Jeff A. Nessler, Ph.D.

Curriculum Vitae

Assistant Professor, Department of Kinesiology
California State University, San Marcos

Academic Address

Department of Kinesiology
California State University, San Marcos
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Professional Interests: Biomechanics, Motor Control, Rehabilitation, Bioengineering, Robotics

Education:

B.S. in Sports Medicine, 1997, Pepperdine University, Malibu, CA

M.A. in Kinesiology (Biomechanics), 2000, San Diego State University, CA
Thesis: *The Use of Radiographic Absorptiometry to Quantify Bone Mineral Density Loss Resulting from Disuse.*

M.S. in Mechanical Engineering, 2002, University of California, Irvine
Project: *Affordable Actuator Backdriveability for Human Robot Interaction: the Series Elastic Servomotor.*

Ph.D. in Mechanical Engineering, 2005, University of California, Irvine
Dissertation: *Robotic Assessment of Locomotor Ability Following Spinal Cord Injury in Rats.*

Postdoctoral Fellow, *Rehabilitation Engineering,* 2005-2006, Feinberg School of Medicine, Northwestern University and Rehabilitation Institute of Chicago, Chicago, IL.

Academic Employment History:

2008-present	Assistant Professor, Department of Kinesiology, California State University, San Marcos, CA 92096
2006-2008	Assistant Professor, Department of Kinesiology and Health Promotion, California State Polytechnic University, Pomona, CA, 91768
2006	Adjunct Professor, School of Physical Therapy Doctoral Program, Chapman University, Orange, CA 92866
2005-2006	Postdoctoral Fellow, Feinberg School of Medicine, Northwestern University and Rehabilitation Institute of Chicago, Chicago, IL
2003-2005	Adjunct Professor, Department of Exercise and Sport Science, Vanguard University, Costa Mesa, CA 92626
2002	Teaching Assistant, Dept. of Mechanical and Aerospace Engineering, University of California, Irvine, CA, 92697
2000	Teaching Assistant, Dept. of Exercise and Nutritional Science, San Diego State University, San Diego, CA 92182
1998-2000	Substitute Teacher, Jr. High Physical Education, *Escondido Union School District*, Escondido, CA

Non-Academic Employment:

Research Assistant, *Acculaser Inc*., San Diego, CA, 1999-2000 (Research seeking FDA approval for low-level laser as a treatment modality for muscle strain)

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Teaching Experience:

California State University, San Marcos
- KIN 300 – Undergraduate Biomechanics
- KIN 301 – Undergraduate Motor Control and Learning
- KIN 305 – Undergraduate Applied Kinesiology

California State Polytechnic University, Pomona
- KIN 402 – Undergraduate Biomechanics with Lab
- KIN 430 – Undergraduate Motor Control with Lab

Chapman University
- PT 511 – Graduate Biomechanics with Lab

Vanguard University
- EXSS 421 – Undergraduate Biomechanics
- EXSS 328 – Program Design and Conditioning

University of California, Irvine (Teaching Assistant)
- MAE 106 - Mechanical Systems Laboratory

San Diego State University (Teaching Assistant)
- ENS 630 - Advanced Biomechanics (Graduate)

Professional Organizations:

IEEE Engineering in Medicine and Biology Society (EMBS)
American Society of Biomechanics (ASB)
American College of Sports Medicine (ACSM)

Editorial Activities:

Reviewer for Journal of Biomechanics
Reviewer for International Conference on Rehabilitation Robotics
Program Co-Chair, Southern California Conference on Biomechanics (2008)

Awards:

Professor of the Year, Department of Kinesiology and Health Promotion, California State Polytechnic University, Pomona (AY 2007-2008)
Provost's Teacher-Scholar Award, California State Polytechnic University, Pomona (2007-2008)
Student Travel Award, International Conference on Rehabilitation Robotics, 2005
Research Fellowship, Roman Reed Spinal Cord Injury Research Fund, 2002-2003
Academic Fellowship, Department of Mechanical and Aerospace Engineering, 2001, University of California, Irvine
Outstanding Graduate Student of the Year, 2000, San Diego State University, College of Professional Studies and Fine Arts
Member Phi Kappa Phi Honor Society, 2000-present.

Peer Reviewed Journal Publications:

Nessler, J.A. & Gilliland, S.J. (currently under review). Interpersonal synchronization during side by side treadmill walking is influenced by leg length differential and restricted sensory feedback. *Human Movement Science.*

Nessler, J.A., & Pottukalam, R. (2008). Body Weight Support Alters Lower Limb Kinematics During Treadmill Stepping in Unimpaired Subjects. *Medicine and Science in Sport and Exercise*, 40(5S).

Nessler, J.A., Minakata, K., Sharp, K., Reinkensmeyer, D.J. (2007). Robot-assisted hindlimb extension increases the probability of swing initiation during treadmill walking by spinal cord contused rats. *J Neurosci Methods.* Jan 15; 159(1):66-77.

Reinkensmeyer, D.J., Aoyagi, D., Emken, J.L., Galvez, J.A., Ichinose, W., Kerdanyan, G., Maneekobkunwong, S., Minakata, K., **Nessler, J.A.,** Weber, R., Roy, R.R., de Leon, R., Bobrow, J.E., Harkema, S.J., Edgerton, V.R. (2006). Tools for understanding and optimizing robotic gait training. *J Rehabil Res Dev.* Sep-Oct;43(5):657-70.

Nessler, J.A., deLeon, R.D., Sharp, K., Minakata, K., Kwak, E., Reinkensmeyer, D.J. (2006). Robotic gait analysis of bipedal treadmill stepping by spinal contused rats: characterization of intrinsic recovery and comparison to BBB. *J. Neurotrauma,* vol.23, no. 6, pp.882-896.

Nessler, J.A., Timoszyk, W.K., Merlo, M., Emken, J.L., Minakata, K., Roy, R.R., de Leon, R.D., Edgerton, V.R., Reinkensmeyer, D.J. (2005). A Robotic Device for Studying Rodent Locomotion After Spinal Cord Injury. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 13(4), pp 497-506.

W. Timoszyk, **J.A. Nessler**, K. Nelson, C. Acosta, R.R. Roy, V. R. Edgerton, R. de Leon, D.J. Reinkensmeyer (2005). Relationship Between Hindlimb Loading and Stepping Ability of Spinal Transected Rats. *Brain Research*, 1050(1-2), pp. 180-189.

Reinkensmeyer DJ, Pang CT, **Nessler JA**, Painter CC (2002). Web-based telerehabilitation for the upper-extremity after stroke, *IEEE Transactions on Neural Science and Rehabilitation Engineering*, vol. 10, no. 2, pp. 102-108.

Peer-Reviewed Conference Publications:

Gilliland, S.J. & **Nessler, J.A.** Gait entrainment during side by side treadmill walking. In Proc. Southern CA Conference on Biomechanics, Thousand Oaks, CA, April 11-12, 2008.

Nessler, J.A., Lin, W., Dhaher, Y. Synergistic joint torques at the hip and knee are altered in post-stroke hemiplegic gait. Proceedings of the ASME 2007 Summer Bioengineering Conference (SBC2007), June 20-24, Keystone Resort & Conference Center, Keystone, Colorado, USA.

Jeff A. Nessler, Koyiro Minakata, Kelli Sharp, David J. Reinkensmeyer. "Gait Activity Depends on Limb Extension and Phasing in Spinal Cord Contused Rodents: Implications for Robotic Gait Training and Assessment", International Conference on Rehabilitation Robotics, Chicago IL., pp 556 – 559, 2005.

Nessler J.A., Reinkensmeyer D.J., Sharp K., Kwak, E., Minakata, K., DeLeon, R.D. "Robotic Assessment of Locomotor Recovery in Spinal Contused Rats", Proceedings of the 26th Annual IEEE Engineering in Medicine and Biology Society Meeting, p. 2687-2690, 2004.

Nessler J.A., Reinkensmeyer D.J., Timoszyk W.K., Nelson K., Acosta C., Roy R.R., Edgerton V.R., de Leon R.D. "The Use of a Robotic Body Weight Support Mechanism to Improve Outcome Assessment in the Spinal Cord Injured Rodent", Proceedings of the 25th Annual IEEE Engineering in Medicine and Biology Society Meeting, p. 1629-1632, 2003.

Reinkensmeyer, D. J.; Aoyagi, D. Emken, J. Galvez, J. Ichinose, W. Kerdanyan, G. **Nessler, J.** Maneekobkunwong, S. Timoszyk, W. Vallance, K. Wynne, J. de Leon, R. Bobrow, J. Harkema, S. Edgerton, R. "Robotic Gait Training: Toward More Natural Movements and Optimal Training Algorithms", Proceedings of the 2004 IEEE Engineering in Medicine and Biology Society Meeting.

Reinkensmeyer DJ, Pang CT, **Nessler JA**, Painter CC (2001) Java Therapy: Web-based robotic rehabilitation. *Integration of Assistive Technology in the Information Age*, Proceedings 7th International Conference on Rehabilitation Robotics, Institut National des Télécommunication (INT), Evry, France, April 25-27, IOS Press, Amsterdam, pp. 66-71.

Peer Reviewed Conference Presentations:

ASME 2007 Summer Bioengineering Conference (SBC2007), Keystone Resort & Conference Center, Keystone, Colorado, June 20-24, 2007.

International Conference on Rehabilitation Robotics, Rehabilitation Institute of Chicago, June 28 - July 1 2005.

Roman Reed/Reeve Irvine Symposium on Spinal Cord Injury, University of California, Irvine, March 2005.

IEEE Engineering In Medicine and Biology 26th annual conference, San Francisco, CA, September, 2004.

Roman Reed/Reeve Irvine Symposium on Spinal Cord Injury, University of California, Irvine, March 2004.

IEEE Engineering In Medicine and Biology 25th annual conference, Cancun, Mexico, September, 2003.

Southern California Conference on Biomechanics, Pepperdine University, March 2003.

Roman Reed/Reeve Irvine Symposium on Spinal Cord Injury, University of California, Irvine, March 2003.

Invited Research Presentations:

Rehabilitation Institute of Chicago, Chicago, Ill, 60611. "A robotic device for locomotor training and outcome assessment in the spinal cord injured rodent." May 6, 2005.

University of Michigan, Ann Arbor, MI, 48109. "A robotic device for locomotor training and outcome assessment in the spinal cord injured rodent." May 13, 2005.

Natural Science Research Seminar, Pepperdine University, Malibu, CA 90263
"The Use of Robotics in Gait Rehabilitation Following Neurological Injury." Feb 14, 2007.

California Baptist University, Riverside, CA 92504. "The Use of Robotics in Gait Rehabilitation Following Neurological Injury," March 13, 2007.

Funding Received:

Organization: California State Polytechnic University, Pomona
Program: Faculty Center for Professional Development Mini Grant
Title: Development of a Low-Cost EMG System for Use in Student Laboratory Activities
Duration: 1 year (2007)
Award: $996

Organization: California State Polytechnic University, Pomona
Program: Provost's Teacher-Scholar Development Program
Duration: 2 years (2007-2008)
Award: $11,000

Organization: California State University
Program: Research, Scholarship, and Creative Activities Program
Title: *Toward an Assist-as-Needed Robotic Gait Training Algorithm in Humans: Increasing Patient Workload.*
Role: Principal Investigator
Duration: 1 year (2008)
Award: $6,668.49

Organization: National Science Foundation
Program: Research to Aid Persons With Disabilities
Title: *Robotic locomotor training and muscle atrophy in the rat model of spinal cord injury.*
Role: Principal Investigator
Duration: 3 years (2008-2011)
Award: $296,000