BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Earhart, Gammon, M.	Assistant Professor of Physical Therapy, Anatomy & Neurobiology, and Neurology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Arcadia University	B.A.	5/1994	Psychobiology
Arcadia University	M.S.P.T.	8/1996	Physical Therapy
Washington University in St. Louis	Ph.D.	8/2000	Movement Science
Oregon Health & Science University	Postdoctoral Fellowship	10/2000-6/2004	Balance Disorders Laboratory

A. POSITIONS AND HONORS

Positions

1996-2000 Doctoral Student/Graduate Research Assistant, 1996-2000
Advisors: Paul S.G. Stein, Ph.D. and Amy J. Bastian, P.T., Ph.D.
Movement Science Program, Washington University in St. Louis, St. Louis, MO

2000-2004 Postdoctoral Fellow, 2000-2004
Advisors: Fay B. Horak, P.T., Ph.D., and Geoffrey Melvill Jones, M.D., F.R.S.
Oregon Health & Science University, Portland, OR and University of Calgary, Calgary, AB

2004-2005 Instructor, Program in Physical Therapy, Washington University School of Medicine

2005- Assistant Professor, Program in Physical Therapy, Department of Neurology, Department of Anatomy & Neurobiology, Washington University School of Medicine

Honors

1999-2000 Promotion of Doctoral Studies Level II Award from The Foundation for Physical Therapy

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

2002 NRSA Postdoctoral Fellowship awarded by NIH (NINDS)

2002-2003 Postdoc Paper of the Year Award, Runner-Up, Oregon Health & Science University

2005 Eugene Michels New Investigator Award from the American Physical Therapy Association

2006 Outstanding Faculty Mentor Certificate of Special Recognition, Washington University

Professional Societies

1994-present American Physical Therapy Association (APTA), Research & Neurology Sections
1997-present Society for Neuroscience
2002-present International Society for Postural and Gait Research
2002-present Society for the Neural Control of Movement
2002-present APTA Neurology Section Research Committee
2005-present Academic Women's Network

B. SELECTED PEER-REVIEWED PUBLICATIONS

Peer-reviewed Articles

1. 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.
2. Earhart, G.M. and Bastian, A.J. (2000) Form switching during human locomotion: traversing wedges in a single step. J. Neurophysiol., 84: 605-615.
3. Earhart, G.M. and Stein, P.S.G. (2000) Step, swim, and scratch motor patterns in the turtle. J. Neurophysiol., 84: 2181-2190.
4. Earhart, G.M. and Bastian, A.J. (2001) Selection and coordination of human locomotor forms following cerebellar damage. J. Neurophysiol., 85: 759-769.

5. 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.
6. 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.
7. Earhart, G.M., Melvill Jones, G., Horak, F.B., Block, E.W., Weber, K.D., and Fletcher, W.A. (2002) Podokinetic after-rotation following unilateral and bilateral podokinetic stimulation. J. Neurophysiol., 87: 1138-1141.
8. Earhart, G.M., Melvill Jones, G., Horak, F.B., Block, E.W., Weber, K.D., and Fletcher, W.A. (2002) Transfer of podokinetic adaptation from stepping to hopping. J. Neurophysiol., 87: 1142-1144.
9. Earhart, G.M., Fletcher, W.A., Horak, F.B., Block, E.W., Weber, K.D., Suchowersky, O., and Melvill Jones, G. (2002) Does the cerebellum play a role in podokinetic adaptation? Exp. Brain Res., 146: 538-542.
10. Earhart, G.M., Horak, F.B., Melvill Jones, G., Block, E.W., Weber, K.D., Suchowersky, O., and Fletcher, W.A. (2002) Is the cerebellum important for podokinetic adaptation? In The Cerebellum: Recent Advances in Cerebellar Research, Annals NY Acad. Sci., 978: 511-512.
11. Earhart, G.M., and Horak, F.B. (2003) Gaining insight by going in circles: use of the rotating circular treadmill to study the neural control of human walking. IEEE Eng Med Biol Mag, 22(2): 32-36.
12. Earhart, G.M., Sibley, K.M., and Horak F.B. (2004) Effects of bilateral vestibular loss on podokinetic after-rotation. *Exp. Brain Res.*, 155(2): 251-256.
13. Earhart, G.M. and Horak, F.B. (2004) Effects of cadence on the acquisition and expression of podokinetic after-rotation. *Human Movement Science*, 23(6): 823-836.
14. Stevens, E.S. and Earhart, G.M. (2006) Changes in self-perception of active but not passive turning following walking on the rotating treadmill. *Exp Brain Res,* 171(3): 340-346.
15. Earhart, G.M. and Hong, M. (2006) Kinematics of podokinetic after-rotation: similarities to voluntary turning and potential clinical implications. *Brain Res Bull*, 70(1): 15-21.
16. Earhart, G.M. (2006) Walking and running on the circular treadmill: transition speed and podokinetic after-effects. *J Mot Behav*, 38: 349-356.
17. Earhart, G.M. and Lang, C.E. (2006) Postdoctoral fellowships: a critical step beyond the Ph.D. in the training of physical therapists. *J Phys Ther Education*, 20(2): 9-11.
18. Hong, M., Perlmutter, J.S., Earhart, G.M. (2007) Podokinetic after-rotation in Parkinson disease. *Brain Res*, 1128: 99-106.
19. Earhart, G.M., Stevens, E.S., Perlmutter, J.S., and Hong, M. (2007) Perception of active and passive turning in Parkinson disease. *Neurorehabil Neural Repair*, 21(2): 116-122.
20. Wong, C.-M., Hong, M., Earhart, G.M. (2007) Limited transfer of podokinetic after-rotation from kneeling to standing. *Somatosens Mot Res*, 24(1): 35-40.
21. Hong, M., Perlmutter, J.S., Earhart, G.M. (2007) Enhancement of rigidity in Parkinson disease with activation. *Mov Disord*, 22(18): 1164-8.
22. Hackney, M., Kantorovich S., Earhart, G.M. (2007) A study on the effects of Argentine tango as a form of partnered dance for those with Parkinson disease and healthy elderly. *Am J Dance Ther*, 29(2): 109-127.
23. Earhart, G.M., Hong, M., Tabbal, S.D., Perlmutter, J.S. (2007) Effects of thalamic stimulation frequency on intention and postural tremor. *Exp Neurol*, 208(2): 257-263.
24. Hackney, M., Kantorovich S., Levin, R., Earhart, G.M. (2007) Effects of tango on functional mobility in Parkinson disease: A preliminary study. *J Neurol Phys Ther,* 31(4): 173-179.
25. Falvo, M.J., Schilling, B.K., Earhart, G.M. (2007) Parkinson's Disease and resistive exercise: rationale, review, and recommendations. *Mov Disord,* 23(1): 1-11.
26. Hong, M., Earhart, G.M. Rotating treadmill training reduces freezing in Parkinson disease: Preliminary observations. *Parkinsonism Relat Disord*, in press.
27. Hackney, M., Earhart, G.M. Tai Chi improves balance, gait and functional Mobility in those with mild to moderate Parkinson disease, *Gait & Posture*, in review.

Abstracts

1. 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
2. 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
3. Earhart, G.M., Melvill Jones, G., Horak, F.B., Block. E.W., Weber, K.D., and Fletcher, W.A. (2002) Adaptation of locomotor spatial orientation: transfer across different locomotor forms. Neural Control of Movement Satellite Meeting on Multisensory Interactions Subserving Orienting Behavior, Naples, FL
4. Melvill Jones, G., Fletcher, W. A., Weber, K. D., Block, E. W., Earhart, G. M., and Horak, F. B. (2002) Foot nystagmus: a tool for controlling spatial orientation during locomotion? J. Vest. Res., 11: 326-327.
5. 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
6. 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
7. Earhart, G.M., Horak, F.B. (2003) The influence of cadence on locomotor adaptation to the rotating circular treadmill. ISPGR 2003 Meeting, Sydney, Australia
8. Earhart, G.M., Sibley, K.M., Horak, F.B. (2003) Podokinetic after-rotation in subjects with bilateral vestibular loss. Soc. Neurosci., New Orleans, LA.
9. 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.
10. Earhart, G.M. and Hong, M. (2005) Kinematics of podokinetic after-rotation: similarities to voluntary turning and clinical implications. Soc. Neurosci., Washington, D.C.
11. 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.
12. 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.
13. 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.
14. Melvill Jones, G., Fletcher, W.A., Weber, K.D., Block, E.W., Earhart, G.M. and Horak, F.B. (2006) Modulation of intended trajectory curvature by unperceived alteration of angular and linear components of the locomotor cycle. Canadian Physiological Society, Banff, Alberta, Canada.
15. Hong, M., Perlmutter, J.S., and Earhart, G.M. (2006) The rotating treadmill: a new tool for gait rehabilitation. World Parkinson Congress, Washington, DC.
16. 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.
17. 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.
18. Hong, M., Perlmutter, J.S., and Earhart, G.M. (2006) Evidence for bilateral pathways mediating rigidity in Parkinson disease. Mov. Dis. Soc., Kyoto, Japan.
19. Hong, M., Perlmutter, J.S., and Earhart, G.M. (2007) Recommendations on the assessment of bradykinesia in Parkinson disease. APTA Combined Sections Meeting, Boston, MA.
20. Hong, M., Wong, C.M., and Earhart, G.M. (2007) Is the hip joint a major player in locomotor trajectory adaptation? ISPGR Meeting, Burlington, VT.
21. Hackney, M.E., Earhart, G.M. (2007) The effect of argentine tango on functional mobility in people with Parkinson disease, ISPGR Meeting, Burlington, VT.
22. 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.
23. 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.

Book Chapters

1. Earhart, G.M., Horak, F.B. Chapter 43: Balance Training, In: Textbook of Neural Repair and Rehabilitation, Eds.: Selzer, M.E., Clarke, S., Cohen, L.G., Duncan, P.W., and Gage, F.H., Cambridge University Press, 2006.
2. Earhart, G.M., Bastian, A.J. Evaluation of Gait and Turns, In: Handbook of Clincial Neurophysiology: Vestibular and Balance Disorders, Eds.: Eggers, S.D.Z. and Zee, D. S., Elsevier, in press.

C. RESEARCH SUPPORT

Ongoing Research Support

K01 HD048437 Earhart (PI)
NIH/NCMRR 1/01/05-12/31/09
"Parkinsonian Gait Disorders: Mechanisms and Treatment"
The major goal of this study is to better understand the mechanisms underlying turning difficulties and freezing in individuals with PD with the long term objective of developing novel rehabilitation strategies to address these issues.
Role: PI

Foundation Grant Earhart (PI)
American Parkinson Disease Association 9/01/06-2/28/08
"Can Dance Improve Functional Mobility in Parkinson Disease?"
The purpose of this pilot study is to compare the effects of tango lessons vs. traditional exercise on gait and balance function in individuals with Parkinson disease.
Role: PI

R01 DC04082 Horak (PI)
NIH/NIDCD 4/1/06-3/31/11
"Adaptation of Spatial Orientation in Locomotion and Posture"
The major goal of this study is to determine the mechanisms underlying adaptive modification of gait and standing posture and how control of these tasks may be interrelated.
Role: Co-investigator

1KL2RR024994 Polonsky (PI)
NIH/NCRR 9/17/07-5/31/2012
"Washington University Institute of Clinical and Translational Sciences"
This grant is to support clinical and translational neuroscience research at Washington University. Dr. Earhart's role is to supervise the Quantified Movement Analyses component of the Brain, Behavior, and Performance Unit.
Role: Co-investigator

Completed Research Support

Foundation Grant Hackney (PI)
Marian Chace Foundation of the American Dance Therapy Association 6/01/06-5/31/07
"A study on the effects of Argentine tango as a form of partnered dance for those with Parkinson Disease and the Healthy Elderly"
This award was to fund pilot work examining use of the tango as a therapeutic intervention for older individuals.
Role: Co-investigator

Foundation Grant Earhart (PI) 1/01/05
Greater St. Louis Chapter of the American Parkinson's Disease Association
This award was to support purchase of a 16-channel telemetered EMG system to be used in studies of gait in Parkinson disease.

F32 NS41804 Earhart (PI) 6/01/02-5/31/04
NIH/NINDS
"Locomotor Adaptation Following Podokinetic Stimulation"
The major goal of this study was to better understand the neural control of locomotor trajectory and how walking direction is adapted in response to altered walking surfaces.
Role: PI