

K. MICHAEL ROWLEY, PHD

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**I study neuromuscular control of movement
in diverse athletic and clinical populations as well as preclinical animal models.**

CURRENT POSITION

Postdoctoral Research Associate

Department of Ecology and Evolutionary Biology PI: Sharon Swartz, PhD
Brown University, Providence, RI

EDUCATION

2018 PhD, *Biokinesiology* PI: Kornelia Kulig, PT, PhD
University of Southern California, Los Angeles, CA

2013 BS, *Exercise Science, conc. in Biomechanics and Motor Control*
BA, *Biological Sciences, minor in Dance*
University of Delaware, Newark, DE

PUBLICATIONS

h-index: 5, [Google Scholar](#), [PubMed Bibliography](#)

In Review

Shih HJS, **Rowley KM**, and Kulig K. Lower limb takeoff mechanics during a leap in dancers with and without flexor hallucis longus tendinopathy. *Medical Problems of Performing Artists*. In review.

Rowley KM, Shih HJSS, Traina K, Winder B, Mikkelsen P, and Kulig K. Effects of a “toes-off” modified heel raise on lower leg muscle coordination in non-dancers, dancers, and dancers with flexor hallucis longus tendinopathy. *Clinical Biomechanics*. In review.

Peer-Reviewed Publications

Kurihara T, **Rowley KM**, Reischl SF, Baker LL, and Kulig K. Effect of a task’s postural demands on medial longitudinal arch deformation and activation of foot intrinsic and extrinsic musculature. *Acta Bioengineering and Biomechanics*. In press.

Rowley KM, Winstein CJ, and Kulig K. (2020) Persons in remission from recurrent low back pain alter trunk coupling under dual-task interference during a dynamic balance task. *Experimental Brain Research*. 238: 957–968. [PubMed ID: 32185406](#)

Rowley KM, Engel T, and Kulig K. (2020) Trunk and hip muscle activity during the Balance-Dexterity Task in persons with and without recurrent low back pain. *Journal of Electromyography and Kinesiology*. 50: 102378. [PubMed ID: 31783332](#)

Rowley KM, Smith JA, and Kulig K. (2019) Reduced trunk coupling in persons with recurrent low back pain is associated with trunk muscle activation ratios during the Balance-Dexterity Task. *Journal of Orthopaedic and Sport Physical Therapy*. 49(12): 887-898. [PubMed ID: 31092122](#)

Rowley KM and Kulig K. (2019) Highlighting distinctions between discrete perturbations and continuous perturbations in the study of dynamic trunk control [Letter to the editor-in-chief]. *Journal of Orthopaedic and Sport Physical Therapy*. 49(9): 679-680. [PubMed ID: 31475632](#)

Rowley KM, Gordon J, and Kulig K. (2018) Characterizing the Balance-Dexterity Task as a concurrent bipedal task to investigate trunk control during dynamic balance. *Journal of Biomechanics*. 77: 211-217. [PubMed ID: 30037579](#)

Rowley KM, Jarvis DN, Kurihara T, Chang Y, Fietzer AL, and Kulig K. (2015) Toe flexor strength, flexibility and function and flexor hallucis longus tendon morphology in dancers and non-dancers. *Medical Problems of Performing Artists*. 30(3): 152-56. [PubMed ID: 26395616](#)

Rowley KM and Richards JG. (2015) Increasing plantarflexion angle during landing reduces vertical ground reaction forces, loading rates, and the hip's contribution to support moment within-subjects. *Journal of Sports Sciences*. 33(18): 1922-31. [PubMed ID: 25775364](#)

Russo SA, Kozin SH, Zlotolow DA, Thomas KF, Hulbert RL, Mattson JM, **Rowley KM**, and Richards JG. (2014) Scapulothoracic and glenohumeral contributions to motion in children with brachial plexus birth palsy. *Journal of Pediatric Orthopaedics*. 23(3): 327-38. [PubMed ID: 24075782](#)

Nicholson KF, Russo SA, Kozin SH, Zlotolow DA, Hulbert RL, **Rowley KM**, and Richards JG. (2014) Evaluating the acromium marker cluster as a method for measuring scapular orientation in children with brachial plexus birth palsy. *Journal of Applied Biomechanics*. 30(1): 128-33. [PubMed ID: 24676519](#)

Mattson JM, Russo SA, Rose WC, **Rowley KM**, and Richards JG. (2012) Identification of scapular kinematics using surface mapping: A validation study. *Journal of Biomechanics*. 45(12): 2176-9. [PubMed ID: 22727523](#)

Other Publications

Rowley KM. (2014) *Discovering the Path: A Dance Science Research Career In L.Y.* Overby and B. Lepczyk (Eds.), *Dance: Current Selected Research Vol 8* (pp. 261-270). New York, NY: AMS Press.

GRANT PROPOSALS

2017 [International Society of Biomechanics](#)
Matching Dissertation Grant, \$5,000
KM Rowley (PI), K Kulig
Interfering with conscious motor processing during dynamic balance: Investigating persons with and without recurrent low back pain

- 2016 APTA / Academy of Orthopaedic PT / Performing Arts SIG
Research Grant, \$15,000
KM Rowley and K Kulig (Co-PIs), H Shih (Co-Investigator)
*Investigating a novel intervention for flexor hallucis longus
tendinopathy in dancers*
- 2016 American Society of Biomechanics
Grant-In-Aid, \$2,000
KM Rowley (PI), K Kulig
*Perturbation of systems contributing to the neuromotor control of
posture in persons with low back pain*

TEACHING EXPERIENCE

- 2019-Present *Human Anatomy, for Medical (MD) Students*
(Residential) **Postdoctoral Research Associate**, Students: 150
Brown University, Providence, RI
Role: *Member of teaching team as Lecturer and Lab Instructor*

Teaching Experiences as a Clinical Assistant Professor of Physical Therapy at USC

- 2017-Present *Analytical Anatomy, for Physical Therapy (DPT) Students*
(Hybrid Online/
Residential) **Clinical Assistant Professor of Physical Therapy**, Students: 142
University of Southern California, Los Angeles, CA
Role: *Hybrid Lead and Residential Course Coordinator (2019),
Hybrid Live Session Instructor (2020-Present),
Residential Teaching Assistant (2017-2018)*
- 2016-Present *Musculoskeletal Anatomy, for Physical Therapy (DPT) Students*
(Hybrid Online/
Residential) **Clinical Assistant Professor of Physical Therapy**, Students: 46
University of Southern California, Los Angeles, CA
Role: *Hybrid Live Session Instructor (2018-2019),
Residential Teaching Assistant (2016-2017)*
- 2019 *Human Functional Anatomy for Allied Health Professions*
(Residential) **Clinical Assistant Professor of Physical Therapy**, Students: 15
University of Southern California, Los Angeles, CA
Role: *Lab Instructor (2019)*
- 2019 *Musculoskeletal Anatomy and Pathology, for Pain Medicine cert.*
(Online) **Clinical Assistant Professor of Physical Therapy**, Students: 3
University of Southern California, Los Angeles, CA
Role: *Course Director (2019)*

Teaching Assistant experiences at USC

- 2016 *Therapeutic Exercise, for Physical Therapy (DPT) Students*
Teaching Assistant, Students: 96, Units: 2

- 2015 *Clinical Exercise Physiology, for Physical Therapy (DPT) Students*
Teaching Assistant, Students: 96, Units: 4
- 2016 *Update on the Lumbar Spine, Continuing Education Course*
- 2014 *Fine-Wire Electromyography, Continuing Education Course*

Teaching Assistant and Tutoring experiences at the University of Delaware

- 2012-2013 *Experimental Physiology*
Teaching Assistant, Students: 30-36, Units: 3
- 2012 *The Body and Motion in Dance*
Teaching Assistant, Students: 10, Units: 3
- 2011-2013 *Introductory Biology*
Tutor, Students: 2-30 varied weekly, Units: 4

**HONORS
and
AWARDS**

Outstanding Teaching Award – awarded by USC faculty (2019)
Outstanding Mentorship Award – awarded by USC students (2018)
Jacquelin Perry Research Day Outstanding Poster Award (2018)
Jacquelin Perry Award – Division Scholarship (2017)
IADMS Student Poster Award (2016)
Student Travel Grants (IADMS, ISB, DeLuca Foundation)
Provost Fellow, University of Southern California (2013-15)
American Association of University Professors Scholarship
Eugene du Pont Scholar, University of Delaware

SKILLS

Biosafety Levels 1 & 2, USDA-Regulated Animal Care, Fish Care,
Cadaveric Dissection, Visual 3D, Qualisys Track Manager, Cortex,
Tableau, LabView Development Software, MATLAB, SAS,
Autodesk Maya, XMALab, PASW, Slack, Microsoft Office

INVITED SEMINAR SPEAKER

Rowley KM. (April 2019) Where biology and identity meet: LGBTQ+ inclusion in research. *Institutional Review Board (IRB) of Regis University*. Denver, CO, USA.

Rowley KM. (September 2018) Where biology and identity meet: Implications for an LGBTQ+ population. *Physical Therapy Multicultural Leadership Alliance in the Division of Biokinesiology and Physical Therapy, University of Southern California*. Los Angeles, CA, USA.

Rowley KM. (Fall 2018) Guest Discussant on Diversity Panel. *Management of Diverse and Global Human Resources*, USC Bovard College, Los Angeles, CA.

Rowley KM. (September 2017) Trunk control during dynamic balance: Investigating persons with and without recurrent low back pain. *Regis University*. Denver, CO, USA.

Rowley KM. (July 2015) Investigating Adaptations during Symptom Remission in Persons with Recurrent Low Back Pain: Morphology, Fatigability, and Postural Control.

Czech Association of Physiotherapy Students, founded by students of Charles University. Prague, Czech Republic.

CONFERENCE SYMPOSIUM ORGANIZER

Kenny SJ, **Rowley KM**, Kulig K. (August 2019) Enhancing dance performance with biomechanics: A model for movement training and STEAM education. *International/American Societies of Biomechanics Annual Conference*. Calgary, AB, Canada.

RESEARCH PRESENTATIONS (ABSTRACTS) *Presenting Author

Shih HJS*, **Rowley KM**, Kulig K. (October 2020) Lower limb contact posture during saut de chat takeoff differs in dancers with and without flexor hallucis longus tendinopathy. *International Association for Dance Medicine and Science*. iConference Online. Virtual Podium Presentation.

Shih HJS*, **Rowley KM**, Kulig K. (February 2020) Dancers with flexor hallucis longus tendinopathy maintain performance despite altered lower extremity dynamics. *American Physical Therapy Association Combined Sections Meeting*. Denver, CO, USA. Podium Presentation.

Welsh T* and **Rowley KM*** (October 2019) Comparing information yield in two families of experimental designs. *International Association for Dance Medicine and Science*. Montreal, Quebec, Canada. Podium Presentation.

Andersen A*, **Rowley KM**, Shih HJS, Kulig K. (February 2019) Flexor Hallucis Longus Tendon Morphology in Dancers with and without Tendinopathy. *American Physical Therapy Association Combined Sections Meeting*. Washington, D.C., USA. Podium Presentation.

Yu B*, **Rowley KM**, Andersen A, Shih HJS, Kulig, K. (February 2019) Comparing Imaging Methods in Flexor Hallucis Longus Tendinopathy. *American Physical Therapy Association Combined Sections Meeting*. Washington, D.C., USA. Poster.

Shih HJS*, Trejo L, **Rowley KM**, and Kulig K. (October 2018) Mechanism of metatarsophalangeal joint overload in dancers with flexor hallucis longus tendinopathy. *International Association for Dance Medicine and Science*, Helsinki, Finland. Podium Presentation.

Trejo L,* Shih HJS, **Rowley KM**, Kulig K. (July 2018) Dancers with unilateral FHL tendinopathy show signs of overuse during the propulsive phase of sautés. *8th World Congress of Biomechanics*, Dublin, Ireland. Podium Presentation.

Rowley KM,* Shih HJS, Sutton-Traina K, and Kulig K (October 2017) Lower-limb muscle contributions to relevé in dancers with and without flexor hallucis longus

tendinopathy and the effects of unloading the toes. *International Association for Dance Medicine and Science*, Houston, TX, USA. Podium Presentation.

Rowley KM* and Kulig K. (August 2017) Perturbation of systems contributing to control of posture in persons with LBP. *American Society of Biomechanics*, Boulder, CO, USA. Poster.

Shih HJS,* Trejo L, **Rowley KM**, Jarvis DN, Kulig K. (July 2017) Investigating potential mechanisms of overuse during dance leaps in a dancer with flexor hallucis longus tendinopathy. *International Society of Biomechanics*. Brisbane, Australia. Poster.

Rowley KM*, Gordon J, and Kulig K. (June 2017) Associations between task performance and trunk coupling during a balance-dexterity task. *International Society of Posture and Gait Research*, Fort Lauderdale, FL, USA. Poster.

Shih HJ*, **Rowley KM**, and Kulig K. (February 2017) Flexor Hallucis Longus Activation in a Dancer's Modified Heel Raise – Preliminary Results. *American Physical Therapy Association Combined Sections Meeting*, San Antonio, TX, USA. Poster.

Backiev L,* **Rowley KM**, Shih HJ, and Kulig K. (February 2017) An initial investigation into a clinically feasible measure of medial longitudinal arch flexibility. *American Physical Therapy Association Combined Sections Meeting*, San Antonio, TX, USA. Poster.

Rowley KM*, Shih H, Jarvis DN, and Kulig K. (October 2016) Activation of the flexor hallucis longus in a dancer's relevé. *International Association for Dance Medicine and Science*, Hong Kong. Poster.

Heredia-Jimenez J,* Orantes-Gonzalez E, **Rowley KM**, and Kulig K. (September 2016) Pulling, pushing and lateral use of a trolley vs. carrying a backpack: A pilot study. *European Society for Movement Analysis in Adults and Children*, Seville, Spain. Podium Presentation.

Shih HJ*, **Rowley KM**, and Kulig K. (June 2016) Flexor hallucis longus activation and plantarflexors' muscle coordination in modified dancer's relevé – a pilot study. *Healthy Approaches in the Training of Performing Artists*, Chapman University, Los Angeles, CA, USA. Podium Presentation.

Rowley KM* and Kulig K. (August 2016) The effect of dual-task interference on dynamic trunk control. *American Society of Biomechanics*, Raleigh, NC, USA. Poster.

Rowley KM*, Jarvis DN, Kurihara T, Chang YJ, Fietzer AL, and Kulig K. (October 2015) Toe flexor strength, flexibility and function and flexor hallucis longus tendon morphology in dancers and non-dancers. *International Association for Dance Medicine and Science*, Pittsburgh, PA, USA. Podium Presentation.

Rowley KM,* Beck S, Etlin-Stein H, Harman G, Hopper L, Kuno-Mitzumura M, and Stevens A. (October 2015) IADMS engaging the international dance community through social media. *International Association for Dance Medicine and Science*, Pittsburgh, PA, USA. Podium Presentation.

Rowley KM,* Jarvis DN, Kurihara T, Chang YJ, Fietzer AL, and Kulig K. (June 2015) Toe flexor strength, flexibility and function and flexor hallucis longus tendon morphology in dancers and non-dancers. *Healthy Approaches in the Training of Performing Artists*, Chapman University, Orange, CA, USA. Podium Presentation.

Kurihara T,* **Rowley KM**, Reischl SF, Baker LL, and Kulig K. (August 2015) Intrinsic and extrinsic foot muscles have unique roles in functional standing postures. *American Society of Biomechanics*, Columbus, OH, USA. Poster.

Rowley KM,* Kurihara T, Reischl SF, Baker LL, and Kulig K. (July 2015) Flexible foot longitudinal arches are lowered more in passive loading and lifted more during single-leg stance compared to rigid arches although muscle activations are similar. *International Society of Biomechanics*, Glasgow, Scotland. Podium Presentation.

Bacon HR,* Hooyman A, **Rowley KM**, Valero-Cuevas FJ. (April 2015) Modeling endpoint forces of the upper arm post-stroke. *Neural Control of Movement*, Charleston, SC, USA. Poster.

Rowley KM* and Richards JG. (May 2013) The effect of plantarflexion angle on landing mechanics using a within-subjects real-time feedback protocol. *Gait and Clinical Movement Analysis Society Annual Conference*, Cincinnati, OH, USA. Podium Presentation.

Rowley KM* and Overby L. (October 2012) Changes in alignment during gait after a semester of Franklin Method instruction. *International Association for Dance Medicine and Science Annual Conference*, Singapore. Podium Presentation.

Rowley KM* and Richards JG. (October 2012) The effect of plantarflexion angle on landing mechanics. *International Association for Dance Medicine and Science Annual Conference*, Singapore. Podium Presentation.

PROFESSIONAL SERVICE

Journal Manuscript Review Service

Journal of Applied Biomechanics

Applied Ergonomics Journal

Journal of Biomechanics

Brazilian Journal of Physical Therapy

Clinical Biomechanics

Journal of Clinical and Experimental

Orthopaedics

Clinical Interventions in Aging

Journal of Dance Medicine and Science

Journal of Electromyography and

Kinesiology

Gait & Posture

Medical Problems of Performing Artists

Medical Science Monitor

Musculoskeletal Science & Practice

Journal of Sports Science and Medicine

*Transactions on Neural Systems &
Rehabilitation Engineering*

WORK Journal

Organizational Leadership

- 2020-Present *Diversity, Anti-Racism, Inclusion, and Community Engagement Council*, Division of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, CA.
Council Member
- 2020-Present *Exploring Anti-Racism Faculty Discussion Group*, Division of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, CA.
Group Co-Leader
- 2020-Present *LGBTQQIA+ Student Affinity Group*, Division of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, CA.
Faculty Advisor
- 2013-Present *International Association for Dance Medicine and Science*, Promotion Committee Chair
IADMS Blog Coordinator (iadms.org/blog)
- 2016-2018 *Institutional Review Board of USC's Health Sciences Campus*
IRB Member
- 2014-2015 *USC Biokinesiology Student Council*,
President (2015), Biomechanics Lab Representative (2014)

Organizational Membership

- 2013-Present *American Society of Biomechanics*
2013-Present *International Society of Biomechanics*
2011-Present *International Association for Dance Medicine and Science*

Community Volunteer Service

- 2018 *International Rescue Committee*, Glendale, CA
Early Employment Volunteer – assisted refugees and asylees with job searches and applications
- 2013-Present *The ManKind Project*
Volunteer – staff weekend retreats, participate in and lead personal development and leadership trainings
- 2019-2020 *Sunrise Movement*, Los Angeles Hub

Volunteer – led internal communications team including developing Los Angeles-wide newsletter and managing Slack workspace

- 2018-2019 *Kinesiology: Moving Minds and Bodies through Sports, Medicine, and Health* (CORE-195)
USC Summer Program for high school students, Los Angeles, CA.
Course Director: Christina Dieli-Conwright
- 2015-2016 *Boys Republic, LA Residence, Los Angeles, CA*
Tutor – tutored high school age residents in a rehabilitation center
- 2014 *USC Young Researcher's Program, Los Angeles, CA*
Mentored a high school student through a summer research project
- 2010-2013 *Indigenous Pitch Dance Collective, New Orleans, LA*
Volunteer Dance Instructor and Camp Coordinator – planned and led week-long dance and arts camps for children in New Orleans