

Andrew Robert Karduna, PhD

April, 2022

Professor of Human Physiology
University of Oregon
Eugene, OR 97403

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EDUCATION

BS, Massachusetts Institute of Technology, Mechanical Engineering, 1989
Bachelor's Thesis: "Efficiency of the Quadriceps using Functional Electrical Stimulation"
Advisor: William F. Durfee, PhD

MSE, The Johns Hopkins University, Biomedical Engineering, 1991
Master's Thesis: "Transverse Stiffness and Constitutive Laws for Fiber Reinforced Elastomers"
Advisor: Frank C. P. Yin, MD, PhD

PhD, University of Pennsylvania, Bioengineering, 1995
Dissertation: "Translation at the Natural and Prosthetically Reconstructed Glenohumeral Joint"
Advisor: John L. Williams, PhD; Co-Advisor: Joseph P. Iannotti, MD, PhD

APPOINTMENTS

Department of Bioengineering, University of Pennsylvania, Philadelphia, PA
Instructor, 1995 –1996
Adjunct Assistant Professor, 1999 –2000

Department of Physical Therapy, MCP Hahnemann University (currently Drexel University), Philadelphia, PA
Assistant Professor, 1996 –2000
Associate Professor, 2000 –2002

Department of Human Physiology, University of Oregon, Eugene, OR
Assistant Professor, 2002 – 2008
Associate Professor, 2008 – 2014
Professor, 2014 - present

Graduate School, University of Oregon, Eugene, OR
Associated Dean, 2017- 2021
Interim Vice Provost for Graduate Studies, 2021

PUBLICATIONS

Peer Reviewed Publications

80. King J, Shapiro M, **Karduna A**. Weakness in patients with subacromial pain syndrome is local and more pronounced in females. *Clinical Biomechanics*, Epub Mar 25, 2022
79. Cooper J, **Karduna A**. Submaximal contractions can serve as a reliable technique for shoulder electromyography normalization. *Journal of Biomechanics*, Epub Feb 19, 2022
78. Spitzley KA, **Karduna AR**. Joint Position Accuracy Is Influenced by Visuoproprioceptive Congruency in Virtual Reality. *Journal of Motor Behavior*, 54(1):92-101, 2022
77. Ettinger L, Shapiro M, **Karduna A**. Muscle Activity Before and After Subacromial Injection. *Journal of Sports Rehabilitation*, 30(8):1144-1150, 2021
76. Phillips D, Zahariev A, **Karduna A**. Shoulder Joint Position Sense Can Be Reduced by Sensory Reference Frame Transformations. *Perceptual and Motor Skills*. 128(3):938-951, 2021
75. Sharma J, Maenza C, Myers A, Lehman EB, **Karduna AR**, Sainburg RL, Armstrong AD. Clinical Outcomes and Shoulder Kinematics for the "Gray Zone" Extra-articular Scapula Fracture in 5 Patients. *International Journal of Orthopaedics*, 3(1):1017, 2020
74. Phillips D, Kosek P, **Karduna A**. Force perception at the shoulder after a unilateral suprascapular nerve block, *Experimental Brain Research*, 237(6):1581-1591, 2019.
73. Ramos MM, Carnaz L, Mattiello SM, **Karduna A**, Zanca GG. Shoulder and elbow joint position sense assessment using a mobile app in subjects with and without shoulder pain - between-days reliability, *Physical Therapy in Sport*, 37:157-163, 2019.
72. Spitzley K, **Karduna A**. Feasibility of using a fully immersive virtual reality system for kinematic data collection, *Journal of Biomechanics*, 87: 172-176, 2019.
71. Troussel K, Phillips D, **Karduna A**. An investigation into force sense at the shoulder. *Motor Control*, 22(4):462-471, 2018
70. Phillips D, Kosek P, **Karduna A**. The contribution of the supraspinatus muscle at submaximal contractions. *Journal of Biomechanics*, 68: 65-69, 2018.
69. Badagliacco JA, **Karduna A**. College Pitchers Demonstrate Directional Differences in Shoulder Joint Position Sense Compared to Controls. *Journal of Sport Rehabilitation*, 27(4): 301-305, 2018.
68. Phillips D, **Karduna A**. No Relationship Between Joint Position Sense and Force Sense at the Shoulder. *Journal of Motor Behavior*, 50(2): 228-234, 2018
67. Ettinger LR, Shapiro M, **Karduna A**. Subacromial anesthetics increase proprioceptive deficit in the shoulder and elbow in patients with subacromial impingement syndrome. *Clinical Medicine Insights: Arthritis and Musculoskeletal Disorders*, 10: 1–7, 2017.
66. Phillips D, **Karduna A**. Deltoid EMG is reliable during submaximal isometric ramp contractions. *Journal of Applied Biomechanics*, 33(3): 237-240, 2017.
65. Lin YL, **Karduna A**. Errors in shoulder joint position sense mainly come from the glenohumeral joint. *Journal of Applied Biomechanics*, 33(1): 32-38, 2017.
64. Edwards E, Lin YL, King J, **Karduna A**. Joint position sense – There’s an app for that. *Journal of Biomechanics*, 49(14): 3529-3533, 2016.
63. Lin YL, **Karduna A**. Four-week exercise program does not change rotator cuff muscle activation and scapular kinematics in healthy subjects. *Journal of Orthopaedic Research*, 34(12): 2079-2088, 2016.

62. Lin YL, **Karduna A**. Exercises focusing on rotator cuff and scapular muscles do not improve shoulder joint position sense in healthy subjects. *Human Movement Science*, 49: 248-57, 2016
61. Grant-Beuttler M, Heriza CB, Palisano RJ, Wagner BR, Miller DP, **Karduna A**. Ankle movements during supine kicking in infants born preterm. *Pediatric Physical Therapy*. 28(3): 294-302, 2016
60. Ettinger L, Weiss J, Shapiro M, **Karduna A**. Normalization to maximal voluntary contraction is influenced by subacromial pain. *Journal of Applied Biomechanics*, 19:1-23, 2016
59. Zanca GG, Mattiello SM, **Karduna A**. Kinesio taping of the deltoid does not reduce fatigue induced deficits in shoulder joint position sense. *Clinical Biomechanics*, 30(9): 903-7, 2015
58. Lin YL, Christie A, **Karduna A**. Excitability of the infraspinatus, but not the middle deltoid, is affected by shoulder elevation angle. *Experimental Brain Research*, 233(6):1837-43, 2015
57. Temes WC, Temes Clifton A, Hilton V, Girard L, Strait N, **Karduna A**. Reliability and validity of thickness measurements of the supraspinatus muscle of the shoulder: an ultrasonography study. *Journal of Sports Rehabilitation*, Technical Notes (8), 2014.
56. Ettinger L, Shapiro M, **Karduna A**. Subacromial injection results in further scapular dyskinesis. *The Orthopaedic Journal of Sports Medicine*, 2 (8), 2014
55. King J, **Karduna A**. Joint position sense during a reaching task improves at targets located closer to the head but is unaffected by instruction, *Experimental Brain Research*, 232(3): 865-874, 2014
54. King J, Harding E, **Karduna A**. The shoulder and elbow joints and right and left sides demonstrate similar joint position sense. *Journal of Motor Behavior*, 45(6): 479-486, 2013
53. Lin, YL, **Karduna A**. Sensors on the humerus are not necessary for an accurate assessment of humeral kinematics in constrained movements. *Journal of Applied Biomechanics*, 29(4): 496-500, 2013
52. San Juan J, Kosek P, **Karduna A**. Humeral head translation after a suprascapular nerve block. *Journal of Applied Biomechanics*, 29(4): 371-9, 2013
51. Amasay T, **Karduna A**. Patient's body size influence dental hygiene shoulder kinematics, *IIE Transactions on Occupational Ergonomics and Human Factors*, 1(3): 153-165, 2013
50. Ettinger L, Kincl L, Johnson P, Carter C, Garfinkel S, **Karduna A**. Workday arm elevation exposure, a comparison between professions, *IIE Transactions on Occupational Ergonomics and Human Factors*. 1(2): 119-127, 2013
49. **Karduna A**, Sainburg R. Similarities in the neural control of the shoulder and elbow joints belie their structural differences. *PLoS One*, 7(10): e45837, 2012
48. Acuna M, **Karduna A**. Wrist activity monitor counts are correlated with dynamic, but not static assessments of arm elevation exposure made with a triaxial accelerometer. *Ergonomics*, 55(8): 963-70, 2012
47. Timmons MK, Thigpen CA, Seitz AL, **Karduna AR**, Arnold BL, Michener LA. Scapular kinematics and subacromial impingement syndrome: a Meta-Analysis. *Journal of Sport Rehabilitation*. 21(4): 354-70, 2012
46. **Karduna A**. Understanding the biomechanical nature of musculoskeletal tissue. *Journal of Hand Therapy*. 25(2): 116-21, 2012

45. Ettinger L, McClure P, Kincl L, **Karduna A**. Exposure to a workday environment results in an increase in anterior tilting of the scapula in dental hygienists with greater employment experience. *Clinical Biomechanics*. 27(4): 341-345, 2012
44. Erickson RI, **Karduna AR**. Three-dimensional repositioning tasks show differences in joint position sense between active and passive shoulder motion. *Journal of Orthopaedic Research*. 30(5): 787-792, 2012
43. Helgadottir H, Kristjansson E, Mottram S, **Karduna A**, Jonsson H, Jr. Altered alignment of the shoulder girdle and cervical spine in patients with insidious onset neck pain and whiplash-associated disorder. *Journal of Applied Biomechanics*. 27(3): 181-191, 2011
42. Helgadottir H, Kristjansson E, Einarsson E, **Karduna A**, Jonsson H, Jr. Altered activity of the serratus anterior during unilateral arm elevation in patients with cervical disorders. *Journal of Electromyography and Kinesiology*. 21(6): 947-953, 2011
41. San Juan JG, **Karduna AR**. Measuring humeral head translation using fluoroscopy: a validation study. *Journal of Biomechanics*. 43(4): 771-774, 2010
40. Helgadottir H, Kristjansson E, Mottram S, **Karduna AR**, Jonsson H, Jr. Altered scapular orientation during arm elevation in patients with insidious onset neck pain and whiplash-associated disorder. *Journal of Orthopaedic and Sports Physical Therapy*. 40(12): 784-791, 2010
39. Amasay T, Latteri M, **Karduna AR**. In vivo measurement of humeral elevation angles and exposure using a triaxial accelerometer. *Human Factors*. 52(6): 616-626, 2010
38. Acuna M, Amasay T, **Karduna AR**. The reliability of side to side measurements of upper extremity activity levels in healthy subjects. *BMC Musculoskeletal Disorders*. 11: 168, 2010
37. Silfies SP, Mehta R, Smith SS, **Karduna AR**. Differences in feedforward trunk muscle activity in subgroups of patients with mechanical low back pain. *Archives of Physical Medicine and Rehabilitation*. 90(7): 1159-1169, 2009
36. Joshi A, Massey CJ, **Karduna A**, Vresilovic E, Marcolongo M. The effect of nucleus implant parameters on the compressive mechanics of the lumbar intervertebral disc: a finite element study. *Journal of Biomedical Materials Research. Part B, Applied Biomaterials*. 90(2): 596-607, 2009
35. Chapman J, Suprak DN, **Karduna AR**. Unconstrained shoulder joint position sense does not change with body orientation. *Journal of Orthopaedic Research*. 27(7): 885-890, 2009
34. Amasay T, Zodrow K, Kincl L, Hess J, **Karduna A**. Validation of tri-axial accelerometer for the calculation of elevation angles. *International Journal of Industrial Ergonomics*. 39(5): 783-789, 2009
33. Amasay T, **Karduna AR**. Scapular kinematics in constrained and functional upper extremity movements. *Journal of Orthopaedic and Sports Physical Therapy*. 39(8): 618-627, 2009
32. Suprak DN, Osternig LR, van Donkelaar P, **Karduna AR**. Shoulder joint position sense improves with external load. *Journal of Motor Behavior*. 39(6): 517-525, 2007
31. McCully SP, Suprak DN, Kosek P, **Karduna AR**. Suprascapular nerve block results in a compensatory increase in deltoid muscle activity. *Journal of Biomechanics*. 40(8): 1839-1846, 2007
30. Suprak DN, Osternig LR, van Donkelaar P, **Karduna AR**. Shoulder joint position sense improves with elevation angle in a novel, unconstrained task. *Journal of Orthopaedic Research*. 24(3): 559-568, 2006

29. McCully SP, Suprak DN, Kosek P, **Karduna AR**. Suprascapular nerve block disrupts the normal pattern of scapular kinematics. *Clinical Biomechanics*. 21(6): 545-553, 2006
28. McClure PW, Michener LA, **Karduna AR**. Shoulder function and 3-dimensional scapular kinematics in people with and without shoulder impingement syndrome. *Physical Therapy*. 86(8): 1075-1090, 2006
27. Joshi A, Fussell G, Thomas J, Hsuan A, Lowman A, **Karduna A**, Vresilovic E, Marcolongo M. Functional compressive mechanics of a PVA/PVP nucleus pulposus replacement. *Biomaterials*. 27(2): 176-184, 2006
26. Ebaugh DD, McClure PW, **Karduna AR**. Effects of shoulder muscle fatigue caused by repetitive overhead activities on scapulothoracic and glenohumeral kinematics. *Journal of Electromyography and Kinesiology*. 16(3): 224-235, 2006
25. Ebaugh DD, McClure PW, **Karduna AR**. Scapulothoracic and glenohumeral kinematics following an external rotation fatigue protocol. *Journal of Orthopaedic and Sports Physical Therapy*. 36(8): 557-571, 2006
24. Wu G, van der Helm FC, Veeger HE, Makhsous M, Van Roy P, Anglin C, Nagels J, **Karduna AR**, McQuade K, Wang X, Werner FW, Buchholz B, International Society of B. ISB recommendation on definitions of joint coordinate systems of various joints for the reporting of human joint motion--Part II: shoulder, elbow, wrist and hand. *Journal of Biomechanics*. 38(5): 981-992, 2005
23. Silfies SP, Squillante D, Maurer P, Westcott S, **Karduna AR**. Trunk muscle recruitment patterns in specific chronic low back pain populations. *Clinical Biomechanics*. 20(5): 465-473, 2005
22. McCully SP, Kumar N, Lazarus MD, **Karduna AR**. Internal and external rotation of the shoulder: effects of plane, end-range determination, and scapular motion. *Journal of Shoulder and Elbow Surgery*. 14(6): 602-610, 2005
21. **Karduna AR**, Kerner PJ, Lazarus MD. Contact forces in the subacromial space: effects of scapular orientation. *Journal of Shoulder and Elbow Surgery*. 14(4): 393-399, 2005
20. Joshi A, Mehta S, Vresilovic E, **Karduna A**, Marcolongo M. Nucleus implant parameters significantly change the compressive stiffness of the human lumbar intervertebral disc. *Journal of Biomechanical Engineering*. 127(3): 536-540, 2005
19. Ebaugh DD, McClure PW, **Karduna AR**. Three-dimensional scapulothoracic motion during active and passive arm elevation. *Clinical Biomechanics*. 20(7): 700-709, 2005
18. Dayanidhi S, Orlin M, Kozin S, Duff S, **Karduna A**. Scapular kinematics during humeral elevation in adults and children. *Clinical Biomechanics*. 20(6): 600-606, 2005
17. Su KP, Johnson MP, Gracely EJ, **Karduna AR**. Scapular rotation in swimmers with and without impingement syndrome: practice effects. *Medicine and Science in Sports and Exercise*. 36(7): 1117-1123, 2004
16. McClure PW, Bialker J, Neff N, Williams G, **Karduna A**. Shoulder function and 3-dimensional kinematics in people with shoulder impingement syndrome before and after a 6-week exercise program. *Physical Therapy*. 84(9): 832-848, 2004
15. Tsai NT, McClure PW, **Karduna AR**. Effects of muscle fatigue on 3-dimensional scapular kinematics. *Archives of Physical Medicine and Rehabilitation*. 84(7): 1000-1005, 2003
14. Michener LA, McClure PW, **Karduna AR**. Anatomical and biomechanical mechanisms of subacromial impingement syndrome. *Clinical Biomechanics*. 18(5): 369-379, 2003
13. Williams GR, Jr., Wong KL, Pepe MD, Tan V, Silverberg D, Ramsey ML, **Karduna A**, Iannotti JP. The effect of articular malposition after total shoulder arthroplasty on

- glenohumeral translations, range of motion, and subacromial impingement. *Journal of Shoulder and Elbow Surgery*. 10(5): 399-409, 2001
12. Williams GR, Jr., Naranja J, Klimkiewicz J, **Karduna A**, Iannotti JP, Ramsey M. The floating shoulder: a biomechanical basis for classification and management. *Journal of Bone and Joint Surgery*. 83-A(8): 1182-1187, 2001
 11. McClure PW, Michener LA, Sennett BJ, **Karduna AR**. Direct 3-dimensional measurement of scapular kinematics during dynamic movements in vivo. *Journal of Shoulder and Elbow Surgery*. 10(3): 269-277, 2001
 10. **Karduna AR**, McClure PW, Michener LA, Sennett B. Dynamic measurements of three-dimensional scapular kinematics: a validation study. *Journal of Biomechanical Engineering*. 123(2): 184-190, 2001
 9. Johnson MP, McClure PW, **Karduna AR**. New method to assess scapular upward rotation in subjects with shoulder pathology. *Journal of Orthopaedic and Sports Physical Therapy*. 31(2): 81-89, 2001
 8. **Karduna AR**, McClure PW, Michener LA. Scapular kinematics: effects of altering the Euler angle sequence of rotations. *Journal of Biomechanics*. 33(9): 1063-1068, 2000
 7. Klimkiewicz JJ, Williams GR, Sher JS, **Karduna A**, Des Jardins J, Iannotti JP. The acromioclavicular capsule as a restraint to posterior translation of the clavicle: a biomechanical analysis. *Journal of Shoulder and Elbow Surgery*. 8(2): 119-124, 1999
 6. **Karduna AR**, Williams GR, Iannotti JP, Williams JL. Total shoulder arthroplasty biomechanics: a study of the forces and strains at the glenoid component. *Journal of Biomechanical Engineering*. 120(1): 92-99, 1998
 5. **Karduna AR**, Williams GR, Williams JL, Iannotti JP. Glenohumeral joint translations before and after total shoulder arthroplasty. A study in cadavera. *Journal of Bone and Joint Surgery*. 79(8): 1166-1174, 1997
 4. **Karduna AR**, Williams GR, Williams JL, Iannotti JP. Joint stability after total shoulder arthroplasty in a cadaver model. *Journal of Shoulder and Elbow Surgery*. 6(6): 506-511, 1997
 3. **Karduna AR**, Halperin HR, Yin FC. Experimental and numerical analyses of indentation in finite-sized isotropic and anisotropic rubber-like materials. *Annals of Biomedical Engineering*. 25(6): 1009-1016, 1997
 2. Iannotti J, Williams J, **Karduna A**. Factors affecting the design of shoulder prosthesis. *Seminars in Arthroplasty*. 8: 260-267, 1997
 1. **Karduna AR**, Williams GR, Williams JL, Iannotti JP. Kinematics of the glenohumeral joint: influences of muscle forces, ligamentous constraints, and articular geometry. *Journal of Orthopaedic Research*. 14(6): 986-993, 1996

Book Chapters

Marcolongo M, Kambin P, Lowman A, **Karduna A**: Experience with minimally invasive nucleus replacement. In *Arthroscopic and Endoscopic Spinal Surgery*, Edited by: P Kambin, Publisher: Humana Press, 2005.

Karduna A: Introduction to Biomechanical Analysis. In: *Kinesiology: Mechanics and Pathomechanics of Human Motion*, Edited by: Carol Oatis, Publisher: Lippincott Williams and Wilkins, 1st edition, 2003, 2nd edition, 2009, 3rd edition, 2016

RECENT INVITED TALKS AND CONFERENCE WORKSHOPS

Museum of Natural and Cultural History's Ideas on Tap, "Where is My Arm? Exploring Proprioception" – March 2020

International Shoulder Group symposium at the American Society of Biomechanics Meeting, Mayo Clinic, "Head, Shoulders, Knees and Toes" - August 2018

Seminar, University of Michigan, "A Biomechanist Perspective on Shoulder Proprioception" - April 2018

UO Quack Chats, "Where is My Arm? How injuries impact our sense of body movements" - October, 2017

Organized and presented at workshop at the International Society of Biomechanics meeting in Brisbane, Australia, "The Upper Extremity ISB Standard – Give us a hand as we shoulder on to the future" – August, 2017

Invited Speaker, International Symposium of Sports Science, Korea National Sport University, "Upper Extremity Joint Position Sense: Implications for Athletes" - March, 2017

Invited Speaker, Eugene Clinical Research Forum, "Neurophysiology of Weakness and Exercise for Rotator Cuff Tendinopathy" - May 2016

Invited Speaker, Rotator Cuff Disorders: Questions, Consensus and Controversies, Arcadia University, "Muscle Coordination and changes with pain: What is really producing pain?" - December 2015

Seminar, Tokyo University of Science, "Where is My Arm? Upper Extremity Joint Position Sense" - September 2015

Seminar, Northwestern University, "Where is My Arm? Upper Extremity Joint Position Sense" - October 2014

FUNDING

Current Grants

Co-Principal Investigator, *Pac-12 Grant Program*: Biomechanical metrics to improve performance and reduce elbow injuries in baseball, July 2019 - June 2022, \$350,000 (direct costs).

Completed Grants

Principal Investigator, R01, *National Institutes of Health (National Institute of Arthritis and Musculoskeletal and Skin Diseases)*: Neurophysiology of Weakness and Exercise in Rotator Cuff Tendinopathy, July 2014 – April 2021, \$1,500,000 (direct costs).

Principal Investigator, R01, *Centers for Disease Control and Prevention - National Institute of Occupational Safety and Health*: A Biomechanical Study of Work-Related Shoulder Disorders, March 2007 – February 2013, \$700,000 (direct costs).

Principal Investigator, *University of Oregon, Summer Research Award*: Evaluation of a novel iPod touch app to assess joint proprioception, 2012, \$5,500.

Principal Investigator, *Oregon Medical Research Foundation*: Biomechanics of Rotator Cuff Tears, November 2003 – October 2006, \$24,000.

Principal Investigator, *Whitaker Foundation*: Consequences of Altered Scapular Orientation Associated with Shoulder Impingement Syndrome, September 2000 – June 2004, \$232,000.

Co-Investigator, *National Science Foundation*: Functional Restoration of the Intervertebral Disc Using Novel Hydrogel Copolymers as Nucleus Pulposus Replacements, October 2000 – September 2003, \$270,000.

Principal Investigator, R03, *Centers for Disease Control and Prevention - National Institute of Occupational Safety and Health*: The Biomechanics of Occupational Shoulder Injuries, August 2000 – July 2003, \$50,000.

Co-Investigator, *Drexel - MCP Hahnemann Intramural Synergies Program*: Associating Hydrogels as Artificial Articular Cartilage, July 2001 – June 2002, \$20,000.

Co-Investigator, *American Physical Therapy Association - Orthopaedic Section*: Classification of Low Back Pain Patients based on Trunk Electromyographic and Kinematic Patterns, May 1999 – December 2001, \$5,000.

Co-Investigator, *Foundation for Physical Therapy*: The Effects of Physical Rehabilitation in Patients with Impingement Syndrome, September 1999 – September 2001, \$40,000.

Principal Investigator, *Drexel - MCP Hahnemann Intramural Synergies Program*: Hydrogel Replacement of the Nucleus Pulposus for Degenerative Disc Disease, May 1999 – May 2000, \$20,000.

Co-Investigator, *Arthritis Foundation*: Mechanisms Associated with Shoulder Impingement Syndrome, September 1998 – August 2000, \$50,000.

Co-Investigator, *American Physical Therapy Association - Orthopaedic Section* Three-Dimensional Scapular Kinematics and Spinal Posture in Patients with Shoulder Impingement Syndrome, May 1997 – May 1998, \$5,000.

Graduate Student, *DePuy, Inc.* Kinematics of the Glenohumeral Joint: Effects of Glenoid Prosthetic Component Design and Rotator Cuff Deficiency, June 1992 – June 1996, \$200,000.

PROFESSIONAL LEADERSHIP ROLES/TRAINING

University of Oregon Leadership Academy, 2018-2019

American Society of Biomechanics

Executive Board, 2003 – 2009, 2012 – 2015

Secretary/Membership Chair, 2012 – 2015

Communications Chair, 2006 – 2009

Newsletter Editor, 2003 – 2006

International Shoulder Group

Executive Board, 2005 – 2014

Committee on Standardization of Upper Extremity Motion, 2001 – 2005

Journal of Biomechanics

Associate Editor, 2015 - present

Journal of Applied Biomechanics

Associate Editor, 2013 - 2017

Clinical Biomechanics

Editorial Board, 2015 – present

SCHOLARSHIP OF TECHING

Initiated a Teaching Biomechanics Symposium at the American Society of Biomechanics

Session Chair, Long Beach (2011) and Boston (2014)

Presentation - “Guided inquiry in biomechanics or: How I learned to stop worrying and leave the lectern,” Omaha (2013)

Developed and maintained a website for Biomechanics Classes on the Web, 1998-2015

Summer Institute Education Fellow, 2017

Member of UO’s Teaching Academy, 2017-present

University of Oregon Williams Council Grant Leveraging Technology to Help Teach Non-Science Majors, 2017, \$11,000

CONFERENCE ORGANIZATION

Conference Organization

Local Organization Committee, *American Society of Biomechanics*, Portland, September, 2004

Co-Chair, *Northwest Biomechanics Symposium*, Seattle, 2005

Co-Chair, *Northwest Biomechanics Symposium*, Eugene, 2007, 2012, 2017

Session Chairing

American Society of Biomechanics, Upper Extremity, State College, August, 2009

Northwest Biomechanics Symposium, Injury, Pullman, June, 2009

American Society of Biomechanics, Methods II, Palo Alto, August, 2007

American Society of Biomechanics, Shoulder, Blacksburg, September, 2006

Northwest Biomechanics Symposium, Upper Extremity, Seattle, May, 2005

International Society of Biomechanics, Motor Control – Upper Extremity, Cleveland, September, 2005

American Society of Biomechanics, Orthopaedics I: Basic Science, Portland, September, 2004

ASME Winter Annual Meeting, Kinematic Analysis, Orlando, November 2000

Reviewing

American Society of Biomechanics meeting abstracts, 2006 – present

International Society of Biomechanics meeting abstracts, 2009 – present

American Society of Biomechanics meeting awards, 2010-2012

3-D Analysis of Human Movement, 2010

International Shoulder Group meeting abstracts, 2010, 2012

MANUSCRIPT REVIEWER (in past 5 years)

Archives of Physical Medicine and Rehabilitation

Clinical Biomechanics

Experimental Brain Research

Human Movement Science

Journal of Applied Biomechanics

Journal of Biomechanics

Journal of Motor Behavior

Journal of Orthopaedic Research

Journal of Sport Rehabilitation

GRANT REVIEWING

Hong Kong General Research Fund, 2019
University of Oregon - Oregon Health and Sciences Collaborative Seed Grant, 2018
National Institutes of Health: Musculoskeletal Rehabilitation Sciences Study Section
ad hoc reviewer (2010, 2011, 2013, 2017), phone reviewer (2008, 2009, 2010, 2020)
Pac-12 Student-Athlete Health and Well-Being Grant Program, 2016
Health Research Board, Ireland, 2007, 2011
U.S. Army Medical Research, 2005, 2006, 2007
National Athletic Trainers' Association, 2006
Swiss National Science Foundation, 2003, 2013
Department of Veterans Affairs, 2001
Drexel University, Synergy Program, 2000

STEM OUTREACH

Summer Academy to Inspire Learning (SAIL), Physiology Camp Director, 2011 – present
First League Robotics, Coach, 2009 – 2014

HONORS AND AWARDS

Finalist, Clinical Biomechanics Award, American Society of Biomechanics, 1998, 1999
Research Award, Pennsylvania Physical Therapy Association, 1998
Alpha Eta, Health Care Educator Honor Society, 2000
UO Graduate School Excellence Award for Director of Graduate Studies, 2017

SOCIETY MEMBERSHIP

American Society of Biomechanics, 1988 – present
International Society of Biomechanics, 2001 – present
International Shoulder Research Group, 1995 – present

UNIVERSITY SERVICE

University of Oregon

College/University
Search Committee for Associate Vice Provost for Academic Affairs, 2018
Search Committee for Dean of Graduate School, 2018
Tuition and Fee Advisory Board, 2017

VPRI Research Advisory Board, 2017 - 2020
Faculty Advisory Council, 2015 - 2017
Technical Science Administration Committee, 2003 – 2017 (Chair, 2014 – 2017)
Intercollegiate Athletics Committee, 2012 – 2016 (Chair, 2015-2016)
Intercollegiate Athletics Advisory Committee, 2017 (Chair)
Search Committee for selection of Faculty Athletics Representative, 2014 (Chair)
Scholastic Review Committee, 2005 – 2007, and 2010 – 2014 (Chair, 2012-2013)
Search Committee for Dean of Libraries, 2014
Goldwater Scholarship Committee, 2008 – 2013
Institutional Review Board, 2006 –2012
University Library Committee, 2007 –2009
Librarian Appointment Review working group, 2009
Search Committee for Head of Technical Science Administration Shop, 2003

Department

Coordinator of mentorship for new faculty, 2017- present
Personnel Committee, 2015 - present
Merit Review Committee, 2015 - present
Director of Graduate Studies, 2011 - 2018
Diversity, Equity and Inclusion Committee, 2018-2019
Graduate Admissions Committee, 2007 - 2018
Coordinator of Department Website, 2008 - 2016
Search Committee for Athletic Medicine Faculty Position, 2021/2022
Search Committee for Biomechanics Faculty Position, 2019/2020
Chair Search Committee for Biomechanics/Neurophysiology Faculty Position, 2018/2019
Search Committee for Career Instructor, 2013/2014
Search Committee for Neurophysiology Faculty Position, 2012/2013, 2016/2017
Chair Search Committee for Neurophysiology Faculty Position, 2009/2010, 2010/2011, 2011/2012
Search Committee for Athletic Training Faculty Position, 2008/2009
Search Committee for Muscle Physiology Faculty Position, 2007/2008
Search Committee for Open Faculty Position, 2006/2007

MCP Hahnemann University (Drexel University)

Student/Resources Task Force, 1997
Graduate Admissions and Standards Committee, 1998 – 2000
Appointments and Promotions Committee, 2000 – 2002
Research Committee, 2002

CLASSES TAUGHT

Kinetics of Human Movement (HPHY 685), 2003
Kinematics of Human (HPHY 684), 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016
Research Methods (HPHY 450/550), 2003, 2005, 2007, 2009, 2011

Biomechanics (HPHY 381), 2005, 2007, 2008, 2011, 2013, 2016
Exercise and Performance (HPHY 103), 2003, 2005, 2006, 2007, 2008, 2009, 2012
Evidence, Inference and Biostatistics (HPHY 212), 2012-2019
Orthopedic Biomechanics (HPHY 410), 2003
Biomechanics of Human Joints (HPHY 410), 2005, 2006, 2008
Injury Biomechanics (HPHY 410), 2009

STUDENT ADVISING

Doctoral Students

- Lori Michener (co-advisor with Phil McClure), Relationships Between Impairments, Three-Dimensional Kinematics, Functional Limitation, and Disability in Patients with Subacromial Impingement Syndrome, MCP Hahnemann University, graduated 2001
Current Position: Professor, Division of Biokinesiology and Physical Therapy, University of Southern California
- Sheri Silfies, Trunk Muscle and Motor Control Impairments in Patients with Lumbar Instability, MCP Hahnemann University, graduated 2002
Current Position: Associate Professor, Physical Therapy, University of South Carolina
- David Ebaugh (co-advisor with Phil McClure), The Effects of Muscle Activity and Fatigue on Three-Dimensional Scapulothoracic and Glenohumeral Kinematics, MCP Hahnemann University, graduated 2004
Current Position: Professor, Department of Physical Therapy, University of Delaware
- Abhijeet Joshi (co-advisor with Michele Marcolongo), Mechanical Behavior of the Human Lumbar Intervertebral Disc with Polymeric Hydrogel Nucleus Implant: An Experimental and Finite Element Study, Drexel University, graduated 2004
Current Position: Engineering Manager at Edwards Lifesciences
- David Suprak, Unconstrained Joint Position Sense in Healthy and Unstable Shoulder, University of Oregon, graduated 2006
Current Position: Professor, Department of Physical Education, Health and Recreation, Western Washington University
- Tal Amasay, Unconstrained Humeral Elevation in Occupational Setting, University of Oregon, graduated 2008
Current Position: Associate Professor, School of Human Performance and Leisure Studies, Barry University
- Bernardo San Juan, Measuring Humeral Head Translation After Suprascapular Nerve Block, University of Oregon, graduated 2009
Current Position: Associate Professor, Department of Physical Education, Health and Recreation, Western Washington University
- Luke Ettinger, The Influence of Subacromial Pain on Scapular Kinematics, Muscle Recruitment and Joint Proprioception, University of Oregon, graduated 2013
Current Position: Assistant Professor, Department of Exercise Science, Willamette University
- Yin-Liang Lin, University of Oregon, The effect of exercise training on shoulder neuromuscular control, graduated 2015

Current Position: Assistant Professor, National Yang Ming University, Department of Physical Therapy and Assistive Technology

David Phillips, University of Oregon, Supraspinatus contribution and proprioceptive behavior at the shoulder, graduated 2017

Current Position: Assistant Professor, Department of Exercise Science and Physical Education, Montclair State University

Jacqlyn King, University of Oregon, Sensorimotor abnormalities in chronic subacromial pain: the influence of sex, contributions of pain, and utility of using the contralateral limb as a control, graduated 2017

Current Position: Instructor, Instructor, Biology & CIE Teaching Engagement Lead, College of Southern Idaho

Jennifer Cooper, University of Oregon, Subacromial shoulder pain: A look at acute muscle pain, acute relief of chronic pain, and an electromyography normalization technique.

Kate Spitzley, University of Oregon, current student

Motoki Sakurai, University of Oregon, current student

Masters Students

Michael Johnson, Reliability and Validity of a New Method to Assess Scapular Upward Rotation in Subjects with and without Shoulder Pathology, MCP Hahnemann University, graduated 1999

Nian-Tuen Tsai, The Effect of Muscle Fatigue of the Infraspinatus and Teres Minor Muscles on Scapular Kinematics, MCP Hahnemann University, graduated 1999

Eva Su, Changes in Scapular Rotation after Practice in Swimmers with and without Shoulder Impingement Syndrome, MCP Hahnemann University, graduated 2000

Bessie Wu, Work Related Biomechanics of the Shoulder, MCP Hahnemann University, graduated 2000

Sudarshan Dayanidhi, Scapular Kinematics During Humeral Elevation in Adults and Children, MCP Hahnemann University, graduated 2003

Sean McCully, Internal and External Rotation of the Shoulder: Effects of Plane, End Range Determination, and Scapular Motion, University of Oregon, graduated 2003

Jason Chapman, Unconstrained Shoulder Joint Position Sense Does Not Change With Body Orientation, University of Oregon, graduated 2006

Wade Soenksen, Shoulder Proprioception in Baseball Players, graduated, 2009

Carl Erickson, Unconstrained Repositioning Tasks show better Joint Position Sense in Active than in Passive Shoulder Motion, University of Oregon, graduated 2010

Elizabeth Harding, The Influence of Active Control on Joint Position Sense at the Elbow, University of Oregon, graduated, 2012

Kelleigh O'Neil, Effect of Kinesiotape on Shoulder Joint Position Sense, University of Oregon, graduated, 2012

John Badagliacco, College Pitchers Demonstrate Directional Differences in Shoulder Joint Position Sense Compared to Controls, University of Oregon, graduated 2015

Elizabeth Gillespie, Shoulder Proprioception: Effects of Dissociating Force and Angle, University of Oregon, graduated 2015

Blair Conner, Proprioception in the Dominant and Non-Dominant Shoulder: A Systematic Review, graduated 2016
Holly Rittenberry, The Relationship of Torso Angle and Glenohumeral Muscle Activation, graduated 2021

Dissertation/Thesis Committees

Kelley Fitzgerald, PhD Student, MCP Hahnemann University, 1998
David Hutchinson, MS Student, MCP Hahnemann University, 1997
Yi-Liang Kuo, MS Student, MCP Hahnemann University, 1997
Saipin Prasersukdee, PhD Student, MCP Hahnemann University, 2001
Maiko Sakamoto, MS Student, MCP Hahnemann University, 2001
Wen-Yu Liu, PhD Student, MCP Hahnemann University, 2001
Renee Crossman, MS Student, MCP Hahnemann University, 2003
Margaret Finley, PhD Student, University of Maryland, 2003
Nuanlaor Thawinchai, MS/PhD Student, MCP Hahnemann University, 2004
Jeanne Langan, PhD Student, University of Oregon, 2006
Heng-Ju Lee, PhD Student, University of Oregon, 2006
Robert Catena, PhD Student, University of Oregon, 2008
Sandy Saavedra, PhD Student, University of Oregon, 2009
Harpa Helgadóttir, PhD Student, Iceland University, 2010
Robert Hermosillo, MS Student, University of Oregon, 2011
Vipul Lugade, PhD Student, University of Oregon, 2011
Betty Chen, PhD Student, University of Oregon, 2012
Shiu-Ling Chiu, PhD Student, University of Oregon, 2012
Masa Fujimoto, PhD Student, University of Oregon, 2012
Scott Berloff, PhD Student, University of Oregon, 2013
Jim Becker, PhD Student, University of Oregon, 2013
Jennifer Rachwani, PhD Student, University of Oregon, 2014
Victor Gonzales, PhD Student, University of Oregon, 2015
Amanda Morris, PhD Student, University of Oregon, 2019
Michael McGeehan, PhD Student, University of Oregon
Seth Donahue, PhD Student, University of Oregon
Katie Farina, PhD Student, University of Oregon
Mitchell Fisher, PhD Student, University of Oregon

Past UO Undergraduate Thesis Students

Brian Fedor
Annie Fetcher
Linden Lee
Keely Zodrow
Simon Yang
Sara Garfinkel
Matt Collins
Tayson Heward

Elizabeth Gillespie
Kaitlyn Jackson
Kaytee Arnold
Lauren Maloney
Katya Troussel
Vikas Mankala
Aly Zahariev
Roi Medina
Marlene Loui

Current UO Undergraduate Students

Kieley Trempy
Dylan Kumar
Chris Steiner
Trace VanCleave
Zach Hoffman
Maddie Rabing
Srishty Sharma

Summer Program for Undergraduate Research (SPUR)

Claire Edwards, Smith College, 2007
Mikey Acuna, Cal State Chico, 2008 and 2009
Cameron Carter, Colorado State University, 2010
Ismail Raslan, King Saud University, 2011