

# CURRICULUM VITAE

## Elizabeth A. Hubbard

### INSTITUTIONAL ADDRESS

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Department of Kinesiology  
Berry College  
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### EDUCATION

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#### Doctor of Philosophy in Kinesiology

August 2017

University of Illinois at Urbana-Champaign

*Dissertation Title:* “The acute effects of high-intensity interval and continuous cardiovascular exercise on physiological and functional outcomes in persons with multiple sclerosis”

*Advisor:* Robert W Motl

#### Master of Science in Exercise Science

May 2013

University of South Florida

*Thesis Title:* “The effects of exercise modality on state body image in college females”

*Advisor:* Marcus Kilpatrick

#### Bachelor of Science in Psychobiology

May 2010

Centre College

### TEACHING EXPERIENCE

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#### Assistant Professor

August 2017 – Present

*Berry College*

- Instructor of records for Nutrition, Exercise Psychology, Neuromuscular Aspects of Exercise, Sport Nutrition & Metabolism, and Medical Aspects of Sport courses (Fall 2017, Spring 2018)
- Led classroom-based discussions and activities, designed semester-long projects to facilitate individual motivation for learning individual needs, goals, and health status, designed and graded assessments of student learning
- Assisted students with online nutritional software and assessment in Nutrition & Sport Nutrition courses

**Teaching Assistant****August 2014 – May 2017***University of Illinois at Urbana-Champaign*

- Provided guided feedback and grading for Health and Wellness (Fall 2016) group projects in the form of public service announcements that persuade target audiences to participate in more physical activity
- Facilitated and graded online discussion forums for introductory Health and Wellness (Fall 2014, Spring 2015) and Sport in Society (Fall 2016)
- Proctored examinations, graded weekly activity assignments, and amalgamated informal feedback from students to produce recommendations for improving future course materials and student success in the lecture-based course on Health and Wellness (Fall 2015, Spring 2016)

**Creating Research Experiences and Activities Through Teaching Enhancement Mentor & Graduate Assistant****August 2012 – May 2013***University of South Florida*

- Taught students foundational research skills that acquainted them with the research process and facilitated a greater capacity for evaluating and applying research in clinical exercise testing and prescription
- Assisted student groups with developing a research question, writing a research proposal, collecting and analyzing relevant data and presenting data in a conference-style setting and in manuscript form
- Lectured to students regarding research design, data collection, and proper data analysis

**Course Instructor****August 2011 – May 2013***University of South Florida*

- Led classroom-based discussions and activities, designed semester-long personal wellness projects to facilitate individual motivation for learning individual needs, goals, and health status, designed and graded assessments of student learning in two sections of a lecture-based course on Personal Wellness (Fall 2011)
- Assisted students with online nutritional software and assessment, facilitated and graded online discussion amongst students on relevant nutritional topics, and designed and graded assessments of student learning for an online survey of Human Nutrition (Spring 2012, Fall 2012, Spring 2013)
- Designed online platform using multimedia primary sources to encourage student analysis, interacted with students and graded online discussion forums, and designed and graded assessments of student learning for an online course of Personal Wellness (Spring 2012, Fall 2012, Spring 2013)

## RESEARCH EXPERIENCE

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### Research Assistant

June 2013 – July 2017

*Exercise Neuroscience Research Lab, Dr. Robert Motl, Department of Kinesiology and Community Health, University of Illinois at Urbana-Champaign*

- Conducted outcome assessments and data analysis on 10 separate research projects; outcome assessments included maximal exercise tests with indirect spirometry, Wingate and isometric knee extension and flexion assessments of anaerobic power, walking, gait, and balance assessments, cognitive assessments ranging from information processing speed to executive functioning, core temperature analysis, retinal thickness analysis using optical coherence tomography, body composition assessment with Dual-Energy X-ray absorptiometry, urine analysis for sodium content, and grey matter, white matter, and fractional anisotropy analysis using Magnetic Resonance Imaging and Diffusion Tensor Imaging
- Served as an exercise trainer and behavioral coach for two, six-month long exercise interventions in persons with MS
- Designed website and interactive story modules for increasing physical activity levels through walking as part of a collaborative team
- Collaborated and coordinated with faculty, staff scientists, health care doctors and staff, and fellow graduate students across departments

### Research Assistant

May 2012 – September 2012

*Heat Stress Lab, Dr. Candi Ashley and Dr. Thomas Bernard, Department of Public Health, University of South Florida*

- Collected oxygen consumption via metabolic cart and Douglas bag; collected temperature data using three separate modalities: rectal probe, skin electrode and ingestible pill temperature devices to examine the effects of various cooling devices (ice pack vest, cooled water flow vest, and cooled, wet vest) on heat stress outcomes in healthy adults while walking

### Research Assistant

June 2011 – May 2013

*Health and Exercise Science Lab, Dr. Marcus Kilpatrick, University of South Florida*

- Managed maximal and high-intensity interval cycling sessions to identify the effects of interval duration on affective and exertional responses in healthy adults.
- Collected blood pressure with sphygmomanometer, affect, and ratings of perceived exertion data

**RightBRAIN Fellow****May 2010 – August 2010**

*Behavioral Research Advancements in Neuroscience (BRAIN) program, Center for Behavioral Neuroscience, National Science Foundation Science and Technology Center Yerkes National Primate Research Center, Dr. Jocelyne Bachevalier, Developmental and Cognitive Neuroscience Department, Emory University*

- Conducted stimulus-reward associative learning paradigm (object discrimination reversal task) in rhesus macaques with and without perirhinal cortex lesions
- Compiled visual paired comparison data for data analysis
- Performed primate histological procedures by preparing and plating rhesus macaque brain slices

**PUBLISHED MANUSCRIPTS**

1. Kinnett-Hopkins D, Learmonth Y, **Hubbard E**, Pilutti L, Roberts S, Fanning J, Wójcicki T, McAuley E, Motl R. The interpretation of physical activity, exercise, and sedentary behaviours by persons with multiple sclerosis. *Disabil Rehabil.* 2017 Nov 7:1-6. doi: 10.1080/09638288.2017.1383519. [Epub ahead of print] PubMed PMID: 29111839.
2. Motl RW, **Hubbard EA**, Bollaert RE, Adamson BC, Kinnett-Hopkins D, Balto JM, Sommer SK, Pilutti LA, McAuley E. Randomized controlled trial of an e-learning designed behavioral intervention for increasing physical activity behavior in multiple sclerosis. *Multiple Sclerosis Journal: Experimental, Translational, and Clinical.* 2017 (in press).
3. **Hubbard EA**, Motl R.W., Fernhall B. Sedentary behavior and blood pressure in MS. *International Journal of MS Care.* 2017.
4. Motl, RW, Balto, JM, Ensari, I, & **Hubbard, EA.** Self-efficacy and walking performance in multiple sclerosis. *Journal of Neurologic Physical Therapy.* 2017 Apr;41;2:114-118.
5. Hervault M, Balto JM, **Hubbard EA**, Motl RW. Reliability, precision, and clinically important change of the Nine-Hole Peg Test in individuals with multiple sclerosis. *Int J Rehabil Res.* 2017 Mar;40(1):91-93.
6. Balto JM, Ensari I, **Hubbard EA**, Khan N, Barnes JL, Motl RW. Co-occurring Risk Factors in Multiple Sclerosis. *American Journal of Health Behavior.* 2017 Jan;41(1):76-83.
7. Klaren RE, **Hubbard EA**, Wetter NC, Sutton BP, Motl RW. Objectively measured sedentary behavior and brain volumetric measurements in multiple sclerosis. *Neurodegenerative Disease Management.* 2017 Feb;7(1):31-37.
8. Balto JM, Ensari I, **Hubbard EA**, Khan N, Barnes JL, Motl RW. Individual and co-occurring SNAP Risk Factors: Investigation of Smoking, Nutrition, Alcohol Consumption, and Physical Activity in Persons with Multiple Sclerosis. *International Journal of MS Care.* 2016 Nov-Dec;18(6):298-304.
9. Sebastião E, **Hubbard EA**, Klaren R, Pilutti L, Motl RW. Fitness and its Association with Fatigue in Persons with Multiple Sclerosis. *Scandinavian Journal of Medicine and Science in Sports.* 2016 Oct 17.

10. Dysterheft JL, Lindahl-Lewis P, **Hubbard EA**, Jones O, Rice L, Rice I. A mixed methods exploration of how university students with physical disabilities perceive physical activity and the influence of perceptions on physical activity levels. *Cogent Medicine*. 2016 3:1196809.
11. **Hubbard EA**, Wetter, NC, Sutton, BP, Pilutti, LA, Motl, RW. Diffusion tensor imaging of the corticospinal tract and walking performance in multiple sclerosis. *Journal Neurol Sci*. 2016 Apr 15;363:225-231.
12. Wetter NC, **Hubbard EA**, Motl RW, BP Sutton. Fully-automated open-source lesion mapping of T2-FLAIR images with FSL correlate with clinical disability in MS. *Brain Behav*. 2016 Jan 28;6(3): e00440.
13. Klaren RE, **Hubbard EA**, Zhu W, Motl RW. Reliability of accelerometer scores for measuring sedentary and physical activity behaviors in persons with multiple sclerosis. *Adapted Physical Activity Quarterly*. 2016 Apr;33(2):195-204.
14. Motl RW, Learmonth YC, Wójcicki TR, Fanning J, **Hubbard EA**, Kinnett-Hopkins D, Roberts SA, McAuley E. Preliminary validation of the short physical performance battery in older adults with multiple sclerosis: secondary data analysis. *BMC Geriatr*. 2015 Dec 3;15:157.
15. **Hubbard EA**, Motl RW, Manns PJ. The descriptive epidemiology of daily sitting time as a sedentary behavior in multiple sclerosis. *Disabil Health J*. 2015 Oct;8(4):594-601.
16. Klaren RE, **Hubbard EA**, Motl RW, Pilutti LA, Wetter NC, Sutton BP. Objectively Measured Physical Activity Is Associated with Brain Volumetric Measurements in Multiple Sclerosis. *Behav Neurol*. 2015;2015:482536.
17. Pilutti LA, Sandroff BM, Klaren RE, Learmonth YC, Platta ME, **Hubbard EA**, Stratton M, Motl RW. Physical Fitness Assessment Across the Disability Spectrum in Persons With Multiple Sclerosis: A Comparison of Testing Modalities. *J Neurol Phys Ther*. 2015 Oct;39(4):241-9.
18. Motl RW, **Hubbard EA**, Sreekumar N, Wetter NC, Sutton BP, Pilutti LA, Sosnoff JJ, Benedict RH. Pallidal and caudate volumes correlate with walking function in multiple sclerosis. *J Neurol Sci*. 2015 Jul 15;354(1-2):33-6.
19. McAuley E, Wójcicki TR, Learmonth YC, Roberts SA, **Hubbard EA**, Kinnett-Hopkins D, Fanning J, Motl RW. Effects of a DVD-delivered exercise intervention on physical function in older adults with multiple sclerosis: A pilot randomized controlled trial. *Multiple Sclerosis Journal – Experimental, Translational, and Clinical*. 2015; 1:1-9.
20. Ezeugwu V., Klaren R.E., **Hubbard E.A.**, Motl R.W., Manns, P. Mobility disability and pattern of accelerometer-derived sedentary and physical activity behaviors in people with multiple sclerosis. *Preventive Medicine Reports*. 2015; 2:241-246.
21. Motl RW, Pilutti LA, **Hubbard EA**, Wetter NC, Sosnoff JJ, Sutton BP. Cardiorespiratory fitness and its association with thalamic, hippocampal, and basal ganglia volumes in multiple sclerosis. *Neuroimage Clin*. 2015 Feb 26;7:661-6.
22. Sandroff BM, **Hubbard EA**, Pilutti LA, Motl RW. No association between body composition and cognition in ambulatory persons with multiple sclerosis: A brief report. *J Rehabil Res Dev*. 2015;52(3):301-8.

23. **Hubbard EA**, Motl RW. Sedentary behavior is associated with disability status and walking performance, but not cognitive function, in multiple sclerosis. *Appl Physiol Nutr Metab*. 2015 Feb;40(2):203-6.
24. Motl RW, McAuley E, Sandroff BM, **Hubbard EA**. Descriptive epidemiology of physical activity rates in multiple sclerosis. *Acta Neurol Scand*. 2015 Jun;131(6):422-5.
25. Wójcicki TR, Roberts SA, Learmonth YC, **Hubbard EA**, Kinnett-Hopkins D, Motl RW, McAuley E. Improving physical functional and quality of life in older adults with multiple sclerosis via a DVD-delivered exercise intervention: a study protocol. *BMJ Open*. 2014 Dec 1; 4(12):e006250.
26. Klaren RE, **Hubbard EA**, Motl RW. Efficacy of a behavioral intervention for reducing sedentary behavior in persons with multiple sclerosis: a pilot examination. *Am J Prev Med*. 2014 Nov; 47(5):613-6.
27. Learmonth YC, Hubbard EA, McAuley E, Motl RW. Psychometric properties of quality of life and health-related quality of life assessments in people with multiple sclerosis. *Qual Life Res*. 2014 Sep;23(7):2015-23.
28. **Hubbard EA**. The effects of exercise modality on state body image. Graduate School Theses and Dissertations. <http://scholarcommons.usf.edu/etd/4509>. 2013.

#### SUBMITTED MANUSCRIPTS

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1. **Hubbard EA**, Learmonth YC, Kinnett-Hopkins D, Fanning J, Roberts SA, Wójcicki, McAuley E, Motl RW. A qualitative study of a home-based DVD exercise intervention for older adults with multiple sclerosis. *Disability and Rehabilitation*.

#### PRESENTATIONS & POSTERS

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1. **Hubbard EA**, Petruzzello SJ, Motl RW. Acute effects of high-intensity interval exercise on physiological and functional outcomes in multiple sclerosis. [Neuromuscular- Musculoskeletal]. *American College of Sports Medicine Annual Meeting*. Denver, CO, June 2017.
2. **Hubbard EA**, Learmonth YC, Kinnett-Hopkins DL, Wójcicki T, Roberts S, Fanning J, McAuley E, Motl RW. A qualitative study of a home-based DVD exercise intervention in older adults with multiple sclerosis. [Rehabilitation interventions platform presentation]. *Consortium of Multiple Sclerosis Centers*. National Harbor, MD, June 2016.
3. **Hubbard EA**, Wetter NC, Sutton BP, Pilutti LA, Motl RW. Volume of subcortical grey matter structures and gait outcomes in multiple sclerosis. [Neuroimaging and neurophysiology poster presentation]. *Consortium of Multiple Sclerosis Centers*. National Harbor, MD, June 2016.
4. **Hubbard EA**, Wetter NC, Sutton BP, Pilutti LA, Motl RW. Diffusion tensor imaging of the corticospinal tract and walking performance in multiple sclerosis. *Consortium of Multiple Sclerosis Centers*. Indianapolis, IN, May 2015.
5. **Hubbard EA**, Motl RW. The descriptive epidemiology of daily sitting time as a sedentary behavior in multiple sclerosis. [Rehabilitation poster presentation]. *Consortium of Multiple Sclerosis Centers*. Dallas, TX, May 2014.

6. **Hubbard EA**, Alvarado MC, Kazama A, Bachevalier J. The effects of neonatal perirhinal cortex lesions on stimulus-reward associative learning. *Behavioral Research Advancements in Neuroscience (BRAIN) Poster Symposium*. Atlanta, GA, August 2010.
7. **Hubbard EA**. The effects of behind-the-scenes tours on behaviors and salivary cortisol levels in orangutans (*Pongo pygmaeus* and *Pongo abelii*). *Student Research, Internships, and Creative Endeavors (RICE) Symposium*, Danville, KY, May 2008.

## **PUBLISHED ABSTRACTS**

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1. Sandroff, BM, Johnson, CL, Balto, JM, Klaren, RE, **Hubbard, EA**, Sommer, SK, & Motl, RW. (2016). Systematically developed pilot randomized controlled trial of exercise and cognition in persons with multiple sclerosis. *International Journal of MS Care*, 18, S103.
2. Kinnett-Hopkins, D. L., Motl, R. W., **Hubbard, E. A.**, McAuley, E., Pilutti, L. A., & Learmonth, Y. C. (2016). The meaning of physical activity, exercise, and sedentary behavior in persons with multiple sclerosis. *International Journal of MS Care*, 18, S95.
3. Greeley A.J., Collins L.H., **Hubbard E.A.**, Ohara J.L., Kilpatrick M.W. (2012) Impact of interval duration on affect in healthy adults. *Medicine and Science in Sport and Exercise*.
4. Kilpatrick M.W. Greeley S.J., **Hubbard E.A.**, Collins L.H., Ohara J.L. (2012). Exertional responses to sprint interval training: A comparison of 30-second and 60-second conditions. *Medicine and Science in Sport and Exercise*.

## **PROFESSIONAL EXPERIENCE & SERVICE**

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### **Invited Presenter**

**August 2017**

*Berry College Women's Soccer Team, Berry College*

- Presented information regarding energy expenditure, macronutrients, hydration, meal preparation, and the relationship between nutrition/hydration and soccer-specific performance.
- Offered psychological skills training via describing the benefits of developing psychological skills and training players on imagery and goal setting techniques.

### **Sport Physiologist**

**September 2016 – May 2017**

*University of Illinois' Women's Soccer Team*

- Analyzed and interpreted sport-related data (i.e. in-session heart rate with the Polar Team 2 system, wellness and sleep data) and provided behavioral recommendations for improving athletic performance.
- Collaborated with other members of the coaching, nutrition, sports medicine, and strength and conditioning staff to optimize player and team performance.

### **Invited Presenter**

**August 2016**

*Parkland College Women's Soccer Team, Parkland College*

- Presented information regarding energy expenditure, macronutrients, hydration, meal preparation, and the relationship between nutrition/hydration and soccer-specific performance.
- Offered psychological skills training via describing the benefits of developing psychological skills and training players on imagery and goal setting techniques.

- Discussed personal activity, sleep, and performance-related data collection and how to translate that data into actions and performance-enhancing benefits.

**Alumna Advisor****January 2014 – July 2017***Delta Pi Chapter, Delta Delta Delta Sorority, University of Illinois at Urbana-Champaign*

- Served as chairman of the Advisory Committee and provided guidance and support as a mentor and coach to the collegiate chapter officers
- Focused on the chapter's growth and development and the sound implementation of operations
- Served as the primary advisory point of contact for the University administration

**AWARDS & SCHOLARSHIPS**

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**Laura J Huelster Award**, Department of Kinesiology and Community Health, University of Illinois at Urbana-Champaign, Spring 2017, \$2000**Avery Brundage Scholarship**, University of Illinois, Fall 2016-Spring 2017, \$2500**Sarah Shinn Marshall Fellowship**, Tri Delta Foundation, Fall 2016-Spring 2017, \$1500**Consortium of Multiple Sclerosis Centers Scholarship**, May 2016, \$750**PROFESSIONAL MEMBERSHIPS & CERTIFICATIONS**

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**Certified Strength & Conditioning Specialist**, National Strength & Conditioning Association, February 2017-Present**Member**, American College of Sports Medicine, 2016-Present**Certificate in the Foundations of Teaching**, Center for Innovation, Teaching, and Learning, University of Illinois at Urbana-Champaign, December 2016-Present**TOPSoccer State Coaching Certification**, US Youth Soccer, April 2016-Present**E License**, United States Soccer Federation, Illinois Youth Soccer Association, July 2014-Present**Member**, The Consortium of Multiple Sclerosis Centers, 2014-Present**Member**, National Strength & Conditioning Association, 2014-Present**Neurostatus Certification Level C**, Neurostatus.net, 2013-Present

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