

## **Paul L. Gribble, Ph.D.**

Curriculum Vitae

Sep 21, 2018

Brain and Mind Institute, Dept. Psychology  
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### **EDUCATION**

1999 Ph.D. McGill University Psychology  
1995 M.Sc. McGill University Psychology  
1993 B.Sc. Queen's University Cognitive Science

### **ACADEMIC POSITIONS**

2011 Professor Western University \*  
2006 Associate Professor Western University \*  
2000 Assistant Professor Western University \*  
\* joint appointed in Dept. Psychology and in Dept. Physiology & Pharmacology

### **RESEARCH FELLOWSHIPS**

1999 CIHR/MRC Postdoctoral Fellow, Dept. Anatomy & Cell Biology, Queen's University.  
Supervisor: Stephen Scott  
1994 France-Québec Researcher, Institute de la Communication Parlée, Grenoble, France.  
Supervisors: Pascal Perrier & Rafael Laboissière  
1993 Research Engineer, ATR Human Information Processing Laboratories, Japan.  
Supervisor: Eric Vatikiotis-Bateson

### **AWARDS & DISTINCTIONS**

2015 Faculty Scholar Award (Western University)  
2003 Ontario Premier's Research Excellence Award  
2002 CIHR New Investigator Award  
1999 MRC / CIHR Postdoctoral Fellowship  
1998 NSERC PGS-B Postgraduate Scholarship

### **PROFESSIONAL CONTRIBUTIONS**

**Editorial Board** Academic Editor, PLoS ONE, 2008–15

**Ad-Hoc Reviewer** Nature, Neuron, Current Biology, Proceedings of the National Academy of Sciences, PLoS Computational Biology, Journal of Neuroscience, Journal of Neurophysiology, Experimental Brain Research, Journal of Neuroscience Methods, Trends in Cognitive Sciences, Neural Computation, PLoS ONE, Biology Letters

<b>Program Committee</b>	Annual Translational and Computational Motor Control Meeting
<b>CIHR Peer Review</b>	Member, College of Reviewers, 2017–present Scientific Officer, CIHR Behavioural Sciences-C, 2010–2015; Committee Member, CIHR Behavioural Sciences-C, 2007–2015, 2018–
<b>Grant Reviews</b>	CIHR (Canada), NSERC (Canada), National Science Foundation (USA)
<b>Memberships</b>	Society for Neuroscience (1994), Society for the Neural Control of Movement (1994)

## RESEARCH FUNDING

### Active Grants as Principal Investigator

NSERC Discovery Grant, 2018-23  
Somatosensory Basis of Human Motor Learning  
\$ 235,000

NSERC Discovery Accelerator Supplement Award, 2018-21  
Somatosensory Basis of Human Motor Learning  
\$ 120,000

CIHR PJT-389243 Project Grant, 2018-23  
Sensory Motor Neuroplasticity and Motor Learning by Observing  
\$ 694,240

### Grants Previously Held as Principal Investigator

CIHR PJT-153447 Project Grant, 2017–18  
Sensory Motor Neuroplasticity and Motor Learning by Observing  
\$ 100,000

NSERC RGPIN 238338 Discovery Grant, 2013–18  
Control of human arm movement  
\$ 200,000

Western University Internal Award, 2016–17  
Sensorimotor Neuroplasticity and Motor Learning by Observing  
\$ 25,000

Western University, 2015–17  
Faculty scholar's award  
\$ 14,000

CIHR Open Operating Grant, 2010–15  
Motor learning and sensory systems  
\$ 547,280

Western ADF Internal Grant, 2013–14  
Brain networks for observational motor learning  
\$ 8,400

NSERC Discovery Grant, 2012–13  
Control of human arm movements  
\$ 31,000

NSERC Research Tools & Infrastructure Grant, 2010–11  
Robotic exoskeleton and integrated eye tracker  
\$ 146,236

NSERC Discovery Grant, 2007–12  
Cognitive and sensory basis of motor learning  
\$ 155,300

NSERC Discovery Grant Accelerator Award, 2007–10  
Cognitive and sensory basis of motor learning  
\$ 120,000

CIHR Open Operating Grant, 2005–10  
Computational mechanisms of motor learning  
\$ 338,670

Premier's Research Excellence Award (Ontario), 2003–07  
Neural and cognitive mechanisms of motor learning  
\$ 150,000

CIHR New Investigator Salary Award, 2002–05  
Computational mechanisms of motor learning  
\$ 250,000

CIHR Open Operating Grant, 2002–05  
Computational mechanisms of motor learning  
\$ 216,000

NSERC Discovery Grant, 2001–06  
Multi-joint limb movement and motor learning  
\$ 97,500

Canada Foundation for Innovation & Ontario Innovation Trust, 2001–03  
Multidisciplinary approaches to cognitive neuroscience  
\$ 659,293

Western ARA Internal Grant, 2001–02  
Motor learning pilot project  
\$ 3,000

NSERC Research Tools & Infrastructure Grant, 2001–02  
Equipment to support motor learning studies  
\$ 48,968

### **Grants Previously Held as Co-Applicant**

NIH R01 Grant, 2012–17  
Training-induced plasticity in human motor and sensory systems, D. Ostry (PI)  
\$ 1,880,455

NSERC Research Tools & Infrastructure Grant, 2015–16

A portable system for integrated measurement of human actions, B. Corneil (PI)

\$ 139,655

NSERC Research Tools & Infrastructure Grant, 2010–11

Transcranial magnetic stimulation for research in cognitive neuroscience, M. Goodale (PI)

\$ 98,178

NIH R01, 2005–10

Motor control of human arm stiffness, D. Ostry (PI)

\$ 1,053,000

CIHR Open Operating Grant, 2007–10

Cerebellar control of overarm throwing, J. Hore (PI)

\$ 268,575

CIHR Group Grant, 2004–09

Neural transformations for perception and action, M. Goodale (PI)

\$ 2,272,200

CIHR Open Operating Grant, 2001–06

Cerebellar control of throwing, J. Hore (PI)

\$ 610,438

## **PUBLICATIONS (\* indicates trainee under my supervision)**

### **Submitted Papers**

7. \*Maeda RS, Cluff T, Gribble PL, Pruszynski JA (2018) Feedforward and feedback control share an internal model of the arm's dynamics. Submitted
6. \*Cashaback JGA, \*Lao C, \*Palidis DJ, \*Coltman SK, \*McGregor HR, Gribble PL (2018) The Gradient of the Reinforcement Landscape Influences Sensorimotor Learning. Submitted
5. Gu C, Pruszynski JA, Gribble PL, Corneil BD (2018) A rapid visuomotor response on the human upper limb is selectively influenced by implicit, but not explicit, motor learning. Submitted
4. \*Popp NJ, Yokoi A, Gribble PL, Diedrichsen J (2018) The effect of habits on motor skill learning. Submitted
3. Ohashi H, Valle-Mena R, Gribble PL, Ostry DJ (2018) Movements following force-field adaptation are aligned with altered perceptual boundaries. Submitted
2. \*Weiler J, Gribble PL, Pruszynski JA (2018) Spinal stretch reflexes exploit musculoskeletal redundancy to support postural hand control. Submitted
1. \*Palidis DJ, \*Cashaback JGA, Gribble PL (2018) Neural Signatures of Reward and Sensory Prediction Error in Motor Learning. Submitted

### **Refereed Journal Articles**

71. \*McGregor HR, \*Cashaback JGA, Gribble PL (2018) Somatosensory Perceptual Training Enhances Motor Learning by Observing. *J. Neurophysiol.*, in press

70. \*McGregor HR, Vesia M, \*Rinchon C, Chen R, Gribble PL (2018) Changes in corticospinal excitability associated with motor learning by observing. *Exp. Brain Res.* 236:2829-38
69. Gu C, Pruszynski JA, Gribble PL, Corneil BD (2018) Done in 100 ms: Path-dependent visuomotor transformation in the human upper limb. *J. Neurophysiol.* 119:1319-28
68. \*Weiler J, Gribble PL, Pruszynski JA (2018) Rapid feedback responses are flexibly coordinated across arm muscles to support goal-directed reaching. *J. Neurophysiol.* 119:537-47
67. \*Maeda R, Cluff T, Gribble PL, Pruszynski JA (2017) Compensating for intersegmental dynamics across the shoulder, elbow and wrist joints during feedforward and feedback control. *J. Neurophysiol.* 118:1984-97
66. \*Cashaback JG, \*McGregor HR, \*Mohatarem A, Gribble PL (2017) Dissociating Error-Based and Reinforcement-Based Loss Functions During Sensorimotor Learning. *PLoS Comp. Biol.* 13(7):e1005623
65. \*McGregor HR, Gribble PL (2017) Functional Connectivity Between Somatosensory and Motor Brain Areas Predicts Individual Differences in Motor Learning by Observing. *J. Neurophysiol.* 118(2): 1235-43
64. \*Cashaback JG, \*McGregor HR, \*Pun HCH, Buckingham G, Gribble PL (2017) Does the Sensorimotor System Minimize Prediction Error or Select the Most Likely Prediction During Object Lifting? *J. Neurophysiol.* 117:260-74
63. \*Weiler J, \*Saravanamuttu J, Gribble PL, Pruszynski JA (2016) Coordinating long-latency stretch responses across the shoulder, elbow and wrist during goal-directed reaching. *J. Neurophysiol.* 116:2236-49
62. Gu C, Wood DK, Gribble PL, Corneil BD (2016) A Trial-by-Trial Window into Sensorimotor Transformations in the Human Motor Periphery. *J. Neurosci.* 36(31):8273-82
61. \*McGregor HR, \*Cashaback JG, Gribble PL (2016) Functional Plasticity in Somatosensory Cortex Supports Motor Learning by Observing. *Current Biology* 26(7):921-927
60. \*Wong JD, Bobbert MF, van Soest KAJ, Gribble PL, \*Kistemaker DA (2016) Optimizing the distribution of leg muscles for vertical jumping. *PLoS ONE* 11(2):e0150019, 2016
59. Ostry DJ, Gribble PL (2016) Sensory plasticity in human motor learning. *Trends Neurosci.* 39(2): 114-123
58. Martin CB, Cowell RA, Gribble PL, Wright J, Köhler S (2015) Distributed category-specific recognition memory signals in human perirhinal cortex. *Hippocampus* 26(4):423-36
57. \*Weiler J, Gribble PL, Pruszynski JA (2015) Goal-dependent modulation of the long-latency stretch response at the shoulder, elbow and wrist. *J. Neurophysiol.* 114(6):3242-54
56. Wood DK, Gu C, Corneil BD, Gribble PL, Goodale MA (2015) Transient visual responses reset the phase of low-frequency oscillations in the skeletomotor periphery. *Eur. J. Neurosci.* 42:1919-32
55. \*McGregor HR, Gribble PL (2015) Changes in Visual and Sensory-Motor Resting-State Functional Connectivity Support Motor Learning by Observing. *J. Neurophysiol.* 114:677-88
54. \*Cashaback JGA, \*McGregor HR, Gribble PL (2015) The Human Motor System Alters Its Reaching Movement Plan for Task-Irrelevant Positional Forces. *J. Neurophysiol.* 113:2137-49

53. \*Kistemaker DA, \*Wong J, Gribble PL (2014) The cost of moving optimally: kinematic path selection. *J. Neurophysiol.* 112, 1815-24
52. Buckingham G, \*Wong JD, Tang M, Gribble PL, Goodale MA (2014) Observing object lifting errors modulates cortico-spinal excitability and improves object lifting performance. *Cortex* 50, 115-24
51. Ramsay JO, Gribble PL, Kurket S (2014) Analysis of juggling data: Landmark and continuous registration of juggling trajectories. *Electronic Journal of Statistics* 8(2):1835-1841
50. Ramsay JO, Gribble PL, Kurket S (2014) Description and processing of functional data arising from juggling trajectories. *Electronic Journal of Statistics* 8(2):1811-1816
49. \*Wong JD, \*Wilson ET, \*Kistemaker DA, Gribble PL (2014) Bimanual proprioception: are two hands better than one? *J. Neurophysiol.* 111, 1362-8
48. \*Kistemaker DA, Van Soest AJ, \*Wong JD, Kurtzer I, Gribble PL (2013) Control of position and movement is simplified by combined muscle spindle and Golgi tendon organ feedback. *J. Neurophysiol.* 109, 1126-39
47. \*Wong JD, \*Kistemaker DA, \*Chin A, Gribble PL (2012) Can proprioceptive training improve motor learning? *J. Neurophysiol.* 108, 3313-3321
46. \*Williams A, Gribble PL (2012) Observed Effector-Independent Motor Learning by Observing. *J. Neurophysiol.* 107(6), 1564-70
45. Goonetilleke SC, Gribble PL, Mirsattari SM, Doherty TJ, Corneil BD (2011) Neck muscle responses evoked by transcranial magnetic stimulation of the human frontal eye fields. *Eur. J. Neurosci.* 33, 2155-67
44. Hore J, \*Debicki DB, Gribble PL, Watts S (2011) Deliberate Utilization of Interaction Torques Brakes Elbow Extension in a Fast Throwing Motion. *Exp. Brain Res.* 211, 63-72
43. \*Wong J, \*Wilson ET, Gribble PL (2011) Spatially Selective Enhancement of Proprioceptive Acuity Following Motor Learning. *J. Neurophysiol.* 105, 2512-21
42. \*Debicki DB, Gribble PL, Watts S, Hore J (2011) Wrist muscle activation, interaction torque and mechanical properties in unskilled throws of different speeds. *Exp. Brain Res.* 208(1), 115-25
41. \*Kistemaker DA, \*Wong JD, Gribble PL (2010) The Central Nervous System does not minimize energy cost in arm movements. *J. Neurophysiol.* 104, 2985-94
40. \*Brown LE, \*Wilson ET, Obhi S, Gribble PL (2010) Effect of Trial Order and Error Magnitude on Motor Learning by Observing. *J. Neurophysiol.* 104(3), 1409-16
39. \*Wilson ET, \*Wong J, Gribble PL (2010) Mapping Proprioception Across a 2D Horizontal Workspace. *PLoS ONE* 5(7), e11851
38. \*Debicki DB, Watts S, Gribble PL, Hore J (2010) A Novel Shoulder-Elbow Mechanism for Increasing Speed in a Multijoint Arm Movement. *Exp. Brain Res.* 203, 601-613
37. Ostry D, Darainy M, Mattar AAG, \*Wong J, Gribble PL (2010) Somatosensory Plasticity and Motor Learning. *J. Neurosci.* 30(15), 5384-93
36. \*Cothros N, \*Wong J, Gribble PL (2009) Visual cues signaling object grasp reduce interference in motor learning. *J. Neurophysiol.* 102(4), 2112-20

35. \*Malfait N, \*Valyear KF, Culham JC, Anton JL, Gribble PL. (2009) fMRI activation during observation of others' reach errors. *J. Cogn. Neurosci.* 22(7):1493-1503
34. \*Wong J, \*Wilson ET, \*Malfait N, Gribble PL (2009) Limb Stiffness is Modulated with Spatial Accuracy Requirements During Movement in the Absence of Destabilizing Forces. *J. Neurophysiol.* 101(3), 1542-9
33. \*Brown LE, \*Wilson ET, Gribble PL (2009) Repetitive Transcranial Magnetic Stimulation to the Primary Motor Cortex Interferes with Motor Learning By Observing. *J. Cogn. Neurosci.* 21(5), 1013-22
32. \*Wong J, \*Wilson ET, \*Malfait N, Gribble PL (2009) The Influence of Visual Perturbations on the Neural Control of Limb Stiffness. *J. Neurophysiol.* 101, 246-57
31. \*Cothros N, \*Wong J, Gribble PL (2008) Distinct Haptic Cues Do Not Reduce Interference When Learning To Reach In Multiple Force Fields. *PLoS ONE* 3(4), e1990
30. \*Malfait N, Henriques DY, Gribble PL (2008) Shape Distortion Produced By Isolated Mismatch Between Vision and Proprioception. *J. Neurophysiol.* 99(1), 231-243
29. \*Brown LE, \*Wilson ET, Goodale MA, Gribble PL (2007) Motor Force Field Learning Influences Visual Processing of Target Acceleration. *J. Neurosci.* 27(37), 9975-83
28. \*Cothros N, Köhler S, \*Dickie EW, Mirsattari S, Gribble PL (2006) Proactive Interference as a Result of Persisting Neural Representations of Previously Learned Motor Skills in Primary Motor Cortex. *J. Cogn. Neurosci.* 18(12), 2167-76
27. \*Cothros N, \*Wong JD, Gribble PL (2006) Are There Distinct Neural Representations of Object and Limb Dynamics? *Exp. Brain Res.* 173(4), 689-97
26. \*Mattar AAG, Gribble PL (2005) Motor Learning by Observing. *Neuron* 46(1), 153-60
25. Malfait N, Gribble PL, Ostry DJ (2005) Generalization of motor learning based on multiple field exposures and local adaptation. *J. Neurophysiol.* 93, 3327-3338
24. \*Debicki DB, Gribble PL (2005) Persistence of inter-joint coupling strategy during single joint elbow flexions after shoulder fixation. *Exp. Brain Res.* 163(2), 252-7
23. Darainy M, Malfait N, Gribble PL, Towhidkhan F, Ostry DJ (2004) Learning to Control Arm Stiffness Under Static Conditions. *J. Neurophysiol.* 92(6), 3344-50
22. \*Debicki DB, Gribble PL (2004) Inter-joint coupling strategy during adaptation to novel viscous loads in human arm movement. *J. Neurophysiol.* 92(2), 754-65
21. \*Debicki DB, Gribble PL, Watts S, Hore J (2004) Kinematics of wrist joint flexion in overarm throws made by skilled subjects. *Exp. Brain Res.* 154, 382-94
20. Gribble PL, \*Mullin LI, \*Cothros N, \*Mattar A (2003) Role of cocontraction in arm movement accuracy. *J. Neurophysiol.* 89, 2396-2405
19. Graham K, Moore K, Cabel W, Gribble PL, Cisek P, Scott SH (2003) Kinematics and kinetics of multi-joint reaching in non-human primates. *J. Neurophysiol.* 89, 2667-77
18. Gribble PL, Everling S, \*Ford K, \*Mattar A (2002) Hand-eye coordination for rapid pointing movements: Arm movement direction and distance are specified prior to saccade onset. *Exp. Brain Res.* 145, 372-382

17. Gribble PL, Scott SH (2002) Overlap of internal models for mechanical loads during reaching in motor cortex. *Nature* 417, 938-941
16. Gribble PL, Scott SH (2002) Method for assessing directional tuning characteristics of non-uniformly sampled neural activity. *J. Neurosci. Methods* 113(2), 185-195
15. Scott SH, Gribble PL, Graham KM, Cabel, DW (2001) Dissociation between hand motion and population vectors from neural activity in motor cortex. *Nature* 413, 161-165
14. Suzuki M, Shiller DM, Gribble PL, Ostry DJ (2001) Relationship Between Cocontraction, Movement Kinematics and Phasic Muscle Activity in Single-Joint Arm Movement. *Exp. Brain Res.* 140(2), 171-181
13. Shiller DM, Ostry DJ, Gribble PL, Laboissière R (2001) Compensation for the Effects of Head Acceleration on Jaw Movement in Speech. *J. Neurosci.* 21(16), 6447-6456
12. Gribble PL, Ostry DJ (2000) Compensation For Loads During Arm Movements Using Equilibrium-Point Control. *Exp. Brain Res.* 135(4), 474-482
11. Gribble PL, Ostry DJ (1999) Compensation for Interaction Torques During Single- and Multi-Joint Limb Movement. *J. Neurophysiol.* 82(5), 2310-2326
10. Shiller DM, Ostry DJ, Gribble PL (1999) Effects of Gravitational Load on Jaw Movements in Speech. *J. Neurosci.* 19(20), 9073-9080
9. Gribble PL, Ostry DJ (1998) Independent Coactivation of Shoulder and Elbow Muscles. *Exp. Brain Res.* 123(3), 355-360
8. Feldman AG, Ostry DJ, Levin MF, Gribble PL, Mitnitski, A (1998) Recent Tests of the Equilibrium-Point Hypothesis ( $\lambda$  model). *Motor Control* 2(3), 189-205
7. Gribble PL, Ostry DJ, Sanguineti V, Laboissière R (1998) Are Complex Control Signals Required for Human Arm Movement? *J. Neurophysiol.* 79(3), 1409-1424
6. Ostry DJ, Vatikiotis-Bateson E, Gribble PL (1997) An Examination of the Degrees of Freedom of Human Jaw Motion in Speech and Mastication. *J. Speech Language. Hear. Res.* 40, 1341-1351
5. Ostry DJ, Gribble PL, Levin MF, Feldman AG (1997) Phasic and Tonic Stretch Reflexes in Muscles with Few Muscle Spindles: Human Jaw Opener Muscles. *Exp. Brain Res.* 116(2), 299-308
4. Gribble PL, Ostry DJ (1996) Origins of the Power Law Relation between Movement Velocity and Curvature: Modeling the Effects of Muscle Mechanics and Limb Dynamics. *J. Neurophysiol.* 76(5), 2853-2860
3. Ostry DJ, Gribble PL, Gracco VL (1996) Coarticulation of Jaw Movements in Speech Production: Is Context Sensitivity in Speech Kinematics Centrally Planned? *J. Neurosci.* 16(4), 1570-1579
2. Munhall KG, Gribble P, Sacco L, Ward M (1996) Temporal Constraints on the McGurk Effect. *Percept. Psychophys.* 58(3), 351-362
1. Ostry DJ, Laboissière R, Gribble PL (1995) Command Invariants and the Frame of Reference for Human Movement. *Behav. Brain Sci.* 18(4), 770-772

## Book Chapters



\*McGregor H, Gribble PL (2016) Observational Motor Learning. In S Obhi & ES Cross (eds.), Shared representations: Sensorimotor Foundations of Social Life (Social Neuroscience Series). 525-540. Cambridge University Press

Gribble PL, Laboissière R, Ostry DJ (1997) Control of Human Arm and Jaw Motion: Issues Related to Musculo-skeletal Geometry. In PG Morasso & V Sanguineti (eds.), Self-organization, Computational Maps and Motor Control. Advances in Psychology Series, Vol. 119. Elsevier-North Holland

### **Conference Presentations & Published Abstracts**

\*Popp N, Kordjaz N, Gribble PL, Diedrichsen J (2018) Evidence for chunking vs. statistical learning in motor sequence production. Poster presented at the 2018 Conference on Cognitive Computational Neuroscience, Philadelphia PA, Sep 5-8

\*Palidis D, \*Cashaback J, Gribble P (2018) Distinct neural signatures of reward and sensory prediction error in motor learning. Poster presented at the 28th Annual Meeting of the Society for the Neural Control of Movement, Santa Fe NM, May 1-4

\*Coltman S, \*Cashaback J, Gribble P (2018) The fast and slow adaptive processes are malleable based on prior experience. Poster presented at the 28th Annual Meeting of the Society for the Neural Control of Movement, Santa Fe NM, May 1-4

\*Weiler J, Gribble P, Pruszynski A (2018) Spinal stretch reflexes exploit musculoskeletal redundancy to support postural hand control. Poster presented at the 28th Annual Meeting of the Society for the Neural Control of Movement, Santa Fe NM, May 1-4

\*Maeda R, Cluff T, Gribble P, Pruszynski A (2018) Generalization of internal models of limb dynamics. Poster presented at the 28th Annual Meeting of the Society for the Neural Control of Movement, Santa Fe NM, May 1-4

\*McGregor HR, \*Cashaback JGA, & Gribble PL (2017) The somatosensory system supports motor learning by observing. Talk presented at the Australasian Neuroscience Society sensorimotor satellite meeting in Sydney, Australia, Dec 2

\*Popp N, Kordjazi N, Yokoi A, Diedrichsen J, Gribble PL (2017) Bad habits: how initial instructions influence performance in long-term motor sequence learning. Paper presented at the 2017 Advances in Motor Learning & Motor Control Meeting, Washington D.C., Nov. 10

\*Cashaback JGA, \*Lao C, \*Palidis D, \*Coltman S, \*McGregor HR, Gribble PL (2017) The reinforcement landscape influences sensorimotor learning. SCAPPS, St. Johns, Canada

\*Lao C, \*Cashaback JGA, \*McGregor HR, \*Palidis D, \*Coltman S, Gribble PL (2017) Ascending the reinforcement gradient during sensorimotor learning. Southern Ontario Neuroscience Association, St. Catharines, Canada

\*McGregor HR, \*Cashaback JGA, & Gribble PL (2017) The somatosensory system supports observational motor learning. Poster presented at the Progress in Motor Control meeting, Miami, FL, July 20-22.

Gu C, Pruszynski A, Gribble P, Corneil B (2017) Visuomotor properties of the reticulospinal contribution during human visually-guided reaching movements. Paper presented at the 27th Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland May 2-5

\*Popp N, Kordjazi N, Yokoi A, Gribble P, Diedrichsen J (2017) Bad habits in motor skill learning: how initial instructions influence performance in long-term motor sequence learning. Paper presented at the 27th Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland May 2-5

\*Weiler J, Gribble P, Pruszynski A (2017) Short- and long-latency responses at the elbow integrate information about wrist movement to return the hand to a specific location. Paper presented at the 27th Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland May 2-5

\*McGregor H, Gribble P (2017) Somatosensory perceptual training enhances motor learning by observing. Paper presented at the 27th Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland May 2-5

\*Cashaback J, \*Lao C, \*McGregor H, \*Palidis D, \*Coltman S, Gribble P (2017) Reinforcement gradient ascent during sensorimotor learning. Paper presented at the 27th Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland May 2-5

\*Maeda R, Cluff T, Gribble P, Pruszynski A (2017) Learning and transfer of novel intersegmental dynamics between feedforward and feedback control. Paper presented at the 27th Annual Meeting of the Society for the Neural Control of Movement, Dublin, Ireland May 2-5

Nucera A, Cardinali L, Alsubaie R, Azarpazhoooh MR, Chang TC, Gribble P, Weishaupt N, Hackinski V (2016) The up-going-thumb sign: a sensitive sign of corticospinal pathway involvement. Paper presented at the 10th World Stroke Congress, Hyderabad, India, Oct 26-29

\*McGregor HR, \*Rinchon VC, Gribble PL, Chen R, Vesia M (2016) Changes in cortico-spinal excitability associated with motor learning by observing. Paper presented at the 46th Annual Meeting of the Society for Neuroscience, San Diego, CA, Nov 12-16

Gu C, Pruszynski JA, Gribble PL, Corneil BD (2016) Visual stimulus-locked responses on upper limb muscles are modulated by the upcoming reach trajectory. Paper presented at the 46th Annual Meeting of the Society for Neuroscience, San Diego, CA, Nov 12-16

\*Diep C, \*Cashaback JGA, Gribble PL (2016) The Relationship Between Upper Limb Inertia and Decision Making at Movement Initiation. Paper presented at the 36th annual meeting of the Southern Ontario Neuroscience Association, University of Waterloo, May 6

Gu C, Wood DK, Pruszynski JA, Gribble PL, Corneil BD (2016) The Sensorimotor Properties of the Fast Visuomotor System. Paper presented at the 26th Annual Meeting of the Society for the Neural Control of Movement, Montego Bay Jamaica, Apr 24-29

\*Weiler J, \*Saravanamuttu J, Gribble PL, Pruszynski JA (2016) Coordinating goal- dependent modulation of the long-latency stretch response across muscles. Paper presented at the 26th Annual Meeting of the Society for the Neural Control of Movement, Montego Bay Jamaica, Apr 24-29

\*Maeda RS, Cluff T, Gribble PL, Pruszynski JA (2016) Accounting for intersegmental limb dynamics when making single-joint movements. Paper presented at the 26th Annual Meeting of the Society for the Neural Control of Movement, Montego Bay Jamaica, Apr 24- 29

\*Cashaback JGA, \*Mohatarem A, \*McGregor HR, Gribble PL (2016) Dissociating error- based and reinforcement-based learning. Paper presented at the 26th Annual Meeting of the Society for the Neural Control of Movement, Montego Bay Jamaica, Apr 24-29

\*McGregor HR, \*Cashaback JGA, Gribble PL (2016) Functional Plasticity in Somatosensory Cortex Supports Motor Learning by Observing. Paper presented at the 26th Annual Meeting of the Society for the Neural Control of Movement, Montego Bay Jamaica, Apr 24-29

\*Pun H, \*Cashaback JGA, \*McGregor H, Gribble PL (2015) Motor Prediction and Object Lifting. Paper presented at the annual meeting of the Southern Ontario Neuroscience Association, McMaster University, May 1

\*Weiler J, Gribble P, Pruszynski A (2015) The long-latency stretch response accounts for kinematic redundancy of the arm. Paper presented at the 45th Annual Meeting of the Society for Neuroscience, Chicago IL, Oct 17-21

\*McGregor HR, Gribble PL (2015) Neuroplasticity in primary somatosensory cortex supports motor learning by observing. Paper presented at the 45th Annual Meeting of the Society for Neuroscience, Chicago IL, Oct 17-21

Gu C, Pruszynski JA, Gribble PL, Corneil BD (2015) Adaptation of ultra-rapid visual response on human upper limb muscle during visuomotor rotation. Paper presented at the 45th Annual Meeting of the Society for Neuroscience, Chicago IL, Oct 17-21

\*Cashaback JG, \*Mohatarem A, \*McGregor HR, Gribble PL (2015) Bayesian integration of skewed distributions during sensorimotor learning. Paper presented at the 45th Annual Meeting of the Society for Neuroscience, Chicago IL, Oct 17-21

\*McGregor H, Gribble PL (2015) Resting-state functional connectivity predicts observational motor learning. Paper presented at the 25th Annual Meeting of the Society for the Neural Control of Movement, Charleston SC, Apr 20-24

\*Kistemaker D, \*Cashaback J, Gribble PL (2015) On what basis does the brain select muscle activation patterns? Paper presented at the 25th Annual Meeting of the Society for the Neural Control of Movement, Charleston SC, Apr 20-24

\*Weiler J, Gribble PL, Pruszynski JA (2015) Goal-dependent modulation of the long-latency stretch response at the shoulder, elbow and wrist muscles. Paper presented at the 25th Annual Meeting of the Society for the Neural Control of Movement, Charleston SC, Apr 20-24

\*Cashaback JG, \*McGregor H, Gribble PL (2014) The human motor system adapts reaching movements for both task-relevant and task-irrelevant forces. Paper presented at the 44th annual meeting of the Society for Neuroscience, Washington DC, Nov 15-19

Gu C, Wood DK, Gribble PL, Doherty TJ, Corneil BD (2014) Visual Responses on Human Upper Limb Muscles during pro- and anti-reach movements implicate the superior colliculus Paper presented at the 44th annual meeting of the Society for Neuroscience, Washington DC, Nov 15-19

Martin CB, Cowell RA, Gribble PL, Köhler S (2014) Are familiarity-based memory representations in human perirhinal cortex distributed? Paper presented at the 44th annual meeting of the Society for Neuroscience, Washington DC, Nov 15-19

Gu C, Wood DK, Gribble PL, Doherty TJ, Corneil BD (2014) Visual Responses on Human Upper Limb Muscles can be Independent of the Ensuing Reach Movement. Presented at the 34th Annual Meeting of the Southern Ontario Neuroscience Association, London Canada, May 5

\*Wong J, \*Wilson E, \*Kistemaker D, Gribble PL (2014) Bimanual proprioception: are two hands better than one? Paper presented at the 24th Annual Meeting of the Society for the Neural Control of Movement, Amsterdam NL, Apr 21-26

Gu C, Wood D, Gribble PL, Doherty T, Goodale M, Corneil B (2014) Visual responses on human upper limb muscles can be independent of the ensuing reach movement. Paper presented at the 24th Annual Meeting of the Society for the Neural Control of Movement, Amsterdam NL, Apr 21-26

\*Kistemaker DA, \*Wong J, Gribble PL (2014) The cost of moving optimally: kinematic path selection. Paper presented at the 24th Annual Meeting of the Society for the Neural Control of Movement, Amsterdam NL, Apr 21-26

\*McGregor H, Gribble PL (2013) Brain networks underlying observational motor learning. Paper presented at the 43rd annual meeting of the Society for Neuroscience, San Diego, Nov 9-13

\*Kistemaker DA, van Soest KJ, Wong JD, Gribble PL (2013) Control of Position and Movement is Simplified by Combined Muscle Spindle and Golgi Tendon Organ Feedback. Paper presented at the 24th Congress of the International Society of Biomechanics, Brazil, Aug 4-9

\*Wong JD, Bobbert M, van Soest KJ, \*Kistemaker DA, Gribble PL (2013) Design and control in the maximization of human vertical jumping. Paper presented at the 24th Congress of the International Society of Biomechanics, Brazil, Aug 4-9

\*McGregor H, Gribble PL (2013) Brain Networks Underlying Motor Learning by Observing Assessed Using Resting-State fMRI. Paper presented at the 9th Annual Progress in Motor Control meeting, Montreal QC, July 13-16

Melnyk L, Franch JA, Gribble PL (2013) Source Confusion for Online Health Information. Paper presented at the 25th Annual Meeting of the Association for Psychological Science, Washington DC, May 23-26

\*McGregor H, Gribble PL (2013) Exploring the Neural Basis of Observational Motor Learning using Resting-state fMRI. Paper presented at the 19th Annual Meeting of the Organization for Human Brain Mapping, Seattle, WA, June 16-20

\*McGregor H, Gribble PL (2013) Motor learning by observing: A resting-state fMRI study. Paper presented at the 23rd Annual Meeting of the Society for the Neural Control of Movement, San Juan PR, Apr 15-20

\*Kistemaker DA, \*Wong JD, Gribble PL (2012) Combined feedback of spindle and GTO afferents. Paper presented at the 42nd Annual meeting of the Society for Neuroscience, New Orleans, LA, Oct 13-17

\*McGregor H, Gribble PL (2012) Mapping functional changes in resting-state sensorimotor networks following active and observational learning using fMRI. Paper presented at the 42nd Annual meeting of the Society for Neuroscience, New Orleans, LA, Oct 13-17

\*Chin A, Gribble PL (2012) Can incrementally modifying the goal increase the rate of learning for a complex motor task? Paper presented at the 42nd Annual meeting of the Society for Neuroscience, New Orleans, LA, Oct 13-17

\*Wong JD, \*Kistemaker DA, Gribble PL (2012) Proprioceptive training on a desired trajectory improves motor learning. Paper presented at the 22nd Annual Meeting of the Society for the Neural Control of Movement, Venice, Italy, Apr 23-29

Buckingham G, \*Wong JD, Gribble PL, Goodale MA (2012) Observing lifting errors modulates cortico-spinal excitability. Paper presented at the 22nd Annual Meeting of the Society for the Neural Control of Movement, Venice, Italy, Apr 23-29

\*Kistemaker DA, \*Wong JD, Gribble PL (2011) Testing predictions of optimal control models of arm movement. Paper presented at the 41st Annual meeting of the Society for Neuroscience, Washington DC, Nov 12-16

Buckingham G, \*Wong JD, Tang M, Gribble PL, Goodale MA (2011) Observing object lifting errors. Paper presented at the 41st Annual meeting of the Society for Neuroscience, Washington DC, Nov 12-16

\*Wong JD, Gribble PL, \*Kistemaker DA (2011) Can proprioceptive training improve motor learning of complex movements? Paper presented at the 41st Annual meeting of the Society for Neuroscience, Washington DC, Nov 12-16

Buckingham G, Tang M, Gribble PL, Goodale MA (2011) Learning from mistakes: Improving initial fingertip force scaling by observing lifting errors. Paper presented at the 21st Annual Meeting of the Society for the Neural Control of Movement, San Juan, Puerto Rico, Apr 26- May 1

Gribble PL, \*Wong JD (2011) Spatially Selective Enhancement of Proprioceptive Acuity Following Motor Learning. Paper presented at the Satellite meeting on Motor Learning: behavior, computation, and pathology, at the 21st Annual Meeting of the Society for the Neural Control of Movement, San Juan, Puerto Rico, Apr 26-May 1

Gribble PL (2011) Motor Learning by Observing. Paper presented at the 21st Annual Meeting of the Society for the Neural Control of Movement, San Juan, Puerto Rico, Apr 26-May 1

\*Kistemaker D, \*Wong JD, Gribble PL (2010) Energy Minimization in arm movements. Paper presented at the 40th Annual meeting of the Society for Neuroscience, San Diego, Nov 13-17

\*Kistemaker D, \*Wong J, Gribble PL (2010) Does the Central Nervous System Minimize Energy Cost in Arm Movements? Paper presented at the 20th Annual Meeting of the Society for the Neural Control of Movement, Naples FL, April 20-25

Goonetilleke S, Gribble PL, Mirsattari S, Doherty T, Corneil B (2010) Investigating the Human Frontal Eye Fields Using Transcranial Magnetic Stimulation and Electromyography. Paper presented at the 20th Annual Meeting of the Society for the Neural Control of Movement, Naples FL, April 20-25

Darainy M, Mattar AAG, \*Wong J, Gribble PL, Ostry DJ (2009) The Sensed Position of the Limb Changes Following Dynamics Learning. Paper presented at the 39th Annual meeting of the Society for Neuroscience, Chicago, October 17-21

\*Wong J, Gribble PL, Darainy M, Mattar A, Ostry DJ (2009) Bias in proprioception changes with dynamics learning. Paper presented at the 39th Annual meeting of the Society for Neuroscience, Chicago, October 17-21

Goonetilleke SC, Gribble PL, Mirsattari SM, Doherty TJ, Corneil BD (2009) Studying the excitability of the human frontal eye fields using transcranial magnetic stimulation and electromyography. Paper presented at the 39th Annual meeting of the Society for Neuroscience, Chicago, October 17-21

Goonetilleke SC, Gribble PL, Mirsattari SM, Doherty TJ, Corneil BD (2009) Using Transcranial Magnetic Stimulation and Electromyography to Study Excitability of the Frontal Eye Fields in Humans. Paper presented at the 15th European Conference on Eye Movements, Southampton UK, August 23-27

Melnyk L, Lucyk JM, Gribble PL (2009) Accuracy for estimating age, height and weight. Paper presented to the biennial conference of the Society for Applied Research in Memory and Cognition, Kyoto, Japan, July 26-30

\*Kistemaker D, Gribble P (2009) Energy Optimization in Reaching Movements. Paper presented at the 22nd meeting of the International Society of Biomechanics, Cape Town, South Africa, July 5-9

Ostry DJ, Darainy M, Mattar AAG, Nasir SM, \*Wong J, Gribble PL (2009) Sensory Plasticity and Motor Learning. Paper presented at the 19th Annual Meeting of the Society for the Neural Control of Movement, Waikoloa HI, Apr 26-May 3

\*Malfait N, \*Valyear K, Culham JC, Anton JL, Gribble PL (2008) fMRI activation during observation of others' reach errors. Paper presented at the 38th Annual meeting of the Society for Neuroscience, Washington D.C, Nov 15-18

\*Wilson ET, \*Wong J, Gribble PL (2008) Workspace-Dependent Differences in Proprioception of the Human Arm. Paper presented at the 38th Annual meeting of the Society for Neuroscience, Washington D.C, Nov 15-18

\*Wong J, \*Wilson ET, Gribble PL (2008) Tuning Proprioception With Movement Training. Paper presented at the 38th Annual meeting of the Society for Neuroscience, Washington D.C, Nov 15-18

\*Wong JD, \*Wilson ET, Gribble PL (2008) Proprioceptive sensitivity following movement practice. Paper presented at the 18th Annual meeting of the Society for the Neural Control of Movement, Naples, FL Apr 28-Mar 4

\*Wilson ET, \*Wong JD, Gribble PL (2008) Mapping proprioceptive sensitivity across a 2D workspace. Paper presented at the 18th Annual meeting of the Society for the Neural Control of Movement, Naples, FL Apr 28-Mar 4

\*Cothros N, Wong J, Gribble PL (2008) Visual cues aid in switching between force field and null field movements. Paper presented at the 18th Annual meeting of the Society for the Neural Control of Movement, Naples, FL Apr 28-Mar 4

\*Malfait N, \*Valyear KF, Culham JC, Anton JL, Gribble PL (2008) fMRI activation during observation of others reach errors. Paper presented at the 18th Annual meeting of the Society for the Neural Control of Movement, Naples, FL Apr 28-Mar 4

\*Kistemaker D, Rozendaal LA, Gribble PL (2008) Stiffness and Damping of the neuro-musculoskeletal system cannot be estimated adequately using a stiffness-damping-inertia model. Paper presented at the Computational and Systems Neuroscience (Cosyne) Meeting, Salt Lake City, Feb 28-Mar 2

\*Wong J, \*Wilson E, Gribble PL (2008) Movement Effects on Proprioception. Paper presented at the Computational and Systems Neuroscience (Cosyne) Meeting, Salt Lake City, Feb 28-Mar 2

\*Brown LE, \*Wilson ET, \*Billing RS, Obhi S, Gribble PL (2007) Motor learning by observing without observing learning. Paper presented at the 37th Annual meeting of the Society for Neuroscience, San Diego, Nov 3-7

\*Wong J, Gribble PL (2007) Visual and Proprioceptive Determinants of Stiffness Control. Paper presented at the 37th Annual meeting of the Society for Neuroscience, San Diego, Nov 3-7

\*Cothros N, \*Wong J, Gribble PL (2007) Extent of Interference in Learning Multiple Inertial Loads. Paper presented at the 17th Annual meeting of the Society for the Neural Control of Movement, Seville, Spain, March 25-Apr 1

\*Wong J, \*Malfait N, Gribble PL (2007) The Role of Vision in Limb Impedance Control. Paper presented at the 17th Annual meeting of the Society for the Neural Control of Movement, Seville, Spain, March 25-Apr 1

\*Brown L, \*Billing R, Obhi S, Gribble PL (2007) Motor learning by observing without observing learning. Paper presented at the 17th Annual meeting of the Society for the Neural Control of Movement, Seville, Spain, March 25-Apr 1

\*Malfait N, Henriques DYP, Gribble PL (2007) Visuomotor Adaptation: Local Warping Rather than Global Realignment. Paper presented at the 17th Annual meeting of the Society for the Neural Control of Movement, Seville, Spain, March 25-Apr 1

\*Malfait N, Henriques DYP, Gribble PL (2006) Local rather than global remapping during visually-guided tracking. Paper presented at the 36th annual meeting of the Society for Neuroscience, Atlanta GA, October 14-18

Gribble PL (2006) Proactive Interference as a Result of Persisting Neural Representations of Previously Learned Motor Skills in Primary Motor Cortex. Paper presented at the 14th annual meeting of the International Society for Behavioral Neuroscience, Bath, UK, July 3-7

\*Brown LE, \*Wilson ET, Goodale MA, Gribble PL (2006) Motor Force Field Learning Influences Visual Perception of Acceleration. Paper presented at the 6th annual meeting of the Vision Sciences Society, Sarasota, FL, May 5-10

\*Brown LE, \*Wilson ET, Gribble PL (2006) Does motor cortex contribute to the “motor-learning-by-observing” effect? An rTMS study. Paper presented at the 28th international symposium on Computational Neuroscience, Montréal, May 8-9

\*Cothros N, \*Wong J, Gribble PL (2006) Reaching Movements in Free Space Exhibit Small After-Effects but Do Not Disrupt Retention in Force Field Adaptation. Paper presented at the 28th international symposium on Computational Neuroscience, Montréal, May 8-9

\*Cothros N, Gribble PL (2006) Do Haptic Cues Associated with Grasp Promote Acquisition of Multiple Internal Models? Paper presented at the 28th international symposium on Computational Neuroscience, Montréal, May 8-9

\*Malfait N, Henriques DYP, Gribble PL (2006) Local adaptation for local remapping in a tracking task. Paper presented at the 28th international symposium on Computational Neuroscience, Montréal, May 8-9

\*Cothros N, Gribble PL (2006) Do Haptic Cues Associated With Grasp Promote Acquisition of Multiple Internal Models? . Paper presented at the 16th Annual meeting of the Society for the Neural Control of Movement, Key Biscayne, FL, May 2-7

\*Brown LE, \*Wilson ET, Gribble PL (2006) Does Motor Cortex Contribute to the Motor Learning By Observing Effect? Paper presented at the 16th Annual meeting of the Society for the Neural Control of Movement, Key Biscayne, FL, May 2-7

\*Cothros N, \*Wong JM, Gribble PL (2006) Reaching Movements in Free Space Exhibit Small After Effects but Do Not Disrupt Retention of Force Field Adaptation. Paper presented at the 16th Annual meeting of the Society for the Neural Control of Movement, Key Biscayne, FL, May 2-7

\*Cothros N, \*Wong JD, Gribble PL (2005) A New Internal Model of a Novel Force Field is Acquired Independently From the Existing Internal Model for Controlling the Limb. Paper presented at the 35th Annual meeting of the Society for Neuroscience, Washington DC, Nov. 12-16

\*Brown LE, \*Wilson ET, Goodale MA, Gribble PL (2005) Motor Force Field Learning Influences Vision: Evidence From an Interception Task. Paper presented at the 35th Annual meeting of the Society for Neuroscience, Washington DC, Nov. 12-16

\*Debicki DB, Gribble PL (2005) Adapting to Novel Dynamics In Human Arm Movement Using an Inter-Joint Coupling Strategy. Paper presented at the Joint Meeting of the Canadian Society for Clinical Investigation and the Royal College of Physicians and Surgeons of Canada, Vancouver BC, Sept. 22-24

\*Brown LE, Wilson E, Goodale MA, Gribble PL (2005) Information Learned by Motor System Influences Visual System: Evidence From an Interception Task. Paper presented at the Progress in Motor Control V meeting, State College PA, Aug 17-20

\*Cothros N, Köhler S, \*Dickie EW, Mirsattari SM, Gribble PL (2005) Role of Primary Motor Cortex in Retention and Interference. Paper presented at the 15th Annual meeting of the Society for the Neural Control of Movement, Key Biscayne, FL, Apr 12-17

\*Mattar AG, Gribble PL (2005) Motor Learning by Observing. Paper presented at the 15th Annual meeting of the Society for the Neural Control of Movement, Key Biscayne, FL, Apr 12-17

Joanisse MF, Melnyk L, \*Mattar AAG, \*Terry A, Gribble PL (2005) Procedural memory in children: A motor learning task reveals developmental differences in learning but not interference. Poster presented at the biennial meeting of the Society for Research in Child Development, Atlanta GA, April 7-10

\*Mattar AG, Gribble PL (2004) Motor Learning by Observing. Paper presented at the 34th Annual Meeting of the Society for Neuroscience, San Diego, CA, Oct. 23-27

\*Cothros N, \*Dickie EW, Köhler S, Gribble PL (2004) Role of Primary Motor Cortex in Consolidation and Interference During Motor Learning. Paper presented at the 34th Annual Meeting of the Society for Neuroscience, San Diego, CA, Oct. 23-27

Darainy M, Malfait N, Gribble PL, Towhidkhan F, Ostry DJ (2004) Control of Human Arm Impedance in Statics. Paper presented at 2nd International Symposium on Measurement, Analysis and Modeling of Human Functions, Genova, June 14-16

Darainy M, Malfait N, Gribble PL, Towhidkhan F, Ostry DJ (2004) Learning Impedance Control in Statics. Paper presented at the Motor Learning and Plasticity Satellite Meeting of the 14th Annual Neural Control of Movement Meeting, Barcelona, March 26-28

Gribble PL, \*Mattar AAG, \*Terry A, Melnyk L, Joanisse MF (2004) Development of motor learning and consolidation: Adaptive representation of limb dynamics in children. Paper presented at the 11th Annual Cognitive Neuroscience Society Meeting, San Francisco, CA, April 18-20

\*Debicki DB, Gribble PL (2003) What strategies drive adaptation to novel interaction loads during arm movements? Paper presented at the 33rd Annual Meeting of the Society for Neuroscience, New Orleans, LA, November 8-12

Malfait N, Gribble PL, Ostry DJ (2003) How does the motor system encode dynamic properties of the external world? Paper presented at the 33rd Annual Meeting of the Society for Neuroscience, New Orleans, LA, November 8-12

Gribble PL (2003) Neural control of arm movements: Internal models of limb dynamics. Paper presented at International Society for Behavioural Neuroscience annual meeting, Prague, June 29-July 3

Debicki DB\*, Gribble PL (2003) Motor adaptation is limited in the absence of kinematic error. Paper presented at the 13th Annual Neural Control of Movement meeting, Santa Barbara, CA, April 22-27



Malfait N, Gribble PL, Ostry DJ (2003) How does the motor system encode dynamic properties of the external world? Paper presented at the 13th Annual Neural Control of Movement meeting, Santa Barbara, CA, April 22-27

Gribble PL, \*Mullin L (2002) Role of Cocontraction in Arm Movement Accuracy. Paper presented at the 32nd Annual Meeting of the Society for Neuroscience, Orlando, November 2-7

Gribble PL, Everling S (2002) Examining Hand-Eye Coordination for Pro and Anti Movements. Paper presented at the 12th Annual Neural Control of Movement meeting, Naples, FL, April 16-21

Gribble PL, Everling S (2001) Hand-eye coordination: Arm movement direction is specified prior to eye movement onset. Paper presented at the 31st Annual Meeting of the Society for Neuroscience, San Diego, November 10-15

Ostry DJ, Gribble PL (2001) Compensation for loads using equilibrium-point control. Paper presented at the 3rd Progress in Motor Control Meeting, Montreal, Aug 15-18

Gribble PL (2001) Effects of muscle co-contraction on phasic activation patterns during arm movement: Empirical observations and model predictions. Paper presented at the 11th Annual Neural Control of Movement meeting, Seville, Spain, March 25-31

Scott SH, Gribble PL (2001) Dissociation between the direction of hand movement and population vectors constructed from motor cortical activity. Paper presented at the 11th Annual Neural Control of Movement meeting, Seville, Spain, March 25-31

Suzuki M, Shiller DM, Gribble PL, Ostry, DJ (2000) Relationship between co-contraction, movement kinematics and phasic muscle activity in single joint arm movement. Paper presented at the 30th Annual Meeting of the Society for Neuroscience, New Orleans, November 4-9

Gribble PL, Scott SH (2000) Internal Models of Dynamic Loads in Primary Motor Cortex. The 10th Annual Neural Control of Movement satellite meeting on Computational Models, Key West, FL April 14-16

Gribble PL, Ostry DJ (2000) Compensation for Loads During Arm Movement Using Equilibrium-Point Control. The 10th Annual Neural Control of Movement satellite meeting on Computational Models, Key West, FL April 14-16

Ostry DJ, Shiller DM, Gribble PL (2000) The complexity of control of orofacial motion. Proceedings of the 5th Speech Production Seminar: Models and Data. Munich, May 2000

Gribble PL, Cabel DW, Scott SH (1999) Neural activity in primary motor cortex is sensitive to dynamic loads during movement. The 29th Annual Meeting of the Society for Neuroscience, Miami Beach, FL, October 23-28

Ostry DJ, Gribble PL (1999) Compensation for interaction torques during single- and multi-joint limb movement. The 29th Annual Meeting of the Society for Neuroscience, Miami Beach, FL, October 23-28

Shiller DM, Gribble PL, Ostry, DJ (1999) Compensation for naturally occurring loads affecting jaw motion in speech. The 29th Annual Meeting of the Society for Neuroscience, Miami Beach, FL, October 23-28

Ostry DJ, Shiller DM, Gribble PL, Gracco, VL (1999) Control of coarticulatory patterns of tongue and jaw movement in speech. The 14th International Congress of Phonetic Sciences, San Francisco, August 1999

Gribble PL, Ostry DJ (1999) Compensation for interaction torques during single- and multi-joint limb movement. The 9th Annual Neural Control of Movement meeting, Kauai, April 11-15

Shiller DM, Gribble PL, Ostry DJ (1999) Compensation for naturally occurring loads in multi-degree of freedom movement. The 9th Annual Neural Control of Movement meeting, Kauai, April 11-15

Gracco VL Shiller DM, Gribble PL, Ostry DJ (1999) Coarticulation of tongue and jaw movement in speech. Paper presented at the 137th Meeting of the Acoustical Society of America and the 2nd Convention of the European Acoustics Association, Berlin, Germany, March 1999

Gribble PL, Shiller, DM, Ostry DJ (1998) Shoulder and elbow muscle co-activation following multijoint movement. The 28th Annual Meeting of the Society for Neuroscience, Los Angeles, CA, November 7-12

Ostry DJ, Gribble PL (1998) "Complex" patterns of joint impedance and movement can result from "simple" control signals. Meeting of the Biomedical Engineering Society, Cleveland, Ohio, October 10-13

Ostry DJ, Shiller DM, Gribble PL (1998) The Equilibrium Point Hypothesis and Speech Motor Control. Proceedings of the 4th Biennial Linguistics and Phonetics Conference. Columbus, Ohio, Sept. 15-20, 1998

Shiller DM, Gribble PL, Ostry DJ (1998) Effects of Naturally Occurring Loads on Jaw Movements During Speech. The 135th meeting of the Acoustical Society of America, Seattle, WA, June 20-26

Gribble PL, Ostry DJ (1998) Shoulder and elbow muscle co-activation following multijoint movement. Conference for Research in Action and Perception, Kingston, Ont., June 5-6

Gribble PL, Shiller DM, Ostry DJ (1998) Independent Control of Shoulder and Elbow Muscle Co-activation. The 8th Annual Neural Control of Movement meeting, Key West, April 14-21

Ostry DJ, Shiller DM, Gribble PL (1998) Internal Models for Speech Production. The 9th Biennial Conference on Motor Speech, Tucson, AZ, February 1-4

Ostry DJ, Shiller DM, Gribble PL (1997) Do the Control Signals Underlying Orofacial Motion Take Account of the Direction of the Gravitational Force? The 27th Annual meeting of the Society for Neuroscience, New Orleans, LA, October 25-30

Gribble PL, Ostry DJ, Sanguineti V, Laboissière R (1997) Are Complex Commands Required for the Control of Arm Movement? The 27th Annual meeting of the Society for Neuroscience, New Orleans, LA, October 25-30

Gribble PL, Ostry DJ, Sanguineti V, Laboissière R (1997) Are Complex Computations Required for the Control of Arm Movement? The 7th Annual Neural Control of Movement meeting, Cancun, Mexico, April 8-13

Ostry DJ, Gribble PL, Levin MF, Feldman AG (1996) Phasic and Tonic Stretch Reflexes in Human Jaw Opener Muscles. The 3rd Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan, Honolulu, Hawaii, December 2-6

Gribble PL, Ostry DJ (1996) Origins of the Power Law Relationship between Movement Velocity and Curvature: The Effects of Muscle Mechanical Properties and Limb Dynamics. The 26th Annual meeting of the Society for Neuroscience, Washington, D.C., November 16-21

Ostry DJ, Gribble PL, Gracco VL (1996) Is Context-Sensitivity in Speech Kinematics Centrally Planned? The 4th ETRW Speech Production Seminar: Models and Data, Autrans, France, May 21-24

Gribble PL, Ostry DJ (1996) Origins of the Power Law Relation between Movement Velocity and Curvature: The Effects of Muscle Mechanics and Limb Dynamics. The 6th Annual Neural Control of Movement meeting, Marco Island, Florida, April 16-21

Ostry DJ, Gribble PL, Laboissière, R (1996) Empirical and Modelling Studies of the Control of Human Jaw Motion. The 8th Biennial Conference on Motor Speech, Amelia Island, Florida, February 22-25

Ostry DJ, Gribble PL, Gracco VL (1996) Is Context-Sensitivity in Speech Kinematics Centrally Planned? Proceedings of the First ECSA Tutorial and Research Workshop on Speech Production Modeling

Gribble PL, Ostry DJ (1995) Interpreting Movement Kinematics. The 25th Annual meeting of the Society for Neuroscience, San Diego, CA, November 11-16

Ostry DJ, Gribble PL (1995) Database requirements for articulatory modelling. ACCOR Workshop on Articulatory Databases, Munich, Germany, May 25-26

Vatikiotis-Bateson E, Gribble PL, Ostry DJ (1995) Coordinate reference frames and what they do to data. ACCOR Workshop on Articulatory Databases, Munich, Germany, May 25-26

Vatikiotis-Bateson E, Gribble PL, Ostry DJ (1994) The coordinate system for jaw movement control. The 127th Meeting of the Acoustical Society of America, Cambridge, MA, June 6-10

Vatikiotis-Bateson E, Gribble PL, Ostry DJ (1993) Functionality of jaw motion components during speech. Meeting of the Acoustical Society of Japan, October 1993

Vatikiotis-Bateson E, Gribble PL (1993) Examination of three-dimensional jaw motion during speech. The ATR-KIT joint workshop on speech perception and production, Kanazawa, Japan, July 29-30

#### INVITED TALKS

2011 Invited speaker at 12th International Multisensory Research Forum, Fukuoka, Japan, "Sensory Changes Accompanying Motor Learning", Oct 18

2010 Invited speaker at McMaster University, Dept. Psychology, "Motor Learning by Observing", Feb. 3

2010 Invited speaker at Université de Montréal, "Motor Learning by Observing", Oct 22

2010 Invited speaker at Northeastern Univ., Dept. of Biology, Electrical & Computer Engineering, and Physics, Boston, MA "Sensory Changes Accompanying Motor Learning", June 22

2010 Invited speaker at MIT, Laboratory for Biomechanics and Human Rehabilitation, Cambridge, MA, June 21 "Does the Central Nervous System Minimize Energy for Planning Reaching Movements?"

2008 Keynote Speaker at the Fourth Computational Motor Control Workshop at Ben-Gurion University of the Negev, Beer-Sheva, Israel, June 11-12 "Motor Learning by Observing"

2008 Invited speaker at Centre Neurobiologie Intégrative et Adaptative, Université de Provence / CNRS, Marseille, France, March 26-30 "Motor Learning by Observing"

2008 Invited speaker at Centre For Vision Research, York University, Toronto Canada, February 22 "Role of Primary Motor Cortex in Motor Learning and Motor Learning by Observing"

2007 Invited speaker at the annual meeting of the North American for Psychology of Sport and Physical Activity, San Diego, CA, June 7-9 "Motor Learning by Observing"

2007 Invited speaker at the University of Michigan, Division of Kinesiology Seminar Series, "Studies of Human Motor Learning", Jan 26

2006 Invited speaker at the annual meeting of the Society for Experimental Biology, "Neural Control of Human Limb Movements", Canterbury, UK, April 2-7

- 2003 Invited speaker on Panel at biennial Progress in Motor Control (IV) meeting, Université de Caen Basse Normandie, “What drives adaptation during motor learning?” Caen, France, August 20-23
- 2003 York University, Toronto Canada, School of Kinesiology and Health Science, “Neural Control of Limb Movement: Internal Models of Dynamics” February 22
- 2000 The University of Western Ontario, London Canada, Depts. of Psychology and Physiology, “Neural Control of Limb Movement: Computational and Empirical Approaches” January
- 2000 Queen’s University, Kingston Canada, Queen’s Neuroscience Seminar Series, “Neural Control of Limb Movement: Computational and Empirical Approaches” January
- 1999 Queen’s University, Kingston Canada, MRC Group in Sensory Motor Neuroscience, “Neural Control of Multi-Joint Limb Dynamics”, December
- 1995 ATR Human Information Processing Laboratories, Kyoto Japan, “Interpreting Movement Kinematics”, October 8

### **THESES**

- Ph.D. Gribble PL (1999) Empirical and modeling studies of multi-joint limb movement. Department of Psychology, McGill University, Montréal, Canada (D. Ostry, supervisor)
- M.Sc. Gribble PL (1995) Musculo-skeletal geometry and the control of single degree of freedom elbow movements. Department of Psychology, McGill University, Montréal, Canada (D. Ostry, supervisor)
- B.Sc. Gribble PL (1993) Effects of an altered visuo-motor feedback relationship on the kinematics of reaching movements performed under remote visual guidance. Department of Psychology, Queen’s University, Kingston, Canada (K. Munhall & S. Lederman, supervisors)

### **TRAINEES**

#### **Postdoctoral Fellows**

Jeff Weiler, (Ph.D. Western) co-supervised with Andrew Pruszynski, 2014–present

Joshua Cashaback, (Ph.D. McMaster), 2013–17

Jeremy Wong, (Ph.D. Western), 2012–13

Currently a postdoc at SFU, supported by a Michael Smith Fellowship

Dinant Kistemaker, (Ph.D. Vrije Univ. Amsterdam), 2007–11

Currently a Research Scientist at Vrije Univ. Amsterdam

Nicole Malfait, (Ph.D. McGill), 2005–07

Currently Chargée de Recherche CNRS at CNRS / Université de Provence, Marseille, France

Liana Brown, (Ph.D. Penn State), supported by CIHR PDF, 2003–07

Currently Assistant Professor, Dept. Psychology, Trent University, Canada

#### **Graduate Students**

Susan Coltman, Ph.D. candidate (Neuroscience), 2016–present

Dimitri Palidis, M.Sc. candidate (Neuroscience), 2016–present

Nicola Popp, Ph.D. candidate (Neuroscience) co-supervised by Jörn Diedrichsen, 2016–present

Rodrigo Maeda, Ph.D. candidate (Neuroscience) co-supervised by Andrew Pruszynski, 2015–present

Heather McGregor, Ph.D. candidate (Neuroscience), supported by NSERC, 2011–present

Alvin Chin, M.Sc. Neuroscience, 2011–13

Jeremy Wong, Ph.D. Neuroscience, supported by CIHR, 2007–12

Elizabeth Wilson, M.Sc. Neuroscience, supported by NSERC, 2007–09

Derek Debicki, M.D./Ph.D. Neuroscience, supported by CIHR, 2002–09

Nicholas Cothros, Ph.D. Neuroscience, supported by NSERC, 2004–08

Jeremy Wong, M.Sc. Neuroscience, 2005–07

Nicholas Cothros, M.Sc. Neuroscience, 2002–04

Derek Debicki, M.Sc. Neuroscience (co-supervised by J. Hore), 2000–02

### **Undergraduate Students**

Elliot Polster, B.Sc. Physiology Honours Thesis, 2018-19

Avneet Sandhu, B.Sc. Psychology Honours Thesis, 2018-19

Xie, Xin Yue, Work Study, 2017

Chris Lao, B.Sc. Physiology Honours Thesis, 2016–17

Cricia Rinchon, B.Sc. Neuroscience Honours Thesis, 2015–16

Calvin Diep, B.Sc. Physiology Honours Thesis, 2015–16

Anthony Wong, B.Sc. Physiology Honours Thesis, 2014–15

Henry Pun, B.Sc. Physiology Honours Thesis, 2014–15

Ayman Mohatarem, Biology Work Study, 2013–15

Meghan Bhatia, B.Sc. Physiology Honours Thesis, 2013–14

Eric Rocca, B.Sc. Physiology Honours Thesis, 2012–13

Dan Huynh, B.Sc. Physiology Honours Thesis, 2012–13

Brandon Belbeck, B.Sc. Physiology Honours Thesis, 2011–12

Stephanie Williams, B.Sc. Physiology Honours Thesis, 2010–11

Alvin Chin, B.Sc. Physiology Honours Thesis, 2010–11

Seth Climans, B.Sc. Physiology Honours Thesis, 2009–10

Alexandra Williams, B.Sc. Physiology Honours Thesis, 2008–09

Nikolai Whyte, B.Sc. Physiology Honours Thesis, 2008–09

Jeremy Wong, B.Sc. Physiology Honours Thesis, 2004–05

Erin Skinner, B.Sc. Physiology Honours Thesis, 2004–05

Alison Firestone, B.Sc. Physiology Honours Thesis, 2004–05

Andrew Mattar, B.Sc. Physiology Honours Thesis, 2003–04

Erin Dickie, B.Sc. Physiology Honours Thesis, 2003–04

Dorianne Butler, B.Sc. Physiology Honours Thesis, 2002–03

Lucy Mullin, B.Sc. Physiology Honours Thesis, 2001–02

Kashta Dolphin, Independent research project, 2001–02

## **TEACHING**

### **Graduate Courses**

Psychology 9040A, Scientific Computing with MATLAB, 2013–present

Psychology 9041b, Introduction to Statistics using R, 2013–present

Neuroscience 9506, Statistics for Neuroscience, 2005–13

Neuroscience 9519, Scientific Programming & Data Analysis, 2004–13

Neuroscience 9520, Computational Neuroscience: Neural Models, 2003–13

### **Undergraduate Courses**

Physiology 4980, Seminar & Honours thesis research project supervision, 2001–present

Psychology 4850, Honours thesis project supervision, 2000–present

Psychology 2820E, Research Methods & Statistical Analysis in Psychology, 2008–13

Psychology 380, Psychological Statistics, 2001, 2002

Psychology 223, Introduction to Psychobiology 2000, 2001