

Kirk I. Erickson, Ph.D

University of Illinois at Urbana-Champaign
Beckman Institute for Advanced Science and Technology
405 N. Mathews Ave
Urbana, IL 61801

kiericks@uiuc.edu
work: 217-333-1553
home:217-398-6228

Post-doctoral history:

- 2005 - Structural and functional neuroimaging research on aging interventions (e.g. exercise, nutrition, hormone replacement therapy) and neuroplasticity in human models. Dr. Arthur Kramer's laboratory.
- 2005 - Molecular and behavioral studies of exercise and hormone treatments on brain plasticity, learning and memory in animal models. Structural and functional MRI with mouse and rat brain tissue to assess relationship between histology and volume. Dr. Donna Korol's laboratory.

Academic history:

- 1999 - 2005 University of Illinois at Urbana-Champaign
Ph.D awarded in Psychology – 2005
Major: Psychology: Brain and Cognition
Minor: Cognitive Psychology
Minor: Quantitative Psychology
- 1996-1999 Marquette University, Milwaukee, WI
B.A. Psychology, Philosophy; cum laude
- 1998 St. Clare's College, Oxford, UK
- 1995 University of Wisconsin at Oshkosh

Teaching Experience:

Teaching assistantships:

- 2005 Introduction to Psychology
2003 Introduction to Psychology

Guest lectures:

- 2005 Neurobiology of Aging (Dr. Donna Korol)
2005 Estrogen and aging (Dr. Donna Korol)
2002 Neuropsychology (Dr. Wendy Heller)
2002 Cognitive Psychology (Dr. Mike Wilson)

Mentoring:

Last updated 02/21/06

2001-2006 Students enrolled in Undergraduate research credit, University of Illinois

Professional Memberships:

2005- Organization for Human Brain Mapping
2002- Cognitive Neuroscience Society
2000- Society for Neuroscience
1998-1999 President of Psi Chi-Marquette University Chapter
1998 Member of Phi Sigma Tau-National Honors Society in Philosophy
1998 Member of Psi Chi-National Honors Society in Psychology

Clinical Experience:

2001- 2002 Neuropsychological Assessment at University of Illinois.
 Assessed and developed rehabilitative measures for
 people with psychological and neurological disorders.
1998-1999 Autistic Treatment Center, Milwaukee, WI
1998 Internship at Oxford School for Autistic Children

Fellowships and awards:

2004 Psychology Department travel award
2004 Graduate College travel award
2004 NIMH Cognitive Psychophysiology Training Grant
2003-2004 Paul D. Doolen Scholarship for the Study of Aging
2002-2003 Beckman Institute Predoctoral Fellowship
2001-2002 NIMH Cognitive Psychophysiology Training Grant

Ad hoc referee:

Cognitive, Affective, and Behavioral Neuroscience
Human Brain Mapping
Journal of Aging and Physical Activity
Cerebral Cortex
The Cleft Palate-Craniofacial Journal
Psychonomic Bulletin & Review

Publications:

Bherer, L, Kramer, AF, Peterson, M, Colcombe, SJ, **Erickson**, KI, Becic, E. Testing the Limits of Cognitive Plasticity in Older adults: Application to Attentional Control. *Acta Psychologica*. In press.

Erickson, KI, Colcombe, SJ, Wadhwa, R., Bherer, L., Peterson, M., Scalf, P., Kim, JS, Alvarado, M, Kramer, AF. Training-induced functional activation changes in dual-task processing: An fMRI study. *Cerebral Cortex*. Epub ahead of print, 2006.

Erickson, KI, Colcombe, SJ, Wadhwa, R, Bherer, L, Peterson, M, Scalf, P, Kim, JS, Alvarado, M, Kramer, AF. Training-induced plasticity in older adults: effects of training on hemispheric asymmetry. *Neurobiology of Aging*. Epub ahead of print, 2006.

Erickson, KI, Colcombe, SJ, Elavsky, S, McAuley, E, Korol, DL, Scalf, PE, Kramer, AF. Interactive effects of fitness and hormone treatment on brain health in postmenopausal women. *Neurobiology of Aging*. Epub ahead of print, 2006.

Bherer, L, Kramer, AF, Peterson, M, Colcombe, SJ, **Erickson**, KI, Becic, E. Training effects on dual-task performance: are there age-related differences in plasticity of attentional control?. *Psychology and Aging* 20(4): 695-709, 2005.

Kramer, AF, Colcombe, SJ, McAuley, E, Scalf, PE, **Erickson**, KI. Fitness, Aging, and Neurocognitive function. *Neurobiology of Aging*. 26 Suppl 1: 124-7, 2005.

Erickson, KI, Colcombe, SJ, Wadhwa, R, Bherer, L, Peterson, M, Scalf, P, Kramer, AF. Dual-task related brain activity after minimizing task-preparation. *NeuroImage* 28 (4): 967-79, 2005.

Colcombe, SJ, Kramer, AF, **Erickson**, KI, Scalf, P. The implications of cortical recruitment and brain morphology for individual differences in cognitive performance in aging humans. *Psychology and Aging*. 20(3): 363-75, 2005.

Erickson, KI, Colcombe, SJ, Raz, N, Korol, DL, Scalf, P, Webb, A, Cohen, NJ, McAuley, E, Kramer, AF. Selective sparing of brain tissue in post-menopausal women receiving hormone replacement therapy. *Neurobiology of Aging*. 26 (8): 1205-13, 2005.

Nielson, KA, Yee, D, **Erickson**, KI. Memory enhancement by a semantically unrelated emotional arousal source induced after learning. *Neurobiology of Learning and Memory* 84 (1): 49-56, 2005.

Erickson, KI, Ho, R, Colcombe, SJ, Kramer, AF. A structural equation modeling analysis of attentional control: an event-related fMRI study. *Cognitive Brain Research* 22, 349-357, 2005.

Colcombe, SJ, Kramer, AF, McAuley, E, **Erickson**, KI, Scalf, P. Neurocognitive aging and cardiovascular fitness: recent findings and future directions. *Journal of Molecular Neuroscience* 24 (1), 9-14, 2004.

Colcombe, SJ, Kramer, AF, **Erickson**, KI, Scalf, P, McAuley, E, Cohen, NJ, Webb, A, Jerome, GJ, Marquez, DX, Elavsky, S. Cortical recruitment and aging: The influence of cardiovascular fitness on executive brain function as assessed by event-related fMRI. *Proceedings of the National Academy of Sciences USA* 101 (9): 3316-21, 2004.

Erickson, KI, Milham, MP, Colcombe, SJ, Kramer, AF, Banich, MT, Webb, A, & Cohen, NJ. Behavioral Conflict, Anterior Cingulate Cortex, and Experiment Duration: Implications of Diverging Data. *Human Brain Mapping* 21 (2): 96-105, 2004.

Kramer AF, Colcombe, SJ, McAuley, E, **Erickson**, KI, Scalf, P, Jerome, GJ, Marquez, DX, & Webb, AG. Enhancing Brain and Cognitive Function of Older Adults through Fitness Training. *Journal of Molecular Neuroscience* 20(3): 213-21, 2003.

Colcombe, SJ, **Erickson**, KI, Raz, N, Webb, AG, Cohen, NJ, McAuley, E, & Kramer, AF, Aerobic Fitness Reduces Brain Tissue Loss in Aging Humans. *Journal of Gerontology: Biological and Medical Sciences* 58(2): 176-80, 2003.

Kramer, AF, Colcombe, SJ, **Erickson**, KI, Belopolsky, A, McAuley, E, Cohen, NJ, Webb, A. Effects of Aerobic Fitness Training on Human Cortical Function: A Proposal. *Journal of Molecular Neuroscience*. 19(1-2): 227-31, 2002.

Milham, MP, **Erickson**, KI, Banich, MT, Kramer, AF, Webb, A, Wszalek, T, Cohen, NJ. Attentional Control in the Aging Brain: Insights From an fMRI Study of the Stroop Task. *Brain & Cognition*. 49(3): 277-96, 2002.

Submitted or In preparation:

Colcombe, SJ, **Erickson**, KI, Scalf, PE, Kim, JS, Wadhwa, R, McAuley, E, Kramer, AF. Aerobic exercise training increases brain volume in aging humans: evidence from a randomized clinical trial. Submitted *Neurobiology of Aging*.

Chang, S, **Erickson**, KI, Ambrose, P, Hasegawa-Johnson, M. Structural brain abnormalities in children who stutter: preliminary evidence for altered development in speech-relevant sensorimotor regions. Submitted *Journal of Fluency Disorders*.

Colcombe, SJ, Wadhwa, R, **Erickson**, KI, Alvarado, M, Kim, JS, Scalf, PE, Kramer, AF. Old brains do not always learn new tricks: intact functional specificity in the aging prefrontal cortex. Submitted *Neuron*.

Scalf, PE, McCarley, JS, Colcombe, SJ, **Erickson**, KI, Alvarado, M, Kim, JS, Wadhwa, R, Kramer, AF. Age-differences in the impact of functional field of view (FFOV) training on brain activation. Submitted *Journal of Gerontology*.

Scalf, PE, Colcombe, SJ, McCarley, JS, Erickson, KI, Kim, JS, Alvarado, M, Wadhwa, RP, Kramer, AF. Divided attention in the visual field: evidence from the functional field of view (FFOV) task. Submitted.

Last updated 02/21/06

Erickson, KI, Wadhwa, R, Kramer, AF, Kim, JS, Sutton, B, Colcombe, SJ. Modulation of color sensitive regions during performance of the stroop task depends on level of conflict. In Preparation. *Neuron*.

Erickson, KI, Wadhwa, R, Kramer, AF, Colcombe, SJ. Older adults show greater specialization for word information than younger adults: evidence against dedifferentiation. In Preparation. *Nature-Neuroscience*.

Erickson, KI, Suever, BL, Wadhwa, R, Colcombe, SJ, McAuley, E, Kramer, AF. B Vitamins and anti-oxidants spare grey matter tissue in aging humans. In preparation *NeuroImage*.

Erickson, KI, Korol, DL. The effects of hormone replacement therapy on the structure and function of the brain in postmenopausal women: a review. In preparation *Psychological Science*.

Erickson, KI, Kramer, AF. Cognitive training, aerobic fitness training, and neurocognitive functioning in old humans. In preparation. *Journal of Applied Physiology*.

Talks:

Erickson, K.I. & Kramer, A.F. *Aging & Fitness: Implications for cognitive and cortical plasticity?* Presented at Winter Conference on Brain Research (January, 2005), Breckenridge, CO.

Behrer, L, Kramer, A.F., Colcombe, S.J., **Erickson**, K.I., Peterson, M., McCarley, J., Becic, E. *Cognitive plasticity and aging: The effect of laboratory-based dual-task training on attentional time-sharing.* Presented at Cognitive Aging Conference (April, 2004), Atlanta, GA.

Nielson, K.A., Yee, D., **Erickson**, K.I., Bryant, T. *Enhancement of delayed memory retrieval by arousal after learning: A possible intervention approach.* Paper presented to the Society for Applied Research in Memory and Cognition (July, 2003), Aberdeen, Scotland, UK.

Kramer, A.F., Colcombe, S.J., **Erickson**, K.I., Scalf, P. *Enhancing Cognitive Vitality in Older Adults.* Presented at Chicagoland Symposium on Functional MRI of the Brain in Health and Disease (2003), Chicago, IL.

Colcombe, S., **Erickson**, K.I., Kramer, A.F. *Neurocognitive Decline in Older adults: Descriptions and Developments.* Presented at Life Long Learning Conference (2002), Yokohama, Japan.

Colcombe S., Kramer A.F., **Erickson**, K.I., Belopolsky, A., Webb A., Cohen N., McAuley E., Wszalek T. *An fMRI examination of models of age-related decline in cognitive functioning.* Presented at the Cognitive Aging Conference (2002), Atlanta, GA.

Posters:

Last updated 02/21/06

Chang, S, **Erickson**, K.I., Ambrose, N. *Structural brain abnormalities in children who stutter: preliminary evidence for altered development in speech-relevant sensorimotor regions*. Presented at Society for Neuroscience (November, 2005), Washington D.C.

Erickson, K.I., Colcombe, S.J., Wadhwa, R., Bherer, L., Peterson, M., Scalf, P., Kim, J., Alvarado, M., Kramer, A.F. *The neural correlates of dual-task performance after minimizing effects of task-preparation*. Presented at Organization for Human Brain Mapping (June, 2005), Toronto, CA.

Wadhwa, R., **Erickson**, K.I., Colcombe, S.J., et al. *An fMRI investigation of inhibitory control in younger and older adults*. Presented at Organization for Human Brain Mapping (June, 2005), Toronto, CA.

Erickson, K.I., Colcombe, S.J., Elavsky, S., Korol, D.L., Scalf, P., McAuley, E., Kramer, A.F. *Mind your body, spare your brain: interactive effects of fitness and estrogen treatment on brain and cognitive health*. Presented at Cognitive Neuroscience Society (April, 2005), New York, NY.

Scalf, P, Colcombe, SJ, Kramer, AF, **Erickson**, KI, Kim, J, Alvarado, M, Wadhwa, R. Title of talk. Presented at Organization for Human Brain Mapping (June, 2004), Budapest, Hungary.

Erickson , K.I., Milham, M.P., Colcombe, S.J., Kramer, A.F., Banich, M.T., Webb, A., Cohen, N.J. *Behavioral conflict, anterior cingulate cortex, and experiment duration: Implications of diverging data*. Presented at Cognitive Neuroscience Society (April, 2004), San Francisco, CA.

Erickson , K.I., Colcombe, S.J., Korol, D., Scalf, P., Cohen, N.J., Webb, A., Kramer, A.F. *Hormone Replacement Therapy Spares Brain Tissue in Postmenopausal Women*. Presented at Cognitive Aging Conference (April, 2004), Atlanta, GA.

Colcombe, SJ, Kramer, AF, **Erickson**, KI, Scalf, P. *Cardiovascular fitness, cortical plasticity and aging*. Presented at Cognitive Aging Conference (April, 2004), Atlanta, GA.

Scalf, P., Colcombe, S.J., Kramer, A.F., **Erickson** , K.I. *Age-related patterns of cortical recruitment during response inhibition remains consistent across task and performance*. Presented at Cognitive Aging Conference (April, 2004), Atlanta, GA.

Last updated 02/21/06

Erickson, K.I., Ho, M.H., Colcombe, S.J., Kramer, A.F. *A Structural Equation Modeling Analysis of Attentional Control: An Event-Related fMRI Study*. Presented at Cognitive Neuroscience Society (2003), New York, NY.

Colcombe S.J., **Erickson K.I.**, Raz N., Webb A., Cohen N.J., McAuley E. and Kramer, A.F. *Fitness Reduces Age-Related Decline in Human Brain Tissue Density*. Presented at Cognitive Neuroscience Society (2003), New York, NY.

Nielson, K.A., Yee, D., Lapka, L.A., **Erickson, K.I.** *Emotion-Induced Modulation of Story Memory*. Presented at the Midwestern Psychological Association (2001), Chicago, IL.

Banich, M.T., Milham, M.P., **Erickson, K.I.**, Wzsalek, T., Webb, A., Kramer, A., Cohen, N.J., Barad, V., Atchley, R. *Components of the Neural Network Underlying the Stroop Task in the Elderly as Assessed by fMRI*. Presented at the Society for Neuroscience (2000), New Orleans, LA.

Heller, W., Banich, M.T., Herrington, J.D., Mohanty, A., Fisher, J.E., Jacobson, B.L., Scalf, P., **Erickson, K.I.**, Koven, N.S., Compton, R.J., Miller, G.A. *Differential Brain Activation in Response to Positive and Threat Stimuli in an Emotional Stroop Paradigm*. Presented at Society for Research in Psychopathology (2000), Boulder, CO.