

## *Gregory W. King, PhD, PE*

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CONTACT INFORMATION      Civil and Mechanical Engineering      Tel: (816) 235-2350  
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Kansas City, MO 64110

CURRENT APPOINTMENT      Associate Professor of Mechanical Engineering, University of Missouri - Kansas City

## **Background**

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VITAL STATISTICS      Born: April 9, 1977 in Decatur, Illinois, USA.  
Health: Excellent.  
Citizenship: United States.  
Marital Status: Married with three children.

EDUCATION      **University of Kansas**      **Lawrence, KS**  
August 2002 - August 2006  
*Doctor of Philosophy, Mechanical Engineering*

- Graduated with honors in August, 2006
- Dissertation title: *“Effects of Age and Localized Muscle Fatigue on Force Control and Balance Recovery Abilities”*
- Advisor: Carl W. Luchies, Ph.D.

**University of Kansas**      **Lawrence, KS**  
January 2000 - May 2002  
*Master of Science, Mechanical Engineering*

- Graduated with honors in May, 2002
- Thesis title: *“Effects of Step Length on Balance Recovery From a Forward Fall”*
- Advisor: Carl W. Luchies, Ph.D.

**University of Kansas**      **Lawrence, KS**  
August 1995 - December 1999  
*Bachelor of Science, Mechanical Engineering*

- Graduation date: December, 1999

ACADEMIC EXPERIENCE      **University of Missouri - Kansas City**      **Kansas City, MO**  
February 1, 2019 - Present  
*Associate Chair, Department of Civil and Mechanical Engineering*

- Assist with faculty and staff performance evaluations
- Manage faculty workloads and course scheduling
- Serve as Department Chair proxy when needed

**University of Missouri - Kansas City** **Kansas City, MO**  
September 1, 2014 - Present  
*Associate Professor, Primary Appointment*

- Director, Human Balance and Ambulation Research Laboratory
- Teach undergraduate and graduate courses including Electric Circuits, Computer Programming, Introduction to Biomechanics, and Experimental Methods in Biomechanics
- Maintain an active musculoskeletal research program. Research is focused on studying age- and disease-related deficiencies in balance, mobility, and motor control

**Truman Medical Centers** **Kansas City, MO**  
January 2019 - Present  
*Courtesy Appointment*

**University of Missouri - Kansas City** **Kansas City, MO**  
January 1, 2007 - August 31, 2014  
*Assistant Professor, Primary Appointment*

- Director, Human Balance and Ambulation Research Laboratory
- Taught undergraduate and graduate courses including Electric Circuits, Computer Programming, Introduction to Biomechanics, and Experimental Methods in Biomechanics
- Maintained an active musculoskeletal research program. Research is focused on studying age- and disease-related deficiencies in balance, mobility, and motor control

**Kansas City VA Medical Center** **Kansas City, MO**  
April 2012 - March 2013  
*Without Compensation (WOC) Appointment*

**University of Kansas Medical Center** **Kansas City, KS**  
August 2006 - December 2006  
*Post Doctoral Fellow*

- Post doctoral fellow in KUMC's Human Performance Laboratory within the Landon Center on Aging
- Developed and implemented experimental protocols, prepared work for publication, developed grant proposals

**University of Kansas** **Lawrence, KS**  
June 2003 - August 2006  
*Graduate Research Assistant*

- Research assistant in KU's Biodynamics Research Laboratory
- Developed and implemented experimental protocols, collected and analyzed data, documented experimental results

**University of Kansas** **Lawrence, KS**  
January 2000 - May 2002  
*Graduate Teaching Assistant*

- Teaching assistant for undergraduate mechanical measurements and experimentation courses

- Developed and taught experiments relating to measurements, data acquisition, and data analysis as applied in mechanical engineering

HONORS Recipient, Western Chapter of the Missouri Society of Professional Engineers Leadership Excellence Achievement Program Award, 2012

COMPUTER SKILLS Operating systems: Windows, Unix, Linux, Macintosh  
 Programming languages: FORTRAN, BASIC, VBA, MATLAB, LabVIEW, Assembly Language  
 Drafting software: AutoCAD, ProEngineer, CADKEY, CATIA  
 Statistics packages: SPSS, SAS, MINITAB  
 Other software experience: ANSYS, L<sup>A</sup>T<sub>E</sub>X

## Teaching

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COURSES TAUGHT ME 484 Vibration Analysis<sup>1</sup>(4 semesters at UMKC)  
 ME 219 Computer Programming for Engineers (9 semesters at UMKC)  
 ME 220 Electric Circuits (12 semesters at UMKC)  
 ME 411/5511D Introduction to Biomechanics<sup>1</sup>(12 semesters at UMKC)  
 ME 413/5513 Bioinstrumentation of Human Motion<sup>1</sup>(4 semesters at UMKC)  
 ME 401MB/5501MB Experimental Methods in Biomechanics<sup>1</sup>(3 semesters at UMKC)  
 ANCH399 Special Topics: Innovation and the Aging Population<sup>2</sup>(2 semesters at UMKC)  
<sup>1</sup>new course developed by GWK <sup>2</sup>team-taught interdisciplinary course

UNDERGRADUATE RESEARCHERS ADVISED Quang Nguyen; Fall 2017 - Present.  
 Jessica Peters; Fall 2017 - Present.  
 Mary Okafor; Spring 2017 - Present.  
 Michael Dennis; Spring, 2017 - Present.  
 Clare Goldkamp; Spring, 2017.  
 Mackenzie Moore; Spring 2017.  
 Jordan Andrews; Spring 2017.  
 Nimesha Senanayake; Spring, 2016 - Spring, 2017.  
 Ricky Abnos; Fall, 2015 - Spring, 2017.  
 Annie Muller; Fall, 2014 - Spring, 2017.  
 Katherine Polednik; Fall, 2014.  
 Jonathan Parman; Summer, 2014.  
 Logan Ellis; Summer, 2014.  
 Sierra Shipley; Fall, 2013.  
 Chase Franklin; Summer, 2013.  
 Crystal Wolfe; Summer, 2013.  
 Audrey Barnard; Fall, 2012.  
 Grant Meyer; Spring, 2012.  
 Negar Khalandi; Spring, 2011.  
 Adam P. Bruetsch; Spring, 2010.  
 Ghassan G. Dinn; Spring, 2008.

GRADUATE COMMITTEES CHAIRED **PhD Graduate Students**  
 Safer Siddicky, MS, May 2018 (expected).

## MS Graduate Students

Phanidhar Boddu, BS *Ergonomic Study of Ophthalmology Surgical Loupes*, May 2019 (exp.);

Mustafa Muhibullah, BS *Evaluation of Upper-Extremity Kinetics during Crutch Use*, May 2019 (exp.); Degree: MS, Mechanical Engineering.

Safeer Siddicky, BS, *Use of Biomechanical Motion Analysis to Evaluate Endotracheal Intubation Skill in a Simulated Clinical Setting*, May 2015; Degree: MS, Mechanical Engineering.

Elliott Goff, BS, *Postural Indices of Performance in Music Conductors*, May 2016; Degree: MS, Mechanical Engineering.

Vicki A. Angelini, BS

Darren S. Mullin, BS, *Effects of Deceptive Behavior on Biomechanical Measures of Standing Posture*, May 2012; Degree: MS, Mechanical Engineering. **Selected as UMKC's Distinguished Master's Thesis award winner, 2012.**

Adam P. Bruetsch, BS, *Biomechanical Characterization of Slipping on Pervious and Traditional Concrete Walking Surfaces*, May 2012; Degree: MS, Mechanical Engineering.

Noah A.M. Weichselbaum, BS, *Optimization of the Slag Tap for the Gasification of Sustainable Feedstocks*, December 2011; Degree: MS, Mechanical Engineering (research supervised by Dr. Anthony F. Black, PhD, PE).

Seth R. Powers, BS

Sai M. Malineni, BE, *Evaluation of Stepping Task Biomechanics Using Inverse Dynamics Simulations in OpenSim*, December 2010; Degree: MS, Mechanical Engineering.

Ghassan G. Dinn, BS

Chaitanya K. Akula, BS, *Age Related Differences in the Ankle Joint Dynamics During a Balance Recovery Step Response*, December 2009; Degree: MS, Mechanical Engineering.

## GRADUATE COMMITTEE MEMBERSHIP

## PhD Graduate Students

Mark Chrisman, MS, May 2019 (expected); Degree: PhD, Mechanical Engineering.

Munsur Rahman, MS, *Musculoskeletal Modeling of the Elbow Joint*, May 2017 (expected); Degree: PhD, Mechanical Engineering.

Saripalle SK, *A Multimodal Biometric Authentication for Smartphones*, May 2015; Degree: PhD, Electrical and Computer Engineering.

Gottemukkula V, *Biometrics for Smartphones Using Eyeprints*, August 2014; Degree: PhD, Electrical and Computer Engineering.

Anupindi R.S. Rau, MS, *Performance Standards for Walk-In Coolers and Freezers in the United States as a Function of Local Weather Conditions*, May 2011; Degree: PhD, Mechanical Engineering.

Katherine H. Bloemker, MS, *Development of a Subject-Specific Multi-Body Knee Model to Com-*

*pare and Improve Upon Multiple ACL Reconstruction Techniques*, December 2012; Degree: PhD, Mechanical Engineering.

Jennifer Melander, MS, *Evaluation of Silorane System for Use in Stabilization of Traumatic Bone Injuries*, May 2010; Degree: PhD, Oral Biology.

Mohammad Kia, MS, *A Musculoskeletal Model of a Subject Specific Knee Joint with Menisci during the Stance Phase of a Walk Cycle* December 2011; Degree: PhD, Mechanical Engineering.

### **MS Graduate Students**

Ignacio Hernandez, *Overcoming the Challenges of Using Unmanned Aircraft for Bridge Inspections*, August 2016 (expected); Degree: MS, Mechanical Engineering.

John Bazin, *Strain Gauge Utilization for Aerial Vehicle Dynamic Load Measurement*, May 2016; Degree: MS, Mechanical Engineering.

Rahul Tripathi, B.Tech., *Parametric Soil-Structure Modeling for Rapid Climatic Disaster Response*, May 2014; Degree: MS, Civil Engineering.

Daniel M. Cervantes, BS, *Mechanostimulation of an Osteocyte-Like Cell Line Induces Changes in Gene Expression*, May 2013; Degree: MS, Mechanical Engineering.

Mohammad A. Bayazid, BA, *Scour at Bottomless Culverts*, December 2012 (expected); Degree: MS, Civil Engineering.

Bryan C. Sartin, BS, *Derviation of Walk-In Cooler and Freezer Performance Standard Equations as they Pertain to the ANSI/AHRI Standard 1250 and 1251*, December 2012 (expected); Degree: MS, Mechanical Engineering.

Jason F. Nall, BS, PE, *Engineering Onsite Stormwater Treatment Systems (OSTSs) through Rain Garden Installations on Private Properties*, December 2011; Degree: MS, Civil Engineering.

Gavin C. Paiva, BS, *Development of Multibody Soft Tissue Models and Their Tuning to Experimental Data: With a Focus on the Canine Meniscus*, December 2010; Degree: MS, Mechanical Engineering.

Leo E. Olcott, BS, *Validation of a Subject Specific Canine Hind Limb Model with Emphasis on an Anatomical Stifle*, December 2010; Degree: MS, Mechanical Engineering.

Vikas Gottemukkula, B. Tech, *Application of Wrapper Methods to Non-Invasive Brain-State Detection: An Opto-Electric Approach*, December 2010; Degree: MS, Electrical Engineering.

Sashi K. Saripalle, B. Tech, *Classification of Human Postural and Gestural Movements using Center of Pressure Parameters Derived from Force Platforms*, December 2010; Degree: MS, Electrical Engineering.

Vivek K.R. Yaramada, BS, *Numerical Response of Steel Reinforced Concrete Slab Subjected to Blast and Pressure Loadings in LS-DYNA*, August 2010 (expected); Degree: MS, Mechanical Engineering.

Padmavathi Iyengar, BE, *Field Performance Evaluation of UMKC Rain Gardens*, December 2009; Degree: MS, Civil Engineering.

Paul Wilson, BS, *Optimization of Ligament Parameters on a Subject-Specific Computational Human Knee Model in a Dynamic Knee Simulator Using Design of Experiments*, May 2010; Degree: MS,

Mechanical Engineering.

Himabindu Bodduna, BS, *Finite Element Simulation of the Human Knee Joint in ABAQUS/Explicit using Dynamic Kinematic Inputs*, July 2008; Degree: MS, Mechanical Engineering.

Danny Atie, BS, *An Evaluation of Driver Responses on the Flashing Yellow Arrow (FYA) Signal Phasing*, May 2008; Degree: MS, Civil Engineering.

Gaurav N. Pathak, BE, *Experimental Study of Bond-Slip Relationship Between Concrete and Fiber Reinforced Polymers (FRP)*, January 2008; Degree: Civil Engineering.

Katherine A. Weimer, BS, *Development and Validation of a Subject-Specific Computational Human Knee Model in a Dynamic Knee Simulator to Include Ligament and Tendon Bone Wrapping*, July 2007; Degree: MS, Mechanical Engineering.

Aarthi S. Shankar, BS, *Optimization of Quadriceps Force Distribution for Minimization of Patellofemoral Contact Pressures*, June 2007; Degree: ME, Mechanical Engineering.

Mohammad Murayan, BS, *Determination of Viscoelastic Properties of Dentin Using Scanning Acoustic Microscopy*, April 2007; Degree: MS, Mechanical Engineering.

INVITED LECTURES **King GW**, “Biomechanics of Gait and Balance”, guest lecture to Social Work graduate students enrolled in A&S5500 Interdisciplinary Colloquium on Aging course (Linda M. Breytspraak, instructor), University of Missouri - Kansas City, Kansas City, MO, October 11, 2010.

**King GW**, “Biomechanics of Gait and Balance”, guest lecture to Physical Therapy PhD students enrolled in Advanced Research Topics in Rehabilitation Science course (Wen Liu, instructor), University of Kansas Medical Center, Kansas City, KS, October 6, 2010.

**King GW**, “Experiences of a New Assistant Professor”, guest lecture to PhD and post-doctoral students attending the Professional Development Seminar Series, School of Dentistry, University of Missouri - Kansas City, Kansas City, MO, October 29, 2009.

**King GW**, Bloemker KH, “An Introduction to Bioengineering”, guest lecture to students at the Mathematics and Physics Institute, a mathematics and physics college credit program for high school seniors, Independence, MO (recurring each year; January 2009 - present).

Presented guest lecture for CE276: Strength of Materials course covering statically indeterminate beams, Department of Civil and Mechanical Engineering, University of Missouri - Kansas City, Kansas City, MO, November 12, 2008.

Presented guest lecture for ME352: Instrumentation and Measurements Lab I course covering force and electromyographic measurement techniques used in biomechanics, Department of Civil and Mechanical Engineering, University of Missouri - Kansas City, Kansas City, MO, November 3, 2008.

**King GW**, “Circuits Review for the FE Exam”, taught electric circuits portion for the Fundamentals of Engineering review course, Department of Civil and Mechanical Engineering, University of Missouri - Kansas City, Kansas City, MO (recurring each year; March 2008 - March 2013).

**King GW**, “What is Biomechanics?”, guest lecture in introductory engineering course, Department of Civil and Mechanical Engineering, University of Missouri - Kansas City, Kansas City, MO (recurring each semester; 2007-present).

## Research

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PUBLICATIONS  
(PEER REVIEWED:  
IN PRINT,  
ACCEPTED, OR IN  
PRESS)

1. **King GW**, Abreu EL, Kelly PJ, Brotto M, “Neural Control of Postural Sway: Relationship to Strength Measures in Young and Elderly Adults,” *Experimental Gerontology* (2019), DOI: <https://doi.org/10.1016/j.exger.2019.01.005>.
2. Branson BG, Abnos RM, Simmer-Beck ML, **King GW**, Siddicky SF, “Using Motion Capture Technology to Measure the Effects of Magnification Loupes on Dental Operator Posture: A Pilot Study,” *WORK: A Journal of Prevention, Assessment, and Rehabilitation* 59(1) (2018).
3. **King GW**, Abreu EL, Cheng AL, Chertoff KK, Brotto L, Kelly PJ, Brotto M, “A Multimodal Assessment of Balance in Elderly and Young Adults,” *Oncotarget* 7(12):13297-306 (2016).
4. Mullin DS, **King GW**, Saripalle SK, Derakhshani RR, Lovelace CT, Burgoon JK, “Deception Effects on Standing Center of Pressure,” *Human Movement Science* 38:106-115 (2014).
5. Saripalle SK, Paiva GC, Cliett TC, Derakhshani R, **King GW**, Lovelace CT, “Classification of Body Movements based on Posturographic Data,” *Human Movement Science* 33:238-250 (2014).
6. **King GW**, Bruetsch AP, Kevern JT, “Slip-Related Characterization of Gait Kinetics: Investigation of Pervious Concrete as a Slip-Resistant Walking Surface,” *Safety Science* 57:52-29 (2013).
7. Shirey M, Hurlbutt M, Johansen N, **King GW**, Wilkinson SG, Hoover DL, “The Influence of Core Musculature Engagement on Hip and Knee Kinematics in Women during a Single Leg Squat,” *The International Journal of Sports Physical Therapy* 7(1):1-12, 2012.
8. **King GW**, Akula CK, Luchies CW, “Age-Related Differences in Kinetic Measures of Landing Phase Lateral Stability during a Balance-Restoring Forward Step,” *Gait & Posture* 35(3):440-445 (2012).
9. Kevern JT, **King GW**, Bruetsch AP, “Pervious Concrete Surface Characterization to Reduce Slip-Related Falls,” *Journal of Performance of Constructed Facilities* 26(4):526-531 (2012).
10. **King GW**, Stylianou AP, Kluding PM, Jernigan SD, Luchies CW “Effects of Age and Localized Muscle Fatigue on Ankle Plantar Flexor Torque Development,” *Journal of Geriatric Physical Therapy* 35(1):8-14 (2012).
11. **King GW**, Luchies CW, Stylianou AP, Schiffman JM, Thelen DG, “Effects of Step Length on Stepping Responses Used to Arrest a Forward Fall,” *Gait and Posture* 22:219-24 (2005).
12. Stylianou AP, Luchies CW, Lerner D, **King GW**, “The Use of Correlation Integrals in the Study of Localized Muscle Fatigue of Elbow Flexors During Maximal Efforts,” *Journal of Electromyography and Kinesiology* 15:437-43 (2005).

PEER-REVIEWED  
CONFERENCE  
PROCEEDINGS

1. Siddicky SF, Mozafari H, **King GW**, Suh DW, “Redesigning Surgical Magnification Loupes: Effect of Angle of Declination, Weight, and Strap Design on the Postural Ergonomics of Ophthalmic Surgeons,” American Association for Pediatric Ophthalmology and Strabismus 45th Annual Meeting, San Diego, CA, March 2019.
2. Siddicky SF, Olitsky SE, **King GW**, “Evaluating the Postural Ergonomics of Ophthalmologists using Kinematic Motion Analysis and Electromyography,” 42nd Annual Meeting of the American Society of Biomechanics, Rochester, MN, August 2018.
3. Arif MA, Mahmud F, **King GW**, Sutkin G, Stylianou AP, “Development of a Pelvic Model for Study of Surgical Errors in the Midurethral Sling Procedure,” 42nd Annual Meeting of the American Society of Biomechanics, Rochester, MN, August 2018.
4. Siddicky SF, Abnos RM, Muller MA, **King GW**, Olitsky SE, “Evaluating Ergonomics in Ophthalmology Using Kinematic Motion Analysis: A Pilot Study,” 18th Annual Meeting of the American Academy of Ophthalmology, New Orleans, LA, November 2017.

5. **King GW**, Abreu EL, Kelly PJ, Brotto M, "Strength and Skeletal Muscle Troponin in Postural Control," 41st Annual Meeting of the American Society of Biomechanics, Boulder, CO, August 2017.
6. Abnos R, Siddicky SF, Muller MA, Branson B, Simmer-Beck M, **King GW**, "Postural Evaluation of Dental Care Professionals using Motion Analysis and Electromyography," 41st Annual Meeting of the American Society of Biomechanics, Boulder, CO, August 2017.
7. Abnos RM, Branson BS, Simmer-Beck ML, Siddicky SF, **King GW**, "Motion Capture Technology as a Method for Measuring the Effect of Magnification Lenses on Dental Clinician Posture: A Pilot Study," 7th International Conference on Applied Human Factors and Ergonomics, Orlando, FL, July 2016.
8. Hoffman M, Siddicky SF, Balakrishnan B, **King GW**, "3D Motion Analysis of Clinical Performance: A New Big Data Opportunity," American Medical Informatics Association Joint Summits on Translational Science, San Francisco, CA, March 2016.
9. **King GW**, Abreu EL, Cheng AL, Kelly P, Brotto M, "Multimodal Assessment of Balance Impairment in Older Adults," The Gerontological Society of America Annual Scientific Meeting, Orlando, FL, November 2015.
10. Saripalle SK, Vemulapalli S, **King GW**, Burgoon JK, Derakhshani RR, "Machine Learning Methods for Credibility Assessment of Interviewees Based on Posturographic Data," 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Milano, Italy, August 2015.
11. Fields TD, **King GW**, "Quadrotor 6-DOF HIL Simulation and Verification using a 6-axis Load Cell," American Institute of Aeronautics and Astronautics Science and Technology Forum and Exposition, Kissimmee, FL, January 2015 (submitted).
12. Gottemukkula V, Zhang J, Derakhshani RR, **King GW**, "Mobile Gaming Effects on Frontal Lobe Activation," 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, San Diego, CA, August 2012.
13. Gottemukkula V, Derakhshani R, **King GW**, "Training Reasoning Capabilities of Brain with Mobile Games," UMKC Interdisciplinary Doctoral Student Council Poster Contest, Kansas City, MO, April 2012.
14. Mullin DS, **King GW**, Derakhshani RR, Lovelace CT, "Effects of Deceptive Behavior on Biomechanical Measures of Standing Posture," 35th Annual Meeting of the American Society of Biomechanics, Long Beach, CA, August 2011.
15. Bruetsch AP, **King GW**, Kevern JT, "Biomechanical Characterization of Slipping on Pervious and Traditional Concrete Walking Surfaces," 35th Annual Meeting of the American Society of Biomechanics, Long Beach, CA, August 2011.
16. Shirey M, Hurlbutt M, Johansen N, **King GW**, Wilkinson SG, Hoover D, "The Influence of Core Musculature Engagement on Hip and Knee Kinematics in Females during a Single Leg Squat," Missouri Physical Therapy Association Spring Conference, Kansas City, MO, April 2011.
17. Shirey M, Hurlbutt M, Johansen N, Wilkinson SG, **King GW**, Hoover D, "Influence of Core Musculature Engagement on Knee Kinematics of Females During a Single Leg Squat," *Medicine and Science in Sports and Exercise* 43:501, 2011.
18. Kevern JT, **King GW**, Bruetsch AP, "Preliminary Investigation of Pervious Concrete Surface Characteristics to Reduce Slip-Related Falls," 90th Annual Transportation Research Board Annual Meeting, Washington, DC, January 2011 (submitted).
19. **King GW**, Akula CK, "Age Effects on Lateral Stability during Stepping," 34th Annual Meeting of the American Society of Biomechanics, Providence, Rhode Island, August 2010.



20. Malineni SM, **King GW**, "Evaluation of Stepping Task Biomechanics using OpenSim," 34th Annual Meeting of the American Society of Biomechanics, Providence, Rhode Island, August 2010.
21. Guess TM, Derakhshani R, **King GW**, Leon-Salas WD, "Multi-Disciplinary Collaborations in Measurement of Human Motion," Missouri Regional Life Sciences Summit, Kansas City, Missouri, March 2010.
22. Saripalle SK, Gajjala LS, Cliett TC, Paiva GC, Derakhshani R, Lovelace CT, **King GW**, "Classification of Body Motions Based on Posturographic Data," Missouri Regional Life Sciences Summit, Kansas City, Missouri, March 2010.
23. Dinn GG, **King GW**, "Effects of a Single Step Requirement on Balance Recovery Maneuvers in Young and Older Adults," 33rd Annual Meeting of the American Society of Biomechanics, University Park, Pennsylvania, August 2009.
24. Akula CK, **King GW**, "Age Differences in Landing Phase Ankle Dynamics During a Balance-Restoring Step Response," American Society of Mechanical Engineers Summer Bioengineering Conference, Lake Tahoe, California, June 2009.
25. **King GW**, Luchies CW, "The Role of Knee Extensor Strength in Landing Phase Characteristics of a Balance-Restoring Step Response," North American Congress on Biomechanics, Ann Arbor, Michigan, August 2008.
26. **King GW**, Luchies CW, "The Role of Knee Extensor Strength in Balance-Restoring Step Initiation and Execution," American Society of Mechanical Engineers Summer Bioengineering Conference, Marco Island, Florida, June 2008.
27. **King GW**, Luchies CW, Stylianou AP, McVey MA, "Age and Fatigue Effects on Lower Extremity Joint Torque Development," 31st Annual Meeting of the American Society of Biomechanics, Stanford, California, August 2007.
28. **King GW**, Luchies CW, Maletsky RA, Zahner L, Stylianou AP, McVey MA, "Age Effects on Lower Extremity Force Control," American Society of Mechanical Engineers Summer Bioengineering Conference, Amelia Island, Florida, June 2006.
29. **King GW**, Luchies CW, Stylianou AP, Schiffman JM, Thelen DG, "Effects of Step Length on Balance Recovery From a Forward Fall," Kansas City Area Life Sciences Research Day, Overland Park, Kansas, March 2004.
30. **King GW**, Luchies CW, Stylianou AP, Richards L, "Effects of Lower Extremity Exercise on Balance Recovery From a Forward Fall," XV<sup>th</sup> Congress of the International Society of Electrophysiology and Kinesiology, Boston, Massachusetts, June 2004.
31. Stylianou AP, Luchies CW, Lerner D, **King GW**, "SEMG Analysis of Elbow Flexors During Sustained Maximal Voluntary Contractions," XV<sup>th</sup> Congress of the International Society of Electrophysiology and Kinesiology, Boston, Massachusetts, June 2004.
32. **King GW**, Luchies CW, Stylianou AP, Schiffman JM, Thelen DG, "Effects of Step Length on Balance Recovery From a Forward Fall," American Society of Mechanical Engineers Summer Bioengineering Conference, Key Biscayne, Florida, June 2003.
33. Luchies CW, Stylianou AP, **King GW**, Won YS, Lerner D, Richards L, "Effects of Fatigue and Load Carriage on the Soldier's Performance of Time Critical Tasks," Kansas Statewide EPSCoR Conference, Lawrence, Kansas, April 2003.

#### PRESENTATIONS

1. "Age Effects on Lateral Stability during Stepping," 34th Annual Meeting of the American Society of Biomechanics, Providence, Rhode Island, August 2010.
2. "The Role of Knee Extensor Strength in Landing Phase Characteristics of a Balance-Restoring Step Response," North American Congress on Biomechanics, Ann Arbor, Michigan, August 2008.

3. "The Role of Knee Extensor Strength in Balance-Restoring Step Initiation and Execution," American Society of Mechanical Engineers Summer Bioengineering Conference, Marco Island, Florida, June 2008.
4. "Age and Fatigue Effects on Lower Extremity Joint Torque Development," 31st Annual Meeting of the American Society of Biomechanics, Stanford, California, August 2007.
5. "Age Effects on Lower Extremity Force Control," American Society of Mechanical Engineers Summer Bioengineering Conference, Amelia Island, Florida, June 2006.
6. "Effects of Step Length on Balance Recovery From a Forward Fall," Kansas City Area Life Sciences Research Day, Overland Park, Kansas, March 2004.
7. "Effects of Lower Extremity Exercise on Balance Recovery From a Forward Fall," *XV<sup>th</sup>* Congress of the International Society of Electrophysiology and Kinesiology, Boston, Massachusetts, June 2004.
8. "Effects of Step Length on Balance Recovery From a Forward Fall," American Society of Mechanical Engineers Summer Bioengineering Conference, Key Biscayne, Florida, June 2003.

#### INVITED TALKS

1. **King GW** "A Biomechanical Framework for Characterization of Clinician Task Performance," University of Missouri System Research Summit, University of Missouri - Kansas City, Kansas City, MO, September 19, 2018
2. Mendes T, **King GW**, "Engaging the Entrepreneurship-Minded Student in UMKC's Engineering Programs," American Society of Engineering Education Midwest Section Conference, Kansas City, MO, September 17, 2018.
3. Davis SD, Madison-Cannon S, **King GW**, Goff EE, "How's My Posture? A Conductor Analysis," The Midwest Clinic International Band and Orchestra Conference, Chicago, IL, December 18, 2014.
4. Davis SD, Madison-Cannon S, **King GW**, Goff EE, "How's My Posture? A Conductor Analysis," Southwestern Division, College Band Directors National Association Convention, University of Arkansas, Fayetteville, AR, March 21, 2014.
5. **King GW**, "Breaking Down Falls: UMKC's Human Balance and Ambulation Research Laboratory," Missouri Society of Professional Engineers - Western Chapter Dinner Meeting, Kansas City, MO, March 21, 2013.
6. **King GW**, "Breaking Down Falls: Diverse Tools for Studying Human Balance," Senior Falls Prevention Coalition of Clay and Platte Counties, Kansas City, MO, September 11, 2012.
7. "Gait Kinetics on Pervious and Traditional Concrete Walking Surfaces," Center of Excellence in the Study of Dental and Musculoskeletal Tissues Seminar Series, University of Missouri - Kansas City, April 18, 2012.
8. "UMKC's Human Motion Laboratory: A Resource for Applied Research," UMKC Board of Trustees meeting, University of Missouri - Kansas City, February 13, 2012.
9. "UMKC's Human Motion Laboratory: A Collaborative Resource for Neuromusculoskeletal Experimentation," Center of Excellence in the Study of Dental and Musculoskeletal Tissues External Advisory Board meeting, University of Missouri - Kansas City, November 19, 2011.
10. "Using Pervious Concrete to Reduce Slip-Related Falls," Heartland EngAGEment meeting, Kauffman Foundation, Kansas City, MO, July 19, 2011.
11. "Initial Investigation of Pervious Concrete as a Slip-Resistant Walking Surface," Aging Consortium meeting, Institute for Human Development, University of Missouri - Kansas City, June 29, 2011.
12. "Preliminary Investigation of Deceptive Behavior on Biomechanical Measures of Standing Posture," Department of Oral Biology Seminar Series, School of Dentistry, University of Missouri - Kansas City, May 18, 2011.

13. "Initial Investigation of Pervious Concrete as a Slip-Resistant Walking Surface," Department of Oral Biology Seminar Series, School of Dentistry, University of Missouri - Kansas City, November 17, 2010.
14. "Experimental and Computational Resources for Musculoskeletal Biomechanics," Honeywell Federal Manufacturing and Technologies, Kansas City, MO, August 16, 2010.
15. "Biomechanics of the Step Response Used as a Fall Prevention Strategy," Department of Oral Biology Seminar Series, School of Dentistry, University of Missouri - Kansas City, January 28, 2009.
16. "Biomechanics of the Step Response Used as a Fall Prevention Strategy," University of Missouri, Columbia, MO, March 7, 2008.

GRANTS AWARDED

1. National Institutes of Health (1R21EB025272-01A1)  
 Title: *Virtual Pelvic Surgery Simulator for the Prevention of Surgical Errors*  
 Period: 9/14/18 - 9/13/21  
 Amount: \$609,705  
 Role: Co-PI
2. University of Missouri Research Board Grant  
 Title: *Virtual Pelvic Surgery Simulator for the Prevention of Surgical Errors*  
 Period: 6/1/17 - 5/31/18  
 Amount: \$47,048  
 Role: Co-PI
3. University of Missouri - Kansas City Funding For Excellence Grant  
 Title: *Using Home-Based and Wearable Technology to Predict Cognitive Frailty and Functional Decline in Aging*  
 Period: 10/1/16 - 9/30/17  
 Amount: \$14,920  
 Role: PI
4. University of Missouri System Interdisciplinary Intercampus Research Program  
 Title: *Informatic and Architectural Analysis of Human Performance in a Clinical Simulation Setting*  
 Period: 8/1/14 - 7/31/15 Amount:\$94,640  
 Role: Co-PI
5. University of Missouri Research Board Grant (UMRB-KCJ23/K3703049-K8714)  
 Title: *Biomechanical and Neurological Correlates of Balance Impairment in Parkinson's Disease*  
 Period: 9/1/11 - 8/31/12  
 Amount: \$64,000  
 Role: PI
6. National Science Foundation EARly-concept Grant for Exploratory Research (CMMI-0951444)  
 Title: *NSF EAGER: Improving Pedestrian Safety Using Pervious Concrete to Reduce Slip-Related Falls*  
 Period: 1/1/10 - 12/31/10  
 Amount: \$40,000  
 Role: Co-PI
7. Center for Identification Technology Research Grant (NSF I/UCRC)  
 Title: *Economical, Unobtrusive Measurement of Postural Correlates of Deception*  
 Period: 8/1/09 - 4/31/10

Amount: \$30,000  
Role: Co-PI

8. National Science Foundation Major Research Instrumentation Grant (CBET-0821459)  
Title: *MRI: Acquisition of an Experimental Platform to Support Research and Educational Activities in Human Motion*  
Period: 9/1/08 - 8/31/11  
Amount: \$263,685 (plus commitment of \$113,008 in matching funds from UMKC SCE)  
Role: Co-PI
9. University of Missouri Research Board Grant (UMRB-KB337/K3703035-K8714)  
Title: *An Inverse Model to Predict Lower Extremity Joint Dynamics During a Balance Recovery Maneuver*  
Period: 9/1/07 - 8/31/08  
Amount: \$26,800  
Role: PI
10. University of Missouri - Kansas City Faculty Research Grant  
Title: *Acquisition of Balance Data for Preliminary Testing of an Inverse Model to Predict Lower Extremity Joint Dynamics During Falls*  
Period: 9/1/07 - 8/31/08  
Amount: \$6,520  
Role: PI

PROPOSALS  
SUBMITTED, NOT  
AWARDED

1. National Institutes of Health  
Title: *Biomechanics-Based Pavement Textural Design Parameters for Slip Avoidance in Older Adults* (new submission)  
Period: 12/1/18 - 11/30/21  
Amount: \$447,260  
Role: PI
2. National Institutes of Health  
Title: *Biomechanics-Based Pavement Textural Design Parameters for Slip Avoidance in Older Adults* (resubmission)  
Period: 4/1/18 - 3/31/21  
Amount: \$448,748  
Role: PI
3. National Institutes of Health  
Title: *Biomechanics-Based Pavement Textural Design Parameters for Slip Avoidance in Older Adults*  
Period: 7/1/17 - 6/30/20  
Amount: \$437,949  
Role: PI
4. University of Missouri Research Board  
Title: *Virtual Pelvic Surgery Simulator for the Prevention of Surgical Errors*  
Period: 2/1/17 - 1/31/18  
Amount: \$73,096  
Role: Co-PI
5. United States Department of Defense  
Title: *Quantitative and Qualitative Clinical Skills Assessment and Correlation with Patient Outcomes*

- Period: 9/1/16 - 2/28/19  
Amount: \$1,237,904  
Role: PI
6. University of Missouri - Kansas City Funding For Excellence Grant  
Title *IMAG Distinguished Lecturers Series*  
Period: 10/1/15 - 9/30/16  
Amount: \$15,000  
Role: PI
  7. University of Missouri - Kansas City Funding For Excellence Grant  
Title *A Pilates Intervention to Improve Conductor Posture and Music Performance Quality*  
Period: 10/1/15 - 9/30/16  
Amount: \$14,952  
Role: PI
  8. National Science Foundation  
Title: *A Quadrotor-Based Mechatronics Design Course for Mechanical Engineering Undergraduates*  
Period: 7/1/14 - 6/30/15  
Amount: \$93,583  
Role: Co-PI
  9. VentureWell  
Title: *Engineering, Design, and Commercial Translation: A VentureWell Course and Program Faculty Grant Proposal*  
Period: 3/1/15 - 4/30/17  
Amount: \$49,400  
Role: Co-PI
  10. National Institutes of Health  
Title: *Kansas City Consortium for Studies of Aging (KC SAGE)*  
Period: 7/1/14 - 6/30/19  
Amount: \$2,315,619  
Role: Co-PI
  11. Frontiers: The Heartland Institute for Clinical and Translational Research Pilot and Collaborative Studies Funding Program  
Title: *Development of a Whole-Body Biomechanical Model for Fall Risk Intervention*  
Period: 3/1/14 - 2/28/15  
Amount: \$20,000  
Role: PI
  12. Centers for Disease Control and Prevention  
Title: *Investigation of Slip-Resistant Paved Surfaces for Fall Risk Reduction in Working Environments*

Period: 4/1/14 - 3/31/16  
Amount: \$367,424  
Role: PI

13. Ewing Marion Kauffman Foundation - Letter of Inquiry  
Title: *Development of Innovative Technologies to Detect and Mitigate Slipping Hazards in the Built Environment*  
Period: N/A  
Amount: \$80,000  
Role: PI
  
14. University of Missouri System Interdisciplinary Intercampus Research Program  
Title: *Traumatic Brain Injuries and Alzheimer's Dementia*  
Period: 5/1/13 - 8/31/14  
Amount: \$70,000  
Role: Co-PI
  
15. Frontiers: The Heartland Institute for Clinical and Translational Research Pilot and Collaborative Studies Funding Program  
Title: *Biomechanical and Neurological Correlates of Human Balance*  
Period: 3/1/13 - 2/28/14  
Amount Requested: \$27,750  
Role: PI
  
16. Walgreens Foundation Grant  
Title: *Reducing Slip-Related Falls on Paved Walking Surfaces*  
Period: 12/1/12 - 11/30/14  
Amount Requested: \$97,132  
Role: PI
  
17. Missouri EPSCoR Concept Paper  
Title: *Multimodal Methodologies for Fall Risk Detection*  
Role: PI  
To be considered for inclusion in statewide submission of grant proposal to NSF EPSCoR Research Infrastructure Improvement Program
  
18. National Science Foundation Unsolicited Award  
Title: *Investigation into Pavement Slipping Characteristics using Biomechanical Evaluation*  
Period: 9/1/12 - 8/31/15  
Amount Requested: \$315,300  
Role: Co-PI
  
19. Frontiers: The Heartland Institute for Clinical and Translational Research Pilot and Collaborative Studies Funding Program  
Title: *Biomechanical and Neurological Correlates of Human Balance* (second submission)  
Period: 3/1/12 - 2/29/13  
Amount Requested: \$29,908  
Role: PI
  
20. National Science Foundation Informal Science Education Award  
Title: *CRPA: Improving Pedestrian Safety Using Pervious Concrete to Reduce Slip-Related*

*Falls*

Period: 9/1/11 - 8/31/13

Amount Requested: \$147,867

Role: PI

Reviewer Scores: Fair, Fair, Good

21. National Science Foundation Unsolicited Award  
Title: *Optimizing Pervious Concrete Slip and Fall Safety with Biomechanical Evaluation* (second submission)  
Period: 5/1/12 - 4/30/15  
Amount Requested: \$301,522  
Role: Co-PI
22. Frontiers: The Heartland Institute for Clinical and Translational Research Pilot and Collaborative Studies Funding Program  
Title: *Biomechanical and Neurological Correlates of Human Balance*  
Period: 10/1/11 - 2/29/12  
Amount Requested: \$29,940  
Role: PI
23. National Science Foundation Unsolicited Award  
Title: *Optimizing Pervious Concrete Slip and Fall Safety with Biomechanical Evaluation* (first submission)  
Amount Requested: \$300,174  
Role: Co-PI  
Reviewer Scores: Excellent/Very Good, Good, Good, Good
24. National Institutes of Health Academic Research Enhancement Award  
Title: *Testing Multimodal Methodologies for Fall Risk Detection in Parkinson's Patients*  
Amount Requested: \$387,418  
Role: PI
25. University of Missouri Research Board Grant  
Title: *Cortical Near Infrared Spectroscopy for Fall Risk Detection in Parkinson's Disease*  
Amount Requested: \$49,950  
Role: PI
26. National Science Foundation Faculty Early Career Development Grant  
Title: *CAREER: A Model-Driven Approach to Guide Interventions for Balance Recovery Improvement in Older Adults* (second submission)  
Amount Requested: \$496,610  
Role: PI  
Reviewer Scores: Very Good, Very Good, Very Good, Fair
27. National Institutes of Health Shared Instrumentation Grant  
Title: *Imaging Bone and Brain at the Cellular Level using MicroXCT Technology*  
Role: Other User
28. National Science Foundation Academic Research Infrastructure Recovery and Reinvestment Grant (ARI-R2)  
Title: *CaN-RISE: Campus Network Research Infrastructure for Science and Engineering*  
Amount Requested: \$918,482  
Role: Senior Personnel

29. National Science Foundation Major Research Instrumentation Recovery and Reinvestment Grant (MRI-R2)  
 Title: *MRI-R2: Acquisition of a High Performance Computing and Mechanical Testing Facility to Support Musculoskeletal Research and Education*  
 Amount Requested: \$748,297  
 Role: Key Personnel
30. National Science Foundation Faculty Early Career Development Grant  
 Title: *CAREER: A Model-Driven Approach to Guide Interventions for Balance Recovery Improvement In Older Adults* (first submission)  
 Amount Requested: \$439,695  
 Role: PI  
 Reviewer Scores: Good, Good, Good, Fair
31. Missouri Life Sciences Research Board - Life Sciences Trust Fund Research Grant (letter of intent selected for full proposal; full proposal submitted but not funded due to budget restrictions)  
 Title: *Multi-Modal Methodologies for Fall Risk Detection in Older Adults*  
 Amount Requested: \$377,750  
 Role: PI
32. National Institutes of Health - National Center for Research Resources Shared Instrumentation Grant  
 Title: *Establishment of a High Performance Computational and Mechanical Testing Facility (HPCMTF)*  
 Amount Requested: \$480,780  
 Role: Other (Secondary User)
33. University of Missouri Research Board Special Opportunity Grant  
 Title: *Purchase of Measurement Equipment to Support Bioengineering Research Activities Focused on Human Movement*  
 Amount Requested: \$61,085 (plus commitment of 1:1 matching funds from UMKC SCE)  
 Role: PI
34. University of Missouri Research Board Special Opportunity Grant  
 Title: *Purchase of Measurement Equipment to Support Bioengineering Research Activities Focused on Human Movement*  
 Amount Requested: \$51,572 (plus commitment of 1:1 matching funds from UMKC SCE)  
 Role: PI

OTHER FUNDING  
AWARDED

1. Mobility Designed, LLC  
 Lab donation supporting undergraduate research assistant working on crutch biomechanics project  
 Date: July, 2017  
 Amount: \$1,920

**Service**

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DEPARTMENTAL  
SERVICE

- Chair, UMKC Civil and Mechanical Engineering Faculty Search Committee (2016 - present)
- Chair, UMKC Civil and Mechanical Engineering Faculty Search Committee (2015-2016)
- Chair, UMKC Civil and Mechanical Engineering Faculty Search Committee (2013-2014)



Member, UMKC Civil and Mechanical Engineering Faculty Search Committee (2009-2010)

Member, UMKC Civil and Mechanical Engineering Laboratory Committee (2008 - present)

Member, UMKC Civil and Mechanical Engineering Graduate Program Committee (2008 - present)

Academic advising of new, continuing, and transferring Mechanical Engineering students (2007 - present)

Member, UMKC Civil and Mechanical Engineering Faculty Search Committee (2007-2008)

SCHOOL  
SERVICE

Chair, SCE Scholarship Committee (2017 - present)

Chair, SCE Curriculum Committee (2015 - present)

Member, SCE Space Audit Committee (2012 - present)

Member, SCE Scholarship Committee (2009 - 2016)

Participated in SCE new student orientation (2007 - present)

Represented SCE at UMKC Campus Visit Day; November 9, 2007

UNIVERSITY  
SERVICE

Member, UMKC Undergraduate Curriculum Committee (2014 - present)

Member, UMKC Faculty Senate (2014 - 2016)

Represented SCE on University-wide search committee for the founding Dean of the UMKC Honor's College (2014)

Faculty advisor, UMKC Human Powered Vehicle Team (2013 - present)

Represented SCE on University-wide search committee for the Director of UMKC's Translational/Clinical Research Center (2012)

Grant Reviewer, University of Missouri Research Board (2008 - present)

Faculty advisor, Pi Tau Sigma, Missouri Phi Eta chapter (2007 - present)

Faculty co-advisor, Society of Automotive Engineers, University of Missouri - Kansas City (2009)

NATIONAL  
SERVICE

Program Committee, 34th Annual Meeting of the American Society of Biomechanics (2010)

Abstract Reviewer, ASME Summer Bioengineering Conference (2008 - 2009)

Co-Chair, session on Bipedal Stance and Gait, ASME Summer Bioengineering Conference, Lake Tahoe, California (2009)

Co-Chair, session on Analysis of Human Movement, ASME Summer Bioengineering Conference, Marco Island, Florida (2008)

Grant Reviewer, NIDRR Rehabilitation Engineering Research Center program (2007)

JOURNAL REVIEWS *Gait and Posture*  
*Journal of Biomechanical Engineering*  
*The International Journal of Neuroscience*  
*Biological Psychology*  
*Journal of Applied Biomechanics*  
*Medicine and Science in Sports and Exercise*  
*Journal of Biomechanics*

## Professional

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REGISTRATION Licensed Professional Engineer, Missouri (#2017019000)

ACTIVITIES Entrepreneurship Fellow, UMKC Regnier Institute for Entrepreneurship and Innovation (2014 - present).

Research Divison Head, UMKC Consortium for Aging in Community (2013 - present).

Founding Member, UMKC Consortium for Aging in Community (2011 - present).

Member, Institute for Neurological Disorders; University of Kansas Medical Center - Kansas City, KS (2009 - present).

National Science Foundation CAREER Proposal Writing Workshop (1 of 150 participants invited out of over 250 applicants); George Mason University, Arlington, VA, March 12-13, 2009.

University of Missouri New Faculty Teaching Scholars Program (2007 - 2008).

CITI Course in the Protection of Human Research Subjects: Human Research Curriculum; University of Missouri - Kansas City, Kansas City, MO, May 23, 2007.

Completed Pathway Advisor Training for PeopleSoft web-based enrollment/grading system; University of Missouri - Kansas City, Kansas City, MO, May 7, 2007.

Attended the Kansas City Area Life Sciences Institute's Annual Dinner, "Strategy for Success: Pathways to Implementation"; Kansas City, MO, April 11, 2007.

Attended the SCE faculty seminar, "Assembling a Best Practice Toolbox: Data Collection and Hypothesis Testing"; University of Missouri - Kansas City, Kansas City, MO, January 19, 2007.

MEMBERSHIPS

Member, American Society of Mechanical Engineers (ASME)  
Member, International Society of Biomechanics (ISB)  
Member, American Society of Biomechanics (ASB)

CONSULTING  
ACTIVITIES

BlueScope Buildings North America, Inc., Kansas City, MO (November 2018 - present)

**Community**

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Interviewed for segment on motion analysis research on National Public Television's SciTech Now, Air date: April 11, 2016.

Conducted biomechanics laboratory demonstrations for NSBE Jr. Chapter visit, November 4, 2011.

Participant in PIPELINE Science Power, a program designed to expose urban high school students to hands-on learning activities in science, engineering, technology, and mathematics (STEM); developed by UMKC's Division of Diversity, Access, and Equity (Spring 2011)

Member of the "UMKC Nine", a consortium of faculty spearheading a program to pair area high schools with SCE faculty liaisons who facilitate activities to enhance high school STEM education (2010 - present)

Featured guest on *Building Kansas City* radio program; discussion of slippery conditions on concrete walking surfaces with host Dr. Deb O'Bannon. Air date: November 21, 2010, KCMO 710 AM

Participant in Inventure U, an engineering-focused Girl Scout camp organized in partnership with UMKC's School of Computing and Engineering (2009)

Member and Secretary, Board of Church Properties, Calvary Lutheran Church, Kansas City, MO (2009 - 2011)

Interviewee in video highlighting successful graduates from Blue Valley School District, Overland Park, KS (2009)

Mentor, FIRST Robotics Competition Team, Grandview High School, Grandview, MO (2009)

Member, Calvary Lutheran Church, Kansas City, MO (2008 - 2016)

Member, Saint Stephen Lutheran Church, Liberty, MO (2016 - Present)