

**Carolynn Patten, Ph.D., PT**  
*Curriculum Vitae*

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Brain Rehabilitation R&D Center/151A  
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## Education

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### Stanford University

Department of Functional Restoration  
Rehabilitation Research & Development Center, VA Palo Alto Health Care System  
Post-Doctoral Fellow, 1998 – 2001  
Career Development Award: Motor Unit Firing Patterns in Post-stroke Hemiparesis

### University of Massachusetts – Amherst

School of Public Health & Health Sciences, Dept. of Exercise Science  
Doctor of Philosophy, 1998  
Dissertation: Adaptations in Human Motor Unit Control Properties: Influences of Aging and Training

### Boston University

Sargent College of Rehabilitation Sciences, Department of Physical Therapy  
Master of Science, Physical Therapy, 1992  
Research Option: Use of Accelerometry to Measure Postural Sway

### University of Washington

Department of Kinesiology  
Bachelor of Arts, 1980  
Undergraduate Research: Developmental Effects on Reaction Time Sequencing

## Grants & Awards

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### Rehabilitation Research and Development, Department of Veterans Affairs

*May, 2008*

Large equipment grants  
Principal Investigator - \$111,185

### Rehabilitation Research and Development, Department of Veterans Affairs

*Award dates pending (priority score of 16.67 and percentile of 15.52%)*

Developing Evidence-based Parameter Selection for Locomotor Training  
Co-Principal Investigator w/Steven A. Kautz, Ph.D. - \$650,000, Direct Costs (3.0 year proposal)

### Rehabilitation Research and Development, Department of Veterans Affairs

*April, 2008*

Small equipment grants  
Principal Investigator - \$105,147

### National Institute for Diabetes and Digestive and Kidney Diseases, NIH

*September 2007 – August 2009*

Testosterone Replacement Therapy in Advanced Chronic Kidney Disease  
Co-Investigator (PI – Ralph Rabkin, MD - \$275,000, Direct costs)

### Rehabilitation Research and Development, Department of Veterans Affairs

*Award Dates Pending, One Year Pilot Grant*

Neuromuscular Adaptations to UE Resistance Training Post-stroke

Principal Investigator - \$50,000, Direct Costs  
Rehabilitation Research and Development, Department of Veterans Affairs  
*August 2005 – July 2009, Merit Review*  
Mechanisms of Upper Extremity Recovery in Post-stroke Hemiparesis  
Principal Investigator - \$1,000,000, Direct costs

Rehabilitation Research and Development, Department of Veterans Affairs  
*August 2005 – July, 2008, Pilot initiative on Body Weight Supported Treadmill Training*  
Internally v. Externally-driven BWSTT for Locomotor Recovery Post-stroke  
Principal Investigator - \$450,000, Direct costs

National Institute for Biomedical Engineering, NIH  
*January 1, 2006 – December 31, 2010, R01*  
EMG-based Estimation of Muscle Structure and Function  
Co-Investigator (PI – Kevin McGill, Ph.D. - \$1,000,000, Direct costs)

National Institute of Aging, NIH  
*June 2005 – May 2009, R01*  
Lower extremity muscle power and function in the elderly  
Co-Investigator (PI - Roger Fielding, Ph.D. - \$2,072,482, Direct costs)

Rehabilitation Research and Development, Department of Veterans Affairs  
*Summer 2003, Clinical Trial Planning Grant*  
Effects of Locomotor Training in Post-stroke Hemiplegia  
Principal Investigator - \$200,000, Direct costs

Rehabilitation Research and Development, Department of Veterans Affairs  
*April 1, 2003 – March 30, 2006, Merit Review Grant*  
Therapeutic Effects on Neuromuscular Function in Post-stroke Hemiplegia  
Principal Investigator - \$800,000, Direct costs

Rehabilitation Research and Development, Department of Veterans Affairs  
*February 2001- February 2004, Advanced Research Career Development Award*  
Motor-Unit Firing Patterns in Hemiplegia  
Principal Investigator - \$300,000, Direct costs  
with preceptors: Felix E. Zajac, III, Ph.D. & Kevin C. McGill, Ph.D.

Rehabilitation Research and Development, Department of Veterans Affairs  
*January 1, 2001 – December 31, 2003, Merit Review Grant*  
Effects of Strength Training on Upper-limb Function in Post-stroke Hemiparesis  
Principal Investigator - \$414,700, Direct costs

National Center for Medical Rehabilitation Research, NIH  
*June 2000 – May 2004, R01*  
Bilateral Coordination of Hemiparetic Locomotion  
Co-Investigator (PI- Steven A. Kautz, Ph.D. - \$869,443, direct costs)

National Institute of Neurological & Communicative Disorders and Stroke, NIH  
*January 2000 – December 2002, R01*  
Intermuscular Coordination of Mammalian Movement  
Co-Investigator (PI - Felix E. Zajac, III, Ph.D. - \$724,947 direct costs)

VA VISN 21 Research Council  
2000, Young Investigator Award  
*January 1, 2000 – December 31, 2000*  
Comparison of Computer-Aided EMG Analysis Tools  
Principal Investigator, \$5,000, Direct costs

Foundation for Physical Therapy  
1998-2000, New Investigator Fellowship and Training Initiative  
Motor Unit Discharge and Control of Functional Movement in Hemiplegia  
Principal Investigator - \$60,000, Direct costs

Rehabilitation Research and Development, Department of Veterans Affairs

1998-2001, Research Career Development Award

Motor-Unit Firing Patterns in Hemiplegia

Principal Investigator - \$ 275,000, Direct costs

with preceptors: Felix E. Zajac, III, Ph.D. & Kevin C. McGill, Ph.D.

Foundation for Physical Therapy

1994-97, Doctoral Research Awards:

Neural and Structural Motor Unit Contributions to Muscular Force in Older Adults

Principal Investigator, \$15,000 per year

Dudley Allen Sargent Research Fund (Boston University)

1992, Grant Recipient:

Use of Accelerometry to Measure Postural Sway

Principal Investigator, \$1900

## Scholarly Activity

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### Peer-Reviewed Articles

1. Westlake, K.P.\*, **Patten, C.** Pilot Study of Robot versus Manual-Assisted Treadmill Training for Locomotor Recovery Post-Stroke. *Submitted, Neurorehabilitation & Neural Repair.*
2. Pak, S.S.\*, **Patten, C.** Strengthening to Promote Functional Recovery Post-stroke: An evidence-based Review. *Topics in Stroke Rehabilitation, 15(3): in press.*
3. Clark D.J.\*, Fielding, R.A., **Patten, C.** Velocity-dependent modulation of agonist activation preserves dynamic torque. *In revision, Journal of Applied Physiology.*
4. Jonkers I.\*, Delp S.L., **Patten C.** Capacity to increase walking speed is limited by impaired hip and ankle power generation in lower functioning persons post-stroke. *Revision submitted, Gait & Posture.*
5. **Patten, C.**, Condliffe, E.G., Dairaghi, C.A., Lum, P.S. Upper-extremity functional gains after dynamic resistance training in post-stroke hemiparesis. *Neurorehabilitation and Neural Repair, in press.*
6. Wagner J.M.\*, Rhodes J.A., **Patten C.** Reproducibility and minimal detectable change of three-dimensional kinematic analyses of forward reaching tasks in person with post-stroke hemiparesis. *Physical Therapy, 88(5): 652-63, 2008.*
7. Chen G.\*, **Patten C.** Joint moment work during the stance-to-swing transition in hemiparetic subjects. *Journal of Biomechanics: 41(4): 877-83, 2008.*
8. Chen, G.\* & Patten, C., Treadmill Training with Harness Support: Selection of training parameters for individuals with post-stroke hemiparesis. *J. Rehabilitation R&D, 43(4): 485-498, 2006.*
9. Clark, D.J., Condliffe, E.G., **Patten, C.**, Activation impairment alters muscle torque-velocity in post-stroke hemiparesis. *Clinical Neurophysiology, 117(10): 2328-2337, October 2006.*
10. **Patten, C.**, Dozono, J.M., Jue, M.E., Schmidt, S.G., Lum, P.S. Its Not About the Muscle! Response to invited commentary. *Journal of Neurologic Physical Therapy, 30(3): 118-119, 2006.*
11. **Patten, C.**, Dozono, J.M., Jue, M.E., Schmidt, S.G., Lum, P.S. Combined Functional Motor Retraining and Dynamic High Intensity Resistance Training Promotes Recovery of Upper-extremity Motor Recovery in Post-stroke Hemiparesis. *Journal of Neurologic Physical Therapy, 30(3): 99-115, 2006.*
12. Kautz, S.A., **Patten, C.**, Neptune, R., Does Unilateral Pedaling Activate a Rhythmic Locomotor Pattern in the Non-pedaling Leg in Post-stroke Hemiparesis? *Journal of Neurophysiology, 95(5): 3154-63, 2006.*
13. Clark, D.J.\*, Condliffe, E.G., **Patten, C.**, Reliability of Concentric and Eccentric Torque During Isokinetic Knee Extension in Post-stroke Hemiparesis. *Clinical Biomechanics, 21(4): 395-404, 2006.*
14. Chen, G., **Patten, C.**, Kothari, D. and Zajac, F.E. Gait deviations associated with post-stroke hemiparesis: Improvement during treadmill walking using weight support, speed, support stiffness, and handrail hold. *Gait and Posture, 22(1): 57-62, 2005.*
15. Chen, G., **Patten, C.**, Kothari, D. and Zajac, F.E. Gait differences between individuals with post-stroke hemiparesis and non-disabled controls at matched speeds. *Gait and Posture, 22(1): 51-56, 2005.*
16. Condliffe E.G.\*, Clark, D.J., **Patten C.** Reliability of Elbow Stretch Reflex Assessment in Chronic Post-stroke Hemiparesis, *Clinical Neurophysiology, 116(8): 1870-1878, 2005.*
17. Kautz, S.A., **Patten C.** Interlimb Influences on Paretic Leg Function in Post-stroke Hemiparesis. *Journal of Neurophysiology, 93(5): 2460-73, 2005.*

18. Flansbjerg U-B, Holmback AM, Downham D, **Patten C** and Lexell J. Reliability of Gait Performance Tests in Men and Women with Hemiparesis After Stroke. *Journal of Rehabilitation Medicine*, 37: 75-82, 2005.
19. **Kim, C.M.\***, Kothari, D.H., Lum, P.S., **Patten, C.** Reliability of Dynamic Muscle Performance in the Hemiparetic Upper-Limb. *Journal of Neurologic Physical Therapy*, 29(1): 9-17, 2005.
20. Lum PS, **Patten C**, Kothari D, Yap R. Effects of velocity and angle on elbow torque during isokinetic strength testing in post-stroke hemiparesis. *Muscle & Nerve*, 30: 732-42, 2004.
21. **Patten, C.**, Lexell, J., Brown, H.E.. Strength training in persons with post-stroke hemiplegia: Rationale, Method, and Efficacy. *J. Rehabilitation R&D*, 41(3A): 293-312, 2004.
22. **Patten, C.**, Meyer, R.A. & Fleckenstein, J.L. T2 Mapping of Muscle *Dynamic and Functional Musculoskeletal Imaging--Seminars in Musculoskeletal Radiology*, Vol 7, No 4: 297-305, 2003.
23. **Patten, C.**, Kothari, D., Whitney, J.A., Lexell, J. & Lum, P.S. Reliability and Responsiveness of Elbow Trajectory-tracking in Chronic Post-stroke Hemiparesis. *J. Rehabilitation R&D*, 40(6): 487-500, 2003.
24. **Patten, C.**, Horak, F.B. Krebs, D.E. Head & Body Center of Gravity Control Strategies: Adaptations Following Vestibular Rehabilitation. *Acta Oto-laryngologica*, 123(1): 32-40, 2003.
25. **Patten, C.**, Kamen, G., Rowland, D.M. Adaptations in Maximal Motor Unit Discharge Rate Following Strength Training in Young and Older Adults. *Muscle & Nerve*, 24: 542-550, 2001.
26. **Patten, C.**, Kamen G. Adaptations in Motor Unit Discharge Activity with Force Control Training in Young and Older Adults. *European Journal of Applied Physiology*, 83, 128-143, 2000.
27. **Patten, C.** Reeducating Force Control in Older Persons Through Strength Training. *Topics in Geriatric Rehabilitation*, 15(3), 46-58, 2000.
28. Leong, B., Kamen, G., **Patten, C.** & Burke, J.R. Maximal motor unit discharge rates in older weightlifters. *Medicine and Science in Sports and Exercise*, 31(11), 1638-1644, 1999.
29. Kamen, G., **Patten, C.**, Du, C.C., and Certo, C.M.E. Accelerometry as a Technique for Measuring Balance. *Gerontology*, 44: 40-45, 1998.
30. Kamen, G., Sison, S.V., Du, C.C., **Patten, C.** Motor Unit Discharge Rates During Maximal Effort in Older Adults, *Journal of Applied Physiology*, 79:1908-1913, 1995.
31. **Patten, C.**, Hillel, A.D. The Eleventh Nerve Syndrome: Accessory Nerve Palsy or Adhesive Capsulitis? *Archives of Otolaryngology/Head and Neck Surgery* (119), February 1993.

(name\* denotes student or post-doctoral fellow as first author)

### Manuscripts in Preparation

- Jonkers I.\***, Delp S.L., **Patten C.** Comparison of muscle activation patterns of hemiparetic and non-disabled persons walking at matched speeds. *In preparation, Gait & Posture*.
- Lum, P.S., **Patten, C.** Torque production is increased by high-intensity resistance training, but is unchanged by functional motor relearning therapy in post-stroke hemiparesis. *in preparation for Muscle & Nerve*.
- Patten C**, Condliffe E, Kothari D and Lum PS. High-intensity Resistance Training Improves Stretch Reflex Modulation in Post-stroke Hemiparesis, *in preparation for Brain*
- Patten, C.**, McGill, K.C., Motor Unit Firing Patterns in Post-Stroke Hemiplegia. *in preparation for Brain*

### Book Chapters and Monographs

- Patten, C.** & Craik. R.L. Sensorimotor changes and Adaptation in the Older Adult. In Geriatric Physical Therapy, 2nd Edition, Guccione, A.A., Editor. Mosby-Year Book, 2000.
- Patten, C.** Motor Unit Firing Patterns and Age-related Changes. PROCID Symposium on Muscular Disorders in computer users: mechanisms and models. Copenhagen, 1999, pp 84-89.
- Patten, C.**, Steindorf, S. Principles of Physical Therapy, in Outpatient Medicine, S. Fihn and S. McGee, Editors. W.B. Saunders & Co., 1992.
- Hillel, A.D., **Patten, C.** Neck Dissection: Morbidity and Rehabilitation, in Head and Neck Oncology, Third Edition, Charlotte Jacobs, Editor. Kluwer Academic Publishers, 1989.

### Book Reviews

- Patten, C.** Review of Clinical Applications in Surface Electromyography, *Physical Therapy*.
- Patten, C.** Review of Sedentary Life and Nutrition, *Topics in Geriatric Rehabilitation* 8(4), June 1993.

## Published Abstracts

1. Westlake, KP\*, **Patten C.** Comparative Study of Two Motor Learning Approaches to Restoration of Locomotion Post-Stroke, Society for Neuroscience Abstracts, 2008.
2. Corti, M\*, McGuirk TE, **Patten, C.** Differential effects on kinematics of free reaching after functional task practice and dynamic resistance training in low functioning persons post-stroke. 2nd Summer School on Advanced Technologies for Neuro-motor Assessment and Rehabilitation. STARTER: Strategic Network for Assitive & Rehabilitation Technology in Emilia-Romagna, Bologna, Italy, July 2008
3. Clark DJ\*, **Patten C**, Reid KF, Carabello RJ, Phillips EM and Fielding RA. Slow rate of neuromuscular activation contributes to impaired movement acceleration and peak power in mobility-limited older adults. Experimental Biology, San Diego CA, April 2008.
4. Veeraraghavan K\*, Wagner JM, **Patten C.** Differential effects of treatment outcomes based on chronicity of stroke and severity of upper extremity motor impairment. APTA Combined Sections Meeting, abstracted in J Neurologic Physical Therapy, 31(4): 191, 2007.
5. Rhodes JA\*, **Patten, C**, Wagner JM. Reliability and responsiveness of three-dimensional kinematic analysis of forward reach tasks in adults with post-stroke hemiparesis. APTA Combined Sections Meeting, abstracted in J Neurologic Physical Therapy, 31(4): 210, 2007.
6. Jonkers I\*, Delp SL, **Patten C.** To what extent does walking speed influence the interpretation of gait analysis data in hemiparetic gait? 16<sup>th</sup> Annual Meeting of ESMAC (European Society for Motion Analysis in Adults and Children), Athens, Greece, Gait and Posture, 26S: S3, 2007.
7. Chen G.\*, **Patten, C.** Joint moment work during the stance-to-swing transition in hemiparetic subjects. International Society for Posture & Gait Research, July, 2007. Abstracted in Gait & Posture, July, 2007.
8. **Patten, C.**, Jaramillo, J.P., Grogan, A.P., Teraoka, J.K. and Chen, G. Locomotor Training Speed Influences Lower Extremity Motor Activation in Clinically Motor Complete Spinal Cord Injury. International Society for Posture & Gait Research, July, 2007.
9. Jonkers, I.\*, Delp, S.L., **Patten, C.** Gait Speed Modulation is Limited by impaired hip and ankle power generation in lower functioning persons post-stroke. International Society for Posture & Gait Research, July, 2007.
10. Kautz, S.A., **Patten, C.**, Neptune, R.R., Worthen, L.C., Kim, C.M. The influence of mechanical load on the locomotor pattern in persons with post-stroke hemiparesis. International Society for Posture & Gait Research, July, 2007.
11. Clark D.I.\*, **Patten, C.**, Fielding R.A. Does force or velocity contribute more to maximal power in older adults? American College of Sports Medicine, May, 2007. Abstracted in Medicine and Science in Sports and Exercise, May, 2007
12. **Patten C**, Dozono JM, Jonkers I. Gait Speed Improves Significantly Following Dynamic, High-Intensity Resistance Training in Persons Post-stroke. Int'l Stroke Conference, San Francisco, CA February, 2007, Stroke, 38(2): 465, 2007.
13. Jonkers I\*, Liu M, Arnold A, Thelen D, Anderson FC, **Patten C**, Delp SL. Factors that Impede Forward Progression during Hemiparetic Gait: A Simulation-Based Case Study World Congress of Biomechanics, Germany, July 2006.
14. Clark DJ\*, Condliffe E, **Patten, C.** Activation impairment alters muscle torque-velocity in post-stroke hemiparesis. Society for Neuroscience Abstracts, 2005.
15. Jonkers I.\*, **Patten C.**, Arnold A., Delp S. Is the reflex threshold during the pendulum test related to the onset of vastus excitation during hemiparetic gait? Gait & Posture, 22S: S34, 2005.
16. Clark DJ\*, Condliffe E, **Patten, C.** Reliability of Lower Extremity Torque Production in Persons with Post-Stroke Hemiparesis. American College of Sports Medicine, Annual Meeting, abstracted in Medicine and Science in Sports and Exercise, May, 2005.
17. Jonkers I\*, **Patten C**, Arnold A, Delp S. Does dynamic reflex threshold of knee extensors predict musculo-tendon lengthening velocity during hemiparetic gait? Gait and Clinical Movement Analysis Society, Portland, OR, April 2005.
18. Condliffe, E.G.\*, Kothari D.H., Lum, P.S., **Patten, C.** High-intensity Resistance Training Improves Reflex Modulation in Post-stroke Hemiparesis, Society for Neuroscience Abstracts, 2004.
19. Kothari, D.\*, McGill, K.C., **Patten, C.** Severity of Motor Dysfunction Corresponds with Activation Impairment in Post-stroke Hemiparesis. Society for Neuroscience Abstracts, 2004

20. **Patten, C.**, Kothari, D.H., Condliffe, E.G., Dairaghi, C. & Lum, P.S. Effects of Dynamic High-Intensity Resistance Training on Upper-extremity Motor Function and Power in Post-stroke Hemiparesis, World Forum for Neurological Rehabilitation, October, 2004
21. **Patten, C.**, Kothari, D.H., Condliffe, E., Yap, R., Northrop, S., Lum, P.S. Improvements in Dynamic Upper-extremity Strength and Motor Activation following Resistance Training Combined with Functional Motor Relearning in Post-stroke Hemiparesis. APTA Combined Sections Meeting, February, 2004, abstracted in J. Neurol PT, Dec, 2003.
22. Lum, P.S. **Patten, C.**, Kothari, D.H., Yap, R. Velocity-dependent deficits in torque production in post-stroke hemiparesis. APTA Combined Sections Meeting, February, 2004, abstracted in J. Neurol PT, Dec, 2003.
23. **Brown, H.E.\***, Kothari, D.H., Yap, R., Northrop, S., Lum, P.S., **Patten, C.** Do Strength Gains Underlie Functional Improvement in Post-stroke Hemiparesis?. APTA Combined Sections Meeting, February, 2004, abstracted in J. Neurol PT, Dec, 2003.
24. **Kothari, D.H.\***, Northrop, S., Yap, R., Condliffe, E., Lum, P.S., **Patten, C.** Upper-extremity Strength Gains following High Intensity Resistance Training Combined with Functional Motor Relearning in Post-stroke Hemiparesis. APTA Combined Sections Meeting, February, 2004, abstracted in J. Neurol PT, Dec, 2003.
25. **Northrop, S.\***, Brown, H.E., Kothari, D.H., Lum, P.S., **Patten, C.** Clinical Effects of Resistance Training Combined with Functional Motor Re-learning in Post-stroke Hemiparesis APTA Combined Sections Meeting, February, 2004, abstracted in J. Neurol PT, Dec, 2003.
26. S.A. Kautz; **C. Patten**; R.R. Neptune; L. Worthen; C.M. Kim. Bilateral Coordination Deficits Differ with Post-stroke Motor Recovery Status. Society for Neuroscience Annual Meeting, November, 2003, Abstracted in Soc. for Neuroscience Abstracts, Vol.
27. Chen G, **Patten C**, Kothari DH, and Zajac FE. Factors governing temporal symmetry in hemiparetic gait: Improvement on the treadmill with harness support. 8th Annual Gait and Clinical Movement Analysis Meeting, Wilmington, DE, May 7-10<sup>th</sup>, 2003.
28. **Patten, C.**, Srisethnil J., Asakawa, D., Wright, G.A., Gold, G. Imaging Activation Impairment in Post-stroke Hemiparesis. Int'l Society for Magnetic Resonance in Medicine, May 2002.
29. Chen G, **Patten C**, Worthen LC, Kothari DH, and Zajac FE Treadmill walking with harness support: Mechanical energetics in a healthy and hemiparetic subject. International Stroke Symposium, Kansas City, MO, April 26-28, 2002.
30. **Patten, C.**, Whitney, J.A., Kothari, D., Lum, P.S. Reliability of Elbow Trajectory Tracking in Chronic Post-stroke Hemiparesis, 2002 VA RR&D Meeting, February, 2002
31. Chen, G., **Patten, C.**, Burgar, C.G., Kautz, S.A. and Zajac, F.E. (2001) Harness-support compliance in treadmill training of post-stroke hemiparesis. 25th Annual Meeting of the American Society of Biomechanics, San Diego, CA. 389-390.
32. **Patten, C.**, Gardner, M.C., Dickinson, L.M., McGill, K.C. & Zajac, F.E. "Altered motor unit activity corresponds with weakness and locomotor disability in post-stroke hemiparesis. Neurology Report, 24(5): 198, 2000.
33. Chen, G., Schwandt, D., Van der Loos, H., Anderson, J., Ferris, D.P., Zajac, F.E., Kautz, S.A., Burgar, C.G., **Patten, C.**, Neptune, R.R., Gordon, K.E. "Compliance-adjustable, force-sensing harness support for studying treadmill training in neurologically impaired subjects." 6th Annual Gait and Clinical Movement; Analysis Meeting, Sacramento, CA. In Gait & Posture 13: 293-294.
34. Kautz, S.A., **Patten, C.**, Neptune, R.R. & Harvey, J. "Interlimb coordination influences on the excitation of paretic leg muscles during lower limb tasks in persons with post-stroke hemiparesis. Society for Neuroscience Abstracts, 26: 163, 2000.
35. **Patten, C.**, McGill, K.C., Rose, J. & Lateva, A. "Common Drive Among Concurrently Active Motor Units in Cerebral Palsy and Post-stroke Hemiparesis. Society for Neuroscience Abstracts, 26: 462, 2000.
36. **Patten, C.**, Gardner, M.C., Dickinson, L.M., McGill, K.C. & Zajac, F.E. Altered motor unit activity corresponds with weakness and locomotor disability in post-stroke hemiparesis. Neurology Report, 24(5): 198, 2000.
37. **Patten C**, Gardner M, McGill KC & FE Zajac. Motor Unit Firing Patterns in Hemiparesis. 2<sup>nd</sup> Annual National VA Rehabilitation Research & Development Service Conference, Washington, D.C., February, 2000.
38. **Patten C**, van Emmerik REA & Kamen G. Motor Unit Discharge Rate Variability: Adaptation in Frequency Content with Force Control Training. Med Sci Sports & Exercise, 31(5) Supplement, S136. 1999.

39. Kamen G., **Patten C.**, Rowland D.M. "Motor Unit Synchronization in Young and Older Adults Following Resistance Training." Abstracted in Society for Neuroscience Abstracts, 24: 424, 1998.
40. **Patten C.**, Kamen G, Rainsford KA & Porter MM. Adaptations in Antagonist Motoneuron Excitability in Young and Older Adults. Society for Neuroscience Abstracts, 23: 2237, 1997.
41. **Patten C.**, van Emmerik REA & Kamen G. Motor Unit Discharge Rate Variability: Age and Training Related Adaptations in Frequency Content. American College of Sports Medicine, Annual Meeting, Denver, CO, May, 1997. Abstracted in Medicine & Science in Sports & Exercise, 29(5), S1127, May 1997.
42. **Patten, C.**, Kamen, G. "Adaptations in Human Motor Unit Discharge Behaviour to Strength Training." Society for Neuroscience, Washington, D.C., November, 1996.
43. **Patten, C.**, Kamen, G. "Adaptations in Motor Unit Discharge Behaviour Following Isometric Resistance Training in Young and Older Adults." Canadian Society for Biomechanics, Biennial Meeting, Vancouver, B.C., August, 1996.
44. **Patten, C.**, Burke JR, Kamen G, Rowland D. Age and Practice Effects on Motor Unit Discharge Variability. in Society for Neuroscience Abstracts, 21: 1433, 1995.
45. **Patten, C.**, Kamen G., Rowland D., Du CC. "Rapid Adaptations in Motor Unit Firing Rate During the Initial Phase of Strength Development." American College of Sports Medicine, Annual Meeting, Minneapolis, MN, June 1995. Abstracted in Medicine and Science in Sports and Exercise, Supplement, June, 1995.
46. Leong, B., Kamen G., **Patten C.**, Du C.C. "Motor Unit Discharge Rates in Older Weight Lifters During Maximal Voluntary Contractions." American College of Sports Medicine, Annual Meeting, Minneapolis, MN, June 1995. Abstracted in Medicine and Science in Sports and Exercise, Supplement, June, 1995.
47. Krebs, D.E., Riley, P.O., **Patten, C.**, Horak, F.B. "Head and Body Center of Gravity (CG) Biomechanics: Locomotor Control Adaptations to Vestibular Loss and Rehabilitation." Second World Congress of Biomechanics, Amsterdam, The Netherlands, July, 1994.
48. **Patten, C.**, Hillel, A.D. Comparisons of Upper Extremity Isokinetic Muscle Performance Between Older and Young Normal Adults. Physical Therapy, Volume 74 (5), Suppl.t PO-084-T, 1994.
49. **Patten, C.**, Krebs, D.E., Horak, F.B., Riley, P.O. "Head and Body Center of Gravity Control Strategies: Adaptations Following Vestibular Rehabilitation". Physical Therapy, Vol. 74 (5), Suppl. PL-351-SA.
50. Kamen, G., Sison, S.V., Du, C.C., **Patten, C.**, "Motor Unit Discharge Rates During Maximal Effort in Older Adults". Abstracted in: Proceedings Triennial Meeting of International Union of Physiological Scientists, Glasgow, Scotland, July 1993.
51. **Patten, C.**, Kamen, G., Sison, S.V., Du, C.C. "Improvements in Balance in Young and Older Adults Documented by Accelerometry". American College of Sports Medicine, Annual Meeting, Seattle, Washington, June 1993. Medicine and Science in Sports and Exercise, Volume 25 (5), S198.
52. **Patten, C.**, Kamen, G., Sison, S.V., Du, C.C. "Quantitative Assessment of Balance Performance in Young and Older Normal Subjects". Combined Sections Meeting, Section on Neurology, American Physical Therapy Association. San Antonio, Texas. February, 1993. Abstracted in Neurology Report, Volume 16 (4), 1993.
53. Kamen G., **Patten, C.**, Du CC., "Assessment of Balance Function in Older Adults". International Society for Physical Activity, Aging, and Sport. Jyväskylä, Finland, June 1992.
54. **Patten, C.**, Hillel, A.D. "The Eleventh Nerve Syndrome: Accessory Nerve Palsy or Adhesive Capsulitis?" American Society for Head and Neck Surgery. Kona, Hawaii, May 1991. Abstracted in Archives of Otolaryngology/Head and Neck Surgery, May 1991.

### Invited Presentations

1. **Patten, C.** Intervention approaches for paralysis and weakness. *Contribution to Concentrated Educational Series (CES): Recovery and Rehabilitation after Stroke*, American Physical Therapy Association Annual Conference, San Antonio, TX, June, 2008.
2. **Patten, C.** Gait speed modulation in post-stroke hemiparesis. *Contribution to Altering Locomotion through Learning and Conscious Control: what are the implications for rehabilitation?* Neural Control of Movement Society, Naples, FL, May, 2008.
3. **Patten, C.** Innovative Approaches to Promoting Upper-extremity Recovery. *Contribution to: Emerging Therapies and Technologies in Brain Rehabilitation*, VA HSR&D National Meeting, February, 2008.
4. **Patten, C.** Optimizing the scheduling and type of exercise to maximize functional outcomes. Invited contribution to symposium: *Rehabilitation Intervention Effectiveness: Impact of Dose-response and Timing Post-stroke*, International Stroke Conference, New Orleans, LA, February, 2008.

5. **Patten, C.** Can strengthening produce functional improvements in gait following stroke? Invited contribution to symposium: *Utilizing exercise as a Research and Rehabilitative Tool in Special Populations*, Canadian Society of Exercise Physiology, London, Ontario, **CANADA**, November, 2007.
6. **Patten, C.** Physical Therapy Interventions with Robotics. Invited presentation at APTA National Student Conclave, Valley Forge, PA, October, 2007.
7. **Patten, C.** Neurophysiological Mechanisms and Biomechanical Consequences of Weakness in Post-stroke Hemiparesis, Seminar, Department of Physical Therapy and VA Brain Rehabilitation R&D Center, University of Florida, Gainesville, FL, December, 2006.
8. **Patten, C.** Neurophysiological Mechanisms and Biomechanical Consequences of Weakness in Post-stroke Hemiparesis, Seminar, Faculty of Biomedical Kinesiology, Katholieke University, Leuven, **BELGIUM**, November, 2006.
9. **Patten, C.** Strengthening to Promote Recovery of Function in Neurologic Populations. Invited course (2.5 days) at Hoge School Physiotherapie & University Rehabilitation Centre, Heerlen, **THE NETHERLANDS**, November, 2006.
10. **Patten, C.** Combined Dynamic Resistance Training and Functional Task Practice Promote Greater Recovery of Upper-extremity Function in Post-stroke Hemiparesis. *Update on Neurorehabilitation (Bay Area Regional III-STEP Conference)*, hosted by Kaiser-Permanente/Samuel Merritt College, September, 2006.
11. **Patten, C.** Its not about the muscle.....strengthening vs. functional task practice for motor rehabilitation post-stroke. Seminar, Department of Physical Therapy and Biokinesiology, University of Southern California, Los Angeles, CA, 29 August, 2006.
12. **Patten, C.** Effectiveness of Strengthening on Functional and Neurologic Recovery: Evidence From Adults and Children. Educational Session with Katherine Sullivan, Ph.D., PT and Samuel C. Lee, Ph.D., PT at APTA Annual Conference, Orlando, Florida, June, 2006.
13. **Patten, C.** Fundamental Strategies for Musculoskeletal Rehabilitation. Monthly Musculoskeletal Research Lecture, Dept. of Orthopaedic Surgery, Stanford University Medical School, May 2006.
14. **Patten, C.** But Doctor, I can't get my strength back.....Understanding Weakness in Post-stroke Hemiparesis. Invited seminar at Center For Applied Biomechanics and Rehabilitation Research (CABRR), National Rehabilitation Hospital, November, 2005.
15. **Patten, C.** Contemporary Perspectives on Motor Rehabilitation in Post-stroke Hemiparesis. Invited Seminar, Department of Physical Therapy and Rehabilitation Sciences, University of California, San Francisco, November, 2005.
16. **Patten, C.** Research Update - Neurorehabilitation for Post-stroke Hemiplegia. Invited Symposium, Abilities Expo, Santa Clara, California, November, 2005.
17. **Patten, C.** Promoting Recovery of Upper-extremity Function in Post-stroke Hemiparesis: Dynamic High-intensity Resistance Training Contrasted with Functional Motor Relearning. San Jose District, APTA meeting, November, 2005.
18. **Patten, C.** Dynamic High Intensity Resistance Training Improves Upper Extremity Motor Function, Power and Reflex Modulation Post-stroke. Invited contribution to symposium, *Upper Extremity Motor Control and Rehabilitation*, Biannual Motor Control Conference, Varna, **BULGARIA**, September, 2005.
19. **Patten, C.** Evidence that both Motor Learning and strength Training drive Upper-extremity recovery Post-stroke, contribution to session: *Neuroplasticity in Relation to Functional Recovery – What is the Human Clinical Evidence?* III-STEP (Summer Institute on Translating Evidence into Practice: Linking Movement Science and Intervention), Salt Lake City, Utah, July, 2005.
20. **Patten, C.** Emerging Technologies in Rehabilitation Research & Development Invited symposium at VA Senior Management Conference, Washington, D.C., August, 2004
21. **Patten, C.** How Foundation Research Facilitates Follow-on Funding Invited contribution to Symposium: *Foundation Funding, Where It Goes*. Combined Sections Meeting, APTA, Nashville, TN, February, 2004
22. **Patten, C.** Doctor, I can't get my strength back.....why we are weak following stroke. Five College Life Sciences Colloquium (invited), Smith College, November 10, 2003.
23. **Patten, C.** Why is scientific research important to physical therapy clinicians? Invited contribution to Symposium: *Foundation Funding, Where It Goes*. Combined Sections Meeting, APTA, Tampa, FL, Feb, 2003
24. **Patten C.** Identifying mechanisms of weakness in post-stroke hemiplegia. Seminar, Department of Physical Therapy and Biokinesiology, University of Southern California, Los Angeles, CA, Oct, 2002.

25. **Patten, C.** Is there evidence for neurorehabilitation practice? Invited contribution to Symposium: *Function-focused rehabilitation for the neurologic patient*. American Physical Therapy Assn. Annual Meeting & Scientific Exposition, Anaheim, CA, 2001.
26. **Patten, C.** Motor unit firing patterns in Hemiplegia – Identifying Mechanisms Contributing to Weakness in Post-stroke Hemiparesis. Invited contribution to Symposium: From Gee Whiz to What Is? American Society of Neurorehabilitation, San Diego, California, April, 2000. (focus on applications of biomedical engineering in clinical practice of neurorehabilitation).
27. **Patten, C.** Measuring Clinically Important Aspects of Balance and Gait. Invited contribution to Symposium on *Measurement of Balance and Gait*, 2nd Annual VA RR&D Service Annual Meeting, Washington, D.C., February 2000.
28. **Patten, C.** Motor unit firing patterns and age related changes Invited presentation for symposium on Motor unit firing patterns in voluntary movements. International symposium on *Motor control in human voluntary upper limb precision tasks*, Copenhagen, **DENMARK**, 25-27 November, 1999.
29. **Patten, C.** Variability in Motor Unit Discharge Activity: Effects on Force Regulation and Movement Control with Aging. Presentation for *Movement Control Symposium*. International Society of Biomechanics, Calgary, Alberta, **CANADA**, August, 1999.
30. **Patten, C.** Career Development and Mentoring. VA Rehabilitation Symposium, Houston, Texas, June, 1999.
31. **Patten, C.** Age and Training-related Adaptations in Motor Unit Control Properties. Invited seminar, Neurological Sciences Institute, Oregon Health Science University, Portland, OR, February 26, 1999.
32. **Patten, C.** Repetitive Strain Injuries: Causes, Treatment, & Prevention. Invited presentation to Massachusetts Society of Court Reporters Annual Conference. Braintree, MA. October 19, 1996.
33. **Patten, C.** Musculoskeletal considerations in prescribing exercise for older adults. Workshop contribution to *Exercise: Promoting Function and Independence in the Elderly*. Boston University Summer Institute in Gerontology, June 21, 1995.
34. **Patten, C.** Interpreting the Clinical Test of Sensory Integration and Balance. Invited inservice presentation at Spaulding Rehabilitation Hospital, Boston, Massachusetts, July, 1994.
35. **Patten, C.** Using the Motion Lab to Answer Clinical Questions. Invited presentation at *Biomechanics of Human Movement in Orthopaedics, Rehabilitation & Sports*. Massachusetts Institute of Technology, 2.75s, June, 1994.
36. **Patten, C.** Managing Balance Problems in the Older Patient. Symposium Lecture for: *Rehabilitation in the Elderly -- Neuro-Musculo-Skeletal Considerations*. American Academy of Cardiovascular and Pulmonary Rehabilitation, Annual Conference. Orlando, Florida. October 1993.
37. **Patten, C.** Assessment and Treatment of Balance Disorders in Physical Therapy Regional Inservice, Kaiser-Permanente of the Mid-Atlantic States, April, 1993.

## Research Experience

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### Research Scientist/ Upper-extremity Research Initiative Leader (GS-13)

Brain Rehabilitation R&D Center, Gainesville, Florida

Direct interdisciplinary Upper-extremity Research Initiative including coordination of collaborations with BRRC Translational Research Initiative

August, 2007 –

### Research Scientist/RR&D Center Core Principal Investigator (GS-13)

one of eight RR&D Center Core Investigators

Rehabilitation R&D Center of Excellence, VA Palo Alto Health Care System

Direct interdisciplinary Neural Control of Movement/Neurorehabilitation Program

October 2002 – August, 2007

### Research Scientist/Principal Investigator (GS-12)

Rehabilitation R&D Center of Excellence, VA Palo Alto Health Care System

Responsible for research lines investigating functional motor recovery in post-stroke hemiparesis

January 2001 – October 2002

### Post-Doctoral Fellow,

Rehabilitation R&D Center of Excellence, VA Palo Alto Health Care System

Investigation of neurophysiology and biomechanics of weakness in post-stroke hemiparesis

January 1998 – January 2001

**Graduate Research Assistant**

Motor Control Laboratory - Boston University, Department of Physical Therapy

September 1993 – August 1995.

Motor Control Laboratory - University of Massachusetts Department of Exercise Science

September 1995 – January 1998.

**Research Assistant**

Motor Control Laboratory - Boston University, Department. of Physical Therapy

May 1991- July 1992.

**Research Associate and Project Manager**

Seattle VA Medical Center, Department of Otolaryngology/Head & Neck Surgery

July 1987 - June 1990.

## Academic Experience

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**Associate Professor (2007 - )**

University of Florida, School of Public Health & Health Professions

Tenure Track

Department of Physical Therapy

(jointly appointed in Neurology (Medicine) and Applied Physiology & Kinesiology (Health & Human Performance))

*Provide lectures in PHT 6761 & PHT 6762 (Neurorehabilitation I & II) in DPT Curriculum;*

*Responsible for: RSD 7025 (Instrumentation and Analysis Techniques in Human Movement) and RSD*

*8111/Neuroscience 8111 (Translational Research) taught jointly with Jeff Kleim, Ph.D. in the*

*Rehabilitation Sciences Doctoral Program*

**Clinical Associate Professor (2005 - 2007)**

Stanford University School of Medicine

Department of Orthopaedic Surgery, Division of Physical Medicine & Rehabilitation

*Provided PM&R Resident Core Lectures on Therapeutic Interventions in PM&R Practice and Evidence-Based Practice; Member of Research Oversight Committee*

Human Biology Program

*HumBio 136 – Neural Basis of Human Movement*

**Clinical Assistant Professor (2005 - 2007)**

University of California, San Francisco/San Francisco State University

Department of Physical Therapy & Rehabilitation Science

*Provided lectures in PT 710 (Neurological Pathokinesiology I); Directed MSPT and DPT student*

*research experiences and projects PT 890 & PT 419; contributing faculty for DPTSci students*

**Consulting Assistant Professor (2003 - 2005)**

Stanford University School of Medicine

Department of Orthopaedic Surgery, Division of Functional Restoration

**Adjunct Assistant Professor (2004 - 2007),**

Boston University, Department of Rehabilitation Sciences

*Developed and taught online version of PT 634 (Diagnostic Procedures for Rehab Professionals)*

*Supervised graduate and doctoral student research*

**Assistant Professor (2002-2004)**

Boston University, Department of Rehabilitation Sciences,

*PT 634 (Diagnostic Procedures for Rehabilitation Professionals), selected lectures in neurology, neuro-rehabilitation, geriatrics, motor control, research), graduate student supervision*

**Consulting Assistant Professor (1998 - 2003)**

Stanford University School of Medicine

Department of Functional Restoration

**Research Mentor (1998, 1999)**

PVA/SCI Summer Scholar Research Program

Spinal Cord Injury Service, VA Palo Alto HCS

**Adjunct Assistant Professor (1997-1998)**

American International College, Department of Physical Therapy  
*Life Span Development, Motor Control*

**Graduate Teaching Assistant**

University of Massachusetts, Department of Exercise Science  
*Exercise Science 611 (Research Seminar- Design and Methods)*  
*Coordinator - Talent Advancement Program (TAP) (1996-1998)*

**Adjunct Lecturer (1993-1995)**

**Graduate Teaching Assistant (1994-1995)**

Boston University, Department of Physical Therapy  
*PT 652, 653 (Neurological Systems II & III), HP 771 (Foundations of Motor Control)*

**Mentoring**

*Post-doctoral Fellows and Career Development Recipients*

- Michelle Woodbury, Ph.D., OTR/L - Level-2 Career Development Award, VA Rehabilitation R&D Service - Primary Mentor. June, 2008 – June, 2011. *“A toolbox for measuring post-stroke upper extremity motor ability”*
- Christopher Gregory, Ph.D., PT - Level-2 Career Development Award, VA Rehabilitation R&D Service - Mentor. June, 2008 – June, 2011. *“Skeletal muscle properties and the metabolic cost of walking post-stroke”*
- Chetan Phadke, Ph.D., PT - Post-doctoral Fellow – January – December, 2008
- Christopher T. Robertson, Ph.D. - Post-doctoral Fellow, VA RR&D Service Associate Investigator Award, June 2007 – May 2009
- Kelly P. Westlake, Ph.D., PT - Post-doctoral Fellow, Canadian Institutes of Health Research - Clinical Initiative, Post-doctoral Research Award, February, 2007 – December, 2007
- Joanne M. Wagner, Ph.D., PT - Post-doctoral Fellow, VA RR&D Service Associate Investigator Award, June 2006 – December 2007
- Michael Harris-Love, Ph.D., PT - NIH Bone & Joint Decade Young Investigator – Mentor, February 2006 – December 2007.
- Ilse Jonkers, Ph.D., PT - Post-doctoral Fellow, Flemish Research Council – Co-supervisor with Scott Delp, Ph.D., June 2004 – June 2006

**Graduate Students**

- Virginia Little, MSPT - - University of Florida, Rehabilitation Sciences, Ph.D. student – August 2008 –  
*Degree expected May 2013*
- Elisa Gonzalez-Rothi, DPT – University of Florida, Rehabilitation Sciences, Ph.D. student – August 2008 –  
*Degree expected May 2013 (Recipient of NIH T32 Fellowship)*
- Martina Spiess, PT, MS - University of Florida, Rehabilitation Sciences, Ph.D. student – August 2008  
*Degree Expected May 2012 (Recipient of University of Florida Alumni Fellowship)*  
Co-mentorship with Andrea Behrman, Ph.D., PT
- Manuela Corti, PT. – University of Florida, Rehabilitation Sciences, Ph.D. student. January, 2008 –  
*Degree Expected May 2012 (Recipient of University of Florida Alumni Fellowship)*
- Shilpa Patil, PT - University of Florida, Rehabilitation Sciences, Ph.D. student. January, 2008 –  
*Degree expected May 2010*
- David J. Clark – Boston University, Movement and Rehabilitation Sciences Program, Sc.D., September 2002 –  
May, 2007. Defense April, 2007, Graduation, May, 2007.
- Aaron Grogan – Boston University, Department of Biomedical Engineering, Master’s Degree, graduation  
Spring, 2006
- Melanie Lomaglio – University of British Columbia, Department of Rehabilitation Sciences, External thesis  
reviewer, May, 2005 (Primary Supervisor, Janice E. Eng, Ph.D., PT/OT)

Elizabeth G. Condliffe – Boston University, Department of Biomedical Engineering, Master’s Student, graduation, Spring, 2004

George Chen – Stanford University, Department of Mechanical Engineering, Dissertation Committee member, graduation, Spring 2003

### *Physical Therapy and other Student Research Projects*

Sang Pak – University of California, San Francisco, Department of Physical Therapy and Rehabilitation Sciences, DPT student research internship, 2006-2007 Academic Year

Tianna Meriage – University of California, San Francisco, Department of Physical Therapy and Rehabilitation Sciences, DPT student research internship, 2006-2007 Academic Year

Jennifer Rhodes - University of California, San Francisco, Department of Physical Therapy and Rehabilitation Sciences, MSPT student research internship, 2006-2007 Academic Year

Liza Yanuzzi - University of California, San Francisco, Department of Physical Therapy and Rehabilitation Sciences, MSPT student research internship, 2006-2007 Academic Year

Jennifer Whitney – California State University, Long Beach, Dept. of Physical Therapy, Master’s Research Project, Summer, 2001.

Allison Magruder – California Polytechnic University, San Luis Obispo, Paralyzed Veterans of America Summer Scholars Program, Summer 2000.

Mark C. Gardner – Dept of Physical Therapy, Arcadia University. Master’s Research Project, Summer 1999.

Frederick J. Rumford, III – Department of Exercise Science, University of Massachusetts. Research Independent Study & Undergraduate Honors Thesis Committee, January –August, 1999.

Cheng Feng – University of Texas, Paralyzed Veterans of America Summer Scholars Program, Summer 1998.

Kara A. Rainsford – Department of Exercise Science, University of Massachusetts. Research Independent Study, Academic Year 1996-97.

Shannon E. Chabot – Dept. of Exercise Science, University of Massachusetts. Research Independent Study, Academic Yr 1996-97.

Daniel M. Rowland – Department of Biomedical Engineering, Boston University. Senior Biomedical Engineering Research Project, Academic Year 1993-94.

## **Professional Experience**

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**Physical Therapist** - Optimum Rehab, Sundance Rehabilitation. (Adult & geriatric neurology, subacute rehab). University Health Services–UMass/Amherst (Kaiser-Permanente Affiliate) (Outpatient/HMO). April 1995 - January 1998.

**Clinical Specialist** - Boston VA Medical Center, Physical Medicine and Rehabilitation Service, Physical Therapy Section. Adult Neurology and Research. January 1995 - April 1995.

**Senior Physical Therapist** - Boston VA Medical Center, PM&R Service, Physical Therapy Section. Adult Neurology, Research (60% Clinical/40% Research). June 1993-January 1995

**Physical Therapist** - Baltimore VA Medical Center, Rehabilitation Medicine Service. Acute Care, Neurology, Outpatient. September 1992 - June 1993.

## **Professional Licensure**

Physical Therapist - California License #22929, Massachusetts License #9246

## **University and Professional Service**

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### **Manuscript Reviewer -**

Journal of Neurologic Physical Therapy, 2007 -  
Stroke, 2007 -

Disability & Rehabilitation, 2007 -  
Physiotherapy Research and Practice, 2007 -  
Clinical Neurophysiology, 2006 -  
Neurorehabilitation and Neural Repair, 2006 -  
Journal of NeuroEngineering and Rehabilitation, 2005 -  
Archives of Physical Medicine and Rehabilitation, 2005 -  
Physical Therapy, 2005 -  
IEEE Transaction on Systems, Man and Cybernetics - Part B, 2005 -  
Journal of Neurologic Physical Therapy, 2005-  
Muscle & Nerve, 2005 -  
Journal of Neurophysiology, 2003 -  
Experimental Brain Research, 2003 -  
Canadian Journal of Applied Physiology, 2003 -  
Journal of Clinical Neurophysiology, 2003 -  
Journal of Applied Physiology, 2001 -  
Journal of Rehabilitation Research & Development, 2000 -  
European Journal of Applied Physiology. 2000 -  
Journal of Gerontology: Medical Sciences, 1999 -  
Journal of Orthopaedic and Sports Physical Therapy, 1998-  
Medical Engineering and Physics, 1998-  
Medicine and Science in Sports and Exercise, 1997-  
APTA Cardiopulmonary Section, 1995-

## **Professional Contributions**

### *Journal Editorial Boards and Committees*

- Physical Therapy Journal
  - Editorial Board Member
  - June, 2007 -
- Physical Therapy Journal
  - Steering Committee
  - April 2006 - June 2007

### *Professional Associations*

- American Stroke Association
  - Scientific Review Committee
  - May, 2007 -
- American Physical Therapy Association - Section on Neurology
  - Research Committee, Co-chairman (Strategic planning)
  - 2006 -
- American Physical Therapy Association - Section on Neurology
  - Research Committee, Chairman
  - 2002 - 2006
- American Physical Therapy Association.
  - Program Committee Reviewer for Neurology Section
  - 2000 - 2003
- American Physical Therapy Association - Section on Neurology.
  - Research Committee Member
  - 2000 - present

### *Grant and Scientific Review*

- Canadian Stroke Network
  - Expert Scientific Review Committee
  - January, 2008
- National Institutes of Health, NINDS
  - Ad Hoc reviewer, NINDS-K Clinical Trials Study Section

- February, 2007
- Foundation for Physical Therapy
  - Scientific Review Committee
  - January 2005 – December 2009
  - Chair, Scientific Review Committee
  - January 2007 – December 2009
- International Conference on Rehabilitation Robotics
  - Awards Review Committee, 2005
- Department of Veterans Affairs
  - Merit Review Panel
    - Scientific Reviewer, Winter 2004, Fall 2004, Spring 2005
  - Office of Research & Development Annual Meeting Abstract Reviewer, 2003
- NASA - Musculoskeletal Biology, Exercise and Countermeasures Review Panel
  - Spring, 2002

#### ***Institutional and Departmental***

- Subcommittee for Clinical Investigation, Malcom Randall VA Medical Center
  - Subcommittee of medical center-wide R&D committee
  - December, 2007 – present
- Brain Rehabilitation Research Center, Malcom Randall VA Medical Center
  - Executive Committee
  - Leader, Upper Extremity Research Initiative
- Research and Development Committee, VA Palo Alto Health Care System
  - Medical Center-wide review committee
  - November 2006 – August 2007
- Rehabilitation R&D Subcommittee
  - VA Palo Alto Health Care System
  - November 2006 – August 2007

#### **Session Chairperson**

- Recovery – *International Stroke Conference (American Heart Association)*, New Orleans, Louisiana, February, 2008
- Imagery and Imaging – *APTA Combined Sections Meeting, Section on Neurology*, San Diego, California, February, 2006.
- Post-stroke Hemiplegia – *APTA Combined Sections Meeting, Section on Neurology*, San Diego, California, February, 2006.
- Upper Extremity Motor Control – *Biannual Motor Control Conference*, Varna, Bulgaria, September, 2005.
- Mechanisms of Neural Recovery – *APTA Combined Sections Meeting, Section on Neurology*, Tampa, Florida, February, 2003.
- Muscle Symposium – *International Society of Biomechanics*, Calgary, Alberta, Canada, August, 1999.

#### **Memberships**

- Society for the Neural Control of Movement, 2008 -
- International Society for Posture and Gait, 2006 -
- American Physical Therapy Association, 1990 - present
  - Sections on: Research, Neurology
  - California Chapter
- American College of Sports Medicine, 1994 - present
- Society for Neuroscience, 1996 - present
- International Society for Electrophysiology and Kinesiology, 1998 -

#### **Honors/Activities**

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- Clinician Publication Award, California Chapter American Physical Therapy Association, 2007

- Visiting Fellowship, Faculty of Biomedical Kinesiology, Katholieke University, Belgium, November, 2006
- Speaker, Department of Veterans Affairs Senior Management Conference, August, 2004
- Honoree, American Physical Therapy Association, Profiles in Excellence, December, 2003
- Advanced Research Career Development Award, 2001 - 2004
  - Rehabilitation Research and Development Service, Department of Veteran's Affairs
- Outstanding Presentation, 2<sup>nd</sup> National Rehabilitation R&D Service Conference, February, 2000
- John V. Basmajian Student Investigator Award, 1998
  - International Society for Electrophysiology & Kinesiology
- Research Career Development Award, 1998 - 2001
  - Rehabilitation Research and Development Service, Department of Veteran's Affairs
- Boston University Women's Graduate Club Scholarship, 1995
- Department of Veteran's Affairs Health Professions Scholarship, 1990-1992
- Employee Performance Award
  - VA Palo Alto Health Care System - Rehab R&D Center - 1998
  - Boston VA Medical Center - Physical Medicine and Rehabilitation Service - 1994
  - Seattle VA Medical Center - General Medical Research - 1988, 1989, 1990
- Student Advisory Board, Class Representative, 1990-1992
  - Department of Physical Therapy, Sargent College, Boston University

## Professional Development (*attended*)

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- Grant Writing Part II: The Workshop Experience, April – August, 2008  
Candidacy by competitive selection process, 16 participants University-wide  
Stephen W. Russell, Ph.D, through the University of Florida, Office of the Associate Provost for Faculty Development
- Neural Control of Movement Society, May 2008
- VA Health Service Research & Development Service, Annual Meeting, February, 2008
- Intensive Course in Transcranial Magnetic Stimulation  
Laboratory for Magnetic Brain Stimulation, Beth Israel-Deaconess Medical Center (A. Pascual-Leone, M.D., Ph.D.), September, 2007
- International Society for Posture & Gait Research  
University of Vermont, July, 2007
- Building Effective Translational Rehabilitation Research (BETRR) – Translational Research Conference and Workgroups, University of Florida and VA Brain Rehabilitation Research Center, April, 2007
- International Stroke Conference  
American Heart Association/ American Stroke Association, February, 2007, 2008
- UE Translational Research Conference and Workgroups  
University of Florida and VA Brain Rehabilitation Research Center, January, 2006
- Write Winning Grants Seminar  
Sponsored by University of California, Irvine School of Medicine - Stephen W. Russell, Ph.D. and David C. Morrison, Ph.D. San Francisco, November, 2005.
- III-STEP (International Summer Institute Translating Evidence into Practice) – Linking Movement Science and Intervention, sponsored by APTA Sections on Neurology and Pediatrics and NICHD-NIA Conference Grant, Salt Lake City, Utah, July, 2005
- 3<sup>rd</sup> Annual Intensive Workshop On Grant Writing, Preparation and Submission in Rehabilitation Research  
Sponsored by ERRIS (Enhancing Rehabilitation Research in the South) and the Midwest Medical Rehabilitation Regional Network, Charlottesville, VA - January, 2005
- Evidence Based Medicine in Neurorehabilitation  
3<sup>rd</sup> Joint Congress of the World Federation for Neurorehabilitation, Zurich, Switzerland – October, 2004
- NIH Regional Grant Writing Workshop  
California State University Sacramento - September, 2004
- Brain Mapping Workshop  
Sponsored by NIH Regional Network, RehabNetWest  
University of California Los Angeles - February, 2002
- Current Concepts of Magnetic Resonance Imaging  
Offered by the Department of Radiology, Stanford University School of Medicine and the National Center for Advanced MR Technology at Stanford, September, 2000
- How to Practice Evidence-based Medicine  
2<sup>nd</sup> Rocky Mountain Workshop sponsored by The Colorado Health Outcomes Program and University of Colorado School of Medicine – August 2000
- PROCID (Prevention of Muscle Disorders in Operation of Computer Input Devices) Symposium  
Muscle Disorders in Computer Users: Mechanisms and Models  
National Institute of Occupational Health, Copenhagen, Denmark, November, 1999
- VA Epidemiology Summer Session (Epidemiology Research & Information Center/ERIC)  
University of Washington and VA Puget Sound Health Care System, June 1999
- Neural Plasticity  
Research Retreat Sponsored by the APTA Section on Research, August 1998
- Tenth Annual Interdisciplinary Bobath Symposium in the Treatment of Adult Hemiplegia  
San Francisco, CA, April 1998
- Brain Imaging Short Course  
Society for Neuroscience Annual Meeting, 1997
- Canadian Society of Biomechanics, Biennial Meeting.  
Simon Fraser University, Vancouver, B.C., August, 1996.

Sarcopenia and Physical Performance in Old Age  
Sponsored by the National Institute on Aging, National Institutes of Health, July 1996

Society for Neuroscience, Annual Meeting  
November 1993, 1995, 1996, 1997, 1998, 2000, 2003, 2004, 2005

Multisegmental Motor Control: Interface of Biomechanical, Neural, and Behavioral Approaches  
Research Retreat Sponsored by the APTA Section on Research, August 1995

Exercise Neuroscience Group  
Ontario, Canada - August 1995, June 2006

Stroke Survivors' Conference  
Sponsored by Braintree Rehabilitation Hospital/Neurobehavioral Programs, September 1994

American Physical Therapy Association, Annual Conference, June 1991, 2001, 2006, 2007, 2008  
World Congress of Physical Therapy, June 1995  
Second Joint APTA/CPA Congress, June 1994

NDT/Bobath Three Week Course in the Treatment of Adults with Hemiplegia  
NDTA Approved Course, Janice B. Hulme, PT, March 1994

Introduction to NDT: Focus on the Trunk  
Janice B. Hulme, PT, presented by In Motion Therapy Services, Cranston, R.I., January 1994.

EMG: Fine Wire Technique  
presented by: The Motion Analysis Laboratory, Children's Hospital, San Diego, CA, October 1993

NDT Approach to the Orthopaedic and Pain Patient  
Terry Wilson, PT, presented by Fallon Clinic, Auburn, MA, September 1993

American College of Sports Medicine  
Annual Conference: May 1993, 1995, 1996, 1998, 2003, 2005

Grantsmanship -- The Preparation of a Successful Research Grant  
Leslie C. Costello, Ph.D., University of Maryland, November 1992

Interpretation of Gait Analysis Data  
The Motion Analysis Laboratory, Children's Hospital, San Diego, California  
David Sutherland, M.D., et al, September 1992

Concepts of Rehabilitation for Adults with Balance Disorders  
Lewis Nashner, Sc.D. and Susan L. Whitney, PT  
Pre-Conference Instructional Course, Annual Massachusetts Chapter APTA Meeting, October 1991

Muscle Function in Normal and Pathological States  
Research Retreat sponsored by the APTA Section on Research, August 1991

Balance in the Elderly  
Pam Duncan, Ph.D., PT, Course sponsored by the Maine Chapter APTA, June 1991

Neurobehavioral Bases of Locomotion and Reaching  
Annual Conference in Movement Sciences, Teachers' College, Columbia University, March 1991

Combined Sections Meeting American Physical Therapy Association  
(Sections on Research and Neurology)  
February, 1991, 1992, 1993, 1994, 1995, 1997, 1998, 1999, 2000, 2001, 2003, 2004, 2005, 2006, 2007, 2008

Massachusetts Chapter APTA, Annual Meeting, 1990, 1991

Functional Electrical Stimulation  
Lucinda Baker, Ph.D., PT, Sponsored by REMEC at Seattle VA Medical Center, July 1989