

# Tanvi Bhatt

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Chicago IL 60612

## EDUCATION

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- **Doctor of Philosophy (Movement Sciences)** Aug. 2001 – Dec. 2005  
Major: Motor control, Movement Sciences Department, University of Illinois, Chicago. GPA. 4.0/4.0
- **Master of Science (Rehabilitation)** Sep. 1998 – Oct. 2000  
Major: Neuroscience, School of Medical Rehabilitation, University of Manitoba, Winnipeg, Canada. GPA= 4.20/4.5
- **First year Master of Science (Physical Therapy)** Jul. 1997 – Aug. 1998  
School of Occupational and Physical Therapy, Seth G.S. Medical College, King Edward Memorial (KEM) Hospital, University of Bombay, Bombay, India
- **Bachelor of Science (Physical Therapy)** Jun. 1993 – Nov. 1996  
School of Occupational and Physical Therapy, Seth G.S. Medical College, King Edward Memorial (KEM) Hospital, University of Bombay, Bombay, India. GPA = 3.89/4.00

## POSITIONS

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- **Assistant Professor**, Department of Physical Therapy, University of Illinois, Chicago Aug 2011-Present
- **Program Coordinator**, MS in Rehab Sciences, Department of Physical Therapy, University of Illinois, Chicago Feb 2016-Present
- **Research Assistant Professor**, Clinical Gait & Motion Analysis Lab, University of Illinois, Chicago Aug 2009-Aug 2011
- **Post Doctoral Research Fellow**, Clinical Gait & Motion Analysis Lab, University of Illinois, Chicago Jan 2006- Aug 2009
- **Research Assistant**, Clinical Gait & Motion Analysis Lab, University of Illinois, Chicago Aug 2001-Dec 2005
- **Research Assistant**, Health Sciences Centre, Physical Therapy Dept., Winnipeg, Canada Aug 1999- Aug 2000
- **Research Assistant**, Spinal Cord Research Lab, College of Medicine, University of Manitoba Aug 1998- Aug 1999

## HONORS AND AWARDS

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- Rising Star, Researcher of the Year Award (Clinical Sciences), University of Illinois at Chicago Feb 2017
- Susan Campbell Award for Teaching Excellence, Department of Physical Therapy, University of Illinois at Chicago May 2016
- Excalibur Award for Teaching Excellence, College of Applied Health Sciences, University of Illinois at Chicago May 2013
- Faculty Scholarship Support Award, University of Illinois at Chicago 2011-2012
- Faculty Merit Award, Dept. of Physical Therapy, University of Illinois at Chicago 2012-2013
- Torrance Scholarship, Dept. of Physical Therapy, University of Illinois at Chicago 2004-2005
- University of Manitoba Students' Union Scholarship 1999-2000
- Merit Certificate for fourth rank in 3rd year B.Sc (Physical Therapy), University of 1997

- Bombay
- Merit Certificate for fourth rank in 2<sup>nd</sup> year BSc (Physical Therapy), University of Bombay 1995
- Kummari Kanchan Kochar Memorial Scholarship for First rank in 1<sup>st</sup> year BSc (Physical Therapy), University of Bombay 1994

## RESEARCH FELLOWSHIP

- University of Manitoba Graduate Fellowship (\$10,000) 1999-2000

## LICENSURE

- State of Illinois, Department of Professional Regulation Active (Lic. No. 070012317)
- State of California, Physical Therapy Board of California Active
- The Indian Association of Physiotherapists Permanent Registration
- APTA Certified Clinical Instructor 2008-present

## PEER-REVIEWED PUBLICATIONS (Senior author underlined)

1. Patel P, Bhatt T. Fall-risk during opposing stance perturbations among healthy adults and chronic stroke survivors. *Gait & Posture* (under review)
2. Patel P, Bhatt T. Attentional demands of locomotor and balance tasks in individuals aging with and without a stroke. *Topics in Stroke Rehab* (under review)
3. Vora J, Vora J, Varghese R, Weisenbach S, **Bhatt T** Test-retest reliability and validity of a computerized neuropsychological test battery: A cross-sectional study assessing cognition in healthy young and old adults, and stroke survivors" (*Disability and Rehabilitation, under review*)
4. Sawers A, Pai YC, **Bhatt T**, Ting LH (2017). Neuromuscular responses differ between slip-induced falls and recoveries in older adults. *J Neurophysiol*. Feb 1;117(2):509-522. doi: 10.1152/jn.00699.2016.
5. Subramaniam S, Bhatt T (2017). Effect of Yoga practice on reducing cognitive motor interference for improving dynamic balance control in healthy adults. *Complementary Therapies in Medicine Journal*. Feb;30:30-35
6. Luciana Maria Malosá Sampaio, PhD, PT; Savitha Subramaniam, PT,MS; Ross Arena, PhD, P, Tanvi Bhatt, PhD, PT. Does virtual reality-based Kinect dance training paradigm improve autonomic nervous system modulation in individuals with chronic stroke? *Journal of Vascular and Interventional Neurology*. 2016 Oct;9(2):21-29
7. Vora J, Varghese R, Weisenbach S, **Bhatt T**. Test-retest reliability and validity of a custom-designed computerized neuropsychological cognitive test battery in young healthy adults. *Journal of Psychology and Cognition* 2016;1:11-9 (*Category: Cognitive Psychology*).
8. Patel P, **Bhatt T**. Does aging with a cortical lesion increase fall-risk: Examining effect of age versus stroke on intensity modulation of reactive balance responses from slip-like perturbations. *Neuroscience* 2016 Oct 1;333:252-63. *Impact Factor: 3.41 (Category: Neuroscience, Ranked 119/509)*.
9. **Bhatt T**, Subramaniam S, Varghese R. Examining interference of different cognitive tasks on voluntary balance control in aging and stroke. *Experimental Brain Research*. 2016 Sep;234(9):2575-84. *Impact Factor: 2.036 (Category: Neuroscience, Ranked 49/135)*.
10. Kajrolkar T, **Bhatt T**. Falls-risk post-stroke: Examining contributions from paretic versus non paretic limbs to unexpected forward gait slips. *Journal of Biomechanics*. 2016 Sep 6;49(13):2702-2708. *Impact Factor: 3.03 (Category: Rehabilitation, Ranked 6/115, Biomedical Engineering, Biophysics Ranked 22/122) PMC4691437*.
11. Lee A, **Bhatt T**, Pai YC. Generalization of treadmill perturbation to overground slip during gait: Effect of different perturbation distances on slip recovery. *Journal of Biomechanics*. 2016 Jan 25;49 (2):149-54. *Impact Factor: 3.03 (Category: Rehabilitation, Ranked 6/115). PMC4793378*.
12. Subramaniam S, **Bhatt T**. Does A Virtual Reality-Based Dance Training Paradigm Increase Balance Control in Chronic Stroke Survivors? A Preliminary Study. *International Journal of Neurorehabilitation*. 2015;2 (185). *Impact Factor: 1.124*.
13. Patel P, **Bhatt T**. Modulation of reactive response to slip-like perturbations: effect of explicit cues on paretic versus non-paretic side stepping and fall-risk. *Experimental brain research*. 2015 Nov;233(11):3047-58. *Impact Factor: 2.036 (Category: Neuroscience, Ranked 49/135)*.
14. Varghese R, Hui-Chan CW, **Bhatt T**. Reduced Cognitive-Motor Interference on Voluntary Balance Control in Older Tai Chi Practitioners. *Journal of Geriatric Physical Therapy*. 2015 Aug 18. Aug 18. [Epub ahead of print]. *Impact Factor: 1.275 (Category: Geriatrics and Gerontology; Ranked 44/108)*.

15. Salot P, Patel P, **Bhatt T**. Reactive Balance in Individuals with Chronic Stroke: Biomechanical Factors Related to Perturbation-Induced Backward Falling. *Physical therapy*. 2016 Mar;96(3):338-47. *Impact Factor: 2.53 (Category: Physical Therapy, Sports Therapy and Rehabilitation, Ranked 7/175)*.
16. Liu X, **Bhatt T**, Pai YC. Intensity and generalization of treadmill slip training: High or low, progressive increase or decrease? *Journal of Biomechanics*. 2016 Jan 25;49(2):135-40. *Impact Factor: 3.03 (Category: Rehabilitation, Ranked 6/115)*. PMC4691437.
17. Varghese R, Hui-Chan CW, **Bhatt T**. Effects of Tai Chi on a Functional Arm Reaching Task in Older Adults: A Cross-Sectional Study. *Journal of Aging and Physical Activity*. 2015 Jul;23(3):361-8.. [Epub ahead of print]. *Impact Factor: 1.966 (Category: Gerontology; Ranked 9/40; Category Rehabilitation, Ranked 27 /115)*.
18. Desai R, Tailor A, and **Bhatt T**. Effects of yoga on brain waves and structural activation: A review. *Complementary Therapies in Clinical Practice*. 2015 May;21(2):112-118. *Impact Factor: (Category: Complementary and alternative medicine, Ranked 17/96)*.
19. Patel P and **Bhatt T**. Adaptation to large-magnitude treadmill-based perturbations: improvements in reactive balance response. *Physiological Reports journal*. 2015 Feb 3;3(2). *Impact factor: 0.53*.
20. Patel P and, **Bhatt T**. Attentional demands of perturbation evoked compensatory stepping responses: examining cognitive-motor interference to large magnitude forward perturbations. *Journal of Motor Behavior*. 2015 May-Jun;47(3):201-10. *Impact Factor: 1.41 (Category: Cognitive Neuroscience, Ranked 51/74, Orthopedics and Sports Medicine, Ranked 71/218)*.
21. Subramaniam S, Hui-Chan CWY, **Bhatt T**. A novel cognitive-balance control training paradigm to reduce fall risk in chronic stroke survivors. *Journal of Neurological Physical Therapy*. 2014 Oct;38(4):216-25. *Impact Factor: 1.766 (Category: Rehabilitation, Ranked 5/115)*.
22. Patel P and **Bhatt T**. Task Matters: Influence of cognitive tasks on cognitive-motor Interference during dual-task walking in chronic stroke survivors. *Topics in Stroke Rehabilitation*, 2014 Jul-Aug; 21(4):347-57. *Impact Factor: 1.43 (Category: Rehabilitation, Ranked 28/115)*.
23. Varghese, R., Hui-Chan, C. W., Wang, E., & **Bhatt, T**. Internal consistency and test-retest reliability of an instrumented functional reaching task using wireless electromyographic sensors. *Journal of Electromyography and Kinesiology*. 2014 Oct;24(5):593-600 24(5), 593-600. *Impact Factor: 1.647 (Category: Neuroscience, Ranked 69/135)*.
24. Pai Y.-C, **Bhatt T**, Yang F and Edward Wang. Perturbation Training can reduce community-dwelling older adults' annual fall-risk: A randomized controlled trial. *Journal of Gerontology Biological Sciences and Medical Sciences*. 2014 Dec;69(12):1586-94. *Impact Factor: 5.416 (Category Geriatrics and Gerontology; Ranked 2/108 )*. PMC4296119.
25. Kajrolkar T, Yang F, Pai -YC and **Bhatt T**. Dynamic Stability and Compensatory Stepping Responses during Anterior Gait-slip Perturbations in People with Chronic Hemiparetic Stroke. *Journal of Biomechanics*. 2014 Aug 22;47(11):2751-8. *(Category: Rehabilitation, Ranked 6/115, Engineering, Biophysics, Ranked 18/79)*.
26. Subramaniam S, Hui-Chan CWY, **Bhatt T**. Task Matters: Effect of dual tasking on intentional vs. reactive balance control in people with hemiparetic stroke. *Journal of Neurophysiology*, 2014 Sep 1;112(5):1152-8. *Impact Factor: 2.887(Category Neurosciences; Ranked 23/135; Category Physiology, Ranked78/173)*.
27. Pai YC, Yang F, **Bhatt T**, Wang E. Learning from laboratory-induced falling: long-term motor retention among older adults. *Age*. 2014 Jun 1;36(3):1367-76. *Impact Factor: 3.390 (Category: Geriatrics and Gerontology, Ranked 17/108)*.
28. Patel P, Lamar M, **Bhatt T**. Effect of type of cognitive task and walking speed on cognitive-motor interference during dual-task walking. *Neuroscience*. 2014 Feb 28; 260:140-8. *Impact Factor 3.41 (Category: Neurosciences; Ranked119/509)*.
29. **Bhatt T**, Wang TY, Yang F, Pai YC. Adaptation and generalization to opposing perturbations in walking. *Neuroscience*. 2013 Aug 29;246:435-50. *Impact Factor 3.41 (Category: Neurosciences; Ranked119/509)*. PMC3809766.
30. Yang F, **Bhatt T**, Pai YC. Generalization of treadmill-slip training to prevent a fall following a sudden (novel) slip in over-ground walking. *Journal of Biomechanics*. 2013 Jan 4;46(1):63-9. *Impact Factor: 3.03 (Category: Rehabilitation Ranked 6/115)*. PMC3532900.
31. Bhatt T, Yang F, Mak MK, Hui-Chan CW, Pai YC. Effect of externally cued training on dynamic stability control during the sit-to-stand task in people with Parkinson disease. *Physical Therapy*. 2013 Apr 1;93(4):492-503. *Impact Factor: 2.85 (Category: Physical Therapy, Sports Therapy and Rehabilitation, Ranked 7/175)*. PMC3613339.
32. Wang TY, **Bhatt T**, Yang F, Pai YC. Adaptive control reduces trip-induced forward gait instability among young adults. *Journal of Biomechanics*. 2012 Apr 30;45(7):1169-75. *Impact Factor: 3.03 (Category: Rehabilitation, Ranked 6/115)* PMC3378399.
33. **Bhatt T**, Yang F, Pai YC. Learning to resist gait-slip falls: long-term retention in community-dwelling older adults. *Archives of Physical Medicine and Rehabilitation*. 2012 Apr 30;93(4):557-64. *Impact Factor: 2.565 (Category: Rehabilitation, Ranked 4/115)*. PMC3667400.

34. Yang F, Espy D, **Bhatt T**, Pai YC. Two types of slip-induced falls among community dwelling older adults. *Journal of Biomechanics*. 2012 Apr 30;45(7):1259-64. *Impact Factor: 3.03 (Category: Rehabilitation, Ranked 6/115)*. *PMC3390203*.
35. **Bhatt T**, Yang F, Pai YC. Learning from falling: Retention of fall resisting behavior derived from one episode of laboratory-induced-slip training. *Journal of the American Geriatrics Society*. 2011 Dec;59(12):2392. *Impact Factor: 4.572 (Category: Geriatrics and Gerontology, Ranked 4/108)*.
36. Yang F, **Bhatt T**, Pai YC. Limits of recovery against slip-induced falls while walking. *Journal of Biomechanics*. 2011 Oct 13;44(15):2607-13. *Impact Factor: 3.03 (Category: Rehabilitation, Ranked 6/115)* *PMC3390211*.
37. **Bhatt T**, Espy D, Yang F, Pai YC. Dynamic gait stability, clinical correlates, and prognosis of falls among community-dwelling older adults. *Archives of Physical Medicine and Rehabilitation*. 2011 May 31;92(5):799-805. *Impact Factor: 2.565 (Category: Rehabilitation, Ranked 4/115)*.
38. Wang TY, **Bhatt T**, Yang F, Pai YC. Generalization of motor adaptation to repeated-slip perturbation across tasks. *Journal of Neurosciences*. 2011 Apr 28;31(18):85-95. *Impact Factor 6.344 (Category Neurosciences; Ranked 11/135)*. *PMC3390205*.
39. Pai YC, Wang E, Espy DD, **Bhatt T**. Adaptability to perturbation as a predictor of future falls: a preliminary prospective study. *Journal of Geriatric Physical Therapy* (2001). 2010 Apr;33(2):50. *Impact Factor: 1.275 (Category: Geriatrics and Gerontology; Ranked 44/108)*. *PMC3483070*.
40. Espy DD, Yang F, **Bhatt T**, Pai YC. Independent influence of gait speed and step length on stability and fall risk. *Gait & Posture*. 2010 Jul 31;32(3):378-82. *Impact Factor 2.752 (Category: Rehabilitation, Ranked 3/115)*. *PMC2943048*.
41. Pai YC, **Bhatt T**, Wang E, Espy D, Pavol MJ. Inoculation against falls: rapid adaptation by young and older adults to slips during daily activities. *Archives of Physical Medicine and Rehabilitation*. 2010 Mar 31;91(3):452-9. *Impact Factor: 2.565 (Category: Rehabilitation, Ranked 4/115)*. *PMC2842602*.
42. **Bhatt T**, Pai YC. Role of cognition and priming in interlimb generalization of adaptive control of gait stability. *Journal of Motor Behavior*. 2009 Nov 6;41(6):479-93. *Impact Factor: 1.41 (Category: Orthopedics and sports medicine, Ranked 71/218, Cognitive Neuroscience, Ranked 51/74)*.
43. Yang F, **Bhatt T**, Pai YC. Role of stability and limb support in recovery against a fall following a novel slip induced in different daily activities. *Journal of Biomechanics*. 2009 Aug 25;42(12):1903-8. *Impact Factor: 3.03 (Category: Rehabilitation, Ranked 6/115)* *PMC2753595*.
44. **Bhatt T**, Pai YC. Prevention of slip-related backward balance loss: the effect of session intensity and frequency on long-term retention. *Archives of Physical Medicine and Rehabilitation*. 2009 Jan 31;90(1):34-42. *Impact Factor: 2.565 (Category: Rehabilitation, Ranked 4/115)*. *PMC2677700*.
45. **Bhatt T**, Pai YC. Generalization of gait adaptation for fall prevention: from moveable platform to slippery floor. *Journal of Neurophysiology*. 2009 Feb 1;101(2):948-57 *Impact Factor: 3.31 (Category Neurosciences; Ranked 23/135; Category Physiology; Ranked 78/173)*. *PMC2657073*.
46. **Bhatt T**, Pai YC. Immediate and latent interlimb transfer of gait stability adaptation following repeated exposure to slips. *Journal of Motor Behavior*. 2008 Sep 1;40(5):380-90. *Impact Factor: 1.41 (Category: Orthopedics and Sports Medicine, Ranked 71/218, Cognitive Neuroscience, Ranked 51/74)*. *PMC2614623*.
47. **Bhatt T**, Pai YC. Can observational training substitute motor training in preventing backward balance loss after an unexpected slip during walking? *Journal of Neurophysiology*. 2008 Feb 1;99(2):843-52. *Impact Factor: 3.31 (Category Neurosciences; Ranked 23/135; Category Physiology; Ranked 78/173)*. *Category Physiology; Ranked 22/80*. *PMC2810608*.
48. Pai YC, **Bhatt T**. Repeated-slip training: an emerging paradigm for prevention of slip-related falls among older adults. *Physical Therapy*. 2007 Nov 1;87(11):1478-91. *Impact Factor: 2.85 (Category: Physical Therapy, Sports Therapy and Rehabilitation, Ranked 7/175)*.
49. **Bhatt T**, Wang E, Pai YC. Retention of adaptive control over varying intervals: prevention of slip-induced backward balance loss during gait. *Journal of Neurophysiology*. 2006 May 1;95(5):2913-22. *Impact Factor: 2.887 (Category Neurosciences; Ranked 23/135; Category Physiology; Ranked 78/173)*.
50. Irwin KE, Wening JD, **Bhatt T**, Pai YC. Does knee osteoarthritis alter the neuromuscular responses to a perturbation during single lower limb stance? *Journal of Geriatric Physical Therapy*. 2005 Dec 1;28(3):93-101. *Impact Factor: 1.275 (Category Geriatrics and Gerontology; Ranked 44/108)*.
51. **Bhatt T**, Wening JD, Pai YC. Adaptive control of gait stability in reducing slip-related backward loss of balance. *Experimental Brain Research*. 2006 Mar 1;170(1):61-73. *Impact Factor: 2.036 (Category: Neuroscience, Ranked 49/135)*.
52. **Bhatt T**, Pai YC. Long-term retention of gait stability improvements. *Journal of Neurophysiology*. 2005 Sep 1;94(3):1971-9. *Impact Factor: 3.31 (Category: Neurosciences; Ranked 23/135; Category Physiology, Ranked 78/173)*.
53. **Bhatt T**, Wening JD, Pai YC. Influence of gait speed on stability: recovery from anterior slips and compensatory stepping. *Gait & Posture*. 2005 Feb 28;21(2):146-56. *Impact Factor 2.752 (Category: Rehabilitation, Ranked 3/115)*.

## BOOK CHAPTERS

Madhavan S, Bhatt T. Exercise Rounds: Spinal Cord Injury, in Moore GE, Durstine JL, Painter PL (eds.), *ACSM's Exercise Management for Persons with Chronic Disease and Disability*, 4th edition. Human Kinetics, Urbana, IL

## SYMPOSIA

1. **Symposium Organizer and Speaker**, Bhatt T, Other Speakers (Espy E, Reinthal A), Fall-risk assessment and prevention in geriatric and neurologic populations, ACRM 93rd Annual Conference, Progress in Rehabilitation Research (PIRR) to be held 30 October – 4 November 2016 at the Hilton Chicago in Chicago, IL, USA.
2. **Symposium Organizer and Speaker**, Bhatt T, Other Speakers (Aruin A, Espy D, Pai YC), Proactive and Reactive Adaptations during locomotor-balance control: Implications for Fall-Risk Assessment and Rehabilitation, ACRM 93rd Annual Conference, Progress in Rehabilitation Research (PIRR) to be held 30 October – 4 November 2016 at the Hilton Chicago in Chicago, IL, USA.
3. **Symposium Organizer and Speaker**, Bhatt T, Other Speaker (Schwertfeger J) Fall-Risk Assessment and Prevention Poststroke: What Does the Evidence Say? American Physical Therapy Association's NEXT Conference and Exposition, June 8 - 11, Gaylord Convention Center, Nashville, Tennessee -
4. **Symposium Organizer and Speaker**, Bhatt T; Other Speakers, Rietdyk S, Pijnappels P, Pai YC), Proactive and Reactive Adaptations to Slips and Trips: Implications for Fall-Risk Assessment and Rehabilitation, ISPGR World Congress, June 29-July 3<sup>rd</sup>, 2014, Vancouver, Canada.
5. Bhatt T, **Invited speaker for the Symposium**, 'Novel mechanism-based interventions to prevent falls after stroke', Organized by Special Interest Group 'Posture, Mobility and Falls'; 8<sup>th</sup> World Congress of Neurorehabilitation, Istanbul, Turkey, April 2014

## INVITED SPEAKER

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1. Bhatt T, Neuroimaging for locomotor-posture control: Application for fall risk assessment and prevention. The AMPET (Ambulatory PET) planning project, **GE Global Research Center**, Albany, NY, April 2016
2. Cognitive-motor training for chronic stroke survivors, School of Rehabilitation, **University of Manitoba**, Winnipeg, August 2014.
3. Bhatt T, Cognitive-motor interference post-stroke: Impact on locomotor-balance control, Center for Brain Health, **University of Texas at Dallas**, November 2013.
4. Bhatt T, Perturbation Training for Resisting Falls: From Young, Old to Neurologically Impaired, Department of Kinesiology, **Purdue University**, Lafayette, IN, November 2013
5. Bhatt T, Technological Advances for Promoting Physical Activity, **AHA's Scientific Sessions 2013**, November 16-20th, Dallas, TX.
6. Bhatt T, Training Arm Function, Balance and Mobility in Stroke Survivors, **University of Illinois Medical Hospital, Chicago**, IL, February 2013
7. Bhatt T, Repeated-slip training: Adaptation, retention and transfer, Physical Therapy Department, **Midwestern University**, IL, February 2012
8. Bhatt T, Perturbation training for prevention of backward balance loss, Program in Physical Therapy, School of Allied Health and Communicative Disorders, **Northern Illinois University**, DeKalb, IL, October 2010

## PLATFORMS (presenting author underlined)

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1. ADD APMR – PLATFORM NOV 2016
2. Bhatt T, Patel P. Does level of motor impairment affect reactive adaptation, transfer and retention to repeated slip perturbation training? **American Physical Therapy Association Combined Sections Meeting**. Anaheim, CA, Feb 2016
3. Bhatt T and Patel P. Fall risk reduction in chronic stroke survivors: Acquisition and retention of reactive adaptation to large-scale slip perturbations, **International Society for Posture & Gait Research** Congress, Seville, Spain June 28 – July 2, 2015
4. Patel P and Bhatt T. Task Matters: Influence of Cognitive Tasks on Cognitive-Motor Interference during Dual-task Walking in Chronic Stroke. **APTA Annual Combined Sections Meeting**, 2014. 14th Annual Marilyn Gossman Seminar Award.
5. Subramaniam S, Hui-Chan C, Bhatt T. Effect of dual-tasking on intentional versus reactive balance control. **ISPGR**

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**World Congress, Akita, Japan, 2013**

6. Bhatt T, Yang F, Pai YC. Perturbation-training can lower daily-living fall-risk in community dwelling older adults. **1st Joint World Congress, ISGPR/Gait and Mental Function**. Clarion Hotel and Congress, Trondheim, Norway, June 24-28, 2012.
7. Bhatt T, Feng Y and Pai Y-C. Resistance to gait-slip falls: Long-term retention in community-dwelling older adults. **APTA Annual Combined Sections Meeting**. Chicago, Illinois. February 8-11, 2012.
8. Bhatt T, and Pai Y-C. Impact of cognition on motor control and adaptation to novel slip induced in walking. **International Society for Posture & Gait Research**. Bologna, Italy, June 21-25, 2009.
9. Bhatt T, Pai Y-C., Espy D. Prevention of backward falls among older adults: 3-month retention of adaptive stability and limb support control. **APTA Annual Combined Sections Meeting**. Las Vegas, Nevada. February 9-12, 2009.
10. Bhatt T, Wening JD and Pai Y-C. Influence of gait speed on stability. **APTA Annual Combined Sections Meeting**. New Orleans, LA. February 23-27, 2005. 6th Annual Marilyn Gossman Seminar Platforms (Category: Research).
11. Bhatt T, and Szturm T, Limits of balance recovery in hemiparetic stroke Individuals during corrective in-place and stepping responses. Platforms. **Society for Neuroscience 30<sup>th</sup> Annual meeting**. New Orleans, La, Nov 2000.

**POSTERS** (Presenting author underlined)

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12. Vora J, Varghese R, Bhatt T. Test-retest reliability and validity of computerized neuropsychological cognitive test battery for dual-task paradigms: Applications in young, old and stroke survivors. **World Congress of Neuro Rehabilitation**, Philadelphia, May 2016
13. Subramaniam S, Bhatt T. Virtual Reality-Based Dance Gaming Improves Performance on an Instrumented Functional Arm Reach Task in Community-Dwelling Chronic Stroke Survivors. Hand Rehabilitation. **American Physical Therapy Association Combined Sections Meeting**. Anaheim, CA, Feb 2016
14. Vora J, Varghese R, Patel P, Bhatt T. High intensity tapering conventional balance training for decreasing fall-risk in chronic stroke survivors: Measuring improvement across different domains of balance control. **American Physical Therapy Association Combined Sections Meeting**. Anaheim, CA. February 17-20, 2016.
15. Vora J, Varghese R, Patron V, Weisenbach S, Bhatt T. Application of computerized neuropsychological cognitive test battery for dual-task paradigms: Test-retest reliability and validity in young, old and stroke survivors. **American Physical Therapy Association Combined Sections Meeting**. Anaheim, CA. February 17-20, 2016.
16. Vora J, Patel T, Bhatt T. Can conventional balance training improve reactive balance responses to decrease fall-risk in chronic stroke survivors? **AHS Research Day**. University of Illinois at Chicago. Chicago, IL. November 4, 2015.
17. Subramaniam S, S. Nadimpalli, Bhatt T. Effect of yoga practice on cognitive-motor interference of dynamic balance control. Human Executive Function: Clinical and Translational. **Society for Neuroscience**. Chicago, IL, Oct 2015.
18. Rini Varghese, Subramaniam S, Bhatt T. Influence of chronic stroke on functional arm reaching: Quantifying deficits in the ipsilesional arm. Reach Control: Selection Mechanisms. **Society for Neuroscience**. Chicago, IL, Oct 2015
19. Patel P, Bhatt T. Does aging with a cortical lesion increase fall-risk: Examining effect of age versus stroke on intensity modulation of reactive balance responses from slip-like perturbations. **Society for Neuroscience**. Chicago, IL, Oct 2015
20. Vora J, Varghese R, Bhatt T. The test-retest reliability of a computerized neuropsychological cognitive test battery in chronic stroke survivors: Application for dual-task paradigms. **Society of Neurosciences**. Chicago, IL. October 17-20, 2015
21. Patel P and Bhatt T. Impaired modulation of reactive balance responses post stroke: Response to varying magnitudes of unpredictable perturbations. **International Society for Posture & Gait Research** Congress, Seville, Spain June 28 – July 2.
22. Subramaniam S and Bhatt T. A virtual reality based dance training paradigm to increase physical activity in community dwelling chronic stroke survivors. **International Society for Posture & Gait Research** Congress, Seville, Spain June 28 – July 2.
23. Salot P, Patel P, Bhatt T. Reactive Balance in Individuals with Chronic Stroke: Biomechanical Factors Related to Perturbation Induced Backward Falling. Physical Therapy. **APTA Annual Combined Sections Meeting, Indianapolis, IN, Feb 2015**
24. Varghese R, Hui-Chan CW, Bhatt T. Reduced Cognitive-Motor Interference On Voluntary Balance Control In Older Tai Chi Practitioners. **APTA Annual Combined Sections Meeting, Indianapolis, IN, Feb 2015**
25. Subramaniam S, Bhatt T: Interference between working and semantic memory cognitive domains on voluntary balance control: Effect of age and stroke. **Society of Neuroscience, November 2014**
26. Kajrolkar T and Bhatt T, Falls-risk post-stroke: Examining contributions from paretic versus non-paretic limbs to

- unexpected forward gait slips. **Society for Neuroscience**, Washington DC, November, 2014.
27. Patel P and Bhatt T. Modulation of reactive balance response: Effect of central cues on compensatory stepping with the paretic side. **Society for Neuroscience**, Washington DC, November, 2014.
  28. Patel P and Bhatt T. Attentional Demands of Perturbation-Evoked Compensatory Stepping Responses: Cognitive-Motor Interference to Large Magnitude Forward Perturbations. **ISPGR World Congress**, Vancouver, BC, June 2014
  29. Patel P and Bhatt T. Adaptation to large-magnitude treadmill-based perturbations: Improvements in Reactive Balance Response. **ISPGR World Congress**, Vancouver, BC, June 2014
  30. Subramaniam S, Hui-Chan C, Bhatt T. A novel cognitive-balance control training paradigm to reduce fall risk in chronic stroke survivors. **APTA Annual Combined Sections Meeting**, 2014
  31. Bhatt T, Wang E, Yang F, Pai Y.-C. Feasibility of tracking annual incidence of falls following large-scale slip perturbation training in community-dwelling older adults. **APTA Annual Combined Sections Meeting**, 2013.
  32. Subramaniam S, and Bhatt T. Task Matters: Interference between voluntary balance control and cognitive tasks in Chronic hemiparetic stroke. **Society for Neuroscience**, San Diego, November 9-13, 2013.
  33. Patel P and Bhatt T. Alteration in Cognitive Motor Interference following Plastic Neural Changes Post Stroke. **Society for Neuroscience**, San Diego, November 9-13, 2013
  34. Patel P and Bhatt T. Slow walking as a strategy for optimizing performance on cognitive task during dual task walking. **ISPGR World Congress**, Akita, Japan, June 22–26, 2013
  35. Patel P and Bhatt T. Effect of task complexity on cognitive and motor prioritization during dual-task walking. **ISPGR World Congress**, Akita, Japan, June 22–26, 2013
  36. Bhatt T, Pai YC, Yang F. Plasticity within the locomotor-balance control system: Perturbation induced adaptations to reduce fall-risk in chronic stroke survivors. **1st Joint World Congress, ISGPR/Gait and Mental Function**. Clarion Hotel and Congress, Trondheim, Norway, June 24-28, 2012
  37. Wang T, Bhatt T, Feng Y and Pai Y.-C. Generalization of Motor Adaptation to Repeated-Slip Perturbation Across Tasks. **APTA Annual Combined Sections Meeting**. Chicago, Illinois. February 8-11, 2012.
  38. Bhatt T, and Pai Y-C. Contextual Transfer of Gait Adaptation for Fall Prevention: From Moveable Platform to Slippery Floor. **International Society for Posture & Gait Research**. Bologna, Italy, June 21-25, 2009.
  39. Pai Y.-C., Espy D, Bhatt T, Wang E. Age Does Not Reduce One's Ability to Adapt and Resist Backward Falling Following Repeated Slip Exposure. **APTA Annual Combined Sections Meeting**. Nashville, TN. February 6-9, 2008.
  40. Bhatt T, and Pai Y.-C., Prevention of Backward Balance Loss During Gait: Can Observational Training Improve Outcome to an Unexpected Slip? Shanghai, China, 200
  41. Bhatt T, and Pai Y-C. Role of probability estimate and priming in inter-limb transfer of adaptive strategies for prevention of slip-related balance loss. **Society for Neuroscience 37th Annual Meeting**. San Diego, California Nov 3-7, 2007.
  42. Bhatt T, and Pai Y-C. Immediate & longer-term inter-limb transfer of adaptive gait stability improvements following repeated exposure to slips. **Society for Neuroscience 36th Annual Meeting**. Atlanta, GA, Oct 14-18, 2006.
  43. Bhatt T and Pai Y.-C. Role of anticipation of physical context in gait adaptation. **The International Congress on Gait & Mental Function -The interplay between Walking, Behavior and Cognition**. Madrid Spain, Feb 3-6, 2006.
  44. Bhatt T and Pai Y.-C. Long-term training effects on dynamic stability. **Proceedings of XXII International Symposium on Sport Biomechanics**. Beijing, China, 2005.
  45. Bhatt T, Wening JD and Pai Y.-C. Gait stability adaptation: strategies for prevention of backward loss of balance. **XVIIth Conference of International Society for Posture and Gait Research**. Marseille, France. May 29-June 2, pg. 300, 2005.
  46. Bhatt T, Wening JD and Pai Y.-C. Feedforward Adaptation of Gait stability for Reduction of Backward Balance Loss. **Society for Neuroscience 34th Annual Meeting**. San Diego, California Oct 23-27, 2004.

## RESEARCH SUPPORT

### Ongoing Research Support

1) R01AG050672	(PI)	09/01/2016 - 03/31/2021
National Institutes of Health/NIA	(\$1,612,035)	

Title: Aging and mixed perturbation training to reduce falls in locomotion

This grant examines the generalization or interference induced by a single perturbation type training (slip or trip) when encountering the opposing perturbation unexpectedly in older adults during walking, and subsequently examines the effect of combined slip and trip training on laboratory-induced and longer-term fall risk.

2) R01HD088543 (PI) 09/23/2016 - 08/31/2021  
National Institutes of Health/NICHHD (\$1,627,268)  
Title: Perturbation training for enhancing stability and limb support control for fall-risk reduction among stroke survivors

3) Midwest Roybal Center for Health Promotion and Translation  
Pilot project Year 1 (\$40,000) (PI) 09/01/2014–05/31/2015  
(no cost extension 06/01/2015-05/31/2016)  
Title: A novel cognitive-balance control training paradigm to reduce fall risk in older, community-dwelling hemiparetic stroke survivors.  
*Part of 2P30AG022849-11 Hughes (PI)*

4) Scientific Development Grant (PI) 07/01/2012-07/01/2016  
American Heart Association (\$307,000),  
Title: Development of perturbation induced fall-risk assessment and training protocol in community dwelling ambulatory individuals with stroke-related hemiparesis.

5) R01-AG044364 Co-Investigator (Yi-Chung Pai -PI) 07/01/2013-06/30/2018  
National Institutes of Health/NIA  
Title: Perturbation Training for Fall-Risk Reduction among Older Adults  
This project explores perturbation training through the use of treadmill device and a motor learning approach, in which experience with slip-like perturbation generated by that treadmill is used to prepare the motor system to develop and then put to use fall-resisting skills outside of training environment (cross-environment transfer).

### **Completed Research Support**

3) RO1-AG029616 Co-Investigator (Y.C. Pai –PI) 09/01/2008–08/31/2013  
National Institutes of Health/NIA  
Title: Motor Training for Fall Prevention: Adaptation and Retention in Older Adults  
The purposes of the study were to verify the effectiveness of a new falls prevention paradigm for older adults that can significantly reduce their risk of backward balance loss and falls through multiple protected slip exposure, and to determine course of dynamic memory decay of such adaptive improvements with a 3-month resolution over the one-year period after the initial training.

### **TEACHING EXPERIENCE**

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*Course coordinator and Instructor, PT 634, Neuromuscular Dysfunction II, DPT curriculum, 5 credit hrs. Dept. of Physical Therapy, University of Illinois.* 2013-Present

*Instructor, PT 503, Biomechanics, M.S program, 3 credit hrs, Physical Therapy Department, University of Illinois* 2015-Present

*Instructor, PT 505, Advances in Rehabilitation Sciences, M.S program, 3 credit hrs, Physical Therapy Department, University of Illinois* 2011-Present

*Instructor (Course co-coordinator), PT 505, Advances in Rehabilitation Sciences, M.S program, 3 credit hrs, Physical Therapy Department, University of Illinois* 2011-2013

*Course coordinator and Instructor, PT 628, Case Management, DPT curriculum, 3 credit hrs. Dept. of Physical Therapy, University of Illinois.* 2011-2013

*Instructor, PT 624, Therapeutic Application, DPT curriculum, 5 credit hrs. Physical Therapy Department, University of Illinois.* 2010-2012

*Instructor, PT 618, Posture and Movement Across the Lifespan, DPT curriculum, 2 credit hrs. Physical Therapy Department, University of Illinois,* 2006-2008



Teaching Assistant, PT 617, Biomechanics- post professional curriculum, 2 credit hrs, Physical Therapy Department, University of Illinois.

Fall 2003

Teaching Assistant, PT 517, Biomechanics, DPT curriculum, 6 credit hrs, Physical Therapy Department, University of Illinois.

Spring 2002 – 2003

Clinical Instructor, *Seth G.S. Medical College, KEM hospital*

Jul. 1997 – Aug. 1999

Visiting Physical Therapy Faculty and Course coordinator, *Mind's College Special Education, Bombay, India*

Feb. 1997 – Jun. 1998

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## **GRADUATE STUDENT MENTORING**

### **Dissertation/Thesis/Project Advisor**

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- PhD, (Patel P), "Cognitive-motor interference post-stroke: Effects of task complexity and training on fall-risk", Dept. of Kinesiology and Nutrition, University of Illinois at Chicago. Fall 2012 - Fall2016 (anticipated)
- PhD, (Savitha S), "Alternative therapies for fall-risk prevention post-stroke", Dept. of Kinesiology and Nutrition, University of Illinois at Chicago. Fall 2013 – Spring 2017 (anticipated)
- MS (Vora J), "Reliability and usability of a novel custom-designed computerized cognitive test battery: Applications in the young, old and stroke survivors", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2014-2016 (anticipated)
- MS, (Alqahtani S), "Effect of dual-task on fall risk in chronic stroke survivors: Examining reactive balance responses to forward perturbations in stance", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2014-2016
- MS, (Desai S), "Cognitive-motor interference costs during forward directional movement in individuals with stroke", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2013-2015
- MS, (Salot P), "Reactive balance in individuals with chronic stroke: Biomechanical factors related to perturbation induced backward falling", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2013-2015
- MS, (Rini V), "Effect of Tai-chi practice on functional arm reach in older adults: A cross-sectional study", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2012-2014
- MS (Kajrolkar T), "Dynamic stability and compensatory stepping responses during anterior gait-slip perturbations in people with chronic hemiparetic stroke", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2011-2013
- MS (Subramaniam S), "Effect of dual-tasking on intentional versus reactive balance control in people with hemiparetic stroke" Rehabilitation Sciences, University of Illinois at Chicago, IL, 2011-2013

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### **Dissertation/Thesis/Project Committee Member**

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- PhD, (Chen B), "Anticipatory and compensatory postural adjustments during a dual-task performance." Rehabilitation Sciences, University of Illinois at Chicago, IL, 2013-present
- PhD, (Robderson E), "Cognition, Gait, Balance, and Tremor in FXTAS, PD, and ET", Department of Anatomy and Cell Biology, Rush University, Chicago, IL, 2013 – present (anticipated Fall 2016)
- PhD, (Hoddy K), "Meal Timing during Alternate Day Fasting: Effect on Body and Cardiovascular Disease Risk", Dept. of Kinesiology and Nutrition, University of Illinois at Chicago. 2012–2016
- MS, (Wang Y) "Better functional limits of stability in older adults: shoe or barefoot?" Rehabilitation Sciences, University of Illinois at Chicago, IL, 2013-2015
- MS, (Ma C) "Effect of a discomfort-inducing textured insole on balance and gait" Rehabilitation Sciences, University of Illinois at Chicago, IL, 2013-2015
- MS, (Jagdhane S), "Training related enhancements in anticipatory postural adjustments in healthy older adults" Rehabilitation Sciences, University of Illinois at Chicago, IL, 2013-2015
- MS, (Szcurek M), "The Effects of Vitamin D on Microvascular Endothelial Function in Obese Adults", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2012-2014
- MS, (Atre P), "Hypoesthesia after ACL reconstruction: Relationship between proprioception, vibration sense, pain and function", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2012-2014
- PhD, (Kanekar N), "The role of anticipatory postural adjustments in balance control: effects of age and training", Dept. of Kinesiology and Nutrition, University of Illinois at Chicago, IL, 2008-2013
- MS, (Chen B), "Somatosensory information in lifting objects while applying contralateral finger touch to the target

arm", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2011-2013

- MS (Mehendale K), "Fatigue in multiple sclerosis", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2011-2013
- MS (Panwankar), "Role of ankle foot orthoses on the outcome of clinical tests of balance", Rehabilitation Sciences, University of Illinois at Chicago, IL, 2011-2013
- PhD, (Wang TY), "Generalization of fall-resisting skills", Dept. of Kinesiology and Nutrition, University of Illinois at Chicago, IL, 2007-2011

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### Academic Advising

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- |   |           |
|---|-----------|
| • Maharshi Patel, MS in Rehab Sciences  | 2011-2014 |
| • Ishwari Upasani, MS in Rehab Sciences | 2012-2014 |
| • Sneha Kamble, MS in Rehab Sciences    | 2014-2016 |

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### UNDERGRADUATE MENTORING

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#### UIC Chancellors Undergraduate Research Award

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- |                              |                           |
|------------------------------|---------------------------|
| • Gorlon Teah, Kinesiology   | Fall 2015- Present        |
| • Vandana Vaid, Kinesiology  | Fall 2013 -2016           |
| • Jenny Sampras, Kinesiology | Fall 2012 - Spring 2013   |
| • Anisha Tailor, Kinesiology | Spring 2013 and Fall 2013 |

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#### UIC Honors College

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- |   |                       |
|---|-----------------------|
| • Brent Wilson, Senior, Kinesiology     | Spring 2015 - Present |
| • Matthew Lee, Freshman, Kinesiology    | Fall 2012             |
| • Kaitlyn Reinwald, Junior, Kinesiology | Fall 2013             |

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### CLINICAL EXPERIENCE

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**Physical Therapist (Part-time-Registry), Marianjoy, Wheaton, IL, USA** Aug 2005-Present

- Provide rehabilitation in Subacute and Skilled Nursing Facilities

**Physical Therapist (Part-time), Physical Therapy Plus, Caterpillar Plant, Oswego, IL, USA** 2007-2010

- Outpatient Rehabilitation & Work Hardening, Job position evaluations

**Physical Therapist (self employed)** Jan. 1997-Aug. 1998

- Provided home-based therapy for individuals (Focus on patients with impairments like stroke, demyelinating spinal cord disorders, Parkinson's Disease, Chronic spondylosis, and joint replacements) on a long -term basis

**Graduate training, In-patient Rehabilitation** Jul 1997- Jul 1998

- Neurology and Pediatric Unit, (3 months, case load -10 to15 patients)
- Orthopedic Unit (4 months, case load - at least 15 patients)
- Assessment and treatment of patients; ADL and gait training; Prescription of braces, splints and assistive devices according to individual needs; Attended weekly ward rounds with the unit team.

**Physical Therapist (part-time), Jaslok Hospital and Research Centre, Physiotherapy dept., Bombay, India** Mar. 1997-Dec.1997

- Treated orthopedic (Joint replacements, fractures, deformity corrections, spine injuries), neurologic (Traumatic brain Injury, CVA, spinal cord injuries, cerebellar and basal ganglia disorders), pediatric, and cardio-respiratory (CABG, IHD, COPD, asthma) patients with a case load of 6-8 patients

**Physical Therapist (part-time), Mahavir Polyclinic and international Institute for Prevention and Control of Pain, Bombay, India** Dec. 1996-Jul. 1997

- Assessment, Diagnosis and Treatment of neuro and orthopedic and pediatric patients in out-patient setting

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## PROFESSIONAL SERVICES

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### Public Service

- Appointed Board member on the Advisory Commission on Disabilities for the City of Naperville 2015-Present

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### College and University Service

- University of Illinois Senator, College of Applied Healthy Sciences, University of Illinois at Chicago Fall 2011- 2014
- University of Illinois Student Research Forum, UIC Forum, University of Illinois at Chicago 2012-2015
- Interprofessional Education and Collaborative Practice Elective, Facilitator 2012-2015
- Academic Affairs Committee, College of Applied Health Science, Physical Therapy Department Representative Fall 2012-Spring 2013
- Alumni Weekend Steering Committee, College of Applied Health Sciences, Department of Physical Therapy Representative, University of Illinois at Chicago Fall 2012 - 2015

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### Departmental Service

- Awards Committee chair, Department of Physical Therapy, University of Illinois at Chicago Fall 2015 - Present
- Curriculum Committee member - MS program in Rehab Sciences Fall 2014 - Present
- Search Committee Chair – For Open Rank Clinical Track Associate/Assistant Professor position for Anatomy/Neuroanatomy Spring 2014
- Search Committee member –For Director and Open Rank Clinical Track Associate/Assistant Professor Position (Faculty Practice Spring 2014
- Search Committee member –For co-Director of Clinical Education, Clinical Track Associate/Assistant Professor Position Spring 2014
- Faculty Advisory Committee, Department of Physical Therapy, University of Illinois at Chicago Fall 2012 - Spring 2013
- Professional Program (DPT) Admissions Committee, Department of Physical Therapy, University of Illinois at Chicago Fall 2012 - Present
- Awards Committee, Department of Physical Therapy, University of Illinois at Chicago Fall 2012 - Present
- Department of Physical Therapy Seminar Series Coordinator Fall 2011 – Present
- MS in Rehab Sciences, Admissions Committee, Department of Physical Therapy, University of Illinois at Chicago Fall 2011 – Present

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### Professional Organizations

- **Member**, Society of Neuroscience 2004- present
- **Member**, American Physical Therapy Association 2004- present
- **Member**, International Gait and Posture Rehabilitation Society 2008- present

### Editorial Board

- Journal of Physical Therapy and Health Promotion Fall 2013

### Invited Grant Reviewer

- RFA for Pilot Grant Proposals issued by Pittsburgh Pepper Center Fall 2015
- Career Development Award, Rehabilitation Research and Development Service, Office of Research and Development, U.S. Department of Veterans Affairs Spring 2016

**Invited Abstract Reviewer**

Section on Geriatrics, Combined Sections Meeting, American Physical Therapy Association

2010-Present

**Invited Scientific Review Committee member**

International Society for Posture and Gait Rehabilitation

2014-Present

**Reviewer Service (Journal, ad hoc)**

Archives of Physical Medicine and Rehabilitation

- Received 'Certificate for Outstanding Contribution in Reviewing' in 2014

Journal of Biomechanics

- Received 'Outstanding Reviewer Status' in 2015

Journal of Aging and Physical Activity

Journals of Gerontology Series A: Biological and Medical Sciences

Medicine and Science in Sports and Exercise

IIE Transactions on Occupational Ergonomics and Human Factors

Neuroscience Letters

Neuroscience Methods

Frontiers in Systems Neuroscience

Journal of NeuroEngineering and Rehabilitation