

# Lauren Benson

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## EDUCATION

**University of Wisconsin-Milwaukee**, Milwaukee, WI Date of graduation: August 2016  
*Degree Program:* PhD in Health Sciences  
*Major:* Biomechanics

**University of Wisconsin-Milwaukee**, Milwaukee, WI Date of graduation: May 2013  
*Degree Program:* Master's in Kinesiology  
*Major:* Biomechanics

**Amherst College**, Amherst, MA Date of graduation: May 2008  
*Honors:* cum laude, Sigma Xi  
*Major:* Chemistry

## RESEARCH EXPERIENCE

**University of Calgary**, Calgary, AB September 2016-present  
*Postdoctoral Fellow*

- Identify running gait patterns using wearable devices.

**University of Wisconsin-Milwaukee**, Milwaukee, WI September 2011-August 2016  
*PhD Dissertation:* “Identifying Gait Deficits in Stroke Patients Using Inertial Sensors”

- Quantified deficits in stroke gait using machine learning techniques applied to accelerometer signals.

*Research Assistant*

- Investigated biomechanical factors of sports injuries, including fatigue, orthotics and balance training.
- Developed software to score and produce reports for injury-risk assessment of all UWM athletes.

*Master's Thesis:* “The Effect of Fatigue on Intra-Limb Joint Coordination Variability during Running Using a Waveform Analysis Approach”

- Examined the effect of running in an exerted state on joint coordination variability of healthy runners.

**Amherst College**, Amherst, MA September 2007-May 2008  
*Senior Honors Thesis:* “A Fluorescence Spectroscopy Investigation of Ruthenium Anticancer Compounds”

- Synthesized ruthenium-based compounds that mimicked an anticancer drug.
- Examined interactions of ruthenium compounds with transport proteins by fluorescence spectroscopy.

**National Cancer Institute**, Frederick, MD May 2007-August 2007  
*Amherst College Kauffman Fellowship*

**DAAD RISE Program**, Würzburg, Germany June 2006-August 2006  
*RISE (Research Internships in Science and Engineering) Scholar*

## FUNDING

**International Society of Biomechanics** December 2015  
*The Matching Dissertation Grant Program*

- Recipient of **\$2000** award, “Identifying Gait Deficits in Stroke Patients Using Inertial Sensors”.

**University of Wisconsin-Milwaukee**, Milwaukee, WI November 2012-August 2016  
*College of Health Sciences Student Research Grant*

- Recipient of **\$1900** award, “Identifying Gait Deficits in Stroke Patients Using Inertial Sensors”.
- Recipient of **\$2000** award, “The Effect of Balance Training on Knee Kinematics and Kinetics for Athletes with Previous Overuse Knee Injury”.
- Recipient of **\$500** award, “The Effect of Fatigue on Intra-Limb Joint Coordination Variability during Running Using a Waveform Analysis Approach”.

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## PUBLICATIONS

1. **Benson, L. C.**, Almonroeder, T.G., & O'Connor, K. M. (in review). Quantifying knee mechanics during balance training exercises. *Human Movement Science*.
2. Almonroeder, T. G. & **Benson, L. C.** (2016). Sex differences in lower extremity kinematics and patellofemoral kinetics during running. *Journal of Sports Sciences*, Published online.
3. Almonroeder, T. G., **Benson, L. C.**, & O'Connor, K. M. (2016). The effect of a prefabricated foot orthotic on lower extremity mechanics during running in individuals with varying rearfoot dynamics. *Journal of Orthopaedic & Sports Physical Therapy*, Published online.
4. Almonroeder, T. G., **Benson, L. C.**, & O'Connor, K. M. (2015). Changes in patellofemoral joint stress during running with the application of a prefabricated foot orthotic. *International Journal of Sports Physical Therapy*, 10(7), 967.
5. **Benson, L. C.**, & O'Connor, K. M. (2015). The effect of exertion on joint kinematics and kinetics during running using a waveform analysis approach. *Journal of Applied Biomechanics*, 31(4), 250-257.
6. O'Connor, K. M., Johnson, C., & **Benson, L. C.** (2015). The effect of isolated hamstrings fatigue on landing and cutting mechanics. *Journal of Applied Biomechanics*, 31(4), 211-220.
7. Almonroeder, T. G., **Benson, L. C.**, & O'Connor, K. M. (2015). The effect of a prefabricated foot orthotic on frontal plane joint mechanics in healthy runners. *Journal of Applied Biomechanics*, 31(3), 149-158. doi:10.1123/JAB.2014-0100
8. Bles, J. S., Schmid, T., Thomas, C. L., Baker, A. R., **Benson, L.**, Evans, J. R., . . . Henrich, C. J. (2010). Development of a high-throughput cell-based reporter assay to identify stabilizers of tumor suppressor Pcd4. *Journal of Biomolecular Screening*, 15(1) doi: 10.1177/1087057109351028
9. Bringmann, G., Ruedenauer, S., Bruhn, T., **Benson, L.**, & Brun, R. (2008). Total synthesis of the antimalarial naphthylisoquinoline alkaloid 5-epi-4'-O-demethylancistrobertsonine C by asymmetric suzuki cross-coupling. *Tetrahedron*, 64(23) doi: 10.1016/j.tet.2008.03.087

## MANUSCRIPTS IN PREPARATION

1. **Benson, L. C.**, Cobb, S. C., Hyngstrom, A., Keenan, K., G., Luo, J., & O'Connor, K. M. Identifying methods for quantifying foot clearance and foot clearance variability.
2. **Benson, L. C.**, Cobb, S. C., Hyngstrom, A., Keenan, K., G., Luo, J., & O'Connor, K. M. Predicting walking foot clearance from sagittal plane joint coordination.
3. **Benson, L. C.**, Cobb, S. C., Hyngstrom, A., Keenan, K., G., Luo, J., & O'Connor, K. M. Identifying group differences related to falls risk and obstacle avoidance.
4. **Benson, L. C.**, Cobb, S. C., Hyngstrom, A., Keenan, K., G., Luo, J., & O'Connor, K. M. Determining factors that affect obstacle avoidance ability.
5. **Benson, L. C.**, Cobb, S. C., Hyngstrom, A., Keenan, K., G., Luo, J., & O'Connor, K. M. Predicting joint kinematics related to obstacle avoidance from accelerometer signals.
6. **Benson, L. C.**, Cobb, S. C., Hyngstrom, A., Keenan, K., G., Luo, J., & O'Connor, K. M. Predicting obstacle avoidance ability using accelerometer signals.

## NON-REFEREED PUBLICATIONS

**Benson, L.** & O'Connor, K. (2015). Running in an exerted state: mechanical effects. *Lower Extremity Review*, 7(10).

## PRESENTATIONS

1. Almonroeder, T., **Benson, L.**, & O'Connor, K.M. (2017). Sex differences in the vertical ground reaction force time series during running. Abstract for platform presentation. American Physical Therapy Association Combined Sections Meeting, San Antonio, TX
2. **Benson, L.**, Cobb, S., Hyngstrom, A., Keenan, K., Luo, J., & O'Connor, K. (2016). Predicting walking foot clearance from sagittal joint coordination. Abstract for poster presentation, Annual Meeting of the American Society of Biomechanics, Raleigh, NC
3. **Benson, L.**, Cobb, S., Hyngstrom, A., Keenan, K., Luo, J., & O'Connor, K. (2016). Predicting walking foot clearance from sagittal plane joint coordination. Abstract for podium and poster presentations, **Second Place in Student Competition** University of Wisconsin-Milwaukee College of Health Sciences Spring Research Symposium, Milwaukee, WI

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## PRESENTATIONS CONTINUED

4. **Benson, L.**, Almonroeder, T., & O'Connor, K.M. (2015). Making it count: using number of touch-downs during eyes closed single-leg stance to evaluate balance performance. Abstract for podium and poster presentations, University of Wisconsin-Milwaukee College of Health Sciences Fall Research Symposium, Milwaukee, WI
5. **Benson, L.** & O'Connor, K.M. (2015). Assessment of knee mechanics and muscle activity during balance exercises. Abstract for poster presentation, Annual Meeting of the American Society of Biomechanics, Columbus, OH
6. **Benson, L.** & O'Connor, K.M. (2015). Assessment of knee mechanics and muscle activity during balance exercises. Abstract for podium and poster presentations, **Second Place in Student Competition** University of Wisconsin-Milwaukee College of Health Sciences Spring Research Symposium, Milwaukee, WI
7. Almonroeder, T., **Benson, L.**, & O'Connor, K.M. (2015). The effect of a foot orthotic on frontal plane joint mechanics during running in groups with varying rearfoot motion. Abstract for poster presentation. American Physical Therapy Association Combined Sections Meeting, Indianapolis, IN
8. **Benson, L.**, & O'Connor, K.M. (2014). The effect of fatigue on joint kinematics during running using a waveform analysis approach. Abstract for poster presentation, **Finalist in the International Master's Student Paper Competition**, World Congress of Biomechanics, Boston, MA
9. Almonroeder, T., **Benson, L.**, & O'Connor, K.M. (2015). The effect of a prefabricated foot orthotic on frontal plane joint mechanics during running. Abstract for poster presentation, World Congress of Biomechanics, Boston, MA
10. **Benson, L.**, & O'Connor, K.M. (2014). The effect of fatigue on joint kinematics during running using a waveform analysis approach. Abstract for podium and poster presentations, University of Wisconsin-Milwaukee College of Health Sciences Spring Research Symposium, Milwaukee, WI
11. Almonroeder, T., **Benson, L.**, & O'Connor, K.M. (2014). The effect of a prefabricated foot orthotic on frontal plane joint mechanics during running. Abstract for podium and poster presentations, University of Wisconsin-Milwaukee College of Health Sciences Spring Research Symposium, Milwaukee, WI
12. **Benson, L.**, & O'Connor, K.M. (2013). The effect of fatigue on intra-limb joint coordination variability during running using a waveform analysis approach. Abstract for podium and poster presentations, University of Wisconsin-Milwaukee College of Health Sciences Spring Research Symposium, Milwaukee, WI
13. **Benson, L.**, & O'Hara, P.B. (2008). A fluorescence spectroscopy investigation of ruthenium anticancer compounds. Abstract for poster presentation. Smith College Intercollegiate Poster Session, Northampton, MA

## TEACHING EXPERIENCE

**University of Wisconsin-Milwaukee**, Milwaukee, WI September 2011-2015

*Kinesiology Department Ad hoc Instructor (Spring and Fall 2014, Fall 2015)*

- Developed lessons for and instructed students in undergraduate Biomechanics course.
- Kinesiology Department Lecture and Laboratory Teaching Assistant (2011-12 and 2012-13)*
- Led two laboratory sections per semester in Biomechanics.
- Assisted students during lectures and out of class in introductory Kinesiology courses.

**WyzAnt Tutoring**, Milwaukee, WI

September 2011-May 2012

*Science and Math Tutor*

**Center for Talented Youth**, Baltimore, MD

Summers 2009, 2011, 2012

*Chemistry Instructor*

**Williston Northampton School**, Easthampton, MA

August 2008-June 2011

*Chemistry Teacher*

*Head of Track & Field Program*

*Assistant Varsity Field Hockey Coach*

*Assistant Varsity and JV Skiing Coach*

*Dorm Head*

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## TEACHING EXPERIENCE CONTINUED

**Amherst College, Amherst, MA** September 2005-May 2008  
*Chemistry Department Lecture and Laboratory Teaching Assistant, Tutor*

## PROFESSIONAL EXPERIENCE

**USA Field Hockey, Colorado Springs, CO** October 2013-June 2013  
*Head Futures Coach, Wisconsin*

- Coached elite field hockey student-athletes in the state of Wisconsin.

**University School of Milwaukee, River Hills, WI** August 2012-October 2015  
*Head Varsity Reserve/JV Field Hockey Coach*

- Coached student-athletes in varsity- and JV-level field hockey

**Nomads Field Hockey Club, Northampton, MA** December 2008-March 2011  
*U-19/U-14 Coach*

- Coached a local indoor field hockey team in tournaments throughout New England and nationally.

## PROGRAMMING SKILLS

**Titanium Certified Developer** December 2013-present

- Certified to create and distribute mobile applications for all smart phones.

**MATLAB** September 2011-present

- Proficient in using MATLAB to create custom software for data analyses.

## AWARDS

**University of Calgary, Calgary, AB** September 2016-present

- Eyes High Postdoctoral Scholar Fellowship (2016-18)

**University of Wisconsin-Milwaukee, Milwaukee, WI** May 2013-August 2016

- Distinguished Graduate Student Fellowship awarded to UWM's most academically excellent graduate students (2015-16)
- College of Health Sciences Alumni Chapter Scholarship for strong academic work (2015-16)
- Chancellor's Graduate Student Award for scholarly activity in the College of Health Sciences (2014-15)
- Georgio Sanna Memorial Scholarship for graduate studies in Kinesiology (2013-2014 and 2014-2015)

**Amherst College, Amherst, MA** May 2006-May 2008

- Everett H. Pryde Research Award for outstanding teaching assistance and research (2008)
- Computer Center Prize for outstanding contributions in the Computer Center (2008)
- Eugene Wilson Award for preeminent student-athlete in sportsmanship at Amherst (2008)
- Samuel Bowles Prize for proficiency in journalism (2008)
- Sphinx Spoon Award for student that best promotes Amherst Athletics (2005-06, 2006-07)
- Friends of Amherst Field Hockey Award (2007)
- Friends of Amherst Track and Field Award (2007-08)
- NESCAC All-Sportsmanship team for Field Hockey (2007)
- NESCAC All-Sportsmanship team for Track and Field (2007-08)
- NESCAC and NFCA All-Academic team for Field Hockey (2006, 2007)
- NESCAC All-Academic team for Indoor (2007, 2008) and Outdoor Track and Field (2007, 2008)

## LEADERSHIP ROLES

**University of Wisconsin-Milwaukee, Milwaukee, WI** August 2012-August 2016

- President of Kinesiology Graduate Association (2013-16)
- Vice President of Kinesiology Graduate Association (2012-13)
- Black & Gold Committee representative to the College of Health Sciences (2012-16)

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## LEADERSHIP ROLES CONTINUED

**Metro Milwaukee Women's Ice Hockey**, Milwaukee, WI

September 2013-March 2014

- Captain of traveling women's ice hockey team

**Amherst College**, Amherst, MA

September 2006-May 2008

- Tri-Captain of varsity field hockey team (2007)
- Tri-Captain of varsity track and field indoor and outdoor teams (2007-08)
- President and Founder of Student-Athlete Advisory Committee (SAAC) (2007-08, 2006-07)
- Chair and Vice Chair of New England Small College Athletic Conference SAAC (2007-08, 2006-07)
- Editor-in-Chief of weekly school newspaper (2006-07)

## VOLUNTEER WORK

**Fuel Up. Go! Fitness and Nutrition**, Milwaukee, WI

April 2013-October 2014

*Strength and Conditioning Intern*

- Organized weekly metabolic circuit conditioning workouts to help people reach their fitness goals.

**University School of Milwaukee**, River Hills, WI

March 2013-May 2013

*Volunteer Track & Field Coach*

- Coached student-athletes in track and field.

**Aurora Sports Medicine Institute**, Milwaukee, WI

Fall 2012

*Volunteer*

- Prepared treatment areas and assisted Physical Therapists with patient visits.

**Kingo Lutheran Church**, Shorewood, WI

October 2011-May 2015

*Tutor*

- Assisted disadvantaged students with homework and study skills.

## INTERESTS

*Running*

- Compete in races at distances from 5K to marathon. (2008-present)

*Ice hockey*

- Member of the Metro Milwaukee traveling women's ice hockey team. (2011-14)
- Member of the Pioneer Valley Vipers traveling women's ice hockey team. (2009-11)

*Music*

- Member of the Milwaukee American Legion Band trumpet section. (2013-15)

*Traveling*

- Toured 18 countries during a nine-week around the world excursion. (Summer 2010)