

DANIEL D. CALLOW

Curriculum Vitae

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Education

- 2023 (Expected) Ph.D., Neuroscience and Cognitive Science
University of Maryland, College Park, MD
Advisor: J. Carson Smith, Ph.D.
- 2018 B.S., Kinesiology
University of Maryland, College Park, MD
Summa Cum Laude
High Honors, Department of Kinesiology Honors Program
Honors College Citation, Entrepreneurship, and Innovation Program

Grants and Fellowships

- 2021 NIH-National Institute on Aging (PI: D Callow),
NRSA Individual Predoctoral Grant, F31AG074670
*The effects of acute aerobic exercise on hippocampal function and
microstructure in older adults. 09/01/21-08/31/23.*
- 2020 – Present Computation and Mathematics for Biological Networks (COMBINE) NRT Fellow
National Science Foundation NRT Stipend Awarded Trainee (\$36,500)
- 2018 – 2020 Graduate School Dean's Fellowship (\$5,000)
- 2017 Maryland School of Medicine, Biomedical Research Fellowship (\$4,500)
- 2017 University of Maryland College Park, Summer Research Grant (\$3,000)
*Effects of acute exercise on semantic memory task activation in elders at
risk for Alzheimer's disease. Declined due to simultaneous receipt of
Summer Biomedical Research Fellowship.*

Research Experience

- 2018 - Present Graduate Research Assistant, Exercise for Brain Health Lab
Department of Kinesiology, College Park, MD
Primary Investigator: J. Carson Smith, Ph.D.
- 2017 - 2018 Summer Biomedical Research Fellowship,
Translational Neuroengineering and Neuroscience Lab
Department of Neurosurgery, University of Maryland School of Medicine
Primary Investigator: Dr. Xiaofeng Jia

2015 - 2018 Undergraduate Research Assistant, Exercise for Brain Health Lab
Department of Kinesiology, College Park, MD
Primary Investigator: J. Carson Smith, Ph.D.

2014 - 2015 AutoCAD Technician
Institute for Research in Electronics and Applied Physics
Primary Investigator: Dr. Brian Beaudoin

Work Experience

2015 - 2018 Resident Assistant for University of Maryland
2015 - 2018 University of Maryland Athletics' ASCDU Student-Athlete Tutor
2015 Apprentice Mechanical Engineer at Grotheer and Co.

Publications and Scholarly Presentations

Peer-Reviewed Journal Articles

1. Won, J, **Callow, DD**, Pena, G, Gogniat, MA, Jordan, LS, Kommula, Y, Arnold, NA & Smith, JC (in press). Evidence for Exercise-Related Plasticity in Functional and Structural Neural Network Connectivity. *Neuroscience and Biobehavioral Reviews*.
2. Won, J, **Callow, DD**, Pena, G, Arnold, NA, Jordan, L, Nielson, K, & Smith, JC (2021). Increased Hippocampal Functional Connectivity and Corresponding Improvement in Memory Performance after Exercise Training in Older Adults with MCI. *Journal of Alzheimer's Disease*. doi: 10.3233/JAD-210051
3. Callow, MA, & **Callow, DD** (2021). Older Adults' Behavior Intentions once a COVID-19 Vaccine Becomes Available: The Importance of Beliefs versus Public Policy Interventions in Shaping Societal Behavior. *Journal of Applied Gerontology*. <https://doi.org/10.1177/07334648211019205>
4. **Callow, DD**, Won, J, Alfini, AJ, Purcell, JJ, Weiss, LR, Zhan, W & Smith, JC (2021). Microstructural Plasticity in the Hippocampus of Healthy Older Adults After Acute Exercise. *Medicine and Science in Sports and Exercise*. doi: 10.1249/MSS.0000000000002666
5. **Callow, DD**, Won, J, Pena, G, Arnold, NA, Jordan, L, Nielson, K, & Smith, JC (2021). Differential effects of a six-month walking intervention on gray matter microstructure in healthy older adults versus individuals with Mild Cognitive Impairment. *Frontiers in Aging Neuroscience*. <https://doi.org/10.3389/fnagi.2021.645258>
6. Won, J, Ranadive, SM, **Callow, DD**, & Smith, JC (2021). Blood Pressure-related Differences in Brain Health Between Young African Americans and Caucasian Americans. *Journal of Hypertension*. <https://doi.org/10.14814/phy2.14819>
7. Jordan, L, Woodard, J, Pena, G, Arnold, NA, Won, J, **Callow, DD** & Smith, JC (in press). Forward-Focused Coping Predicts Better Mental Health Outcomes in Older Adults During COVID-19 Pandemic. *Aging and Mental Health*. <https://doi.org/10.1080/13607863.2021.1897523>
8. Won, J, Farooqi-Shah, **Callow, DD**, Williams, A, Awoyemi, A, Y, Nielson, K, & Smith, JC (2021). Association between Greater Cerebellar Network Connectivity and Improved Phonemic Fluency Performance after Exercise Training in Older Adults. *Cerebellum*. <https://doi.org/10.1007/s12311-020-01218-3>
9. **Callow, DD**, Canada, LK, & Riggins (2020). Microstructural integrity of the hippocampus during childhood: Relations with age and source memory. *Frontiers in Psychology*, 11, 2352. <https://doi.org/10.3389/fpsyg.2020.568953>

10. Callow, MA, **Callow, DD**, & Smith, C (2020). Older Adults' Intention to Socially Isolate once COVID-19 Stay-at-Home Orders are Replaced with "Safer-at-Home" Public Health Advisories: A Survey of Respondents in Maryland. *Journal of Applied Gerontology*.
<https://doi.org/10.1177/0733464820944704>
11. **Callow, DD**, Arnold, NA, Jordan, L, Pena, G, Won, J, Woodard, J & Smith, JC (2020). The Mental Health Benefits of Physical Activity for Older Adults Survive the COVID-19 Pandemic. *American Journal of Geriatric Psychiatry*. <https://doi.org/10.1016/j.jagp.2020.06.024>
12. Won, J, Alfini, AJ, Weiss, LR, Casandra N, **Callow, DD**, Spira, AP, & Smith, JC (2019). Caudate Volume Mediates the Interaction between Total Sleep Time and Executive Function after Acute Exercise in Healthy Older Adults. *Brain Plasticity*. Special issue: *Exercise and Cognition*, (Preprint), 1-14. doi: 10.3233/BPL-190087
13. Won, J, Alfini, AJ, Weiss, LR, **Callow, DD**, & Smith, JC (2019). Brain Activation During Executive Control After Acute Exercise in Older Adults. *International Journal of Psychophysiology*, 146, 240-248. <https://doi.org/10.1016/j.ijpsycho.2019.10.002>
14. Won, J, Alfini, AJ, Weiss, LR, Michelson, CS, **Callow, DD**, Ranadive, SM, Gentili, RJ, & Smith, JC (2019). Semantic memory activation after acute exercise in healthy older adults. *Journal of the International Neuropsychological Society*, 25(6), 557-568.
<https://doi.org/10.1017/S1355617719000171>
15. He, J, Lu, H, Young, L, Deng, R, **Callow, DD**, Tong, S, & Jia, X (2019). Real-time quantitative monitoring of cerebral blood flow by laser speckle contrast imaging after cardiac arrest with targeted temperature management. *Journal of Cerebral Blood Flow & Metabolism*, 39(6), 1161-1171.
<https://doi.org/10.1177/0271678X17748787>
16. Ren-jin, L, Shi-hen, L, **Callow, DD**, Lei, W, Shi, L, Long, C, Jian, D, Wei-yang, G, Hua-z, X, Jian-zhong, K, & Kai-liang, Z (2017). Multifaceted effects of Astragaloside IV on promotion of random pattern skin flap survival in rats. *American journal of translational research*, 9(9), 4161.
PMCID: PMC5622259

Manuscripts in Review/Preparation

1. Peterman KN, **Callow, DD**, Arnold, NA, Won J, Jordan, LS, Pena GS, Kommula, Y, Gogniat, MA & Smith, JC (in prep). The Impact of Coronavirus Disease 2019 on Anxiety within Collegiate Student-Athletes Compared to Non-Athlete University Students. Submitted: *Journal of Sport and Exercise Physiology*.
2. **Callow, DD**, Purcell, JJ, Won, J, & Smith, JC (under review). Relations Between Fitness and NODDI Based Gray and White Matter Microstructure in Healthy Younger Adults. Submitted: *Neuroimage*.
3. Won, J, **Callow, DD**, Purcell, JJ, & Smith, JC (under review). Mediating Role of Cerebellar Subregion Volume in the Relationship between Gait Speed and Working Memory. Submitted: *Scientific Reports*.

Non-Refereed Publications

1. Smith, JC & **Callow, DD** (2021). A single session of exercise induces hippocampal plasticity in older adults. *Invited ACSM Sports Medicine Bulletin – Active Voice Commentary*.
<https://www.multibriefs.com/briefs/acsm/ACSM090721.php>

Professional Presentations

1. Purcell, JJ, Won, J, Weiss, LR, Alfini, AJ, **Callow, DD**, & Smith, JC (November 2021). Increased Neural Heterogeneity after 30-minutes of Aerobic Exercise in Older Adults. 50th Annual Society for Neuroscience Conference, Chicago, Illinois.
2. Peterman, K, **Callow, DD**, & Smith, JC (April 2021). Will There Be a Season? The Impact of COVID-19 on Anxiety Within NCAA Student-Athletes and Non-Athlete University Students. Annual University of Maryland School of Public Health Meeting, Virtual. **Master's student 2nd Place poster award.**
3. Pena, G, Won, J, Kommula, Arnold, NA, **Callow, DD**, Jordan, L, Kommula, Y, Hein, D, & Smith, JC (April 2021). Benefits Indices of Sleep Quality Relate to Lower Depression and Anxiety During the COVID-19 Pandemic. Annual University of Maryland School of Public Health Meeting, Virtual.
4. Weimer, R, Hein, D, Kommula, Y, Arnold, NA, **Callow, DD**, Jordan, L, Pena, G, Won, J, & Smith, JC (April 2021). Benefits of Zoom Fatigue; Exercise Intervention in the Post Covid World. Annual University of Maryland School of Public Health Meeting, Virtual.
5. Jordan, L, Woodard, J, Pena, G, Arnold, NA, Won, J, **Callow, DD** & Smith, JC (November 2020). Forward-Focused Coping Predicts Better Mental Health Outcomes in Older Adults During COVID-19 Pandemic. Gerontological Society of America Annual Scientific Meeting, Virtual.
6. **Callow, DD**, Won, J, Alfini, AJ, Purcell, JJ, Weiss, LR, Zhan, W & Smith, JC (May 2020). Hippocampal Plasticity After Acute Exercise in Older Adults: A Diffusion Tensor Imaging Study. Annual American College for Sports Medicine Conference, San Francisco, California. **Selected for thematic poster session by the Aging Special Interest Group.**
7. **Callow, DD**, Won, J, Alfini, AJ, Purcell, JJ, Weiss, LR, Zhan, W & Smith, JC (April 2020). Hippocampal Plasticity After Acute Exercise in Older Adults: A Diffusion Tensor Imaging Study. 2nd Annual Aging Research Symposium, University of Maryland School of Medicine, Center for Research on Aging.
8. **Callow, DD**, Won, J, Alfini, AJ, Purcell, JJ, Weiss, LR, Zhan, W & Smith, JC (April 2020). Hippocampal Plasticity After Acute Exercise in Older Adults: A Diffusion Tensor Imaging Study. University of Maryland School of Public Health Research Day, College Park, Maryland. **Nominated by Delta Omega Gamma Zeta Chapter to compete in the National 2020 Delta Omega Honorary Society in Public Health's graduate student poster competition.**
9. **Callow, DD**, Won, J, Alfini, AJ, Purcell, JJ, Weiss, LR, Zhan, W & Smith, JC (February 2020). Microstructural Plasticity in the Hippocampus of Healthy Older Adults Following Acute Exercise. Annual International Neuropsychological Society Conference, Denver, Colorado.
10. Alfini, A, Spira, A, Weiss, L, Won, J, Nyhuis, C, Michelson, C, Simon, C, **Callow, D**, & Smith, JC (July, 2019). Sleep, Aerobic Fitness, and Regional Brain Volume among Older Adults. Abstract accepted to the Alzheimer's Association International Conference, Los Angeles, California.
11. Smith, JC, Weiss, L, Alfini, A, Won, J, Nyhuis, C, Michelson, C, Simon, C, **Callow, D**, Spira, Adam (July, 2019). Moderating effects of sleep on exercise-induced changes in default mode network connectivity in healthy older adults. Abstract accepted to the Alzheimer's Association International Conference, Los Angeles, California.
12. Weiss, L, Alfini, A, Won, J, Nyhuis, C, Michelson, C, Simon, C, **Callow, D**, Spira, A, & Smith, JC (May, 2019). Sleep duration influences exercise-induced reduction in default mode network functional connectivity in healthy older adults. Abstract accepted to the Annual American College for Sports Medicine Meeting, Orlando, Florida.
13. Alfini, A, Spira, A, Weiss, L, Won, J, Nyhuis, C, Michelson, C, Simon, C, **Callow, D**, & Smith, JC (May, 2019). Effects of acute exercise on functional activation in the aging brain: what is the role of sleep? Abstract accepted to the Annual American College for Sports Medicine Meeting, Orlando,

Florida.

14. Won, J, Alfini, A, Weiss, L, Michelson, C, **Callow, D**, & Smith, JC (February, 2019). Impact of Acute exercise on semantic memory activation in healthy older adults. Abstract accepted to the Annual Meeting of the International Neuropsychological Society, New York, New York City.
15. Alfini, A, Weiss, L, Won, J, Michelson, C, Simon, C, **Callow, D**, Spira, AP, & Smith JC (May, 2018). Decreased salience network functional connectivity accompanies improved mood after exercise in healthy older adults. Abstract accepted to the Annual American College for Sports Medicine Meeting, Minneapolis, Minnesota.
16. **Callow, D**, Won, J, Alfini, A, Weiss, L, & Smith, JC (April, 2018). Effects of acute exercise intensity on neural efficiency in younger adults: an fMRI study. Poster presentation given at 2018 University of Maryland School of Public Health Research Day, College Park, Maryland. **Runner-up for best undergraduate poster and recognized by Delta Omega Gamma Zeta (National Honors Society for Public Health).**
17. Alfini, A, Won, J, Weiss, L, Michelson, C, Simon, C, **Callow, D**, & Smith, JC (February, 2018). Effects of Acute Exercise on Conflict-Dependent Functional Activation in the Aging Brain. Abstract accepted to the Annual Meeting of the International Neuropsychological Society, Washington, District of Columbia.
18. **Callow, D**, He, J, Jia, X (June, 2017). Can Objectively Guided Targeted Temperature Management Improve Recovery for Post Cardiac Arrest Syndrome Patients? Oral presentation given at the 2017 University of Maryland School of Medicine Office of Student Research Mid-Summer Research Retreat, Baltimore, Maryland.
19. **Callow, D**, He, J, & Jia, X (July, 2017). Enhanced neuroprotection with dynamic hypothermia delivery for post cardiac arrest syndrome. Oral presentation given at the 2017 University of Maryland School of Medicine Summer Research Programs Student Research Forum, Baltimore, Maryland.
20. **Callow, D**, Smith, TJ, Dorsey, K, Williams, A, & Smith, JC (April, 2016). Effects of a 6-month exercise intervention on episodic memory in older adults at risk for stroke. Presented in poster format at the 2016 University of Maryland School of Public Health Research Day, College Park, Maryland.

Academic Honors and Awards

2021	James Humphrey Published Research Award, Department of Kinesiology, UMD
2021	Gold Creativity in Crisis Innovation Award, School of Public Health, UMD
2021	Deans Scholar Award, School of Public Health, UMD
2021	Seabury Aging Research Fellowship, Public Health Center on Aging, UMD
2021	American Kinesiology Association Department Writing Award
2021	Outstanding Graduate Assistant Award (<i>top 2% of UMD Graduate Students</i>)
2020	NACS Training Award to attend Diffusion Imaging in Python (DIPY) Workshop
2019	David H. and Louis B. Clarke Scholarship, Department of Kinesiology, UMD
2018	Winston Writing Award for Best Senior Honors Thesis (<i>University Wide</i>)
2018	American Kinesiology Association Department Undergraduate Scholar Award
2018	School of Public Health Delta Omega Gamma Zeta Chapter Poster Award
2016 - 2018	University of Maryland, School of Public Health Dean Scholars Awards
2017	MARC-ACSM Conference Travel Award, Department of Kinesiology, UMD
2017	San Antonio Texas, Barshop Symposium on Aging, Conference Travel Award
2014 - 2015	University of Maryland Undergraduate Dean's Scholarship

Teaching Experience

- 2022 Broadening Participation in Science: Open Science Grant
University of Maryland College Park, Psychology Department
Awarded \$5000 to help develop an open science workshop focused on getting MRI data into the standard and sharable BIDS format.
<https://bids.neuroimaging.io/>
- 2021 KNES445/645 Exercise for Brain Health: Invited Guest Lecture
Primary Instructor: Dr. Carson Smith
Lecture Topic: *Exercise and Sleep*
- 2021 Workshop Development and Presentation
University of Maryland College Park, COMBINE program,
Introduction to High-Performance Computing for the High-Performance Researcher (1.5 Hour Interactive Zoom Workshop)
Tutorial Material and Video Freely Available <http://www.combine.umd.edu/peer-to-peer-tutorials-high-performance-computing-tools/>
- 2020 Teaching Assistant – Asynchronous Online Course
University of Maryland College Park,
Course: KNES131V (Physical Education Activities; Coed Jogging)
- 2020 KNES350 Sport Psychology: Invited Guest Lecturer
Primary Instructor: Dr. Carson Smith
Lecture Topic: *Epidemiology of Physical Activity*
- 2019 Methods Seminar: Diffusion Tensor Imaging Theory and Analysis
- 2019 Psyc409 Topics in Neuroscience: Invited Guest Lecturer
Primary Instructor: Dr. Adam Brockett
Lecture Topic: *Exercise and Microstructural Plasticity in Older Adults*
- 2016 - 2018 Lab Instructor – 2-hour lab sections (taught 2 sections a semester)
University of Maryland College Park,
Courses: BSCI201 (Anatomy 1), BSCI202 (Anatomy 2)

Specialized Training and Certifications

- 2021 - Present Maryland Neuroimaging Center Level 2 Safety Certification
- 2021 UMD library Workshops: Introduction to R for programing
- 2021 Diffusion Imaging in Python (DIPY) Workshop
- 2020 Understanding and Exploring Network Epidemiology in the Time of COVID-19
- 2020 COMBINE Statistical and Machine Learning Workshop
- 2019 Maryland Introduction to Multivariate Pattern Analysis Workshop
- 2019 COMBINE Github Version Control Training
- 2019 Maryland Introduction to Supercomputing Workshop
- 2018 NIH Summer Neuroimaging Course
- 2018 - Present Human Phlebotomy Certification
- 2015 - Present CPR/AED/First Aid Certified Red Cross
- 2015 - Present Maryland Neuroimaging Center Level 1 Safety Certification

Professional Membership

2017 - Present American College of Sports Medicine

Service

2020 - Present NACS grant review committee
2018 - 2021 NACS-Fest recruitment/event planning committee
2020 Developed and Held AFNI MRI Visualization and Preprocessing Workshop
2019 NACS Methods Seminar Presenter

Manuscript reviewer: for Developmental Psychobiology, *Neuroimage*, *Journal of Applied Gerontology*, *American Journal of Geriatric Psychiatry*, *Journal of the International Neuropsychological Society*, *Brain Behavior Research*, *Journal of Alzheimer's Disease*, and *Journal of Gerontology: Medical Sciences*.

Mentorship

2020 – 2021 Kirsten Peterman, Kinesiology Masters Program at UMD, Second Year
2020 – 2021 Leah Sorcher, Clinical Psychology Doctoral Program at UMD, First Year
2020 – 2021 Bala Yaswanthsai Kommula, NACS PhD Student, First Year Peer Mentor
2019 – 2021 TEAM BRAIN (10 student team), Gemstone 4 Year Honors Research Program, Mentor
2019 – 2020 Grace Graynor, Animal Science Undergraduate Student, Graduate Mentor
2019 – 2020 Adewale Awoyemi, UM-ADAPT Student, Public Health Science Undergraduate
2018 – 2019 Nicole Sendner, KNES Undergraduate Honors Student, 2018-2019

Technical Research Skills

MRI Processing – Expertise in FSL, mrtrix3, Freesurfer, AFNI; Proficient in SPM
Analysis – R, JASP, python
Programing – Bash/Shell, MATLAB, High Performance Computing Clusters
GitHub link - <https://github.com/CallowBrainProject>

References

J. Carson Smith, Ph.D. | Professor, University of Maryland College Park
Department of Kinesiology
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Tracy Riggins, PhD | Associate Professor, University of Maryland College Park
Department of Psychology
(301) 405-5905 | riggins@umd.edu

Bradley Hatfield, Ph.D. | Professor, University of Maryland College Park
Department of Kinesiology
Neuroscience and Cognitive Science Program and Center on Aging
301-405-2485 | bhatfiel@umd.edu

Carey Gregory, PhD | Associate Professor, University of Maryland School of Medicine
Department of Microbiology and Immunology

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Xiaofeng Jia, B.M., M.S., PhD | Professor, University of Maryland School of Medicine
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