

Leland A. Barker, Ph.D., CSCS
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Education

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| Ph.D. | University of Nevada, Las Vegas
Kinesiology, Biomechanics (Focus)
Strength & Conditioning, Neuroscience (cognate areas) | 2018 |
| M.S. | California State University, Fullerton
Kinesiology, Biomechanics (Focus)
Strength and Conditioning, Exercise Physiology (cognate areas) | 2013 |
| B.S. | Creighton University
Exercise Science
Minor: Biological Physics | 2010 |
| CSCS | National Strength and Conditioning Association | 2010 |
| USAW | USA Weightlifting Performance Coach Level 1 (expired) | 2014 |

Academic Positions

Assistant Professor

Department of Exercise Science & Pre-Health Professions
Creighton University
2019-Present
Biomechanics and Neuromechanics

Part-Time Instructor

Department of Kinesiology
University of Nevada, Las Vegas
2018-2019
Taught undergraduate biomechanics lecture and lab

Graduate Assistant

Department of Kinesiology
University of Nevada, Las Vegas
2015-2018
teaching and research duties in the biomechanics laboratory. Formally taught Scientific Basis of Strength Training, Biomechanics of Endurance Performance, Biomechanics Laboratory, and Anatomical Kinesiology

Teaching Associate

Department of Kinesiology

California State University, Fullerton
2011-2013

Taught performance basketball courses for 4 semesters in addition to lab hours in the exercise physiology and human performance labs.

Published Manuscripts

Harry, J.R., Barker, L.A., Eggleston, J.D., Dufek, J.S. Evaluating Performance During Maximum Effort Vertical Jump Landings. *Journal of Applied Biomechanics*. 2018.

Barker, L, Burnstein, B, Mercer, J. "Acrobatic Trampoline Act: A Description of Acceleration Profiles in Training and Shows Using Wearable Technology". *Sports Biomechanics*. May 2018.

Barker, L, Mendoza, D, Mercer, J. "Exploring the use of 3D scanning to determine whole body volume while wearing a triathlon wetsuit". *Journal of Functional Morphology and Kinesiology*. April 2018.

Harry, J.R., Paquette, M.R., Schilling, B.K., Barker, L.A., James, C.R., Dufek, J.S. "Kinetic and Electromyographic Sub-Phase Characteristics with Relation to Countermovement Vertical Jump Performance". *Journal of Applied Biomechanics*. March 2018.

Harry, J.R., Barker, L.A., James, C.R., Dufek, J.S. "Performance differences among skilled soccer players of different playing positions during vertical jumping and landing". *Journal of Strength and Conditioning Research*. February 2018;

Barker, LA, Harry, JR, Mercer, JA. "Relationships Between Countermovement Jump Ground Reaction Forces and Jump Height, Reactive Strength Index, and Jump Time". *Journal of Strength and Conditioning Research*. January 2018.

Harry, JR, Barker, LA, Mercer, JA, Dufek, JS. "Vertical and Horizontal Impact Force Comparison During Jump Landings With and Without Rotation in NCAA Division I Male Soccer Players.". *Journal of Strength and Conditioning Research*. July 2017.

Barker, LA, Harry, JR, Dufek, JS, Mercer, JA. "Aerial Rotation Effects on Vertical Jump Performance Among Highly Skilled Collegiate Soccer Players". *Journal of Strength and Conditioning Research*. April 2017.

Conference Abstracts & Presentations

Sanchez, C, Vanderhoof, H, Aure, M, Barker, L, Eggleston, J. "Effect of Ankle Braces on Frontal Plane Knee Angle and Moment and Vertical Jump Performance". ISB/ASB International Conference, 2019.

Aure, M, Barker, L, Eggleston, J. "Relationship Between Frontal Plane Knee Kinematics and Landing Kinetics in a Rebound Jump." ISB/ASB International Conference, 2019.

Harry, J, Barker, L. "Determinants of Countermovement Vertical Jump Performance among NCAA Division 1 Men's Basketball Players." ISB/ASB International Conference, 2019.

Vanderhoof, H, Sanchez, C, Aure, M, Barker, L, Eggleston, J. "Brace Yourself: Impact of Prophylactic Ankle Brace during a Rebound Jump." ISB, ASB International Conference, 2019.

Barker, L. "Demands of a Cirque Du Soleil Artist." Lecture/presentation. NSCA Southwest Clinic, 2018.

Barker, L, Mercer, J. "The Influence of Load on Preferred Countermovement Depth during Jump Squats." ACSM Conference, 2018.

Harry, J, Barker, L, Dufek, J, James, R. "Force- and Velocity- Profile Differences Between Good and Poor Countermovement Vertical Jumpers." ACSM Conference, 2018.

Barker, L, Burnstein, B, Mercer, J. "Measuring Acceleration of a Trampoline Circus Act during Training and In-Show Using Wearable Technology." ACSM Conference, 2017.

Barker, LA, Harry, JR, Dufek, JS, Mercer, JA. "Performance of Aerial Rotation During Vertical Jumping Among Highly Skilled Collegiate Soccer Players". ASB Conference, 2016.

Barker, LA, Bailey, J, Galor, KS, Soucy, M, Mercer, JA, FACSM. "Technical Ability of Force Application Between Various Stride Frequencies at Constant Velocity". ACSM Annual Meeting, 2016 Poster.

Barker, LA, Bailey, J, Galor, KS, Soucy, M, Mercer, JA FACSM. "Technical Ability of Force Application Between Various Stride Frequencies at Constant Velocity". SWACSM, 2015 Poster

Bailey, J.P., Barker, L., Galor, K., Soucy, M., & Mercer, J.A. FACSM. "Effects of stride frequency perturbations on kinetics during treadmill running". SWACSM, 2015 Poster

Barker LA, DuBois AM, Brown LE, Coburn JW. "Effect of Band-Resisted Jumping on Subsequent Countermovement Jump Performance". SWACSM, 2012 Poster.

Andrea M. DuBois, Leland A. Barker, Lee E. Brown, FACSM, Jared W. Coburn, FACSM.
“Effect of Resisted Jumping on Vertical Jump Relative Peak Power”

Barker, Leland. “Effect of a Glute-Targeted Warm-Up on Hip and Knee Moments During a Countermovement Jump”. Master’s Thesis.

Mercer, JA FACSM, Mata, T., Soucy, M., Barker, L., Gaitlin, T., Bailey, J.
“Using wearable technology to examine relationship between stride length, frequency, and velocity while running on a treadmill and overground.”

Grants

Edmonds, R, Siedlik, J, **Barker, L**
Assessing the Validity and Reliability of Heart Rate Data Obtained from a Casio Smartwatch Prototype Device. 2019. Funded Amount: \$28,974

Barker, L, Mercer, J. NSCA Doctoral Student Research Grant, 2017. \$15,000.
Unfunded.

Mercer, JA, Zhan, J, Navalta, J, Lough, N, Gatlin, T, Bailey, JP, **Barker, L**, & Craig-Jones, A. National Science Foundation, 2016: Partnerships for Innovation: Building Innovation Capacity. \$1,000,000. Unfunded.

Mercer, J.A., Bailey, J.P., and **Barker, L.** (2016) United States of America Track and Field. \$123,217. Unfunded.

Barker, L. AMTI Force & Motion Student Scholarship, 2016. \$10,000. Unfunded.

Barker, L., Mercer, J. NSCA Doctoral Student Research Grant, 2016. \$15,000.
Unfunded.

Mercer, J.A., Bailey, J.P., **Barker, L.**, and Soucy, M. Arthritis foundation, 2015. \$75,000.
Unfunded

Barker, L., Mercer, J. NSCA Doctoral Student Research Grant, 2015. \$15,000.
Unfunded.

Professional Positions Held

Performance Scientist, Cirque du Soleil. *August 2014-June 2019*

Propose research projects to analyze performer workload and fatigue
Aid in strength and conditioning for performer development and maintenance.

Performance Conditioning Specialist, Cirque du Soleil. *April 2016-June 2019*
Provide performance conditioning training at 'O!' with the Resident Show Division.

Undergraduate and High School Research Mentorships

Department of Kinesiology
University of Nevada, Las Vegas
2015-2017

During three summer semesters, I mentored undergraduate (INBRE Program) and high school (STEP UP Program) students through their own research project in the biomechanics laboratory.

Owner, Head Coach, Barker Athletics, LLC. *2014-2017.*

I provide private coaching and training to clients in addition to maintaining small business operations.

Journal Reviewer (service). *Journal of Strength and Conditioning Research. Journal of Applied Biomechanics.*

University of Wisconsin Ultimate Frisbee Strength Coach, *August 2014-August 2015*

Design and develop the strength and conditioning program for the Hodags, the University of Wisconsin's Ultimate Frisbee team

Cal State Fullerton Olympic Weightlifting Club Founding Member

August 2012-August 2013

Strength and Conditioning Coach Intern, Creighton University Athletic Department,

April 2009-January 2010

Speed/Strength Coach, Athletic Training Center, Omaha, NE

August 2010-October 2010.

Women's Basketball Team Practice Player, Creighton University

August 2007- March 2010

Learned and performed opposing team offenses to prepare the team for season play. Aided in skill development drills for guards.

Biomechanics Lab Volunteer, Nebraska Biomechanics Core Facility, UNO

August 2010-November 2010

Technical Skills

Force platform analysis

3D motion capture

Electromyography

Accelerometers and Inertial sensors
Wearable Technology (various devices)
3D Scanning
MATLAB
SPSS Statistics
Visual3D
Microsoft Office Suite
R Studio
Metabolic Cart
Shoe Impact Testing