: A systematic review for an evaluation of dose. *Neurology: Clinical Practice*, 8(5), 366. <https://doi.org/10.1212/CPJ.0000000000000532>
3. Gomes-Osman, J., Cabral, D. F., **Morris, T. P.**, McInerney, K., Cahalin, L. P., Rundek, T., Oliveira, A., & Pascual-Leone, A. (2018). Exercise for cognitive brain health in aging: A systematic review for an evaluation of dose. *Neurology: Clinical Practice*, 8(3), 257–265. <https://doi.org/10.1212/CPJ.0000000000000460>

2017

2. Gomes-Osman, J., Cabral, D. F., Hinchman, C., Jannati, A., **Morris, T. P.**, & Pascual-Leone, A. (2017). The effects of exercise on cognitive function and brain plasticity—A feasibility trial. *Restorative Neurology and Neuroscience*, 35(5), 547–556. <https://doi.org/10.3233/RNN-170758>

2016

1. **Morris, T.**, Gomes Osman, J., Tormos Muñoz, J. M., Costa Miserachs, D., & Pascual Leone, A. (2016). The role of physical exercise in cognitive recovery after traumatic brain injury: A systematic review. *Restorative Neurology and Neuroscience*, 34(6), 977–988. <https://doi.org/10.3233/RNN-160687>

PREPRINTS AND SUBMITTED MANUSCRIPTS

Submitted

Ai, M., Loui, P., **Morris, T.P.**, Chaddock-Heyman, L., Hillman, C.H., McAuley, E., Kramer, A.F.
Musical experience relates to insula-based functional connectivity in older adults.

Pérez López, L., Costa, D., ... **Morris, T.P**.**, Coll-Andreu, M. A cross-over study to investigate the effect of 20-weeks of aerobic exercise on cognition and heart rate variability in chronic traumatic brain injury.

McDonald, K., **Morris, T.P.**, Anteraper, S., Voss, M., ... Hillman, C.H., McAuley, E., Kramer, A.F.
Data-Driven MRI Analysis Reveals Fitness-Related Functional Change in Default Mode Network and Cognition Following an Exercise Intervention.

Preprints

Morris, T. P., Redondo-Camos, M., ... , Muñoz, J. M. T., Batres-Faz, D., Pascual-Leone, A., & Shafi, M. M. (2020). Greater TMS-evoked frontoparietal effective connectivity is correlated with better cognitive performance. *BioRxiv*, 2020.08.03.234518. <https://doi.org/10.1101/2020.08.03.234518>)

MANUSCRIPTS IN PREPARATION

Morris, T.P., Hillman, C.H., Whitfield-Gabrieli, S., Loui, P., Somerville, L., Kramer, A.F., Aerobic Fitness, Manual Dexterity and Participation in Sport are Consistent Predictors of Fluid Cognition Across Developing Age Groups in Childhood.

Westfall, D., Kranz, B., ... **Morris, T.P.,** McAuley, E., Whitfield-Gabrieli, S., Hillman, C.H., Kramer, A.F. Cortical Morphometry of Functional Connectivity Networks in Understanding the Associations Between Aerobic Fitness and Cognition in Aging Adults.

HONORS AND AWARDS

2021 Travel Scholarship Award, 3rd workshop on Reserve and Resilience, Bethesda, USA
2020 Young Investigator Award, 7th International Congress on Noninvasive Brain Stimulation, Baden-Baden, Germany
2012 Undergraduate Dissertation Award, Department of Sport and Exercise Science, Aberystwyth University, Wales, UK

CURRENT FUNDING APPLICATIONS (Submitted)

NIH/NIA (R21) Raine, Lauren (PI)
Feb 2022 submission
Title: Exercise and thinking: Reanalysis of metabolics in saliva (Ex:TreMes). Goals: to examine the role of adiposity, inflammation and cognitive responses to a single bout of exercise in children. Role: Co-investigator.

NIH/NIA (R01) Hillman, Charles (PI)
March 2022 resubmission
Title: Investigating a Novel Virtual Intervention to Exercise (INVITE). Goals: To investigate the effect of a 12-week high intensity interval training program on cognitive, brain and academic outcomes in children. Role: Co-investigator.

NIH/NIA (R01 supplement) Hillman, Charles (PI)
September 2021 submission
Title: Masks in youth: Physical activity, emotion and cognition (MY-PACE). Goals: To investigate the effect mask wearing on children's perceived and actual cognitive function, emotions and exercise performance. Role: Co-investigator.

PAST RESEARCH FUNDING (completed)

La Caixa Foundation Pascual-Leone, Alvaro (Scientific Director)
09/01/2016 – 08/31/2020
Title: Barcelona Brain Health Initiative. Goals: Prospective interventional cohort study to characterize determinants of brain health and factors contributing to the transition from health to neurological or psychiatric

disease through serial evaluations of health, behavior, cognition, lifestyle, brain structure and function. Role: Post-doc (completed)

NFL-Players Association

Nadler, Zafonte (PI)

04/01/2017 - 03/31/2020

Title: Football Players Health Study at Harvard. Goals: This study seeks to produce transformative improvements in the health of professional football players by identifying who is at risk to develop problems, which measures of injury are most sensitive, when can early interventions mitigate risks and enhance resilience, and more importantly, which reproducible parameters can be translated to skilled physicians and trainers who advise NFLPA members to make critical health decisions. Role: Post-doc (completed)

UNSUCCESSFUL FUNDING APPLICATIONS

NIH/NIA (R03)

Morris, Timothy (PI)

Feb 2022

Impact score :70

Title: Towards precision medicine in exercise adherence in older adults. Goals: To predict adherence to exercise, physical activity and sedentary behaviors using multimodal machine learning models. Role: PI.

NIH/NIA (K99/R00)

Morris, Timothy (PI)

2021

Impact score: 36

Title: Prediction and classification of future physical exercise behaviors. Goals: To investigate predictors of future engagement in exercise and sedentary behaviors relevant for brain health in aging, with an emphasis on neuroimaging. Role: Principal Investigator

INVITED TALKS

Headings based on appointment at time of talk

International

2019 **La Caixa Forum**, Barcelona, 3rd annual Barcelona Brain Health conference, “TMS-EEG connectivity and brain health”. December. <https://www.youtube.com/watch?v=CAuTh5h1v7M&t=15s>

National

2019 **University of Miami**, Evelyn F. McKnight Brain Institute, “Results from the Barcelona Brain Health Initiative: Exercise, cognition and TMS-EEG in healthy aging”. November.

Local

2022 **Hebrew Senior Life**, Harvard Medical School, “What can the brain teach us about adherence to exercise and sedentary behaviors in older adults”. June.

2020 **McLean Hospital**, Harvard Medical School, Halko Lab, “Prediction modelling using functional connectivity”. July.

2019 **Northeastern University**, Center for Cognitive and Brain Health, “Results from the Barcelona Brain Health Initiative: Exercise, cognition and TMS-EEG in healthy aging”. October.

Departmental

2020 **Northeastern University**, Neuroscience Graduate Honors Class, “Predicting sedentary behavior with functional connectivity”. December.

- 2020 **Northeastern University**, Precision Medicine and Early Intervention (Susan Whitfield-Gabrieli Lab), “Predicting and classifying future exercise behaviors with functional connectivity”. June.
- 2020 **Beth Israel Deaconess Medical Center**, Harvard Medical School, Cognitive Neurology Grand Rounds, “Modifiable biomarkers of brain health in midlife”. January.
- 2017 **Harvard Medical School**, Introduction to Transcranial Current Stimulation CME Course “Exercise, gait, balance and transcranial direct current stimulation”. June.
- 2017 **Beth Israel Deaconess Medical Center**, Harvard Medical School, Cognitive Neurology Grand Rounds, “Physical exercise and brain health”. February.

SELECT CONFERENCE PAPERS AND POSTERS

7. **Morris, T.P.**, ..., Hillman, C.H., Whitfield-Gabrieli, S., McAuley, E., Kramer, A.F. (2022). What can the brain teach us about adherence to exercise and sedentary behaviors in older adults. ACSM annual conference, June 2022.
6. **Morris, T. P.**, Whitfield-Gabrieli, S., Hillman, C.H., McAuley, E., Kramer, A.F. (2021). Brain-based metrics are better predictors of adherence to exercise interventions than psychosocial and behavioral measures and provide mechanistic insights. University of British Columbia Brain Health Symposium.
5. **Morris, T. P.**, Gomes-Osman, J., *Espana-Irla*, G., ..., Tormos-Munoz, J. M., Bartres-Faz, D., & Pascual-Leone, A. (2020, July 30). Modifiable factors, cardiorespiratory fitness and cardiovascular risk are associated with cognitive and structural brain health in midlife: Results from the BBHI. 2020 Alzheimer’s Association International Conference.
<https://alz.confex.com/alz/20amsterdam/meetingapp.cgi/Paper/42875>
4. **Morris, T.**, Redondo, M., Cattaneo, G., Macia, D., Delgado-Galen, S., Alviárez, V., Solana-Sanchez, J., Tormos Muñoz, J. M., Batres-Faz, D., Pascual-Leone, A., & Shafi, M. (2020). P163 Fronto-parietal effective connectivity revealed via TMS is associated with global cognitive functioning. *Clinical Neurophysiology*, 131(4), e106. <https://doi.org/10.1016/j.clinph.2019.12.274>
3. **Morris, T.**, Shafi, M., Bartres-Faz, D., Delgado-Gallén, S., Camós, M. R., Alviárez, V., Cattaneo, G., Sanchez, J. S., Albu, S., Macia, D., Muñoz, J. T., & Pascual-Leone, A. (2019). Intracortical inhibition of the parietal cortex is associated with cognitive function in older adults: A TMS-EEG study. *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation*, 12(2), 456–457.
<https://doi.org/10.1016/j.brs.2018.12.483>
2. **Morris, T.P.**, Davila Perez, P., Jannati, A., Pascual-Leone, A., and Fried, P.J. (November 2017). Specificity of theta-burst stimulation. Conference poster presented at the annual meeting for the *Society for Neuroscience*, Washington D.C (USA), November 2017.
1. **Morris., T.P.**, Stillman. A., Fried., P.J., Gomes-Osman., J.G., Tormos Muñoz. J.M., Costa Miserachs., D., Pascual-Leone. A., and Emiliano Santarnecchi. (October 2017). Physical Exercise, Neuroplasticity and Cognition Following Mild Traumatic Brain Injury. Conference poster presented at *The European Congress on Neurorehabilitation*, Lausanne (Switzerland)

TEACHING EXPERIENCE

- 2017- Course faculty, Intensive Course in Transcranial Magnetic Stimulation at Harvard Medical School (continuing medical education course). Three times yearly week-long course to international clinicians and researchers.

Guest lectures

December 8th 2020 - HONR3310 – Neuroscience and Brain Health (honors), Northeastern University

April 4th 2022 – Advanced PSYCH (undergraduate) Behavioral Neuroscience, Northeastern University
April 6th 2022 – PT7202 (graduate), PTRMS, Northeastern University

SERVICE

Ad hoc reviewer: European Journal of Neuroscience, Journal of Psychopharmacology, Nutrition and Metabolic insights, Journal of Clinical Neuroscience, Research on Aging, Frontiers in Behavioral Neuroscience, Scientific Reports, Mental Health and PA, Journal of Neuroscience, Medicine and Science in Sport and Exercise

MENTORING EXPERIENCE

* co-supervisor of mentee's PhD thesis

*Goretti España Irla (Autonomous University of Barcelona). PhD candidate in Medicine.

Thesis project: Physical exercise and inhibitory control in healthy aging

*Lydia Pérez López (Autonomous University of Barcelona). PhD candidate in Neuroscience.

Thesis project: Physical exercise for cognitive rehabilitation after traumatic brain injury

Maria Redondo Cámos (Graduate student, Guttmann Institute, Barcelona).

Katherine McDonald (Graduate student, Northeastern University).

Meishan Ai (Graduate student, Northeastern University).

Mark Nwakamma (Graduate student, Northeastern University).

Emma Tinney (Graduate student, Northeastern University).

OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS

2020	FSL Neuroimaging Course, Oxford University
2019-2020	Mentor-Mentee Matching Program, Harvard Catalyst, Harvard University
2018-2019	Certificate in Applied Biostatistics, Harvard Catalyst, Harvard University
2018	TMS-EEG Science Factory, Aalto University, Finland
2016	Intensive course in transcranial magnetic stimulation, Berenson-Allen Center for noninvasive brain stimulation, Harvard Medical School
2016	Introduction to transcranial direct current stimulation, Berenson-Allen Center for noninvasive brain stimulation, Harvard Medical School
2022-	Member, American College of Sports Medicine
2016-2018	Member, Spanish Society for Neuroscience
2016-2019	Member, Society for Neuroscience

LANGUAGES

English: Native
Spanish: C1
Catalan: B1

MEDIA COVERAGE

Systematic review published in Neurology: Clinical Practice (co-author) covered by multiple media outlets including but not limited to Time Magazine (<https://time.com/5294493/exercise-healthy-brain-aging/>), The Times (<https://www.thetimes.co.uk/article/just-an-hour-a-week-of-exercise-can-reverse-mental-decline-k8kg6bg7p>).

Academic career profiled in an article via the College of Science at Northeastern University <https://cos.northeastern.edu/news/lifestyle-choices-affect-our-brains-capabilities-throughout-life-this-research-wants-to-know-how/>