

Shelby Keye, Ph.D.
Assistant Professor

Department of Health and Kinesiology | University of Illinois at Urbana-Champaign
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Education

- May 2023 **Ph.D., Kinesiology and Community Health**
University of Illinois at Urbana-Champaign
Advisor: Dr. Naiman Khan, Ph. D., R.D.
Dissertation: Physical Activity, Fitness and Obesity Influences on Cognitive and Motor Functions
- May 2019 **M.S., Exercise Science**
University of Massachusetts Boston
Advisor: Dr. Sarah Camhi, Ph.D.
Thesis: The Relationship Between Enjoyment and Physical Activity During a Community Based Youth Physical Activity Program
- May 2017 **B.S., Human Nutrition, Foods, and Exercise**
Virginia Polytechnic Institute and State University (“Virginia Tech”)

Academic Positions

- 2023-current **Assistant Professor**
University of Illinois at Urbana Champaign, Urbana, IL
Director of PLAYFUL laboratory
- 2019- 2023 **Graduate Research Assistant**
University of Illinois at Urbana-Champaign, Urbana, IL
Neurocognitive Health Behavior Laboratory- PI: Naiman Khan, Ph.D., R.D.
- 2018-2019 **Graduate Research Assistant**
UMass Boston, Boston, MA
Project Exercise Prescription Research Study- PI: Dr. Sarah Camhi, Ph.D.

Publications

Peer Reviewed Journal Articles

- 2024 Kim, J., Walk, A. M., **Keye, S. A.**, Kinder, C. J., Cannavale, C. N., Burd, N. A., & Khan, N. A. (2024). Adiposity influences intraindividual variability in behavioral and neuroelectric indices of attentional inhibition. *Psychophysiology*, *00*, e14677. <https://doi.org/10.1111/PSYP.14677>
- Rosok, L. M., Fifield, L. M., Sarma, R., **Keye, S. A.**, Walk, A. M., & Khan, N. A. (2024). Skin Carotenoids are Related to Cognitive Abilities among Toddlers. *The Journal of Nutrition*. <https://doi.org/10.1016/J.TJNUT.2024.09.001>
- Keye, S. A.**, Kinder, C. J., Rosok, L. M., Cannavale, C. N., Walk, A., & Khan, N. A. (2024). Neuroelectric Indices of Pre-Motor Planning and Adiposity are Selectively Related to Balance in Children. *Human Movement Science*, *95*, 103126. <https://doi.org/10.1016/j.humov.2024.103216>

Holthaus, T.A., **Keye, S.A.**, Verma, S., Cannavale, C.N., Burd, N.A., Holscher, H.D., Khan, N.A. (2024) Dietary Patterns and Carotenoid Intake: Comparisons of MIND, Mediterranean, DASH, and Healthy Eating Index. *Nutrition Research*, 126, 58-66. <https://doi.org/10.1016/j.nutres.2024.03.008>

2023

Cannavale, C. N., Edwards, C. G., Liu, R., **Keye, S. A.**, Iwinski, S. J., Holscher, H. D., Renzi-Hammond, L., Khan, N. A., & Khan, N. A. (2023). Macular pigment is inversely related to circulating C-reactive protein concentrations in school-aged children. *Nutrition Research*, 114, 13–19. <https://doi.org/10.1016/j.nutres.2023.03.003>

Keye, S. A., Morales, D., Walk, A. M., Cannavale, C. N., & Khan, N. A. (2023). Neuroelectric indices of attention are related to academic skills in preschool-aged children. *Trends in Neuroscience and Education*, 32, 100205. <https://doi.org/10.1016/j.tine.2023.100205>

Keye, S. A., Kinder, C. J., Ragab, S., Ouzidane, M., Rich, A., Richards, K. A., & Khan, N. A. (2023). Effects of a Summer Physical Activity Program on Fitness and Cognitive Function among Children from Low Socioeconomic Households. *Journal of Cognitive Enhancement*. <https://doi.org/10.1007/s41465-023-00266-x>

Cannavale, C. N., **Keye, S. A.**, Rosok, L. M., Martell, S. G., Holthaus, T. A., Raine, L. R., Mullen, S. P., Holscher, H. D., Hillman, C. H., Kramer, A. F., Cohen, N. J., Hammond, B. R., Renzi-Hammond, L., & Khan, N. A. (2023). Macular Pigment Optical Density and Skin Carotenoids in a Childhood Sample. *The Journal of Nutrition*. <https://doi.org/10.1016/j.tjnut.2023.06.006>

Walk, A. M., Cannavale, C. N., **Keye, S. A.**, Rosok, L., Edwards, C., & Khan, N. (2023). Weight status impacts children's incidental statistical learning. *International Journal of Psychophysiology*, 187, 34–42. <https://doi.org/10.1016/j.ijpsycho.2023.02.003>

2022

Keye, S. A., Kim, J., Cannavale, C. N., Walk, A. M., Burd, N. A., Pindus, D., & Khan, N. A. (2022). Neuroelectric indices of motor response preparation are selectively associated with physical activity among adults with obesity. *International Journal of Psychophysiology*, 182, 200-210. <https://doi.org/10.1016/j.ijpsycho.2022.10.013>

Cannavale, C. N., **Keye, S. A.**, Rosok, L., Martell, S., Holthaus, T. A., Reeser, G., Raine, L. B., Mullen, S. P., Cohen, N. J., Hillman, C. H., Hammond, B. R., Renzi-Hammond, L., & Khan, N. A. (2022). Enhancing children's cognitive function and achievement through carotenoid consumption: The Integrated Childhood Ocular Nutrition Study (iCONS) protocol. *Contemporary Clinical Trials*, 122. <https://doi.org/10.1016/j.cct.2022.106964>

2021

Keye, S. A., Walk, A. M., Cannavale, C. N., Iwinski, S., McLoughlin, G. M., Steinberg, L. G., & Khan, N. A. (2021). Six-minute walking test performance relates to neurocognitive abilities in preschoolers. *Journal of clinical medicine*, 10(4), 584. <https://doi.org/10.3390/jcm10040584>

Book Chapters

2024

Kim, J., **Keye, S. A.**, Pascual-Abreu, M., & Khan, N. A. (2024). Effects of an acute bout of cycling on different domains of cognitive function. In *Progress in Brain Research*. Elsevier B.V. <https://doi.org/10.1016/bs.pbr.2024.01.005>

Manuscripts Under Review

2024

Martell, S., **Keye, S.**, Kim, J., Walk, A., Erdman, J., Adamson, B., Motl, R., Khan, N. Exploring differences in the lateralized readiness potential in persons with multiple sclerosis compared to healthy controls (UNDER REVIEW). *Psychophysiology*

Keye, S., Holthaus, T., Cannavale, C., Rosok, L., Lamblin, E., Renzi-Hammond, L., Holscher, H., & Khan, N. MIND Diet Pattern Is Selectively Associated With Attentional Control in Preadolescent Children (UNDER REVIEW). *Nutrition Research*

Kim, J., Walk, A.M., **Keye, S.A.,** Kinder, C.J., Cannavale, C.N., Burd, N.A., Khan, N.A. Adiposity Influences Intraindividual Variability in Behavioral and Neuroelectric Indices of Attentional Inhibition (UNDER REVIEW). *Psychophysiology*.

Abstracts
2023

Singh, A., Kinder, C., Rosok, L., Khan, N., **Keye, S.** (2023). Household Chaos is Related to Physical Activity in Children from Low-Income Households. *Midwest American College of Sports Medicine Annual Meeting*

Keye, S., Kinder, C., Rosok, L., Khan, N. (2023). Neuroelectric indices of pre-motor planning are selectively related to balance in children. *Psychophysiology*, 60,056.

Rosok, L., Fifield, L., Sarma, R., **Keye, S.,** Walk, A., Khan, N. (2023) Skin Carotenoids and Mismatch Negativity in Toddlers. *Psychophysiology*, 60, 055.

Martell, S., **Keye, S.,** Kim, J., Walk, A., Erdman, J., Adamson, B., Motl, Khan, N. (2023) Understanding the Neural Underpinnings of Motor Impairment in Persons with Multiple Sclerosis Using the Lateralized Readiness Potential. *Psychophysiology*, 60.

Martell, S., **Keye, S.,** Kim, J., Walk, A., Erdman, J., Adamson, B., Motl, Khan, N. (2023) Effects of Multiple Sclerosis Extend to Intra-Individual Variability in the P3 ERP Component. *Psychophysiology*, 60, 069

Kim, J., Walk, A., **Keye, S.,** Kinder, C., Cannavale, C., Burd, N., Khan, N. (2023) Increased Adiposity is Related to Intraindividual Variability in Cognitive Control. *Psychophysiology*, 60, 020

Sarma, R., Fifield, L., Rosok, L., **Keye, S.,** Walk, A., Khan, N., Schulze, K., Hampel, D., Wu, L., Baker, S., Stephenson, K., Shaikh, S., Ali, H., Shehab-Ferdows, S., Allen, L., West, K., & Christian, P. (2023). Maternal Physical Activity During Pregnancy Linked With Better Receptive and Expressive Communications in Toddlers. *Current Developments in Nutrition*, 7(1), 101107.

Rosok, L., Fifield, L., Sarma, R., **Keye, S.,** Walk, A., Khan, N., Verma, S., Kinder, C., Sethi, S., Kim, J., Barnett, M., Abreu, M., Moran, N., Wade, J., Stroh, R., Stoll, B., Hair, A., & Burrin, D. (2023). Increase in Skin Carotenoids is Related to Greater Improvements in Cognition Among Toddlers Across Six Months. *Current Developments in Nutrition*, 7(1), 100204.

Keye, S., Holthaus, T., Cannavale, C., Rosok, L., Lamblin, E., Renzi-Hammond, L., Holscher, H., & Khan, N. (2023). MIND Diet Pattern Is Selectively Associated With Attentional Control in Preadolescent Children. *Current Developments in Nutrition*, 7(1), 100656.

Cannavale, C., **Keye, S.,** Rosok, L., Martell, S., Holthaus, T., Raine, L., Mullen, S., Holscher, H., Hillman, C., Kramer, A., Cohen, N., Hammond, B., Renzi-Hammond, L., & Khan, N. (2023). Macular Pigment Optical Density and Skin Carotenoids in a Midwestern Childhood Sample. *Current Developments in Nutrition*, 7(1), 100203.

Holthaus, T., **Keye, S.**, Verma, S., Cannavale, C., Holscher, H., Khan, N., Hudson, E., Steinhardt, M., Davis, J., & Burgermaster, M. (2023). P14-033-23 Dietary Patterns and Carotenoid Intake: Comparisons of MIND, Mediterranean, DASH, and Healthy Eating Index. *Current Developments in Nutrition*, 7(1).

Keye, S. A., Kinder, C. J., Ragab, S., Ouzidane, M., Rich, A., Richards, K. A., & Khan, N. A. (2023) Effects of a Summer Physical Activity Program on Fitness and Cognitive Function among At-risk Children: 520. *Medicine & Science in Sports & Exercise* 55(9S): p168

Kinder, C. J., **Keye, S. A.**, Cannavale, C. N., Walk, A. M., Khan, N.A. Beyond Measures Of Central Tendency: Aerobic Fitness And Childhood Cognitive Control: 1510. *Medicine & Science in Sports & Exercise* 55(9S): p 507

Kim, J., Paulussen, K.J.M., Keye, S.A., Mehta, T.D., Lamblin, E.N., Pascual-Abreu, M., Burd, N.A., Khan, N.A., Increased P3 Variability Following An Acute Bout Of Cycling: 1511. *Medicine & Science in Sports & Exercise* 55(9S): p 507

2022

Keye, S.A., Walk, A.M., Cannavale, C.N., Khan, N.A. (2022) Neuroelectric indices of attention are related to academic skills in preschool aged children. Society for Neuroscience Conference. *Society for Neuroscience Conference, San Diego, CA*.

Rosok, L., Fifield, L., Sarma, R., **Keye, S.**, Walk, A., Khan, N. (2022). Interrelationships between mismatch negativity and visual evoked potentials and cognitive, language, and motor development among toddlers. *Society for Neuroscience Conference, San Diego, CA*

Keye, S. A., Pindus, D. M., Walk, A. M., Burd, N. A., Holscher, H. D., & Khan, N. A. (2022). Moderate-to-vigorous Physical Activity Is Related To Pre-motor Planning In Persons With Obesity: 783. *Medicine & Science in Sports & Exercise*, 54(9S), 187-188.

McMath, A., **Keye, S.**, Iwinski, S., Cannavale, C., Khan, N., & Donovan, S. (2022). Associations Between Dietary Patterns and Fiber Intake and Cognitive Performance in Early Childhood. *Journal of the Academy of Nutrition and Dietetics*, 122(10), A91.

Fifield, L., Khan, N., Walk, A., **Keye, S.**, Rosok, L., & Sarma, R. (2022). Skin Carotenoids Are Related to Cognitive and Motor Skills Among Toddlers. *Current Developments in Nutrition*, 6(Supplement_1), 59-59.

Yen, T., McMath, A., **Keye, S.**, Iwinski, S., Cannavale, C., Walk, A., & Khan, N. (2022). Skin Carotenoids and Diet Quality Are Associated With Intellectual Ability Among Preschool-Aged Children. *Current Developments in Nutrition*, 6(Supplement_1), 68-68.

Rosok, L., Cannavale, C., **Keye, S.**, Edwards, C., & Khan, N. (2022). Skin Carotenoids and Relations to Intellectual Abilities and Academic Achievement Among School-Aged Children. *Current Developments in Nutrition*, 6(Supplement_1), 66-66.

2020

Keye, S. A., Edwards, C. G., Cannavale, C. N., Iwinski, S. J., Reeser, G. E., Walk, A. D., Mazzoli, E., Barnett, Lisa M., & Khan, N. A. (2020). Relationships Between Adiposity and Parent's Perceptions of Their Children's Fundamental Movement Skills and Coordination. *North American Society for the Psychology of Sport and Physical Activity Conference*

Keye, S., Edwards, C. G., Cannavale, C. N., Iwinski, S. J., Reeser, G. E., Walk, A. D., Mazzoli, E., Barnett, Lisa M., & Khan, N. A. (2020). Parent-report Of Children's Motor Skills Are Selectively Related To Interference Control Among School-aged Children. *Medicine & Science in Sports & Exercise*, 52(7S), 614.

2018 **Keye, S.,** Trudeau, G.C., Hayman, L.L., Troped, P.J., Lindsay, A.C., Wright, J.A., Camhi, S.M (2018). Associations of Self-Efficacy, Social Support, and Stage of Change with Exercise Prescription Adherence. *American College of Sports Medicine: New England Chapter Conference, Providence, RI*

Conference and Symposia Presentations

2023 Relationships between Physical Activity and Behavioral and Neuroelectric Indices of Motor Coordination in Children from Underserved Communities. Oral Presentation at *Illinois Association for Health, Physical Education, Recreation, and Dance* (12/2023) Chicago, IL.

Neuroelectric indices of pre-motor planning are selectively related to balance in children. *Poster presentation at Society for Psychophysiological Research Conference* (9/2023) New Orleans, LA.

MIND Diet Pattern Is Selectively Associated With Attentional Control in Preadolescent Children. *Poster presentation at Nutrition 2023* (7/2023) Boston, MA.

Macular Pigment Optical Density and Skin Carotenoids in a Midwestern Childhood Sample. *Oral presentation at Nutrition 2023* (7/2023) Boston, MA.

Effects of a Summer Physical Activity Program on Fitness and Cognitive Function among At-risk Children. *Oral poster presentation at American College of Sports Medicine Annual Meeting* (6/2023) Denver, CO.

2022 Neuroelectric indices of attention are related to academic skills in preschool aged children. Society for Neuroscience Conference. *Poster Presentation Society for Neuroscience Conference* (11/2022) San Diego, CA

Moderate-to-vigorous Physical Activity Is Related To Pre-motor Planning In Persons With Obesity. *Oral presentation at ACSM Annual Meeting* (6/2022) San Diego, CA.

2020 Relationships between adiposity and Parent's Perceptions of their Children's Fundamental Movement Skills and Coordination. *Virtual Oral Presentation Virtual at NASPSPA Conference* (6/2020)

Parent-report of Children's Motor Skills are Selectively Related to Interference Control among School-aged Children. *Virtual Poster Presentation at ACSM Annual Meeting* (6/2020)

Parent-report of Children's Motor Skills are Selectively Related to Interference Control among School-aged Children. *Invited: Oral Presentation at University of Illinois Urbana Champaign Community of Scholars Seminar* (3/2020) Urbana, IL

2018 Associations of Self-Efficacy, Social Support, and Stage of Change with Exercise Prescription Adherence. *Poster presented at New England ACSM Conference* (11/2018) Providence, RI

Grants

2024 **UIUC-UIC CHAD Interdisciplinary Collaborative Grant Program**

Principal Investigator: “Convergent Effects of Health Behaviors on Neurocognitive and Academic Performance”, \$40,000 (Funded 4/2024)

UIUC Research Board

Principal Investigator: “Using The RE-AIM Framework To Assess The Feasibility Of The Ipals Program: Aimed To Mitigate The Opportunity Gap In Youth From Communities Affected By Poverty”, \$24,072 (Under Review)

ACES FIRE Grant

Co-Investigator: “Enhancing Child Well-being: Addressing Nutrition and Physical Activity Disparities in License-Exempt Home-Based Child Care Settings in Illinois”, \$60,000 (Under review)

Illinois Association for Health, Physical Education, Recreation, and Dance Research Grant

Co-Investigator: “Behavioral indices of Resilience to Early Experiences Study (BREES): The influence of resilience on student health outcomes”, \$5,000 (under review)

Center for Social and Behavioral Sciences Small Grant:

Co-Investigator: “Behavioral indices of Resilience to Early Experiences Study”, \$30,000 (under review)

2022

Illinois Association for Health, Physical Education, Recreation, and Dance Research Grant

Principal Investigator: “Relationships between Physical Activity and Behavioral and Neuroelectric Indices of Motor Coordination in Children from Underserved Communities”, \$4,500 (Funded 5/2022)

ACSM Foundation Doctoral Student Research Grant

Principal Investigator: “iPALS Movement: Effects of a Physical Activity Program on Neural Measures of Motor Function in Children”, \$5000 (Funded 4/2022)

Awards and Honors

2022

Trainee Professional Development Award, *Society for Neuroscience*

Department of Kinesiology and Community Health Robert L. Sprague Graduate Student Award, *University of Illinois Urbana Champaign*

2020-2024

Leadership and Diversity Training Program Protégé, *American College of Sports Medicine*

2020

Student Scholarship Award, *North American Society for the Psychology of Sport and Physical Activity*

2019

Graduate College Fellowship, *University of Illinois Urbana Champaign*

Teaching

Invited Guest Lectures

Spring 2023

KIN 140, Social Sciences of Human Movement, University of Illinois Urbana Champaign
Topic: Implementation of the IPALS Wellness Program

Spring 2021

KIN 201, Physical Activity Research Methods, University of Illinois Urbana Champaign

Topic: Research Methods in the BCNN Lab

Fall 2021 KIN 201, Physical Activity Research Methods, University of Illinois Urbana Champaign
Topic: Physical Activity Assessments with Practical Applications in the IPALS Wellness Program

KIN140, Social Sciences of Human Movement, University of Illinois Urbana Champaign
Topic: Physical Activity Assessments

KIN 444, Physical Activity and Chronic Disease, University of Illinois Urbana Champaign
Lecture 1 Topic: Physical Activity and Obesity
Lecture 2 Topic: Physical Activity and Depression

Fall 2018 EHS 230, Strength and Conditioning, University of Massachusetts Boston
Topic: ACL Injuries and Rehabilitation

Teaching Assistant, University of Massachusetts Boston

2017-2019 EHS 490, Exercise and Health Sciences Internship
EHS 230, Strength and Conditioning
Pediatric Exercise Development (Course Development)

Community Seminar Series

Spring 2022 The Impact of Cutting Physical Activity Opportunities in Schools

Spring 2021 Stand Up Against Sitting Down: The Benefits of Sitting Less

Fall 2020 Active Aging: Using Exercise to Maintain Health Across the Lifespan

Mentorship

Undergraduate Research Symposium Presentations

2022 Mariam Ouzidane & Kenley Grimmer, **Shelby Keye**, Christopher Kinder, Kevin A. Richards, Naiman A. Khan
Effectiveness of a Youth Summer Physical Activity Program for Children from Low-Income Households in Champaign County. Oral presentation at Undergraduate Research Symposium. University of Illinois Urbana-Champaign. 2022. April 28. Urbana-Champaign, IL

Diana Morales & Sarah Kravitz, **Shelby Keye**, Arden McMath, Corinne Cannavale, Naiman A. Khan
Diet, Physical Activity, and Aerobic Fitness Relationships with Academic Performance in Preschool Aged Children. Poster presented at Undergraduate Research Symposium. University of Illinois Urbana-Champaign. 2022. April 28. Urbana-Champaign, IL.

2021 Alyssa Martin, **Shelby Keye**, Naiman A. Khan
Relationship Between Early Life Developmental Milestones and Coordination Skills in Later Childhood. Poster presented at Undergraduate Research Symposium. University of Illinois at Urbana-Champaign. 2021. Virtual

Abigail Rich & Carolyn Francart, **Shelby Keye**, Arden McMath, & Naiman A. Khan
Exploring Weight Gain and Diet Quality in Women During Late Pregnancy. Poster presented at Undergraduate Research Symposium. University of Illinois at Urbana-Champaign. 2021. Virtual

Meghan Vanasco, **Shelby Keye**, Nate Willis, Kevin Richards, Naiman Khan

The impact of Covid-19 on lifestyle behaviors among children living in Champaign County. Poster presented at Undergraduate Research Symposium. University of Illinois at Urbana-Champaign. 2021. Virtual

2020 Maria Derrig & Alyssa Martin, **Shelby Keye**, Arden McMath, Naiman A. Khan
An Investigation of the Impact of Breastfeeding on Childhood Adiposity. 2020. Virtual

Service

2022- Graduate Program Advisory Committee
2020- Students Advising on Graduate Education (SAGE)
2020-2022 Lifestyle Medicine Ambassador

Training and Certifications

2022 University of Illinois Certificate in Foundations of Teaching
2018 ACSM Exercise is Medicine Ambassador

Society Memberships

2023-current American Society for Nutrition
2023-current Society for Psychophysiological Research
2018-current American College of Sports Medicine
Midwest Chapter of ACSM (joined 2024)
2022-2023 Society for Neuroscience
2019-2020 North American Society for the Psychology of Sport and Physical Activity