Curriculum Vitae: Dagmar Sternad

Title and Affiliation

Professor

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Education

PhD 1995	Experimental Psychology, University of Connecticut (summa cum laude)
1991-1992	Movement Science, Free University of Amsterdam, The Netherlands
MS 1991	Experimental Psychology, University of Connecticut
BA 1986	Movement Science and English Linguistics / Literature, Technical University of Munich, Germany (with highest honors)

Professional Appointments

2015 –	Elected Member of the Board of the Society of Neural Control of Movements
2015 –	Affiliated Faculty at the Max Planck Institute for Intelligent Systems, Tübingen, Germany
2011 – 2014	Member of Editorial Board of "Biomathematics"
2011 – 2016	Regular Member of NIH Study Section on Motor Function, Speech and Rehabilitation (MFSR)
2009 –	Affiliated Faculty at the Department of Mechanical Engineering, Massachusetts Institute of Technology
2009 –	Member of Steering Committee of the PhD Program in Bioengineering and Manager of Track "Motor Control", College of Engineering, Northeastern University
2009 – 2012	Consulting Editor for Journal of Experimental Psychology: Human Perception and Performance
2008 –	Member of the Center for Interdisciplinary Research in Complex Systems (CIRCS), Northeastern University
2008 –	Professor of Biology, Electrical & Computer Engineering, and Physics, Northeastern University, Northeastern University
2007 – 2008	Professor, Department of Kinesiology and Integrative Biosciences, Pennsylvania State University
2006 – 2008	Temporary member of the NIH Study Section on Motor Function, Rehabilitation and Speech (MFRS)
2006 – 2008	Member of the National Science Foundation (NSF) panel, Division of Behavioral and Social Sciences
2005 – 2014	Executive Editor of Journal of Motor Behavior

2004 – 2008	Joint appointment in the Intercollege Graduate Degree Program in Neuroscience, Huck Institutes of the Life Sciences, Pennsylvania State University, University Park
2001 – 2007	Associate Professor, Department of Kinesiology and Faculty at the Integrative Biosciences, Institute for Neuroscience, Pennsylvania State University, University Park
1995 – 2001	Assistant Professor, Department of Kinesiology, Pennsylvania State University, University Park
1993	Teaching Assistant, University of Connecticut
1991 – 1995	Research Assistant, University of Connecticut
1992	Research Assistant, Free University of Amsterdam, Department of Human Movement Sciences
1989 – 1991	Research Assistant, Haskins Laboratories – Yale University, New Haven
1983 – 1986	Research Assistant, Department of Movement Science, Technical University of Munich, Germany

Positions as Visiting Professor

2014 – 2015	Guest Scientist at the McGovern Institute for Brain Science and the Department of Brain and Cognitive Science, MIT
2014 – 2015	Visiting Professor at the Department of Mechanical Engineering, Newman Lab for Biomechanics and Rehabilitation, MIT
2014 – 2015	Guest Scientist at the Max-Planck Institute for Intelligent Systems, Tübingen, Germany
Spring 2003	Visiting Associate Professor at the GRASP lab at the University of Pennsylvania, Philadelphia
Fall 2002	Visiting Associate Professor at the Institute of Cognitive and Brain Sciences at the University of California at Berkeley
Summer 2002	Invitation as Guest Professor at the Center for Research in Sport Sciences, University of Paris Sud XI (competitive appointment)
2001	Invited Researcher at the University of Saarbrücken, Germany
1999 – 2001	Collaboration on fMRI study with University of Western Ontario, Department of Psychology, Canada
Summer 1998	Visiting Researcher at the Kawato Dynamic Brain Project of the ERATO (Exploratory Research for Advanced Technology), Program organized by Japan Science and Technology Corporation (JST)
May 1998	Guest Professor at the Technical University of Munich (competitive appointment by the Technical University of Munich)
Summer 1997	Visiting Researcher at the Kawato Dynamic Brain Project of the ERATO (Exploratory Research for Advanced Technology), Program organized by Japan Science and Technology Corporation (JST)
Spring 1997	Researcher at the Simulations Applications Lab at Los Alamos National Laboratory, TSA-DO/SA MS M997, New Mexico

Honors, Scholarships and Awards

2015	Invited member of the Nu Rho Psi NEU Honors Society of Neuroscience students.
2014	*Klein Lectureship Award*, Award for outstanding scholarship and teaching at Northeastern University, April 8.

2013	Presentation of the 11th Arthur S. Iberall (1918-2002) *Distinguished Lecture on Life and the Sciences of Complexity*, University of Connecticut, Center for the Ecological Study of Perception and Action, Storrs, CT, December 6.
2009	Invited Speaker in *Women in Computational Neuroscience*, Bernstein Center for Computational Neuroscience, Max-Planck-Institute for Dynamics and Self-Organization, Göttingen, Germany, January 13.
2008	Invited participant at the *National Academies Keck Futures Initiative on Complex Systems*, Arnold and Mabel Beckman Center, Irvine, CA
2007	Invited Researcher at the *Institute for Interdisciplinary Research* in Bielefeld (Zentralinstitut für Interdisziplinäre Forschung), Germany
1999, 2000	Fellow-at-Large of the *Santa Fe Institute for Complex Systems*
1999	Honorary Member of the *National Golden Key Honors Society,* award based on excellence in teaching
1995	Postdoctoral Fellowship of the Institute for Research in Cognitive Science of the University of Pennsylvania, Philadelphia (declined)
1995	Postdoctoral Fellowship of the Beckman Institute for Advanced Science and Technology, University of Illinois (declined)
1995	Postdoctoral Fellowship of the Leverhulme Trust, Lancaster University, Great Britain (declined)
1994	Dissertation Research Award of the *American Psychology Association*
1992 –	Fellow of the *Santa Fe Institute* (Study of Complex Systems)
1988 – 1993	Scholarship and Fellow of the German National Merit Foundation, (*Studienstiftung des Deutschen Volkes*, for the top 0.25% of university students)
1989	Scholarship from the *German Academic Exchange Service* (Deutscher Akademischer Austauschdienst, DAAD)
1988	Doctoral Fellowship from the *Bavarian Government* for a doctoral dissertation
1981 – 1982	Scholarship from the University of Munich to study one year in Great Britain, (*Kontaktstipendium der Ludwig Maximilians Universität München*)
1978 – 1986	Fellowship awarded to the academic elite by the Bavarian Government, (*Hochbegabtenförderung nach dem Bayerischen Begabtenförderungsgesetz*, for 0.20% of High School graduates)

RESEARCH

GRANTS

In Progress

- *2015 – 2020*: NIH-R01-HD087089-01: *Predictability in complex object control,*   12/01/15-11/30/20
  Principal Investigator: Dagmar Sternad, Total: $1,835,860.

- *2015 – 2020*: NIH-R01-HD081346: *Multi-center trial of augmented sensory feedback in children with dyskinetic CP*
      05/31/15-4/30/20
  Principal Investigator: Terence Sanger, Co-Investigator: Dagmar Sternad. Total: $3,100,000 (priority percentile 2%), NU portion: $51,285 per year.

- *2015 – 2017*: NSF-EAGER 1548514: *Collaborative research: Challenging the cognitive divide.* 09/01/15-08/30/17
  Principal Investigators: Neville Hogan, Dagmar Sternad. Total: $300,000, NU: $170,060.

- *2006 – 2015*: NIH-R01: *Research resource for complex physiologic signals*   05/31/15-4/30/16
  Principal Investigator: David Paydarfar. Subcontract: Dagmar Sternad. Direct cost: $19,387 per year.

- *2013 – 2016:* NIH-R21 DC013095-01: *Prosody in congenital and acquired dysarthria*   11/01/14-10/30/17
  Principal Investigator: Rupal Patel, Co-Investigator: Dagmar Sternad. Total Costs: $414,041 (Priority percentile: 1%).

- *2016*: MIT-G00005030: *Support for experimental facilities.*   01/01/16-02/31/17
  Principal Investigator: Pawan Sinha, Dagmar Sternad. Total direct costs: $7,500.

Completed

- *2010 – 2016:* NIH-R01-HD045639: *Variability and stability in skill acquisition*
  Principal Investigator: Dagmar Sternad, National Institutes of Health. Total: $1,542,159 (priority percentile: 2%).

- *2015 – 2016:* Museum of Science: Living Laboratory Senior Thesis Scholarship: *Pitchers and pianists: timing in discrete and rhythmic motor skills.*
  Student Investigator: Dena Guo, Mentor: Dagmar Sternad.

- *2016*: Provost Research Award: *Timing accuracy in a throwing task*.
  Principal Investigator: Dena Guo. Supervisor: Dagmar Sternad. $3,000.

- *2014 – 2016*: F31 NIH Ruth Kirschstein Predoctoral Fellowship: *The influence of ambulatory biofeedback schedules on the retention of vocal motor behavior*
  PhD Student: Jarrad van Stan. Mentor: Dagmar Sternad. Total: $60,000.

- *2015*: Provost Research Award and Creative Endeavors Award: *Human control of complex objects: Stability in the face of perturbations*.
  Principal Investigator: Julia Ebert. Supervisor: Dagmar Sternad. $1,875.

- *2015*: Provost Research Award: *Neural and behavioral crosstalk during learning a polyrhythmic bimanual skill*.
  Principal Investigator: Courtney Stead. Supervisor: Dagmar Sternad. $3,000.

- *2015*: Provost Research Award: *Effects of metric structure strength on motor learning of temporal rhythms*.
  Principal Investigator: Keith Harrigian. Supervisor: Dagmar Sternad. $1,000.

- *2012 – 2015*: US Army Research Institute for Behavioral and Social Sciences W5J9CQ-12-C-0046: *The effect of threat on task performance: testing the threat-induced potentiation of prepotent responses model*
  Principal Investigator: Steve Harkins. Total: $575,681.

- *2011 – 2014:* International Grant to University of Beijing: *Multi-joint intelligent prosthesis based on EMG control*
  Principal Investigator: Long Wang and Kunlin Wei, Co-Investigator: Dagmar Sternad. Total: $320,000 to University of Beijng.

- 2014: Provost Undergraduate Research Award, Northeastern University: *Limits in human timing accuracy*
  Student: Dena Guo. Mentor: Dagmar Sternad. Total: $1,000.

- 2013: Provost Undergraduate Research Award, Northeastern University: *Neuroplasticity in learning and retention of asymmetric bimanual movement*
  Student: Julia Cowenhoven. Mentor: Dagmar Sternad. Total: $1,000.

- *2013 – 2014:* Tier I Seed Grant Vice Provost of Research, Northeastern University: *Development of an adaptive clinician-friendly virtual rehabilitation system and its evaluation in post-operative shoulder therapy*
  Principal Investigator: Dagmar Sternad, Co-Investigators: Miriam Leeser, Amee Seitz. Total: $50,000.

- 2009 – 2014: NSF DMS-0928587 PRISM: *Attracting students to Mathematics, Physics and Biology through interdisciplinary research and discovery*
  Principal Investigator: Richard Porter, Co-PI: Dagmar Sternad, Total: $1,987,411.

- *2011 – 2014:* American Heart Association, 11SDG7270001, National Center Research Program. *Training dual-task walking after stroke: effects on attentional and locomotor control*
  Principal Investigator: Prudence Plummer d'Amato, Co-Investigator: Dagmar Sternad. Total: $308,000.

- *2010 – 2013*: DFG-MU 1374/3-1: (Deutsche Forschungsgesellschaft, Germany): *Feedbackverarbeitung beim motorischen Lernen unter besonderer Berücksichtigung von motorischem Rauschen* (*The role of motor noise in feedback processing in motor learning*)
  Principal Investigator: Hermann Müller, Consultant: Dagmar Sternad, Total: $210,000 to University of Giessen.

- *2013*: Provost Undergraduate Research Award, Northeastern University: *Origins of asymmetric learning in an asymmetric bimanual task*
  Student: Julia Ebert. Mentor: Dagmar Sternad. Total: $1,000.

- *2011 – 2013:* Tier I Seed Grant Vice Provost of Research, Northeastern University: *Central fatigue in motor, sensory and cognitive performance*
  Principal Investigator: Dagmar Sternad, Therese Pirozzi O'Neill, Ying-Yee Kong, Deniz Erdogmus: Total: $50,000.

- *2012:* Mathworks Sponsorship of Research Assistant Meghan Huber*: Development of Matlab-based virtual rehabilitation systems using Microsoft Kinect.*
  Principal Investigator: Miriam Leeser. Support: $10,000.

- *2011 – 2013:* NIH 1F32 AR061238: Postdoctoral Training Fellowship: *Learning to control flexible objects using error-tolerant movement strategies*
  Principal Investigator: Christopher J. Hasson, Sponsor: Dagmar Sternad. Total: $119,499.

- *2009 – 2010*: DAAD 0809950: *Effektorabhängige und unabhängige Anteile beim motorischen Transfer (Effector-dependent and independent contributions in motor transfer*)
  Principal Investigators: Heiko Maurer and Lisa Pendt, Contact and Collaborator: Dagmar Sternad, approx. $20,000 to University of Giessen.

- *2005 – 2010:* BCS-0904464: *Dynamics of action and perception in a rhythmic task*
  Principal Investigator: Dagmar Sternad, National Science Foundation, Division of Behavioral and Cognitive Science, Perception, Action and Cognition, $355,000.

- *2003 – 2010:* R01 HD045639: *Variability and stability in skill acquisition*
  Principal Investigator: Dagmar Sternad, National Institutes of Health, $1,237,155.

- *2005 – 2009:* ONR N00014-05-1-0844: *Anomalous behavior detection related to IEDs*
  Principal Investigator: Lora Weiss, Applied Research Lab, Co-Investigator: Dagmar Sternad, $225,000.

- *2006 – 2007:* Penn State 421-55 1001: *Control of manual positioning sequences*
  Investigator: David Rosenbaum. Co-Investigator: Dagmar Sternad. Social Science Research Institute, $20,000.

- *2004 – 2007:* TSF 4100020604: *Integrative functional imaging of cognitive systems in the developing brain*
  Principal Investigator: Dr. Paul Eslinger, Hershey Medical Center, Co-Investigator: Dagmar Sternad, Pennsylvania Department of Health, Tobacco Formula Funded Health Research, $224,410.

- *1995 – 1996: A dynamical analysis of force production in rhythmic tapping and its application as a diagnostic tool for Parkinson patients*.
  Principal Investigator: Dagmar Sternad. Co-Investigator: Dr. Karl Newell. Interdisciplinary Seed Grant of the College of Health and Human Development. $5,000.

- *1997 – 1998: Individual route planning in large-scale traffic simulations*
  Principal Investigator: Chris Barrett. Los Alamos National Laboratories and the Santa Fe Institute for Complex Systems, Co-Investigator: Dagmar Sternad, $35,000.

- *1998 – 1999: NSF: Conference grant: Progress in Motor Control II*
  Principal Investigator: Dagmar Sternad. Co-Investigators: Mark Latash and the Conference Organizing Committee. National Science Foundation (NSF), Integrative Biology and Neuroscience. $10,000.

- *1997 – 2001: NSF-SBR 97-10312: Multi-joint dynamics: A model for discrete and rhythmic movements*

Principal Investigator: Dagmar Sternad. Co-Investigator: Dr. Stefan Schaal, University of Southern California and ATR Human Information Research Laboratories, Japan. National Science Foundation, Social, Behavioral and Economic Research, Human Cognition and Perception, $203,845.

- *2002:* DFG: *Sensorimotor control of biped walking: Acquisition of dynamics and statics in the generation of walking patterns*
Principal Investigator: Karl-Theodor Kalveram, Department of Psychology, University of Düsseldorf, Germany. Co-Investigator: Dagmar Sternad. Deutsche Forschungsgesellschaft (DFG), German equivalent to the National Science Foundation. $3,000. (3-month internships of students in my lab) $50,000.

- *2005: International conference: Progress in Motor Control V: A multidisciplinary perspective*
Principal Investigator: Dagmar Sternad. Level–I Proposal to the Children, Youth and Families Consortium, The Pennsylvania State University, $6,000.

- *2005:* NIH: *International conference: Progress in Motor Control V: A multidisciplinary perspective*
Principal Investigator: Dagmar Sternad. National Institutes of Child Health and Human Development, $3,000.

- *2005: International conference: Progress in Motor Control V: A multidisciplinary perspective*
Principal Investigator: Dagmar Sternad. The Huck Institute, Pennsylvania State University, $5,000.

- *2001 – 2005:* NSF-BCS-0096543: *Discrete and rhythmic dynamics in multijoint movements*
Principal Investigator. Dagmar Sternad. Co-Investigator: Stefan Schaal. National Science Foundation, Human Cognition and Perception, $342,902.

PUBLICATIONS

Peer-Reviewed Journal Articles

1. Van Stan, J.H., Mehta, D.D., Sternad, D., Petit, R.J., & Hillman, R.E. (in revision). Ambulatory voice biofeedback: relative frequency and summary feedback effects on performance and retention of reduced vocal intensity in the daily lives of participants with normal voices. *American Journal of Speech Language Pathology.*

2. Stein, P., Saltzman, E., Holt, K.G., & Sternad, D. (accepted). Is failed predictive control a risk factor for focal dystonia? *Motor Disorders*.

3. Huber, M.E., Kuznetsov, N., Sternad, D. (under review). Reducing neuromotor noise in long-term motor skill learning. *Journal of Neurophysiology.*

4. Hasson, C.J., Zhang, Z., Abe, M.O., & Sternad, D. (2016). Neuromotor noise is malleable by amplification of perceived error. *PLoS Computational Biology.*

5. Ahn, J., Zhang, Z., & Sternad, D. (2016). Noise induces biased estimation of the correction gain. *PLoS ONE.*

6. Van Stan, J.H., Mehta, D.D., Petit, R.J., Sternad, D., Muise, J., Burns, J.A., & Hillman, R.E. (2016). Integration of motor learning principles into real-time ambulatory voice biofeedback and example implementation via a clinical case study with vocal fold nodules. *American Journal of Speech Language Pathology.*

7. Huber, M.E., Brown, A., & Sternad, D. (2016). Girls *can* play ball: Stereotype threat reduces variability in a motor skill. *Acta Psychologica, 169,* 79-87.

8. Chu, W.T.V., Park, S.W., Sanger, T.D., & Sternad, D. (2016). Dystonic children can learn a novel motor skill: Strategies that are tolerant to high variability. *IEEE Transactions on Neural Systems and Rehabilitation Engineering.* Epub Jan 25.

9. Huber, M.E., Seitz, A, Leeser, M., & Sternad, D. (2015). Validity and reliability of Kinect skeleton for measuring shoulder joint angles: A feasibility study. *Physiotherapy, 101, 4*, 389-393.

10. Huber, M.E. & Sternad, D. (2015). Implicit guidance to stable performance in a rhythmic perceptual-motor skill. *Experimental Brain Research, 233, 6,* 1783-99. DOI 10.1007/s00221-015-4251-7.

11. Sternad, D. & Körding, K.P. (2015). Carrot or stick in motor learning. *Nature Neuroscience, 18, 4,* 480-481.

12. Park, S-W. & Sternad, D. (2015). Robust retention of individual sensorimotor skill after self-guided practice. *Journal of Neurophysiology*, *113, 7,* 2635-45.

13. Huber, M.E., Seitchik, A., Brown, A., Sternad, D., & Harkins, S. (2015). A mere effort account of stereotype threat in performance of a rhythmic motor skill. *Journal of Experimental Psychology: Human Perception and Performance, 41, 2*, 525-541.

14. Sternad, D., Huber, M.E., & Kuznetsov, N. (2014). Acquisition of novel and complex motor skills: Stable solutions where intrinsic noise matters less. *Advances in Experimental Medicine and Biology, 826,* 101-24. doi: 10.1007/978-1-4939-1338-1_8.

15. Nasseroleslami, B., Hasson, C.J., & Sternad, D. (2014). Rhythmic manipulation of objects with complex dynamics: Predictability over chaos. *PLoS Computational Biology, 10(10),* e1003900. doi: 10.1371

16. Hasson, C.J. & Sternad, D. (2014). Safety margins in older adults increase with improved control of a dynamic object. *Frontiers in Aging Neuroscience, 6:158*, doi: 10.3389/fnagi.2014.00158

17. Park, S-W., Dijkstra, T.M.A., & Sternad, D. (2013). Learning to never forget: Time scales and specificity of long-term memory of a motor skill. *Frontiers in Computational Neuroscience, 7:111*. doi: 10.3389/fncom.2013.00111.

18. Sternad, D., Marino, H., Duarte, M., Dipietro, L., Charles, S., & Hogan, N. (2013). Transitions between discrete and rhythmic primitives in a unimanual task. *Frontiers in Computational Neuroscience, 7:90*. doi: 10.3389/fncom. 2013.00090.

19. Hogan, N. & Sternad, D. (2013). Dynamic primitives in the control of locomotion. *Frontiers in Computational Neuroscience, 7:71*, doi: 10.3389/fncom.2013.00071.

20. Abe, M.O., & Sternad, D. (2013). Directionality in distribution and temporal structure of variability in skill acquisition. *Frontiers in Human Neuroscience, 7:225*. doi: 10.3389/fnhum.2013.00225.

21. Chu, W.T.V., Sternad, D., & Sanger, T.D. (2013). Healthy and dystonic children compensate for changes in motor variability. *Journal of Neurophysiology, 109, 8,* 2169-78.

22. Plummer d'Amato, P., Kyvelidou, A., Sternad, D., Najafi, B., Villalobos, R.M., & Zurakowski, D. (2012). Training dual-task walking in community-dwelling adults within 1 year of stroke: A protocol for a single-blind randomized controlled trial. *BMC Neurology, 12, 1,* 129.

23. Hogan, N., & Sternad, D. (2012). Dynamic primitives of motor behavior. *Biological Cybernetics*, *106 (11-12)*, 727-739. PMID: 23124919

24. Hasson, C.J., Shen, T., & Sternad, D. (2012). Energy margins in dynamic object manipulation. *Journal of Neurophysiology, 108, 5,* 1349-65.

25. Cohen, R.G. & Sternad, D. (2012). State space analysis of intrinsic timing: Exploiting task redundancy to reduce sensitivity to timing. *Journal of Neurophysiology, 107, 2*, 618-627.

26. Sternad, D., Abe, M.O., Hu, X., & Müller, H. (2011). Neuromotor noise, sensitivity to error and signal-dependent noise in trial-to-trial learning. *PLoS Computational Biology, 7, 9,* e1002159.

27. Ajemian, R. & Sternad, D. (2010). Theoretical ideas in motor neuroscience and their capacity for falsification. *Journal of Motor Behavior, 6*, 331-332.

28. Ronsse, R. & Sternad, D. (2010). Bouncing between model and data: stability, passivity, and optimality in hybrid dynamics. *Journal of Motor Behavior, 6,* 387-397.

29. Sternad, D., Park, S., Müller, H., & Hogan, N. (2010). Coordinate dependence of variability analysis. *PLoS Computational Biology, 6, 4,* e1000751.

30. Sanger, T.D., Chen, D., Fehlings, D.L., Hallett, M. et al. (2010). Definitions and classification of hyperkinetic movements in childhood. *Movement Disorders, 25, 11,* 1538-49.

31. Ronsse, R., Wei, K., & Sternad, D. (2010). Optimal control of a hybrid rhythmic-discrete task: the bouncing ball revisited. *Journal of Neurophysiology, 103,* 2482-2493.

32. Ehrlenspiel, F., Wei, K., Sternad, D. (2010). Open-loop, closed-loop, and compensatory control: Performance under pressure in a rhythmic task. *Experimental Brain Research*, *201, 4,* 729-741.

33. Van der Wel, R.P.R.D., Sternad, D., & Rosenbaum, D.A. (2010). Moving the arm at different rates: Slow movements are avoided. *Journal of Motor Behavior*, *42, 1,* 29-36. PMCID: 3566270

34. Hogan, N. & Sternad, D. (2009). Sensitivity of smoothness measures to movement duration, amplitude and arrests. *Journal of Motor Behavior, 41, 6,* 529-534.

35. Ronsse, R., Sternad, D., & Lefevre, P. (2009). A computational model for rhythmic and discrete movements in uni- and bimanual coordination. *Neural Computation, 21,* 1335–1370.

36. Cohen, R.G., & Sternad, D. (2009). Variability in motor learning: Relocating, channeling and reducing noise. *Experimental Brain Research, 193,* 1, 69-83.

37. Müller, H. & Sternad, D. (2009). Motor learning: Changes in the structure of variability in a redundant task. *Advances in Experimental Medicine and Biology, 629,* 439-456.

38. Duarte, M., & Sternad, D. (2008). Complexity of human postural control: Alterations with aging during prolonged standing. *Experimental Brain Research*, *191(3),* 265-276.

39. Wei, K., Dijkstra, T.M.H., & Sternad, D. (2008). Stability and variability: Indicators for passive stability and active control in a rhythmic task. *Journal of Neurophysiology, 99,* 3027-3041.

40. Raftery, A., Cusumano, J., & Sternad, D. (2008). Chaotic frequency scaling in a coupled oscillator model for free rhythmic actions. *Neural Computation, 20, 1,* 205-226.

41. Wei, K., Dijkstra, T.M.H., & Sternad, D. (2007). Passive stability and active control in a rhythmic task. *Journal of Neurophysiology, 98, 5,* 2633-2646.

42. Hogan, N., & Sternad, D. (2007). On rhythmic and discrete movements: Reflections, definitions and implications for motor control. Experimental Brain Research, 181, 1, 13-30.

43. Yu, H., Sternad, D., Corcos, D.M., & Vaillancourt, D. (2007). Cerebellum and motor cortex in Parkinson's disease: Is activation compensatory or disease-related? *NeuroImage, 35,* 1, 222-233.

44. Müller, H., Frank, T.D., & Sternad, D. (2007). Variability, covariation and invariance with respect to coordinate systems in motor control. *Journal of Experimental Psychology: Human Perception and Performance, 33, 1,* 250-255.

45. Sternad, D., Wei, K., Diedrichsen, J., & Ivry, R.B. (2007). Intermanual interactions during initiation and production of rhythmic and discrete movements in individuals lacking a corpus callosum. *Experimental Brain Research, 76, 4,* 559-574.

46. Sanger, T., Chen, D., Delgado, M., Gaebler, Spira, D., & Hallett, M. et al. (2006). Definition and classification of negative motor signs in childhood. *Pediatrics, 118, 5,* 2159-2167.

47. Schaal, S., Sternad, D., Osu, R., & Kawato, M. (2004). Rhythmic arm movements are not discrete. *Nature Neuroscience, 7, 10,* 1136-1143.

48. Sternad, D. & Dijkstra, T.M.H. (2004). Dynamical stability in the acquisition and performance of rhythmic ball manipulation: Theoretical insights with a clinical slant. *Journal of Clinical Neurophysiology, 21, 3*, 215-227.

49. Dijkstra, T.M.H., Katsumata, H., de Rugy, A., & Sternad, D. (2004). The dialogue between data and model: Passive stability and relaxation behavior in a ball bouncing task. *Nonlinear Studies, 11, 3*, 319-344.

50. Müller, H., & Sternad, D. (2004). Accuracy and variability in goal-oriented movements: decomposition of gender differences in children. *Journal of Human Kinetics, 12*, 31-50.

51. Müller, H., & Sternad, D. (2004). Decomposition of variability in the execution of goal-oriented tasks – Three components of skill improvement. *Journal of Experimental Psychology: Human Perception and Performance*, *30*, *1*, 212-233.

52. De Rugy, A., & Sternad, D. (2003). Interaction between discrete and rhythmic movements: reaction time and phase of discrete movement initiation against oscillatory movements. *Brain Research, 994*, 160-174.

53. Sternad, D. & Dean, W.J. (2003). Rhythmic and discrete elements in multi-joint coordination. *Brain Research, 989*, 152-171.

54. De Rugy, A., Wei, K., Müller, H., & Sternad, D. (2003). Actively tracking "passive" stability. *Brain Research*, *982, 1*, 64-78.

55. Wei, K., Wertman, G., & Sternad, D. (2003). Interactions between rhythmic and discrete components in a bimanual task. *Motor Control, 7, 2*, 134-154.

56. Müller, H. & Sternad, D. (2003). A randomization method for the calculation of covariation in multiple nonlinear relations: Illustrated at the example of goal-directed movements. *Biological Cybernetics, 89*, 22-33.

57. Yu, H., Russell, D.M., & Sternad, D. (2003). Task-effector asymmetries in a rhythmic continuation task. *Journal of Experimental Psychology: Human Perception and Performance, 29, 3*, 616-630.

58. Katsumata, H., Zatsiorsky, V., & Sternad, D. (2003). Control of ball-racket interactions in the rhythmic propulsion of elastic and non-elastic balls. *Experimental Brain Research, 149*, 17-29.

59. Sternad, D., de Rugy, A., Pataky, T., & Dean, W.J. (2002). Interactions of discrete and rhythmic movements over a wide range of periods. *Experimental Brain Research, 147,* 162-174.

60. Katsumata, H. & Sternad, D. (2002). Movement coordination from a dynamical systems perspective. *Japanese Journal of Biomechanics in Sports and Exercise, 6, 2*, 76-95.

61. Sternad, D. (2002). Wachholder and Altenburger 1927: Foundational experiments for current hypotheses on equilibrium point control in voluntary movements. *Motor Control, 6*, 299-318.

62. Sternad, D. & Corcos, D. (2001). Effect of task and instruction on patterns of muscle activation: Wachholder and beyond. *Motor Control, 5, 4*, 307-336.

63. Sternad, D., Duarte, M., Katsumata, H., & Schaal, S. (2001). Bouncing a ball: Tuning into dynamic stability. *Journal of Experimental Psychology: Human Perception and Performance, 27, 5*, 1163-1184.

64. Russell, D. & Sternad, D. (2001). Sinusoidal visuomotor tracking: Intermittent servo-control or coupled oscillations? *Journal of Motor Behavior*, *33, 4*, 329-349.

65. Schaal, S., & Sternad, D. (2001). Origins and violations of the 2/3 power law in rhythmic three-dimensional arm movements. *Experimental Brain Research, 136, 1*, 60-72.

66. Dingwell, J.B., Cusumano, J.P., Cavanagh, P.R., & Sternad D. (2001). Local dynamic stability versus kinematic variability of continuous overground and treadmill walking. *Journal of Biomechanical Engineering, 123, 1*, 27-32.

67. Sternad, D., Duarte, M., Katsumata, H., & Schaal, S. (2001). Dynamics of a bouncing ball in human performance. *Physical Review E, 63*, 011902-1 –011902-8.

68. Sternad, D. (2000). Debates in dynamics: A dynamic systems perspective on perception and action. *Human Movement Science*, 19, 407-423.

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Books

1. Sternad, D. (Editor, 2009). *Progress in motor control – A multidisciplinary perspective*. New York: Springer. **(over 30,000 downloads of the articles until 2013)**

Popular Books

1. Sternad, D. (2002). *Stretching*. München: Blv-Verlagsgesellschaft.

2. Sternad, D. (1999/1987). *Richtig Stretching* (**9th revised editions**). München: Blv-Verlagsgesellschaft. **Translated into 5 languages** (French, Spanish, Italian, Hungarian, Dutch).

3. Sternad, D., & Bozdech, K. (1990). *Spaß mit Stretching* (2nd ed.). München: Blv-Verlagsgesellschaft.

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Book Chapters

1. Sternad, D. (2016). Control of intermittent and continuous objects. In J.-P. Laumond, *Geometric and numerical foundations of movements*. New York: Springer.

2. Sternad, D. & Hasson, C.J. (2016). Predictability and robustness in the manipulation of dynamically complex objects. In J. Lazsko & M.L. Latash (eds.), *Progress in motor control*. New York: Springer.

3. Sternad, D. & Abe, M.O. (2011). Variability, noise, and sensitivity to error in learning a motor task. In F. Danion & M.L. Latash (eds.), *Progress in motor control: theories, experiments, and applications (*pp.267-295). New York: Springer.

4. Sternad, D. (2008). Towards a unified framework for rhythmic and discrete movements: behavioral, modeling and imaging results. In A. Fuchs & V. Jirsa (Eds.), *Coordination: neural, behavioral and social dynamics* (pp.105-136). New York: Springer.

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Conference Proceedings

1. Ochoa, J., Sternad, D., & Hogan, N. (2016). Entrainment of overground human walking to mechanical perturbations at the ankle joint. *Proceedings of the 8th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob2016)*, University Town, Singapore, June 26-29.
    BEST NATIONAL SCIENCE FOUNDATION (NSF) STUDENT PAPER AWARD

2. Sternad, D. (2015). From theoretical analysis to clinical assessment and intervention: Three interactive motor skills in a virtual environment. *IEEE Virtual Rehabilitation Proceedings (ICVR), International Conference on*, Valencia, Spain, June 9-12, pp. 265-272.
BEST PAPER AWARD

3. Huber, M.E., Leeser, M., Sternad, D., & Seitz, A. (2015). Accuracy of Kinect for measuring shoulder joint angles in multiple planes of motion. *IEEE Virtual Rehabilitation Proceedings (ICVR), International Conference on*, Valencia, Spain, June 9-12.

4. Ye, F., Nasseroleslami, B., & Sternad, D. (2014). Predictability in human manipulation on nonlinear dynamic objects. *IEEE Proceedings of the 40th Northeast Bioengineering Conference,* Boston, MA, April 25-27.

5. Nasseroleslami, B., & Sternad, D. (2014). Extrinsic contributions to movement variability in human object manipulation. *IEEE Proceedings of the 40th Northeast Bioengineering Conference,* Boston, MA, April 25-27.

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8. Kuznetsov, N., Huber, M.E., & Sternad, D. (2014). Exploratory aspects in learning a novel skill. *IEEE 40th Proceedings of the Northeast Bioengineering Conference,* Boston, MA, April 25-27.

9. Huber, M.E. & Sternad, D. (2014). Implicit guidance to dynamic stability in rhythmic ball bouncing. *IEEE Proceedings of the 40th Northeast Bioengineering Conference,* Boston, MA, April 25-27.

10. Guo, D., Huber, M.E. & Sternad, D. (2014). State space analysis of human timing: Timing accuracy limit is 9ms. *IEEE Proceedings of the 40th Northeast Bioengineering Conference,* Boston, MA, April 25-27.

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12. Huber, M.E., Leeser, M., & Sternad, D. (2013). Development of a low-cost, adaptive, clinician-friendly virtual rehabilitation system. *IEEE Proceedings for the 10th International Conference on Rehabilitation, Virtual Rehabilitation (ICVR),* pp.172-173, Philadelphia, PA, August 26-29.

13. Hasson, C.J., Hogan, N., & Sternad, D. (2012). Human control of dynamically complex objects. *Proceedings of the 4th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob2012)*, Rome, Italy, June 24-28.

14. Lee, M., Roan, M., Sternad, D. & van Werkhoven, H. (2006). Gait analysis to detect hidden external loads. *Biomedical Engineering Society Fall Meeting*, Chicago, IL, Oct 18-20.

15. Erdley, J., Weiss, L., Long, L., Sternad, D., Murphy, K., Roan, M. (2006). Predicting precursors to IED deployment, *7th International Symposium on Technology and the Mine Problem*, Monterey, CA, May 2-4.

16. Schaal, S., Kotosaka, S., Sternad, D. (2000). Nonlinear dynamical systems as movement primitives, *Proceedings of the 1st IEEE-RAS International Conference on Humanoid Robotics*, 1425-1436.

17. Schaal, S., Sternad, D., Dean, W.J., Kotosaka, S., Osu, R., & Kawato, M. (2000). Reciprocal excitation between biological and robotic research. *Sensor Fusion and Decentralized Control in Robotic Systems III, Proceedings of SPIE*, 30-40.

18. Dingwell, J.B., Cusumano, J.P., Cavanagh, P.R., & Sternad, D. (1999). Stride-to-stride variability in human walking is not noise. *Proceedings of the 23rd Annual Meeting of the American Society of Biomechanics*, 58-59.

19. Dingwell, J.B., Cusumano, J.P., Cavanagh, P.R., & Sternad, D. (1999). Walking variability and stability in diabetic neuropathy. *Proceedings of the 23rd Annual Meeting of the American Society of Biomechanics*, 60-61.

20. Dingwell, J.B., Cavanagh, P.R., & Sternad, D. (1999). Dynamic analysis of human walking: Treadmills, loss of sensation, and comparisons with surrogate data. *DETC99/VIB-8360, Proceedings of the 1999 ASME International Design Engineering Technical Conferences*, 120-129.

21. Schaal, S. & Sternad, D. (1998). Programmable pattern generators. *3rd International Conference on Computational Intelligence in Neuroscience*, 48-51.

22. Dingwell, J.B., Cusumano, J.P., Sternad, D., and Cavanagh, P.R. (1998). Beyond 3D: A nonlinear dynamics approach to the analysis of human locomotion. *Proceedings of the Fifth International Symposium on the 3-D Analysis of Human Movement*, 140-143.

23. Dingwell, J.B., Cusumano, J.P., Sternad, D., & Cavanagh, P.R. (1998). Using Lyapunov exponents to quantify dynamic stability during continuous overground locomotion. *Proceedings of the Third North American Congress on Biomechanics*, 125-126.

24. Dingwell, J.B., Ulbrecht, J.S., Sternad, D., & Cavanagh, P.R. (1997). Variability of neuropathic and non-neuropathic subjects walking on a motorized treadmill. *Proceedings of the 21st Annual Conference of the American Society of Biomechanics*, 254-255.

Public Dissemination of Research Results

1. Dagmar Sternad's conference paper "From theoretical analysis to clinical assessment and intervention: Three interactive motor skills in a virtual environment" is featured in the *Newsletter of the International Society for Virtual Rehabilitation, Issue 5,* August, 2015.

2. Dagmar Sternad appears on Chinese TV show "*The Brain*" as the International Science Judge, March 7, 2015.

3. *NSF Highlights 24778, MPS/DMS 2013*, Undergraduate NSF PRISM participant wins Goldwater Scholarship, July 2013.

4. *OpenNI Blog:* OpenNI brings virtual rehabilitation programs into patients' home. May 6, 2013. http://www.openni.org/articles/openni-brings-virtual-rehabilitation-programs-into-patients-homes/#.UYf1JWRhmLM

5. *Video in Engadgets, Northeastern University's haptic ball-racket system is one pricey game of paddle ball*. November 14, 2012. http://www.viddler.com/v/b41e038f

6. *Medical Daily*, Research highlighted in section on Science/Tech: *Carrying a cup of coffee is a complex task*. June 2012.

7. *NSF Highlights, Perception, Action & Cognition*, Dynamics of action and perception in a rhythmic task, February 2011.

8. STEM Research Symposium for Students, Northeastern University. The brain and the exponential power of handwriting – From Movements to Mathematics (&back). April 15, 2010.

9. *NSF Highlights, Perception, Action & Cognition*, Dynamics of action and perception in a rhythmic task, May 2007.

10. *Press Release and News and Views in Nature Neuroscience:* Miall, C.R. & Ivry, R. (2004). Moving to a different beat. *Nature Neuroscience, 7, 10*, 1025-1026.

11. *Technological Research News*, February 28, 2001: Robots learn soft touch. http://www.trnmag.com/Stories/022801/Robots_learn_soft_touch_022801.html

12. *Nature Science Update*, January 28, 2001: Chaos on center court. http://www.nature.com/nsu/010104/010104-9.html

13. *Plus*, Issue 16, 09/01: Robots can't play tennis - yet. http://plus.maths.org/issue16/news/tennis/

14. *Revista Pesquisa Fapesp*, Edition 67, 08/01: Movement under measure.

INVITED PRESENTATIONS

1. "From simple movements to complex skills: A task-dynamic approach to motor control". **Keynote** at the *Annual Conference of the Deutsche Vereinigung für Sportwissenschaften, Sektion Motorik/Training/Biomechanik*, Darmstadt, Germany, September 29, 2016.

2. "From actions to interactions: Variability, stability and predictability in the control of dynamic objects". *Department of Bioengineering*, Politecnico di Milano, Italy, May 12, 2016.

3. "Control of intermittent and continuous interactions with objects". *2nd Workshop of the Anthropomorphic Motion Factory: Geometric and Numerical Foundations of Movements*, LAAS-CNRS, Toulouse, France, November 19-20, 2015.

4. "From actions to interactions: Variability, stability and predictability in the control of dynamic objects". *Department of Bioengineering*, University of Pittsburgh, October 29, 2015.

5. "Actions and interactions with the physical world: How the brain controls the body". *Department of Engineering,* Lafayette College, Easton, PA, September 15, 2015.

6. "Skill learning – Actions and interactions with the physical world". *Department of Engineering, Computational and Biological Learning,* University of Cambridge, United Kingdom, September 3, 2015.

7. "Control of intermittent and continuous interactions with objects". *7th International Symposium on Adaptive Motion of Animals and Machines (AMAM 2015)*, Massachusetts Institute of Technology, Cambridge, MA, June 20-25, 2015.

8. "Skill learning – Self-guided practice and retention". *Computational Neuroscience, Hertie Institute for Clinical Brain Research*, Eberhard Karls Universität Tübingen, Germany, May 21, 2015.

9. "Learning of complex skills: A basic approach with clinical perspectives". *Department of Cognitive Neurology, Hertie Institute for Clinical Brain Research*, Eberhard Karls Universität Tübingen, Germany, May 18, 2015.

10. "Learning to never forget: Self-guided practice and reward". *25th Annual Meeting of the Neural Control of Movement,* Charleston, SC, April 21-24, 2015.

11. "The wonder of human movement: How the brain controls the body". Master class for incoming University Scholars, Northeastern University, March 23, 2015.

12. "Long-term retention – the forgotten aspect of motor memory". *Department of Psychology*, Beijing University, Beijing, March 11, 2015.

13. "Actions and interactions in the physical world". *Department of Psychology*, Beijing University, Beijing, March 10, 2015.

14. "Variability and stability in skill acquisition". *Department of Psychology*, Beijing University, Beijing, March 9, 2015.

15. "Actions and interactions in the physical world". *Department of Mechanical Engineering, Control, Instrumentation, & Robotics Area,* MIT, February 23, 2015.

16. "Actions and interactions in the physical world". *Max Planck Institute for Biological Cybernetics*, Tübingen, Germany, September 26, 2014.

17. "Actions and interactions in the physical world". *Department of Cognitive Neurology, Hertie Institute*, University of Tübingen, Germany, September 2, 2014.

18. "Neuroscience for the upper extremity: From analysis to assessment to intervention". *Hospital Rede Lucy Montoro de Reabilitacao (IMREA),* Sao Paolo, Brazil, August 16, 2014.

19. "Neuroscience for the upper extremity: From analysis to assessment to intervention". *Workshop at the IEEE International Conference on Biomedical Robotics and Biomechatronics, BioRob 2014*, Sao Paolo, Brazil, August 15, 2014.

20. "Variability, stability and predictability in physical interaction". *IEEE International Conference on Biomedical Robotics and Biomechatronics, BioRob 2014*, Sao Paolo, Brazil, August 12, 2014.

21. "Variability and stability in skill acquisition: From actions to interactions ". *Department of Bioengineering, Imperial College of London*, London, United Kingdom, July 21, 2014.

22. "Variability and stability in skill acquisition: From actions to interactions ". *Institute of Motor Neuroscience, University College of London*, London, United Kingdom, July 18, 2014.

23. "Variability and stability in skill acquisition: From actions to interactions ". *Institute of Neuroscience, Karl Eberhard University*, Tübingen, Germany, July 15, 2014.

24. "The wonders of human movement: How the brain controls the body". *Klein Award Lecture*, Northeastern University, April 8, 2014.

25. "Quantifying motor learning and interventions in virtual rehabilitation". *CDSP Workshop*, Northeastern University, March 28, 2014.

26. "Variability and stability in skill learning and retention - Behavioral correlates of neuroplasticity". *Department of Psychology, Brandeis University*, Waltham, MA, February 27, 2014.

27. "Actions and interactions in a complex world". *11ᵗʰ Arthur S. Iberall (1918-2002) Distinguished Lecture on Life and the Sciences of Complexity, University of Connecticut*, Storrs, CT, December 6, 2013.

28. "Variability and stability in skill learning and retention - Behavioral correlates of neuroplasticity". Department of *Cognitive, Linguistic, and Psychological Sciences, Brown University*, Providence, November 7, 2013.

29. "Variability and stability in skill learning - Behavioral correlates of neuroplasticity". Department of *Brain and Cognitive Sciences, Massachusetts Institute of Technology*, Boston, November 1, 2013.

30. "Variability and stability in skill learning and retention- Behavioral correlates of neuroplasticity". *Boston Action Club, Northeastern University*, Boston, September 12, 2013.

31. "Variability and noise in skill acquisition". *Progress in Motor Control IX*, Montreal, Canada, July 13-16, 2013.

32. "Redundancy and variability in skill acquisition". *10ᵗʰ Motor Control Summer School*, Antiochian Village, Ligonier, PA, July 7-11, 2013.

33. "Rhythmic movements –A window into brain and behavior". *Faculty of Sport and Health Science, Technical University of Munich,* Munich, Germany, July 2, 2013.

34. "Variability and stability in skill learning: From actions to interactions". *Max-Planck Institute for Intelligent Systems*, Tübingen, Germany, June 19, 2013.

35. "Variability and stability in skill learning: From actions to interactions". *Rehabilitation Institute of Chicago, Northwestern University,* Chicago, IL, June 6, 2013.

36. "Rhythm 'n' moves: A window into brain and behavior". Keynote at the *Eastern New England Biology Conference*, Northeastern University, April 20, 2013 (Keynote talk).

37. "Rhythmic movements: A window into brain and behavior". *Center for Brain Science, Harvard University*, March 25, 2013.

38. "Sensorimotor skill: Analysis of variability as a window into control." *Applied Mathematics Interdisciplinary Seminar, Northeastern University*, January 15, 2013.

39. "Sensorimotor skills: Mechanics and neurophysiology constrains optimization and rehabilitation". 35ᵗʰ *National Congress in Biomedical Engineering*, San Luis Potosi, Mexico, October 5, 2012. (Keynote talk).

40. "Stability and variability in learning a novel motor skill". *Department of Applied Physiology and Kinesiology, University of Florida,* Gainesville FL, September 6, 2012.

41. "Towards coordinate-free analysis of motor variability". *Santa Lucia Foundation*, Rome, Italy, June 24-28, 2012.

42. "Human control of dynamically complex objects". *Biorob 2012*, Rome, Italy, June 24, 2012.

43. "A neuroscience perspective for upper limb rehabilitation." *Biorob 2012*, Rome, Italy, June 26, 2012.

44. "Multiple solutions in skilled performance – Error tolerance and variability". *Neural Control of Movement,* Venice, Italy, April 29, 2012.

45. "Stability and variability in learning interactive tasks". *Department of Cognitive Science, Rensselaer Polytechnic Institute*, Troy, NY, February 29, 2012.

46. "Human motor performance: Exploiting stability, channeling variability, and tuning safety margins". *Universite Catholique de Louvain, Center for Research in Mechatronic*, Louvain, Belgium, December 19, 2011.

47. "Rhythm 'n' moves –A window into brain and behavior". *Universite Catholique de Louvain, Biomedical Engineering*, Louvain, Belgium, December 19, 2011.

48. "Scientific discoveries: Understanding the brain to combat neurological disorders - one step at a time". *Holiday Presentation at the Cape Cod Alumni Chapter of Northeastern Faculty*, December 10, 2011.

49. "Rhythm 'n' moves –A window into brain and behavior" *Computational Neuroscience, Brandeis University*, Waltham MA, November 7, 2011.

50. "Motor skill: Exploiting stability, channeling variability, and tuning safety margins". *33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11)*, Boston, MA, September 1, 2011.

51. "Stability and variability in learning an interactive task". *VII Computational Motor Control Workshop*, Israel, June 12-17, 2011.

52. "Noise, covariation, and tolerance to error in learning a motor skill." *The Weizmann Institute of Science, Applied Mathematics and Computer Science*, Rehovot, Israel, June 20, 2011.

53. "Bouncing balls: Stability and variability in learning and performance of a rhythmic task." *Technion Israel Institute of Technology, Mechanical Engineering*, Technion City, Haifa, Israel, June 13, 2011.

54. "Motor skills: Exploiting stability, channeling variability, and optimizing safety margins". *Center for Complex Network Research*, Northeastern University, April 15, 2011.

55. "Variability and stability in interactive tasks: From motor learning to neuro-recovery". *BioRobotics Laboratory, School of Engineering, Ecole Polytechnique Federale de Lausanne,* Lausanne, Switzerland, September 2, 2010.

56. "The brain and the exponential power of handwriting – From Movements to Mathematics (and back)". STEM Research Symposium for Students, Northeastern University, April 15, 2010.

57. "The neuroscience of interactive tasks: From motor learning to neuro-recovery". *Department of Mechanical Engineering, University Autonoma de San Luis Potosi*, Mexico, March 3, 2010.

58. "Variability, noise, and sensitivity to error in learning a motor task". *Forschungszentrums Netzindustrien und Infrastruktur (CNI),* Technical University, Berlin, Germany, September 21, 2009.

59. "Variability, noise, and sensitivity to error in learning a motor task". *Computational Principles of Sensorimotor Learning*, Kloster Irsee, Germany, September 13-15, 2009.

60. "Dynamic stability and active control in a rhythmic task – A dialogue between data and model". *Satellite Symposium on Theoretical Motor Neuroscience at the 19th Annual Conference of Neural Control of Movement*, Waikoloa Beach, April 28 – May 3, 2009.

61. "Variability, noise, and sensitivity to error in learning a motor task". *Computational Science Invited Lectures*, Pennsylvania State University, State College, PA, February 9, 2009.

62. "Variability, noise, and sensitivity to error in learning a motor task". *Bernstein Center for Computational Neuroscience, Max-Planck-Institute for Dynamics and Self-Organization*, Göttingen, Germany, January 13, 2009.

63. "Dynamical stability and variability in human sensorimotor control: Passive stability and active control in a rhythmic task". *Northeastern University, Center for Interdisciplinary Research in Complex Systems (CIRCS)*, Boston, December 2, 2008.

64. "Variability, covariation and sensorimotor noise in motor learning and retention". *Society for Engineering Science*, Champaign Urbana IL, October 12-14, 2008.

65. "Stochastic resonance in the acquisition and control of a perceptual-motor skill". *The Turvey Transition*, University of Connecticut, June 19-21, 2008.

66. "Variability, noise and sensitivity to error in motor learning". *Department of Neurology and Neurological Sciences, Stanford Medical Center*, Stanford University, CA, March 20, 2008.

67. "Rhythm 'n' moves – A window into brain and behavior". *Institute for Research in Cognitive Science, University of Pennsylvania (IRCS)*, Philadelphia, February 1, 2008.

68. "Variability, covariation and equifinality in motor learning and retention". *Institute for Sport Sciences, University of Giessen*, Giessen, Germany, January 11, 2008.

69. "Stability and variability in rhythmic and discrete tasks". *International Conference Progress in Motor Control VI*, Brazil, August 18-21, 2007.

70. "Stability and variability in a rhythmic task: Passive stability and active control in ball bouncing". *Department of Electrical Engineering, University of Liege*, Liege, Belgium, May 8, 2007.

71. "Towards a framework for rhythmic and discrete movements – Behavioral results, modeling and brain imaging. *Department of Psychology, University of Connecticut*, Storrs, CT, April 6, 2007.

72. "Analysis of rhythmic and discrete movements: Issues of timing, coordinate systems and primitives." *Department of Biology, Northeastern University*, Boston, MA, April 5, 2007.

73. "Towards a framework for rhythmic and discrete dynamics: Behavioral results, modeling and brain imaging." *Conference and Festschrift for Scott Kelso*, Boca Raton, FL, February 23-25, 2007.

74. "Stability and perturbation analyses in a rhythmic task". Workshop on "Mathematical stability analyses in biomechanics und robotics." *Center for Interdisciplinary Research, University of Bielefeld*, Germany, February 15-17, 2007.

75. "Rhythm 'n' Moves – Behavioral, modeling, and fMRI results on rhythmic and discrete movements", *Department of Psychology, University of Potsdam*, Germany, December 20, 2006.

76. "Rhythmic and discrete movements – Behavioral and fMRI results." *Crossover 2006, Conference at Penn State organized by the Huck Institute*, University Park, PA, October 12, 2006.

77. "Rhythm 'n' Moves – Behavioral, modeling, and fMRI results on rhythmic and discrete movements" *Behavioral and Brain Sciences, School of Psychology*, *University of Birmingham*, Great Britain, September 5, 2006.

78. "Two types of control for rhythmic and discrete movements? New results from fMRI." Symposium at the Annual Conference of the *North American Society for Sport Psychology and Physical Activity*, June 3, 2006.

79. "Variability and stability in a rhythmic task: Active and passive control in ball bouncing." *Department of Psychology, Wright State University*, Dayton, OH, February 24, 2006.

80. "Securing a reliable outcome in short goal-oriented movements – Three components of skill improvement". *International Conference on Progress in Motor Control V – A Multidisciplinary Perspective*, State College, PA, August 17-20, 2005.

81. "Discrete and rhythmic movements as two units of action: fMRI, behavioral and modeling results." *Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology*, Cambridge, MA, March 11, 2005.

82. "Discrete and rhythmic movements as two units of action: fMRI, behavioral and modeling results." *Department of Psychology, University of Connecticut*, Storrs, CT, March 7, 2005.

83. "Rhythm 'n' Moves – A window into brain and behavior." *National Science Foundation*, Washington, DC, February 12, 2005.

84. "Rhythm 'n' Moves – A window into brain and behavior." *Department of Anatomy and Neurobiology, University of Maryland, School of Medicine*, Baltimore, MD, February 14, 2005.

85. "Rhythm 'n' Moves – A window into brain and behavior." *Department of Kinesiology, Arizona State University*, Tempe, AZ, February 7, 2005.

86. "The role of resonance in the timing of rhythmic movements". *International Scientific Congress on Motor Control*, Wisla, Poland, October 23-26, 2004.

87. "Rhythm 'n' Movement." *Summer Academy of the Studienstiftung des Deutschen Volkes*, St. Johann, Italy, September 8, 2004.

88. "Rhythmic timing and resonance constraints." *28th International Conference on Psychology*, August 8-13, 2004, Beijing, China.

89. "Discrete and rhythmic movements as two units of action: fMRI and behavioral results." *Donders Institute for Cognitive Neuroscience*, University of Nijmegen, Netherlands, June 24, 2004.

90. "Paradigms in motor control - Overview and examples from a dynamical systems perspective". *Institute for Biomechanics, University of Jena*, Germany, June 30, 2004.

91. "Tuning into dynamic stability: Acquisition and performance of a rhythmic ball skill." Invited presentation at the *International Conference Progress in Motor Control IV*, Caen, France, August 22, 2003.

92. "Discrete and rhythmic dynamics as primitives in the control and coordination of action." *Max Planck Institute for Psychological Research*, Munich, Germany, August 14, 2003.

93. "Discrete and rhythmic dynamics as primitives in the control and coordination of action." *Institute of Mathematics and Signal Processing, University of the Armed Forces*, Munich, Germany, August 13, 2003.

94. "Period drift and variability in a rhythmic task - Signatures of an oscillator." *Department of Psychology, University of Pennsylvania*, Philadelphia, PA, May 9, 2003.

95. "Discrete and rhythmic dynamics as primitives in the control and coordination of action: Behavioral data and brain imaging". *Department of Kinesiology, University of Michigan*, Ann Arbor, MI, December 9, 2002.

96. "Discrete and rhythmic dynamics as primitives in the control and coordination of action: Behavioral data and brain imaging". *Hershey Medical Center, Pennsylvania State University*, Hershey, PA, October 24, 2002.

97. "Discrete and rhythmic dynamics as primitives in the control and coordination of action: Behavioral data and a dynamical model". *Department of Physical Therapy, University of Delaware*, Newark, DE, October 18, 2002.

98. "Acquisition and performance of a rhythmic skill". *Symposium of the "Movement Club" at the University of Paris Sud XI*, Paris, September 24, 2002.

99. "Discrete and rhythmic dynamics as units of coordinated action: Behavioral data, a dynamic model, and brain imaging results " *Department of Mouvement and Perception, University of Marseille*, France, September 18, 2002.

100. "Ball bouncing: Acquisition and performance of a rhythmic skill". *Center for Research in Sport Sciences University of Paris Sud XI*, Paris, May 30, 2002.

101. "Dynamical stability and visual information in rhythmic ball manipulation". *Department of Theoretical and Applied Mechanics, Cornell University*, Ithaca, NY, October 11, 2001.

102. "Discrete and rhythmic dynamics as primitives in the control and coordination of action: Behavioral data and a dynamical model". *Department of Theoretical and Applied Mechanics, Cornell University*, Ithaca, NY, October 12, 2001.

103. "Discrete and rhythmic dynamics as units of coordinated action: Behavioral data, a dynamic model, and brain imaging results", *Department of Movement Sciences, University of Illinois at Chicago*, Chicago, IL, May 11, 2001.

104. "Discrete and rhythmic dynamics as units of coordinated action: Behavioral data, a dynamic model, and brain imaging results". *Department of Physical Medicine and Rehabilitation, Northwestern University*, Chicago, IL, May 10, 2001.

105. "Discrete and rhythmic dynamics as units of coordinated action: Behavioral data, a dynamic model, and brain imaging results". *Medical School and Clinic for Child Neurology, Stanford University*, Stanford, CA, April 9, 2001.

106. "Discrete and rhythmic dynamics as units of coordinated action: Behavioral data, a dynamic model, and brain imaging results". *Department of Psychology, Berkeley University*, Berkeley, CA April 6, 2001.

107. "The role of dynamic stability for the acquisition and performance of a rhythmic skill." *University School of Physical Education*, *University of Katowice*, Poland, October 26, 2000.

108. "Rhythm and movement – A dynamic systems perspective". *Academy of Physical Education, University of Wroclaw*, Poland, October 22, 2000.

109. "The role of dynamic stability for the acquisition and performance of a rhythmic skill". Invited presentation at the *International Scientific Conference Motor Control 2000 at the Academy of Physical Education* in Katowice, Poland, October 27 - 29.

110. "A dynamic systems perspective to interlimb and intralimb coordination". *Department of Sport Science, Technical University of Munich*, Germany, July 27, 2000.

111. "Planarity and 2/3 power law in endpoint trajectories of 3D drawing movements". *Department of Electrical Engineering, Technical University of Munich*, Germany, July 20, 2000.

112. "Coordination and control of actions: From intralimb to interlimb coordination". *The Santa Fe Institute*, Santa Fe, NM, June 16, 2000.

113. "Coupled oscillations as a model for bimanual coordination: From interlimb to intralimb coordination". *Department of Psychology, Ohio State University*, Columbus OH, October 22, 1999.

114. "Interaction of rhythmic and discrete pattern generators in human point-to-point movements." *Department of Neurobiology and Anatomy, Medical College of Pennsylvania/Hahnemann Medical School, Allegheny University*, Philadelphia, PA, May 12, 1999.

115. "Planarity and 2/3 power law in endpoint trajectories of 3D drawing movements: Generating mechanisms or epiphenomena?" *Center for the Ecological Study of Perception and Action, University of Connecticut*, Storrs, CT, March, 1999.

116. "Coordination and control of actions: A dynamic approach to multi-joint movements". *The Santa Fe Institute*, Santa Fe, NM, December, 1998.

117. "2/3 power law and movement segmentation in 3D arm movements." *Center for Complex Systems, Florida Atlantic University*, Boca Raton, FL, April, 1998.

118. "A dynamic system's perspective on issues in motor control." *Technical University of Munich*, Germany, December, 1997.

119. "The dynamic systems approach to movement control." Keynote address at the conference *"Sport Kinetics '97"*, Magdeburg, Germany, 1997.

120. "Oscillatory dynamics for multi-joint coordination." *Department of Kinesiology, University of Waterloo*, Canada, July, 1997.

121. "The dynamic systems approach to perception and action: From interlimb to intralimb coordination". *Kawato Dynamic Brain Project, ERATO*, Japan, June 23, 1997.

122. "Dynamics of 1:2 coordination in bimanual rhythmic movement." *The Santa Fe Institute for Complex Systems*, Santa Fe, NM, April, 1997.

123. "Bouncing of a ball: Dynamic stability and the role of visual and haptic perception." *Los Alamos National Laboratory, TSA-DO/SA MS M997*, Los Alamos, NM, April, 1997.

124. "Dynamics of 1:2 coordination in bimanual rhythmic movement." *Center for Complex Systems, Florida Atlantic University*, Boca Raton, FL, February, 1997.

125. "Dynamics of 1:2 coordination in bimanual rhythmic movement." *Department for Cybernetic Psychology, University of Düsseldorf*, Germany, September, 1996.

126. "Die amerikanische Bernstein-Rezeption und die USA-Konferenz zu Bernstein's Tradition in Motor Control" (The American Bernstein reception and the US conference on Bernstein's traditions in motor control.) Keynote presentation at the *2. Bernstein-Konferenz: Bewegungskoordination und sportliche Leistung integrativ betrachtet*, Zinnowitz/Usedom, Germany, September, 1996.

127. "Perceptual control of movement, units of action, and dynamical approaches." *Los Alamos National Laboratory, TSA-DO/SA MS M997*, Los Alamos, NM, May, 1996.

128. "A dynamical perspective on the control and coordination of movement." *Department for Computer and Information Science, GRASP Lab, University of Pennsylvania*, Philadelphia, PA, 1995.

129. "Diffusive, synaptic and synergetic coupling: An evaluation through inphase and antiphase rhythmic movements." *Department for Cybernetic Psychology, University of Düsseldorf*, Germany, 1994.

130. "Average phase difference theory and 1:1 phase entrainment in interlimb coordination." *Complex Systems Summer School*, Santa Fe, NM, 1992.

131. "Average phase difference theory and 1:1 phase entrainment in interlimb coordination." *3. dvs-Sommerakademie (Deutsche Vereinigung für Sportwissenschaften)*, Berlin, 1992.

132. "On the dynamics of serial order in human coordination." *Max-Planck-Institut für Psychologie*, München, 1991.

133. "Average phase difference theory and 1:1 phase entrainment in interlimb coordination." *Department of Psychology, University of Amherst*, MA, 1991.

134. "Neurophysiological aspects of endurance training on the example of aerobics." *Symposium on Sports Medicine*, München, 1989.

135. "Neurophysiological Aspects of Aerobics and Stretching." *Institute for Sports Medicine*, Buenos Aires, Argentina, 1987.

ORGANIZATION OF CONFERENCES AND SYMPOSIA

Symposium on "Exploration of extraordinary skill: What can neuroscientists learn from performers". Organizers: Terence Sanger, Dagmar Sternad. Participants: Gary Paige, Ken Broadway, Peter Sparling. *26th Annual Conference for Neural Control of Movement*, Jamaica, April 29, 2016.

Organization of annual "*Lab Advance*", a joint workshop between the Newman Laboratory at MIT and the Action Lab at Northeastern University, July 31, 2015.

Symposium on "Motor memory – the forgotten aspect of motor adaptation and learning: From after-effects and savings to long-term retention". Participants: Nicolas Schweighofer, Valeria Della-Maggiore, Gelsy Torres-Oviedo, Dagmar Sternad. *25th Annual Conference for Neural Control of Movement*, Charleston, SC, April 20-24, 2015.

Symposium on "Control of Physical Interaction", as part of the *International Conference on Biomedical Robotics and Biomechatronics*, BioRob 2014, Sao Paolo, Brazil, August 12-15, 2014.

"*The Boston Action Club*", tri-weekly interdisciplinary seminar with invited speakers on movement neuroscience, held at *Northeastern University*, I hosted 70 speakers since 2008.

Symposium on "*Virtual Rehabilitation and Health*", *25th Annual CDSP Research Workshop of the Communications and Digital Signal Processing Center for research and graduate Studies (CDSP)*, Northeastern University, March 28

Symposium on "*Human Dynamics*", as part of the *40th Northeast Bioengineering Conference*, Boston, MA, April 25-27.

Organizer of "*The Penn State Action Club*", bi-weekly interdisciplinary seminar with invited speakers on movement neuroscience, Pennsylvania State University, 1995-2008, I hosted more than 100 speakers during the 13 years.

International Conference on *Progress in Motor Control VII*, Marseille, France, July 23-25, 2009, Member of Conference Committee.

International Conference on *Progress in Motor Control VI*, Santos, Brazil, August 18-21, 2007, Member of Conference Committee.

International Conference on *Progress in Motor Control V, Multidisciplinary Perspective to Motor Control*. State College, PA, August 23-25, 2005.
Resulting in a Conference Volume: *Sternad, D. (ed), Progress in Motor Control–A Multidisciplinary Perspective*. 2009, New York: Springer.

Workshop on "*Debates in Dynamics III*", sponsored by the Santa Fe Institute, held at the Pennsylvania State University, State College, PA, May 5-9, 2004

Workshop on "*Debates in Dynamics II*", sponsored by the Santa Fe Institute, held at the Pennsylvania State University, State College, PA, December 6-10, 2000.

Workshop on "*Debates in Dynamics I*", sponsored by the Santa Fe Institute, held at the Pennsylvania State University, State College, PA, August 16-19, 1999.
Resulting in a Special Issue in *Human Movement Science*, Vol 19, 4, 2000.

II. TEACHING

Courses Taught

Spring 2016	Undergraduate course BIOL 2299: "Inquiries in movement neuroscience: Control of Human Movement: Skill and Loss of Skill in Disease"
Fall 2015	Graduate course BIOL 5610: "Multidisciplinary approaches to motor control"
2014 - 2015	Sabbatical year
Summer 2014	One-month full immersion summer school for freshmen and sophomores (co-taught): Summer Discovery PRISM
Spring 2014	Graduate course BIOL 5610: "Multidisciplinary approaches to motor control"
	Undergraduate course (co-taught): Exploration and research: Mathematics, Physics, and Biology
Fall 2013	Graduate course: "Advanced Topics in Integrative Biology: Motor learning"
Summer 2013	One-month full immersion summer school for freshmen and sophomores (co-taught): Summer Discovery PRISM
Spring 2013	Graduate course BIOL 5610: "Multidisciplinary approaches to motor control"
	Undergraduate course (co-taught): Exploration and research: Mathematics, Physics, and Biology
Fall 2012	Graduate course: Advanced Topics in Integrative Biology: "Motor learning"
Summer 2012	One-month full immersion summer school for freshmen and sophomores (co-taught): Summer Discovery PRISM
Spring 2012	Graduate course BIOL 5610: "Multidisciplinary approaches to motor control"
	Undergraduate course (co-taught): Exploration and research: Mathematics, Physics, and Biology

Fall 2011	Graduate course: Advanced Topics in Integrative Biology: "Motor learning"
Summer 2011	One-month full immersion summer school for freshmen and sophomores (co-taught): Summer Discovery PRISM
Spring 2011	Graduate course BIOL 5610: "Multidisciplinary approaches to motor control"
	Undergraduate course (co-taught): Exploration and research: Mathematics, Physics, and Biology
Fall 2010	Graduate course: Advanced topics: "Movement neuroscience"
Summer 2010	One-month full immersion summer school for freshmen and sophomores (co-taught): Summer Discovery PRISM
Spring 2010	Graduate course: "Multidisciplinary approaches to motor control"
	Undergraduate course (co-taught): Exploration and research: Mathematics, Physics, and Biology
Fall 2009	Graduate course: Advanced topics: "Movement neuroscience"
Fall 2007	Graduate course: "Multidisciplinary approaches to motor control"
Fall 2006	Graduate course: "Paradigms in motor control: Stability and variability"
Fall 2005	Graduate course: "Multidisciplinary approaches to motor control"
Fall 2004	Graduate course: "Paradigms in motor control"
Spring 2004	Undergraduate course: "Skill acquisition"
Fall 2003	Graduate course: "Multidisciplinary approaches to motor control"
Spring 2002	Undergraduate course: "Movement forms"
	Undergraduate course: "Movement skills: An introduction into motor control"
Fall 2001	Graduate course: "Dynamical systems perspective to action"
Spring 2001	Undergraduate course: "Movement forms"
Spring 2001	Graduate course: "Multidisciplinary approaches to motor control"
Fall 2000	Undergraduate course: "Movement skills: An introduction into motor control"
Spring 2000	Graduate course: "Multidisciplinary approaches to motor control"
Spring 2000	Undergraduate course: "Movement forms"
Fall 1999	Undergraduate course: "Movement skills: An introduction into motor control"
Spring 1999	Undergraduate course: "Skill Acquisition"
Spring 1999	Undergraduate class on "Movement forms"
Fall 1998	Reading seminar for graduate students
Fall 1998	Undergraduate class on "Movement skills: An introduction into motor control"
Spring 1998	Undergraduate class on "Movement forms"
Spring 1998	Graduate Seminar on "A dynamic perspective on perceptual control of movement"
Fall 1997	Undergraduate class on "Movement skills: An introduction into motor control"
Spring 1997	Undergraduate class on "Movement forms"

	Co-teaching of graduate seminar on "Dynamic systems perspective on movement coordination"
Fall 1996	Undergraduate class on "Movement skills: An introduction into motor control"
Spring 1996	Undergraduate class on "Movement skills: An introduction into motor control"
Fall 1995	Undergraduate class on "Movement acquisition"

Summer Schools Taught

August 5-6, 2016	CosMo 2016, Computational Sensory-Motor Neuroscience, Minneapolis, MN
January – March 2016	Robotics in Rehabilitation Course, International Society of Physical and Rehabilitation Medicine
July 8-10, 2013	Motor Control Summer School X, Antiochian Village, PA
May 13-17, 2013	PRISM Summer Discovery Experience, Northeastern University (one week of introduction to the scientific process)
May 9 -13, 2012	PRISM Summer Discovery Experience, Northeastern University (one week of introduction to the scientific process)
May 9 -13, 2011	PRISM Summer Discovery Experience, Northeastern University (one week of introduction to the scientific process)
May 10-14, 2010	PRISM Summer Discovery Experience, Northeastern University (one week of introduction to the scientific process)
July 7 - 11, 2004	First Summer School of the International Society for Motor Control, Jim Thorpe, PA
Aug 29 – Sept 11, 2004	Annual Summer Academy of the Studienstiftung des Deutschen Volkes (Society for National Merit Fellowships in Germany), St. Johann, Italy

Further Education

| October 2004 | MGH NMR Visiting Fellowship: Intensive training course in functional Magnetic Resonance Imaging at the Massachusetts General Hospital and Harvard University, Boston |

Student Supervision

Students Graduated Under My Supervision

Name	Thesis Title	Time of Completion	Present Position
William Dean 1995 - 1997	Force and timing variability in rhythmic unimanual tapping	MS: July 1997 Kinesiology	Senior Software Developer
Daniel Russell 1996 - 2000	Task-effector asymmetries in visually guided rhythmic movements	PhD: May 2000 Kinesiology	Assistant Professor in Physical Therapy Old Dominion University
William Dean 1997 - 2001	Rhythmical and discrete movement patterns in the upper extremity	PhD: December 2001 Kinesiology	Senior Software Developer
Kunlin Wei 2000 - 2002	Interaction of rhythmic and discrete elements in unimanual and bimanual movements	MS: July 2002 Kinesiology	Professor in Psychology Peking University, China
Hiromu Katsumata 1997 - 2002	Acquisition and performance of rhythmic ball bouncing: Attuning to dynamical stability	PhD: August 2002 Kinesiology	Professor in Movement Science University of Daito Bunka, Japan
Hong Yu 2001 - 2005	Rhythmic timing in human movements: Behavioral data, a model and fMRI studies	PhD: August 2005 Kinesiology	Neurologist Harvard Medical School
Kunlin Wei 2002 - 2007	Bouncing a ball: Stability and variability in a rhythmic task	PhD: May 2007 Kinesiology	Professor in Psychology Peking University, China
Xiaogang Hu 2006 - 2008	The role of variability in the control and learning of a throwing task	MS: August 2008 Kinesiology	Assistant Professor, University of North Carolina
Rajal Cohen 2005 - 2008	Variability in motor learning	PhD and Minor Degree: August 2008 Psychology	Assistant Professor in Psychology University of Idaho
Se-Woong Park 2008 - 2013	Acquisition and retention of an asymmetric bimanual skill: Behavioral correlates of neuroplasticity	PhD: September 2013 Biology	Postdoctoral Fellow Northeastern University
Fei Ye 2012 - 2014	Manipulation of complex dynamic objects	MS: July 2014 Electrical Engineering	PhD student in Electrical Engineering University of California, Riverside
Meghan Huber 2011 - 2016	Assessing and enhancing complex motor skill learning in virtual environments: Basic insights for rehabilitation	PhD: June 2016 Bioengineering	Postdoctoral Fellow in Mechanical Engineering, MIT

Graduate Students Under My Current Supervision

Name	Thesis Title	Institution
Zhaoran Zhang 2012 -	Major: Bioengineering	Northeastern University
Nick Korsantia 2012 -	Major: Biology	Northeastern University
Ian Zuzarte 2014 -	Major: Bioengineering	Northeastern University

Member on Student Thesis Committee

Name	Thesis Title	Time of Completion
Allen Wolstenholme	The swimming relay exchange: An investigation of movement timing Major: Kinesiology, Advisor: Bob Eckhardt	MS: August 1996 Penn State University
Michael Broderick	Major: Kinesiology, Advisor: Karl Newell	PhD: September 1997 Penn State University
Jon Dingwell	Variability and nonlinear dynamics of continuous locomotion: Applications to treadmill walking and diabetic peripheral neuropathy Major: Kinesiology, Minor: Mechanical Engineering, Advisor: Peter Cavanagh	PhD: December 1998 Penn State University
Matt Rearick	Major: Kinesiology, Advisor: Bob Eckhardt	MS: May 1998
Paola Cesari	Scaling of human grip configurations Major: Kinesiology, Advisor: Karl Newell	PhD: August 1999 Penn State University
Laura Julien	Connections between anxiety, cognitive functioning, and coping in multiple sclerosis Major: Psychology, Advisor: Peter Annett	PhD: August 2001 Psychology, Penn State
Harmen Slijper	Sensory aspects and central organization of anticipatory postural adjustments Major: Kinesiology, Advisor: Mark Latash	PhD: December 2001 Penn State University
Mohamed Tlili	Approche dynamique des mouvements cycliques complexes: application au jonglage en football et du dribble en basket (A dynamical systems approach to complex cyclic movements: soccer juggling and basketball dribbling ball) Major: Human Movement Science, Advisor: Denis Mottet	PhD: May 2002 University of Poitiers, France
Kunlin Wei	Gait recognition: Model validation approach and Martin distance approach Major: Electrical Engineering, Advisor: Mario Snzaier	MS: December 2003 Penn State University
Felix Ehrlenspiel	Choking under Pressure - Aufmerksamkeit und Bewegungskontrolle in Leistungssituationen (Attention and motor control in pressurized situations) Major: Psychology, Advisor: Reinhard Kliegl	PhD: Fall 2006 University of Potsdam, Germany
Robrecht van der Wel	Subdivision of time intervals: a new method for determining preferred movement speed Major: Psychology, Advisor: David Rosenbaum	MS: August 2006 Penn State University
Lee Hong	Constraint-driven redundancy and uncertainty in the control of human action Major: Kinesiology, Advisor: Karl Newell	PhD: May 2007 Penn State University
	Variability and stability during the acquisition of ball	MS: October 2006

Tjitske Boonstra	bouncing Major: Human Movement Sciences, Advisor: Peter Beek	Free University of Amsterdam, Netherlands
Robin Salesse	La dynamique des coordinations inter-segmentaires - Résultat d'une coalition des contraintes neuromusculaires et spatiales (Dynamics of intersegmental coordination - Results from neuromuscular and spatial constraints) Major: Human Movement Sciences, Advisor: J.-J. Temprado	PhD: October 2006 University of Marseille, France
Renaud Ronsse	Rhythmic movements control: Parallels between human behavior and robotics Major: Electrical Engineering and Computer Science, Advisor: Rudolphe Sepulchre	PhD: May 2007 University of Liege, Belgium
Gregg Twietmeyer	Embodying kinesis: How Aristotle and Polanyi reshape the philosophy of kinesiology Major: Kinesiology, Advisor: Scott Kretschmar	PhD: Spring 2008 Penn State University
Rajal Cohen	Ready for action: Fixational limb movements reveal forthcoming voluntary movements Major: Psychology, Advisor: David Rosenbaum	PhD: June 2008 Penn State University
Britne Shabbott	The contributions of visual information to reaching behaviors Major: Integrative Biosciences, Special Field: Kinesiology, Advisor: Robert Sainburg	PhD: December 2008 Penn State University
Robrecht van der Wel	The flexible use of reference frames in human action planning Major: Psychology, Advisor: David Rosenbaum	PhD: January 2009 Penn State University
Avijit Bakshi	A biomechanical and statistical mechanics analysis of human standing posture Major: Physics and Ashton Graybiel Spatial Orientation Laboratory Advisor: Paul Dizio and James Lackner	PhD: March 2009 Physics and Neuroscience, Brandeis University
Virginia Chu	The role of variability in human motor learning Major: Bioengineering, Advisor: Terrence Sanger	PhD: August 2009 Bioengineering, Stanford University
Rajiv Ranganathan	Utilizing redundancy in motor learning Major: Kinesiology, Advisor: Karl Newell	PhD: August 2009 Kinesiology, Penn State University
Amanda Hitchcock	Mechanisms for maintaining stability in the helmeted guinea fowl, *Numida meleagris*, when running on uneven terrain Major: Biology, Advisor: Richard Marsh	MS: August 2010 Biology, Northeastern University
Sarah Degallier	Rhythmic and discrete movements Major: Computer and Communication Science, Biorobotics Advisor: Auke Ijspeert	PhD: September 2010 Ecole Polytechnique Federale Lausanne, Switzerland
Hamal Marino	Transitions between rhythmic and discrete performance in unimanual movements Advisor: Arianna Menciassi	MS: August 2012 Control Engineering, Scuola Superiore Sant'Ana, Pisa, Italy

Andrew Yegian	The roles of muscles in arm swing and thoracic rotation during walking Major: Biology, Advisor: Richard Marsh	MS: April 2012 Biology, Northeastern University
Lindsay Griffin	Exploring the relation between fatigue and cognitive-communication performance Major: Speech, Language Pathology and Audiology Advisor: Therese O'Neil-Pirozzi	MS: April 2012 Northeastern University
Hyunglae Lee	Quantitative characterization of multi-variable human ankle mechanical impedance Major: Mechanical Engineering, Advisor: Neville Hogan	PhD: May 2013 Mechanical Engineering, MIT
Tyler Susko	MIT Skywalker: A novel robot for gait rehabilitation of stroke and cerebral palsy patients Major: Mechanical Engineering Advisor: Hermano Igo Krebs	PhD: January 2015 Mechanical Engineering MIT
Jarrad van Stan	Performance and retention of a modified vocal behavior using ambulatory voice biofeedback and motor learning principles in subjects with normal voices Major: Rehabilitation Sciences Advisor: Robert Hillman	PhD: May 2016 Massachusetts General Hospital
Francesca Lunardini	Functional assessment methods and EMG-based interventions for children with dystonia Major: Electronics, Information and Bioengineering Advisor: Alessandra Pedrocchi	PhD: May 2016 Bioengineering Politecnico di Milano, Italy
Peter Stein	TBA Major: Physical Therapy, Advisor: Elliot Saltzman	PhD: 2016 Boston University
Adina Draghici	TBA Major: Bioengineering Advisor: Sandra Shefelbine	PhD Northeastern University
Eric Lacrosse	TBA Max Planck Institute for Intelligent Systems Major: Computer Science Advisor: Gaby Lohmann	PhD Karl Eberhard University of Tübingen
Julie Ochoa	Entrainment of overground human walking to mechanical perturbations at the ankle joint. Major: Mechanical Engineering Advisor: Neville Hogan	MS: 2016 Massachusetts Institute of Technology

Previous and Current Postdoctoral Fellows

Name	Grant Support	Present Position
Aymar de Rugy 2001 - 2003	NSF Grant BCS-0096543: Rhythmic and discrete dynamics in multijoint movements	Senior Researcher at Centre Nationale Recherche Scientifique (CNRS), Bordeaux, France
Anil Maybhate	NIH Grant: R01 HD045639 Variability and stability	Lecturer

2004 - 2006	in skill acquisition	Johns Hopkins University
Masaki Abe 2007 - 2010	ONR Grant: Detection of anomalous behavior due to IEDs	Associate Professor Hokkaido University, Japan
Christopher J. Hasson 2009 - 2012	NIH Grant: R01 HD045639 Variability and stability in skill acquisition NIH F32 Postdoctoral training grant	Assistant Professor Northeastern University
Anastasia Kyvelidou 2011 - 2012	AHA grant on gait rehabilitation in stroke patients	Assistant Professor University of Nebraska
Bahman Nasseroleslami 2012 - 2014	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Research Scientist Trinity College of Dublin, Ireland
Jooeun Ahn 2014	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Assistant Professor University of Victoria, Canada
Nikita Kuznetsov 2013 - 2015	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Postdoctoral Fellow University of North Carolina
Se-Woong Park 2014 -	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	
Pauline Maurice 2015 -	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	
Francesca Lunardini 2016 -	NIH Grant: Predictability in complex object control	

Undergraduate Students

Name	Department, Type of Experience	Time in the Action Lab
Peter Mears	Kinesiology, Internship	1997 - 1999
Jocelyn Woods	Kinesiology, Internship	1997 - 1999
Gary Wertman	Biology, Internship	1999 - 2002
Emily Wiecek	Behavioral Neuroscience, Research Coop **PhD degree from University College of London**	2009 - 2011
Leo Byun	Mechanical Engineering and Physics, Research Coop	2010 - 2011
Brittany Haffner	Physics, Research Coop and Directed Study	2011 - 2013
Julia Ebert	Behavioral Neuroscience, two Research Coop's in Action Lab **Recipient of Goldwater Fellowship and Marshall Fellowship** **MS at Imperial College, London, current PhD student in Bioengineering, Harvard**	2011 - 2015
Anthony Lamattina	Mathematics and Premed, Research Coop	2012
Michael Spens	Physics, Research Coop	2012
Dena Guo	Physics, Directed Study **Recipient of Senior Thesis Fellowship of Museum of Science** **Lawrence Fellowship from Department of Physics** **Shafer fellowship for research co-op in the Action Lab**	2013 - 2016

Julia Cowenhoven	Biology, Directed Study	2014
Oliver Cervantes	Biology, Directed Study	2014 - 2016
Courtney Stead	Biomedical Physics, Directed Study	2014 - 2015
Keith Harrigian	Mathematics, Physics **Outstanding Student Research Award at RISE** **Northeastern Nomination for Goldwater Fellowship**	2014 - 2016
Rebecca Cheung	Biomedical Physics, Directed Study	2015 - 2016
Marie Mitchell	Electrical and Computer Engineering, Directed Study	2015
Katie Owens	Behavioral Neuroscience	2015 -
Hannah Tam	Biology	2015 -

III. PROFESSIONAL SERVICES

ORGANIZATION AND PROGRAM COMMITTEES AT UNIVERSITY

2016 -	Member of Teaching Peer Review Committee, Department of Biology
2015 – 2017	Chair of Full Professor Promotion Committee of the College of Science
2015 - 2016	Chair of the Search Committee in Biology in the area of Neuroscience and Aging
2014 - 2015	Chair of the Provost Committee for Cluster Hires in the area of Health
2013 - 2014	Member of the Administrator Evaluation Review Committee: review of Dean of Bouve College
2013 - 2014	Member of Search Committee for a tenure-track faculty position in Electrical and Computer Engineering
2013 – 2014	Member of Senate Committee for Interdisciplinary Faculty Tenure Procedures
2013 – 2014	Member of the Executive Committee of the Department of Biology
2012 – 2013	Member of the Search Committee for the Chair of Biology
2012 – 2013	Member of Search Committee for a position in Network Science, Department of Physics
2012 – 2013	Member of Senate Committee for Academic Policy
2012 – 2013	Member of the Full Professor Advisory Committee at the College of Science
2011 – 2012	Member of Senate Agenda Committee for Evaluation of Department Head in Physical Therapy
2010 – 2011	Member of Senate Agenda Committee for Research and Policy Oversight
2009 – 2010	Member of Search Committee for Dean of College of Science
2009 – 2010	Chair of Search Committee for Senior Faculty in Movement Neuroscience
2009 –	Member of the Bioengineering PhD Graduate Committee, Northeastern University
2009 –	Member of the Promotion and Tenure Committee of the Physical Therapy Department

2009 – 2011	Member of the University Standing Tenure Appeals Committee, Northeastern University
2009	Member of the College Restructuring Committee, Northeastern University
2007 – 2008	Member of the Promotion and Tenure Committee, Department of Kinesiology, Pennsylvania State University
2006 – 2008	Member of the Steering Committee of the Penn State Neuroscience Institute
2005 – 2008	Member of the WISE Advisory Committee (Women in Science and Engineering)
2005 – 2008	Member or Chair of the Awards Committee
2004 – 2008	Member of the International Advisory Board of the Dean of the College of Health and Human Development
2002 – 2005	Faculty advisor to the Honor Society of the College of Health and Human Development
2002 – 2004	Vice Chair of the Senate Committee on Libraries of the Pennsylvania State University
2000 – 2005	Member of the Faculty Senate of the Pennsylvania State University
2003 – 2005	Member of the Curriculum Committee
2000 – 2001	Member of the Advisory Board of the Department of Kinesiology
1995 – now	Member of the Candidacy Exam Committee in Motor Control
1997 – 2003	Chair of the Candidacy Committee in Motor Control

ORGANIZATION COMMITTEES AT EXTERNAL ASSOCIATIONS AND CONFERENCES

2016	External Reviewer for Applicants for Professor Position in Motor Learning and Cognitive Science, Darmstadt, Germany
2015 -	Member of the Executive Board of the Society of Neural Control of Movement
2015	Organization of Lab Advance - Recent Research of the Newman Lab and the Action Lab, Massachusetts Institute of Technology, July 25
2014	Member of Organizing Committee of 5th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob2014), "Biomedical Robotics and Biomechatronics Technology for a World without Borders", Sao Paolo, Brazil, August 12-15
2014	Chair of Symposium on Human Dynamics at the 40th Annual Northeast Bioengineering Conference (NEBEC), Northeastern University, April 25-27
2012	Organization of Lab Advance - Recent Research of the Newman Lab and the Action Lab, Massachusetts Institute of Technology, September 15
2011	Organization of Lab Advance - Recent Research of the Newman Lab and the Action Lab, Northeastern University, August 25
2010	Organization of Lab Advance - Recent Research of the Newman Lab and the Action Lab, Massachusetts Institute of Technology, August 21, 2010
2010 – 2011	Member of the Advisory Committee for the Organization of the International Conference: "Progress in Motor Control VIII", Cincinnati, July 2011
2008	Member of the grant review panel for the National Science Foundation, Cyber-Enabled Discovery, Special topic: Complexity
2008 –	Member of the Organizing Committee of the International Conference "Progress in Motor

	Control VII", Marseille, France, August, 2009
2006 – 2008	Member of the grant review panel for the National Science Foundation, Program Perception, Cognition and Action
1995 – 2008	Organization of the bi-weekly seminar series "Penn State Action Club" with invited speakers on topics of motor control
2006 – 2008	Temporary member of the study section "Motor Function, Speech and Rehabilitation" (MFSR) at the National Institute of Health
2006 – 2007	Member of the Organizing Committee of the International Conference "Progress in Motor Control VI", Santos, Brazil, August, 2007
2005 – 2011	Member of the NIH Taskforce on Childhood Motor Disorders
2004 – 2005	Chair of the Organization of the 5th International Conference "Progress in Motor Control", held at Penn State August 17-20, 2005
May 6–9, 2004	Organization of the third workshop "Debates in Dynamics III" held at Penn State
2002 – 2014	Member of the Executive Committee of the International Society for Motor Control
2001	Member of review committee in the organization of the annual conference of NASPSPA (North American Society of Psychology of Sport and Physical Activity)
December 7–11, 2000	Organization of the second workshop sponsored by the Santa Fe Institute "Debates in Dynamics: Modeling Action and Perception II" held at The Pennsylvania State University
August 16–19, 1999	Organization of the first workshop sponsored by the Santa Fe Institute "Debates in Dynamics: Modeling Action and Perception" held at The Pennsylvania State University
1999	Member of the organizing committee of the International Conference on "Progress in Motor Control II" in August, 19-22, 1999 at The Pennsylvania State University

Editorial Work

2014 –	Member of the Editorial Board of *Neuroscience for Kids*
2011 – 2014	Member of the Editorial Board of *Biomathematics*
2010	Guest Editor for special issue in *Journal of Motor Behavior*: Theoretical ideas in motor neuroscience and their capacity for falsification
2009 – 2012	Consulting Editor of *Journal of Experimental Psychology: Human Perception and Performance*
2005 – 2014	Executive Editor of *Journal of Motor Behavior*
1997 – 2005	Member of the Editorial Board of *Journal of Motor Behavior*
2001	Guest Editor for *Human Movement Science*: Special issue on "Debates in Dynamics"