

## **CURRICULUM VITAE**

Matthew Kirk Seeley, PhD, ATC

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### **Education**

Doctor of Philosophy, Exercise Science, University of Kentucky, Lexington, KY, USA, 2006

Area of Concentration: Biomechanics

Dissertation Title: A Test of the Functional Asymmetry Hypothesis During Walking

Dissertation Co-Advisors: Robert Shapiro, PhD & Brian R. Umberger, PhD

Master of Science, Health, PE, and Recreation, Utah State University, Logan, UT, USA, 2002

Area of Concentration: Biomechanics

Thesis Title: Reaction Forces During the Yurchenko Vault and Floor Exercise

Thesis Advisor: Eadric Bressel, EdD

Bachelor of Science, Physical Education, Utah State University, Logan, UT, USA, 2000

### **Professional Experience**

University of North Carolina, Chapel Hill, NC, USA

Visiting Scholar, 2018

Brigham Young University, Provo, UT, USA

Professor, 2018-

Associate Professor, 2012–2017

Assistant Professor, 2006–2012

University of Kentucky, Lexington, KY, USA

Research Assistant & Biodynamics Laboratory Manager, 2003–2006

Teaching Assistant, Department of Kinesiology and Health Promotion 2003–2006

Graduate Assistant, Faculty and Staff Wellness Program, 2002–2003

Intermountain Health Care, Logan, UT, USA

Athletic Trainer, Utah State University Club and Intramural Sports, 2001–2002

Utah State University, Logan, UT, USA

Graduate Teaching Assistant, Department of Health, PE, and Recreation, 2001–2002

Graduate Assistant Athletic Trainer, 2000–2001

Undergrad Teaching Assistant, Department of Health, PE, and Recreation, 1997–2000

Undergraduate Student Athletic Trainer, 1997–2000

## Teaching Experience

### Brigham Young University

EXSC 362	Kinesiology and Biomechanics	(instructor)
EXSC 365	Scientific Bases of Sport: Kinesiology	(instructor)
EXSC 663	Research Techniques in Biomechanics	(instructor)

### University of Kentucky

KHP 515	Anatomical and Mechanical Kinesiology	(co-instructor)
AT 695	Advanced Rehabilitation Concepts	(co-instructor)

### Utah State University

PEP 4200	Biomechanics	(lab instructor)
PEP 3100	Athletic Injuries	(lab instructor)

## Scientific Publications

Refereed Articles (\*undergraduate student coauthor; †graduate student coauthor)

1. Tracy, J.T.<sup>†</sup>, Ridge, S.T., **Seeley, M.K.**, & Hunter, I.. Ground reaction force characteristics for steeplechase hurdling at various speeds. *Sports Biomechanics*. In Preparation.
2. Coombs, H.L.\* , **Seeley, M.K.**, Page, G.L., Davis-Wilson, H.C.<sup>†</sup>, Johnston, C.D.<sup>†</sup>, Blackburn, J.T., & Pietrosimone, B.G.. Cluster analysis of walking load and patient-reported outcomes after anterior cruciate ligament reconstruction. *American Journal of Sports Medicine*. In Preparation.
3. Thygerson, S.J., Christensen, E.T., Newton, C.N., Merrell, A.J., Bowden, A.E., **Seeley, M.K.**, Mazzeo, B., & Fullwood, D.T.. Dual-sensing piezoresponsive foam sensors for impact and pressure. In Preparation.
4. Lee, H.<sup>†</sup>, Han, S.<sup>†</sup>, **Seeley, M.K.**, Bruening, D., & Hopkins, J.T.. Effects of balance training with stroboscopic glasses on postural control in chronic ankle instability patients. *Journal of Athletic Training*. In Review (first review).
5. **Seeley, M.K.**, Son, S.J., Kim, H., & Hopkins, J.T.. Movement neuromechanics differ between athletes with similar self-reported measures of patellofemoral pain. *Journal of Sport Rehabilitation*. In Review (second round).
6. **Seeley, M.K.**, Denning, W.M., Garner, K.\* , Park, J., Horton, Z.<sup>†</sup>, & Hopkins, J.T.. Anterior knee pain independently alters landing and jumping biomechanics. *Clinical Biomechanics*. In Review (second round).
7. White, M.S.<sup>†</sup>, Horton, Z.W.<sup>†</sup>, Burland, J.P., **Seeley, M.K.**, & Lepley, L.K.. The utility of functional data analyses to reveal between-limb asymmetries in those with a history of ACLR. *Journal of Athletic Training*. In Review (first round).
8. Pietrosimone, B., Davis-Wilson, H.<sup>†</sup>, **Seeley, M.K.**, Johnston, C.<sup>†</sup>, Spang, J.T., Creighton, R.A., Kamath, G.M., & Blackburn, J.T.. Gait biomechanics in individuals meeting sufficient quadriceps strength cutoffs following anterior cruciate ligament reconstruction. *Journal of Athletic Training*. In Review (first round).

9. Martineau, A.<sup>†</sup>, Merrell, J., Bowden, A.E., **Seeley, M.K.**, & Fullwood, D.T.. Estimating walking human gait kinematics with nanocomposite high deflection strain gauges. *Annals of Biomedical Engineering*. In Review (first round).
10. Lee, H.<sup>†</sup>, Son, S.J., Kim, H., Han, S.<sup>†</sup>, **Seeley, M.K.**, & Hopkins, J.T.. Chronic ankle instability impairs submaximal force steadiness and accuracy. *Journal of Athletic Training* (IF = 2.416; Sport Sciences Rank = 33/85, Q2). Accepted for publication on July 2, 2020.
11. Anderson, S.\* , Odom, A.<sup>†</sup>, Gray, H.\* , Jones, J.\* , Pickett, A.E.<sup>†</sup>, Christensen, W.F., Hollingshead, T., Hadfield, J., Frost, M., Wilson, C., Davidson, L., & **Seeley, M.K.** (2020). A case study exploring associations between popular media attention of scientific research and scientific citations. *PLOS ONE* (IF = 2.740; Multidisciplinary Sciences Rank = 27/71, Q2). Web Access: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7329059/>
12. Evans-Pickett, A.<sup>†</sup>, Davis-Wilson, H.C.<sup>†</sup>, Luc-Harkey, B.A., Blackburn, T.J., Padua, D.A., **Seeley, M.K.**, & Pietrosimone, B. (2020). Biomechanical Effects of Manipulating Peak Vertical Ground Reaction Force During Gait in Individuals with Anterior Cruciate Ligament Reconstruction. *Clinical Biomechanics* (IF = 1.624; Sport Sciences Rank = 58/85, Q3). Web Access: <https://pubmed.ncbi.nlm.nih.gov/32388079/>
13. **Seeley, M.K.**, Evans, A.<sup>†</sup>, Collins, G.<sup>†</sup>, Rosquist, P.<sup>†</sup>, Tuttle, N.<sup>†</sup>, Morrin, S.J.\* , Tracy, J.<sup>†</sup>, Merrell, A.J.<sup>†</sup>, Christensen, W.F., Fullwood, D.T., & Bowden, A.E. (2020). Predicting running ground reaction forces using novel piezoelectric foam sensors. *Journal of Sports Sciences* (IF = 2.597; Sport Sciences Rank = 27/85, Q2). Web Access: <https://www.tandfonline.com/doi/full/10.1080/02640414.2020.1757361>
14. Kwon, S.<sup>†</sup>, Breuning, D., Morrin, S.J.\* , Kunz, D.\* , Hopkins, J.T., & **Seeley, M.K.** (2020). Simultaneous ice and transcutaneous electrical nerve stimulation decrease anterior knee pain during running but do not affect kinematics or associated muscle inhibition. *Clinical Biomechanics* (IF = 1.977; Sport Sciences Rank = 39/83, Q2), 72, 1-7. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/31765839>
15. Davis-Wilson, H.C.<sup>†</sup>, Pfeiffer, S.J.<sup>†</sup>, Johnston, C.D.<sup>†</sup>, **Seeley, M.K.**, Harkey, M.S., Blackburn, J.T., Fockler, R.P.\* , Spang, J.T., & Pietrosimone, B. (2020). Bilateral gait 6 and 12 months post-anterior cruciate ligament reconstruction compared with controls. *Medicine and Science in Sports and Exercise* (IF = 4.478; Sports Sciences Rank = 6/83, Q1), 52(4), 785-794. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/31809411>
16. Kim, H., Son, S.J., **Seeley, M.K.**, & Hopkins, J.T. (2019). Altered movement strategies during jump landing/cutting in patients with chronic ankle instability. *Scandinavian Journal of Medicine and Science in Sports* (IF = 3.631; Sport Sciences Rank = 11/83, Q1), 29, 1130-1140. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/31050053>.
17. Kim, H., Son, S.J., **Seeley, M.K.**, & Hopkins, J.T. (2019). Altered movement biomechanics in chronic ankle instability, coper, and control groups: energy absorption and distribution implications. *Journal of Athletic Training* (IF = 2.253; Sport Sciences Rank = 30/81, Q2), 54(6), 708-717. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/31184955>
18. Hopkins, J.T., Son, S.J., Kim, H., Page, G.L., & **Seeley, M.K.** (2019). Characterization of multiple movement strategies in participants with chronic ankle instability. *Journal of Athletic Training* (IF = 2.253; Sport Sciences Rank = 30/81, Q2), 54(6), 698-707. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/31184956>

19. Son, S.J., Kim, H., **Seeley, M.K.**, & Hopkins, J.T. (2019). Altered walking neuromechanics in patients with chronic ankle instability. *Journal of Athletic Training* (IF = 2.253; Sport Sciences Rank = 30/81, Q2), 54(6), 684-697. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/31162941>
20. Davis, H.C.<sup>†</sup>, Luc-Harkey, B.A., **Seeley, M.K.**, Blackburn, J.T., & Pietrosimone, B. (2019). Sagittal plane walking biomechanics in individuals with knee osteoarthritis after quadriceps strengthening. *Osteoarthritis and Cartilage*, (IF = 4.789; Orthopedics Rank = 3/76, Q1), 27(5), 771-780. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/30660722>.
21. Pietrosimone, B., **Seeley, M.K.**, Johnston, C.<sup>†</sup>, Pfeiffer, S.J.<sup>†</sup>, Spang, J.T., & Blackburn, J.T. (2019). Walking ground reaction force post-ACL reconstruction: analysis of time and symptoms. *Medicine and Science of Sports and Exercise* (IF = 4.478; Sports Sciences Rank = 6/83, Q1), 51(2), 246-254. Web Access: <https://www.ncbi.nlm.nih.gov/pubmed/30157111>.
22. Lee, J.<sup>†</sup>, Li, G.<sup>†</sup>, Christensen, W.F., Collins, G.<sup>†</sup>, **Seeley, M.K.**, Bowden, A.E., Fullwood, D.T., & Goldsmith, J. (2019). Functional data analyses of gait data measured using in-shoe sensors. *Statistics in Biosciences*, 11(2), 288-313.
23. Evans, A.<sup>†</sup>, Collins, G.<sup>†</sup>, Rosquist, P.<sup>†</sup>, Tuttle, N.<sup>†</sup>, Morrin, S.J.\* , Tracy, J.<sup>†</sup>, Merrell, A.J.<sup>†</sup>, Christensen, W.F., Fullwood, D.T., Bowden, A.E., & **Seeley, M.K.** (2018). Predicting energy expenditure during walking and running using novel piezoelectric foam sensors. *Journal for the Measurement of Physical Behavior*, 1(3) 100-107.
24. Bird, E.<sup>†</sup>, Merrell, J., Rosquist, P.<sup>†</sup>, Martineau, A.<sup>†</sup>, Bowden, A.E., **Seeley, M.K.**, & Fullwood, D.T. (2018). Effect of environmental and material factors on the response of nanocomposite foam impact sensors. *Smart Materials and Structures* (IF = 2.909; Instruments and Instrumentation Rank = 9/58, Q1), 27, 1-10.
25. Johnson, A.W., Warcup, C.N.<sup>†</sup>, **Seeley, M.K.**, Eggett, D., & Feland, J.B. (2018). The acute effects of stretching with vibration on dynamic flexibility in young female gymnasts. *Journal of Sports Medicine and Physical Fitness* (IF = 1.120; Sport Sciences Rank = 65/81, Q4), DOI: 10.23736/S0022-4707.18.08290-7.
26. Bird, E.<sup>†</sup>, Bowden, A.E., **Seeley, M.K.**, & Fullwood, D.T. (2018). Materials selection of flexible open-cell foams in energy absorption applications. *Materials and Design* (IF = 4.364; Materials Science, Multidisciplinary = 46/275, Q1), 137(5), 414-421.
27. Sanders, M.<sup>†</sup>, Bowden, A.E., Baker, S.\* , Jensen, R.\* , Nichols, M.\* , & **Seeley, M.K.** (2018). The influence of ambulatory aid on lower-extremity muscle activation during gait. *Journal of Sport Rehabilitation* (IF = 1.413; Sport Sciences Rank = 48/81, Q3), 27(3), 230-236. doi: 10.1123/jsr.2016-0148.
28. Kim, H., Son, S.J.<sup>†</sup>, **Seeley, M.K.**, & Hopkins, J.T. (2018). Kinetic compensations due to chronic ankle instability during landing and jumping. *Medicine and Science in Sports and Exercise* (IF = 4.141; Sports Sciences Rank = 6/81, Q1), 50(2), 308-317. doi:10.1249/MSS.0000000000001442.
29. Park, J., **Seeley, M.K.**, Francom, D.<sup>†</sup>, Reese, S., & Hopkins, J.T. (2017). Functional vs. traditional analysis in biomechanical gait data: an alternative statistical approach. *Journal of Human Kinetics* (IF = 0.798; Sport Sciences Rank = 64/81, Q4), 60, 39-49. doi:10.1515/hukin-2017-0114.
30. Kwon, S.<sup>†</sup>, Pfister, R.\* , Hager, R.L., Hunter, I., & **Seeley, M.K.** (2017). Influence of tennis racquet kinematics on ball topspin rate and accuracy during the forehand groundstroke. *Journal of Sports Science and Medicine* (IF = 1.797; Sports Sciences Rank = 37/81, Q2), 16(4), 505-513.

31. Merrell, A.J.<sup>†</sup>, Christensen, W.F., **Seeley, M.K.**, Bowden, A.E. & Fullwood, D.T. (2017). Nano-composite foam sensor system in football helmets. *Annals of Biomedical Engineering*, (IF = 3.221; Biomedical Engineering Rank = 18/77, Q1), 45(12), 2742-2749. doi.org/10.1007/s10439-017-1910-9.
32. Rosquist, P.G.<sup>†</sup>, Collins, G.<sup>†</sup>, Merrell, A.J.<sup>†</sup>, Tuttle, N.J.<sup>†</sup>, Tracy, J.B.<sup>†</sup>, Bird, E.T.<sup>†</sup>, **Seeley, M.K.**, Fullwood, D.T., Christensen, W.F., & Bowden, A.E. (2017). Estimation of 3D ground reaction force using nanocomposite piezo-responsive foam sensors during walking. *Annals of Biomedical Engineering* (IF = 2.887; Biomedical Engineering Rank = 16/76, Q1), 45(8), 2122-2134. doi.org/10.1007/s10439-017-1852-2.
33. Son, S.J.<sup>†</sup>, **Seeley, M.K.**, Reese, S.C., & Hopkins, J.T. (2017). Movement strategies among groups of chronic ankle instability, coper, and control. *Medicine and Science in Sports and Exercise* (IF = 4.141; Sports Sciences Rank = 6/81, Q1), 49(8), 1649-1661.
34. **Seeley, M.K.**, Son, S.J.<sup>†</sup>, Kim, H., & Hopkins, J.T. (2017). Walking mechanics for patellofemoral pain subjects with similar self-reported pain levels can differ based upon neuromuscular activation. *Gait and Posture* (IF = 2.347; Sports Sciences Rank = 20/81, Q1), 53, 48-54.
35. Park, J.<sup>†</sup>, Denning, W.M.<sup>†</sup>, Pitt, J.\* , Francom, D.<sup>†</sup>, Hopkins, J.T., & **Seeley, M.K.** (2017). Effects of experimental anterior knee pain on muscle activation during landing and jumping performed at various intensities. *Journal of Sport Rehabilitation* (IF = 1.413; Sport Sciences Rank = 48/81, Q3), 26(1), 78-93.
36. Son, S.<sup>†</sup>, Kim, H., **Seeley, M.K.**, & Hopkins, J.T. (2017). Efficacy of sensory transcutaneous electrical nerve stimulation on perceived pain and gait patterns in individuals with experimental knee pain. *Archives of Physical Medicine and Rehabilitation* (IF = 3.289; Sports Sciences Rank = 10/81, Q1), 98, 25-35.
37. Bird, E.\* , Merrell, J., Anderson, B.<sup>†</sup>, Newton, C.<sup>†</sup>, Rosquist, P.<sup>†</sup>, Fullwood, D., Bowden, A.E., & **Seeley, M.K.** (2016). Vibration monitoring via nano-composite piezoelectric foam bushings. *Smart Materials and Structures*, (IF = 2.909; Instruments and Instrumentation Rank = 9/58, Q1), 25(11).
38. Hyldahl, R.D., Evans, A.\* , Kwon, S.<sup>†</sup>, Ridge, S.T., Robinson, E., Hopkins, J.T., & **Seeley, M.K.** (2016). Running decreases knee intra-articular cytokine and cartilage oligomeric matrix concentrations. *European Journal of Applied Physiology* (IF = 3.055; Sports Sciences Rank = 17/81, Q1), 11, 2305-2314.
39. Denning, W.M.<sup>†</sup>, Pardo, M.B.\* , Winward, J.G.\* , Hunter, I., Ridge, S., Hopkins, J.T., Reese, C.S., Parcell, A.C., & **Seeley, M.K.** (2016). Ambulation speed and corresponding mechanics affect articular cartilage catabolism. *Gait and Posture* (IF = 2.347; Sports Sciences Rank = 20/81, Q1), 44, 131-136.
40. Son, S.<sup>†</sup>, Kim, H.<sup>†</sup>, **Seeley, M.K.**, Feland, J.B., & Hopkins, J.T. (2016). Effects of transcutaneous electrical nerve stimulation on quadriceps function in individuals with experimental knee pain. *Scandinavian Journal of Medicine and Science in Sports* (IF = 3.331; Sports Sciences Rank = 9/81, Q1), 26(9), 1080-1090.
41. Hunter, I., Earl, S.<sup>†</sup>, Mack, G.W., & **Seeley, M.K.** (2015). The relationship between steeplechase hurdle economy, mechanics, and performance. *Journal of Sport and Health Science* (IF = 2.531; Sports Sciences Rank = 18/81, Q1), 4, 353-356.
42. Kim, H.<sup>†</sup>, Son, S.<sup>†</sup>, **Seeley, M.K.**, & Hopkins, J.T. (2015). Functional fatigue alters lower-extremity neuromechanics during a forward-side jump. *International Journal of Sports Medicine* (IF = 2.084; Sports Sciences Rank = 26/81, Q2), 36(14), 1192-1200.

43. Denning, W.M.<sup>†</sup>, Winward, J.G.<sup>\*</sup>, Pardo, M.B.<sup>\*</sup>, Hopkins, J.T., & Seeley, M.K. (2015). Body weight independently affects articular cartilage catabolism. *Journal of Sports Science and Medicine* (IF = 1.797; Sports Sciences Rank = 37/81, Q2), 14, 290-296.
44. Sakita, K.,<sup>†</sup> Seeley, M.K., Myrer, J.W., & Hopkins, J.T. (2015). Should muscle electromyography during shoulder external rotation exercises with and without slight abduction. *Journal of Sport Rehabilitation* (IF = 1.413; Sport Sciences Rank = 48/81, Q3), 24(2), 109-115.
45. Prusak, K.M.<sup>†</sup>, Prusak, K.A., Hunter, I., Seeley, M.K., & Hopkins, J.T. (2014). Comparison of two taping techniques on navicular drop and center of pressure measurements during stance. *Athletic Training and Sports Health Care* (No ISI Impact Factor), 6(6), 252-260.
46. Denning, W.M.<sup>†</sup>, Woodland, S.<sup>†</sup>, Winward, J.G.<sup>\*</sup>, Leavitt, M.G.<sup>†</sup>, Parcell, A.C., Hopkins, J.T., Francom, D.<sup>†</sup>, & Seeley, M.K. (2014). The influence of experimental anterior knee pain during running on electromyography and articular cartilage metabolism. *Osteoarthritis and Cartilage* (IF = 4.742; Orthopedics Rank = 3/76, Q1), 22, 1111-1119.
47. Hunter, I., Seeley, M.K., Hopkins, J.T., Carr, C.<sup>\*</sup>, & Frandson, J.J.<sup>\*</sup> (2014). EMG activity during positive-pressure treadmill running. *Journal of Electromyography and Kinesiology* (IF = 1.510; Sport Sciences Rank = 43/81, Q3), 24(3), 348-352.
48. Falk, E.E.<sup>†</sup>, Seeley, M.K., Hunter, I., Park, J.<sup>†</sup>, & Hopkins, J.T. (2014). Effect of experimental anterior knee pain on measures of static and dynamic postural control. *Athletic Training and Sports Health Care* (No ISI Impact Factor), 6(1), 7-14.
49. Hopkins, J.T., Coglianese, M.<sup>†</sup>, Reese, S., & Seeley, M.K. (2013). Alterations in evertor/invertor muscle activation and center of pressure trajectory during a forward lunge in participants with functional ankle instability. *Clinical Research on Foot and Ankle* (No ISI Impact Factor), (2)1. DOI: 10.4172/2329-910X.1000122.
50. Cunningham, R.<sup>†</sup>, Hunter, I., Seeley, M.K., & Feland, B. (2013). Variations in running technique between female sprinters, middle, and long distance. *International Journal of Exercise Science* (No ISI Impact Factor), 6(1), 43-51.
51. Seeley, M.K., Park, J.<sup>†</sup>, King, D.<sup>\*</sup>, & Hopkins, J.T. (2013). A novel experimental knee pain model affects perceived pain and movement biomechanics. *Journal of Athletic Training* (IF = 2.341; Sport Sciences Rank = 21/81, Q2), 48(3), 337-345.
52. Wilcox, S.<sup>†</sup>, Hager, R., Lockhart, B., & Seeley, M.K. (2012). Ground reaction forces generated by twenty-eight Hatha Yoga postures. *International Journal of Exercise Science* (No ISI Impact Factor), 5(2), Article 2.
53. Chan-Roper, M.M.<sup>†</sup>, Hunter, I., Myrer, J.W., Egget, D., & Seeley, M.K. (2012). Kinematic changes during a marathon for fast and slow runners. *Journal of Sports Science and Medicine* (IF = 1.797; Sports Sciences Rank = 37/81, Q2), 11, 77-82.
54. Hopkins, J.T., Coglianese, M.<sup>†</sup>, Glasgow, P., Reese, S., & Seeley, M.K. (2012). Alterations in evertor/invertor muscle activation and center of pressure trajectory in patients with chronic ankle instability. *Journal of Electromyography and Kinesiology* (IF = 1.510; Sport Sciences Rank = 43/81, Q3), 22, 280-285.
55. Denning, W.M.<sup>†</sup>, Bressel, E., Dolny, D., Bressel, M., & Seeley, M.K. (2012). A review of biophysical differences between aquatic and land based exercise. *International Journal of Aquatic Research and Education* (No ISI Impact Factor—this paper was required to be submitted to this journal, as a result of a grant awarded to the first author), 6, 46-67.

56. **Seeley, M.K.**, Funk, M.J.<sup>†</sup>, Denning, W.M.<sup>†</sup>, Hager, R., and Hopkins, J.T. (2011). Tennis forehand kinematics change as post-impact ball speed is altered. *Sports Biomechanics* (IF = 0.826; Sport Sciences Rank = 63/81, Q4), 10(4), 415-426.
57. **Seeley, M.K.**, Sandberg, R.P.<sup>\*</sup>, Chacon, J.F.<sup>\*</sup>, Funk, M.D.<sup>†</sup>, Nokes, N.<sup>†</sup>, & Mack, G.W. (2011). Metabolic energy expenditure during spring-loaded crutch ambulation. *Journal of Sport Rehabilitation* (IF = 1.413; Sport Sciences Rank = 48/81, Q3), 20, 419-427.
58. Neves, T.<sup>†</sup>, Johnson, A.W., Myrer, J.W., & **Seeley, M.K.** (2011). A biomechanical comparison of three different volleyball blocking techniques. *Journal of Sports Science and Medicine* (IF = 1.797; Sports Sciences Rank = 37/81, Q2), 10, 452-457.
59. **Seeley, M.K.**, Hunter, I., Roggia, A.<sup>\*</sup>, Bateman, T.D.<sup>\*</sup>, Larson, B.J., & Draper, D.O. (2011). A kinematic comparison of spring-loaded and traditional crutches. *Journal of Sport Rehabilitation* (IF = 1.413; Sport Sciences Rank = 48/81, Q3), 20, 198-206.
60. **Seeley, M.K.**, Umberger, B.R., Clasey, J.L., & Shapiro, R. (2010). The relation between mild limb-length inequality and asymmetry in healthy walking. *Journal of Sports Science and Medicine* (IF = 1.797; Sports Sciences Rank = 37/81, Q2), 9, 572-579.
61. Villamonte, R.<sup>†</sup>, Vehrs, P.R., Feland, J.B., Johnson, A.W., **Seeley, M.K.**, & Egget, D. (2010). Reliability of sixteen balance tests in individuals with Down Syndrome. *Perceptual and Motor Skills* (IF = 0.618; Psychology, Experimental Rank = 83/84, Q4), 111(2), 530-542.
62. Rice, J.<sup>\*</sup> & **Seeley, M.K.** (2010). An investigation of lower-extremity functional asymmetry for non-preferred able-bodied walking speeds. *International Journal of Exercise Science* (No ISI Impact Factor), 3(4), Article 4.
63. **Seeley, M.K.**, Umberger, B.R. & Shapiro, R. (2008). A test of the functional asymmetry hypothesis in walking. *Gait and Posture* (IF = 2.347; Sports Sciences Rank = 20/81, Q1), 28(1), 24–28.
64. **Seeley, M.K.**, Uhl, T.L., McGinn, P.A., McCrory, J., Kibler, W.B. & Shapiro, R. (2008). A comparison of muscle activation patterns during traditional and abbreviated tennis serves. *Sports Biomechanics* (IF = 0.826; Sport Sciences Rank = 63/81, Q4), 7(2), 248–259.
65. **Seeley, M.K.** & Bressel, E. (2005). A comparison of upper-extremity reaction forces between the Yurchenko vault and floor exercise. *Journal of Sports Science and Medicine* (IF = 1.797; Sport Sciences Rank = 37/81, Q2), 4(2), 85–94.
66. Jacobs, C.<sup>†</sup>, Uhl, T.L., **Seeley, M.K.**, Sterling, W.<sup>†</sup>, & Goodrich, L.<sup>†</sup>. (2005). Strength and fatigability of the dominant and non-dominant hip abductors. *Journal of Athletic Training* (IF = 2.341; Sport Sciences Rank = 21/81, Q2), 40, 203–206.

#### Invited Scientific Presentations

1. Vukala, M.N., Seeley, M.K., & Pamukoff, D.N. (2019). Multifactorial contributors to knee articular cartilage health in normal and injured knees. *An invited presentation given in a concurrent colloquia at the Southwest Regional Meeting of the American College of Sports Medicine*. Costa Mesa, CA, USA.
2. Seeley, M.K. (2018). Characteristics of Force Related to Athletic Injury. *An Invited Tutorial Lecture Presented to the Chinese Olympic Committee*. Chapel Hill, NC, USA.

3. Evans, A., Tuttle, N., Morrin, S., Tracy, J., Rosquist, P., Merrell, A.J., Collins, G., Christensen, W., Fullwood, D., Bowden, A.E., & Seeley, M.K. (2017). Correlating physical activity and energy expenditure measurements with forces measured with piezoelectric foam. *Presented at the Annual Meeting of the Society for the Advancement of Material and Process Engineering*. Orlando, FL, USA. Note: this paper was selected as a finalist in the 2017 University Research Symposium International Competition, and A. Evans placed 2<sup>nd</sup> in the Masters Student Category for Best Presentation.
4. Seeley, M.K. (2016). Altered running mechanics: potential causes, consequences and fixes. *An invited presentation given in a concurrent colloquia at the Southwest Regional Meeting of the American College of Sports Medicine*. Costa Mesa, CA, USA.
5. Seeley, M.K. (2015). Clinical implications of anterior knee pain: effects on cartilage health and movement mechanics. *An Invited Presentation for a 60-minute Special Topics Session at the National Athletic Trainers Association Convention*. St. Louis, MO, USA.
6. Seeley, M.K., Hopkins, J.T., & Park, J. (2014). Neuromechanical effects of anterior knee pain during movement. *An Invited Symposium Presented at the Annual Meeting of the American College of Sports Medicine*. Orlando, FL, USA.

#### Recent (2016-present) Scientific Presentations

(\* indicates undergraduate student coauthor; † indicates graduate student coauthor)

1. Seeley, M.K., Page, G.L., Coombs, H.L. \*, Davis-Wilson, H.C.†, Johnston, C.D.†, Blackburn, J.T., and Pietrosimone, B.G. (2020). Patient-reported outcomes for anterior cruciate ligament reconstruction patients clustered on functional and discrete walking biomechanics. *Presented at the Annual Meeting of the American Society of Biomechanics*. A virtual meeting.
2. Seeley, M.K., Barker, J.T. \*, Kwon, S.†, Kunz, D. \*, Coombs, H. \*, Odom, A.R.†, Huang, S.†, Christensen, W.F., & Hopkins, J.T. (2020). Effects of experimental anterior knee pain on running neuromechanics: a pilot study. *Presented at the Annual Meeting of the American Society of Biomechanics*. A virtual meeting.
3. Denning, W.M., Park, J., Garner, K. \*, Horton, Z.†, Hopkins, J.T., & Seeley, M.K. (2020). Task intensity alters how anterior knee pain influences frontal-plane hip biomechanics during landing and jumping. *Presented at the Annual Meeting of the American College of Sports Medicine*. A virtual meeting.
4. Kim, H., Seeley, M.K., & Hopkins, J.T (2019). Altered muscle activation patterns during walking following sudden inversion perturbation in patients with chronic ankle instability. *Presented at the National Athletic Trainers Association Annual Clinical Symposium*. Las Vegas, NV, USA.
5. Han, S.†, Son, S.J., Kim, H., Lee, H.†, Jeong, H.†, Breuning, D.A., Seeley, M.K., & Hopkins, J.T. (2019). Sudden ankle inversion perturbation during walking alters gait kinematics in chronic ankle instability patients. *Presented at the National Athletic Trainers Association Annual Clinical Symposium*. Las Vegas, NV, USA.
6. Lee, H.†, Son, S.J., Kim, H., Han, S.†, Jeong, H.†, Bruening, D.A., Seeley, M.K., & Hopkins, J.T. (2019). Chronic ankle instability impairs submaximal force steadiness. *Presented at the National Athletic Trainers Association Annual Clinical Symposium*, Las Vegas, NV, USA.



7. Seeley, M.K., Page, G.L., Coombs, H.L., Davis-Wilson, H.C., Johnston, C.D., Blackburn, J.T., & Pietrosimone, B. (2019). Cluster analysis of walking load and patient-reported outcomes after anterior cruciate ligament reconstruction. *Presented at the XXVII Congress of the International Society of Biomechanics*. Calgary, Canada.
8. Tuttle, N.<sup>†</sup>, Ridge, S., Bruening, D., Seeley, M.K., & Avalos, M. (2019). Influence of generalized joint laxity on landing ground reaction force in ballet and modern dancers. *Presented at the 25<sup>th</sup> Congress of the European Society of Biomechanics*. Vienna, Austria.
9. Davis-Wilson, H.C.<sup>†</sup>, Johnston, C.D.<sup>†</sup>, Seeley, M.K., Blackburn, J.T., & Pietrosimone, B.G. (2019). Effect of gender and body mass index on vertical ground reaction force throughout stance phase of walking in individuals with anterior cruciate ligament reconstruction. *Presented at the Annual ACL Research Retreat*. Greensboro, NC, USA.
10. Davis, H.C.<sup>†</sup>, Pfeiffer, S.J.<sup>†</sup>, Johnston, C.D.<sup>†</sup>, Seeley, M.K., Harkey, M.S., Blackburn, J.T., Fockler, R.P., Spang, J.T., & Pietrosimone, B.G. (2019). Walking biomechanics six and twelve months following anterior cruciate ligament reconstruction compared to healthy controls. *Presented at the Annual Meeting of the American College of Sports Medicine*. Orlando, FL, USA.
11. Pickett, A.E.<sup>†</sup>, Luc-Harkey, B.A., Davis, H.C.<sup>†</sup>, Blackburn, J.T., Seeley, M.K., Franz, J.R., & Pietrosimone, B.G. (2019). Manipulating initial peak vGRF during walking affects loading throughout stance in individuals with ACL reconstruction. *Presented at the Annual Meeting of the American College of Sports Medicine*. Orlando, FL, USA.
12. Seeley, M.K., Johnston, C.<sup>†</sup>, Pfeiffer, S.J.<sup>†</sup>, Spang, J.T., Blackburn, J.T., & Pietrosimone, B.G. (2018). Chronological comparison of walking ground reaction force in individuals with anterior cruciate ligament reconstruction. *Presented at the Annual Meeting of the American Society of Biomechanics*. Rochester, MN, USA.
13. Mason, M.A.<sup>\*</sup>, Evans, A.<sup>†</sup>, Kwon, S.<sup>†</sup>, Taylor, M.<sup>†</sup>, Bangerter, N., & Seeley, M.K. (2018). Acute effects of distance running on healthy femoral condyle cartilage thickness and volume: a pilot study. *Presented at the Annual Meeting of the American Society of Biomechanics*. Rochester, MN, USA.
14. Park, J., Seeley, M.K., Francom, D., & Hopkins, J.T. (2018). Alterations in Lower-extremity Frontal Plane Joint Moment due to Experimental Knee Pain and/or Effusion During Walking. *Presented at the Annual Meeting of the American Society of Biomechanics*. Rochester, MN, USA.
15. Son, S.J., Bruening, D.A., Feland, J.B., Seeley, M.K., & Hopkins, J.T. (2018). Biomechanical and Clinical Risk Factors for Recurrent Ankle Sprains in Chronic Ankle Instability: A 6-month Follow-up. *Presented at the Annual Meeting of the National Athletic Trainers Association*. New Orleans, LA, USA.
16. Evans, A.<sup>†</sup>, Tuttle, N.<sup>†</sup>, Morrin, S.<sup>\*</sup>, Tracy, J.<sup>†</sup>, Rosquist, P.<sup>†</sup>, Collins, G.<sup>†</sup>, Christensen, W., Fullwood, D., Bowden, A.E., & Seeley, M.K. (2017). Predicting energy expenditure during walking and running using novel piezoelectric foam sensors: a pilot study. *Presented at the Annual Meeting of the American Society of Biomechanics*. Boulder, CO, USA.
17. Kwon, S.<sup>†</sup>, Mason, M.<sup>\*</sup>, Evans, A.<sup>†</sup>, Taylor, M.<sup>†</sup>, Bangerter, N.K., Hopkins, J.T., & Seeley, M.K. (2017). Intrarater reliability of a novel semi-automated approach to determine knee articular cartilage morphology via MRI. *Presented at the Annual Meeting of the American Society of Biomechanics*. Boulder, CO, USA.

18. Evans, A.<sup>†</sup>, Hyldahl, R.D., Ridge, S., Kwon, S.<sup>†</sup>, Hopkins, J.T., Robinson, E., & Seeley, M.K. (2017). Serum COMP and the inflammatory environment of the knee before and after exercise-induced load. *Presented at the Biomedical Engineering Western Regional Conference*. Provo, UT, USA.
19. Son, S.J.<sup>†</sup>, Kim, H., Seeley, M.K., & Hopkins, J.T. (2017) Effects of neuromuscular exercises targeting evertors and hip abductors on muscle volume (a MRI analysis), strength, and postural control: a six-week randomized controlled trial. *Presented at the International Ankle Symposium*. Chapel Hill, NC, USA.
20. Kim, H., Son, S.J.<sup>†</sup>, Seeley, M.K., & Hopkins, J.T. (2017). The redistribution of lower extremity joint effort in patients with chronic ankle instability during a forward-side jump. *Presented at the International Ankle Symposium*. Chapel Hill, NC, USA.
21. Evans, A.<sup>†</sup>, Son, S.J.<sup>†</sup>, Kim, H., Seeley, M.K., & Hopkins, J.T. (2017). Gender differences during jump landing/cutting in lower extremity kinetic and energetic patterns in chronic ankle instability. *Presented at the International Ankle Symposium*. Chapel Hill, NC, USA.
22. Kim, H., Son, S.J.<sup>†</sup>, Seeley, M.K., & Hopkins, J.T. (2017). Effect of six weeks rehabilitation on ankle neuromechanical patterns in subjects with chronic ankle instability. *Presented at the Annual Meeting of the National Athletic Trainers Association*. Houston, TX, USA.
23. Evans, A.<sup>†</sup>, Hyldahl, R.D., Ridge, Sarah, T, Kwon, S.<sup>†</sup>, Hopkins, J.T., Robinson, E.R., & Seeley, M.K. (2017). Serum COMP concentration and knee intra-articular inflammation before and after a 30-minute run. *Presented at the Osteoarthritis Research Society International World Congress*. Las Vegas, NV, USA.
24. Son, S.J.<sup>†</sup>, Kim, H., Seeley, M.K., & Hopkins, J.T. (2017). Influence of experimental knee pain on bilateral loading patterns during walking in healthy individuals. *Presented at the Osteoarthritis Research Society International World Congress*. Las Vegas, NV, USA.
25. Son, S.J.<sup>†</sup>, Kim, H., Seeley, M.K., & Hopkins, J.T. (2017). Pre-landing lower extremity kinematics among chronic ankle instability patients, ankle sprain copers and healthy controls. *Presented at the Annual Meeting of the National Athletic Trainers Association*. Houston, TX, USA.
26. Kim, H., Son, S.J.<sup>†</sup>, Seeley, M.K., & Hopkins, J.T. (2017). Effect of six weeks rehabilitation on ankle neuromechanic patterns in subjects with chronic ankle instability. *Presented at the Annual Meeting of the National Athletic Trainers' Association*. Houston, TX, USA.
27. Read, J.<sup>\*</sup>, Son, S.J.<sup>†</sup>, Kim, H., Seeley, M.K., & Hopkins, J.T. (2017). Landing energetics and trunk position for patellofemoral pain patients can differ based on quadriceps central activation ratio. *Presented at the Annual Meeting of the National Athletic Trainers Association*. Houston, TX, USA.
28. Martineau, A.<sup>†</sup>, Tracy, J.<sup>†</sup>, Collins, G.<sup>†</sup>, Rosquist, P.<sup>†</sup>, Bruening, D., Seeley, M.K., Fullwood, D., & Bowden, A.E. (2017). Mobile, low profile, and inexpensive knee joint angle sensor. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
29. Son, S.J.<sup>†</sup>, Kim, H., Wiseman, B.<sup>\*</sup>, Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). Pre-landing lower extremity kinematics and muscle activation in chronic ankle instability patients following rehabilitation. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
30. Kim, H., Son, S.J.<sup>†</sup>, Read, J.<sup>\*</sup>, Seeley, M.K., & Hopkins, J.T. (2017). Altered ankle neuromechanics during walking in patients with chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.

31. Hopkins, J.T., Son, S.J.<sup>†</sup>, Kim, H., Bruening, D., & Seeley, M.K. (2017). Effect of rehabilitation intervention on ankle and hip neuromechanics in patients with chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
32. Evans, A.<sup>†</sup>, Son, S.J.<sup>†</sup>, Kim, H., Kwon, S.<sup>†</sup>, Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). A 6-week rehabilitation training improves single-leg static postural control in patients with chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
33. Kwon, S.<sup>†</sup>, Son, S.J.<sup>†</sup>, Kim, H., Evans, A.<sup>†</sup>, Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). Effects of strength and proprioceptive exercises on walking energetic patterns in chronic ankle instability patients. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
34. Gonzales, H.\* , Son, S.J.<sup>†</sup>, Kim, H., Eppich, K.\* , Bangerter, N.K., Seeley, MK, & Hopkins, J.T. (2017). A 6-week strength training program increases muscle size in patients with chronic ankle instability: MRI Analysis. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
35. Eppich, K.\* , Son, S.J.<sup>†</sup>, Kim, H., Gonzales, H.\* , Bangerter, N.K., Seeley, M.K., & Hopkins, J.T. (2017). Strength and proprioceptive training increases muscle size in patients with chronic ankle instability: MRI analysis. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
36. Mills, J.\* , Son, S.J.<sup>†</sup>, Kim, H., Winward, B.\* , Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). Effect of ankle and hip rehabilitation intervention on knee landing mechanics in chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
37. Winward, B.\* , Son, S.J.<sup>†</sup>, Kim, H., Mills, J.\* , Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). Changes in lower extremity energetics during cutting in chronic ankle instability patients following rehabilitation intervention. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
38. Hadley, C.\* , Son, S.J.<sup>†</sup>, Kim, H., Danielson, P.\* , Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). Six-week rehabilitation intervention increases ground reaction force during cutting in patients with chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
39. Danielson, P.\* , Son S.J.<sup>†</sup>, Kim, H., Hadley, C.\* , Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). Effect of rehabilitation intervention on hip mechanics during cutting in patients with chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
40. Perry, C.\* , Son, S.J.<sup>†</sup>, Kim, H., Wiseman, B.\* , Bruening, D., Seeley, M.K., & Hopkins, J.T. (2017). Proximal joint muscle activation during cutting in chronic ankle instability patients following a rehabilitation intervention. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
41. Read, J.\* , Kim, H., Son, S.J.<sup>†</sup>, Mitchell, J.\* , Seeley, M.K., & Hopkins, J.T. (2017). Individuals with chronic ankle instability exhibit altered ground reaction force patterns during walking. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.

42. Mitchell, J. \*, Kim, H., Son, S.J.†, Read, J. \*, Seeley, M.K., & Hopkins, J.T. (2017). Altered locomotive hip joint patterns in patients with chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
43. Roush, J. \*, Kim, H., Son, S.J.†, Fuhriman, T. \*, Seeley, M.K., & Hopkins, J.T. (2017). Functional patterns of knee neuromechanics during stance in subjects with chronic ankle instability. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.
44. Fuhriman, T. \*, Kim, H., Son, S.J.†, Roush, J. \*, Seeley, M.K., Hopkins, J.T. (2017). Altered lower extremity joint energetic patterns in patients with chronic ankle instability during walking. *Presented at the Annual Meeting of the American College of Sports Medicine*. Denver, CO, USA.

### Technical Reports

1. Bateman, T.D., Seeley, M.K., Roggia, A.M., & Draper, D.O. (2008). An evaluation of mechanical energy transfer during traditional and spring-loaded crutch ambulation. *Requested by Millennial Medical Incorporated, Logan, UT, USA*.
2. Hanaki-Martin, S., Spigelman, T., Seeley, M.K., Turnquist, T., Uhl, T., Johnson, D. & Shapiro, R. (2008). Predicting perceived benefit in patients using an off-loading knee orthotic. *Presented to DonJoy, Orthopaedics LLC, Vista, CA, USA*.
3. Shapiro, R., Uhl, T.L., Seeley, M.K., McGinn, P.A., McCrory, J., & Kibler, W.B. (2005). A comparison of traditional and abbreviated tennis serves. *Presented to The United States Tennis Association*.

### Funding

External Funding, for which I am the primary investigator, Co-PI, or Co-investigator

1. *Smart nanocomposite bio-sensing wearable for enhanced out-of-clinic rehabilitation*. Resubmitted in October 2018—Funded from July 1 2019 to July 1 2022. Funding Source: NSF (PD 17-53442—Disability and Rehabilitation Engineering). Amount Requested: \$386,961. Amount Funded: \$386,961, over 3 years. Role: Co-Primary Investigator.
2. *Smart nanocomposite bio-sensing wearable for enhanced out-of-clinic rehabilitation*. Submitted in October, 2017. Funding Source: NSF (PD 17-53442—Disability and Rehabilitation Engineering). Amount Requested: \$300,000, over 3 years. Not Funded. Role: Co-Primary Investigator.
3. *STTR Phase II: Piezoelectric Self-sensing Shoe Insole*. Submitted in February, 2017. Funding Source: NSF (Small Business Innovative Research and Technology Transfer Phase II—15-545). Amount Requested: \$749,999, over 2 years. Not Funded. Role: Co-Investigator.
4. *Smartfoam for complete self-sensing protection and concussion management at all levels of football play*. Submitted in December, 2016. Funding Source: Football Research Initiative (through Duke University), sponsored by the National Football League. Amount Requested: \$330,867. Not Funded. Role: Co-Investigator.

5. *STTR Phase I: Piezoelectric Self-sensing Shoe Insole*. Submitted in June, 2015. Funding Source: NSF (Small Business Innovative Research and Technology Transfer Phase I—15-545). Amount Requested: \$345,948. Amount Funded: \$206,105, over 1 year. Role: Co-Investigator.
6. *Mobile Gait Analysis Using Wearable Piezoresponsive Nano-Composite Sensors*. Submitted in February, 2015. Funding Source: NSF (PD 14-7569—Sensors, Dynamics, and Control). Amount Requested: \$376,053. Amount Funded: \$376,053, over 3 years. Role: Co-PI.
7. *Piezoresponsive Wearables for Monitoring and Biofeedback of Orthopaedic Pathologies*. Submitted in May, 2015. Funding Source: NIH (NOT-EB-15-003—Cyber-physical Systems Initiative). Amount Requested: \$583,380. Not Funded, Not Scored. Role: Co-PI.
8. *Effects of Experimental Anterior Knee Pain on Knee Articular Cartilage Morphology and Composition, Lower Extremity Neuromechanics, and Blood Biomarkers*. Submitted in February, 2014, and Resubmitted in February, 2015. Funding Source: NIH, NIAMS. (PA-13-313—Academic Research Enhancement Award). Amount Requested: \$375,000. Not Funded. Impact Score: 60. Role: Primary Investigator.
9. *Experimental Anterior Knee Pain and Lower Extremity Neuromechanics* (Submitted in February, 2013 and Resubmitted in February, 2014). Funding Source: National Athletic Trainers Association Research and Education Foundation. Amount Requested: \$56,717. Not Funded. Role: Primary Investigator.
10. *Effects of Experimentally Induced Knee Joint Pain on Lower Extremity Neuromechanics* (2011). Funding Source: NIH, NINR (PA10-008—Mechanisms, models, measurement, and management in pain research). Amount Requested: \$150,000. Not Funded. Impact Score: 28. Role: Primary Investigator.
11. *Perfect Empowered Drinking Water* (2010). Funding Source: Perfect Water and Essentials, LLC. Amount Requested: \$9,875; Amount Funded: \$9,875. Role: Primary Investigator.
12. *Creation of Multimedia Tools for Teaching Undergraduate Biomechanics* (2008). Funding Source: NSF (Program Solicitation: 08-546—Course Curriculum, and Laboratory Improvement). Amount Requested: \$150,000. Not Funded. Role: Co-Primary Investigator.
13. *Perceived Benefit for Patients Using A Knee Prosthetic* (2006). Funding Source: DonJoy Orthopedics. Amount Requested: \$22,000; Amount Funded: \$15,000. Role: Primary Investigator.
14. *A Biomechanical Evaluation of a Novel Mobile Walking Device* (2006). Funding Source: Millennial Medical Incorporated. Amount Requested: \$4,200. Amount Funded: \$4,200.

External Funding, for which I am a consultant

1. *Strategic Targets for Reducing Osteoarthritis Burden and Epidemiology (STROBE): Biomechanics Biomarkers, Early Structural Change and Post-traumatic Osteoarthritis Following Joint Injury*. Submitted in November, 2016. Funding Source: Department of Defense, Congressionally Directed Medical Research Program. Amount Requested: \$9,492,245. Not Funded.
2. *Longitudinal Study of Natural Disc Degeneration Using a Novel Camelid Animal Model*. Submitted in October, 2015. Funding Source: NIH, NIAMS. (PA13-302—R01). Amount Requested: \$1,815,000. Not Funded. Impact Score: 45. Percentile: 44.

## Internal Funding

1. *A Comparison of the Effects of Swimming and Running on Serum Cartilage Oligomeric Matrix Protein in an Elderly Population* (2019). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Alex Hay.
2. *Does Running Reduce Risk of Osteoarthritis in Post-ACLR Patients* (2019). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Andrew Croft.
3. *A Step Toward an Increased Understanding of Neuromechanical Factors of Knee Articular Cartilage Health in Obesity* (2019). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Sabrina Dupaix.
4. *Clarifying the Effects of Biological Markers on Knee Articular Cartilage in Obesity* (2019). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Ethan Izu.
5. CEMENT Research Award (2019). Brigham Young University College of Life Sciences. (Amount Requested: \$5,000; Funded: \$5,000). Role: Primary Investigator.
6. *The Effects of Experimental Knee Pain on Neuromechanical Variables While Running* (2018). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Justin Barker.
7. *Effects of Experimental Anterior Knee Pain During Running on Knee Articular Cartilage Morphology* (2018). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Marlee Mason.
8. *Modeling Mobile Gait Using Novel Piezoresponsive Sensors in Running Shoes* (2018). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Colton Curtis.
9. *The Effects of Running for Individuals Who Are Predisposed to Knee Cartilage Degradation* (2018). Life Sciences College Undergraduate Research Award (Amount Requested: \$3,000; Funded: \$3,000). Role: Faculty Mentor for Megan Cook.
10. CEMENT Research Award (2018). Brigham Young University College of Life Sciences. (Amount Requested: \$2,381; Funded: \$2,381). Role: Primary Investigator.
11. *Development of Nanocomposite Wearable Technologies For Increased Understanding of Knee Osteoarthritis* (2018). Brigham Young University Interdisciplinary Research Grant. (Amount Requested: \$112,750; Not Funded). Role: Primary Investigator.
12. *The Effect of Mechanical Load on Knee Joint Biochemistry for Individuals Who Are Predisposed to Knee Osteoarthritis* (2016). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Funded: \$1,800). Role: Faculty Mentor for Taylor Leavitt.
13. *The Acute Effects of Weight Gain on Knee Articular Cartilage Composition and Walking Mechanics* (2016). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Steven Morrin.
14. *The Effect of Running with Experimental Knee Pain on Knee Joint Articular Cartilage Morphology and Composition* (2015). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Steve Morrin.

15. *Do Certain Biomarkers Accurately Reflect Articular Cartilage Change Due to Physical Activity?* (2015). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Funded: \$1,800). Role: Faculty Mentor for Alyssa Evans.
16. *Research Initiation Grant* (2015). Brigham Young University Magnetic Resonance Imaging Research Facility. Amount Requested: \$5,000. Amount Funded: \$5,000. Role: Primary Investigator.
17. *Experimental Anterior Knee Pain and Knee Articular Cartilage Morphology and Composition, and Neuromechanical and Blood Biomarkers* (2014). Brigham Young University Mentoring Environment Grant. Amount Requested: \$19,500; Amount Funded: \$19,500. Role: Co-Primary Investigator.
18. *Effects of Experimental Anterior Knee Pain on Knee Articular Cartilage Morphology and Composition, Lower Extremity Neuromechanics, and Blood Biomarkers: A Pilot Study*. (2014). Brigham Young University Magnetic Resonance Imaging Research Facility. Amount Requested: \$4,800. Amount Funded: \$4,800. Role: Primary Investigator.
19. *The Effect of Running on Synovial and Serum Cartilage Oligomeric Matrix Protein* (2014). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Amount Funded: \$1,800). Role: Faculty Mentor for Alyssa Evans.
20. *Preventing Unforced Errors and Increasing Ball Topspin Rate in Tennis* (2014). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Justin Cox.
21. *Anterior Knee Pain Effects on Uninvolved Leg Biomechanics* (2014). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Christian Shafer.
22. *The Effects of Anterior Knee Pain on the Kinetics of the Lower Extremities During High Intensity Activities* (2011). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Amount Funded: \$1,800). Role: Faculty Mentor for Jordan Pitt.
23. *Examining Quantitative Differences in Gait Between the PVC Prosthesis Design and the Traditional Prosthesis* (2011). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Amount Funded: \$1,800). Role: Faculty Mentor for David Chinn.
24. *Effects of Knee Pain on Kinematics During Strenuous Physical Movement* (2011). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Sydney Chartrand.
25. *The Effect of Knee Pain on Neurological Activity in the Lower Extremities During High Intensity Tasks* (2011). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Cory Cosgrave.
26. *Metabolic Cost of Spring-loaded Crutch Ambulation* (2008). Funding Source: Brigham Young University Mary Lou Fulton Chair for the College of Health and Human Performance. Amount Requested: \$1,820; Amount Funded: \$1,820. Role: Primary Investigator.

27. *Examining Quantitative Differences in Gait Between the PVC Prosthesis Design and the Standard Prosthesis* (2010). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for David Chinn.
28. *Evaluating Electromyographic Responses to Walking in Reebok Easy-Tone Shoe* (2010). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Molly Hagen.
29. *The Effects of Experimentally Induced Anterior Knee Pain on Postural Control* (2010). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Benjamin Willford.
30. *Neuromechanical Factors That Contribute to Chronic Ankle Instability* (2010). Funding Source: Brigham Young University Mentoring Environment Grant. Amount Requested: \$20,000; Amount Funded: \$20,000. Role: Co-Investigator.
31. *Ground Reaction Forces During Spring-loaded Crutch Ambulation* (2009). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Amount Funded: \$1,800). Role: Faculty Mentor for Ryan Sandberg.
32. *A Preliminary Analysis of A Novel Patellar Tendon Strap* (2009). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Not Funded). Role: Faculty Mentor for Macsen Viewhig.
33. *Graduate Mentoring Award* (2009). Funding Source: Brigham Young University Graduate School. Amount Requested: \$4,000; Amount Funded: \$4,000. Role: Faculty Mentor.
34. *Can Antalgic Gait Promote Osteoarthritis?* (2009). Funding Source: Brigham Young University Gerontology Program. Amount Requested: \$4,051.69. Amount Funded: \$4,051.69. Role: Primary Investigator.
35. *Investigating the Neuromuscular and Mechanical Effects of Experimentally Induced Knee Pain During Walking* (2008). Funding Source: College of Health and Human Performance Faculty Fellowship. Amount Requested: \$4,343. Amount Funded: \$4,343. Role: Co-Primary Investigator.
36. *Additional Matlab Training* (2008). Funding Source: College of Health and Human Performance Faculty Fellowship. Amount Requested: \$550; Amount Funded: \$550.
37. *Course Development Project* (2007). Funding Source: Brigham Young University Faculty Center. Amount Requested: \$300; Amount Funded: \$300.
38. *The Mechanics of Using a Novel Mobile Walking Device* (2007). Brigham Young University Office of Research and Creative Activities Grant (Amount Requested: \$1,800; Amount Funded: \$1,800). Role: Faculty Mentor for Thomas Bateman.
39. *The Influence of Anthropometrics on a Novel Mobile Walking Device* (2007). Funding Source: Brigham Young University Mary Lou Fulton Chair for the College of Health and Human Performance. Amount Requested: \$4,300; Amount Funded: \$3,400. Role: Primary Investigator.
40. *Neck extensor muscle endurance in a sitting position compared to a prone position in healthy individuals* (2007). Funding Source: Brigham Young University Mary Lou Fulton Chair for the College of Health and Human Performance. Amount Requested: \$1,900; Amount Funded: \$1,300. Role: Co-investigator.
41. *Neck extensor muscle fatigue and elbow flexor muscle activation* (2007). Funding Source: Brigham Young University Mary Lou Fulton Chair for the College of Health and Human Performance. Amount Requested: \$2,350; Amount Funded: \$1,950. Role: Co-investigator.



42. *Graduate Mentoring Award* (2007). Funding Source: Brigham Young University Graduate School. Amount Requested: \$4,000; Amount Funded: \$4,000. Role: Faculty Mentor.
43. *Walking Speed and the Functional Asymmetry Hypothesis* (2006). Funding Source: College of Health and Human Performance Faculty Fellowship. Amount Requested: \$3,775; Amount Funded: \$3,775. Role: Primary Investigator.
44. *Evaluation of an Isometric Endurance Exercise as a Rehabilitation Tool* (2006). Funding Source: Brigham Young University Faculty Fellowship. Amount Requested: \$2,910; Amount Funded: \$2,910. Role: Co-Investigator.
45. *Lower-extremity Neuromechanics Related to Physical Activity* (2006). Funding Source: Brigham Young University Mentoring Environment Grant. Amount Requested: \$20,000; Not Funded. Role: Co-Investigator.
46. *Creating An Exercise Sciences Research Mentoring Group* (2006). Funding Source: Brigham Young University Mentoring Environment Grant. Amount Requested: \$19,760; Not Funded. Role: Co-Investigator.

### **Professional Affiliations**

- American Society of Biomechanics (ASB), 2003-present
- American College of Sports Medicine (ACSM), 2000-present
- National Athletic Trainers Association (NATA), 2000-present

### **Awards & Honors**

- Kenneth L. Knight Award for the Outstanding Research Manuscript, *Journal of Athletic Training*, 2019 (Characterization of multiple movement strategies in participants with chronic ankle instability)
- Outstanding Research Award, College of Life Sciences, Brigham Young University, 2019
- Visiting Scholar Award, American College of Sports Medicine (ACSM), 2017
- Faculty Mentor for Alyssa Evans, who is a finalist in the 2017 University Research Symposium International Competition, for the Society for the Advancement of Material and Process Engineering
- Faculty Mentor for Sunku Kwon, who received a BYU Graduate Research Fellowship (\$15,000) for the 2017-18 school year
- Faculty Mentor for Tom Bateman, who received the Best Research Presentation Award for an Undergraduate Student, National Athletic Trainers Association Foundation Student Research Awards Competition, 2008
- Outstanding Recent Graduate Award, College of Education, Utah State University, 2008
- Outstanding Recent Graduate Award, Department of Health, Physical Education, and Recreation, Utah State University, 2008
- Hackensmith Award, Presented to the Outstanding Graduate Student, Department of Kinesiology and Health Promotion, University of Kentucky, 2005
- Participant in the Excellence in Science Program, American Association for the Advancement of Science, 2004
- Robins Award Finalist, Utah State University, 2002

## Professional Activity

- Admissions Committee Member, University of Utah Medical School, 2017-
- Session Moderator, Regional and National American Society of Biomechanics Meetings, 2011, 2012, 2017
- Gerontology Program Faculty Affiliate, Brigham Young University, 2016-present
- Editorial Board Member for the Journal of Sport Rehabilitation, 2015-present
- Neuromuscular Control Poster Committee Member, American College of Sports Medicine Meeting, 2016
- Organizing Committee Member, Annual Meeting of the Rocky Mountain Region of the American Society of Biomechanics, 2015
- Ad Hoc Reviewer for the Following Academic Journals (on average, I review approximately 2 manuscripts each month):
  - Assistive Technology
  - BioMed Central: Musculoskeletal Disorders
  - European Journal of Sport Science
  - Gait and Posture
  - Human Movement Science
  - Journal of Applied Biomechanics
  - Journal of Athletic Training
  - Journal of Biomechanics
  - Journal of Orthopaedic Research
  - Journal of Quantitative Analysis of Sports
  - Journal of Sport Rehabilitation
  - Medicine and Science in Sports and Exercise
  - Medical Principles and Practice
  - PLoS ONE
  - Scandinavian Journal of Medicine and Science in Sports
  - Sports Biomechanics
  - Sports Medicine
  - Sports Medicine, Arthroscopy, Rehabilitation, Therapy, and Technology
  - The Knee
- Abstract Reviewer, Annual Meeting for the American Society of Biomechanics, 2013, 2016, 2017, 2018, 2019, 2020
- Communications Committee Member, American Society of Biomechanics, 2009-2012
- External Dissertation Review, University of Western Australia, 2010
- Invited Lecturer, Graduate Course in Biomechanics (ME 555), Department of Mechanical Engineering, Brigham Young University, 2009, 2011
- Moderator, Utah Conference on Undergraduate Research, 2008
- Invited Lecturer, Undergraduate Course in Biomechanics, Utah State University, 2006-2008
- Invited Presenter, University of Kentucky Girls in Science Program, 2005
- Invited Lecturer, Seminar Series for Biomedical Engineering, University of Kentucky, 2005
- Invited Lecturer, Advanced Seminar in Athletic Training, University of Kentucky, 2004
- Biodynamics Laboratory Web Site Manager, University of Kentucky, 2003–2005

## Service

### University/College/Departmental Committees (Brigham Young University)

- University Rank and Status Council, 2018-
- Associate Department Chair, Department of Exercise Sciences, 2016-2017
- Department Advisory Committee Member, Department of Exercise Sciences, 2016-present
- Department Curriculum Committee Chair, Department of Exercise Sciences, 2016-2017
- Human Performance Research Center Director, 2012-2017
- Biomechanics Lab Director, Human Research Performance Center, 2010-present
- Departmental Review Committee Member, Department of Exercise Sciences, 2015
- Reviewer for Office of Research and Creative Activities Grants (BYU), 2014-present
- Ad-hoc Search Committee Member, Exercise Sciences Faculty Position, 2014-2015
- Ad-hoc Search Committee Chair, Exercise Sciences Faculty Position, 2013-2014
- Ad-hoc Search Committee Member, Exercise Sciences Faculty Position, 2012-2013
- Ad-hoc Search Committee Member, Exercise Sciences Faculty Position, 2008-2009
- Ad-hoc Search Committee, Exercise Sciences Faculty Position, 2007-2008
- New Faculty Mentor, 2011-present
- Departmental Strategic Planning Committee, 2011-2012
- College Safety Committee, College of Life Sciences, 2010-2013
- College Curriculum Committee Member, College of Life Sciences, 2016-present
- Departmental Representative, College of Health and Human Performance Magazine Committee, 2007–2009

## Recent Graduate Student Mentoring

### Committee Chair

Hyunwook Lee	PhD (Exercise Sciences)	Graduation Date—2024
Alyssa Evans	MS (Exercise Sciences)	Graduated—Aug 2018
Sunku Kwon	MS (Exercise Sciences)	Graduated—Aug 2018
Matthew Denning	PhD (Exercise Sciences)	Graduated—Aug 2014
Emily Cronk	MS (Exercise Sciences)	Graduated—Dec 2016
Scott Woodland	MS (Exercise Sciences)	Graduated—Aug 2013
Maggie Chan-Roper	MS (Exercise Sciences)	Graduated—Aug 2011
Merrill Funk	MS (Exercise Sciences)	Graduated—Dec 2010

### Committee Member

David Wood	PhD (Mechanical Engineering)	Graduation—Aug 2020
Jun Son	PhD (Physical Medicine & Rehab)	Graduated—Aug 2018
Jake Merrell	PhD (Mechanical Engineering)	Graduated—Aug 2018
Hyunsoo Kim	PhD (Physical Medicine and Rehab)	Graduated—Aug 2015
Sean Tolman	PhD (Mechanical Engineering)	Graduated—August 2014
Mark Coglianesse	PhD (Physical Medicine and Rehab)	Graduated—Aug 2012
Jihong Park	PhD (Physical Medicine and Rehab)	Graduated—Dec 2011
Jeremy Hawkins	PhD (Physical Medicine and Rehab)	Graduated—April 2009
Romina Villamonte	PhD (Physical Medicine and Rehab)	Graduated—April 2009

Spencer Petersen	MS (Exercise Sciences)	Graduation—April 2020
Adin Martineau	MS (Mechanical Engineering)	Graduated—Dec 2017
James Tracy	MS (Exercise Sciences)	Graduated—Aug 2017
Evan Bird	MS (Mechanical Engineering)	Graduated—April 2017
Parker Rosquist	MS (Mechanical Engineering)	Graduated—April 2017
Noelle Tuttle	MS (Exercise Sciences)	Graduated—April 2016
Michael Sanders	MS (Mechanical Engineering)	Graduated—Dec 2015
Jun Son	MS (Exercise Sciences)	Graduated—April 2014
Caisa Brooks	MS (Exercise Sciences)	Graduated—Dec 2013
Jill Williams	MS (Exercise Sciences)	Graduated—Dec 2013
Sarah Ingebretsen	MS (Exercise Sciences)	Graduated—Aug 2013

### **Professional References**

- Eadric Bressel, EdD, Professor; Department of Health, Physical Education and Recreation; Utah State University, Logan UT; Phone: 435.797.7216; E-mail: eadric.bressel@usu.edu
- Brian Umberger, PhD, Professor; School of Kinesiology, University of Michigan, Ann Arbor, MI; Phone: 734.763.8296; Email: umberger@umich.edu
- Timothy L. Uhl, PhD, ATC, PT, Professor and Director of Research; Division of Graduate Athletic Training, Department of Rehabilitative Sciences, College of Health Sciences, University of Kentucky, Lexington, KY; Phone: 859.323.1100 ext. 80858; E-mail: tluhl2@uky.edu