

EDUCATION

- 08/2015 – Present **Doctor of Philosophy in Biokinesiology** (current GPA: 3.85 /4.00)
Division of Biokinesiology & Physical Therapy, University of Southern California
Dissertation title: “On hemisphere-specific deficits in the control of bimanual movements after stroke” (*Expected graduation: May 2021*)
- 08/2012 – 08/2014 **Master of Science in Rehabilitation Sciences** (GPA: 4.00 /4.00)
Department of Physical Therapy, University of Illinois at Chicago
Thesis title “Effects of tai chi practice on a functional arm reaching task in older adults: a cross-sectional study”
- 08/2007 – 03/2012 **Bachelor in Physiotherapy** (GPA: 3.93 /4.00)
Department of Physiotherapy, Krishna Institute of Medical Sciences University, India

GRANT SUPPORT

- 04/2019 – 04/2021 **NIH F31 Ruth L. Kirschstein NRSA Individual Pre-Doctoral Fellowship**
F31 HD098796-01, Role: Principal Investigator
National Center for Medical Rehabilitation Research, NICHD

RESEARCH PUBLICATIONS

Peer-Reviewed Articles

1. **Varghese R**, Kutch JJ, Schweighofer N, Winstein CJ (2020) The Probability of Choosing Both Hands Depends on an Interaction Between Motor Capacity and Limb-Specific Control in Chronic Stroke. (accepted for publication in *Experimental Brain Research*) [[Data/Code](#)] [[Preprint](#)]
2. **Varghese R**, Winstein CJ (2020). Relationship Between Motor Capacity of the Contralesional and Ipsilesional Hand Depends on the Side of Stroke in Chronic Stroke Survivors with Mild-to-Moderate Impairment. *Front Neurol* 10:1340. [[Data/Code](#)] [[Preprint](#)]
3. Buxbaum LJ, **Varghese R**, Stoll H, Winstein CJ (2020). Predictors of Arm Nonuse in Chronic Stroke: A Preliminary Investigation. *Neurorehabil Neural Repair*. 34(6):512-522. [[Preprint](#)]
4. Subramaniam S, **Varghese R**, Bhatt T. (2019). Influence of Chronic Stroke on Functional Arm Reaching: Quantifying Deficits in the Ipsilesional Upper Extremity. *Rehabil Res Pract*. 1–10.
5. Winstein, CJ and **Varghese, R.** (2018) Been there, done that, so what’s next for arm and hand rehabilitation in stroke? *NeuroRehabilitation*. 43(1), 3-18. PMID: 29991146.
6. Plummer HA, Sum JC, Pozzi F, **Varghese R**, Michener LA. (2017). Observational Scapular Dyskinesia: Known-Groups Validity in Patients with and without Shoulder Pain. *J Orthop Sports Phys Ther*. 47(8):530-537.

7. Vora, JP, **Varghese, R**, Patron, V, Weisenbach, SL, Bhatt, T (2017) Test-retest reliability of a computerized neuropsychological test battery: a cross-sectional study assessing cognition in healthy young and old adults, and stroke survivors. *J Psychiatry Cogn Behav* 2017: J107.
8. Bhatt, T, Subramaniam, S, **Varghese, R**. (2016). Examining interference of different cognitive tasks on voluntary balance control in aging and stroke. *Experimental Brain Research*. 234.9. 2575-2584.
9. Vora JP, Kannan, L, **Varghese, R**, Patel, P, Bhatt, T. (2016). Effects of a high intensity tapering conventional balance training for improving balance control among chronic stroke survivors. *Arch of Phys Med and Rehabil*, 97(10), e120-e121.
10. Vora, JP, **Varghese, R**, Weisenbach, SL, Bhatt, T. (2016). Test-retest reliability and validity of a custom-designed computerized neuropsychological cognitive test battery in young healthy adults. *J Psych and Cogn*, 1(1), 11.
11. **Varghese R**, Hui-Chan CWY, Bhatt T. (2016). Reduced cognitive-motor interference on voluntary balance control in older tai chi practitioners. *J Geriatr Phys Ther*. 39:190–199.
12. **Varghese R**, Hui-Chan CW, Bhatt T. (2015) Effects of Tai Chi on a Functional Arm Reaching Task in Older Adults: A Cross-Sectional Study. *J Aging Phys Act*. 23:361–368.
13. **Varghese, R**, Hui-Chan, CW, Wang, E, Bhatt, T. (2014) Internal consistency and test-retest reliability of an instrumented functional reaching task using wireless electromyographic sensors. *J Electromyogr Kinesiol*, 24(5), 593-600.

Manuscripts in Preparation

#working title

1. **Varghese, R**, Gordon, J, Sainburg RL, Winstein, CJ. # Temporal synchrony and conflict monitoring in discrete parallel and cooperative bimanual reaching. [[Experimental Protocol](#)]
2. **Varghese, R**, Gordon, J, Sainburg RL, Winstein, CJ. # Hemisphere-specific deficits in discrete parallel and cooperative bimanual reaching in chronic stroke.
3. **Varghese, R**, Kim, B, Liew, SL, Winstein, CJ. # Microstructural disorganization of the splenium of the corpus callosum differentially explains bilateral distal function after left and right hemisphere stroke.

Published Abstracts & Poster Presentations

*presenting author

1. **Varghese, R***, Gordon, J, Sainburg RL, Winstein, CJ. Discrete asymmetric bilateral reaches are separately initiated and separately terminated, but not separately monitored.
 - 2020 *Neural Control of Movement*, Dubrovnik, Croatia (accepted, but conference cancelled due to the COVID19 pandemic).
 - 2020 *Herman Ostrow School of Dentistry Research Day & Jacquelin Perry Research Day*, Los Angeles, CA (accepted, but symposium cancelled due to the COVID19 pandemic).
2. **Varghese, R***, Sainburg RL, Gordon, J, Winstein, CJ. Temporal coupling is preserved after right but not left hemisphere damage.
 - 2019 *XII Progress in Motor Control*, Amsterdam, The Netherlands.
 - 2019 *Herman Ostrow School of Dentistry Research Day & Jacquelin Perry Research Day*, Los Angeles, CA.
3. **Varghese, R***, Sainburg, RL, Gordon, J, Winstein, CJ. Interlimb differences during bimanual aiming after stroke.
 - 2018 *Society for Neuroscience*, San Diego, CA. (won the Trainee Professional Development Award)
 - 2018 *American Society of Neurorehabilitation*, San Diego, CA.

4. **Varghese, R***, Gordon, J, Winstein, CJ. Interlimb differences during bimanual aiming after stroke: Effect of target distance.
 - 2018 *Progress in Clinical Motor Control I: Neurorehabilitation*, State College, PA, July 23-26.
5. **Varghese, R*** and Winstein, CJ. (2018) Abstract WP152: Exploration of the factors that influence bimanual arm use after stroke: Implications for clinical rehabilitation. *Stroke*, 49(1): AWP152, Orig. published 01/22.
 - 2018 *International Stroke Conference*, Los Angeles, CA
 - 2018 *Herman Ostrow School of Dentistry Research Day*, Los Angeles, CA.
6. Maenza C*¹, **Varghese R**, Good, D*², Winstein, CJ, Wagstaff, D, Sainburg RL. (2018) Abstract T3: Intensive non-paretic arm training in chronic stroke patients with severe paresis improves functional independence without compromising paretic arm function. Abstracts from the 2017 Annual Meeting. *Neurorehabilitation and Neural Repair*, 32(3), 243.
 - 2017 *Society for Neuroscience & American Society of Neurorehabilitation*, Washington DC
 - 2018 *World Congress of Neurorehabilitation*, Mumbai, India
7. **Varghese, R*** and Winstein, CJ. Arm use patterns in chronic stroke: Observations from covert bimanual task performance.
 - 2017 *Progress in Motor Control Annual Meeting*, Miami, FL,
 - 2017 *Herman Ostrow School of Dentistry Research Day & Jacquelin Perry Research Day*, Los Angeles, CA.
8. **Varghese, R*** and Winstein, CJ. (2018) Abstract F32: Bimanual use in chronic stroke survivors with left or right hemiparesis is differentially influenced by non-paretic arm function. Abstracts from the 2017 Annual Meeting. *Neurorehabilitation and Neural Repair*, 32(3), 277–278.
 - 2017 *Society for Neuroscience & American Society of Neurorehabilitation*, Washington D.C.
9. **Varghese R***, Stoll, HM, Jax, S, Buxbaum, LJ, Winstein, CJ. (2018) Abstract T60: The Best Predictors of Non-Use in Chronic Stroke: A Preliminary Investigation. Abstracts from the 2017 Annual Meeting. *Neurorehabilitation and Neural Repair*, 32(3), 264–265.
 - 2017 *American Society of Neurorehabilitation*
10. Michener LA*, Plummer HA, Pozzi F, **Varghese R**, Sum JC. Observational scapular dyskinesis: Is it relevant?
 - 2017 *Combined Sections Meeting of the American Physical Therapy Association*
 - 2016 *Annual meeting of the American Society of Shoulder and Elbow Therapists*
11. **Varghese, R***, Hui-Chan, CW, Wang, E, Bhatt, T. (2015). Internal consistency and test-retest reliability of an instrumented functional reaching task using wireless electromyographic sensors.
 - 2015 *Research Section, Combined Sections Meeting of the American Physical Therapy Association*, Indianapolis, IN.
12. **Varghese, R***, Hui-Chan, CW, Bhatt, T. (2015). Reduced cognitive-motor interference on intentional balance control in older Tai Chi practitioners.
 - 2015 *Geriatrics Section, Combined Sections Meeting of the American Physical Therapy Association*, Indianapolis, IN.
13. **Varghese, R**, Subramaniam, S, Bhatt, T*. Influence of chronic stroke on functional arm reaching: Quantifying deficits in the ipsilesional arm.
 - 2015 *Society for Neuroscience*, Chicago, IL.

14. Vora, JP*, **Varghese, R**, Bhatt, T. The test-retest reliability of a computerized neuropsychological cognitive test battery in chronic stroke survivors: Application for dual-task paradigms.
 - 2015 Society for Neuroscience, Chicago, IL
15. **Varghese, R***, Hui-Chan, CW, Bhatt, T. (2015). Effects of Tai Chi on a functional arm reaching task in older adults: A cross-sectional study.
 - 2015 Research Section of the Combined Sections Meeting of the American Physical Therapy Association, Indianapolis, IN.
 - 2014 Annual Student Research Forum of the University of Illinois at Chicago, Chicago, IL

Other Open Source Efforts

1. **cLBT acquisition program**. Varghese, R, Ma, J, and, Winstein CJ. (June 2, 2020). A Computerized Version of the Line Bisection Test (v.1.2). <https://github.com/rinivarg/cLBT>. GitHub repository. A standalone application using MATLAB Runtime that can be run remotely to simulate the paper-based line bisection test used to assess unilateral spatial neglect after stroke.

AWARDS & HONORS

11/2018	Nancy Rutledge Zahniser Trainee Professional Development Award (\$1000) <i>Society for Neuroscience, Neuroscience 2018, San Diego, CA</i>
06/2018	NSF Travel Award (\$500) with an opportunity to participate in a scholarly exchange with senior scientists <i>1st Progress in Clinical Motor Control Meeting, State College, PA</i>
06/2018	Winning entry entitled CNS Fireworks in the Best Humorous Brain Illustration Category <i>Brain Art Competition of the Neuro Bureau, Organization for Human Brain Mapping</i>
05/2017	2nd Place Award for Best Poster in the Biokinesiology Student Category <i>Herman Ostrow School of Dentistry Research Day, University of Southern California</i>
11/2018	BKN-PT Division Support & Graduate Student Travel Grant to support: <i>American Society of Neurorehabilitation</i>
02/2018	<i>International Stroke Conference, Los Angeles, CA</i>
11/2017	<i>American Society of Neurorehabilitation and Society for Neuroscience, Wash. D.C.</i>
07/2017	<i>Progress in Motor Control Meeting, State College, PA, Miami, FL</i>
06/2017	<i>Organization for Human Brain Mapping, Vancouver, Canada</i>
11/2016	<i>American Society of Neurorehabilitation and Society for Neuroscience, Wash. D.C.</i>
08/2008 – 03/2011	University Honors (top 5%) – Cumulative 2nd rank <i>2008: 1st rank, 2009 & 2010: 3rd rank, 2011: 2nd rank</i>

EXPERIENCE

Research

08/2015 – Present	Research Assistant <i>Motor Behavior and Neurorehabilitation Laboratory, PI Carolee Winstein University of Southern California, Los Angeles, CA</i>
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- 08/2015 – 12/2015 **Clinical Research Assistant** (part-time)
*USC PT Associates, Health Science Campus,
 University of Southern California, Los Angeles, CA*
- 08/2012 – 05/2015 **Graduate Research Assistant and Visiting Research Associate** (2014 - 2015)
*Cognitive Motor and Balance Rehabilitation Laboratory, PI Tanvi Bhatt
 University of Illinois at Chicago, Chicago, IL*

Teaching

- 01/2016 – 01/2019 **Teaching Assistant** (part-time)
 • *PT 546 Neuropathology (3 units, Sp.);*
- 08/2016 – 12/2016 **Teaching Assistant** (part-time)
 • *PT 539 Clinical Pharmacology (2 units, Fa.)*
- 01/2014 – 05/2014 **Teaching Assistant** (part-time)
 • *PT 634 Neuromuscular Dysfunction II (5 credit hours, Sp.)*

Clinical

- 03/2012 – 07/2012 **Home Health Physiotherapist**
Mumbai, India
- 02/2012 – 03/2012 **Physiotherapy Intern**
Krishna Charitable Hospital, Karad, India
- 08/2011 – 01/2012 **Physiotherapy Intern**
Sir JJ Hospital, Mumbai, India
- 08/2009 – 03/2011 **Physiotherapy Student Clinical Assistant**
Dept. of Physiotherapy, Krishna Charitable Hospital, Karad, India

OTHER ACADEMIC ACTIVITIES

- 07/2020 **Neurohackademy Summer School** (<https://neurohackademy.org>)
Organized by the University of Washington eScience Institute (delivered virtually).
- 07/2020 **Stroke Program in Neurorecovery (SPiN) Workshop**, Heart and Stroke Foundation's Canadian Partnership for Stroke Recovery (delivered virtually)
 Accepted to present:
"Evidence for disorganization of the corpus callosum in chronic stroke"
- 06/2017 **Participated in a certified BrainSuite Training Workshop**
Vancouver, Canada
- 06/2016 **Participated in the 3rd European Computational Motor Control Summer School**
Montpellier, France
- 03/2016 **"Clinical Research Support: Moving Research into Practice"**
Co-author, The Explorer (Vol. 8), USC Herman Ostrow School of Dentistry
- 08/2015 **Participated in the TMS Methods and Practice Workshop**
University of Southern California, Los Angeles, CA

SERVICE

- 05/2020 – Present **Social Media Coordinator**, American Society of Neurorehabilitation

02/2020	Ad-Hoc Reviewer <i>Journal of Neurology</i>
10/2019	<i>Neurorehabilitation and Neural Repair</i>
07/2019	<i>Topics in Stroke Rehabilitation</i>
06/2019	<i>Experimental Brain Research</i>
10/23/2019	Guest Lecture , Nu Rho Psi Honors Society (Neuroscience outreach) <i>Nu Rho Psi is an undergraduate student-run Neuroscience academic group</i>
	Graduate Student Mentor , STAR and EHA Research Program <i>Bravo Medical Magnet High School, LAUSD</i>
06/2019 – 07/2020	Students: Jasmine Ma and Xenia Dela-Cueva (Xenia was with us only until 08/2019)
08/2016 – 06/2017	Students: Cassandra Castillo and Antonio Raymundo
11/2018 – 11/2019	NeurOnline Community Leader , Society for Neuroscience
04/2018 – 08/2019	Section Editor , Stroke and General Research Interest Section <i>Journal Watch for the American Society of Neurorehabilitation</i>
01/2018 – 01/2019	President , Biokinesiology Student Council, USC
01/2016 – 01/2017	Neuroscience Representative , Biokinesiology Student Council, USC
08/2016 – 05/2017	Coordinator , Neurorehabilitation Seminar Series, USC

PROFESSIONAL MEMBERSHIPS

	Graduate Student Member <i>Organization for Human Brain Mapping</i>
05/2017 – Present	<i>Society for the Neural Control of Movement</i>
09/2016 – Present	<i>International Society of Motor Control</i>
07/2016 – Present	<i>American Society of Neurorehabilitation</i>
11/2014 – Present	<i>Society for Neuroscience</i>
09/2014 – Present	
05/2012 – Present	Registered Physiotherapist <i>Maharashtra State Occupational Therapy and Physiotherapy Council, Mumbai</i>

SKILLS

- **Experimental and analysis:** Psychophysical paradigms, kinematic analysis, diffusion imaging analysis (FSL)
- **Programming:** Proficient in MATLAB and R. Beginner in Python and bash shell.
- **Other:**
 - *Version control:* Git, GitHub ([/rinivarg](#))
 - *Interactive computing:* Jupyter Notebook
 - *Open source platforms:* OSF, Protocols.io.

REFERENCES

Prof. Carolee J. Winstein (winstein@usc.edu)
 Assoc. Dean James Gordon (jamesgor@pt.usc.edu)
 Assoc. Prof. Nicolas Schweighofer (schweigh@pt.usc.edu)
 Prof. Robert L. Sainburg (rls45@psu.edu)