BIOGRAPHICAL SKETCH

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NAME: Brandon L. Alderman

eRA COMMONS USER NAME (credential, e.g., agency login): alderman1

POSITION TITLE: Associate Professor of Kinesiology and Health

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of Wyoming	B.S.	05/1997	Biology
University of Wyoming	B.A.	05/1998	Secondary Science Education
University of Wyoming	M.S.	05/2000	Kinesiology
Arizona State University	Ph.D.	08/2004	Kinesiology and Health

A. Personal Statement

I have established a patient-oriented research program to study how exercise and other behavioral interventions can be used to enhance physiological, neurocognitive and psychological resilience. My research program incorporates psychophysiological and cognitive neuroscience techniques, including event-related potentials (ERPs) and impedance cardiography, to better understand acute and chronic adaptations to exercise, and how knowledge of these adaptations can be applied to intervention development. The ultimate goal is to better understand how exercise and/or physical activity may improve emotional reactivity and cognitive function among at-risk patient populations, including patients in cardiovascular rehabilitation.

Four relevant publications, on the issues mentioned above, are as follows (see also below, under Contributions to Science, for other relevant papers):

1. Brush, C.J., Ehmann, P.J., Hajcak, G., Selby, E.A., & **Alderman, B.L.** (in press). Using multilevel modeling to examine blunted neural responses to reward in major depression. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.
2. Olson, R. L., Brush, C. J., Ehmann, P. J., & **Alderman, B. L.** (2017). A randomized trial of aerobic exercise on cognitive control in major depression. *Clinical Neurophysiology, 128*, 903-913. doi:10.1016/j.clinph.2017.01.023. [PMID: 28402866]
3. Olson, R. L., Chang, Y. K., Brush, C. J., Kwok, A. N., Gordon, V. X., & **Alderman, B. L.** (2016). Neurophysiological and behavioral correlates of cognitive control during low and moderate intensity exercise. *NeuroImage, 131*, 171-180. [PMID: 26458515]
4. **Alderman, B. L.**, Olson, R. L., Brush, C. J., & Shors, T. J. (2016). Mental and physical (MAP) training: Combining meditation and aerobic exercise reduces depression and rumination while enhancing synchronized brain activity. *Translational Psychiatry, 6*, e726; doi:10.1038/tp.2015.225 [PMID: 26836414]

B. Positions and Honors

Positions and Employment

2004-05	Assistant Professor in Psychology, University of Minnesota Duluth
2005-09	Assistant Professor of Kinesiology, University of Wyoming
2009-16	Assistant Professor of Kinesiology and Health, Rutgers University
2011-	Graduate Program Director in Kinesiology and Applied Physiology, Rutgers University
2016-	Associate Professor and Vice Chair of Kinesiology and Health, Rutgers University

Honors

2008	Young Investigator Award, College of Health Sciences, University of Wyoming

C. Contributions to Science

1. Much of my work has focused on identifying the specific mechanisms whereby exercise promotes physiological, neurocognitive, and psychological resilience. To accomplish these goals, I have identified neurophysiological and cognitive deficits in individuals with various biobehavioral disorders, including major depressive disorder (MDD) and mild traumatic brain injury (mTBI). Second, I have developed novel exercise-related interventions that mediate these deficits and thereby improve mental and physical health outcomes.
    a. Olson, R. L., Brush, C. J., Ehmann, P. J., Buckman, J. F., & **Alderman, B. L.** (2018, in press). A history of sport-related concussion is associated with sustained deficits in conflict and error monitoring. *International Journal of Psychophysiology*. doi.org/10.1016/j.ijpsycho.2018.01.006
    b. Brush, C. J., Ehmann, P. J., Olson, R. L., Bixby, W. R., & **Alderman, B. L.** (2017, in press). Do sport-related concussions result in long-term cognitive impairment? A review of event-related potential research. *International Journal of Psychophysiology*. doi:10.1016/j.ijpsycho.2017.10.006**A**
    c. Shors, T. J., Olson, R. L., Bates, M. E., Selby, E. A., & **Alderman, B. L.** (2014). Mental and physical (MAP) training: A neurogenesis-inspired intervention that enhances health in humans. *Neurobiology of Learning and Memory, 115*, 3-9. [PMID: 25219804]
    d. **Alderman, B. L.**, Olson, R. L., Bates, M. E., Selby, E. A., Buckman, J. F., Brush, C. J., Panza, E. A., Kranzler, A., Eddie, D., & Shors, T. J. (2015). Rumination in major depressive disorder is associated with impaired neural activation during conflict monitoring. *Frontiers in Human Neuroscience*, 9:269. doi:10.3389/fnhum.2015.00269. [PMCID: 4428129]

2. For the past few years, I have been conducting studies examining the influence of exercise or fitness on select aspects of cognitive processing. I have been focusing on prefrontally-mediated cognitive control processes, since they are disproportionately influenced by exercise interventions. We are one of the first laboratories to assess cognitive control processes *during exercise*, in part because of the inherent movement artifact present during exercise. This work is directly relevant to the current application.
    a. Ehmann, P. J., Brush, C. J., Olson, R. L., Bhatt, S. N., Banu, A. H., & **Alderman, B. L.** (2017). Active workstations do not impair executive function in young and middle-age adults. *Medicine & Science in Sports & Exercise*, 49, 965-974. doi:10.1249/MSS.0000000000001189. [PMID: 28009785]
    b. Brush, C. J., Olson, R. L., Ehmann, P. J.., Osovsky, S., & **Alderman, B. L.** (2016). Dose-response and time-course effects of acute resistance exercise on executive function. *Journal of Sport & Exercise Psychology*, 38, 396-408. doi:10.1123/jsep.2016-0027. [PMID: 27385719]
    c. **Alderman, B. L.**, & Olson, R. L. (2014). The relation of aerobic fitness to cognitive control and heart rate variability: A neurovisceral integration study. *Biological Psychology*, 99, 26-33. [PMID: 24560874]
    d. **Alderman, B. L.**, Olson, R. L., & Mattina, D. M. (2014). Cognitive function during low-intensity walking: A test of the treadmill workstation. *Journal of Physical Activity and Health, 11*, 752-758. [PMID: 25078520]

3. For the past 10 years I have conducted studies on the relationships between exercise and various affective states, including depression. The goal of this work is to determine the effectiveness of various forms of exercise in the prevention and treatment of serious mental illness.

a. Shors, T. J., Millon, E. M., Chang, H. Y. M., Olson, R. L., & **Alderman, B. L.** (2017). Do sex differences in rumination explain sex differences in depression? *Journal of Neuroscience Research*, 95(1-2), 711-718.
b. **Alderman, B. L.**, & Olson, R. L. (2016). Prescribing exercise for mental health: Dose-response and exercise mode considerations. In H. Budde and M. Wegner (Eds.), *Exercise and Mental Health*. London: Taylor and Francis.
c. Arent, S. M., & **Alderman, B. L.** (2013). Effects of resistance exercise on anxiety and depression. In J. Ciccolo and W. Kraemer (Eds.), *Resistance Training for the Prevention and Treatment of Chronic Disease*. London: Taylor and Francis.
d. **Alderman, B. L.**, Arent, S. M., Landers, D. M., & Rogers, T. J. (2007). Aerobic exercise intensity and time of stressor administration influence cardiovascular responses to psychological stress. *Psychophysiology, 44*, 759-766. [PMID: 17584185]

4. One focus of my work has been in understanding exercise and physical activity behavior. To address this, I focused on parental and contextual influences on youth physical activity. This work demonstrated the complex nature of the parent-child relationship in physical activity contexts as well as the importance of physical activity and exercise opportunities during the school day on the daily amounts of physical activity for children and youth.
    a. Liu, J. H., **Alderman, B. L.**, Song, T. F., Chen, F. T., Hung, T. M., & Chang, Y. K. (2017). A randomized controlled trial of coordination exercise on cognitive function in obese adolescents. Psychology of Sport and Exercise, 34, 29-38. https://doi.org/10.1016/j.psychsport.2017.09.003
    b. **Alderman, B. L.**, Benham-Deal, T., Beighle, A., Erwin, H. E., & Olson, R. L. (2012). Physical education's contribution to daily physical activity among middle school youth. *Pediatric Exercise Science, 24*, 634-648. [PMID: 23196768]
    c. Beets, M. W., Cardinal, B. J., & **Alderman, B. L.** (2010). Parental social support and the physical activity-related behaviors of youth: A review. *Health Education & Behavior, 37*, 621-644. [PMID: 20729347]
    d. **Alderman, B. L.**, Benham-Deal, T. B., & Jenkins, J. M. (2010). Change in parental influence on children's physical activity over time. *Journal of Physical Activity and Health 7*, 60-67. [PMID: 20231756]

Complete List of Published Work in My Bibliography:

http://www.ncbi.nlm.nih.gov/sites/myncbi/1fefuqiqt9755/bibliography/48249358/public/?sort=date&direction=ascending

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

2013/09/01-2018/08/31
K24 AA021778-01A1, National Institute on Alcohol Abuse and Alcoholism
(NIAAA) BATES, MARSHA E (PI) ALDERMAN, BRANDON L (Mentee)
THE BAROREFLEX MECHANISM: TRANSLATION TO AUD TREATMENT AND PROGNOSTIC MODELS
The goal is to translate a new model of neurocardiac signaling into behavioral interventions for AUDs, to build prognostic models, and mentor early career scientists in patient oriented alcohol research. Some fMRI scans for pilot data collection are being supported by this award.