
Curriculum Vitae: Dagmar Sternad

Title and Affiliation University Distinguished Professor

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Education

PhD 1995	Experimental Psychology, University of Connecticut (summa cum laude)
MS 1992	Movement Science, Free University of Amsterdam, The Netherlands
MS 1991	Experimental Psychology, University of Connecticut
MA/MS 1986	Movement Science and English Linguistics / Literature, Technical University and Ludwig Maximilians University of Munich
BA 1984	Movement Science and English Linguistics / Literature, Technical University and Ludwig Maximilians University of Munich, Germany (summa cum laude)

Professional Appointments

2021 –	Affiliated member of the Institute for Experiential AI, Northeastern University
2020 –	Core Member of the Institute for Experiential Robotics, Northeastern University
2019 –	University Distinguished Professor, Northeastern University
2018 –	Affiliated Faculty of the Department of Physical Therapy, Movement Science and Rehabilitation, Northeastern University
2015 – 2021	Elected Member of the Board of the Society of Neural Control of Movements (re-elected for a second 3-year term)
2021	Member of NSF Review Panel on Collaborative Research in Computational Neuroscience
2015 – 2018	Affiliated Faculty at the Max Planck Institute for Intelligent Systems, Tübingen, Germany
2014 –	Affiliated Faculty of the Behavioral Neuroscience Program, Northeastern University
2017	Reviewer at NIH in special emphasis panels, study sections on graduate fellowships, and member of NIMD Taskforce on development of RDoC matrix
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 –	Affiliated Faculty at the Department of Bioengineering, Northeastern University

2009 – 2015	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
2007 – 2008	Professor, Department of Kinesiology and Integrative Biosciences, Pennsylvania State University
2006 –	Adhoc reviewer for the NIH Study Sections on Motor Function, Rehabilitation and Speech (MFRS), Musculo-Skeletal Rehabilitation (MSR), Sensory and Motor Neuroscience, Cognition and Perception Fellowship Study Section (ZRG-1 F02B), SBRE
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

2022	Guest Professor at the University of Messina, Italy
2021 – 2022	Fulbright Guest Professor at the Fondazione Santa Lucia at Tor Vergata University of Rome, Italy
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

- 2022 *NIH MERIT Award* for the most outstanding scientists supported by NIH
- 2022 *Guest Professorship* at University of Messina, Italy (competitive funded award)
- 2021 Rated among the top 2% of all scientists in 22 disciplines by Stanford University
- 2021 *Distinguished Speaker* at Colloquium series at Women Impact Network (WIN) “*Bridging the Gaps*”. *Department of Robotics Engineering*, Worcester Polytechnic Institute, Worcester, MA, November 5
- 2021 *Fulbright US Scholar Award* for Italy, award for research at a foreign university
- 2019 *University Distinguished Professor*, Highest award of the university for outstanding achievements in research, teaching and service
- 2017 *Faculty of the Year*, Award from Residential Life, University-wide undergraduate student organization, awarded to one faculty member that has gone above and beyond to support learning for residents on campus
- 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 all 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 – 2027: NIH-R37-HD087089: *Predictability in complex object control* 12/01/15-06/30/27
Principal Investigator: Dagmar Sternad, Co-I: David Lin.
- 2020-2025: NIH-R01-CRCNS-NS120579: *Collaborative Research: Neural basis of motor expertise* 08/15/20-05/31/25
Principal Investigators: Dagmar Sternad, Aaron Batista.
- 2021-2025: NSF-SCH: 170230239: *Movement as a vital sign in preterm infants* 10/01/21-09/30/25
Principal Investigators: Dagmar Sternad, David Paydarfar
- 2021-2024: NSF-BCS-PAC-2043318: *Collaborative research: Emergent motor timing influences perceptual timing* 09/01/21-08/31/24
Principal Investigators: Dagmar Sternad, Joo-Hyun Song.
- 2017 – 2020: NSF-CRCNS-1723998: *US-German-Israeli Collaborative research: Hierarchical coordination of complex actions* 09/01/17-10/31/22 (NCE)
Principal Investigator: Dagmar Sternad, Neville Hogan, Tamar Flash, Martin Giese.
- 2018-2021: NSF-M3X-1825942: *Collaborative research: Learning to control dynamically complex objects* 09/15/2018 – 08/31/2022 (NCE)
Principal Investigators: Dagmar Sternad, Neville Hogan.
- 2020-2021: CMMI-1825942 Supplement on Data Science: *Learning to control dynamically complex objects* 07/01/20-06/30/21
Principal Investigator: Dagmar Sternad.
- 2018-2022: SFARI-602705: *Characterization of predictive abilities in individuals with ASD using web-based interactive games* 12/01/18 – 06/30/22 (NCE)
Principal Investigator: Dagmar Sternad, Co-Investigator: Pawan Sinha.
- 2019: SFARI-192901: *Characterization of predictive abilities in individuals with ASD using web-based interactive games – Supplement 1* 12/01/18 – 06/30/22
Principal Investigator: Dagmar Sternad, Co-Investigator: Pawan Sinha.
- 2021: SFARI-192901: *Characterization of predictive abilities in individuals with ASD using web-based interactive games – Supplement 2*

06/01/21 – 06/30/22

Principal Investigator: Dagmar Sternad, Co-Investigator: Pawan Sinha.

- 2021: The Fulbright US Scholar Program – Italy: *Variability and redundancy in motor learning*

01/01/22 – 06/30/22

Consulting and Mentoring Grants

- 2017-2022: NIH-P50: *Clinical research center for the improved prevention, diagnosis and treatment of vocal hyperfunction.* 04/01/17-03/31/22
Principal Investigator: Robert Hillman. Consultant: Dagmar Sternad.
- 2017-2022: NIH-K01 Career Development Award: *Enhancing transfer of motor skill learning from virtual to physical environments in children with cerebral palsy.* 12/01/17-11/30/22
Principal Investigator: Danielle Levac, Mentor: Dagmar Sternad.
- 2017-2022: NIH/NIAMS-K23-AR070913 Career Development Award: *The relation of altered pain processing to impact loading and response to a gait retraining intervention in knee osteoarthritis.* 12/13/17-05/30/22
Principal Investigator: Joshua Stefanik, Mentor: Dagmar Sternad.)
- 2022-2027: NSF CAREER: *Learning visual representations of motor function in infants as prodromal signs for autism*
Principal Investigator: Sarah Ostadabbas, Scientific Advisor: Dagmar Sternad 04/01/22-03/31/27

PUBLICATIONS

Peer-Reviewed Journal Articles

1. Park, S-W., Cardinaux, A., Crozier, D., Kjelgaard, M., Sinha, P., & Sternad, D. (under review). Developmental change of predictive abilities.
2. Russo, M., Lee, J-W., Hogan, N., & Sternad, D. (under review). Mechanical effects of cane support: beyond perceptual information. *Journal of NeuroEngineering and Rehabilitation*.
3. Nah, M.C., Krotov, A., Russo, M., Sternad, D., & Hogan, N. (revised). Controlling a soft object -- a bullwhip: dynamic primitives reverse the curse of dimensionality. *Soft Robotics*.
4. West, M.A., Hermus, J., Huber, M.E., Maurice, P., Sternad, D., & Hogan, N. (2022). Dynamic primitives limit human force regulation during motion. *Robotics and Automation Letters*. doi: 10.1109/LRA.2022.3141778
5. Nayeem, R., Bazzi, S., Sadeghi, M., Hogan, N., & Sternad, D. (2021). Preparing to move: setting initial conditions to simplify interactions with complex objects. *PLoS Computational Biology*, 17(12):e1009597. doi: 10.1371/journal.pcbi.1009597.
6. Rothwell, J., Antal, A., Burke, D., Carlsen, A., Georgiev, D., Jahanshahi, M., Sternad, D., Valls-Solé, J., Ziemann, U. (2021). Central nervous system physiology. *Clinical Neurophysiology*, 132, 3043-3083.
7. Van Stan, J.H. Ortiz, A.J., Sternad, D., Mehta, D.D., Huo, C., Hillman, R.E. (2021). Ambulatory voice biofeedback: Acquisition and retention of modified daily voice use in patients with phonotraumatic vocal hyperfunction. *Journal of Speech Language and Hearing Research*, 1-10.
8. Stipancic, K.L., Kuo, Y., Miller, A., Ventresca, H.M., Sternad, D., Kimberley, T.J., & Green, J.R. (2021). The effects of sustained oromotor activity on speech motor learning: Speech biomechanics and neurophysiologic correlates. *Experimental Brain Research*, 239, 12, 3487-3505. doi: 10.1007/s00221-021-06206-5
9. Zuzarte, I., Sternad, D., & Paydarfar, D. (2021). Prediction of apneic events in preterm infants using cardiorespiratory and movement features. *Computers Methods and Programs in Biomedicine*, 209:106321. doi: 10.1016/j.cmpb.2021.106321.

10. Shiozawa, K., Lee, J., Russo, M., Sternad, D., & Hogan, N. (2021). Frequency-dependent force direction elucidates neural control of balance. *Journal of NeuroEngineering and Rehabilitation*, *8*, 1, 145. doi: 10.1186/s12984-021-00907-2.
11. Yao, K., Sternad, D., & Billard, A. (2021). Hand pose selection in a bimanual fine-manipulation task. *Journal of Neurophysiology*, *126*, 1, 195-212. doi: 10.1152/jn.00635.2020
12. Zuzarte, I., Gee, A., Paydarfar, D., & Sternad, D. (2021). Effect of spontaneous movement on respiration in preterm infants. *Experimental Physiology*, *106*, 1285-1302. doi.org/10.1113/EP089143
13. Balasubramanian, R., Haegens, S., Jazayeri, M., Merchant, H., Sternad, D., & Song, J-H. (2021). Neural encoding and representation of time for sensorimotor control and learning. *Journal of Neuroscience*, *41*, 5, 866-872. doi: 10.1523/JNEUROSCI.1652-20.2020
14. Zhang, Z., & Sternad, D. (2021). Back to reality: Differences in learning strategies in a simplified virtual and a real throwing task. *Journal of Neurophysiology*, *125*, 1, 43-62. doi: 10.1152/jn.00197.2020
15. Van Stan, J.H., Park, S.W., Jarvis, M., Stemple, J., Hillman, R.E., & Sternad, D. (2021). Quantitative assessment of learning and retention in virtual vocal function exercises. *Journal of Speech Language and Hearing Research*, *64*, 1, 1-15. doi: 10.1044/2020_JSLHR-20-00357
16. Bazzi, S. & Sternad, D. (2020). Human control of complex objects: towards more dexterous robots. *Advanced Robotics*, *34*, 17, 1137-1155. doi: 10.1080/01691864.2020.1777198
17. Huber, M.E., Chiovetto, E., Giese, M.A., & Sternad, D. (2020). Rigid foot soles improve balance in beam walking but improvements do not persist with bare feet. *Scientific Reports*, *10*, 1, 7629.
18. Hermus, J., Doeringer, J.A., Sternad, D. & Hogan, N. (2020). Separating neural influences from peripheral mechanics: the speed-curvature relation in mechanically-constrained actions. *Journal of Neurophysiology*, *123*, 1870-1885.
19. Bazzi, S., & Sternad, D. (2020). Robustness in human manipulation of dynamically-complex objects through control contraction metrics. *IEEE Robotics and Automation Letters*, *5*, 2, 2578-2585. doi: 10.1109/LRA.2020.2972863
20. Sohn, W.J., Sipahi, R., Sanger, T.D., & Sternad, D. (2019). Portable motion-analysis device for upper limb research, assessment and rehabilitation in non-laboratory settings. *IEEE Journal of Translational Engineering in Health and Medicine*, *7*, 1-14. Doi: 10.1109/JTEHM.2019.2953257.
21. Levac, D., Huber, M.E., & Sternad, D. (2019). Learning and transfer of complex motor skills in virtual reality: A perspective review. *Journal of NeuroEngineering and Rehabilitation*, *16*, 1, 121. doi: 10.1186/s12984-019-0587-8
22. Crozier, D., Zhang, Z., Park, S-W., & Sternad, D. (2019). Gender differences in throwing re-visited: Sensorimotor coordination in a virtual ball aiming task. *Frontiers in Human Neuroscience*, *13*, 231. doi.org/10.3389/fnhum.2019.00231
23. Sternad, D. & Hogan, N. (2019). Control of goal-directed movements within (or beyond) reach? *Physics of Life Reviews*, *30*, 126-129.
24. Zhang, Z. & Sternad, D. (2019). The primacy of rhythm: How discrete actions merge into a stable rhythmic pattern. *Journal of Neurophysiology*, *121*, 574-587.
25. Zuzarte, I., Indic, P., Sternad, D., & Paydarfar, D. (2019). Quantifying movement in preterm infants using real-time wavelet analysis of pulse oximeter signals. *Annals of Biomedical Engineering*, *47*, 2, 646-656. Doi: 10.1007/s10439-018-02135-7

26. Bazzi, S., Ebert, J., Hogan, N., & Sternad, D. (2018). Stability and predictability in human control of complex objects. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, *28*, 10, 103103. **Editor's Choice on the journal webpage, covered in Physics Today.**
27. Maurice, P., Hogan, N., & Sternad, D. (2018). Predictability, effort, and (anti-)resonance in complex object control. *Journal of Neurophysiology*, *120*, 2, 765-780. Doi: 10.1152/jn.00918.2017
28. Zhang, Z., Guo, D., Huber, M.E., Park, S-W., & Sternad, D. (2018). Exploiting the geometry of solution space to reduce sensitivity to neuromotor noise. *PLoS Computational Biology*, *14*, 2, e1006013. **FINALIST for Klein Vogelbach Prize (best paper award in rehabilitation-related research).**
29. Sternad, D. (2018). It's not (only) the mean that matters: variability, noise and exploration in skill acquisition. *Current Opinion in Behavioral Sciences*, *20*, 183-195.
30. Chiovetto, E., Huber, M.E., Sternad, D., & Giese, M.A. (2018). Angular momentum organization for dynamic balance control during walking on a narrow beam. *Scientific Reports*, *8*, 1, 6362. Doi: 10.1038/s41598-017-18142-y
31. Maurice, P.J., Huber, M.E., Hogan, N., & Sternad, D. (2018). Velocity-curvature patterns matter in human-robot physical interaction. *Robotics and Automation Letters*, *3*, 1, 249-256.
32. Ochoa, J., Sternad, D. & Hogan, N. (2017). Treadmill versus overground walking: Different response to physical interaction. *Journal of Neurophysiology*, *118*, 2089-2102.
33. Van Stan, J.H., Park, S-W., Mehta, D.D., Hillman, R.E., & Sternad, D. (2017). Measuring vocal motor skill improvement using a virtual voice-controlled slingshot. *Journal of the Acoustical Society of America*, *142*, 3, 1199-1212.
34. Park, S.W., Marino, H., Charles, S. Sternad, D., & Hogan, N. (2017). Moving slowly is hard for humans: Limitations of dynamic primitives. *Journal of Neurophysiology*, *118*, 1, 69-83. doi: 10.1152/jn.00643.201.
35. Van Stan, J.H., Mehta, D.D., Sternad, D., Petit, R.J., & Hillman, R.E. (2017). 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*, *60*, 853-864.
36. Van Stan, J.H., Mehta, D.D., Petit, R.J., Sternad, D., Muise, J., Burns, J.A., & Hillman, R.E. (2017). 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*, *26*, 1, 1-10.
37. Huber, M.E., Kuznetsov, N., Sternad, D. (2016). Persistence of reduced neuromotor noise in long-term motor skill learning. *Journal of Neurophysiology*, *116*, 6, 2922-2935.
38. Stein, P., Saltzman, E.L., Holt, K.G., & Sternad, D. (2016). Is failed predictive control a risk factor for focal dystonia? *Motor Disorders*, *31*, 12, 1772-1177.
39. Hasson, C.J., Zhang, Z., Abe, M.O., & Sternad, D. (2016). Neuromotor noise is malleable by amplification of perceived error. *PLoS Computational Biology*, *12*, 8, e1005044. **FINALIST for Klein Vogelbach Prize (best paper award in rehabilitation-related research).**
40. Ahn, J., Zhang, Z., & Sternad, D. (2016). Noise induces biased estimation of the correction gain. *PLoS ONE*, *11*, 7, e0158466. doi:10.1371/journal.pone.0158466
41. 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.
42. 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*, *24*, 8, 847-858.

43. Huber, M.E., Seitz, A., Leiser, M., & Sternad, D. (2015). Validity and reliability of Kinect skeleton for measuring shoulder joint angles: A feasibility study. *Physiotherapy*, *101*, 4, 389-393.
44. 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.
45. Sternad, D. & Körding, K.P. (2015). Carrot or stick in motor learning. *Nature Neuroscience*, *18*, 4, 480-481.
46. Park, S-W. & Sternad, D. (2015). Robust retention of individual sensorimotor skill after self-guided practice. *Journal of Neurophysiology*, *113*, 7, 2635-45.
47. 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.
48. 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*, 101-124. Doi: 10.1007/978-1-4939-1338-1_8.
49. Nasserolelami, B., Hasson, C.J., & Sternad, D. (2014). Rhythmic manipulation of objects with complex dynamics: Predictability over chaos. *PLoS Computational Biology*, *10*(10), e1003900. doi.org/10.1371/journal.pcbi.1003900
50. 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
51. 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.
52. 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.
53. Hogan, N. & Sternad, D. (2013). Dynamic primitives in the control of locomotion. *Frontiers in Computational Neuroscience*, *7*:71, doi: 10.3389/fncom.2013.00071.
54. 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.
55. 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.
56. 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.
57. Hogan, N., & Sternad, D. (2012). Dynamic primitives of motor behavior. *Biological Cybernetics*, *106* (11-12), 727-739. PMID: 23124919
58. Hasson, C.J., Shen, T., & Sternad, D. (2012). Energy margins in dynamic object manipulation. *Journal of Neurophysiology*, *108*, 5, 1349-65.
59. 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.
60. Sternad, D., Abe, M.O., Hu, X., & Müller, H. (2011). Neuromotor noise, error tolerance and velocity-dependent costs in skilled performance. *PLoS Computational Biology*, *7*, 9, e1002159.
61. Ajemian, R. & Sternad, D. (2010). Theoretical ideas in motor neuroscience and their capacity for falsification. *Journal of Motor Behavior*, *6*, 331-332.

62. Ronsse, R. & Sternad, D. (2010). Bouncing between model and data: stability, passivity, and optimality in hybrid dynamics. *Journal of Motor Behavior*, 6, 387-397.
63. Sternad, D., Park, S., Müller, H., & Hogan, N. (2010). Coordinate dependence of variability analysis. *PLoS Computational Biology*, 6, 4, e1000751.
64. 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.
65. 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.
66. 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.
67. 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. PMID: 3566270
68. Hogan, N. & Sternad, D. (2009). Sensitivity of smoothness measures to movement duration, amplitude and arrests. *Journal of Motor Behavior*, 41, 6, 529-534.
69. 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.
70. Cohen, R.G., & Sternad, D. (2009). Variability in motor learning: Relocating, channeling and reducing noise. *Experimental Brain Research*, 193, 1, 69-83.
71. 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.
72. Duarte, M., & Sternad, D. (2008). Complexity of human postural control: Alterations with aging during prolonged standing. *Experimental Brain Research*, 191(3), 265-276.
73. 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.
74. 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.
75. 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.
76. Hogan, N., & Sternad, D. (2007). On rhythmic and discrete movements: Reflections, definitions and implications for motor control. *Experimental Brain Research*, 181, 1, 13-30.
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Books

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Popular Books

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Book Chapters

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Conference Papers

1. West, M.A., Hermus, J., Huber, M.E., Maurice, P., Sternad, D., & Hogan, N. (submitted). Dynamic primitives limit human force regulation during motion. *IEEE International Conference on Robotics and Automation (ICRA 2022)*, Philadelphia, PA, May 23-27.
2. Edraki, M., Sharif Razavian, R., Sadeghi, M., Krotov, A., & Sternad, D. (2021). Modeling of a bullwhip using a NARX network for robot control. *Workshop on Modeling of Deformable Object Simulation. Robotics: Science and Systems*, virtual, July 12-16.
3. Nah, M., Krotov, A., Russo, M., Sternad, D., & Hogan, N. (2021). Manipulating a whip. *Workshop on Modeling of Deformable Object Simulation. Robotics: Science and Systems*, virtual, July 12-16.

4. Xiong, X., Nah, M., Krotov, & Sternad, D. (2021). Online impedance adaptation facilitates manipulating whip. *International Conference on Intelligent Robots and Systems (IROS 2021)*, Prague, Czech Republic, September 27 – October 1.
5. Nah, M., Krotov, A., Russo, M., Sternad, D. & Hogan, N. (2021). Manipulating a whip in 3D via dynamic primitives. *International Conference on Intelligent Robots and Systems (IROS 2021)*, Prague, Czech Republic, September 27 – October 1.
6. Sharif Razavian, R., Bazzi, S., Nayeem, R., Sadeghi, M., & Sternad, D. (2021). Dynamic primitives and optimal feedback control for the manipulation of complex objects. *IEEE International Conference on Robotics and Automation (ICRA 2021)*, Xian, China and virtual, May 30-June 5.
7. Nah, M., Russo, M., Krotov, A., Razavian, R., Edraki, M., Sohn, J.C., Sternad, D. & Hogan, N. (2020). Manipulating a whip – the advantage of primitive actions. *International Conference on Intelligent Robots and Systems (IROS 2020), Workshop on Learning Impedance Modulation for Physical Interaction: Insights from Humans and Advances in Robotics*, held virtually, October 25 – November 25 (On Demand Conference).
8. Hermus, JR, Sternad, D., & Hogan, N. (2020). Features of free motion persist in constrained actions. *IEEE International Conference on Intelligent Robots and Systems (IROS 2020), Workshop on Learning Impedance Modulation for Physical Interaction: Insights from Humans and Advances in Robotics*, held virtually, October 25 – November 25 (On Demand Conference).
9. Bazzi, S., Stansfield. S., Hogan, N., Sternad, D. (2020). Human control of complex objects: optimization or submovements with impedance? *IEEE International Conference on Intelligent Robots and Systems (IROS 2020), Workshop on Learning Impedance Modulation for Physical Interaction: Insights from Humans and Advances in Robotics*, held virtually, October 25 – November 25 (On Demand Conference).
10. Sohn, W-J., Nayeem, R., Zuzarte, I., Hogan, N. & Sternad, D. (2020). Control of complex objects: challenges of linear internal dynamics. *8th IEEE BioRob 2020*, New York, November 29-December 2.
11. Hermus, J., Sternad, D. & Hogan, N. (2020). Evidence for dynamic primitives in a constrained motion task. *BioRob 2020*, New York, November 29-December 2.
12. Nah, M., Krotov, A., Russo, M., Sternad, D. & Hogan, N. (2020). Dynamic primitives facilitate manipulating a whip. *BioRob 2020*, New York, November 29-December 2. **Best Student Paper Award**
13. Zuzarte, I., Gee, A.H., Sternad, D. & Paydarfar, D. (2020). Automated movement detection reveals features of maturation in preterm infants. *42nd International Conference of the IEEE Engineering in Medicine and Biology (EMBC)*, Montreal, Canada, July 20-24.
14. Bazzi, S., & Sternad, D. (2020). Robustness in human manipulation of dynamically-complex objects via exponential stability. *IEEE International Conference on Robotics and Automation (ICRA 2020)*, Paris, France, May 31-June 4.
15. Nayeem, R., Bazzi, S., Hogan, N., & Sternad, D. (2020). Transient behavior and predictability in manipulating complex objects. *IEEE International Conference on Robotics and Automation (ICRA 2020)*, Paris, France, May 31-June 4. **Nomination for Best Paper Award in Cognitive Robotics.**
16. Lee, J.W., Huber, M.E., Chiovetto, E., Giese, M., Sternad, D., & Hogan, N. (2019). Human-inspired balance model to account for foot-beam interaction mechanics. *IEEE International Conference on Robotics and Automation (ICRA 2019)*, 1969-1974, Montreal, Canada, May 20-24.
17. Guang, H., Bazzi, S., Sternad, D., & Hogan, N. (2019). Dynamic primitives for the manipulation of non-rigid objects. *IEEE International Conference on Robotics and Automation (ICRA 2019)*, 3783-3789, Montreal, Canada, May 20-24.
18. Lee, J., Huber, M.E., Sternad, D., & Hogan, N. (2018). Robot controllers compatible with human beam balancing behavior. *IEEE International Conference on Intelligent Robots and Systems (IROS 2018)*, Madrid, Spain, October 1-5.
19. Bazzi, S., Ebert, J., Hogan, N, & Sternad, D. (2018). Stability and predictability in dynamically complex physical interactions. *IEEE International Conference on Robotics and Automation (ICRA 2018)*, Brisbane, Australia, May 21-25.

20. Koeppen, R., Huber, M.E., Sternad, D., & Hogan, N. (2017). Controlling physical interactions: Humans do not minimize muscle effort. *Proceedings of the ASME 2017 Dynamic Systems and Controls Conference (DSCC 2017)*, Tysons Corner VA, October 11-13.
21. Maurice, P.J., Huber, M.E., Hogan, N., & Sternad, D. (2017). Velocity-curvature patterns matter in human-robot physical interaction. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, September 24-28.
22. 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 Biomechanics (BioRob2016)*, University Town, Singapore, June 26-29. **BEST NATIONAL SCIENCE FOUNDATION (NSF) STUDENT PAPER AWARD**
23. 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**
24. 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.
25. Ye, F., Nasserolelami, 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.
26. Nasserolelami, 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.
27. Hasson, C.J., Zhang, Z., Abe, M., & Sternad, D. (2014). Error amplification improves performance by reducing noise. *IEEE Proceedings of the 40th Northeast Bioengineering Conference*, Boston, MA, April 25-27.
28. Park, S-W., Hogan, N., & Sternad, D. (2014). Coordinate sensitivity of variability analysis. *IEEE Proceedings of the 40th Northeast Bioengineering Conference*, Boston, MA, April 25-27.
29. 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.
30. 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.
31. 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.
32. Huber, M.E., Seitz, A., Leeser, M., & Sternad, D. (2014). Validity and reliability of Kinect for measuring shoulder joint angles. *IEEE Proceedings of the 40th Northeast Bioengineering Conference*, Boston, MA, April 25-27.
33. 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.
34. 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 Biomechanics (BioRob2012)*, Rome, Italy, June 24-28.
35. 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.
36. 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.
37. Schaal, S., Kotosaka, S., Sternad, D. (2000). Nonlinear dynamical systems as movement primitives. *Proceedings of the 1st IEEE-RAS International Conference on Humanoid Robotics*, Massachusetts Institute of Technology, Cambridge, MA, September 7 -8. 1425-1436.
38. 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.

39. 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.
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41. 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.
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43. 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.
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45. 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. *Spectrum*: Autistic children may have trouble predicting movements. January 2021.
2. *Physics Today*: Humans control complex objects by guiding them towards stability. Concepts from dynamical systems help to elucidate the subtle physics of how we move. November 2018.
3. *Scilight*: Sarah Michaud: Contraction analysis unveils the task dynamics of carrying a cup of coffee. October 3, 2018.
4. Coverage of new NSF grant in Northeastern Magazine.
5. *Museum of Science, Boston*: Our lab group had a research exhibit in the Living Laboratory for one academic year on the topic: *Catch the mouse: Prediction in interactive motor skills*. We educated and also collected data from over 450 museum patrons. October 2017- May 2018.
6. *Museum of Science, Boston*: Our lab group had a research exhibit in the Living Laboratory for one academic year on the topic: *Pitchers and pianists: Rhythmic and discrete timing in a motor skill*. We educated and also collected data from over 450 museum patrons. October 2015- May 2016.
7. *Magnifying mistakes boosts motor skills past a performance plateau*. Press release by PloS Computational Biology following the publication of: Hasson et al. (2016). Noise is malleable.
8. 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.
9. Dagmar Sternad appears on Chinese TV show "The Brain" as the International Science Judge, March 7, 2015.
10. *NSF Highlights 24778, MPS/DMS 2013*, Undergraduate NSF PRISM participant wins Goldwater Scholarship, July 2013.
11. *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>
12. *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>
13. *Medical Daily*, Research highlighted in section on Science/Tech: *Carrying a cup of coffee is a complex task*. June 2012.

14. *NSF Highlights, Perception, Action & Cognition*, Dynamics of action and perception in a rhythmic task, February 2011.
15. STEM Research Symposium for Students, Northeastern University. The brain and the exponential power of handwriting – From Movements to Mathematics (and back again). April 15, 2010.
16. *NSF Highlights, Perception, Action & Cognition*, Dynamics of action and perception in a rhythmic task, May 2007.
17. *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.
18. *Technological Research News*, February 28, 2001: Robots learn soft touch. http://www.trmmag.com/Stories/022801/Robots_learn_soft_touch_022801.html
19. *Nature Science Update*, January 28, 2001: Chaos on center court. <http://www.nature.com/nsu/010104/010104-9.html>
20. *Plus*, Issue 16, 09/01: Robots can't play tennis – yet. <http://plus.maths.org/issue16/news/tennis/>
21. *Revista Pesquisa Fapesp*, Edition 67, 08/01: Movement under measure.

INVITED PRESENTATIONS

1. “Variability in motor skill learning”. **Keynote talk** at the *Annual Conference of the German Association of Sport and Exercise Psychology*, University of Münster, June 16-18, 2022.
2. “TBA”. Robotics Engineering, University of Geneva, Switzerland, May, 2022.
3. “TBA”. Invited talk at the workshop on "*Joint Action, Adaptation, and Entrainment in Human-Robot Interaction*". *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Sapporo (virtual), March 7-10, 2022.
4. “Human actions and interactions with complex objects – A task-dynamic approach. *Centre Recherche Nationale*, Nancy, France, April, 2022.
5. “H-CoDe MOVE: Challenges Human actions and interactions with complex objects – A task-dynamic approach. **Plenary Talk** at *H-CoDe meeting, Universite Paris-Saclay*, Paris, France, April, 2022.
6. “Human actions and interactions with complex objects – A task-dynamic approach. *Department of Physical Education*, Seoul National University, Seoul, Korea (virtual), November 18, 2021.
7. “Sensorimotor coordination in throwing: It’s all about timing? Talk at the Minisymposium on *The Neural Encoding and Representation of Time for Sensorimotor Control and Learning. Annual Conference of the Society for Neuroscience (virtual)*, Nov 9, 2021.
8. “Human actions and interactions with complex objects – A task-dynamic approach”. **Distinguished Lecture Series “Bridging the Gaps”**, *Department of Robotics Engineering*, Worcester Polytechnic Institute, Worcester, MA, November 5, 2021.
9. “The MAGIC Table: From basic to clinical science: Quantitative assessment of functional motor skill”. *Rehabilitation Meeting, Harvard Engineering and Massachusetts General Hospital*, Boston, October 21, 2021.
10. “From simple movements to complex and real skills”. *Institute of Health Professions, Massachusetts General Hospital*, Boston, July 20, 2021.
11. “Human control of complex objects: decisions grounded in the dynamics of the body and the task”. *10th International Symposium on Biology and Decision Making (SBDM 2021)*, May 10 - 12, 2021, held virtually.
12. “From simple movements to complex skills”. *Penn State Action Club*, Department of Kinesiology, Pennsylvania State University, State College, PA, March 12, 2021, held virtually.
13. “TBA”. **Keynote Talk** at the *29th Annual Computational Neuroscience Meeting (CNS 2020)*, Melbourne, Australia, July 18 - 22, 2020. **Cancelled** due to Covid-19.

14. “Control and learning of human interactions with complex objects - A task-dynamic approach”. Invited talk at the Workshop on *Action Representations for Learning in Continuous Control, Conference on Robotics, Science and Systems (RSS 2020)*, Oregon State University, Corvallis, July 12-15, 2020. Held virtually.
15. “Learning and control of skilled actions and interactions: A task-dynamic approach”. *International Conference on Robotics and Automation (ICRA 2020)*, May 31- June 4, 2020, held virtually.
16. “Stability and variability in rhythmic and discrete tasks”. **Plenary Talk** at *10th Frontiers in Applied and Computational Mathematics (FACM 2020)*, New Jersey Institute of Technology, May 28 - 29, 2020. **Cancelled** due to Covid 19.
17. “Collaborative research: Towards robots with human dexterity”. *NSF-NRI Annual PI Meeting*, Arlington, VA, February 27-28, 2020.
18. “Stability, variability and predictability: Dynamic primitives in the control of complex actions”. *Perception & Action Seminar, Department of Cognitive and Linguistic Sciences*, Brown University, January 30, 2020.
19. “Portable and digital assessments of movement in stroke survivors”. *Center for Neurotechnology and Neurorecovery*, Department of Neurology, Massachusetts General Hospital, December 17, 2019.
20. “Control of dynamically complex objects: Stability and predictability”. *Department of Mechanical & Industrial Engineering*, University of Illinois at Chicago, December 3, 2019.
21. “Control of dynamically complex objects: Stability and predictability”. NYU Robotics Workshop, *Department of Mechanical Engineering*, New York University, November 25, 2019.
22. “Autism as an impairment in prediction”. Talk delivered jointly with Pawan Sinha, *Simons Foundation*, New York City, September 15, 2019.
23. “Control of dynamically complex objects: Stability and predictability”. **Plenary Talk** at the *Adaptive Motion of Animals and Machines (AMAM)*, EPFL, Lausanne, Switzerland, August 23-26, 2019.
24. “Control of dynamically complex objects”. *Institute of Mechanics, Materials and Civil Engineering, University of Louvain-La-Neuve*, Louvain-La-Neuve, Belgium, July 12, 2019.
25. “It’s not (only) the mean that matters: Exploration, fine-tuning and forgetting in skill acquisition”. **Keynote Talk** at *Progress in Motor Control Conference XII, Free University of Amsterdam*, Amsterdam, Netherlands, July 7-10, 2019.
26. “Control of dynamically complex objects: Stability and predictability”. Invited talk at the *International Conference on Robotics and Automation (ICRA 2019)*, Montreal, Canada, May 20-24, 2019.
27. “Geometry and invariances in human actions and interactions.” *Workshop on Invariance and Geometry in Sensation, Action and Cognition*, Center of Mathematical Sciences and Applications, Harvard University, Cambridge, MA, April 16, 2019.
28. “Robotics needs motor neuroscience”. *Boston Dynamics*, Waltham, MA, April 11, 2019.
29. “Is noise only a nuisance: Adding extrinsic noise can enhance timing accuracy.” *New England Sequencing and Timing (NEST 2019)*, University of Connecticut, Storrs, CT, April 6, 2019.
30. “Autism as an impairment in prediction”. Talk delivered jointly with Pawan Sinha as part of the *Simons Foundation Lectures*, New York City, December 12, 2018.
31. “Predictability and dynamic stability in complex object control”. *Department of Mechanical Engineering*, University of Texas, Austin, December 7, 2018.
32. “From simple to complex movements – A task-dynamic approach to motor learning”. *Department of Movement Sciences*, Universite Paris XI, Paris, France, November 22, 2018.
33. “Stability, variability and predictability: Dynamic primitives in the control of complex actions”. **Keynote talk** at *Journee FeDeV 2018, Universite Paris-Saclay*, Paris, France, November 20, 2018.

34. “Robot controllers compatible with human beam balancing behavior”. *NSF-CRCNS Annual PI Meeting, University of California, Berkeley*, June 13-15, 2018.
35. “Predictability and dynamic stability in complex object control”. *Invited talk as part of the Symposium “Moving motor control from the laboratory to the real world? 28th Annual Conference on Neural Control of Movement (NCM 2018)*, Santa Fe, NM, May 4, 2018.
36. “Characterizing predictive control in space and time in autism spectrum disorder”. *New England Sequencing and Timing (NEST)*, University of Connecticut, Storrs, April 21, 2018.
37. “The attraction of rhythm: how discrete actions merge into a rhythmic pattern”. *New England Sequencing and Timing (NEST)*, University of Connecticut, Storrs, April 21, 2018.
38. “From actions to interactions: A task-dynamic approach to motor control”. *Laboratory for Restorative Technology*, Brown University, March 30, 2018.
39. “The wonder of human movement – how the brain controls the body”. *TEDx talk* held at Northeastern University, March 18, 2018.
40. “From simple movements to complex skills: A task-dynamic approach to motor control”. *60th Conference of Experimental Psychologists, 60. Tagung experimentell arbeitender Psychologen (TeaP 2018)*, Phillips Universität Marburg, Germany, March 11-14, 2018.
41. “From simple movements to complex skills: A task-dynamic approach to motor control”. *Sensorimotor Control for Animals and Robots, Workshop of the Mathematical and Biological Institute*, Ohio State University, Columbus, OH, November 13-17, 2017.
42. “Towards robots with human dexterity”. *Annual NSF-National Robotics Initiative Meeting*, Washington, DC, November 9-10, 2017.
43. “From simple movements to complex skills: A task-dynamic approach to motor control”. *Boston Action Club*, Northeastern University, Boston, October 19, 2017.
44. “Control of discrete and rhythmic motor skills – A task-dynamic approach”. *Control and Modulation of Neuronal and Motor Systems, Workshop of the Mathematical and Biological Institute*, Ohio State University, Columbus, OH, September 11–15, 2017.
45. “Human-object interactions: A task-dynamic approach as window into learning and adaptation”. **Plenary Talk** at the *8th International Symposium on Adaptive Motion of Animals and Machines*, Hokkaido University, Sapporo, June 27-30, 2017.
46. “The predictive impairment in autism hypothesis: An empirical assessment”. Joint talk with Pawan Sinha and Nouchette Hadjikhani. *Simons Center for the Social Brain*, Massachusetts Institute of Technology, April 28, 2017.
47. “Pitchers and pianists: Timing in discrete and rhythmic motor skills”. *New England Sequencing and Timing (NEST)*, University of Connecticut, Storrs, CT, March 25, 2017.
48. “From simple movements to complex skills: A task-dynamic approach to motor control”. **Keynote Talk** at the *Annual Conference of the Deutsche Vereinigung für Sportwissenschaften, Sektion Motorik/Training/Biomechanik*, Technische Universität Darmstadt, Germany, September 28, 2016.
49. “From actions to interactions: Variability, stability and predictability in the control of dynamic objects”. *Department of Bioengineering*, Politecnico di Milano, Italy, May 12, 2016.
50. “Explorations of extraordinary skill: What can neuroscientists learn from expert performers?” Symposium on *Motor Learning in the World of Music, Dance, and Performance: What can we learn from the experts* at *26th Annual Conference for Neural Control of Movement*, Jamaica, April 29, 2016.
51. “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.

52. "From actions to interactions: Variability, stability and predictability in the control of dynamic objects". *Department of Bioengineering*, University of Pittsburgh, October 29, 2015.
53. "Actions and interactions with the physical world: How the brain controls the body". *Department of Engineering*, Lafayette College, Easton, PA, September 15, 2015.
54. "Skill learning – Actions and interactions with the physical world". *Department of Engineering, Computational and Biological Learning*, University of Cambridge, United Kingdom, September 3, 2015.
55. "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.
56. "Skill learning – Self-guided practice and retention". *Computational Neuroscience, Hertie Institute for Clinical Brain Research*, Eberhard Karls Universität Tübingen, Germany, May 21, 2015.
57. "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.
58. "Learning to never forget: Self-guided practice and reward". *25th Annual Meeting of the Neural Control of Movement*, Charleston, SC, April 21-24, 2015.
59. "The wonder of human movement: How the brain controls the body". Master class for incoming University Scholars, Northeastern University, March 23, 2015.
60. "Long-term retention – the forgotten aspect of motor memory". *Department of Psychology*, Beijing University, Beijing, March 11, 2015.
61. "Actions and interactions in the physical world". *Department of Psychology*, Beijing University, Beijing, March 10, 2015.
62. "Variability and stability in skill acquisition". *Department of Psychology*, Beijing University, Beijing, March 9, 2015.
63. "Actions and interactions in the physical world". *Department of Mechanical Engineering, Control, Instrumentation, & Robotics Area*, MIT, February 23, 2015.
64. "Actions and interactions in the physical world". *Max Planck Institute for Biological Cybernetics*, Tübingen, Germany, September 26, 2014.
65. "Actions and interactions in the physical world". *Department of Cognitive Neurology, Hertie Institute*, University of Tübingen, Germany, September 2, 2014.
66. "Neuroscience for the upper extremity: From analysis to assessment to intervention". *Hospital Rede Lucy Montoro de Reabilitacao (IMREA)*, Sao Paulo, Brazil, August 16, 2014.
67. "Neuroscience for the upper extremity: From analysis to assessment to intervention". *Workshop at the IEEE International Conference on Biomedical Robotics and Biomechanics, BioRob 2014*, Sao Paulo, Brazil, August 15, 2014.
68. "Variability, stability and predictability in physical interaction". *IEEE International Conference on Biomedical Robotics and Biomechanics, BioRob 2014*, Sao Paulo, Brazil, August 12, 2014.
69. "Variability and stability in skill acquisition: From actions to interactions". *Department of Bioengineering, Imperial College of London*, London, United Kingdom, July 21, 2014.
70. "Variability and stability in skill acquisition: From actions to interactions". *Institute of Motor Neuroscience, University College of London*, London, United Kingdom, July 18, 2014.
71. "Variability and stability in skill acquisition: From actions to interactions". *Institute of Neuroscience, Karl Eberhard University*, Tübingen, Germany, July 15, 2014.

72. “The wonders of human movement: How the brain controls the body”. *Klein Award Lecture*, Northeastern University, April 8, 2014.
73. “Quantifying motor learning and interventions in virtual rehabilitation”. *CDSP Workshop*, Northeastern University, March 28, 2014.
74. “Variability and stability in skill learning and retention - Behavioral correlates of neuroplasticity”. *Department of Psychology, Brandeis University*, Waltham, MA, February 27, 2014.
75. “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.
76. “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.
77. “Variability and stability in skill learning - Behavioral correlates of neuroplasticity”. Department of *Brain and Cognitive Sciences*, Massachusetts Institute of Technology, Boston, November 1, 2013.
78. “Variability and stability in skill learning and retention- Behavioral correlates of neuroplasticity”. *Boston Action Club*, Northeastern University, Boston, September 12, 2013.
79. “Variability and noise in skill acquisition”. *Progress in Motor Control IX*, Montreal, Canada, July 13-16, 2013.
80. “Redundancy and variability in skill acquisition”. *10th Motor Control Summer School*, Antiochian Village, Ligonier, PA, July 7-11, 2013.
81. “Rhythmic movements –A window into brain and behavior”. *Faculty of Sport and Health Science, Technical University of Munich*, Munich, Germany, July 2, 2013.
82. “Variability and stability in skill learning: From actions to interactions”. *Max-Planck Institute for Intelligent Systems*, Tübingen, Germany, June 19, 2013.
83. “Variability and stability in skill learning: From actions to interactions”. *Rehabilitation Institute of Chicago, Northwestern University*, Chicago, IL, June 6, 2013.
84. “Rhythm ‘n’ moves: A window into brain and behavior”. Keynote at the *Eastern New England Biology Conference*, Northeastern University, April 20, 2013 (Keynote talk).
85. “Rhythmic movements: A window into brain and behavior”. *Center for Brain Science, Harvard University*, March 25, 2013.
86. “Sensorimotor skill: Analysis of variability as a window into control.” *Applied Mathematics Interdisciplinary Seminar*, Northeastern University, January 15, 2013.
87. “Sensorimotor skills: Mechanics and neurophysiology constrains optimization and rehabilitation”. *35th National Congress in Biomedical Engineering*, San Luis Potosi, Mexico, October 5, 2012. (Keynote talk).
88. “Stability and variability in learning a novel motor skill”. *Department of Applied Physiology and Kinesiology, University of Florida*, Gainesville FL, September 6, 2012.
89. “Towards coordinate-free analysis of motor variability”. *Santa Lucia Foundation*, Rome, Italy, June 24-28, 2012.
90. “Human control of dynamically complex objects”. *Biorob 2012*, Rome, Italy, June 24, 2012.
91. “A neuroscience perspective for upper limb rehabilitation.” *Biorob 2012*, Rome, Italy, June 26, 2012.
92. “Multiple solutions in skilled performance – Error tolerance and variability”. *Neural Control of Movement*, Venice, Italy, April 29, 2012.
93. “Stability and variability in learning interactive tasks”. *Department of Cognitive Science, Rensselaer Polytechnic Institute*, Troy, NY, February 29, 2012.

94. "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.
95. "Rhythm 'n' moves –A window into brain and behavior". *Universite Catholique de Louvain, Biomedical Engineering*, Louvain, Belgium, December 19, 2011.
96. "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.
97. "Rhythm 'n' moves –A window into brain and behavior" *Computational Neuroscience, Brandeis University*, Waltham MA, November 7, 2011.
98. "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.
99. "Stability and variability in learning an interactive task". *VII Computational Motor Control Workshop*, Israel, June 12-17, 2011.
100. "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.
101. "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.
102. "Motor skills: Exploiting stability, channeling variability, and optimizing safety margins". *Center for Complex Network Research*, Northeastern University, April 15, 2011.
103. "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.
104. "The brain and the exponential power of handwriting – From Movements to Mathematics (and back)". *STEM Research Symposium for Students*, Northeastern University, April 15, 2010.
105. "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.
106. "Variability, noise, and sensitivity to error in learning a motor task". *Forschungszentrums Netzindustrien und Infrastruktur (CNI)*, Technical University, Berlin, Germany, September 21, 2009.
107. "Variability, noise, and sensitivity to error in learning a motor task". *Computational Principles of Sensorimotor Learning*, Kloster Irsee, Germany, September 13-15, 2009.
108. "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.
109. "Variability, noise, and sensitivity to error in learning a motor task". *Computational Science Invited Lectures*, Pennsylvania State University, State College, PA, February 9, 2009.
110. "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.
111. "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.
112. "Variability, covariation and sensorimotor noise in motor learning and retention". *Society for Engineering Science*, Champaign Urbana IL, October 12-14, 2008.

113. "Stochastic resonance in the acquisition and control of a perceptual-motor skill". *The Turvey Transition*, University of Connecticut, June 19-21, 2008.
114. "Variability, noise and sensitivity to error in motor learning". *Department of Neurology and Neurological Sciences, Stanford Medical Center*, Stanford University, CA, March 20, 2008.
115. "Rhythm 'n' moves – A window into brain and behavior". *Institute for Research in Cognitive Science, University of Pennsylvania (IRCS)*, Philadelphia, February 1, 2008.
116. "Variability, covariation and equifinality in motor learning and retention". *Institute for Sport Sciences, University of Giessen*, Giessen, Germany, January 11, 2008.
117. "Stability and variability in rhythmic and discrete tasks". *International Conference Progress in Motor Control VI*, Brazil, August 18-21, 2007.
118. "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.
119. "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.
120. "Analysis of rhythmic and discrete movements: Issues of timing, coordinate systems and primitives." *Department of Biology, Northeastern University*, Boston, MA, April 5, 2007.
121. "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.
122. "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.
123. "Rhythm 'n' Moves – Behavioral, modeling, and fMRI results on rhythmic and discrete movements", *Department of Psychology, University of Potsdam*, Germany, December 20, 2006.
124. "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.
125. "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.
126. "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.
127. "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.
128. "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.
129. "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.
130. "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.
131. "Rhythm 'n' Moves – A window into brain and behavior." *National Science Foundation*, Washington, DC, February 12, 2005.

132. "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.*
133. "Rhythm 'n' Moves – A window into brain and behavior." *Department of Kinesiology, Arizona State University, Tempe, AZ, February 7, 2005.*
134. "The role of resonance in the timing of rhythmic movements". *International Scientific Congress on Motor Control, Wisla, Poland, October 23-26, 2004.*
135. "Rhythm 'n' Movement." *Summer Academy of the Studienstiftung des Deutschen Volkes, St. Johann, Italy, September 8, 2004.*
136. "Rhythmic timing and resonance constraints." *28th International Conference on Psychology, August 8-13, 2004, Beijing, China.*
137. "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.*
138. "Paradigms in motor control - Overview and examples from a dynamical systems perspective". *Institute for Biomechanics, University of Jena, Germany, June 30, 2004.*
139. "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.*
140. "Discrete and rhythmic dynamics as primitives in the control and coordination of action." *Max Planck Institute for Psychological Research, Munich, Germany, August 14, 2003.*
141. "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.*
142. "Period drift and variability in a rhythmic task - Signatures of an oscillator." *Department of Psychology, University of Pennsylvania, Philadelphia, PA, May 9, 2003.*
143. "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.*
144. "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.*
145. "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.*
146. "Acquisition and performance of a rhythmic skill". *Symposium of the "Movement Club" at the University of Paris Sud XI, Paris, September 24, 2002.*
147. "Discrete and rhythmic dynamics as units of coordinated action: Behavioral data, a dynamic model, and brain imaging results". *Departement of Mouvement and Perception, University of Marseille, France, September 18, 2002.*
148. "Ball bouncing: Acquisition and performance of a rhythmic skill". *Center for Research in Sport Sciences University of Paris Sud XI, Paris, May 30, 2002.*
149. "Dynamical stability and visual information in rhythmic ball manipulation". *Department of Theoretical and Applied Mechanics, Cornell University, Ithaca, NY, October 11, 2001.*
150. "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.*

151. "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.
152. "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.
153. "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.
154. "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.
155. "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.
156. "Rhythm and movement – A dynamic systems perspective". *Academy of Physical Education, University of Wroclaw, Poland*, October 22, 2000.
157. "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.
158. "A dynamic systems perspective to interlimb and intralimb coordination". *Department of Sport Science, Technical University of Munich, Germany*, July 27, 2000.
159. "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.
160. "Coordination and control of actions: From intralimb to interlimb coordination". *The Santa Fe Institute, Santa Fe, NM*, June 16, 2000.
161. "Coupled oscillations as a model for bimanual coordination: From interlimb to intralimb coordination". *Department of Psychology, Ohio State University, Columbus OH*, October 22, 1999.
162. "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.
163. "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.
164. "Coordination and control of actions: A dynamic approach to multi-joint movements". *The Santa Fe Institute, Santa Fe, NM*, December, 1998.
165. "2/3 power law and movement segmentation in 3D arm movements." *Center for Complex Systems, Florida Atlantic University, Boca Raton, FL*, April, 1998.
166. "A dynamic system's perspective on issues in motor control." *Technical University of Munich, Germany*, December, 1997.
167. "The dynamic systems approach to movement control." Keynote address at the conference "*Sport Kinetics '97*", Magdeburg, Germany, 1997.
168. "Oscillatory dynamics for multi-joint coordination." *Department of Kinesiology, University of Waterloo, Canada*, July, 1997.

169. "The dynamic systems approach to perception and action: From interlimb to intralimb coordination". *Kawato Dynamic Brain Project, ERATO*, Japan, June 23, 1997.
170. "Dynamics of 1:2 coordination in bimanual rhythmic movement." *The Santa Fe Institute for Complex Systems*, Santa Fe, NM, April, 1997.
171. "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.
172. "Dynamics of 1:2 coordination in bimanual rhythmic movement." *Center for Complex Systems, Florida Atlantic University*, Boca Raton, FL, February, 1997.
173. "Dynamics of 1:2 coordination in bimanual rhythmic movement." *Department for Cybernetic Psychology, University of Düsseldorf*, Germany, September, 1996.
174. "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.
175. "Perceptual control of movement, units of action, and dynamical approaches." *Los Alamos National Laboratory, TSA-DO/SA MS M997*, Los Alamos, NM, May, 1996.
176. "A dynamical perspective on the control and coordination of movement." *Department for Computer and Information Science, GRASP Lab, University of Pennsylvania*, Philadelphia, PA, 1995.
177. "Diffusive, synaptic and synergetic coupling: An evaluation through inphase and antiphase rhythmic movements." *Department for Cybernetic Psychology, University of Düsseldorf*, Germany, 1994.
178. "Average phase difference theory and 1:1 phase entrainment in interlimb coordination." *Complex Systems Summer School*, Santa Fe, NM, 1992.
179. "Average phase difference theory and 1:1 phase entrainment in interlimb coordination." *3. dvs-Sommerakademie (Deutsche Vereinigung für Sportwissenschaften)*, Berlin, 1992.
180. "On the dynamics of serial order in human coordination." *Max-Planck-Institut für Psychologie*, München, 1991.
181. "Average phase difference theory and 1:1 phase entrainment in interlimb coordination." *Department of Psychology, University of Amherst*, MA, 1991.
182. "Neurophysiological aspects of endurance training on the example of aerobics." *Symposium on Sports Medicine*, München, 1989.
183. "Neurophysiological Aspects of Aerobics and Stretching." *Institute for Sports Medicine*, Buenos Aires, Argentina, 1987.

ORGANIZATION OF CONFERENCES AND SYMPOSIA

Member of Organizational Committee for a Workshop on Joint Action, Adaptation, and Entrainment in Human-Robot Interaction. *IEEE International Conference on Human-Robot Interaction*, Sapporo, March 7-10, 2022.

Member of the Scientific Committee of the *10th Conference on Adaptive Motion in Animals and Machines (AMAM 2021)*, Ontario, Canada, held virtually.

Organization of Symposium: "Motor control beyond reach: challenges and insights from complex manual skills", organized jointly with Andrea d'Avella, Speakers: Aude Billard, Christian Rutz, Marta Russo, Antonella Maselli Switzerland, to be held: *International Conference on Neural Control of Movement (NCM2021)*, Held virtually due to Coronavirus.

Organization of Workshop “*Learning of manual skills in humans and robots*”, Whole-day workshop organized jointly with Aude Billard, EPFL, Switzerland, *International Conference on Robotics and Automation (ICRA2020)*, Paris, France, May 30 – June 4, 2020. Held virtually due to Coronavirus.

Organization of “*8th Annual Lab Advance*”, Joint workshop between the Newman Laboratory at MIT and the Action Lab at Northeastern University, MIT, September 30, 2019.

Member of the Scientific Committee of the *9th Conference on Adaptive Motion in Animals and Machines (AMAM 2019)*, EPFL Lausanne, Switzerland, 2019.

Organization of “*7th Annual Lab Advance*”, Joint workshop between the Newman Laboratory at MIT and the Action Lab at Northeastern University, Northeastern University, September 23, 2018.

Organization of the first all-women symposium on “*Moving motor control from the laboratory to the real world*”. Participants: Tamar Makin, Ilana Nisky, Alaa Ahmed. *28th Annual Conference for Neural Control of Movement*, Santa Fe, NM, May 1, 2018.

Organization of *6th Annual Lab Advance* - Joint workshop between the Newman Lab and the Action Lab, Massachusetts Institute of Technology, August 22, 2017.

Organization of *5th Annual Lab Advance* - Joint workshop between the Newman Lab and the Action Lab, Northeastern University, August 10, 2016.

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 “*4th Annual Lab Advance*”, Joint workshop between the Newman Laboratory at MIT and the Action Lab at Northeastern University, MIT, 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 Biomechanics (BioRob 2014)*, Sao Paulo, Brazil, August 12-15, 2014.

Organization of *3rd Lab Advance* - Joint workshop between the Newman Lab and the Action Lab, Massachusetts Institute of Technology, September 15, 2012.

Organization of *2nd Lab Advance* - Joint workshop between the Newman Lab and the Action Lab, Northeastern University, August 25, 2011.

Organization of *1st Lab Advance* - Joint workshop between the Newman Lab and the Action Lab, Massachusetts Institute of Technology, August 21, 2010.

“*The Boston Action Club*”, tri-weekly interdisciplinary seminar with invited speakers on movement neuroscience, held at Northeastern University, hosted ~12 speakers per year 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*, 19, 4, 2000.

PRESENTATIONS AT CONFERENCES (OVER 300 POSTERS)

II. TEACHING

Courses Taught

2021 - 2022	Sabbatical year
Spring 2021	Graduate course BIOL 5601: “Multidisciplinary Approaches to Motor Control”
Fall 2020	Graduate course BIOL 5601: “Multidisciplinary Approaches to Motor Control”
Spring 2020	Graduate course BIOL 5601: “Multidisciplinary Approaches to Motor Control”
Spring 2019	Graduate course BIOL 5601: “Multidisciplinary Approaches to Motor Control”
Fall 2018	Undergraduate course BIOL 2299: “Inquiries in Movement Neuroscience: Control of Human Movement: Skill and Loss of Skill in Disease”
Spring 2018	Graduate course BIOL 5601: “Multidisciplinary Approaches to Motor Control”
Fall 2017	Undergraduate course BIOL 2299: “Inquiries in Movement Neuroscience: Control of Human Movement: Skill and Loss of Skill in Disease”
Spring 2017	Undergraduate course BIOL 2299: “Inquiries in Movement Neuroscience: Control of Human Movement: Skill and Loss of Skill in Disease”
Fall 2016	Graduate course BIOL 5601: “Multidisciplinary Approaches to Motor Control”
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 5601: “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 5601: “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 5601: "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 5601: "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 BIOL 5601: "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

June 1 - August 8, 2021	Biology REU Program: From Cells and Molecules to Organisms, supervision of 2 undergraduate students
August 9-10, 2017	CosMo 2017, Computational Sensory-Motor Neuroscience, Minneapolis, MN
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
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Outreach Activities

Oct 2015 - May 2016 Outreach at the Museum of Science in the Living Laboratory: Pitchers and Pianists: Timing in Discrete and Rhythmic Motor Skills

Oct 2017 - May 2018 Outreach at the Museum of Science in the Living Laboratory: Catch the Mouse: Prediction in Interception

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	Associate Professor in Rehabilitation Sciences 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 Cambridge Health Alliance
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	Associate 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	Assistant Professor in Kinesiology University of Texas at San Antonio
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 Graduate Student Research Award, College of Engineering	PhD: June 2016 Bioengineering	Postdoctoral Fellow at MIT, Mechanical Engineering, Now: Assistant Professor in Mechanical Engineering, University of Massachusetts at Amherst

	Junior Scientist at Max Planck Institute for Intelligent Systems, Tübingen, Germany		
Eric Penchansky 2017 - 2018	Custom handle and quick release system for HapticMaster robot	MS: May 2018 Mechanical Engineering	Engineer
Zhaoran Zhang 2012 - 2018	Intrinsic and extrinsic noise in motor skill acquisition Outstanding Research Award, College of Engineering, 2018	PhD: July 2018 Bioengineering	Postdoctoral Fellow at Zuckerman Institute for Neuroscience Columbia University
Ian Zuzarte 2014 - 2020	Movement as a vital sign in neonates: Early movement monitoring in high-risk infants	PhD: August 2020 Bioengineering	Senior Research Scientist Dräger Medical Systems, Andover, MA
Aleksei Krotov 2018 - 2020	Human control of a flexible object: Hitting a target with a bullwhip	MS: August 2020 Bioengineering	PhD Student in Bioengineering Northeastern University

Graduate and Master's Students Under My Current Supervision

Name	Thesis Title	Institution
Rashida Nayeem 2017 -	Major: Electrical and Computer Engineering	Northeastern University
Aleksei Krotov 2018 -	Major: Bioengineering	Northeastern University
Mahdiar Edraki 2019 -	Major: Mechanical Engineering	Northeastern University
Carissa Aekins 2020 -	Major: Biology	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 Sznaiier	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
Tjitske Boonstra	Variability and stability during the acquisition of ball bouncing Major: Human Movement Sciences, Advisor: Peter Beek	MS: October 2006 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	PhD: June 2008 Penn State University

	Major: Psychology, Advisor: David Rosenbaum	
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, <i>Numida meleagris</i> , 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	PhD: May 2016 Massachusetts General Hospital

	Major: Rehabilitation Sciences Advisor: Robert Hillman	
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	Task variables in violin bowing: influence of variability of bow and bowing limb movement Major: Rehabilitation Science Advisor: Elliot Saltzman	PhD: August 2016 Boston University
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
Xianchao Long	Optimization-based whole-body motion planning for humanoid robots: Formulations, motion templates and applications Major: Electrical and Computer Engineering Advisor: Taskin Padir	PhD: August 2017 Northeastern University
Robert Bottomley	The MAGIC Table Major: Mechanical Engineering Advisor: Rifat Sipahi	MS: May 2017 Northeastern University
Jingwei Liu	Path planning for intelligent wheelchair based on modified tentacle method Major: Electrical and Computer Engineering Advisor: Taskin Padir	MS: August 2017 Northeastern University
Davi da Silva	Input shaping for control of complex objects Institute of Health Science and Technology Advisor: Neville Hogan	MS: December 2019 Harvard and Massachusetts Institute of Technology
Cameron Nurse	Effects of hamstring injury history on frontal plane pelvic mechanics Bioengineering Advisor: Sandra Shefelbine	MS: April 2020 Northeastern University
Jongwoo Lee	Effects of mechanical interventions on human locomotion Mechanical Engineering Advisor: Neville Hogan	PhD: September 2021 Massachusetts Institute of Technology
Jianfei Guo	Action training facilitates perception and cognition Cognitive, Linguistic and Psychological Sciences Advisor: Joo-Hyun Song	PhD: August 2020 Brown University
Kaila Stipancic	Multidisciplinary perspectives on motor speech assessment and intervention Major: Rehabilitation Sciences Advisor: Jordan Greene	PhD: January 2021 Institute of Health Professions Massachusetts General Hospital
Alex Belden	TBA Biology, Arts, Media and Design	PhD: TBA Northeastern University

	Advisor: Psyche Loui	
Raeed Chowdhury	Co-Postdoctoral Advisor with Aaron Batista University of Pittsburgh, Bioengineering	
Hannah Rowe	Exploring the validity of articulatory impairment phenotypes in speech motor disorders Major: Rehabilitation Sciences Advisor: Jordan Greene	PhD: TBA Institute of Health Professions Massachusetts General Hospital
Kunpeng Yao	Advancing dexterity in fine-manipulation skills through coordination - from humans to robots Major: Robotics Advisor: Aude Billard	PhD: December 2021 Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland

Previous and Current Postdoctoral Fellows

Name	Grant Support	Following Position
Aymar de Rugy 2001 - 2003	NSF Grant BCS-0096543: Rhythmic and discrete dynamics in multijoint movements	Research Scientist at Centre Nationale Recherche Scientifique (CNRS), Bordeaux, France
Anil Maybhate 2004 - 2006	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Staff Scientist 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 Nasserroleslami 2012 - 2014	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Research Assistant Professor Trinity College of Dublin, Ireland
Joeeun Ahn 2014	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Associate Professor Seoul National University, Korea
Nikita Kuznetsov 2013 - 2015	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Assistant Professor Louisiana State University
Se-Woong Park 2014 - 2018	NIH Grant: R01 HD045639 Variability and stability in skill acquisition	Assistant Professor University of Texas at San Antonio
Pauline Maurice 2015 - 2017	NIH Grant: R01 Predictability in complex object control	Research Scientist at Centre Nationale Recherche Scientifique (CNRS), Nancy, France
Francesca Lunardini 2016 - 2017	NIH Grant: R01 Predictability in complex object control	Postdoctoral Fellow Politecnico di Milano, Italy
Won Joon Sohn 2017 - 2019	NIH Grant: R01 Predictability in complex object control	Postdoctoral Fellow University of Irvine
Zhaoran Zhang 2018	NSF-M3X Grant: Learning to control complex objects	Postdoctoral Fellow Columbia University
Salah Bazzi 2017 -	NRI Grant: R01 Towards robots with human dexterity	Research Scientist, Action Lab and Institute for Experiential

		Robotics, Northeastern University
Marta Russo 2018 - 2020	NIH Grant: R01 Learning to control complex objects	Senior Research Associate Polyclinic of Tor Vergata University in Rome, Italy
Mohsen Sadeghi 2019 -	NIH Grant: R01 Predictability in complex object control	
Reza Sharif Razavian 2019 -	Canadian NSERC Fellowship and NIH Grant: R01 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 Obtained PhD degree from University College of London and Harvard University	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 (Imperial College, London), PhD Bioengineering, Harvard Internship at Max Planck Institute, Tübingen Honors Thesis: Asymmetric learning in an asymmetric bimanual task	2011 – 2015 PhD student at Harvard University
Anthony Lamattina	Mathematics and Premed, Research Coop	2012
Michael Spens	Physics, Research Coop	2012
Dena Guo (Crozier)	Physics, Directed Study Senior Thesis Fellowship of Museum of Science Lawrence Fellowship from Department of Physics Shafer Fellowship for Research Co-op in the Action Lab Honors Thesis: Pitchers and pianists: Large-scale study of timing	2013 – 2016 Medical School Cleveland Clinic
Julia Cowenhoven	Biology, Directed Study	2014

Oliver Cervantes	Biology, Directed Study	2014 – 2016 Medical School at University of California San Francisco
Courtney Stead	Biomedical Physics, Directed Study	2014 - 2015
Keith Harrigian	Mathematics, Physics Outstanding Student Research Award at RISE Northeastern Nomination for Goldwater Fellowship Finalist for Marshall fellowship	2014 – 2016 PhD student at Johns Hopkins University
Rebecca Cheung	Biomedical Physics, Directed Study	2015 –2016 PhD student at Cornell University
Marie Mitchell	Electrical and Computer Engineering, Directed Study	2015
Katie Owens	Behavioral Neuroscience University Scholar	2015 - 2017
Hannah Tam	Biology and Biochemistry Senior Thesis Fellowship of Museum of Science Recipient of Goldwater Fellowship 2017 Nominated for Knight-Hennessy Scholarship	2015 – 2019 PhD student at Harvard
Lynnsey Martin	Computer Engineering	2016 - 2017
Alexandra Dubinsky	Behavioral Neuroscience, Mathematics	2017 - 2018
Abigail Cahill	Behavioral Neuroscience Travel Award from Nu Rho Psi Honors Society, Armington Award	2017 - 2020
Jeffrey Zhu	Computer Engineering	2017 - 2019
Daniel Silver	Computer Engineering	2017 - 2018
Anne Sigl	Bioengineering	2018 - 2019
Kaleb Noruzi	Bioengineering	2018 - 2019
Meredith Young	Biology	2018 - 2019
Sabrina Bond	Behavioral Neuroscience Schafer Fellowship for Full-time Coop Spring 2021, Recipient of Goldwater Fellowship 2021/22, National Finalist for Rhodes Fellowship	2019 -
Ben Gossart	Biology	2019 - 2020
Adam Shaker	Bioengineering	2019
Hillary Hoyt	Behavioral Neuroscience	2019 - 2020
Abigail Nugent	Bioengineering	2020

Sidharth Annapragada	Electrical and Computer Engineering, Behavioral Neuroscience	2021 -
Christina Larson	Biology (REU from Spring Hill College, Alabama)	Summer 2021
Rachel Hyun	Biology (REU from Brown University)	Summer 2021

III. PROFESSIONAL SERVICES

ORGANIZATION AND PROGRAM COMMITTEES AT UNIVERSITY

2021 -	Member of the Executive Committee of the Institute for Experiential Robotics, Northeastern University
2021	Member of Advisory Board at Université Paris-Saclay Scientific and Educational Advisory Board for the H-CoDe project
2020 – 2021	Chair of Selection Committee for the University Distinguished Professor
2020 –	Member of Search Committee for Tenure-Track Faculty in Computational Biology, Department of Biology
2020 –	Member of Search Committee for Tenure-Track Faculty in Robotics, Department of Electrical and Computer Engineering
2020 –	Member of the Tenure and Promotion Committee at the College of Science
2020 –	Member of Sabbatical Advisory Committee at the College of Science
2020 –	Member of the Executive Committee of the Institute for Experiential Robotics, Northeastern University
2019 – 2020	Member of Selection Committee for the University Distinguished Professor
2019 – 2020	Member of the Search Committee for the Chair of the Department of Mathematics
2019 – 2020	Member of the Search Committee for the Dean of the College of Science
2018 – 2019	Chair of the Search Committee for Faculty Position in Movement Neuroscience (open rank), in Biology
2017 – 2018	Member of the Evaluation Committee of the Dean of the College of Social Sciences and Humanities
2017 – 2018	Chair of the Search Committee for Faculty Position in Movement Neuroscience (open rank), in Biology
2017	Member of the Search Committee for the Chair of the Department of Physics
2017 –	Member of the College of Science Oversight Committee on Healthy Aging
2016 - 2019	Member of Full Professor Promotion Committee of the College of Science
2015 – 2017	Member of Nomination Committee of Rhodes, Marshall and Mitchel Scholars
2015 – 2016	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 – 2014	Member of the Bioengineering PhD Graduate Committee, Northeastern University
2009 – 2013	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

ORGANIZATING COMMITTEES AT EXTERNAL ASSOCIATIONS AND CONFERENCES

2021	Member of Scientific and Educational Advisory Board of Paris Sacle University for H-CoDe, Interdisciplinary Program on Human in the Loop in Control and Decision Making. September 3, 2021
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- 2019 Organization of 8th *Lab Advance* - Recent Research of the Newman Lab and the Action Lab, Massachusetts Institute of Technology, September 30
- 2019 Member of the Organizing Committee for the International Conference on Adaptive Motion in Animals and Machines (AMAM 2019), Lausanne, Switzerland, August 19-23, 2019
- 2018 Organization of 7th *Lab Advance* - Recent Research of the Newman Lab and the Action Lab, Northeastern University, September 23
- 2018 Member of Special Emphasis Panel for NIH Pathway to Independence Award
- 2017 Member of the NIH Study Section Sensory and Motor Neuroscience, Cognition and Perception Fellowship, Arlington, VA
- 2017 Organization of 6th *Lab Advance* - Recent Research of the Newman Lab and the Action Lab, Massachusetts Institute of Technology, August 23
- 2016 Member of the National Advisory Mental Health Council Workgroup, RDoC Motor Systems Workshop, National Institute of Mental Health (NIMH), Moderator of Praxis Construct Group
- 2016 Organization of 5th *Lab Advance* - Recent Research of the Newman Lab and the Action Lab, Northeastern University, August 26
- 2016 External Reviewer for Applicants for Professor Position in Motor Learning and Cognitive Science, University of Darmstadt, Germany
- 2015 – Member of the Executive Board of the Society of Neural Control of Movement
- 2015 Organization of 4th *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 Biomechanics (BioRob2014), “Biomedical Robotics and Biomechanics 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 3rd *Lab Advance* - Recent Research of the Newman Lab and the Action Lab, Massachusetts Institute of Technology, September 15
- 2011 Organization of 2nd *Lab Advance* - Recent Research of the Newman Lab and the Action Lab, Northeastern University, August 25
- 2010 Organization of 1st *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 – 2015 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”