BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Vasudevan, Erin Virginia Lamont	Assistant Professor

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of Alberta, Edmonton, Canada	B.Sc. (Honors)	04/01	Physiology
University of Alberta, Edmonton, Canada	Ph.D.	08/07	Neuroscience
Johns Hopkins School of Medicine and Kennedy Krieger Institute, Baltimore, MD	Postdoctoral	07/10	Motor Learning and Rehabilitation

A. Personal Statement

Walking is a skill that we often take for granted. With little thought or effort, we can modify our gait to dart through traffic while jaywalking, to step over rocks and tree roots while hiking, or to strut in high heels on a night out. When our nervous system is damaged, however, walking can become much more challenging. My research aims to understand the neural structures and pathways that allow walking to be so automatic and adaptable in neurologically-intact people. I also study how damage to the brain (due to stroke, traumatic brain injury, or cerebral palsy) affects the control of walking. My long-term goal is to develop evidence-based techniques and devices to help people to recover functional mobility and to facilitate the return to activities of daily living, including work, home life, and social activities.

B. Positions and Honors

Positions and Employment

2002-2003 Instructor, Dept. of Physical Education, University of Alberta (Edmonton, Canada)

2006 Instructor, School of Physical Education, University of Victoria (Victoria, Canada)

2006-2007 Instructional and Presentation Skills Workshop Facilitator, Centre for Teaching and Learning, University of Victoria (Victoria, Canada)

2010-2014 Institute Scientist, Motor Learning Laboratory, Moss Rehabilitation Research Institute, Albert Einstein Healthcare Network (Elkins Park, PA)

2014-present Assistant Professor, Physical Therapy, School of Health Technology and Management, SUNY Stony Brook University (Stony Brook, NY)

Other Experience and Professional Memberships

2005-present Member, Society for Neuroscience

2007-present Member, Society for the Neural Control of Movement

2009-2010 President, Johns Hopkins School of Medicine Postdoctoral Association (Baltimore, MD)

2009-2010 Founding Member and VP Communications, Association for Women in Science Greater Baltimore Chapter (Baltimore, MD)

2009 Invited Participant, NIH Workshop: Promoting Generalization in Stroke Rehabilitation (Bethesda, MD)

2011-present Member, American Heart Association

2012 Grant Reviewer, Innovational Research Incentives Scheme, Netherlands Organisation for Scientific Research (NWO).

2013 Invited Speaker, Forum for Indian Neurological Education: Workshop on gait and posture disorders. Mumbai, India

2013 Local Organizing Committee, International Conference on Virtual Rehabilitation. Philadelphia, PA

2014 Grant Reviewer, MFSR Study Section (Temporary Member), NIH

Honors and Awards

J Gordon Kaplan Graduate Student Award (2002)
Alberta Learning Graduate Scholarship (2003)
Province of Alberta Graduate Award (2004)
Eli Lilly/Canadian Association for Neuroscience Young Neuroscientist Award (2006)
Centre for Neuroscience Research Award (2006, 2007)
Albert Einstein Basic Science Award (2011)

B. Publications (in chronological order)

Published Manuscripts

1. Yang JF, Lam T, Pang MYC, **Lamont E**, Musselman K, Seinen E (2004). Infant stepping: a window to the behaviour of the human pattern generator for walking. *Canadian Journal of Physiology and Pharmacology* 82: 662-674.
2. Yang JF, **Lamont EV**, Pang MYC (2005). Split-belt treadmill stepping in human infants reveals organizational principles of the pattern generator for walking. *Journal of Neuroscience* 25; 6869-6876.
3. **Lamont EV**, Zehr EP (2006). Task-specific modulation of cutaneous reflexes expressed at functionally relevant gait cycle phases during level and incline walking and stair climbing. *Experimental Brain Research* 173:185-92.
4. **Lamont EV**, Zehr EP (2007). Earth-referenced hand rail contact facilitates interlimb cutaneous reflexes during locomotion. *Journal of Neurophysiology* 98: 433-442.
5. Zehr EP, Hundza SR, **Vasudevan EV** (2009). Human bipeds use quadrupedal coordination. *Exercise and Sports Science Reviews* 37: 102-108.
6. **Vasudevan EV**, Bastian AJ (2010). Split-belt treadmill adaptation shows different functional networks for fast and slow walking. *Journal of Neurophysiology* 103: 183-91. PMC2807217
7. **Vasudevan EV**, Bastian AJ, Torres-Oviedo G (2010). Emerging principles in the learning and generalization of new walking patterns. In F. Danion & M. Latash (Eds.) *Motor Control: Theories, Experiments, and Applications*. Oxford, UK: Oxford University Press.
8. **Vasudevan EV**, Torres-Oviedo G, Morton SM, Yang JF, Bastian AJ (2011). Younger is not always better: development of locomotor adaptation from childhood to adulthood. *Journal of Neuroscience* 31: 3055-65. PMC3084584
9. **Vasudevan EV**, Zehr EP (2011). Multi-frequency arm cycling reveals bilateral locomotor coupling to increase movement symmetry. *Experimental Brain Research* 211: 299-312.
10. Musselman KE, Patrick SK, **Vasudevan EV**, Bastian AJ, Yang JF (2011). Unique characteristics of motor adaptation during walking in young children. *Journal of Neurophysiology* 105: 2195-203. PMC3094181
11. Torres-Oviedo G, **Vasudevan E**, Malone L, Bastian AJ (2011). Locomotor Adaptation. *Progress in Brain Research* 191: 65-74.

12. Malone LA, **Vasudevan EV**, Bastian AJ (2011). Motor Adaptation Training for Faster Relearning. *Journal of Neuroscience* 31: 15136-15143. PMC3209529
13. Handzic I, Barno EM, **Vasudevan EV**, Reed KB (2011). Design and pilot study of a gait enhancing mobile shoe. *Paladyn Journal of Behavioral Robotics* 2: 192-301.
14. Jayaram G, Tang B, Pallegadda R, **Vasudevan EV**, Celnik P, Bastian AJ (2012). Modulating Locomotor Adaptation with Cerebellar Stimulation. *Journal of Neurophysiology* 107: 2950-2957. PMC3378372
15. **Vasudevan EV** (2014). One step backwards, two steps ahead: Amplifying movement errors to improve walking post-stroke. *Clinical Neurophysiology.* 125: 869-71.
16. **Vasudevan EV**, Glass RN, Packel AT (2014). Effects of traumatic brain injury on locomotor adaptation. *Journal of Neurologic Physical Therapy* 38: 172-82.
17. **Vasudevan EV**, Kirk EM (2014). Improving interlimb coordination following stroke: how can we change how people walk (and why should we?). In W. Jensen, O. Andersen, M. Akay (Eds.) *Replace, Repair, Restore, Relieve – Bridging Clinical and Engineering Solutions in Neurorehabilitation: Biosystems & Biorobotics*. Springer International Press. Pg 195-202.

Published Conference Proceedings

1. Handzic I, **Vasudevan E**, Reed KB (2011). Motion controlled gait enhancing mobile shoe for rehabilitation. *Proceedings of the 12th International Conference on Rehabilitation Robotics (ICORR)*. *June 2011.*
2. Handzic I, **Vasudevan E**, Reed KB (2012). Developing a gait enhancing mobile shoe to alter over-ground walking coordination. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA). May 2012.*

Published Conference Abstracts

1. **Lamont EV**, Hoogenboom N, Cabaj J, Maraj BKV, Zehr EP (2002). Postural stability enhances interlimb reflexes during stair climbing. *Society for Neuroscience Annual General Meeting Abstracts* 366.15.
2. Haridas C, **Lamont EV**, Hoogenboom N, Cabaj J, Maraj BKV, Zehr EP (2002). Cutaneous reflex modulation in an above-knee amputee during walking: a case study using two different prostheses. *Society for Neuroscience Annual General Meeting Abstracts* 667.2.
3. **Lamont EV**, Pang MYC, Yang JF (2003). Adaptation to split-belt walking in human infants. *Society for Neuroscience Annual General Meeting Abstracts* 824.4.
4. **Lamont EV**, Baker S, Zehr EP (2005). Amplification of muscle activity during asynchronous arm cycling: evidence for coupling between the upper limb pattern generators? *Society for Neuroscience Annual General Meeting Abstracts* 55.9.
5. **Lamont EV**, Zehr EP (2006). Reflex modulation patterns are conserved during asynchronous arm cycling: evidence for unique specification of reflex control based upon limb activity state. *Society for Neuroscience Annual General Meeting Abstracts* 557.12
6. **Vasudevan EV**, Pallegadda R, Bastian AJ (2008). Walking adaptation is speed- and leg-specific. *Society for the Neural Control of Movement Meeting Abstracts.*
7. **Vasudevan EV**, Bastian AJ (2009). Incomplete transfer of walking adaptation suggests differences in the neural control of fast and slow walking. *Society for the Neural Control of Movement Meeting Abstracts.*
8. Gurbani AJ, Malone LA, **Vasudevan EV**, Bastian AJ (2009). Are consolidation and interference effects present in split-belt locomotor adaptation? *Society for the Neural Control of Movement Meeting Abstracts*.
9. McLean H, **Vasudevan EV**, Bastian AJ (2009). Can split-belt treadmill training lead to long-term improvements in gait symmetry post-hemispherectomy? *The American Academy for Cerebral Palsy and Developmental Medicine Meeting Abstracts.* DP27.

10. Patrick SK, Musselman KE, **Vasudevan EV**, Bastian AJ, Yang JF (2009). Emergence and characteristics of learning on a split-belt treadmill in infants and toddlers. *Society for Neuroscience Annual General Meeting Abstracts* 462.3.
11. **Vasudevan EV**, Torres-Oviedo G, Yang JF, Bastian AJ (2009). Development of motor learning from childhood to adulthood. *Society for Neuroscience Annual General Meeting Abstracts* 462.4.
12. **Vasudevan EV**, Feng T, Bastian AJ (2011). Structure learning in a locomotor adaptation task. *Society for the Neural Control of Movement Abstracts.*
13. **Vasudevan EV**, Patrick SK, Yang JF (2012). Gait transitions in human infants: Can babies run? *Society for Neuroscience Annual General Meeting Abstracts* 478.18.
14. German R, Barno EM, Glass RN, **Vasudevan EV** (2012). Variable practice during locomotor adaptation improves relearning. *Society for Neuroscience Annual General Meeting Abstracts* 274.17.
15. Glass, R, Packel AT, Barno EM, **Vasudevan EV** (2012). Locomotor adaptation following traumatic brain injury. *Society for Neuroscience Annual General Meeting Abstracts* 184.10.
16. **Vasudevan EV**, German RV (2013). Long-term retention of locomotor adaptation: Do you ever forget how to walk on a split-belt treadmill? *Society for Neuroscience Annual General Meeting Abstracts* 749.04.
17. Hamzey RJ, Kirk EM, **Vasudevan EV** (2013). Influence of gait speed on the expression of locomotor learning in different environments. *Society for Neuroscience Annual General Meeting Abstracts* 749.05.
18. Tan DK, **Vasudevan EV** (2014). Long-term retention of locomotor adaptation following short-term training in people with stroke. *Society for Neuroscience Annual General Meeting Abstracts* 68.12.

D. Research Support

Ongoing Research Support

American Heart Association
National Scientist Development Grant PI: Vasudevan 07/01/12-06/30/16
Optimizing Locomotor Adaptation for Rehabilitation Post-Stroke
The projects in this grant will test several methods which we hypothesize will improve the retention and generalization of learned gait patterns in people who have had a stroke.

Completed Research Support

Pennsylvania Dept of Health PI: Vasudevan 01/01/13-06/30/14
Home Based Mirror Therapy for Lower-Limb Rehabilitation Post-Stroke
Mirror therapy (MT) is a relatively new therapeutic intervention that has been shown to improve the range of motion, speed, and accuracy of hemiparetic upper limb movements. MT uses a mirror to create an illusion where movements of the unimpaired limb appear as if they are being made by the impaired limb. The purpose of this study is to investigate whether a home-based form of MT is an effective treatment for lower limb hemiparesis.

Albert Einstein Society Research Award PI: Vasudevan 07/01/11-06/30/12
Development of a Curved-Bottom Shoe for Gait Rehabilitation
This project will develop and test a device – a curved-bottom shoe – that we hypothesize will change interlimb coordination while walking over ground, thus building the foundation for future studies examining the use of this device for gait rehabilitation post-stroke.

NIH R21 HD0662200 PI: Reed 09/13/10-08/31/12
Gait Enhancing Mobile Shoe for Rehabilitation
The objective of this research is to design, evaluate, and optimize a passive mechanical shoe capable of long-term correction of asymmetric walking patterns (e.g. hemiparetic gait) due to stroke.
Role: Co-Investigator

F32 NS063542 PI: Vasudevan 08/15/08-07/15/10

Optimizing Locomotor Adaptation

Individual Postdoctoral Fellowship: The goal of this project was to test new ways to facilitate the transfer of a learned locomotor pattern to everyday walking activities.