# CURRICULUM VITAE Gammon M. Earhart, P.T., Ph.D.

## **Present Position:**

Director, Program in Physical Therapy

Professor, Program in Physical Therapy, Department of Neuroscience, Department of Neurology, Washington University in St. Louis School of Medicine

Associate Director, Movement Science PhD Program, Washington University School of Medicine

Director, Physical Activity Research Center

Director, Locomotor Control Laboratory

#### **Education:**

B.A.	Arcadia University	Psychobiology	1994
M.S.P.T.	Arcadia University	Physical Therapy	1996
Ph.D.	Washington University in St. Louis	Movement Science	2000
Postdoctoral Fellowship	Oregon Health & Science University	Neuroscience	2000-2004

## **Professional Experience and Academic Positions:**

Graduate Research Assistant	Washington University in St. Louis	1996-2000
Physical Therapist	TheraPeak & RehabPlus Inc.	1997-2000
Postdoctoral Fellow	Oregon Health & Science University	2000-2004
Instructor, Program in Physical Therapy	Washington University School of Medicine	2004-2005
Assistant Professor	Washington University School of Medicine	2005-2010
Associate Professor (tenured)	Washington University School of Medicine	2010-2013
Associate Director, Movement Science PhD Pro		2012-present
Professor	Washington University School of Medicine	2014-present
Director, Program in Physical Therapy	Washington University School of Medicine	2014-present

#### **University and Clinical Appointments and Committees:**

2004-present	Research Advisory Council, Program in Physical Therapy
2005-2009	Faculty Search Committee, Program in Physical Therapy
2006-2008, 2011	Years of Service Awards Committee, Program in Physical Therapy
2007-2009, 2013-present	Admissions Committee, Program in Physical Therapy
2008-present	Member, Division of Biology and Biomedical Sciences
2008-2009	Steven J. Rose Symposium Organizing Committee
2011-2012	Teaching Evaluation Task Force, Program in Physical Therapy
2012	Strategic Planning Co-Chair, Program in Physical Therapy
2012-2013	Faculty Performance Metrics Committee, Program in Physical Therapy
2012-2013	Research Division Development Committee, Program in Physical Therapy
2013	Education Division Metrics Task Force, Program in Physical Therapy
2013-2014	Program in Neuroscience PhD Admissions Committee
2013-present	Graduate Council, Graduate School of Arts & Sciences
2014-present	Education Leadership Council, Washington University School of Medicine
2014-2015	Research Affairs Committee, Washington University School of Medicine
2015-present	Academic Affairs Committee, Washington University School of Medicine
2015-present	Gender Equity Committee, Washington University School of Medicine

## Licensure/Registration:

Missouri PT License No. 111723

#### **Honors and Awards:**

1993	Heinz Travel Award for International Research
1994	Beaver College Physical Therapy Scholarship

1994-1996 Gundaker Foundation Scholarship

2001 Best Postdoctoral Presentation, Clinical Neurosciences Research Day, University of Calgary

2001 2002 2002-2003 2005 2005 2005 2006, 2008 2010, 2011 2010 2012 2013	Conference Fellowship, Recent Advances in Cerebellar Research, St. Louis, MO Conference Fellowship, Multisensory Interactions Subserving Orienting Behavior, Naples, FL Postdoc Paper of the Year Award, Runner-Up, Oregon Health & Science University Junior Faculty Scholarship to attend III Step Abstract Chosen for Society for Neuroscience Public Information Committee Press Book American Physical Therapy Association (APTA) Eugene Michels New Investigator Award Outstanding Faculty Mentor Certificate of Special Recognition, Washington University Nominee for Golden Synapse Award for Best Paper Published in J Neurol Phys Ther Friedman Award for Outstanding Contributions to the Advancement of Geriatric Care Arcadia University College of Health Sciences Alumni Achievement Award Outstanding Faculty Mentor Award, Washington University
2014	Chattanooga Research Award for Best Paper Published in <i>Physical Therapy</i>
2014	Keynote Speaker, University of Maryland Research Day
2015	Distinguished Alumni Award, Oxford Area High School
2015	Elite Reviewer Recognition, Archives of Physical Medicine & Rehabilitation
2015	Outstanding Reviewer, Gait & Posture
2016	Excellence in Neurologic Research Award, APTA Academy of Neurologic Physical Therapy

# **Editorial Responsibilities/Manuscript & Grant Reviewer:**

- Editorial Board Member, *Physical Therapy*, 2015-present
- Manuscript reviewer for more than 30 peer-reviewed journals in the fields of rehabilitation, neuroscience, and neurology
- Veterans Health Administration, Rehabilitation Research & Development Grant Reviewer, 2004, 2009, 2011, 2013, 2014
- NIH, NINDS, NSD-B Ad Hoc Study Section Member, 2007
- BJHF/ICTS Grant Reviewer, 2009, 2012
- Israel Science Foundation Grant Reviewer, 2009, 2013
- The Stroke Association (UK) Grant Reviewer, 2009
- Parkinson's Disease Association (UK) Grant Reviewer, 2009, 2011
- NIH Challenge Grant Reviewer, 2009
- National Science Foundation Grant Reviewer, 2009
- Prinses Beatrix Fonds (Netherlands) Grant Reviewer, 2009, 2011
- Auckland Medical Research Foundation (New Zealand) Grant Reviewer, 2009
- Parkinson's Disease Society (UK) Grant Reviewer, 2009
- NIH, NICHD/NCMRR, MRS Ad Hoc Study Section Member, 2010
- National Parkinson Foundation Grant Reviewer, 2011
- Fonds Wetenschappelijk Onderzoek-Research Foundation Flanders (Belgium) Grant Reviewer, 2011, 2012
- Food and Health Bureau: Health and Health Services Research Fund (China) Grant Reviewer, 2011, 2013
- Qatar National Research Fund Grant Reviewer, 2011
- MS Research Australia Grant Reviewer, 2011
- National Sciences and Engineering Research Council of Canada (NSERC), Canadian Institutes of Health Research (CIHR) Grant Reviewer, 2011
- Alzheimer's Association, 2012
- NIH, Special Emphasis Panel Reviewer, Musculoskeletal Rehabilitation, 2012
- NIH, Special Emphasis Panel Reviewer, Neurobiological Mechanisms of Brain Diseases, 2012
- Alberta Innovates Health Solutions (Canada) Grant Reviewer, 2012
- Editorial Board Member, Journal of Neurodegenerative Diseases, 2012-present
- Lead Guest Editor, 2012, Special Issue: Rehabilitation and Parkinson's Disease for the journal Parkinson's Disease
- NIH, NINDS, NSD-K Ad Hoc Study Section Member, 2013
- Department of Defense, Defense Medical Research and Development Program Grant Reviewer, 2013
- NIH, Brain Disorders and Clinical Neuroscience IRG, Ad Hoc Study Section Member, 2013
- NIH, Stroke Trials Network Reviewer, 2013
- Parkinson's Disease Foundation Grant Reviewer, 2013, 2014, 2015
- Health Research Board (Ireland), 2013
- Editorial Board Member, Gait & Posture, 2013-present

- Lead Guest Editor, 2013, Special Issue Series: Rehabilitation and Parkinson's Disease 2012 for the journal Parkinson's Disease
- NIH, Special Emphasis Panel Reviewer, NINDS Clinical Trials, 2015
- Lee Silverman Voice Therapy (LSVT) Grant Reviewer, 2015
- NIH Special Emphasis Panel Reviewer, Exercise in Aging, 2015

## Scientific/Professional Organizations/Societies:

1994-present	American Physical Therapy Association (APTA)	
	1997-present	Research Section of the APTA
	1998-present	Neurology Section of the APTA
	2000-2004	Oregon Physical Therapy Association
	2002-2006	Member-Neurology Section Research Committee
	2004-present	Missouri Physical Therapy Association (MPTA)
	2006-2009	Chair-Neurology Section Research Committee
	2010-2012	Chair-MPTA Research Committee
	2013-2014	President Elect, APTA Section on Research
	2014-2018	President, APTA Section on Research
	2014-2015	Delegate from Section on Research, APTA House of Delegates
1997-present	Society for Neu	ıroscience
2002-present	International So	ociety for Postural and Gait Research
	2013 Awards C	Committee
	2014-2015 Sci	entific Content Committee
2005-present	Academic Won	nen's Network
2007-present	International Pa	arkinson and Movement Disorder Society
2008-present	Parkinson Dise	ase Exercise and Physical Activity Network
2010-present	Exercise and P	arkinson's Disease Consortium
2013-present		Physical Therapy, Research Portfolio Task Force
2014-2018		Physical Therapy, Scientific Advisory Council
2015-present	American Socie	ety of Neurorehabilitation

## **Major Invited Lectureships:**

"Mechanisms and Treatment of Cerebellar Ataxia", Symposium co-presented with Amy J. Bastian, P.T., Ph.D. and Catherine E. Lang, P.T., Ph.D., APTA Meeting and Exposition, June 2000, Indianapolis, IN

"The Postdoctoral Fellowship: Why and How?", Symposium co-presented with Catherine E. Lang, P.T., Ph.D., APTA Combined Sections Meeting, Feb. 2003, Tampa, FL

"Turning to Parkinson's Disease: Plans for a Novel Treatment Strategy to Address Problems with Turning and Freezing During Gait", PT Conclave, September 2004, Washington University School of Medicine, St. Louis, MO

"Walking, Balance and Falls in Parkinson Disease: Recent Research and Practical Applications", Greater St. Louis Chapter of the American Parkinson Disease Association PEP Talk, April 2006, Richmond Heights, MO

"Training Turning: Potential Clinical Application of the Rotating Treadmill", Neurological Sciences Institute, Oregon Health & Science University, October 2006, Portland, OR

"Walking, Balance and Falls in Parkinson Disease: Recent Research and Practical Applications", Gentiva SafeStrides<sup>TM</sup> Continuing Education Seminar, March 2007, St. Louis, MO

"Motor Control and Motor Learning: Recent Research and Practical Applications", Missouri Physical Therapy Association Fall Meeting, Maryville University, October 2007, St. Louis, MO

"Rotating Treadmill Adaptation: Mechanisms and Application", The Science of Balance Rehabilitation Workshop, January 2008, Phoenix, AZ

"Effects of Dance on Balance and Mobility in Parkinson Disease", The Science of Balance Rehabilitation Workshop, January 2008, Phoenix, AZ

- "Use of Tango to Improve Functional Mobility in Individuals with Parkinson Disease", First International Tango Therapy Congress, July 2008, Rosario, Argentina
- "From Research to Practice: A Physical Therapy Perspective on Parkinson Disease", Davis Phinney Foundation Victory Summit, October 2008, Westminster, CO
- "Tango as Therapy for Individuals with Parkinson Disease", St. Louis University, December 2008, St. Louis, MO
- "Dance as Therapy for Individuals with Parkinson Disease", European Psychology Society Workshop on Dance and the Cognitive Neurosciences, January 2009, London, UK
- "Adaptive Control of Spatial Orientation for Locomotion in Health & Disease" Alzheimer's Disease Research Center, Washington University School of Medicine, February 2009, St. Louis, MO
- "Shall We Dance? Benefits of Dance for People with Parkinson Disease", Parkinson Disease Foundation and Houston Area Parkinson's Society, April 2009, Houston, TX
- "Locomotor Adaptation in Health & Disease", VA Palo Alto Spinal Cord Injury Center, July 2009, Palo Alto, CA
- "The Why and How of Tango for PD", University of Cincinnati Sunflower Revolution, September 2009, Cincinnati, OH
- "Research and Physical Rehabilitation in Parkinson Disease", Neurorehabilitation Grand Rounds, Washington University in St. Louis, September 2009, St. Louis, MO
- "Tango for Parkinson Disease: Latest Evidence and Guidelines for Implementation", Second International Tango Therapy Congress, October 2009, Mendoza, Argentina
- "Adaptive Control of Locomotor Spatial Orientation in Health and Disease", Anatomy & Neurobiology Seminar Series, Washington University in St. Louis, November 2009, St. Louis, MO
- "Resistance training induces supraspinal adaptations: Evidence from movement-related cortical potentials", Missouri Physical Therapy Association, April 2010, St. Louis, MO
- "Parkinson Disease and Rehabilitation", Barnes Jewish Hospital Rehabilitation Lecture Series, May 2010, St. Louis, MO
- "Long-term Effects of a Community-Based Tango Program for People with Parkinson Disease", Third International Tango Therapy Congress, July 2010, Buenos Aires, Argentina
- "Rehabilitation in Parkinson Disease: Past, Present, and Future", Rehabilitation Research Day: Advances in Neuro Rehabilitation, The Rehabilitation Institute of St. Louis, October 2010, St. Louis, MO
- "Gait Analysis", WUSM PM&R Resident Lecture Series, December 2010, St. Louis, MO
- "Tango for Parkinson Disease: A Research Synthesis", Fourth International Tango Therapy Congress, July 2011, Rosario, Argentina
- "Locomotor Control in Parkinson Disease", Neurology Grand Rounds, Oregon Health & Science University, September 2011, Portland, OR
- "Balance, Falls, and Physical Activity in Parkinson Disease", Balance and Falls Symposium Series, Oregon Health & Science University, September 2011, Portland, OR
- "From Turtles to Turning to Tango: Studies on the Neural Control of Movement", Arcadia University, January 2012, Glenside, PA
- "From Turtles to Turning to Tango: Studies on the Neural Control of Movement", University of Alabama at Birmingham, April 2012, Birmingham, AL

- "Workshop on Patient Care: The St. Louis Experience", XII ParkinsonItalia Conference, April 2012, Cuneo and Verbania, Italy
- "Rehabilitation Today: Tangotherapy", XII ParkinsonItalia Conference, April 2012, Cuneo and Verbania, Italy
- "From Turtles to Turning to Tango: Studies on the Neural Control of Movement", University of Delaware, April 2012, Newark, DE
- "PD4PD: Partnered Dance for Parkinson Disease" The 2012 McMaster NeuroMusic Conference: "Come Dance With Me: Movement Control in Brain and Body", October 2012, Hamilton, ON, Canada
- "Making Fitness Fun: Parkinson Disease and Non-Traditional Community-Based Group Exercise", Symposium copresented with Stephanie Combs, PT, PhD, NCS, APTA Combined Sections Meeting, January 2013, San Diego, CA
- "Diagnosis and Treatment of Gait and Balance Disorders", Neuroedge: International Neurology Update, April 2013, Mumbai, India
- "Coupling the Benefits of Pharmacological and Surgical Approaches with Rehabilitation", International Symposium on Postural Instability and Falls in Parkinson Disease, June 2013, Sydney, Australia
- "10 Things to Know About Rehabilitation in Parkinson Disease", International Society of Posture and Gait Research, June 2013, Akita, Japan
- "Turning Point: How Experience Can Modify Trajectory", Sensing Motion for Action: A Tribute to the Career of Geoffrey Melvill Jones, July 2013, Montreal, Canada
- "Trial Reporting and Publication Strategies", Parkinson Study Group Introduction to Clinical Trials Course, September 2013, Montreal, Canada
- "Living Well with PD: The Importance of Physical Activity, Self-Efficacy, and Creativity", World Parkinson Congress, October 2013, Montreal, Canada
- "How Do We Know Dance Helps People with Parkinson's?", World Parkinson Congress, October 2013, Montreal, Canada
- "Testudo to Tango: A Moving Story", University of Maryland, May 2014, College Park, MD
- "Tango as Therapy for People with Parkinson Disease: A Scientific and Musical Presentation with Cortango Orquesta of the St. Louis Symphony", Goldfarb School of Nursing, St. Louis, MO, September 2014
- "Tango of Treadmill? A Comparison of Two Exercise Interventions for People with Parkinson Disease", Barnes-Jewish Hospital Department of Research for Patient Care Services, St. Louis, MO, October 2014
- "National Parkinson's Disease Roundtable", YMCA of the USA, Online Meeting, October 2014
- "Tango and Parkinson Disease", Parkinson Disease & Exercise Meeting, Chicago, IL, December 2014
- "Active Interventions: Frequency, Intensity, Time, Type, Setting, and Duration", Parkinson Disease & Exercise Meeting, Chicago, IL, December 2014
- "The Science and Beauty of Tango: A Joint Presentation with the St. Louis Symphony's Cortango", St. Louis College of Pharmacy Convocation Series, St. Louis, MO, January 2015
- "Falls in Parkinson Disease: Causes, Prediction, and Prevention", APTA Combined Sections Meeting, Indianapolis, IN, February 2015

"The Power of Tango", St. Louis Symphony Community Cares Program, St. Louis Symphony Powell Hall, St. Louis, MO, April 2015

"Rehabilitation in Parkinson's Disease: Exercise is as Important as Medication", World Confederation for Physical Therapy, May 2015, Singapore

"Keep Your Balance: Caring for Mind and Body with Parkinson's", Partners in Parkinson's, Michael J. Fox Foundation, St. Louis, MO, October 2015

"Exercise: What do we know about how it impacts Parkinson's?", World Parkinson Coalition, World Parkinson Coalition Scientific Update, October 2015

Physical Therapy and Parkinson's: Exercise is as important as medication", Missouri Physical Therapy Association, St. Louis, MO, January 2016

"Neuroimaging of motor and sensory function in health and disease", APTA Combined Sections Meeting, Anaheim, CA, February 2016

"Practical implications: Integration of exercise into everyday life", World Parkinson Congress, Portland, OR, September 2016

## Consulting Relationships/Board Memberships/Advisory Positions:

Parkinson Disease Exercise and Physical Activity Network (PD EXACT), Founding and Advisory Committee Member, 2008-present

Second International Congress of Tangotherapy, Honorary Committee, Mendoza, Argentina, October 2009

Third International Congress of Tangotherapy, Honorary Committee, Buenos Aires, Argentina, July 2010

Fourth International Congress of Tangotherapy, Honorary Committee, Rosario, Argentina, July 2011

Fifth International Congress of Tangotherapy, Honorary Committee, Rosario, Argentina, December 2012

Sixth International Congress of Tangotherapy, Honorary Committee, Rosario, Argentina, December 2013

Governing Body, The Rehabilitation Institute of St. Louis, 2014-present

Advisory Committee Member/Consultant, Dance and Parkinson's Disease: A Research Dissemination Project. Canadian Institutes of Health Research. Investigative Team: Rachel Bar, Jennifer Lapum, Michelle Dionne, & Lorraine Kalia, 2015-2016

#### **Research Support:**

#### Previous:

Foundation for Physical Therapy, Promotion of Doctoral Studies II, \$15,000, 1999-2000, Role: Principal Investigator

NIH National Research Service Award (F32 NS41804), "Locomotor Adaptation Following Podokinetic Stimulation", \$73,740, 2002-2004, Role: Principal Investigator

American Parkinson Disease Association, St. Louis Chapter Equipment Grant, Electromyographic Studies of Gait in Parkinson Disease, \$15,000, 2005, Role: Principal Investigator

NIH Mentored Research Scientist Career Development Award (K01 HD048437), "Parkinsonian Gait Disorders: Mechanisms and Treatment", \$494,432, 2005-2009, Role: Principal Investigator

Marian Chace Foundation of the American Dance Therapy Association, "A study on the effects of Argentine tango as a form of partnered dance for those with Parkinson Disease and the Healthy Elderly", PI: Madeleine Hackney, 2006, \$2,600, Role: Co-investigator

American Parkinson Disease Association, "Can Dance Improve Functional Mobility in Parkinson Disease?", \$50,000, 2006-2008, Role: Principal Investigator

Washington University Program in Physical Therapy Research Pilot Funds, "Neuroplastic Adaptations Evoked via Resistance Training in Individuals with Parkinson Disease", \$4200, 2008, Role: Principal Investigator

Missouri Physical Therapy Association, "Neuroplastic Mechanisms for Increased Strength Following Resistance Training", \$5000, 2008-2009, Role: Principal Investigator

American Parkinson Disease Association, St. Louis Chapter Equipment Grant, Eye Movement Tracking in Parkinson Disease, \$15,000, 2008, Role: Principal Investigator

McDonnell Center for Systems Neuroscience, New Resource Proposal, Studies of Oculomotor Dysfunction and Walking in Parkinson Disease, \$4300, 2008, Role: Principal Investigator

Center for Programs at Washington University in St. Louis, "Contact Improvisation and Parkinson's Disease", \$6500, 2009-2010, Role: Principal Investigator

Missouri Physical Therapy Association, "Contact Improvisation and Parkinson Disease: A Pilot Study", \$5000, 2009-2010, Role: Principal Investigator

NIH/NIDCD (R01 DC04082), "Adaptation of Spatial Orientation in Locomotion and Posture", PI: Fay B. Horak, Oregon Health & Science University, 2006-2011, \$8,500/yr., Role: Co-investigator

BJHF/ICTS Clinical and Translational Research Award, "Role of Oculomotor Control in Parkinsonian Gait: Mechanisms and Treatment", \$130,000, 2009-2011, Role: Principal Investigator

Washington University Program in Physical Therapy Research Pilot Funds, "Resting State Functional Connectivity in Parkinson Disease", \$2000, 2010-2011, Role: Principal Investigator

Parkinson's Disease Foundation, "PD4PD: Partnered Dance for Parkinson Disease", \$150,000, 2009-2011, Role: Principal Investigator

Washington University Program in Physical Therapy Research Pilot Funds, "Neuroimaging of Locomotor Adaptations to Rotating Treadmill Training", \$2000, 2011-2012, Role: Principal Investigator

Davis Phinney Foundation, "Unveiling the Natural History of Quality of Life and Mobility Decline in Persons with Parkinson's Disease: A Prospective Cohort Study", \$96,000, 2009-2012, Role: Principal Investigator

Davis Phinney Foundation, "Unveiling the Natural History of Quality of Life and Mobility Decline in Persons with Parkinson's Disease: A Prospective Cohort Study", PI: Lee Dibble, University of Utah, \$130,000, 2009-2012, Role: Co-Principal Investigator

Davis Phinney Foundation, "Unveiling the Natural History of Quality of Life and Mobility Decline in Persons with Parkinson's Disease: A Prospective Cohort Study", PI: Terry Ellis, Boston University, \$96,000, 2009-2012, Role: Co-Principal Investigator

Parkinson's Disease Foundation, "Unveiling the Natural History of Quality of Life and Mobility Decline in Persons with Parkinson's Disease: A Prospective Cohort Study", PI: Matt Ford, University of Alabama Birmingham, \$96,000, 2009-2012, Role: Co-Principal Investigator

NIH/NCMRR (R01 HD056015), "Oculomotor Control and Gait in Parkinson Disease", \$475,200, 2009-2012, Role: Principal Investigator

American Parkinson Disease Association, "Community-Based Tango Classes for People with Parkinson Disease", \$10000, 2011-2012, Role: Principal Investigator

Mallinckrodt Institute of Radiology (12-001), "Neurophysiologic Benefits of Tango Dancing versus Treadmill Training in Individuals with Parkinson Disease", \$10,000, 2011-2012, Role: Principal Investigator

University Research Strategic Alliance, "Fall Detection Device", PI: Susan Stark, \$25,000, 2011-2012, Role: Consultant

University Research Strategic Alliance, "Freezing of Gait in Parkinson Disease: An Interdisciplinary Approach", \$25.000, 2011-2012, Role: Principal Investigator

Parkinson's Disease Foundation Conference Award, \$16,500, International Symposium on Postural Instability and Falls in Parkinson Disease, Sydney, Australia, June 2013, Role: Meeting Co-organizer

American Parkinson Disease Association, "Resting State Functional Connectivity MRI: Development of Neuroimaging Methods in Parkinson Disease", \$20,000, 2011-2013, Role: Principal Investigator

Neurology/Health South Central Nervous System Recovery/Restoration Award, "Gaze Behavior and Locomotion in Parkinson Disease", \$30,000, 2012-2013, Role: Principal Investigator

Washington University Program in Physical Therapy Research Pilot Funds, "Dynamics, Adaptation, and Cognitive Influence Across Motor Systems in Parkinson Disease", \$2000, 2013, Role: Principal Investigator

#### **Current:**

NIH/NINDS (R01 NS077959), "Exercise and Parkinson's: Comparing Interventions and Exploring Neural Mechanisms", \$1,900,000, 2012-2017, Role: Principal Investigator

NIH/NICHD (T32 HD007434), "Doctoral Training Program in Movement Science", \$450,000, 2013-2016, Role: Principal Investigator

NIH/NICH (R01 HD070855), "Tracking Neurodegeneration in Early Wolfram Syndrome", PI: Tamara Hershey, 2012-2017, Role: Co-investigator

NIH/NINDS (R01 NS041509), "Mechanisms of Deep Brain Stimulation", PI: Joel Perlmutter, \$3,385,654, 2009-2016, Role: Co-investigator

Neurology/Health South Central Nervous System Recovery/Restoration Award, "Telemedicine & Tango for Parkinson's Disease: In-Person vs. Virtual Dance Class", \$30,000, 2015-2017, Role: Co-Principal Investigator

## Pending:

# **Clinical Title and Responsibilities:**

Member, Movement Disorders Center

#### **Teaching Title and Responsibilities:**

#### **Current:**

Professor, Program in Physical Therapy, Department of Neuroscience, Department of Neurology, Washington University School of Medicine

Associate Director, Movement Science PhD Program

Professional Clinical Doctorate (DPT) Curriculum:

M02 605 Neuroscience, Course Master

M02 641 Motor Control and Motor Learning, Guest Lecturer

M02 613 Kinesiology II, Guest Lecturer

M02 653 Health, Fitness and Prevention, Guest Lecturer

M02 654 Case Integration III, Advisor

M02 650 Diagnosis and Evidence Analysis in Physical Therapy III, Advisor

M02 629 Diagnosis & Management of Neuromuscular Conditions I, Guest Lecturer

Post-Professional Clinical Doctorate (PPDPT) Curriculum:

M22 610 Development, Control, and Analysis of Human Movement, Course Master

M22 820 Capstone Project, Course Master

Movement Science PhD Curriculum:

L63 IPMS 5850 Program Seminar, Course Master

L63 IPMS 5750 Readings in Movement Science, Course Master

L63 IPMS 5720 Research in Movement Science, Course Master

L63 IPMS 5610 Movement Science III-Biocontrol, Guest Lecturer

Division of Biology and Biomedical Sciences:

BIO 5565 Oral Presentation of Scientific Data, Guest Lecturer

BIO 5915 Teaching Practice in Biology and Biomedical Sciences, Mentor

BIO 5011 Ethics and Research Science, Section Leader

Undergraduate:

BIO 181 Freshman Seminar in Biology, Guest Lecturer

BIO 200/500 Independent Study--Undergraduate Research in Biology, Mentor

BME 400 Independent Study in Biomedical Engineering, Mentor

U31 285 Introduction to Somatic Practices, Performing Arts Department, Guest Lecturer

#### Past:

My prior teaching responsibilities were in the areas of neuroscience, motor control, and motor learning. I taught at Washington University, Pacific University, and Oregon Health & Science University.

#### **Trainee Advisement:**

#### **Postdoctoral Fellows**

2010-2014 Kristen Pickett, PhD

PhD in Kinesiology earned in May 2010 2012-2015 NIH Loan Repayment Program

2011-2012 NIIH Postdoctoral Trainee, 2T32HD007434-18A

2012-2013 Parkinson Study Group Mentored Clinical Research Award

Currently: Assistant Professor, University of Wisconsin-Madison, Start Date: July 2014

2015-present Gustavo Christofoletti, PT, MS, PhD

PhD in Neuroscience earned in 2010

Currently: Adjunct Professor Federal University of Mato Grosso do Sul, Campo Grander, Brazil

#### **Graduate Students**

2004-2008 Minna Hong, PT, PhD

Movement Science Ph.D. earned in May 2008

2005-2008 Promotion of Doctoral Studies Awards, Foundation for Physical Therapy

2007-2008 NIH NRSA Predoctoral Fellowship F31 NS566532

Currently: Postdoctoral Research Health Scientist, VA Palo Alto Health Care System, Spinal Cord

Injury Center

2005-2009 Madeleine Hackney, PhD

Movement Science Ph.D. earned in May 2009 2006-2007 Marian Chace Foundation Grant

2007 Washington University Graduate Student Research Symposium 2<sup>nd</sup> prize 2008 Society for Neuroscience Chapters Graduate Student Travel Award

2009 European Psychological Society Student Travel Award

Currently: Research Health Scientist, Atlanta VA Medical Center and Assistant Professor of

Gerontology at Emory University

2006-2010 Michael Falvo, PhD

Movement Science Ph.D. earned in May 2010

2008 National Strength and Conditioning Association Doctoral Student Research Grant

Currently: Research Health Scientist, VA New Jersey War Related Illness and Injury Study Center

and Assistant Professor at New Jersey Medical School

2008-2012 Corey Lohnes, PhD, MS

Movement Science Ph.D. earned in May 2012 2009 World Federation of Neurology Travel Grant

Technology Transfer Trainee at Washington University in St. Louis, 2012

Currently: Consultant at Grant Cooper and Associates Executive Search Firm, Clayton, MO

2008-2012 Marie McNeely, PhD

Neuroscience Ph.D. earned in May 2012

2011-2012 NIH NRSA Predoctoral Fellowship F31 NS071639

Nominee, Lindau Nobel Laureate Meeting, 2011

Currently: Senior Health Economics Analyst—Clinical Outcomes, Centene Corporation

2009-2013 Dan Peterson, PhD, MSCI

Movement Science PhD and Master of Science in Clinical Investigation earned in August 2013

2010-2013 NIH TL1 Predoctoral Clinical Research Trainee, TL1RR024995 2012 NIH-sponsored Training Course in fMRI, University of Michigan Currently: Postdoctoral Fellow, Oregon Health & Science University

2009-2011 Abi Leddy, DPT, MSCI

NIH TL1 Predoctoral Clinical Research Trainee, TL1RR024995

DPT Class of 2011

Master of Science in Clinical Investigation earned in May 2011

2010 Platform Presenter Representing Washington University at the National Predoctoral Clinical Research Training Program Meeting

2011 Mary McMillan Scholarship from the American Physical Therapy Association

Currently: Research Physical Therapist, Rehabilitation Institute of Chicago

2009-2012 Laura Golden, OTD

OTD Class of 2012, completed her dissertation work, co-mentored by Dr. Erin Foster

2010-2012 Ryan Duncan, PT, DPT

Post-professional DPT Class of 2012, completed his capstone research

2012 Loraine F. Lake Award

2013-2015 NIH Loan Repayment Program

Currently: Assistant Professor of Physical Therapy and Neurology, Washington University in St.

Louis

2011-2013 April Williams

NIH TL1 Predoctoral Clinical Research Trainee, TL1RR024995

DPT Class of 2013

Master of Science in Clinical Investigation earned in May 2012 Currently: Physical Therapist at Baylor Institute for Rehabilitation

2012-present Samuel Nemanich

3<sup>rd</sup> year Movement Science Ph.D. student

2013-2014 Parkinson's and Movement Disorder Foundation Grant

2013 Gordon Research Conference Travel Award

2014 - present NIH TL1 Predoctoral Clinical Research Trainee, TL1RR024995

2014 Parkinson's Disease Foundation Travel Award

2014-present Elinor Harrison

2<sup>nd</sup> year Movement Science Ph.D. student

2015 Tom Thach Award - WUSTL Neuroscience Retreat

2014-present Peter Myers

2<sup>nd</sup> year Movement Science Ph.D. student

## **Undergraduate Students**

2005-2006	Elizabeth Stevens, Biology Major, Class of 2007, completed Bio 500/500W honors thesis project,
	Recipient of 2007 Stalker Prize in Biology
2006	John O'Keefe, Biology Major, Class of 2007, completed Bio 500/500W
	Svetlana Kantorovich, Biology Major, Class of 2007, completed Bio 500/500W
2007	Autumn Brockman, Biology Major, Class of 2008, completed Bio500
	Ryan Choi, Biology Major, Class of 2009, completed Bio500
2008-2011	John Scott, Biology Major, Class of 2011, completed Bio 200 and Bio 500 thesis project
2010-2012	Kelly Hill, Biomedical Engineering Major, Class of 2012, completed Bio 200, completing Bio 500
	2011 Mallinckrodt Institute of Radiology Summer Research Fellowship
	2011 Washington University Undergraduate Research Conference Travel Award
2011-2014	Laura Pilgram, Biology Major, Class of 2014, Summer Research Experience 2011, completed
	Bio 200, Bio 500/500W honors thesis project
2012-2014	Ashley Ederle, Anthropology/Global Health Major, Class of 2015, completed Bio 200
2014-present	Marina Mai, Anthropology/Dance, Class of 2016
2015-present	Albert Mo, Biology, Class of 2016

#### **Summer Students**

Rachel Katz, Communications/Religion Major, Northwestern University, Class of 2008, Center for Aging Summer Research Experience 2006

Mandy Wong, DPT Class of 2007, Washington University, NIH TL1 Predoctoral Clinical Research Summer Fellowship 2006, TL1RR024995

Heidi Schmidt, Biology Major, Class of 2009, Washington University, Summer Research Experience 2008 Jennifer Sylvester, DPT Class of 2011, Washington University, NIH TL1 Predoctoral Clinical Research Summer Fellowship 2009, TL1RR024995

# Bibliography:

#### **Articles:**

**Earhart, G.M.** and Stein, P.S.G. (2000) Scratch-swim hybrids in the spinal turtle: blending of rostral scratch and forward swim. J *Neurophysiol*, 83: 156-165.

**Earhart, G.M.** and Bastian, A.J. (2000) Form switching during human locomotion: traversing wedges in a single step. *J Neurophysiol*, 84: 605-615.

**Earhart, G.M.** and Stein, P.S.G. (2000) Step, swim, and scratch motor patterns in the turtle. *J Neurophysiol*, 84: 2181-2190.

**Earhart, G.M.** and Bastian, A.J. (2001) Selection and coordination of human locomotor forms following cerebellar damage. *J Neurophysiol*, 85: 759-769.

**Earhart, G.M.**, Melvill Jones, G., Horak, F.B., Block, E.W., Weber, K.D., and Fletcher, W.A. (2001) Forward vs. backward walking: transfer of podokinetic adaptation. *J Neurophysiol*, 86: 1666-1670.

Horak, F.B., **Earhart, G.M.**, and Dietz, V. (2001) Postural responses to combinations of head and body displacements: vestibular-somatosensory interactions. *Exp Brain Res*, 141(3): 410-414.

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**Earhart, G.M.** and Bastian, A.J. (2000) Forms of walking used to traverse inclines in a single step: healthy subjects versus subjects with cerebellar damage. APTA Combined Sections Meeting, New Orleans, LA

Melvill Jones, G., Fletcher, W.A., Weber, K.D., **Earhart, G.M.**, and Block, E.W. (2001) Foot nystagmus: a podokinetic mechanism for the control of curved locomotion? Soc Neurosci, San Diego, CA

**Earhart, G.M.**, Melvill Jones, G., Block. E.W., Weber, K.D., and Fletcher, W.A. (2001) Transfer of podokinetic adaptation: forward vs. backward walking. Soc Neurosci, San Diego, CA

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**Earhart, G.M.**, Fletcher W.A., Melvill Jones, G., Block, E.W., Weber, K.D., Horak, F.B. (2003) Role of the cerebellum in adaptation of walking trajectory. APTA Combined Sections Meeting, Tampa, FL.

**Earhart, G.M.**, Horak, F.B. (2003) The influence of cadence on locomotor adaptation to the rotating circular treadmill. ISPGR 2003 Meeting, Sydney, Australia

Melvill Jones, G., **Earhart, G.M.**, Block, E.W., Weber, K.D., Fletcher, W.A., and Horak, F.B. (2003) Linear + angular foot nystagmus: a novel perspective on the control of curvature in the trajectory of forward walking. ISPGR 2003 Meeting, Sydney, Australia

**Earhart, G.M.**, Sibley, K.M. and Horak, F.B. (2003) Podokinetic after-rotation in subjects with bilateral vestibular loss. Soc Neurosci, New Orleans, LA.

- **Earhart, G.M.**, Ambler, S. and Hong, M. (2005) Is the rotating treadmill a reasonable and feasible treatment for turning difficulties associated with Parkinson Disease? III Step, Salt Lake City, UT.
- **Earhart, G.M.** and Hong, M. (2005) Kinematics of podokinetic after-rotation: similarities to voluntary turning and clinical implications. Soc Neurosci, Washington, D.C.
- **Earhart, G.M.**, Stevens, E., Wang, S. and Hong, M. (2006) Changes in self-perception of turning following rotating treadmill stimulation. APTA Combined Sections Meeting, San Diego, CA.
- Hong, M., **Earhart, G.M.**, Damiano, D.L. and Perlmutter J.S. (2006) Decreased arm swing at fast walking speed in mild Parkinson Disease (PD). APTA Combined Sections Meeting, San Diego, CA.
- Melvill Jones, G., Fletcher, W.A., Weber, K.D., Block, E.W., **Earhart, G.M.** and Horak, F.B. (2006) Integration of angular and linear components of foot movement during locomotion round a curved trajectory. Canadian Physiological Society, Banff, Alberta, Canada.
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- Hong, M., Perlmutter, J.S., and **Earhart, G.M.** (2006) The rotating treadmill: a new tool for gait rehabilitation. World Parkinson Congress, Washington, DC.
- Stevens, E.S., Perlmutter, J.S., and **Earhart, G.M.** (2006) Self-perception of active and passive turning in Parkinson disease. World Parkinson Congress, Washington, DC.
- Melvill Jones, G., Fletcher, W.A., Block E.W., Weber, K.D., Horak, F.B., and **Earhart, G.M.** (2006) A locomotor system for controlling spatial orientation. Soc Neurosci, Atlanta, GA.
- Hong, M., Perlmutter, J.S., and **Earhart, G.M.** (2006) Evidence for bilateral pathways mediating rigidity in Parkinson disease. Mov Dis Soc, Kyoto, Japan.
- Hong, M., Perlmutter, J.S., and **Earhart, G.M.** (2007) Recommendations for the assessment of bradykinesia in Parkinson disease. APTA Combined Sections Meeting, Boston, MA.
- Hong, M., Wong, C.M., and **Earhart, G.M.** (2007) Is the hip joint a major player in locomotor trajectory adaptation? ISPGR XVIII Conference, Burlington, VT.
- Hackney, M.E., **Earhart, G.M.** (2007) The effects of argentine tango on functional mobility in people with Parkinson disease. ISPGR XVIII Conference, Burlington, VT.
- Hong, M., Perlmutter, J.S., **Earhart G.M.** (2007) Intention and postural components of essential tremor are dependent on thalamic stimulation frequency. Soc Neurosci, San Diego, CA.
- Choi R., Funk J., Hackney M.E., **Earhart G.M.** (2008) Evaluation of multi-directional reach in Parkinson disease. APTA Combined Sections Meeting, Nashville, TN.
- **Earhart G.M.**, Funk J., Mosiman C., Stringer, K. Hong, M. (2008) Effects of medication on turning performance in individuals with Parkinson disease. Movement Disorders Society, Chicago, IL.
- Hackney, M.E., **Earhart, G.M.** (2008) Backward walking in Parkinson disease. Movement Disorders Society, Chicago, IL.
- Hackney, M.E., **Earhart, G.M.** (2008) The effects of American Ballroom and Argentine Tango on motor control and locomotion in those with Parkinson Disease. Soc Neurosci, Washington, D.C.
- Falvo, M.J., **Earhart, G.M.** (2008) Six-minute walk distance in individuals with Parkinson disease: A Regression Model, American Physiological Society, Hilton Head, SC

- **Earhart, G.M.**, Clark, B.R. (2009) Functional mobility in essential tremor: variable effects of bilateral thalamic stimulation. APTA Combined Sections Meeting, Las Vegas, NV.
- Hackney, M.E., **Earhart, G.M.** (2009) Argentine tango dance may improve health related quality of life in those with Parkinson disease, Luther College Black History Conference, Decorah, IA
- Lohnes, C.A., **Earhart, G.M.** (2009) Effects of auditory, attentional, and combined cueing strategies on gait during single and dual cognitive tasks in Parkinson's disease, WFN World Congress on Parkinson's Disease and Related Disorders, Miami Beach, FL
- **Earhart, G.M.** (2009) Dance as an exercise intervention for people with Parkinson disease. SPRING (Special Parkinson's Research Interest Group): Developing the disease-modifying possibilities of exercise for Parkinson's, London, UK
- Hackney, M.E., **Earhart, G.M.** (2010) Effects of Argentine Tango on functional mobility and gait in Parkinson disease: a comparison of individuals with and without freezing of gait and previous fall history. Movement Disorder Society Annual Meeting, Buenos Aires, Argentina
- Foreman, K.B., Cavanaugh, J.T., **Earhart, G.M.**, Ellis, T., Ford, M., Dibble, L.E. (2010) Accumulation of comorbidities worsens functional mobility and motor deficits in persons with PD. 24<sup>th</sup> Annual Parkinson Study Group Symposium, Irving, Texas. Movement Disorders, *25*(6), VII.
- Sylvester J.L., Marchant D., **Earhart G.M.** (2010) Effects of short duration, high dose contact improvisation dance on Parkinson disease. Missouri Physical Therapy Association Meeting, St. Louis, MO
- Duncan, R.P., **Earhart, G.M.** (2010) Participation and Parkinson disease. Missouri Physical Therapy Association Meeting, St. Louis, MO
- Leddy, A.L., Crowner, B.E., **Earhart, G.M.** (2010) Functional Gait Assessment and Balance Evaluation System Test: reliability, validity, and fall risk assessment for individuals with Parkinson disease. Missouri Physical Therapy Association Meeting, St. Louis, MO
- Duncan, R.P., Rotello, J.M.M., **Earhart, G.M.** (2010) Dance as exercise: effects of a community-based tango program for people with Parkinson disease. Parkinson's Disease Foundation: Parkinson Disease & Exercise Conference. Newark. NJ.
- Duncan, R.P., **Earhart, G.M.** (2010) Relationships between participation, quality of life and mobility in individuals with Parkinson disease. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S705.
- Rotello, J.M.M., **Earhart, G.M.** (2010) Activity levels in Parkinson disease: self-assessment and predictive factors. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S705.
- **Earhart, G.M.**, Cavanaugh, J.T., Ellis, T., Ford, M.P., Foreman, K.B., Dibble, L.E. (2010) The 9 hole peg test: what does it really measure in people with Parkinson disease? World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S650-S651.
- **Earhart, G.M.**, Cavanaugh, J.T., Ellis, T., Ford, M.P., Foreman, K.B., Dibble, L.E. (2010) What combination of tests best identified fallers in people with Parkinson disease? World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S650.
- Ellis, T., Cavanaugh, J.T., **Earhart, G.M.**, Ford, M.P., Foreman, K.B., Dibble, L.E. (2010) Which UPDRS motor / mobility items best predict quality of life in people with Parkinson's disease? World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S687.
- Ellis, T., Cavanaugh, J.T., **Earhart, G.M.**, Ford, M.P., Foreman, K.B., Dibble, L.E. (2010) Typical physical activity levels in people with Parkinson disease: effect of disease state, gender and age. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S686.

- McNeely, M.E., Tabbal, S.D., Campbell, M.C., Karimi, M., Hartlein, J.M., Lugar, H.M., Hershey, T., Revilla, F.J., Perlmutter, J.S., **Earhart, G.M.** (2010) Effects of dorsal versus ventral subthalamic nucleus deep brain stimulation on gait in Parkinson disease. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S672.
- **Earhart, G.M.**, Rotello, J.M.M., Duncan, R.P. (2010) Short-term effects of a community-based tango program on motor and non-motor symptoms, activities of daily living, and motor complications in PD. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S697-S698.
- Dibble L.E., Cavanaugh J.T., **Earhart G.M.**, Ellis T., Ford M.P., Foreman K.B. (2010) Accumulation of comorbidities worsens functional mobility, motor deficits, and quality of life in persons with Parkinson disease. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S648.
- Dibble L.E., Cavanaugh J.T., **Earhart G.M.**, Ellis T., Ford M.P., Foreman K.B. (2010) Does peripheral neuropathy worsen balance performance and functional mobility in persons with Parkinson disease? World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S647-S648.
- Ford, M.P., Cavanaugh, J.T., **Earhart, G.M.**, Ellis, T., Foreman, K.B., Dibble, L.E. (2010) Balance, gait speed flexibility, and physical activity predict walking capacity in people with Parkinson disease. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S703-S704.
- Lohnes, C.A., **Earhart, G.M.** (2010) Switching directions of the eyes and leg: relationship to freezing in Parkinson disease. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S642-S643.
- Peterson, D.S., Plotnik, M., Hausdorff, J.M., **Earhart, G.M**. (2010) Effects of turning and backward walking on bilateral coordination in individuals with Parkinson disease. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S644.
- Leddy A.L., Crowner, B.E., **Earhart, G.M.** (2010) Balance assessment in Parkinson disease: the BESTest and MiniBESTest. World Parkinson Congress, Glasgow, Scotland, UK, Mov Disord; 25(Suppl 3): S684.
- Ellis, T., Cavanaugh, J.T., **Earhart, G.M.**, Ford, M.P., Foreman B.K., Dibble, L.E. (2010) Gender impacts physical activity levels in people with Parkinson disease. Seventh Annual Interdisciplinary Women's Health Research Symposium; Journal of Women's Health; 19(10).
- Duncan, R.P., Rotello, J.M.M., **Earhart, G.M.** (2011) Community-based dance for people with Parkinson disease. APTA Combined Sections Meeting, New Orleans, LA.
- Leddy, A.L., Crowner, B.E., **Earhart, G.M.** (2011) Comparative analysis of balance measures in Parkinson disease. APTA Combined Sections Meeting, New Orleans, LA.
- Ellis, T., Cavanaugh, J.T., **Earhart, G.M.**, Ford, M.P., Foreman, K.B., Dibble, L.E. (2011) Do tests of physical mobility predict health related quality of life in people with Parkinson disease? APTA Combined Sections Meeting, New Orleans, LA.
- Cavanaugh, J.T., **Earhart, G.M.**, Ellis, T., Ford, M.P., Foreman, K.B., Dibble, L.E. (2011) Physical activity characteristics of fallers and non-fallers with Parkinson disease. APTA Combined Sections Meeting, New Orleans, LA.
- McNeely, M.E., **Earhart, G.M.** (2011) The effects of levodopa on turning in people with Parkinson disease with and without freezing of gait. Society for Neuroscience, Washington DC.
- Hill, K.K., Campbell, M.C., McNeely, M.E., Hershey, T., Tabbal, S.D., Karimi, M., Flores, H.P., Hartlein, J.M., Lugar, H.M., Revilla, F.J., Videen, T.O., Perlmutter, J.S., **Earhart, G.M.** (2011) Correlations between regional cerebral blood flow responses to dorsal and ventral subthalamic nucleus deep brain stimulation and gait and balance responses in Parkinson disease. Society for Neuroscience, Washington DC.
- Lohnes, C.A., **Earhart, G.M.** (2011) Voluntary saccade function during turning in Parkinson disease. Society for Neuroscience, Washington DC.

- Peterson, D.S., Pickett, K.A., **Earhart, G.M.** (2011) Cortical and subcortical brain activity during different imagined gait tasks. Society for Neuroscience, Washington DC.
- Pickett, K.A., Peterson, D.S., Perlmutter, J.S., Snyder, A.Z., **Earhart, G.M.** (2011) BOLD signal changes following rotating treadmill training. Society for Neuroscience, Washington DC.
- Bondurant, A., Pickett, K., Nguyen, C., Grafeman, S., Lugar, H., Paciorkowski, A., Marshall, B., White, N., Wasson, J., **Earhart, G.M.**, Permutt, A., Hershey, T. (2011) Neuropsychological and motor function in Wolfram syndrome. Diabetes Day, St. Louis, MO.
- **Earhart, G.M.**, Duncan, R.P, Leddy, A.L., Cavanaugh, J.T., Ellis, T., Ford, M.P., Foreman, K.B., Dibble, L.E. (2012) Prospective identification of fallers with Parkinson disease using the BESTest and MiniBESTest. Combined Sections Meeting, Chicago, IL.
- Duncan, R.P., **Earhart, G.M.** (2012) Four square step test performance in individuals with Parkinson disease. Combined Sections Meeting, Chicago, IL.
- Williams, A.J., **Earhart, G.M.** (2012) Gait coordination in Parkinson disease: effects of step length and cadence manipulations. Combined Sections Meeting, Chicago, IL.
- Ellis, T., Cavanaugh, J.T., **Earhart, G.M.**, Ford, M.P., Foreman, K.B., Dibble, L.E. (2012) Association between low activity levels and falling in women and men with Parkinson disease. BIRCWH Scholars Meeting, Bethesda, MD.
- Duncan, R.P, **Earhart, G.M.** (2012) Community-based dance for people with Parkinson disease: an 18-month intervention study, ISPGR, Trondheim, Norway.
- **Earhart, G.M.**, Duncan, R.P. (2012) Should one measure balance or gait to best predict falls among people with Parkinson disease? ISPGR, Trondheim, Norway.
- Pickett, K.A., Duncan, R.P. Permutt, A., Hershey, T. **Earhart G.M.** (2012) Gait and balance impairment in Wolfram syndrome. ISPGR, Trondheim, Norway.
- Peterson, D.S., Pickett, K.A., **Earhart, G.M.** (2012) Cortical and subcortical brain activity during imagined gait tasks across age. ISPGR, Trondheim, Norway.
- Ford, M.P., Cavanaugh, J.T., **Earhart, G.M.**, Ellis, T., Foreman, K.B., Husingh, C., McGwin G., Dibble, L.E. (2012) Methodological challenges in a prospective longitudinal cohort study of persons with PD: does a study of exercise behavior naturally bias the study sample? Movement Disorder Society Annual Meeting, Dublin, Ireland.
- Dibble, L.E., Cavanaugh, J.T., **Earhart, G.M.**, Ellis, T., Ford, M.P., Foreman, K.B. Ambulatory activity monitoring: Capturing participation-level decline in Parkinson disease. (2012) Movement Disorder Society Annual Meeting, Dublin, Ireland.
- Ford, M.P., Cavanaugh, J.T., **Earhart, G.M.**, Ellis, T., Foreman, K.B., Husingh, C., McGwin G., Dibble, L.E. (2012) Charting the progression of disability Parkinson disease (CHOP PD): changes in disability over 12 months. Movement Disorder Society Annual Meeting, Dublin, Ireland.
- Duncan, R.P., Leddy, A., Cavanaugh, J., Dibble, L., Ellis, T., Ford, M., Foreman, K.B., **Earhart, G.M.** (2013) Predicting falls in Parkinson disease: is the Brief-BESTest as good as the Mini-BESTest?", APTA Combined Sections Meeting, San Diego, CA.
- Williams, A.J., Peterson, D.S., Ionno, M., **Earhart, G.M.** (2013) Upper Extremity Freezing and Dyscoordination in Parkinson Disease: Effects of Amplitude and Cadence Manipulations. Missouri Physical Therapy Association, St. Louis, MO
- Duncan, R.P., Leddy, A.L., Cavanaugh, J.T., Dibble, L.E., Ellis, T., Ford, M.P., Foreman, K.B., **Earhart, G.M.** (2013) Prospective measurement of balance decline in people with Parkinson disease: An exploratory analysis. Missouri Physical Therapy Association, St. Louis, MO

- Duncan, R.P., Leddy, A.L., Cavanaugh, J.T., Dibble, L.E., Ellis, T., Ford, M.P., Foreman, K.B., **Earhart, G.M.** (2013) Predictors of changes in balance over 6 and 12 months in Parkinson disease: An exploratory analysis. Movement Disorder Society Annual Meeting, Sydney, Australia.
- Duncan, R.P., Leddy, A.L., Cavanaugh, J.T., Dibble, L.E., Ellis, T., Ford, M.P., Foreman, K.B., **Earhart, G.M.** (2013) Prospective measurement of balance decline in people with Parkinson disease. Movement Disorder Society Annual Meeting, Sydney, Australia.
- Nemanich, S.T., Duncan, R.P., Cavanaugh, J.T., Dibble, L.E., Ellis, T., Ford, M.P., Foreman, K.B., **Earhart, G.M.** (2013) Predictors of walking speeds and differences between preferred and fast as possible walking speeds in people with Parkinson disease. Movement Disorder Society Annual Meeting, Sydney, Australia.
- **Earhart, G.M.** (2013) Rehabilitation Update: Parkinson Disease. International Society of Posture & Gait Research, Akita, Japan.
- Peterson, D.S., Pickett, K.A., **Earhart, G.M.** (2013) Supraspinal Control of Locomotion in Freezers and Non-freezers with Parkinson Disease. International Society of Posture & Gait Research, Akita, Japan.
- Pickett, K.A., Peterson, D.S., Koller, J., Campbell, M.C., Snyder, A.Z., Perlmutter, J.S., **Earhart G.M.** (2013) Resting state functional connectivity in the motor network in individuals with Parkinson disease. International Society of Posture & Gait Research, Akita, Japan.
- Hong, M., **Earhart, G.M.**, Kiratli, J. (2013) Outcomes of short-term participation in wheelchair dancing for individuals with spinal cord injuries: a pilot study. Academy of Spinal Cord Injury Professionals, Las Vegas, NV.
- Nemanich, S.T., **Earhart, G.M.** (2013) Saccadic eye movements during natural viewing of human locomotion Gordon Conference: Eye Movements, Easton, MA
- **Earhart, G.M.**, Cote, D., Fisher, M., Leventhal, D., Sack, J. (2013) Overview: How do we know dance helps people with Parkinson's? World Parkinson Congress, Montreal, Canada
- Duncan, R.P., Leddy, A.L., Cavanaugh, J.T., Dibble, L.E., Ellis, T., Ford, M.P., Foreman, K.B., **Earhart, G.M.** (2013) Balance Differences Between People With and Without Freezing of Gait in Parkinson Disease. World Parkinson Congress, Montreal, Canada
- Peterson, D.S., Pickett, K.A., **Earhart, G.M.** (2013) Supraspinal control of locomotion in those with Parkinson Disease. Society for Neuroscience, San Diego, CA
- Nemanich, S.T., **Earhart, G.M.** (2014) Smaller after-effects following prism adaptation during walking in Parkinson disease. Neuromuscular Plasticity Symposium, Gainesville, FL
- Peterson, D.S., Pickett, K.A., Duncan, R.P, **Earhart, G.M.** (2014) Neural activity during imagined walking in people with Parkinson disease. APTA Combined Sections Meeting, Las Vegas, NV
- Duncan, R.P., Combs-Miller, S., Cavanaugh, J.T., Dibble, L.E., Ellis, T., Ford, M.P., Foreman, K.B., Leddy, A.L., **Earhart, G.M.** (2014) Are the 6 minute and 10 meter walk tests redundant in Parkinson disease? Barnes Jewish Hospital Multidisciplinary Research Conference, St. Louis, MO
- Duncan, R.P., Pickett, K.A., **Earhart, G.M.** (2014) Tango or treadmill? A comparison of two exercise interventions for people with Parkinson disease. Barnes Jewish Hospital Multidisciplinary Research Conference, St. Louis, MO
- Krampe, J. **Earhart, G.M.** (2014) Translation of dance-based research into practice, Gerontological Society of America, Washington DC
- Nemanich, S.T. **Earhart, G.M.** (2014) Differences between two prism adaptation tasks in people with Parkinson disease with and without freezing of gait. Society for Neuroscience, Washington DC
- Duncan, R.P., Pickett, K.A., **Earhart, G.M.** (2014) The effect of levodopa on identifying fall risk in Parkinson disease. Parkinson Study Group, St. Louis, MO

- Nemanich, S., **Earhart G**. (2014) After-effects following stepping on a rotating surface: A comparison of people with Parkinson disease with and without freezing of gait and healthy controls. Clinical Research Training Center, St. Louis, MO
- Duncan, R.P., Pickett, K.A., Weiss, R., **Earhart, G.M.**, Campbell, M.C. (2015) Do Measures of Balance, Motor Severity, or Executive Function Accurately Identify Fall History in Parkinson Disease? APTA Combined Sections Meeting, Indianapolis, IN
- Paul, S.S., Duncan, R.P., Cavanaugh, J.T., **Earhart, G.M.**, Ellis, T.D., Ford, M.P., Foreman, K.B., Leddy, A.L., Canning, C.G., Thackeray, A., Dibble, L.E. (2015) External Validation of a Simple Clinical Tool Used to Predict Falls in People with Parkinson Disease, Movement Disorder Society, San Diego, CA
- Nemanich, S.T., **Earhart, G.M.** (2015) Prism adaptation during reaching and walking: effects of task and aging on adaptation rate and after-effects. Society for the Neural Control of Movement, Charleston, SC
- Duncan, R.P., McNeely, M.E., **Earhart, G.M.** (2015) Characterizing Maximum Step Length Test Performance in People with Parkinson Disease. Missouri Physical Therapy Association, St. Louis, MO
- **Earhart, G.M.**, Canning, C. Dibble, L, Ellis, T., Rochester, L. (2015) Rehabilitation in Parkinson's Disease: Exercise is as Important as Medication, *Physiotherapy*, 101 (Suppl 1): e20.
- Harrison, E., McNeely, M.E., **Earhart, G.M.** (2015) Testing the feasibility of singing to improve gait measures in Parkinson's disease. Neuroscience Retreat Washington University in St. Louis, Grafton, IL.
- Nemanich, S.T., **Earhart, G.M.** (2015) Effect of Parkinson disease and switching on saccade performance. Neuroscience Retreat Washington University in St. Louis, Grafton, IL.
- Myers, P., McNeely, M.E., **Earhart, G.M.**, Campbell, M.C. (2015) Beyond the basal ganglia: cerebellar volumetrics in Parkinson disease. Neuroscience Retreat Washington University in St. Louis, Grafton, IL.
- McNeely M.E., Pickett K.P., Duncan R.P., Hershey T., **Earhart G.M.** (2015) Longitudinal Changes in Gait in People with Wolfram Syndrome. Washington University Neuroscience Retreat, Grafton, IL.
- Nemanich, S.T., Earhart, G.M. (2015) Automaticity of two motor tasks in Parkinson disease. Clinical Research Training Center, St. Louis, MO
- Duncan, R.P., McNeely, M.E., Cavanaugh, J.T., Dibble, L.E., Ellis, T.D., Ford, M.P., Foreman, K.B., **Earhart, G.M.** (2016) Tracking Progression of Motor Signs and Quality of Life Based on Motor Phenotype in Parkinson Disease. IV Step, Columbus, OH
- Duncan, R.P., McNeely, M.E., **Earhart, G.M.** (2016) Non-Motor Symptoms in Parkinson's Disease: Relationships with Measures of Motor Performance, APTA Combined Sections Meeting, Anaheim, CA
- Christofoletti, G., McNeely, M.E., Duncan, R.P. **Earhart, G.M.**, Campbell, M.C. (2016) Factors impacting mobility in Parkinson's disease: evaluating the contribution of age, disease severity and executive function. APTA Combined Sections Meeting, Anaheim, CA
- Duncan, R.P., McNeely, M.E., Earhart, G.M. (2016) Does Distance Walked after Two Minutes Predict Total 6 Minute Walk Test Distance in People with Parkinson Disease? International Parkinson and Movement Disorder Society, Berlin, Germany
- McNeely, M.E., Duncan, R.P., Earhart, G.M. (2016) Differential effects of tango, treadmill, and stretching interventions on gait in people with Parkinson Disease. International Parkinson and Movement Disorder Society, Berlin, Germany

Seidler, K.J., Duncan, R.P., McNeely, M.E., Hackney, M.E., Earhart, G.M. (2016) Feasibility and preliminary efficacy of a telehealth approach to group tango instruction for people with Parkinson disease. International Parkinson and Movement Disorder Society, Berlin, Germany

## **Other Professional Activities:**

## **Community Activities:**

"The Cerebellum & Ataxia", Alberta Ataxia Support Group, July 2001, Calgary, AB, Canada

"What Causes Balance Problems and Falls? The Latest Research on Balance", Elsie Stuhr Senior Center and Hearthstone at Murray Hill, February 2004, Beaverton, OR

Brain Fair, Oregon Museum of Science and Industry, 2003, 2004

"I'm Freezing: A Common Walking Problem Associated with Parkinson Disease", article published in American Parkinson Disease Association St. Louis Parkinson Newsletter, Volume 1, February 2005

"Exercise, Your Options: A Guide To Exercising With PD", article in American Parkinson Disease Association St. Louis Parkinson Newsletter, Volume 20 No. 1, June 2007

"A Celebration of Dance: How Dance Influences Movement in Individuals with Parkinson Disease", Fundraiser for Greater St. Louis American Parkinson Disease Association, Founder, Organizer & Host December 2007, Invited Speaker/Special Guest 2008-2010, St. Louis, MO

"Benefits of Dance for People with Parkinson Disease", Training Session for Parkinson Disease Support Group Leaders, Greater St. Louis American Parkinson Disease Association, March 2008, St. Louis, MO

"Addressing Functional Mobility Issues in Parkinson Disease", St. John's Mercy Physical Therapy Department In-Service, March 2008, St. Louis, MO

"Get Active, Stay Active: An Overview of Exercise for People with Parkinson Disease", Kirkwood Parkinson's Disease Support Group, April 2008, Kirkwood, MO

"Exercise for Seniors", STAES Senior Exercise Program, April 2008, St. Louis, MO

"It Takes Two to Tango, But an APDA Grant to Prove Its Benefits for People with PD", The American Parkinson Disease Association Spring 2008 Newsletter

"Alternative Approaches to Exercise", article in American Parkinson Disease Association St. Louis Parkinson Newsletter, August 2008

"Dancing Your Way to Better Health", 4<sup>th</sup> Annual Healthy Living Senior Fair, St. Charles, MO, August 2008

"Non-traditional Approaches to Exercise for People with Parkinson Disease", St. Peters Parkinson's Disease Support Group, St. Charles, MO, October 2008

Greater St. Louis American Parkinson Disease Association Lucky 13 Fundraiser, Invited Speaker, October 2008

College Student Interest Group in Neuroscience (CO-SIGN), Faculty Guest Speaker, Washington University in St. Louis, St. Louis, MO, January 2009

Ellis, Terry (moderator), Gammon Earhart, Beth Fisher, Fay Horak, and Margaret Schenkman. "Exercise, Balance, and Parkinson's Disease." Journal of Neurologic Physical Therapy Journal Club Podcast, June 2009. Pasadena, CA: Science Audio. <a href="http://www.scienceaudio.net/inpt/200906/inpt">http://www.scienceaudio.net/inpt/200906/inpt</a> 200906 journal club.mp3 >

"Brain Activity and Fatigue: Effects of Aging and Parkinson Disease", St. Peters Parkinson's Disease Support Group, St. Charles, MO, October 2009

"Would You Like to Dance? APDA to Sponsor Tango Classes!", article in American Parkinson Disease Association St. Louis Parkinson Newsletter, November 2010

"Dancing Your Way to Better Health", article in newsletter of the North Texas Chapter of the American Parkinson Disease Association, December 2010

"PD4PD: Partnered Dance for Parkinson Disease", article in American Parkinson Disease Association St. Louis Parkinson Newsletter, November 2011

Judge, Annual Biomedical Research Conference for Minority Students, St. Louis, MO, November 2011

"Dance as Complementary Therapy for Parkinson Disease", Health Innovations in Context, http://www.hinnovic.org/dance-as-complementary-therapy-for-parkinson-disease/, December 2011

Consultant, "The Parkinson Journey: From Diagnosis to Treatment to Cure" Resource DVD, Greater St. Louis Chapter American Parkinson Disease Association, 2012

Clark Elementary School Science Enrichment Committee, Webster Groves, MO, 2009-2013

Judge, Greater St. Louis Science Fair, St. Louis, MO, 2012, 2013

"Physical Therapy and Exercise for Parkinson Disease", article in American Parkinson Disease Association St. Louis Parkinson Newsletter, February 2013

"Walking and Balance in Parkinson's: The Latest Research", Young Onset PD Support Group, Missouri Baptist Hospital, St. Louis, MO, February 2013

APTA Section on Research Congressional Fly-In, Washington DC, February 2013

"Brain Health", Clark Elementary School, Webster Groves, MO, September 2013

Office of Diversity Health Career Fair, Washington University in St. Louis, St. Louis, MO, February 2014

"Exercise: Your Options", Kirkwood PD Support Group, Kirkwood, MO, June 2014

Meet the Researcher Mentoring and Networking Session, "Starting in Research" and "Research Career Paths", World Confederation of Physical Therapy, Singapore, May 2015

PT Day on Capitol Hill, Washington DC, June 2015

#### **Continuing Education:**

- APTA Meeting & Exposition, 2000, 2005
- Vestibular Rehabilitation for Balance and Dizziness, Calgary, AB, Canada, 2001
- NIH Regional Seminar on Program Funding and Grants Administration, Portland, OR, 2002
- Neurological Sciences Institute Grant Writing Workshop, Portland, OR, 2002
- Grantsmanship 101: The Investigator-Initiated NIH Grant, Portland, OR, 2003
- NIH NCMRR Trainee Workshop, Silver Springs, MD, 2003
- APTA Combined Sections Meeting, 2000, 2003, 2006, 2007, 2008, 2011, 2012, 2013, 2014
- III Step: Linking Movement Science and Intervention, 2005
- Society for Neuroscience Meeting, 1999, 2001, 2003, 2005, 2011
- International Society for Posture and Gait Research, 2003, 2007, 2012, 2013
- World Parkinson Congress, 2006, 2010, 2013
- Mentoring and Supervision for the Responsible Conduct of Research, 2006
- Forging Your Own Path: A Summit on the Advancement of Women Faculty at Washington University, 2007
- Movement Disorders Society Meeting, 2008, 2013
- The Key Elements to Becoming an Effective Mentor, 2008
- Third Parkinson's Disease Foundation Exercise Meeting, 2010

- Mentoring and Morale: Society for Neuroscience Annual Neuroscience Departments and Programs Meeting, 2013
- Gordon Conference: Eye Movements, 2013
- Sensing Motion for Action Conference, 2013
- Progress in Motor Control IX, 2013
- WUSM Academic Medical Leadership Program for Physicians and Scientists, 2014
- Building, Retaining, and Sustaining a Diverse Student Body, 2014
- APTA Education Leadership Institute Fellow, July 2014-July 2015
- Diversity and Inclusion 1.0, St. Louis, MO, July 2014
- Preparing the Next Generation of Physical Therapists for Innovative Practice, Washington, DC, July 2014
- Leadership Retreat: Flexible Work Culture, Mission Disruption, Finding the Right Leaders, September 2014
- APTA NEXT Annual Conference, 2014, 2015
- APTA Education Leadership Conference, 2014
- ACAPT Clinical Education Summit, October 2014
- Professionalism for Clinicians & Scientists, November 2014
- Medical Education Day: Teaching as Leadership, December 2014
- World Confederation of Physical Therapy, May 2015
- Faculty Development Workshop: STEM Education, WUSM, May 2015

## Media Coverage of Research:

"The Tango Effect" by Randall Roberts, The Riverfront Times, January 25-31, 2007

"Vive, la tango!", The Record (Washington University Newspaper), February 15, 2007

"Tango improves balance, mobility in patients with Parkinson's disease" by Beth Miller, Medical News Releases January 30, 2008 (http://mednews.wustl.edu) & The Record, February 7, 2008

"Exercise: Parkinson's Patients Benefit from Tango" by Eric Nagourney, New York Times, February 12, 2008

"Fancy Footwork as Therapy" by Cynthia Billhartz Gregorian, St. Louis Post Dispatch, April 7, 2008

Ivanhoe Medical Breakthroughs, Nationwide News Release, April 2008

"Finding the Beat Once Again", CBS Evening News, April 15, 2008

"The Neuroscience of Dance", Scientific American, July 2008

"Tango Therapy: The Healing Embrace", The Argentimes, Buenos Aires, Argentina, August 1, 2008

"Tango Therapy", The World on Public Radio International, July 29, 2008

"Dance Class 'Uplifting' for Parkinson's Patients", USA Today, November 13, 2008

"Dance for the Cure: Tango Improves Parkinson's Study Says", Student Life (Washington University), November 17, 2008

"To Dance Again: Tango Meets Parkinson's", documentary produced by Kerstin Adelt, Higher Education Channel, <a href="http://www.hectv.org/programs/spec/program.php?specialid=35">http://www.hectv.org/programs/spec/program.php?specialid=35</a>, 2009 (St. Louis Film Critics Association Award for Best Documentary Short, 2010)

"Dancing the Tango May Help Parkinson's Patients", Fox Files News Feature, KTVI Channel 2, St. Louis, March 2, <a href="http://www.fox2now.com/news/ktvi-tango-helps-parkinsons-patients-030210,0,6088173.story">http://www.fox2now.com/news/ktvi-tango-helps-parkinsons-patients-030210,0,6088173.story</a>, 2010

"Dancing Tango is Used to Treat Various Diseases", Clarin Newspaper, Buenos Aires, Argentina, July 29, 2010

Health Benefits of Dance, Mysteries of the Human Body, Korean Broadcasting System, Seoul, South Korea, April 2011

"Parkinson's & dance: An unusual partnership unites" by Lindsey Tanner, Associated Press, December 2011

"Earhart Gives Engaging Lecture and Receives Inaugural Alumni Achievement Award", The Bulletin of Arcadia University, <a href="http://bulletin.arcadia.edu/2012/02/earhart-gives-engaging-lecture-and-receives-inaugural-alumni-achievement-award/">http://bulletin.arcadia.edu/2012/02/earhart-gives-engaging-lecture-and-receives-inaugural-alumni-achievement-award/</a>, February 2012

"Tai Chi for Parkinson Disease" video segment for Chinese Culture Days at the Missouri Botanical Gardens, March 2012

"Benefits of Tango for People with Parkinson's Disease" by Heather Stringer, Today in PT Magazine, May 2012

"Transmission to Transformation: Defining a Global Trajectory for Excellence", Arcadia Magazine, <a href="http://magazine.arcadia.edu/inauguration-carl-oxholm-iii/featured-secondary/transmission-transformation-defining-global-trajecto">http://magazine.arcadia.edu/inauguration-carl-oxholm-iii/featured-secondary/transmission-transformation-defining-global-trajecto</a>, Spring 2012

"Teaching Tango for Parkinson's: Gammon M. Earhart, PT, PhD", Parkinson's Disease Foundation Newsletter, Spotlight on Research, April 2013

"Care to tango? Why people with Parkinson's disease may want to put on their dancing shoes", WUSM Outlook Magazine, August 2013

"Washington People: Gammon Earhart, Reviving Freedom of Movement with Tango", WU Record, March 2014

"For Patients With Parkinson: It Takes Two to Tango", Neurology Times, September 2014

"Passionate and precise, the Tango is also therapeutic", The Washington Post, September 2014