# Micah D. Josephson

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## EDUCATION

Ph.D. Applied Physiology
University of Delaware; Newark, DE
Focus: Motor Control
*Dissertation: Neural Excitation of Muscle in Rate of Force Development and Function*

MS Exercise and Sport Physiology
West Chester University; West Chester, PA

BA Psychology w/ dance minor
University of Iowa; Iowa City, IA

## ACADEMIC POSITIONS

**Lecturer, Exercise Science, University, Winchester, VA 2018-present**

Courses:

Research Methods (3 credits)

Undergraduate, in person, 2 sections of 20 students

Responsible for creating course materials and supporting student learning of basic knowledge and skills associated with scientific methodology including basics of statistical analysis using MS Excel. Class culminates in the writing of a literature review and research proposal.

Structural Kinesiology (3 credits)

Undergraduate, in person, 2 sections of 20 students

Created course materials and activities that lead to the learning of functional anatomy of muscles, bones, joints and innervations as they are associated with movement. Classes focused on practical application and movement analysis including use to electromyography to examine neural activation during movement.

**Graduate Instructor, Kinesiology, University of Delaware, Newark, DE 2013-2017**

Courses:

Motor Learning and Control Lecture (3 credits)

Undergraduate, in person, 1 section, 50 students

Responsible for creating syllabus and accompanying lecture materials supplemental to the text. Oversaw 2 laboratory-teaching assistants and created appropriate labs for 3 different lab sections.

Motor Learning and Control Lab (1 credit)

Undergraduate, in person, 13 sections, 18 students

Responsible for creating lab guide, project, and labs along with rubrics. Supervised students in lab activities that support lecture, and created review materials.

Introduction to Exercise Science Lecture (3 credits)
Undergraduate, in person, 3 section, 75 students

Led students through the learning of introductory material from 5 domains of exercise science: exercise epidemiology, exercise physiology, motor control, biomechanics, and health and fitness.

**Adjunct Instructor, Exercise Science, University of the Sciences** **2012**

Course:

A.C.E. personal training certification (3 credits)
Undergraduate, In person, 1 section, 10 students

Responsible for lecturing and creating supportive activities to teach and reinforce the knowledge, skills, and abilities needed to pass the American Council on Exercise Fitness Personal Training Certification exam.

## INVITED TALKS

*Lecture:* Understanding & Combating Functional Decline 2018
Penn State University, Altoona

*Lecture:* The Whats & Whys of Motor Learning 2018
University of IL., Springfield

*Seminar:* Exercise Is Medicine 2018
Health and Wellness Month, University of Pennsylvania

*Lecture*: Neural Anatomy of Information Processing 2018
University of the Sciences

*Lecture:* Functional Neuromechanics 2017
University of Delaware

*Seminar:* Exercise and Aging: Slowing down age-related physiology 2017
Health and Wellness Month, University of Pennsylvania

*Lecture:* Organizing and Scheduling Practice 2015
University of Delaware

*Lecture:* Sensory Contributions to Skilled Movement 2015
University of Delaware

*Seminar:* Trials and Tribulations of Personal Training 2014
Rowan University

*Lecture:* Introduction to Motor Learning 2014
University of Delaware

## NON-UNIVERSITY INSTRUCTION

**Equinox Fitness Training Institute 2001-2003**
Applied Anatomy
Exercise Testing and Program Design
Advanced Stretching Techniques

## ACTIVE RESEARCH PROJECTS

**Josephson, M.D.**, Knight, C.A. Neural excitation rates during preferred and AFAP walking speeds in YA, OA, and PD (writing in progress)

Boelk, O, **Josephson, M.D.** Differences in triphasic burst pattern total activation and rates of neural excitation in rapid elbow extension of older adults and people with Parkinson's disease. (data processing)

Debolt, M, Large, L, Oldham, J, **Josephson, M.D.** Effects of multiple concussions on neural control of rapid contractions. (in development)

## PUBLICATIONS

**Peer-reviewed**

1. **Josephson, M.D.,** Williams, John G. Functional-Strengthening: A Pilot Study on Balance Control Improvement in Community Dwelling Older Adults. (2017). *Montenegrin Journal of Sports Science and Medicine*. 6: 75-78.

2. **Josephson, M.D.**, Knight, C.A. Comparison of Neural Excitation Measures from the Surface Electromyography during Rate-Dependent Muscle Contractions. (Journal of Electromyography and Kinesiology, *in press)*

3. **Josephson, M.D**., Rose, W., Knight, C.A. Bilinear modeling of the rate of neuromuscular activation at increasing velocities. (*in review*)

4. **Josephson, M.D.** Physiological determinants of age-related movement slowing and exercise recommendations. (*in review*)

5. **Josephson, M.D.**, Knight, C.A. Bilinear modeling of the rate of neuromuscular activation during recumbent cycling at increasing RPMs. (*in preparation*)

**Practitioner Publications**

1. **Josephson, M.D.** A Defense Against Age-Related Slowing. (2018). IDEA Fitness Journal. October 2018.

## ACCEPTED CONFERENCE ABSTRACTS

1. **Josephson, M.** (2018) Physiological Determinants of Age-Related Slowing and Exercise Recommendations. *American Congress of Rehabilitation Medicine, 2018 Annual Conference;* Dallas, TX

2. **Josephson, M.** Knight, C.A. (2018) Rate of Neural Excitation During Walking and Recumbent Cycling at Increasing Speeds in Young Adults and People with Parkinson's. *American Society of Biomechanics, East Coast Conference;* Reading, PA.

3. **Josephson, M.**, Knight, C.A. (2017) Differences in Neuromuscular Excitation Rates in Young Adult, Older Adult, and People with Parkinson's Disease. *Annual meeting for the Mid-Atlantic Regional Chapter of the American College of Sports Medicine;* Harrisburg, PA.

4. Diana, J., **Josephson, M.,** Knight, C.A. (2017) Relationships Among sEMG Measures of Neuromuscular Excitation. *Annual meeting for the Mid-Atlantic Regional Chapter of the American College of Sports Medicine;* Harrisburg, PA.

5. Sibson, B., Daniels, R., Howard, S., **Josephson, M.,** Knight, C.A. (2017) High Speed Cycling and the Law of Initial Values in Parkinson's Disease. *Annual meeting for the Mid-Atlantic Regional Chapter of the American College of Sports Medicine;* Harrisburg, PA.

6. **Josephson, M.**, Knight, C.A. (2016) The Relationship Between Rate of Force Development and Surface EMG Measures in Tibialis Anterior. *ACSM Annual Meeting; Boston, MA*

*7.* **Josephson, M.**, Knight, C.A. (2015) Bilinear modeling of neuromuscular excitation at increasing movement velocities. *Delaware Neuroscience Symposium; Newark, DE*

8. **Josephson, M.,** Knight, C.A. (2015) The relationship between initial motor unit firing rate and onset EMG parameters. *Exercise Neuroscience Group; Ontario, Canada*

9. **Josephson, M.,** Williams, J.G. (2015). Functional-strengthening for dynamic balance reduces risk of falls in moderately active older adults. *ACSM Annual Meeting;* San Diego, CA

10. **Josephson, M.,** Stevens, C. (2011). The development and testing of the Gershwin Index of Functionality: A senior physical functioning assessment. *Annual meeting for the Mid-Atlantic Regional Chapter of the American College of Sports Medicine;* Harrisburg, PA.

11. **Josephson, M.** (2010). ADL abilities differ by exercise type and frequency in the elderly. *Annual meeting for the Mid-Atlantic Regional Chapter of the American College of Sports Medicine;* Harrisburg, PA.

**PROFESSIONAL DEVELOPMENT**

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| **Safe Zone Training**, Shenandoah University | 2018 |
| **RECAP conference,** West Chester University | 2016 |
| **Canvas Basics,** University of Delaware | 2015 |

**Extending Canvas,** University of Delaware 2015
**Divide and Conquer,** University of Delaware 2015
**Grant Writing Workshop,** University of Delaware 2015
**New Teaching Assistant Workshop,** University of Delaware 2013

## Non-ACADEMIC EXERCISE SCIENCE EXPERIENCE

Health Educator, Areufit Health Services 2011-2013
Performed health screenings and provided health and wellness information across the mid-Atlantic region

Graduate Assistant, West Chester University 2009-2011
Oversaw classroom biomechanics and Exercise physiology lab and managed undergraduate students staffing the south campus fitness center

Lead Exercise Physiologist, H/S Therapy 2007-2009
Managed patient aftercare program and oversaw all the personal training, marketing, and outreach events. Performed Physical Therapy Assistant duties including taking patients through rehabilitation programs and manual stretching.

Owner/Personal Trainer, Functional Fitness 2005-2013
Built and maintained a regular client base. Performed community health and wellness presentations. Collaborated with local healthcare professionals.

Personal Trainer-Tier 3/Manager on Duty, Equinox Fitness 2002-2005
Led personal trainer education classes and helped manage a staff of 50 personal trainers. Built and maintained a personal training client-base. Worked almost exclusively with special populations including older adults, joint rehabilitation, and severe disease.

## GRANTS & AWARDS

Professional Development Award 2016
University of Delaware, Newark, DE ($776)
Award to support travel to ACSM conference
Professional Development Award 2015
University of Delaware, Newark, DE ($800)
Award to support travel to ACSM conference

Student-Faculty Research Grant 2011
West Chester University, West Chester, PA
Award to support mentored research. Resulted
in conference presentation and publication ($1000)

**SERVICE**

*Shenandoah University*

2018 Community Health Needs Assessment Committee

*University of Delaware*

2016-2018 KAAP Student Organization
President, voting member-at-large

2016 College of Health Science Gala Volunteer

*To the community*

2017 Christiana Care Hospital Parkinson's disease Support Group
Guest speaker
*Improving Functioning in a PD population*
Newark, DE

2017 STAR Campus Parkinson's Disease Support Group
Guest speaker
*Understanding Bradykinesia: Physiology, function, & research*
Newark, DE

*To the profession*

2018 Volunteer Moderator; MARC ACSM

2017-present Ad hoc reviewer
Reviewed submitted exercise science manuscripts for potential publication
-International Journal of Therapy and Rehabilitation
-International Journal of Exercise Science

**CERTIFICATIONS & MEMBERSHIPS**

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|---|---|
| ACSM, MEMBER | 2015-PRESENT |
| AMERICAN COUNCIL ON EXERCISE, Certified Personal Trainer | 2003-2013 |
| EQUINOX FITNESS TRAINING INSTITUTE, Tier 3 Personal Trainer | 2002-2005 |
| AHA CPR/AED | 1996-PRESENT |

**TECHNOLOGY EXPERIENCE**

Classroom Technology Tools

Canvas LMS

Primary classroom learning management systems for two separate universities (Delaware, Shenandoah). Used as main moderator for relaying course information to students and developing quiz and review materials.

In-class Informal Assessments

Socrative (app)
IClickers
Poll Everywhere

Lecture Creation and Presentation

PowerPoint
Nearpod (in class and online lectures)
EdPuzzle (online lectures)

Miscellaneous

TeacherKit (classroom attendance)
Remind (communication with students)

Hardware

Motion Labs EMG System

Extensive experience with set up, data collection, and troubleshooting. Primary EMG system for measuring neural excitation of muscle in both research and classroom demonstrations.

Interface Force Transducers

Use of strain-gauge load cells. Experience includes calibration and use for recording neural control of force development. Used extensively in data collections and classroom demonstrations.

Pietzoelectric Accelerometry

Primary tool to measure accelerometry and a means to explore neural control of movement speeds. Experience includes set up, troubleshooting.

Software

DasyLAB

Primary software used for biophysical signal data collection. Knowledge includes development of data collection programs and troubleshooting.

LabVIEW

Primary software used for offline biophysical signal data processing. Experience includes creation of processing programs and extensive troubleshooting.

Spike 2

Secondary software for identification of specific motor units via sorting motor unit action potentials by shape. Often used to check data quality of biophysical signals.

MUTools

Custom-designed software used primarily for motor unit identification by sorting motor unit action potentials based on shape.

SPSS

Primary software used for advanced statistical analysis. Experience includes advanced statistical analysis, data manipulation, and syntax editing.