



# Sutton B. Richmond, Ph.D.

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Professional Links: [ResearchGate](#) | [PubMed](#) | [Google Scholar](#) | [LinkedIn](#)

## EDUCATION

<b>Post-Doc.</b>	University of Florida	<i>Rachael D. Seidler, Ph.D.</i>	2020-Present
<b>Ph.D.</b>	Colorado State University	<i>Brett W. Fling, Ph.D.</i>	2020
<b>M.S.</b>	University of Northern Colorado	<i>Gary Heise, Ph.D. &amp; Jeremy Smith, Ph.D.</i>	2015
<b>B.S.</b>	Colorado State University - Pueblo	<i>Jack Seilheimer, Ph.D. &amp; Carol Foust, Ph.D.</i>	2012

## PROFESSIONAL EXPERIENCE

2020-Present	<i>Post-Doctoral Associate</i> , Department of Applied Physiology and Kinesiology [Neuromotor Behavior Laboratory], University of Florida.
2016-2020	<i>Research Assistantship</i> , Department of Health & Human Sciences [Sensorimotor Neuroimaging Laboratory], Colorado State University.
2015-2016	<i>Research Assistant II / Research Coordinator</i> , Department of Neurology [Balance Disorders Laboratory], Oregon Health & Science University.
2014-2015	<i>Research Assistantship</i> , Department of Sport & Exercise Science [Biomechanics Laboratory], University of Northern Colorado.

## RESEARCH INTERESTS

My research interests involve the application of biomechanics, motor control, neurophysiology, and neuroimaging principles to clinical research questions aimed at improving neurodegenerative diseases and neurological injuries.

## GRANT APPLICATIONS (\* funded applications)

2019*	International Society of Posture and Gait Research Travel Grant ( <i>1 of 5 World-Wide selectees</i> )
2019*	Colorado State University, Graduate Student Council Travel Award
2019*	Colorado State University, Dulcinea del Toboso Travel Grant
2018	NIH (Co-PI) F31. Bridging the Callosal Gap in Gait: A Mechanistic Evaluation of White Matter in Bilateral Coordination [Mentorship Team: Brett W. Fling, Ph.D., Daniel S. Peterson, Ph.D., & Alexander Leemans, Ph.D.].
2018	DeLuca Foundation Research Scholarship
2018*	Colorado State University, Sally J. Phillips Travel Award
2018*	National Institutes of Health, fMRI Training Course Award ( <i>University of Michigan</i> )
2017*	Colorado State University, Department of Health and Exercise Science: Dissertation Enhancement Award

## HONORS & AWARDS

2020	American Kinesiology Association, Graduate Student Writing Award Recipient
2019	Colorado State University, Graduate Student Showcase Finalist ( <i>Top 5% of over 400 presenters</i> )
2019	American Society of Biomechanics ( <i>Rocky Mountain Regional</i> ) Best Doctoral Podium Presentation Award
2018	Journal of Biomechanics, first author on "Highlighted Research Article"
2009-2010	Colorado State University-Pueblo, Rocky Mountain Athletic Conference All-Academic Team [Football]
2007-2010	Colorado State University-Pueblo & Saginaw Valley State University, Four-year Letterman [Football]

## PEER-REVIEWED PUBLICATIONS († mentored trainee)

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PubMed Bibliography: <https://www.ncbi.nlm.nih.gov/pubmed?term=Sutton%20Richmond>

6. **Richmond, S. B.**, Swanson, C. W., Peterson, D. S., & Fling, B. W. (2020). A temporal analysis of bilateral gait coordination in people with multiple sclerosis. *Multiple Sclerosis and Related Disorders*, 45. doi:10.1016/j.msard.2020.102445
5. Whittier, T. T., **Richmond, S. B.**, †Monaghan, A. S., & Fling, B. W. (2020). Virtual time-to-contact identifies balance deficits better than traditional metrics in people with multiple sclerosis. *Exp Brain Res*, 238(1), 93-99. doi:10.1007/s00221-019-05698-6
4. **Richmond, S. B.**, Dames, K. D., †Shad, J. M., Sutherlin, M. A., & Fling, B. W. (2020). Setting boundaries: Utilization of time to boundary for objective evaluation of the balance error scoring system. *J Sports Sci*, 38(1), 21-28. doi:10.1080/02640414.2019.1677378
3. **Richmond, S. B.**, & Fling, B. W. (2019). Transcallosal Control of Bilateral Actions. *Exercise and Sports Sci Rev*, 47 (4), 251-257. doi: 10.1249/JES.0000000000000202.
2. Whittier, T. T., **Richmond, S. B.**, & †Monaghan, A. S. (2019). Review of 'Modulation of working memory load distinguishes individuals with and without balance impairments following mild traumatic brain injury'. *Brain Inj*, 33(3), 394-395. doi:10.1080/02699052.2018.1553069
1. **Richmond, S. B.**, Dames, K. D., Goble, D. J., & Fling, B. W. (2018). Leveling the playing field: Evaluation of a portable instrument for quantifying balance performance. *J Biomech*, 75, 102-107. doi:10.1016/j.jbiomech.2018.05.008

## SELECTED CONFERENCE ABSTRACTS & POSTER PRESENTATIONS

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*Selected Presentations (chosen from 33 presentations).* † mentored trainee

15. **Richmond, S.B.**, Whittier, T.T., & Fling, B.W. Advanced Characterization of Static Postural Control Dysfunction in Persons with Multiple Sclerosis and Associated Neural Mechanisms. Poster Presentation, Rocky Mountain Regional Conference for the American Society of Biomechanics, Estes Park, CO (2020).
14. Swanson C.W., **Richmond, S.B.**, †Odom, A.R., Whittier, T.T., & Fling, B.W. The Effects of Motor Cortex Grey Matter Thickness on Corticospinal Inhibition and Turning Characteristics in People with Multiple Sclerosis and Healthy Controls. Rocky Mountain American Society of Biomechanics, Estes Park, CO (2020).
13. **\*\*\*Award Winner: Graduate Student Showcase Finalist \*\*\***  
**Richmond, S.B.**, Swanson, C.W., Whittier, T.T., Peterson, D.S., & Fling, B.W. Bridging the Callosal Gap in Gait: A Mechanistic Evaluation of White Matter's Role in Bilateral Coordination. Poster Presentation, Colorado State University Graduate Student Showcase, Fort Collins, CO (2019).
12. **\*\*\*Award Winner: Excellence in Research and Scholarship\*\*\***  
†Odom, A.D., **Richmond, S.B.**, & Fling, B.W. Cerebellar Neuroanatomical Correlates of Sensory Re-Weighting Impairment in People with Multiple Sclerosis. Poster Presentation, Colorado State University Graduate Student Showcase, Fort Collins, CO (2019).
11. **Richmond, S.B.**, Swanson, C.W., Whittier, T.T., Peterson, D.S., & Fling, B.W. Bridging the Callosal Gap in Gait: A Mechanistic Evaluation of White Matter's Role in Bilateral Coordination. Poster Presentation, 9<sup>th</sup> International Symposium on Gait & Balance in MS, Denver, CO (2019).

10. **\*\*\*Award Winner: Distinguished Scholar\*\*\***  
 †Odom, A.D., **Richmond, S.B.**, & Fling, B.W. Cerebellar Neuroanatomical Correlates of Sensory Re-Weighting Impairment in People with Multiple Sclerosis. Poster Presentation, 9<sup>th</sup> International Symposium on Gait & Balance in MS, Denver, CO (2019).
9. **\*\*\*Award Winner: Travel Grant Award \*\*\***  
**Richmond, S.B.**, Swanson, C.W., Whittier, T.T., Peterson, D.S., & Fling, B.W. Bridging the Callosal Gap in Gait: A Mechanistic Evaluation of White Matter's Role in Bilateral Coordination. Poster Presentation, International Society of Posture & Gait Research World Congress, Edinburgh, Scotland, UK (2019).
8. Swanson, C.W., †Monaghan, A.S., **Richmond, S.B.**, Whittier, T. T., & Fling, B. W. Associations Between Motor Cortex Inhibition and Stable Turning Characteristics in Healthy Controls and People with Multiple Sclerosis. Poster Presentation, International Society of Posture & Gait Research World Congress, Edinburgh, Scotland, UK (2019).
7. Whittier, T., **Richmond, S.B.**, †Monaghan, A., & Fling, B.W. Virtual Time-To-Contact Indicates Deficits in State Prediction in Women with Multiple Sclerosis. Poster Presentation, International Society of Posture & Gait Research World Congress, Edinburgh, Scotland, UK (2019).
6. **Richmond, S.B.**, Dames, K.D., & Fling, B.W. Utilization of Time to Boundary for Objective Evaluation of the Balance Error Scoring System. Poster Presentation, Front Range Neuroscience Conference, Fort Collins, CO (2018).
5. **Richmond, S. B.**, Dames, K. D., Goble, D. J., & Fling, B. W. Leveling the playing field: Evaluation of a portable instrument for quantifying balance performance. Society for the Neural Control of Movement; Santa Fe, NM (2018).
4. **\*\*\*Award Winner: High Honors Distinction\*\*\***  
 †Yassa, S.N., †Monaghan, A.S., **Richmond, S.B.**, Yassa, S.N., & Fling, B.W. The Effects of Varying Midsole Cushioning in Footwear on Gait in Females with Multiple Sclerosis. Poster Presentation, Celebrate Undergraduate Research and Creativity Showcase, Fort Collins, CO (2018).
3. **\*\*\*Award Winner: Best Master's Research Poster Presentation\*\*\***  
 †Monaghan, A.S., **Richmond, S.B.**, †Yassa, S.N., & Fling, B.W. The Effects of Varying Midsole Cushioning in Footwear on Gait in Females with Multiple Sclerosis. Poster Presentation, Rocky Mountain Regional Conference for the American Society of Biomechanics, Estes Park, CO (2018).
2. **Richmond, S.B.**, Dames, K.D., Smith, J.D., & Heise, G.D. The Relationship between Foot Contact Area and Single-Legged Postural Stability. Poster Presentation, Rocky Mountain Regional Conference for the American Society of Biomechanics, Estes Park, CO (2015).
1. Dames, K.D., **Richmond, S.B.**, Sommerville, S.M., and Smith, J.D. Effects of Load Carriage and Footwear on Spatiotemporal Parameters, Kinematics, and Metabolic Cost of Walking. Poster Presentation, World Conference of Biomechanics, Boston, MA (2014).

## PODIUM PRESENTATIONS & INVITED LECTURES

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3. **\*\*\*Award Winner: Best Doctoral Podium Presentation\*\*\***  
**Richmond, S.B.**, Swanson, C.W., Whittier, T.T., Peterson, D.S., & Fling, B.W. Bridging the Callosal Gap in Gait: A Mechanistic Evaluation of White Matter's Role in Bilateral Coordination. **Podium Presentation**, Rocky Mountain Regional Conference for the American Society of Biomechanics, Estes Park, CO (2019).
2. **Richmond, S.B.** Transcallosal Control and Bilateral Actions in the Mobility of People with Multiple Sclerosis. **Invited Lecture**. Colorado-Wyoming Chapter of the National Multiple Sclerosis Society (Denver Metro Support Group). Denver, CO (2019).

1. **Richmond, S.B.** The evolution of the evaluation of postural stability. **Invited Lecture**. Research Centre for Motor Control and Neuroplasticity – Katholieke Universiteit Leuven (KU Leuven). Leuven, Belgium (2018).

## TEACHING EXPERIENCE

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### Graduate courses

2020 HES 704B Special Topics in Rehabilitative Science, (3 hours of lecture, 12 students)  
*Colorado State University*

### Undergraduate courses

2018 HES 307 Biomechanical Principles of Human Movement, (30 hours of lecture, 70 students)  
*Colorado State University*

2017 EXS 387 Biomechanics, *State University of New York - Cortland* (3 hours of lecture, 45 students)

2015-2016 SES 331 Biomechanics Laboratory, *University of Northern Colorado* (8 hours of assistance, 20 students)

## MENTORING EXPERIENCE

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### Graduate students

2018-2020 Arianna Odom (Department of Health and Exercise Science, *Colorado State University*, **Primary Research Mentor**, currently a Doctor of Physical Therapy student at the University of Colorado)

2018-2019 Patrick Monaghan (Department of Health and Exercise Science, *Colorado State University*, **Secondary Research Mentor**, currently a doctoral student of Kinesiology at Auburn University)

2017-2019 Andrew Monaghan (Department of Health and Exercise Science, *Colorado State University*, **Primary Research Mentor**, currently a doctoral student of the College of Health Solutions at Arizona State University)

### Undergraduate students

2019-2020 Jacquelyn McRae (Department of Health and Exercise Science, *Colorado State University*, **Primary Research Mentor & honors thesis committee member**, currently applying to medical school programs)

2017-2019 Joanna Shad (Department of Health and Exercise Science, *Colorado State University*, **Primary Research Mentor**, currently applying to medical school programs)

2017-2019 Stephanie Yassa (Department of Health and Exercise Science, *Colorado State University*, **Primary Research Mentor**, currently a Doctor of Physical Therapy student at Duke University)

### High school interns

2017 Francesca Sica (Department of Health and Exercise Science, *Colorado State University*, **Primary Research Mentor**, a summer intern from the Fort Collins STEM research program)

## UNIVERSITY, PROFESSIONAL, & COMMUNITY SERVICE

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2019 Honors thesis committee member [Jacquelyn McRae], *Colorado State University*

2018 Department of Health and Exercise Science National Biomechanics Day organizer, *Colorado State University*

2017-2018 Multiple Sclerosis Walk volunteer/demonstrator, *Colorado-Wyoming Chapter of the National Multiple Sclerosis Society*

2016-2018 Department of Health and Exercise Science Extravaganza team member, *Colorado State University*

2017 Discussion Leader for the Molecular, Cellular, and Neuroscience Journal Club, *Colorado State University*

2016-2017 Department of Health and Exercise Science Liaison, *Colorado State University*

2016 Multiple Sclerosis Run presenter, *Colorado-Wyoming Chapter of the National Multiple Sclerosis Society*

- 2016 Oregon Museum of Science and Industry (OMSI) Brain Fair organizer, *Oregon Health & Science University*
- 2015-2016 Oregon Health and Science University Balance Day organizer, *Oregon Health & Science University*

## PROFESSIONAL AFFILIATIONS

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- 2018 - Present International Society of Posture and Gait Research
- 2017 - Present Society for the Neural Control of Movement
- 2017 - Present American College of Sports Medicine
- 2016 - Present Society for Neuroscience
- 2015 - Present American Society of Biomechanics

## TRAINING WORKSHOPS ATTENDED

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- 2018 Training Course in fMRI, organized and sponsored by the National Institute of Health (*University of Michigan, Ann Arbor, MI*) in August 2018.
- ExploreDTI Training Workshop, organized and sponsored by Dr. Alexander Leemans (*University Medical Center Utrecht, Utrecht, the Netherlands*) in March 2018.

## SUMMARY OF RESEARCH EQUIPMENT & SOFTWARE EXPERIENCE

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- Programming: Matlab, Python, R
- MRI-based Software: SPM, FSL, Explore DTI, MRICron
- Motion Capture: Visual 3D, Vicon Nexus, Vicon Polygon, Motion Analysis Cortex, PEAK Motus
- Force Plates: AMTI and Bertec
- Instrumented Treadmill: AMTI (split belt) & TwinCat (side by side)
- Metabolic Cart: Parvomedics
- Plantar Pressure Sensor Systems: TekScan SB Mat, F-Scan, & F-Socket
- Dynamometer: Biodex System 3
- Transcranial Magnetic Stimulator (TMS): Magventure
- Balance Plate: Balance Tracking System (BTrackS)
- Inertial Sensors: APDM Mobility Lab (Versions 1.0 and 2.0)
- Electromyography: Delsys Trigno and Biopac
- Data management: RedCap
- Statistical Packages: R, JASP, SPSS, and SAS
- Adobe Editing Software: Photoshop and Illustrator