

P. Douglas Kiester, MD
Professor of Orthopaedics—Spine
University of California—Irvine

1998—Present	Professor of Orthopaedics, University of California, Irvine, Irvine, CA.
1998—2003	V.A. Hospital/Spinal Cord Rehabilitation Center, Long Beach, CA.
1988—1998	Private Practice in Beverly Hills, CA. Privileges at Cedars-Sinai Medical Center, Beverly Hills Medical Center, Century City Hospital, Midway Hospital Medical Center, St. John’s Ambulatory Surgery Center in Beverly Hills, CA.
1987—1988	Spine Surgery fellowship, Rush-Presbyterian St. Luke’s, Chicago, IL. Thomas McNeill, M.D. and Gunner Anderson, M.D.
1985—1987	Orthopaedic Residency, served as Chief Resident Bronx-Lebanon Medical Center, Bronx, New York, NY.
1983—1985	Orthopedic Residency, University of Nebraska, Omaha, NE.
1982—1983	Biomechanics Fellowship, Rancho Los Amigos, Downey, CA.
1981—1982	Surgical Internship, LA County/USC, Los Angeles, CA.
1976—1981	MD degree. Indiana University, Indianapolis, IN.
1975—1976	Ph.D. Studies, Biophysics and Computing, University of Utah.
1971—1976	BS, Chemistry, Cum Laude, University of Utah.

Licenses:

1982—present MD California.

Certifications:

1990—present	Diplomate, American Board of Orthopedic Surgery, Recert. 2000, 2011, 2020.
1991—present	Fellow, American Academy of Orthopaedics.
2005—present	Certified in traffic accident reconstruction by ACTAR (The Accreditation Commission of Traffic Accident Reconstructionists).
1991—1994	Qualified Medical Examiner (QME).

Research Appointments:

1974—1976	Department of Chemistry , University of Utah Basic Air Force study on high temperature hydraulic fluids. Used Electron Spin Resonance, Nuclear Magnetic Resonance, Infra-Red, Ultra Violet and Gas Chromatography/Mass Spectrophotometry.
1976	Biophysics and Computing , University of Utah Converting analog force experimental outputs to digital.
1977—1978	Hematology , Robert Bahner, MD, Indiana University. Lipid membrane studies on Chedlak-Higashi mice.
1978—1979	Anesthesiology , Raymond Paradise, MD Anesthesia levels in puppies.
1982—1983	Gait laboratory , Jacqueline Perry, MD, Rancho Los Amigos Acquired from V.A. \$67,000 grant to study prosthetic feet SACH vs. SAFE Improved running/walking energy cost. Developed equipment to analyze forces around the shoulder while pitching.

Professional Organization Memberships:

1989—2002	American Medical Association.
1989—1998	Los Angeles County Medical Association.
1991—present	Western Orthopaedic Association.
1991—present	American Academy of Orthopaedic Surgeons.
1998—present	Orange County Medical Association.
2006—present	California Association of Accident Reconstruction Specialists.
2008—present	Accident Reconstruction Communications Network.
2014—present	European Spine Society.

Presentations at Scientific Meetings and Societies:

May 1989	The Relationship of Dose to Response for Chymopapain. International Society for the Study of the Lumbar Spine, Kyoto, Japan.
June 1989	Proper Dosage for Chymopapain Injections as Demonstrated in a Rabbit Model. North American Spine Society, Quebec, Canada.
May 1998	A New Theory for the Cause and Progression of Adolescent Scoliosis. UC—Irvine.
June 1999	Cox 1, Cox 2 and Non-Steroidal Anti-Inflammatory Treatment. Pediatric Colloquium, Fountain Valley, CA.
May 2006	Update on Major Deformity and Scoliosis Fusion Techniques. Multidisciplinary Spine Symposium, UC—Irvine.
Oct. 2006	The two Axes of Lumbar Rotation, a New Lumbar Motion Model. Department of Neurosurgery Grand Rounds, UC—Irvine.
Aug. 2010	Concave Rotation in Scoliosis of Scheuermann's Kyphosis. Western Orthopaedic Assoc., Monterey, CA
June 2011	How balance is Maintained During Lumbar Rotation. UC—Irvine Spine Symposium.
June 2013	Localization of the Adolescent Scoliosis tether using CT scans. Western Orthopaedic Assoc., Portland, OR.
June 2014	How Tethers Link Rotation and Displacement Which Results in Vertebral Body Tilting. IMAST, Barcelona, Spain.
July 2014	The Biomechanics of Adolescent Scoliosis. Spine Summit, Dana Point, CA.

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- Feb. 2015 Roman Stone Arches and Surgically Reducing AIS Curves. Spine Summit, Park City, UT
- April 2015 Lumbar Rotation, Maintaining Standing Balance, Disk function, and the Etiology of Adult Scoliosis. Wilson—Boost Interurban Club.
- July 2015 How 2 Axis Lumbar Rotation helps us Maintain Standing Balance. Western Orthopaedic Assoc. Coeur d'Alene, ID.
- Sept. 2017 The Surgical treatment of Adolescent Idiopathic Scoliosis without instrumentation or fusion. Jordanian Orthopedic Society. Ammon, Jordan;
- 1998-2016 Community and resident lectures, and national case presentations are not listed.

Publications:

1. Ritter, Merrill A., Kiester, P. Douglas: *Femoral Stem Failures in Total Hip Arthroplasty: An Unusual Casual Mechanism*. Clinical Orthopedics and Related Research, 1982 May (165): 176-9.
2. Kiester PD, Connolly JF. *Fibular Head Dislocation—another differential in the diagnosis of knee injury*. Nebraska Medical Journal, 1985 Jan;70(1):26-7.
3. Kiester, P.D., Duke, A.D., *Is It Malingering, or is it "Real"?, Eight Signs That Point To Non-Organic Back Pain: Postgraduate Medicine, December 1999: 106 (7): 77-84.*
4. Alli, B., Kiester, P.D., *Psychological Aspects Of Back And Neck Pain, In The Practice of Minimally Invasive Spinal Technique*, Editors: Savitz, Chiu, Yeung: Pub CCS, Lima, Ohio , 2000 p.181-186 (Book Chapter).
5. Rosen, C.; Kiester, P.D.; Lee, T. Q.; *Lumbar Disk Replacement Failures: Review of 29 Patients and Rationale for Revision*, Orthopedics, 2009; 32(8), p. 256.
6. Drivers of surgery for the degenerative hip, knee, and spine: a systematic review. Bederman SS, Rosen CD, Bhatia NN, Kiester PD, Gupta R. Clin Orthop Relat Res. 2012 Apr;(470(4))1090-105.
7. Use of lateral access in the treatment of the revision spine patient. Bederman SS, Le VH, Pahlavan S, Kiester PD, Bhatia NN, Deviren V., Scientific World Journal. 2012;2012:308209.
8. Fixation techniques for complex traumatic transverse sacral fractures: a systematic review. Bederman SS, Hassan JM, Shah KN, Kiester PD, Bhatia NN, Zamorano DP. Spine (Phila Pa 1976). 2013 Jul 15;38(16):E1028-40.
9. Robotic Guidance for S2-Alar-Iliac Screws In Spinal Deformity Correction. Bederman SS, Hahn P, Colin V, Kiester DP, Bhatia NN. Clin Spine Surg. 2016 May 26.
10. Surgical techniques for spinopelvic reconstruction following total sacrectomy: a systematic review. Bederman SS, Shah KN, Hassan JM, Hoang BH, Kiester PD, Bhatia NN. Eur Spine J. 2014 Feb;23(2):305-19.

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11. ICD-10 and Its Relevance to Spine Surgeons. Doermann, Alex; Massel, Dustin H.; Mayo, Benjamin C.; Kiester, Douglas; Bhatia, Nitin; Lee, Yu-Po. *Contemporary Spine Surgery*. 17(9):1-5, September 2016.
12. Does the Addition of Tobramycin Decrease Infection Risk in Patients undergoing Lumbar Spinal Instrumented Fusions? Lee, Yu-Po; Bhatia, Nitin N.; Kiester, P D; Farhan, Saif Bassam. (thespnejournalonline.com); <http://dx.doi.org/10.1016/j.spinee.2016.07.066>.
13. Smith-Peterson and pedicle subtraction osteotomies. Halim, Alex; Kiester, P Douglas; Lee, Yu-Po. DOI: 10.1053/j.semss.2016.12.004.
14. Accuracy of Pedicle Screw placement in Revision Spine Surgery using Robotic Guidance. Bederman, Samuel s; Jain, Nick; Kiester, P Douglas; Bhatia, Nitin. *Global Spine Journal*, Vol 5, Issue 1-Supp, pages: s-0035-1554210-s-0035-1554210.
15. Robotic Guidance for S2-Alar-Iliac Screws in Spinal Deformity Correction. Bederman, SS; Hahn, P; Kiester, PD; Bhatia, N. *Clinical Spine Surgery*: February 2017, Vol 30, Issue 1, pages e49-e53.
16. Variables Affecting Return to Work After Spinal Surgery in a Non-workers' Compensation Population: A Retrospective Cohort Study. Lee, Yu-Po; Farhan, Saifal-Deen; Kiester, P Douglas; Rosen, Charles; Pendi, Arif. *JAAOS (J. American Academy of Orthopaedic Surgeons)*, December 2017, Vol 25, Issue 12, pages e282-e288.
17. Outcomes and Complications After Spinal Fusion in Patients With Obstructive Sleep Apnea: Lee, Yu-Po; Kiester, PD; Lu, Y; Lin, CC; et. al. *Global Spine Journal* 2018, Vol 9, Issue 3.
18. Compartment Syndrome with Rhabdomyolysis in a Marathon Runner: Brinley, A; Chakravarthy, B; Kiester, D; Lotfipour, S; et al.; *Clinical Practice and Cases in Emergency Medicine* 2018. Aug; 2(3): 197-199.
19. Traumatic Atlantoaxial Lateral Subluxation with Chronic Type II Odontoid Fracture: A Case Report: Musa, A; Farhan, A; Kiester, PD: *International Journal of Spine Surgery* 2019, Vol 13, No. 1: p. 1-5.

Creative Activities:

I have filed and obtained 18 patents. The most lucrative one was a remotely-powered growth rod designed to treat adolescent scoliosis. Ellipse Technologies developed the patent into the MAGEC Magnetically-Controlled Growth Rod for treating primarily congenital scoliosis. It has been implanted into over 30,000 children world-wide. MAGEC's spin-off, the PRECICE Rod, for lengthening long bones and treating long-bone deformities has also been implanted world-wide in numerous patients. These devices were the company's only two products. In 2015, Ellipse technologies was sold to NuVasive for \$385 million dollars.

After years of study using many methods, I thought I had discovered the biomechanically-active posterior tether which causes adolescent scoliosis. I then learned that it was described by William Adams in his 300-page book in 1865. I then learned by measuring the axis of rotation in scoliosis CT scans that the tether is localized to the very proximal portion of the interspinous ligament. Indeed, this ligament lays exactly on top of the ligamentum flavum. This was new, previously unpublished information. In spite of the cause adolescent scoliosis being discussed extensively in the literature a century and a half ago, modern scoliosis surgeons still call it

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adolescent *idiopathic* scoliosis, indicating that they do not understand either the biomechanics or the cause of the disorder.

I have also used 3D modeling software to attack the previously difficult problem of the biomechanics of adult scoliosis. Lumbar spinal rotation is controlled by the facet joints which forces the vertebral bodies to displace laterally to each during each step and lumbar rotation. The anterior and posterior longitudinal ligaments are stretched by this rotation which decreases the diskspace and thus compresses the intervertebral disk. If the hydraulic “spring-back” mechanism created by the compressed disk fails while the spine is in a rotated position, a lateral spondylolisthesis is created. This coronal imbalance causes asymmetric spinal loading during weight bearing which results in adult scoliosis (or deformity). The radiographic hallmark which distinguishes this from other scoliosis conditions is a lumbar vertebra with a lateral spondylolisthesis. Understanding how the facet joints function explains why lumbar artificial disk replacements were such a failure.

I am also a father and family man with 6 children.

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