

**Lissette M. Ruberté, Ph.D., P.E.**  
**Senior Engineer**

**Professional Profile**

Dr. Lissette M. Ruberté is a Senior Engineer in Exponent's Biomechanics practice. Dr. Ruberté has unique experience in experimental and computational modeling of joint and muscle loads and their associated injury risks. Her principal area of expertise is spine injury biomechanics and, as part of her research efforts, she has assisted in the evaluation of surgical interventions and prototype medical devices used to treat people with spinal deformities. Additionally, Dr. Ruberté has experience in the use of optical motion capture systems, electromyography (EMG), pressure sensors, and metabolic monitors to evaluate human safety and performance during the operation of fitness and rehabilitative equipment. Dr. Ruberté's interests are mechanisms of injury associated with occupational and recreational activities.

Prior to joining Exponent, Dr. Ruberté was a Research Assistant at the Computer Assisted Orthopedic Biomechanics Laboratory, at Rush-Presbyterian-St. Luke's Medical Center and at the Musculoskeletal Biomechanics Laboratory at Edward Hines Jr. VA Rehabilitation Research and Development Center. Dr. Ruberté also worked for three years as a Research Assistant at the Prosthetics Research Laboratory located at the Rehabilitation Institute of Chicago and has experience in the design and development of technical assistive devices.

**Academic Credentials and Professional Honors**

Ph.D., Bioengineering, University of Illinois, 2009  
M.S., Biomedical Engineering, Northwestern University, 2004  
B.S., Mechanical Engineering, University of Puerto Rico, 2001

Diversifying Higher Education Faculty in Illinois Fellowship, 2005 to 2009;  
Thomas P. Andriacchi Fellowship for Biomechanics Research, 2006–2008; Biotechnology Institute Fellow, 2006–2007; Ford Foundation Pre-doctoral Fellowship for Minorities Honorable Mention, 2005–2006; Young Educators Fellow, Center for the Advancement of Hispanics in Science and Engineering Education, 2004; GEM Fellow, National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc., 2001–2003; Merck Engineering and Technology Scholarship Recipient, 1999–2001

**Licenses and Certifications**

Registered Professional Engineer, Illinois, #062-064409  
PC Crash Course, Compressed Essentials and Expert Skills, MEA Forensic, Orlando, FL,  
April 6–8, 2011

## **Languages**

Spanish – Native Speaker

## **Publications**

Weaver, B, Ruberté L, Khan F, Arndt S. Normal pedal activation in real world situations. SAE 2011 World Congress, 2011-01-0551.

Ruberté LM. Effect of lumbar disc degeneration on spine biomechanics and trunk muscle recruitment patterns. Doctoral Dissertation, University of Illinois at Chicago, 2009.

Ruberté LM, Natarajan R, Andersson G. Influence of single-level lumbar degenerative disc disease on the behavior of the adjacent segments-A finite element model study. *Journal of Biomechanics* 2009; 42(3):341–348.

Ruberté LM. Design of a locking humeral rotator for above-elbow prostheses. Master's Thesis, Northwestern University, 2004.

Ruberté, LM. Development of a new mechanical humeral rotator. *Capabilities*, Winter/Spring 2003; 11(4):15–16.

## **Presentations**

Ruberté LM, Havey RM, Dongkeun L, Patwardhan AG. A frontal plane lumbar spine analogue subjected to a follower load by pneumatic muscles. 24<sup>th</sup> North American Spine Society Meeting, San Francisco, CA, November 10–14, 2009.

Ruberté LM, Natarajan R, Andersson G. Changes in the quantity and quality of motion of a degenerated lumbar spine during flexion/extension: A finite element model study. SpineWeek Geneva, Switzerland, May 26–30, 2008.

Ruberté LM, Natarajan R, Andersson G. Biomechanical effect of lumbar disc degeneration on adjacent segments—A finite element model study. International Symposium on Computer Simulation in Biomechanics, Tainan, Taiwan, June 28–30, 2007.

Ruberté LM, Natarajan R, Andersson G. Biomechanical effect of lumbar disc degeneration under flexion/extension- A finite element model study. ASME 2007 Summer Bioengineering Conference, Keystone, CO, June 20–24, 2007.

Ruberté LM, Heckathorne CW. New cable-actuated locking humeral rotator. 11th International Society for Prosthetics and Orthotics World Congress, presented by Heckathorne in Hong Kong, August, 1–6, 2004.

## **Poster Presentations**

Ruberté LM, Natarajan RN, Andersson G. Effect of disc degeneration on the kinematics of the lumbar spine—A finite element model study. 54th Annual Meeting of the Orthopedic Research Society, San Francisco, CA, March 2–5, 2008.

Qunli S, Lin F, Al-Saeede S, Ruberté L, Nam E, Hendrix R, Makhsous M. Soft tissue stress in buttock-thigh of a seated individual elucidated by a 3D FE model. 28th Annual RESNA Conference Proceedings, Atlanta, GA, June 25–27, 2005.

Qunli S, Lin F, Al-Saeede S, Ruberté L, Nam E, Hendrix R, Makhsous M. Finite element modeling of human buttock-thigh tissue in a seated posture, 2005 Summer Bioengineering Conference, Vail, CO, June 22–26, 2005.

Makhsous M, Taylor S, Pucci D, Bankard J, Ruberté L, Lin F. Flexible and user-adjustable lumbar-pelvic-thoracic support system for wheelchair seating. RESNA 28th International Conference, Atlanta, GA, June 25–27, 2005.

Ruberté LM, Heckathorne CW. New cable-actuated locking humeral rotator. Rehabilitation Engineering and Assistive Technology Society of North America Annual Conference, Orlando, FL, June 20–22, 2004.

## **Professional Affiliations**

- Society of Automotive Engineers International—SAE
- Hispanic National Bar Association—HNBA
- Society of Hispanic Professional Engineers—SHPE
- Association for Women in Science—AWIS