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Elaine J. Chiu, M.D., Ph.D., FACEP

Professional Profile

Dr. Elaine Chiu specializes in the biomechanics and dynamics of human injury including vehicle collisions, industrial injuries, falls and sporting accidents. Dr. Chiu has a dual background in trauma medicine and biomechanics. Her work includes analysis of traumatic injuries and biomechanical reconstruction. By combining her applied science and clinical backgrounds, she provides a unique perspective and cross-disciplinary approach to her work. Dr. Chiu has clinical training which includes two years of Orthopedic Surgery and over 15 years of Emergency Medicine. She is board certified in Emergency Medicine and currently works with Vituity in Los Banos, CA and also at the Contra Costa Regional Medical Center in Martinez, CA. Dr. Chiu has researched the human intervertebral disc using MRI and mechanical testing, with modeling of lumbar disc creep behavior. Her research also includes work with a hand replantation orthopedist at UCSF, a study of saw injury patients in San Francisco, and an Intervention Interview Study of intoxicated trauma patients at the University Medical Center in Fresno, California.

Prior to joining InSciTech, Dr. Chiu worked in the Biomechanics Section at Exponent, Failure Analysis Associates, in Menlo Park.

Credentials and Professional Affiliations

Ph.D., Bioengineering, Medical Imaging, University of California, San Francisco/Berkeley
Bioengineering Graduate Group, 1998

M.D., University of California, San Francisco, 1988

A.B., Biophysics, University of California, Berkeley, 1983

Resident, Department of Emergency Medicine, UCSF Fresno, 2003

Intern and Resident, Department of Orthopaedic Surgery, UCSF, 1990

Regents Fellowship, UC San Francisco; Student Research Award, UC San Francisco; Mentorship Fellowship, UC San Francisco; Graduate Opportunity Fellowship, UC San Francisco; Chevron Corporation Scholarship, outstanding engineering students, CCSF; Honors Graduate, UC Berkeley; James H. Hjul Honorarium Scholarship, freshman academic recognition, UC Berkeley

Licenses and Certifications

Board Certified, American Board of Emergency Medicine
Physician and Surgeon License, Medical Board of California
Drug Enforcement Agency, U.S. Department of Justice

Publications

Magnetic resonance imaging measurement of relaxation and water diffusion in the human lumbar intervertebral disc under compression in vitro. *Spine* 2001; 26(19):E437-E444. E. J. Chiu, D.C. Newitt, M.R. Segal, S. S. Hu, J.C. Lotz, S. Majumdar

Magnetic resonance imaging of trabecular bone structure in the distal radius: relationship with x-ray tomographic microscopy and biomechanics. *Osteoporosis International* 1996; 6(5):376-385. S. Majumdar, D. Newitt, A. Mathur, D. Osman, A. Gies, E. Chiu, J. Lotz, J. Kinney, H. Genant

Evaluation of technical factors affecting the quantification of trabecular bone structure using magnetic resonance imaging. *Bone* 1995; 17(4):417-430. S. Majumdar, D. Newitt, M. Jergas, A. Gies, E. Chiu, D. Osman, J. Keltner, J. Keyak, H. Genant

Treatment of infected non-unions and segmental defects of the tibia with staged microvascular muscle transplantation and bone-grafting. *J Bone Joint Surg* 1988; 70-A(3):377-386. L. Gordon, E.J. Chiu.

Presentations and Published Abstracts

Biomechanics in Accident Reconstruction, A Presentation to the Santa Clara Public Defenders Office, July 15, 2014, San Jose, CA.

Acute Radiographic Interpretation. California Association of Physician Assistants, Annual Meeting, Santa Rosa, CA, February 2008. E. J. Chiu

Acute Patient Presentations and Review of Common Emergency Radiographs. California Emergency Physicians regional meetings, Midlevel Lectures, San Jose & San Diego, CA, Spring 2007. E.J. Chiu

Lectures to UCSF Family Practice Residents, Natividad Medical Center, Salinas, CA, topics: acute neurologic presentations, physics of medical imaging/indications for use, acute orthopedic presentations & splinting techniques, common symptoms with serious diagnoses not to be missed, acute emergency procedures: intubation, cryothyroidotomy, tube thoracostomy, ultrasound guided central line placement, 2005–2013.

Educational Director Emergency Department, Saint Francis Memorial Hospital, monthly presentations to Emergency Physicians, physician assistants and nursing staff; quarterly LLSA (Lifelong Learning Self-Assessment) meetings for Emergency Physicians, January 2006–May 2008.

Presentations, continued

Brief intervention with alcohol-related trauma patients at University Medical Center, Fresno: A study testing the effectiveness of a brief intervention interview to change behavior with hospitalized patients involved in accidents while under the influence of alcohol. Western SAEM meeting, Scottsdale, AZ, April 2003. E.J. Chiu

MRI measurement of water diffusion in the human intervertebral disc with compression. 43rd Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 10, 1997. E.J. Chiu, D.C. Newitt, S.S. Hu, J.C. Lotz, S. Majumdar

Correlation of intervertebral disc hydration with MR-derived diffusion coefficients and relaxation times. 43rd Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 12, 1997. E.J. Chiu, D.C. Newitt, S.S. Hu, J.C. Lotz, S. Majumdar

High resolution and diffusion weighted MRI to study the human intervertebral disc in vitro. Inmon/Abbott Conference, University of California, San Francisco, Department of Orthopaedic Surgery, May 1-3, 1996. E. Chiu, J. Lotz, S. Majumdar

Characterization of the human intervertebral disc with high resolution and diffusion weighted magnetic resonance imaging. The Society of Magnetic Resonance, Nice, France, August 1995. E. Chiu, J. Lotz, S. Majumdar

Comparison of trabecular structure measured using MR microscopy and 18 micron X-ray tomographic microscopy. The Society of Magnetic Resonance, Nice, France, August 1995. S. Majumdar, A. Gies, E. Chiu, D. Osman, D. Newitt, M. Jergas, J. Kinney, J. Lotz, H. Genant

High resolution magnetic resonance imaging and measurement of water diffusion in the human intervertebral disc under compression. 41st Annual Meeting of the Orthopaedic Research Society, Lake Buena Vista, FL, February 1995. E. Chiu, J. Lotz, S. Majumdar

Professional Affiliations

- American College of Emergency Medicine (fellow)
- American Board of Emergency Medicine (member)

Specialized Training

Bloodstain Pattern Analysis Course, IAI and IABPA approved by San Bernardino County Sheriff's Department, 40 hours / Feb 28 – Mar 4, 2011

Traditional Chinese Medicine: Acupuncture and Herbal Courses for Physicians, San Francisco, CA, 600 hours, July 2018 and October 2019