

SHEILA SCHINDLER-IVENS, P.T., PH.D.

Current Position **Associate Professor, with Tenure**
Department of Physical Therapy
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I. EDUCATION

Bachelor of Science (Physical Therapy), Marquette University, Milwaukee, WI **1989**

Master of Science (Kinesiology), Simon Fraser University, Burnaby, BC, Canada **1997**
Thesis: 'Detection, Prevalence, and Characteristics of Breakaway Weakness'
Advisor: Dr JA Hoffer

Doctor of Philosophy (Rehabilitation Science), University of Iowa, Iowa City, IA **2001**
Dissertation: 'Soleus H-reflex Threshold, Gain, and Amplitude in Individuals with and without Spinal Cord Injury'
Advisor: Dr Richard K Shields

II. ACADEMIC, SCHOLARLY AND PROFESSIONAL EXPERIENCE

Adjunct Associate Professor	Medical College of Wisconsin, Milwaukee <i>Clinical and Translational Science Institute</i>	08/2013-present
Adjunct Associate Professor	Marquette University, Milwaukee <i>Department of Biomedical Engineering</i>	08/2013-present
Associate Professor	Marquette University, Milwaukee <i>Department of Physical Therapy</i>	08/2013-present
Adjunct Assistant Professor	Medical College of Wisconsin, Milwaukee <i>Clinical and Translational Science Institute</i>	10/2010-present
Adjunct Assistant Professor	Marquette University, Milwaukee <i>Department of Biomedical Engineering</i>	present
Assistant Professor	Marquette University, Milwaukee <i>Department of Physical Therapy</i>	01/2005-8/2013
Postdoctoral Research Fellow	Northwestern University, Chicago <i>Department of Physical Therapy and Human Movement Science</i> Research: Neural control of locomotion post-stroke under the direction of Dr David Brown	2002-2004
Research Assistant	University of Iowa, Iowa City <i>Department of Physical Therapy and Rehabilitation Science</i> Research: Neuromuscular adaptations to spinal cord injury under the direction of Dr Richard K Shields	1997-2001
Teaching Assistant	University of Iowa, Iowa City <i>Department of Physical Therapy and Rehabilitation Science</i> Teaching Areas: Neural control of movement in health and disease, neuromuscular therapeutics	1997-2001
Instructor	Simon Fraser University, Burnaby, BC, Canada	1996 -1997

	School of Kinesiology Teaching Area: Nutrition	
Research Assistant	Simon Fraser University, Burnaby, BC, Canada School of Kinesiology Research: Neural prosthesis, sensory control of movement, breakaway weakness under the direction of Dr JA Hoffer	1994-1996
Teaching Assistant	Simon Fraser University, Burnaby, BC, Canada School of Kinesiology Teaching Areas: Nutrition, exercise prescription, introduction to kinesiology	1994-1996
Physical Therapist	Vanderbilt University Medical Center, Nashville, TN Department of Rehabilitation Services Practice Areas: Neurological rehabilitation, acute care, burns	1990-1994

III. PUBLICATIONS

A. Refereed Journals

Publications Prior to Marquette University

Schindler-Ivens S and Shields RK. Author's Reply on Soleus H-reflex recruitment is not altered in persons with chronic spinal cord injury, *Archives of Physical Medicine and Rehabilitation*, 85(12):2070-1, 2004.

Schindler-Ivens S, Brown DA and Brooke JD. Direction-dependent phasing of locomotor muscle activity is altered post-stroke. *Journal of Neurophysiology*, 92(4):2207-16, 2004.

Schindler-Ivens S and Shields RK. Comparison of linear regression and probit analysis for detecting H-reflex threshold in individuals with and without spinal cord injury. *Electromyography and Clinical Neurophysiology*, 44(3):153-9, 2004.

Schindler-Ivens S and Shields RK. Soleus H-reflex recruitment is not altered in persons with chronic spinal cord injury. *Archives of Physical Medicine and Rehabilitation*, 85(5):840-7, 2004.

Bilodeau M, **Schindler-Ivens S**, Williams DM, Chandran R, Sharma SS. EMG frequency content changes with increasing force and during fatigue in the quadriceps femoris muscle of men and women. *Journal of Electromyography and Kinesiology*, 13(1):83-92, 2003.

Schindler-Ivens S and Shields RK. Low frequency depression of H-reflexes in humans with acute and chronic spinal-cord injury. *Experimental Brain Research*, 133(2):233-41, 2000.

Publications While at Marquette University

Kalinosky BT, **Schindler-Ivens S**, Schmit BD. White matter structural connectivity is associated with sensorimotor function in stroke survivors. *Neuroimage Clin*. 2013 May 27;2:767-81. doi: 10.1016/j.nicl.2013.05.009. PMID: 24179827

Schindler-Ivens SM, Struhar J, Jermé MG. Has the Foundation for Physical Therapy advanced the body of knowledge? *Phys Ther*. 2013 Jun;93(6):718-20. doi: 10.2522/ptj.2013.93.6.718. PMID: 23727958

Promjunyakul NO, Schmit BD, **Schindler-Ivens S**. Changes in hemodynamic responses in chronic stroke survivors do not affect fMRI signal detection in a block experimental design. *Magn Reson Imaging*. 2013 Sep;31(7):1119-28. doi: 10.1016/j.mri.2013.02.009. Epub 2013 May 1. PMID: 23642802

Stowe AM, Hughes-Zahner L, Barnes VK, Herbelin LL, **Schindler-Ivens SM**, Quaney BM. A pilot study to measure upper extremity H-reflexes following neuromuscular electrical stimulation therapy after stroke. *Neurosci Lett*. 2013 Feb 22;535:1-6. doi: 10.1016/j.neulet.2012.11.063. Epub 2013 Jan 8. PMID: 23313593

Jain S, Gourab K, **Schindler-Ivens S**, Schmit BD. EEG during pedaling: evidence for cortical control of locomotor tasks. *Clin Neurophysiol*. 2013 Feb;124(2):379-90. doi: 10.1016/j.clinph.2012.08.021. Epub 2012 Oct 1. PMID: 23036179

Bhagchandani N and **Schindler-Ivens S**. Reciprocal inhibition post-stroke is related to reflex excitability and movement ability. *Clinical Neurophysiology*, 2012 Nov;123(11):2239-46. doi: 10.1016/j.clinph.2012.04.023. Epub 2012 May 19

Mehta JP, Verber MD, Wieser JA, Schmit BD, **Schindler-Ivens S**. The effect of movement rate and complexity on functional magnetic resonance signal change during pedaling. *Motor Control*, 2012 Apr;16(2):158-75. Epub 2012 Feb 16

Fuchs DP, Sanghvi N, Wieser J, **Schindler-Ivens S**. Pedaling alters the excitability and modulation of vastus medialis H-reflexes after stroke. *Clinical Neurophysiology*, 122(10):2036-43, 2011. PMID:21507713

Lang CE, MacDonald JR, Reisman DS, Boyd L, Kimberley TJ, **Schindler-Ivens SM**, Hornby TG, Ross SA, Scheets PL. Observation of amounts of movement practice provided during stroke rehabilitation. *Archives of Physical Medicine and Rehabilitation*, 90(10):1692-8, 2009. PMID: 19801058

Mehta J, Verber M, Wieser J, Schmit BD, **Schindler-Ivens S**. A novel technique for examining brain activity associated with pedaling using fMRI. *Journal of Neuroscience Methods*, 179(2):230-239, 2009. PMID: 19428532

Schindler-Ivens S, Brown DA, Lewis GN, Nielsen JB, Ondishko KL, Wieser J. Soleus H-reflex excitability during pedaling post-stroke. *Experimental Brain Research*, 188(3):465-74, 2008. PMID: 18427793

Stowe AM, Hughes-Zahner L, Stylianou AP, **Schindler-Ivens S**, Quaney BM. Between-day reliability of upper extremity H-reflexes. *Journal of Neuroscience Methods*, 170(2):317-23, 2008. PMID: 18377996

Schindler-Ivens S, Desimone D, Grubich S, Kelley C, Sanghvi N, Brown DA. Lower extremity passive range of motion in community-ambulating stroke survivors. *Journal of Neurologic Physical Therapy*, 32(1):21-31, 2008. PMID: 18463552

Schindler-Ivens S. Bottom Line on Sensory-specific balance training in older adults: effect on position, movement, and velocity sense at the ankle. *Physical Therapy*, 87(5):560-8, 2007.

Schindler-Ivens S. Invited Commentary on Explicit information interferes with implicit motor learning of both continuous and discrete movement tasks after stroke. *Journal of Neurologic Physical Therapy*, 30(2):58, 2006.

Publications Under Review

Promjunyakul N, , Schmit B, **Schindler-Ivens S**. Volume of pedaling-related brain activity post-stroke is reduced. *Human Brain Mapping*, in review.

Bao S, Wang J, Johnson MJ, **Schindler-Ivens S**. Supraspinal control of upper and lower limb movements: an fMRI study. *Clinical Neurophysiology*, in review

Ellwein L, LaDisa Jr. JF, Liebham S, **Schindler-Ivens S**, Samyn MM. Quantification of thoracic aorta blood flow by magnetic resonance imaging during supine cycling exercise of increasing intensity. *International Journal of Cardiovascular Imaging*, submitted.

Publications in Preparation

Promjunyakul N, Seck D, Schmit B, **Schindler-Ivens S**. Relationship between pedaling-related brain activity and locomotor function in people post-stroke. *Stroke*, in preparation

Swedler R, Baillet S, **Schindler-Ivens S**. Oscillations in cortical activity across the pedaling cycle suggest phase-dependent, supraspinal control of pedaling. *NeuroImage*, in preparation

B. Book Reviews

Book Reviews Prior to Marquette University

Schindler-Ivens SM. Review of *Upper Motor Neurone Syndrome and Spasticity: Clinical Management and Neurophysiology*. Barnes MP, Johnson GR, eds. New York, NY 10011-4211, Cambridge University Press, 2001, paperback, 326 pp, illus, ISBN:0-521-79427-7 \$49.95 in *Physical Therapy*, 82(2):194-195, 2002.

Schindler-Ivens SM. Review of *Clinical Evaluation and Management of Spasticity*. Gelber DA, Jeffery DR, eds. Totowa, NJ 07512, Humana Press Inc, 2002, hardcover, 395 pp, illus, ISBN: 0-89603-636-7, \$125 in *Physical Therapy*, 82(10):1038-40, 2002.

Book Reviews While at Marquette University

Schindler-Ivens SM. Review of *Progress in Motor Control, Volume 3 Effects of Age, Disorder, and Rehabilitation*. Latash ML, Levin MF, eds. Champaign, IL 61825-5076, Human Kinetics 2004, hardcover, 325 pp, illus, ISBN: 0-7360-4400-0 \$89 in *Physical Therapy*, 85(8):808, 2005.

Schindler-Ivens SM. Review of *Multiple Sclerosis: The Questions You Have The Answers You Need, ed 3*. Kalb RC, ed. New York, NY 10016, Demos Medical Publishing, 2004, paperback, 659 pp, illus, ISBN: 1-932603-05-0, \$39.95 in *Physical Therapy*, 85(9):976-7, 2005.

c. Professional Presentations/ Abstracts/ Conference Proceedings

Abstracts Prior to Marquette University – Local/Regional

None

Abstracts Prior to Marquette University – National/International

Schindler-Ivens S, Jennings EM, Brown DA. Cutaneomuscular reflex modulation during forward and backward pedaling post-stroke, *Society for Neuroscience Abstracts*, 2004

Schindler-Ivens, S and Brown, DA. Neuromuscular adaptation to locomotor task demands: scaling versus phasing. *Annual Conference and Exposition of the American Physical Therapy Association*, 2004

Brooke, JD, **Schindler-Ivens S**, Brown, DA. Quantifying changes in EMG patterns during pedaling post-stroke. *Society for Neuroscience Abstracts*, 2003

Schindler-Ivens S, Brooke JD, Brown DA. Direction-dependent changes in locomotor muscle activity in individuals with post-stroke hemiparesis. *Society for Neuroscience Abstracts*, 2003

Schindler-Ivens S, Brown DA, Brooke JD. Switch from unifunctional to bifunctional activity of vastus medialis during locomotion post-stroke. *Society for Neuroscience Abstracts*, 2002

Bilodeau M, **Schindler-Ivens S**, Williams DM, Chandran R, Sharma SS. Effects of force and fatigue on EMG signals of the quadriceps of men and women. *XIVth Congress of the International Society of Electrophysiology and Kinesiology*, 2002.

Schindler-Ivens S and Shields RK. Soleus H-reflex threshold, gain, and amplitude in humans with and without spinal cord injury. *Society for Neuroscience Abstracts*, 2001

Shields RK, Clark SD, Grant SA, Tysseling VM, Zwart BD, **Schindler-Ivens S**, Littmann, A. Analysis of bone mineral density in individuals with spinal cord injury. *Annual Conference and Exposition of the American Physical Therapy Association*, 2000.

Schindler-Ivens S and Shields RK. H-reflex-torque relationship in humans with and without spinal cord injury. *Society for Neuroscience Abstracts*, 2000.

Shields RK, Chang YJ, Littmann A, **Schindler-Ivens S**. Effects of electrically induced training on muscle fatigue and H-reflex suppression in individuals with paralysis. *Society for Neuroscience Abstracts*, 1999.

Schindler-Ivens S and Shields RK. Low frequency depression of the H-reflex in humans with acute and chronic spinal cord injury. *Society for Neuroscience Abstracts*, 1998.

Abstracts While at Marquette University – Local/Regional

Schindler-Ivens S, Johnson MJ, Kamara S, Wang J, Bao S. Supraspinal contributions to upper and lower limb motor control and recovery after stroke – an fMRI Study. Milwaukee Regional Research Forum, October 24, 2011, Wauwatosa, WI.

Promjunyakul N, Verber MD, Schmit BD, **Schindler-Ivens SM**. Pedaling related brain activity in chronic stroke survivors: a fMRI study. Wisconsin Physical Therapy Association Spring Meeting, April 7, 2011, Green Lake, WI.

Swedler R, Baillet S, **Schindler-Ivens SM**. Examining motor activity using magnetoencephalography (MEG). Wisconsin Physical Therapy Association Spring Meeting, April 7, 2011, Green Lake, WI.

Bao S, **Schindler-Ivens SM**, Johnson M, Wang J. Supra-spinal contribution to upper limb bilateral motor activity in healthy and stroke subjects: an fMRI study. Wisconsin Physical Therapy Association Spring Meeting, April 7, 2011, Green Lake, WI.

Arand B, **Schindler-Ivens SM**, Promjunyakul N. MRI safe pedaling device for examining human brain activity during unilateral pedaling after stroke. Wisconsin Physical Therapy Association Spring Meeting, April 7, 2011, Green Lake, WI.

Arand B, **Schindler-Ivens SM**. MRI safe device for examining human brain activity during unilateral pedaling after stroke. *Marquette University Forward Thinking Research Symposium*, 2010.

Schindler-Ivens SM, Bhagchandani N. Contribution of impaired reciprocal inhibition to abnormal locomotor muscle timing in people post-stroke. *Marquette University Forward Thinking Research Symposium*, 2008.

Schindler-Ivens SM, Knoblauch S. What's the best rehabilitation prescription? Identifying factors that enhance recovery of gait after stroke. *Marquette University Forward Thinking Research Symposium*, 2008.

Knoblauch S, Ondishko KL, Brown DA, Lewis GN, Sischo J, Wieser J, **Schindler-Ivens SM**. Cortical excitability during locomotion. *Meeting of the Milwaukee Chapter of the Society for Neuroscience*, 2008.

Mehta J, Schmit B, **Schindler-Ivens S**. Cortical function during locomotion - an fMRI study. *Meeting of the Milwaukee Chapter of the Society for Neuroscience*, 2008.

Fuchs DP, Sanghvi NH, **Schindler-Ivens S**. Vastus medialis H-reflex excitability during locomotion post-stroke. *Research Symposium of the National Science Foundation Research Experience for Undergraduates (REU) in Biomedical Engineering*, 2007.

Ondishko K, Deering RE, Stoeckmann TM, **Schindler-Ivens SM**. Electrophysiological modalities help identify factors contributing to acute low back pain in a 55 year old male. *Wisconsin Physical Therapy Association Spring Meeting*, 2007.

Deering RE, Ondishko K, Stoeckmann TM, **Schindler-Ivens SM**. Clinical and radiological modalities fail to fully explain the cause of acute low back pain in a 55 year old male. *Wisconsin Physical Therapy Association Spring Meeting*, 2007.

Stowe AM, Hughes-Zahner L, Barnes V, Herbelin L, **Schindler-Ivens SM**, Quaney BM. The effects of electrical stimulation after stroke: a novel protocol to measure the H-reflex in the extensor carpi radialis. *Annual Meeting of the Kansas Physical Therapy Association*, 2007.

Knoblauch S, Ondishko K, Brown DA, Lewis G, Sischo J, Wieser J **Schindler-Ivens SM**. Corticomotor excitability during post-stroke locomotion. Marquette University College of Health Sciences Biomedical Sciences Summer Research Program, *Student Research Day*, 2007

Schindler-Ivens SM, Mehta J. Imaging of the human brain during pedaling. *Marquette University Forward Thinking Research Symposium*, 2006.

Kalodimos H, **Schindler-Ivens SM**, Wieser JA, Sanghvi NH. Direction dependent modulation of soleus H-reflexes during pedalling. *Research Symposium of the National Science Foundation Research Experience for Undergraduates (REU) in Biomedical Engineering*, 2006.

Cebe Ondishko KL, **Schindler-Ivens SM**, Brown DA, Lewis DA, Sischo J, Wieser JA. Abnormal modulation of soleus H-reflexes during post-stroke locomotion. Marquette University College of Health Sciences Biomedical Sciences Summer Research Program, *Student Research Day*, 2006

Schindler-Ivens S, Hammes, E. How does the spinal cord compensate for reversal of pedalling direction? *Research Symposium of the National Science Foundation Research Experience for Undergraduates (REU) in Biomedical Engineering*, 2005.

Abstracts While at Marquette University – National/International

Schindler-Ivens SM, Swedler R, Schmit B, Baillet S. Neuromagnetic activity in the cerebral cortex is modulated by locomotor-like movements produced during pedaling. Society for Neuroscience Annual Convention, October 2012, New Orleans, LA.

Promjunyakul N, Verber MD, Schmit BD, **Schindler-Ivens SM**, Pedaling-related brain activity in chronic stroke survivors: A fMRI study. Society of Neural Control of Movement Meeting, San Juan, Puerto Rico, April 2011

Promjunyakul N, Verber MD, Schmit BD, **Schindler-Ivens SM**. Pedaling-related brain activity in chronic stroke survivors: A fMRI study. Meeting of the Organization for Human Brain Mapping, June 2011, Quebec City, Canada.

Promjunyakul N, Schmit BD, Verber MD, **Schindler-Ivens SM**. Characteristics of the hemodynamic response function in chronic stroke survivors. Society for Neuroscience Annual Convention, November 12-16, 2011, Washington, DC.

Schindler-Ivens SM, Promjunyakul N, Verber MD, Schmit BD. Pedaling-related brain activity in chronic stroke survivors: A fMRI study. Society for Neuroscience Annual Convention, November 12-16, 2011, Washington, DC.

Schindler-Ivens SM, Bhagchandani N, Wieser J. Contribution of clinical measures in estimating impaired reciprocal inhibition in individuals post-stroke. Society for Neuroscience Abstracts, 2010.

Kathy Ondishko, Shannon Knoblauch, Jon Wieser, **Sheila M. Schindler-Ivens**. Corticomotor excitability during pedaling post-stroke. Combined Sections Meeting of the American Physical Therapy Association, Feb, 2009, Las Vegas.

Schindler-Ivens, S.M.; Ondishko, K.; Knoblauch, S; and Wieser, J. Corticomotor Excitability during Pedaling Post-Stroke. Society for Neuroscience Abstracts, 2009.

Wieser JA, Mehta JP, Schmit BD, Verber M, **Schindler-Ivens SM**. A novel technique for examining human brain activity during locomotion using fMRI. *Society for Neuroscience Abstracts*, 2008.

Schindler-Ivens SM, Wieser JA, Mehta JP, Schmit BD, Verber M. Effects of locomotor task demands on activity in the human primary sensorimotor cortex: an fMRI study. *Society for Neuroscience Abstracts*, 2008.

Fuchs DP, Sanghvi NH, **Schindler-Ivens SM**. Modulation of vastus medialis H-reflexes during post-stroke locomotion. *Annual Conference and Exposition of the American Physical Therapy Association*, 2008.

Schindler-Ivens S, Cebe (Ondishko) K, Brown DA, Lewis GN, Sischo J, Wieser J. Abnormal modulation of soleus H-reflexes during post-stroke locomotion. *Combined Sections Meeting of the American Physical Therapy Association*, 2007.

Ondishko KL, Brown DA, Lewis GN, Nielsen JB, Sischo J, Wieser J, **Schindler-Ivens SM**. Modulation of soleus H-reflexes during pedaling post-stroke. *Society for Neuroscience Abstracts*, 2007

Fuchs DP, Sanghvi NH, **Schindler-Ivens SM**. Vastus medialis H-reflex excitability during locomotion post-stroke. *National Meeting of the Biomedical Engineering Society*, 2007.

Schindler-Ivens S, Lewis GN, Scott M, Nielson JB, Brown DA. Modulation of corticospinal excitability during a novel and familiar locomotor task. *Society for Neuroscience Abstracts*, 2005

IV. RESEARCH FUNDING

As Principal Investigator

Funded Before Marquette University

National Institutes of Health (NIH)

Ruth L. Kirschstein National Research Service Award (Individual F32)

Period: 01/2003 – 12/2004

[HD044299-01]

Title: *Altered muscle activity during locomotion post-stroke*

Direct costs: \$97,856

National Institutes of Health (NIH)

Postdoctoral Fellowship (Institutional T32)

Period: 01/2002 – 12/2002

[HD007418-10]

Topic: *Neural control of locomotion post-stroke*

Direct costs: \$48,928

Funded While at Marquette University

Extramural Grants as PI

American Heart Association – Midwest Affiliate

New Investigator Development Award

Period: 01/2006 – 12/2008

Title: *Supraspinal contributions to locomotor control and recovery after stroke*

Direct costs: \$195,000

National Institutes of Health (NIH)

R15 AREA Award

Period: 01/2006 – 12/2008

[HD051565-01]

Title: *Cortical control of locomotion after stroke*

Direct costs: \$150,000 declined due to overlapping aims with American Heart Association award

Medical College of Wisconsin CTSI core facility for pilot funding

Period: 04/2008 - 07/2009

Title: *Understanding human brain function and plasticity during locomotion in people with and without stroke*

Costs: \$12,648

National Institutes of Health (NIH)

K01 Career Development Award

Period: 02/2010 – 01/2015

[HD060693-02]

Title: *Cortical Supraspinal Contributions to Locomotor Control and Recovery Post-Stroke*

Direct costs: \$597,401

CTSI of Southeastern Wisconsin

Pilot and Collaborative Clinical and Translational Research Grant

Period: 06/2010 – 06/2012

Title: *Supraspinal contributions to upper and lower limb motor control and recovery after stroke.*

Costs: \$45,000

Intramural Grants (Marquette University) as PI

Way Klingler Summer Research Award Title: <i>Cortical control of locomotion post-stroke</i> Costs: \$5,000	Period: 05/2005 – 08/2005
Faculty Development Award, College of Health Sciences Title: <i>Cortical excitability during novel and familiar locomotor tasks</i> Costs: \$1,515	Period: 06/2005 – 12/2005
Jump Start Grant, Office of the Vice Provost for Research Title: <i>Imaging of the human brain during pedaling</i> Costs: \$1,000	Period 12/2006 – 06/2007
Jump Start Grant, Office of the Vice Provost for Research Title: <i>What's the best rehabilitation prescription? Identifying factors that enhance recovery of gait after stroke</i> Costs: \$1,000	Period 12/2008 – 06/2009
Research Development Program, Office of the Vice Provost for Research Title: <i>Functional imaging of the human brain during locomotion</i> Costs: \$2,300	Period 08/2007 – 05/2008
Regular Research Grant, Committee on Research Title: <i>The role of the brain in controlling locomotion in people with and without stroke</i> Costs: \$6,000	Period: 01/2009 – 06/2009

As Co-Investigator

Foundation for Physical Therapy (PI: Quaney, BM) Title: <i>Effect of electrical stimulation on grasping function in individuals with chronic stroke</i> Direct Costs: \$40,000 Role: Co-Investigator	Period: 05/2006 – 04/2007
US Department of Education, RERC (PI: Harris, G) Title: <i>Rehabilitation engineering research center on technologies for children with orthopaedic disabilities</i> Direct Costs: \$4,456,124 Role: Co-Investigator	Period: 10/2010 – 09/2015
American Heart Association - Midwest Affiliate (PI: Ellwein, L) Postdoctoral Fellowship #10POST4210030. Title: <i>Translating Near Infrared Spectroscopy (NIRS) O₂ Saturation Data for the Noninvasive Prediction of Spatial and Temporal Hemodynamics during Exercises</i> Direct Costs: \$90,772 Role: Consultant	Period: 7/2010 – 6/2012

Grant Applications Currently Under Review (Pending)

None

Grant Applications Not Funded (as PI and Co-Invest)

Foundation for Physical Therapy Title: <i>Usefulness of explicit information for locomotor control and recovery post-stroke</i> Role: PI	Submission: 8/2004
Foundation for Physical Therapy Title: <i>Usefulness of explicit information for locomotor control and recovery post-stroke</i> Role: PI	Submission: 8/2005
Research Development Program, Office of the Vice Provost for Research Title: <i>Functional imaging of the human brain during locomotion</i> Role: PI	Submission: 10/2006

- Foundation for Physical Therapy** Submission: 8/2007
 Title: *Multi Site Observational Study of Rehabilitation*
 Role: Co-PI
- Jump Start Grant, Office of the Vice Provost for Research** Submission: 11/2008
 Title: *Reciprocal inhibition of the soleus muscle during pedaling in people with and without stroke*
 Role: PI
- National Institutes of Health (NIH)**
K01 Career Development Award Submission: 06/2008
 [HD060693-02]
 Title: *Supraspinal contributions to locomotor control and recovery after stroke*
 Role: PI
- American Heart Association – Midwest Affiliate**
Grant in Aid Submission: 07/2008
 Title: *Supraspinal contributions to locomotor control and recovery after stroke*
 Role: PI
- Christopher and Dana Reeve Foundation**
Individual Research Grant Period: 07/2010 – 12/2012
 Title: *Supraspinal contributions to upper and lower limb motor control and recovery after stroke-an fMRI study*
 Direct costs: \$145,150
- University of Wisconsin-Milwaukee**
Research Growth Initiative Period: 07/2010 – 06/2012
 Title: *Neural mechanisms underlying supraspinal control of upper and lower limb movements after stroke*
 Direct costs: \$272,005

 VI. PRESENTATIONS (INVITED)

Local/Regional

- Marquette University**, Milwaukee, WI. Biomedical Engineering Neurogroup Seminar. *Locomotor-related brain activity in people post-stroke*. April 19, 2013
- Medical College of Wisconsin**, Milwaukee, WI. Clinical and Translational Science Institute Research in Progress Seminar. *Locomotor-related brain activity in people post-stroke*. April 18, 2013
- Marquette University**, Milwaukee, WI. Clinical and Translational Rehabilitation Science Symposium. *Examining Locomotor-Related Brain Activity after Stroke: An fMRI Approach*. Oct. 20, 2011.
- Marquette University**, Milwaukee, WI. Brotz Seminar in the Department of Biomedical Engineering. *Examining human brain activity during pedaling using fMRI*. March 12, 2010
- Zablacki VA Medical Center**, Milwaukee, WI. Inservice in the Department of Physical Therapy. *Examining human brain activity during pedaling using fMRI*. January 16, 2010
- University of Illinois-Chicago**, Chicago, IL. Grand Rounds in the Department of Physical Therapy. *Examining human brain activity during pedaling using fMRI*. April 15, 2010.
- Marquette University**, Milwaukee, WI. Keynote Speaker for the CTSI Rehabilitation Workshop. *Science, engineering, and patient care: A rehabilitation love story*. May 26, 2010
- St. Mary's Hospital**, Milwaukee, WI. Inservice in the Department of Physical Therapy. *Examining human brain activity during pedaling using fMRI*. May 18, 2010
- Marquette University**, Milwaukee, WI. Speaker at the Milwaukee Area Evidence Based Practice Institute. *Teaching evidence based practice: How can we enhance our skills?* July 28, 2010
- Medical College of Wisconsin**, Milwaukee, WI. Brown Bag Research Seminar in the Functional Imaging Research Center. *Examining human brain activity during pedaling using fMRI*. March 18, 2009
- Marquette University**, Milwaukee, WI. Meeting of the Minds Research Seminar in the Department of Physical Therapy. *Examining human brain activity during pedaling using fMRI*. January 22nd, 2009

Northwestern University, Chicago, IL. Grand Rounds in the Department of Physical Therapy and Human Movement Science. *Examining human brain activity during pedaling using fMRI*. November 20th, 2008

Columbia-St. Mary's Hospital, Milwaukee, WI. Department of Physical Therapy Inservice. *Stroke research at Marquette University*. April 4, 2008.

Medical College of Wisconsin, Milwaukee, WI. Grand Rounds in the Department of Physical Medicine and Rehabilitation. *Impaired locomotion post-stroke: cortical and somatosensory contributions*. February, 2008.

Marquette University, Milwaukee, WI. College of Health Sciences Undergraduate Summer Research Program Series. *Impaired locomotion post-stroke: cortical and somatosensory contributions*. July 31st, 2007

Marquette University, Milwaukee, WI. Meeting of the Minds Research Seminar in the Department of Physical Therapy. *Neural control of locomotion post-stroke*. June 7, 2007

Marquette University, Milwaukee, WI. 50th Anniversary Speaker Series in the Department of Physical Therapy. *Post-stroke locomotor control: contrasting perspectives*. July 28th, 2006

Marquette University, Milwaukee, WI. College of Health Sciences Undergraduate Summer Research Program Series. *Impaired locomotion post-stroke: cortical and somatosensory contributions*. June 26th, 2006

Marquette University, Milwaukee, WI. Department of Biomedical Engineering Research Seminar. *Impaired locomotion post-stroke: cortical and somatosensory contributions*. January 17th, 2006

Marquette University, Milwaukee, WI. Integrative Neuroscience Research Seminar, *Impaired locomotion post-stroke: cortical and somatosensory contributions*. 2005

National/International

Somerset Community College, Somerset, KY. Physical Therapist Assistant Program. Student impact on research in physical therapy. October 21, 2013

University of Illinois-Chicago, Chicago, IL. Department of Kinesiology and Physical Therapy Research Seminar. *Locomotor-related brain activity in people post-stroke*. May 21, 2013

University of Copenhagen, Copenhagen, Denmark. International Spasticity Meeting. *Cortical and somatosensory control of locomotion post-stroke*. January 30th, 2007

Combined Sections Meeting of the APTA, New Orleans, LA. *Locomotor control post-stroke: beyond spasticity*. February 24, 2005

VII. TEACHING

A. Course Director

1. **Introduction to Evidence Based Clinical Decision Making (PHTH 522 or 7522): Course Director**

Summer 2005	2 cr	58 students
Summer 2006	2 cr	58 students
Summer 2007	2 cr	65 students
Summer 2008	2 cr	68 students
Summer 2009	2 cr	66 students
Summer 2010	2 cr	63 students
Summer 2011	2 cr	62 students
Summer 2012	2 cr	61 students
Summer 2013	2 cr	71 students
Summer 2014	2 cr	74 students

2. **Evidence Based Clinical Decision Making 3 (PHTH 564): Course Director**

Spring 2006	1 cr	56 students
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3. **Evidence Based Clinical Decision Making 4 (PHTH 574): Course Director**

Fall 2007	1 cr	60 students
Fall 2008	1 cr	68 students

Fall 2009	3 cr	66 students (Course # change to PHTH 7674)
Fall 2010	3 cr	58 students (Course # change to PHTH 7674) – Sabbatical
Fall 2011	3 cr	61 students (Course # change to PHTH 7674)
Fall 2012	3 cr	62 students (Course # change to PHTH 7674)
Fall 2013	3 cr	61 students (Course # change to PHTH 7674)
Fall 2014	3 cr	61 students (Course # change to PHTH 7674)
4. Integrated Medical Neuroscience (PHTH 560): Course Director		
Spring 2005	2 cr	71 students
Fall 2006	2 cr	53 students
Fall 2007	2 cr	60 students
Fall 2008	2 cr	65 students
5. Introduction to Research and PhD Education (PHTH 598): Course Director		
Spring 2006	1 cr	9 students
6. Neurophysiological Principles in Disease and Rehabilitation		
Spring 2012	3 cr	4 students
Spring 2013	3 cr	3 students
7. Journal Club		
Summer 2012	1-3 cr	4 (plus ~25 non-credit attendees)
8. Neuro Resident Stats		
Fall/Spring	2011	credits N/A 2 students
Summer	2012	credits N/A 2 students
Summer	2013	credits N/A 2 students

B. Other Major Responsibilities**Independent Study (PHTH 195)**

Spring 2008, 1 student (Thomas C)	3 cr
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Independent Study (PHTH 598)

Spring 2008, 1 student (Barel M)	N/A
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Independent Study (PHTH 595)

Fall 2008, 1 student (Knoblauch S)	3 cr
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Spring 2006, 1 student (Sischo J)	2 cr
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Independent Study (HESC 195)

Fall 2007, 1 student (Knoblauch S)	3 cr
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Exercise Science Practicum I (EXSC 105) research practicum

Fall 2008: 1 student (Dillon M)	2 cr
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Fall 2009: 1 student (Patrick J)	2 cr
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Fall 2011: 1 student (Lewellyn C)	2 cr
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College of Health Sciences – Summer Undergraduate Research Program

Summer 2006: 1 student (Cebe Ondishko K)
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Summer 2007: 1 student (Knoblauch S)

Summer 2009: 1 student (Patrick J)

Summer 2011: 1 student (Derr T)

Summer 2012: 1 student (Seck, D)

Summer 2013: 3 students (Struhar, J; Asma, M; Steinmetz, C)

Department of Biomedical Engineering – Research Experience for Undergraduates

Summer 2005: 1 student (Hammes E)

Summer 2006 1 student (Kalodimos H)

Summer 2007 1 student (Fuchs D)

McNair Summer Research Experience for Undergraduates

Summer 2005: 1 student (Shelbourne S)

C. Guest Lecturer

Introduction to Physical Therapy (PHTH xxx, x cr): 1 lecture, Spring 2013

Integrated Medical Neuroscience (PHTH 560, 2 cr): 3 lectures, Spring 2009

Integrated Medical Neuroscience (PHTH 560, 2 cr): 3 lectures, Spring 2010

University of Wisconsin, Milwaukee, WI. Examining human brain activity during locomotion in people post-stroke. Department of Human Movement Sciences Course #910, February 14, 2012.

D. Invited Teaching

Evaluating the Evidence for Diagnostic Tests. Marquette University *2nd Annual Seminar in Evidence Base Practice*. November 25, 2013, Milwaukee, WI. 50 min continuing education seminar

Acquiring the Best Available Evidence from Open Door: APTA's Portal to Evidence Based Practice. Marquette University *Inaugural Seminar in Evidence Base Practice*. December 3, 2012, Milwaukee, WI. 50 min continuing education seminar

Evidence Based Practice for the Busy Clinician. Wisconsin Physical Therapy Association Spring Meeting, April 7, 2011, Green Lake, WI. 3 hour continuing education seminar

Evidence Based Practice for the Pediatric Clinician. Naperville/Aurora School District, January 13, 2012, Naperville, IL. 5 hour continuing education seminar

Evidence Based Practice for the Pediatric Physical Therapist. Cooperative Association for Special Education (C.A.S.E.), March 3, 2012, Glen Ellyn, IL. 5 hour continuing education seminar

VIII. DISSERTATION AND THESIS COMMITTEES

iv. Masters Degree**Principal Advisor for:**

Tamichah Gelting, MS (Physical Therapy-CTRH), Marquette University, 'Non-compensatory training during locomotion post-stroke' January 2014 – present.

Brett Arand, MS (Biomedical Engineering), Marquette University, 'Brain activity during unilateral vs. bilateral leg movements' August 2010-August 2013.

Shancheng Bao, MS (Biomedical Engineering), Marquette University, 'Supraspinal contribution to upper and lower limb movement post-stroke' July 2010-May 2013.

Ruth Swedler (Dept Biomedical Engineering, Marquette University, Milwaukee, WI) 'Using MEG to Examine Locomotion' January 2009 – July 2012

Jay Mehta (Dept Biomedical Engineering, Marquette University, Milwaukee, WI) 'Understanding supraspinal control of locomotion – an fMRI study' Completed December, 2008

Committee Member for:

Usha Tadimeti, (Biomedical Engineering, Marquette University, Milwaukee, WI), Completed, 2012.

Rubing Xu (Dept Biomedical Engineering, Marquette University, Milwaukee, WI), 'Design of an MR safe upper extremity evaluation system to study brain activation patterns after stroke' Completed, 2011.

Sanket Jain (Marquette University, Milwaukee, WI), 'EEG during pedaling: the cortical contribution to human locomotion' Completed, November, 2009

Priyanka Kanade (Dept Biomedical Engineering, Marquette University, Milwaukee, WI), 'Mapping of posture dependent endpoint force in hypertonic arm post-stroke' Completed January, 2009

Tanya Onushko (Dept Biomedical Engineering, Marquette University, Milwaukee, WI) 'Reflex response to imposed bilateral hip oscillations in human spinal cord injury' Completed March, 2007

Mukta Joshi (Dept Biomedical Engineering, Marquette University, Milwaukee, WI), 'Quantification of spastic co-contraction in individuals with hemiparetic stroke' Completed May, 2006

B. Doctoral degree:

Principal Advisor for:

Brice Cleland (Dept Physical Therapy-CTRH, Marquette University, Milwaukee, WI) 'Sensory contributions to cortical excitability during pedalling post-stroke" August 2013 – present.

Nutta-On Promjunyakul (Dept Biomedical Engineering, Marquette University, Milwaukee, WI) 'Supraspinal control of locomotion in individuals post-stroke – an fMRI study' September 2008 – December 2012

Committee member for:

Hugo Maxwell Pereira (Dept Physical Therapy, Marquette University, Milwaukee, WI) 'Motor fatigue and cognitive demands with aging' Aug 2010 – present

Jain Mangalothu (Dept Biomedical Engineering, Marquette University, Milwaukee, WI) 'Integration of EEG-fMRI in the auditory oddball paradigm using joint-independent component analysis' Completed, 2012

Ryan McKindles (Dept Biomedical Engineering, Marquette University, Milwaukee, WI), 'EEG and Walking" January 2010 – December, 2013.

Joseph Lee, PhD (Dept Biomedical Engineering, Marquette University, Milwaukee, WI), May 2012- present

Benjamin Kalinosky, PhD (Dept Biomedical Engineering, Marquette University, Milwaukee, WI), Jan 2011 - present

Joanne Gallichio, (Physical Therapy Neurology, Rocky Mountain University of Health Professions, Provo, UT) 'Changes in muscle activity patterns during forward pedalling after backward pedalling in persons with post-stroke hemiplegia' Completed, 2008

C. Mentored Research –Research Staff, Postdoctoral Fellows, Graduate, Undergraduate, and DPT Students

i. Research Staff

Jon Wieser (2006 – 2008)

Laura Hughes-Zahner (2006)

ii. Postdoctoral Fellows

Ann Stowe (2006-2010)

iii. Graduate Students

Ph.D. Level

Nutta-on Promjunyakul (2008 – present)

Michael Bade (2008)

Masters Level

Brett Arand (2010-present)

Namita Sanghvi (2006-2008)

Neha Bhagchandani (2008-2009)

Jay Mehta (2006- 2008)

Ruth Swedler (2009-2012)

Shancheng Boa (2010-2013)

iv. Undergrad and DPT Students

Kathy Cebe Ondishko (2005-2009)

Harrison Kalodimos (2006)

Shannon Knoblauch (2007-2011)

Rita Deering (2006)

Calvin Thomas (2008-2011)

Jeff Sischo (2006)

Syvil Shelbourne (2005)

Dana Fuchs (2007)

Emily Hammes (2005)

Meghan Dillan (2008)

Matt Pitton (2005)

Mateus Barel (2008)

Catharine Relation (2009)
 Taylor Derr (2011-present)
 David Seck (2012-present)
 Cory Steinmetz (2013-present)

Jill Patrick (2009)
 Cara Lewellyn (2011-present)
 Jan Struhar (2012- present)
 Mary Asma (2013-present)

IX. PROFESSIONAL ACTIVITIES AND SERVICE

A. Memberships in Professional Societies

Society for Neural Control of Movement	2011
Wisconsin Chapter of APTA	2005-present
Women in Neuroscience	2000-2004
Neurology Section of APTA	1998-present
Society for Neuroscience	1998-present
American Physical Therapy Association	1989-present

B. Other Professional Organizations/Activities/Service

Manuscripts reviewed for:

American Journal of Physical Medicine and Rehabilitation
Behavioral Brain Research
Clinical Neurophysiology
European Journal of Neuroscience
Experimental Brain Research
International Journal of Computer Assisted Radiology and Surgery
International Journal of Neuroscience
Journal of Applied Physiology
Journal of Motor Behavior
Journal of Neuroengineering and Rehabilitation
Journal of Neurophysiology
Muscle and Nerve
Neural Rehabilitation and Neural Repair
Neuroscience Letters
Physical Therapy
Restorative Neurology and Neuroscience
Stroke Research and Treatment
Topics in Spinal Cord Injury

Grants reviewed for:

Clinical and Translational Science Institute, Medical College of Wisconsin
 Early Career Reviewer for National Institutes of Health (2011-present, invited)
 Irish Health Research Board
 National Institutes of Health
 Patient Centered Outcomes Research Institute
 University of Wisconsin-Milwaukee, Research Growth Initiative Program

Abstracts Reviewed for:

Wisconsin Chapter of APTA

Poster Judge for:

Wisconsin Chapter of APTA
 Marquette University Forward Thinking Poster Competition
 College of Health Sciences Summer Research Seminar Poster Competition

Total number of manuscripts reviewed per year for peer reviewed journals:

2013	7
2012	12
2011	5
2010	7
2009	7
2008 (began counting)	9

X. COMMITTEES AND UNIVERSITY SERVICE

A. University/College Service

Presented at Alumni Development Event sponsored by College of Health Sciences and University Advancement, Washington, DC. November, 2011.

Presented at Alumni Development Event sponsored by College of Health Sciences and University Advancement, Green Bay, WI. May 10, 2011

Presented at Alumni Development Event sponsored by College of Health Sciences and University Advancement, San Diego, CA. November, 2010

Presented to University Board of Directors (Education SubGroup), April, 2010

Member of a University Committee: Comprehensive Planning Committee for the Marquette Childcare Center: 2007-2009.
Chair of Subcommittee for Examining Comparable Programs
Member of Subcommittee for Program Planning

Manresa First Year Reading Program Discussion Leader: Summer, 2005-2008

B. Program/Departmental Service

Founder, Milwaukee Area Evidence Based Practice Institute, July, 2010

Chairman of Professional Behaviors Working Group: 2008-2009

Coordinator of Marquette Challenge Annual Lecture: 2007-present

Co-Chair of Faculty Search Committee: Tenure-track Faculty, Dept. of Physical Therapy, 2007.

Member of Faculty Search Committee: Tenure-track Faculty, Dept. of Physical Therapy, 2006.

Student Advising: Fall 2006 - present during each semester: ~10-12 students/semester

Executive Producer of Marquette Challenge Information DVD: 2005-2009

Faculty Mentor to Marquette Challenge: January 2005-present

XI. AWARDS

A. Awarded to Sheila Schindler-Ivens

Robert C. Bartlett Innovation in Fundraising Award, Foundation for Physical Therapy, July 2011.

Control Engineering Award was awarded to Micronor, Newbury Park, CA for the MRI Rotary Encoder that they designed for Dr. Schindler-Ivens' MRI-safe pedaling device, 2010

Alumni Scholarship for Doctoral Studies, University of Iowa, Iowa City, IA, 2000

Doctoral Scholarship (PODS Level II), Foundation for Physical Therapy, 2000

Doctoral Scholarship (PODS Level I), Foundation for Physical Therapy, 1999

Doctoral Scholarship (PODS Level I), Foundation for Physical Therapy, 1998

Graduate Student Travel Award, University of Iowa, Iowa City, IA, 1997-2001

C.N. Terry Fox Research Fellowship, Simon Fraser University, Burnaby, BC, Canada, 1995

Graduate Fellowship, Simon Fraser University, Burnaby, BC, Canada, 1995

Wisconsin Physical Therapy Association Merit Award for Student Most Likely to Excel Beyond the Clinical Setting, 1989

M. Pat Murray Award for Clinical and Academic Excellence, Marquette University, Milwaukee, WI, 1988

B. Awarded to Students Mentored by Sheila Schindler-Ivens

Mary McMillan Award to Kathy Cebe Ondishko, 2009

Top Honors to Shannon Knoblauch for presentation of 'What's the best rehabilitation prescription? Identifying factors that enhance recovery of gait after stroke.' Marquette University Forward Thinking Research Symposium, 2008.

Top Honors to Jay Mehta for presentation of 'Imaging of the human brain during pedaling.' Marquette University Forward Thinking Research Symposium, 2006.

Travel Scholarship to Dana Fuchs for presentation of 'Vastus medialis H-reflex excitability during locomotion post-stroke.' Research Symposium of the National Science Foundation Research Experience for Undergraduates (REU) in Biomedical Engineering, 2007.

Third Place to Kathy Cebe Ondishko for presentation of 'Abnormal modulation of soleus H-reflexes during post-stroke locomotion.' Marquette University College of Health Sciences Biomedical Sciences Summer Research Program, Student Research Day, 2006

Travel Scholarship to Harrison Kalodimos for presentation of 'Direction dependent modulation of soleus H-reflexes during pedaling.' Research Symposium of the National Science Foundation Research Experience for Undergraduates (REU) in Biomedical Engineering, 2006.