

## CURRICULUM VITAE

### NATALIA DOUNSKAIA

Kinesiology Program  
School of Nutrition and Health Promotion  
Arizona State University  
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### EDUCATION

- 1990            Candidate of Science (equivalent to Ph.D) in Physics and Mathematics,  
Russian Academy of Science, the Institute of Control Science,  
Moscow, USSR  
Dissertation: The Goal Potential Method for Control of Robot  
Manipulators under Conditions of Incomplete Information  
Dissertation Committee: Prof. Dr. Evgeniy S.Pyatnitskiy (Supervisor)
- 1976            Diploma (equivalent to B.A. and M.A.) in Applied Mathematics,  
Moscow Institute of Electronic Building, Moscow, USSR.

### EMPLOYMENT

- 1976 -1979            Senior Assistant, Moscow State University, Psychology  
Department, Moscow, USSR
- 1979 -1994            Senior Researcher, the Russian Academy of Science, the  
Institute of Control Science, Moscow, USSR
- Summer 1994 – Fall 1999            Post-doctoral Associate, Department of Kinesiology, Katholieke  
Universiteit Leuven, Belgium.
- Spring 1999 – Summer 2002            Research Associate, Motor Control Laboratory, Department of  
Exercise Science and Physical Education, Arizona State  
University
- Fall 2002 – Summer 2004            Assistant Research Professor, Motor Control Laboratory,  
Department of Kinesiology, Arizona State University
- Fall 2004 – 2010            Assistant Professor, Department of Kinesiology, Arizona  
State University
- Fall 2010 – Present            Associate Professor, Kinesiology Program, SNHP, Arizona  
State University

## **RESEARCH AND TEACHING INTERESTS**

I am investigating how the central nervous system adjusts its descending signals to the biomechanical properties of the limbs. More specifically, my research has been focusing on five major topics: (1) general principles of control of multi-joint human movements, (2) control and organization of handwriting, (3) kinematic invariants in arm movements and their relation to the anatomical structure of the arm, (4) origins of submovements in aiming arm movements, (5) coordination of bimanual movements. In addition, I have been applying my findings about control of normal movements to problems associated with adverse effect of normal aging and Parkinson's disease. In correspondence with my research experience, my teaching interests include fundamental issues of motor control and their applications.

## **SPONSORED RESEARCH**

January 2017 – September of 2018	PI on an ASU Mayo seed grant “Rotator cuff tears in older adults: assessment of upper limb function and the underlying movement strategies” (\$50,000). Co-PI: Meghan Vidt.
January 2011 – June 2011	CONHI Small grant (\$5000) “Effect of Sign Chi Do training on submovements in arm movements of elderly”
May 2008-April 2012	PI on a grant (\$335,712) “Factors contributing to efficiency of arm movements revealed through directional biases”, National Science Foundation
January 2003-December 2008	Co-PI and then PI since 2004 on a RO1 (\$825,000) project “Joint discoordination in Parkinson’s disease”, NIH.
January 2006 – December 2006	PI on a Seed ASU-Mayo grant (\$40,000).
September 2003-August 2007	Co-PI on a RO1 (\$1,705,125) project “Altered movement structure in the elderly”, National Institute of Aging, NIH.
November 2002-October 2003	PI on a grant (\$81,849) “Factors influencing microstructure of aiming movements”, National Science Foundation.
January 2003-December 2003	PI on a RO3 grant (\$75,000) “Age related deficits in multijoint coordination” from National Institute of Aging, NIH.

## **GRANT APPLICATIONS IN REVIEW**

**None**

## **NON-FUNDED GRANT APPLICATIONS**

- 2017 ASU PI on an NSF collaborative proposal (ASU: \$215,173) “Collaborative Research: Movement compensation and motor control mechanisms of older adults with a rotator cuff tear”. PSU PI: Meghan Vidt. Declined.
- 2017 Co-PI on an NSF (\$421,754) “Movement compensation and motor control mechanisms of older adults with a rotator cuff tear”. PI: Meghan Vidt. Declined.
- 2017 PI on an NIH R21 (\$392,070.00) “Elevation of the center of mass to improve balance in older adults”. Declined.
- 2016 PI on a one-year ASU Mayo seed grant “Novel intervention in postural balance in older adults with a history of falls” (\$50,000). Collaborators: Daniel Peterson, Cheryl Der Ananian. Declined.
- 2016 PI on an NIH R01 application “Changes in joint control patterns during arm movements as a marker of typical motor development in children” (\$1,204,975.00). Not scored.
- 2014, 2016 PI on an NSF grant “Development of Coordinated Arm Movements in Childhood” (\$620,226). Resubmitted in 2016 (\$508.71). Declined.
- 2015 Co-PI on a n NIH R21 proposal “The effect of a rotator cuff tear on arm movements in older adults” (\$441,262). PI: Meghan Vidt. Declined.
- 2015 PI on a n NIH R03 proposal “Changes in arm movements as an objective marker of mild traumatic brain injury” (\$162,658). Declined.
- 2014 PI on an ASU Mayo seed grant “Effect of Chronic Mild Traumatic Brain Injury on Arm Movement Intermittency” (\$40,000). Declined.
- 2012 PI on an RO1 application to NIA (\$1,551,150). Title: “Disruptions in smooth hand velocity in the elderly and rehabilitative approaches” Declined.
- 2011- 2013 PI on an NSF grant “Preferred Patterns of Joint Control During Unconstrained Arm Movements” (\$684,121). Resubmitted in July of 2012 and July 2013. Declined.
- 2009-2010 PI on an RO3 application to NIH (\$74,000). Title: “Joint Control and Parkinsonian Features of Arm Movements”. The first submission got a score of 28. Resubmitted in 2010. Declined.
- 2010 PI on a 2-year application to the Parkinson’s Disease Foundation (\$150,000). Title: “Automatic testing of Parkinson’s disease motor symptoms based on EMG characteristics”. Rejected.
- 2006-2009 PI on an RO1 grant proposal submitted to NIH (\$1,169,685). Title: “Dyscoordination in Parkinson’s disease”. After three submissions, this proposal got a score of 39 and was rejected.
- 2007 PI on an RO1 grant proposal submitted to NIH (1,250,000). Title: “Directional Biases During Multi-Joint Arm Movements”. This proposal got a score of 44 at first submission and was rejected at the resubmission.
- 2006 PI on an NSF grant “Cost minimization during arm movements”. Rating: very good (1); good/fear (1); fear (2).
- 2005 PI on an NSF grant proposal “The contribution of biomechanical factors to the directional anisotropy of multi-joint arm movements”. Rating: excellent (1); very good (2); good (3).

## **FELLOWSHIP AND AWARDS**

### External

Research Award from the Arizona Chapter of the National Parkinson Foundation , 2003

Volkswagen Stipend for Summer School "Cognitive Aspects of Motor Behaviour",  
Olstadt, Germany, 1991

## **COURSES TAUGHT**

### Arizona State University

KIN 345	(Motor and Developmental Learning)	2007 – 2009, 2012, 2014 - 2018
KIN 421/621	(Human Motor Control, literacy course)	Spring 2007 - 2018
KIN 423/598	(Motor Control and Aging, literacy course)	Spring of 2006, 2008, Fall of 2010, 2012-2017
Invited lecture	Human Systems Neuroscience (Grad course at the School of Biological and Health Systems Engineering, ASU)	Spring 2009 - 2012
KIN 499/494	Undergraduate Research (4-7 students each semester)	2011-2015
KIN 521	(Motor Development, Motor Control, and Motor Learning)	2002
KIN 621	(Motor Control and Learning)	2003
KIN 492	Research for Honors students	
KIN 493	Thesis for Honors students	

## **GRADUATE STUDENT MENTORING**

Gregory Imlay, M.A., Member, Fall 2003.  
Caroline Ketcham, Ph.D., Co-Chair, Fall 2004.  
Sara Wings, Ph. D, Member, Spring 2005.  
Jamie Henderson, M.A., temporal supervisor (Fall 2005 – Spring 2005)  
Jacob Goble, M.A., Ph.D, Chair, completed in Summer of 2007.  
Tania Flink, Ph.D., Member, completed in Spring 2009.  
Young-Kwan Kim, Ph.D., Member, completed in Spring 2008.  
Andrea Downing, Ph.D., Member, completed in Summer 2008.  
Jamie Lucos, Ph.D., Member, completed in 2010.  
Giridar Hegde, M.A., Member, completed in Summer 2008.  
Keith Nogueira, M.A., Chair, completed in Spring 2008.  
Mu Qiao, PhD, Member, completed Fall 2012.  
Wijitha Nilaweera, PhD, Member, in progress.  
Phil Cheetham, Ph.D., Member, completed Fall 2014  
Daisuke Shibata, PhD, Member, completed Spring 2014  
Yuliang Sun, Ph.D., Co-Mentor, School of Kinesiology, Shanghai University of Sport, China, visiting scholar, 2013  
Dmitrijs Celinskis, MS, School of Biological and Health Syst. Engin. 2014  
Erik Stout, Ph.D., Co-chair, completed in Spring of 2015.  
Patricia Abbot, MS, chair, 2015.  
Natasha Birchfield, Ph. D., chair, transferred Spring 2016.  
Dattaraj Sansgiri, MS, Chair, School of Biological and Health Syst. Eng, completed Spring 2018  
Dirk Marshall, MS, Chair, School of Biological and Health Syst. Eng., completed Spring 2018  
Joshua Sarbolandi, MS, Chair, School of Biol. and Health Syst. Eng., lab assistant in 2017-2018.

## **POSTDOCTORAL MENTORING**

Deric Wisleder, Ph.D., 2004-2005  
Gyusung Lee, Ph.D., 2004-2005  
Laetitia Fradet, Ph.D., 2005-2007  
Yanxin Zhang, Ph.D., 2006-2006  
Young-Kwan Kim, Ph.D, 2008-2009

## **MENTORING OF UNDERGRADUATE STUDENTS, BARRET HONORS COLLEGE STUDENTS, AND GRADUATE RESEARCH ASSISTANTS**

Travis Johnson, Undergraduate Research Assistant, internship, graduation Fall 2003  
Nikita Trauberg, Graduate Research Assistant, 2005  
Edhem Sadikovich, Graduate Research Assistant, 2006  
Sara Hasan, Undergraduate Research Assistant, internship, graduation Fall 2006  
Sid Sharms, Undergraduate Research assistant, graduation Spring 2007  
Adarsh Bangalore Narasimhamurthy, Graduate Research Assistant, 2007  
Elizabeth Drummond, Undergraduate Honors student, graduated in Spring 2008  
Sudhir Nadimpalli, Graduate Research Assistant, 2008  
Andres Piscocoya, Undergraduate, 2009-2010  
Travis Johnson, Research Assistant, 2010  
Anand Wiswanathan, Master Graduate, Electroengineering, 2010- 2011  
Lauren Torassa, Undergraduate Honor student, Spring 2011  
Marco Paredes, Undergraduate, KIN 499 (individualized instructions) Spring 2011  
Clarissa Romirez, Undergraduate, KIN 499 (individualized instructions) Fall 2011  
Thomas St. Germain, Undergraduate, KIN 499 (individualized instructions) Fall 2011  
Srajit Singh, a volunteer Master student at Electroengineering, Spring 2013  
Aaron Ivanhoe, Honors student, Kinesiology, Chair, Spring 2013  
Kevin Kleisler, Honors student, Kinesiology, Chair, Fall 2013  
Nickolas Sterkowits, volunteer, School of Biological and Health Systems Engineering, 2012  
Emerson Tucker, volunteer, School of Biological and Health Systems Engineering, 2012  
Jasmine Brown, volunteer, School of Biological and Health Systems Engineering, 2013  
Akash Sharma, a volunteer Master student at Electroengineering, 2013  
Kedar Chougule, a volunteer Master student at Electroengineering, 2014  
Moheed Bhute, a volunteer Master student at Electroengineering, 2014  
Ava Wiedemann, undergraduate Honors student, Chair, 2014  
Pamela Abbot, MS at SNHP, graduated in Spring 2015  
Eric Scherwinski, undergraduate Honors student, Chair, Spring 2016  
Nadaa Kemmou, undergraduate Honors student, Chair, Spring 2017  
Victoria Way, undergraduate Honors student, Chair, Spring 2017  
Hikaru Fujita, undergraduate Honors student, Co-Chair, Spring 2017  
Sandesh Raj, undergraduate research assistant, Univ. of Pittsburg, School of Health and Rehabilitation Sciences (co-supervisor), Spring 2017  
Joshua Sarbolandi, MS, School of Biological and Health Syst. Eng., Research assistant, Fall 2017.  
Kristina Huffman, undergraduate research assistant, Summer and Fall 2017.  
Courtney Schalk, undergraduate Honors student, Chair, graduated in Spring 2018.  
Nick Garnica, undergraduate Honors student, Chair, graduated in Spring 2018.  
Austin Perrine, undergraduate Honors student, Chair, graduated in Spring 2018.  
Rachael Nowak, undergraduate Honors student, Member, graduated in Fall 2018.  
Noah Flores, undergraduate Honors student, Chair, in progress.

Theodor Nania, undergraduate Honors student, Chair, in progress.

Undergraduate research assistants from SNHP

2014: Spring: Rosa Franklin-Robertson, Desiree Williams; Jade Poisson; Patric Potsiadlo; Marquis Mayberry; Tonny Leidenheimer; James Kempton.

Fall: Adrian Gettler; Ryan Bruhns

2015: Spring: Adrian Gettler; Ryan Bruhns; Zachary Cash; Sydney Huffman; Ali Moghadam; Hamza Shqeirat; Danny Wong

Fall: Sydney Huffman; Hamza Shqeirat; Danny Wong, Sarah Wooten, Megan Yock, Steven Samaniego

2016: Spring: Megan Yock, Mike Ames, Jessica Chifor, Timothy Johnston, Ian Stover, Alissa Trinh

Fall: Kristina Huffman, Kenny Shannon

2017: Spring: Adam Hazlett, Kenny Shannon, Kristina Huffman

Fall: Jennifer Davis, Amanda Lohman, Shea Springett, Robert Vazquez, Felicity Cowels.

2018: Spring: Jennifer Davis, Amanda Lohman, Shea Springett, Robert Vazquez, Jordan Peters

Fall: None (sabbaticals)

**Invited classes/presentations to students:**

Spring 2011-2015 Guest lecture in the course “Human Systems Neuroscience” at the Bioengineering Department, ASU

2015 Fall: Lecture to undergraduate students at Grand Challenge Scholars Program, ASU

**PRESENTATIONS**

**Oral Presentations at Scientific Meetings**

*Effect of Handedness Reveals Hierarchical Control of Bimanual Movements.* The Sixth Computational Motor Control Workshop at Ben-Gurion University at the Negev. Beer-Sheva, Israel, June 16-17, 2010

*Computational load as a source of coupling of bimanual movements.* European Workshop on Movement Science 2007. Amsterdam, May 31-June 2, 2007

*Optimization processes during arm movements revealed through directional biases.* The Third Computational Motor Control Workshop at Ben-Gurion University at the Negev. Beer-Sheva, Israel, June 13-14, 2007

**Invited Talks**

ASU, SBHSE Tempe, 2016

ASU, SNHP seminar, Phoenix, 2013

Johns Hopkins University, Department of Neuroscience, Baltimore, 2012

University of Nebraska at Omaha, Department of Health, Physical Educ & Recreation, 2012

Harvard School of Public Health, Department of Environmental Health, Boston, 2011

Brandeis University, Department of Psychology, Boston, 2011

Massachusetts Institute of Technology, Mechanical Engineering, Boston 2011

Department of Physiology, University of Montréal, Canada, 2011

Department of Electrical and Computer Engineering, Northeastern University, Boston, 2011

Kinesiology Department, Penn State University, 2010

University of British Columbia, Vancouver, Canada, 2008  
 Barrow Neurological Institute, Phoenix, 2007  
 Department of Kinesiology, ASU, 2007  
 Arizona Chapter of National Parkinson Foundation, 2003  
 Biomechanical Engineering Division, Stanford University, 2002  
 Department of Health and Human Performance, Iowa State University, 2002  
 Bioengineering Department, Arizona State University, 2001  
 Department of Kinesiology, Penn State University, 2001  
 School of Kinesiology, University of Illinois at Chicago, 1999

## **SERVICE**

### **ASU Service**

2016 - 2018	Internal ASU grant proposal reviewer
2013 - 2018	Member of CHS P&T Committee
2013-2016, 2018	Member of SNHP Annual Review Committee
2014, 2018	Member of SNHP search committee (Assist. Prof. in biomech)
2013, 2018	Observation of classroom performance
2012	Member of the Ad Hoc Promotion and Tenure Review Committee for the College of Health Solutions
2012	Member of the SNHP research strategic planning committee
Fall of 2010 – present	Member of a departmental Search Committee
Spring 2008 – 2012	Member of the departmental Personnel Committee
Fall 2005 – Spring 2006	Member of a departmental Search Committee

### **Service outside ASU**

2019	Editor-in-Chief, Journal of Motor Behavior
2017-2018	Executive Editor, Journal of Motor Behavior
2014-present	Member of the organizing committee of the meeting “Computational Motor Control”
Spring 2007 – 2016	Consulting Editor at the Journal of Motor Behavior

Periodical, Reviewer at scientific journals *Acta Psychologica*, *Brain*, *Journal of Neurophysiology*, *Journal of Neuroscience*, *Experimental Brain Research*, *Neuroscience Letters*, *Motor Control*, *Neuroscience*, *Human Movement Science*, *Perception and Psychophysics*, *Cortex*, *Journal of Motor Behavior*, *Behavior and Information Technology*, *Brain Research*, *Journal of Applied Biomechanics*, *BMS Neuroscience*, *Medical Engineering & Physics*.

Has served as a reviewer of grant proposals for *National Science Foundation*, *Parkinson’s Disease Society (UK)*, and *Arizona Chapter of National Parkinson Foundation*.

Fall 2010 – A text book prospectus reviewer for Holcomb Hathaway Publishers

## **PUBLICATIONS**

### **Notes:**

1. Names of co-authors who were students or postdocs mentored by Dr. Dounskaia are highlighted with bold italic font.
2. Authorship order: The mentor of the study is listed last. The rest of coauthors are listed according to their contribution to the study.

### **Dissemination Publications**

Supplement for the article by Wang W and Dounskaia N “Influence of workspace constraints on directional preferences of 3D arm movements.” featured in Biomedical Frontiers (2016)

<file:///D:/My%20publications/Biomedical%20Frontiers%202016.html>

Nuwer R (2015) Perfect Circles: Why We Can Spot Them, But Can't Draw Them. Brain Decoder, <https://www.braindecoder.com/perfect-circles-why-we-can-spot-them-but-cant-draw-them-1423206771.html> (N. Dounskaia served as a consultant and editor)

Dounskaia N (2012) Poetry in motion. International Innovation, July 2012, 111-113.

### **Review Articles**

Dounskaia N, Shimansky Y (2016) Strategy of arm movement control is determined by minimization of neural effort for joint coordination. *Exp Brain Res*. 234:1335-1350. PMID: 26983620, doi: 10.1007/s00221-016-4610-z. 5-year IF: 2.18.

Dounskaia N. (2012) Unique features of human movement control predicted by the leading joint hypothesis. *Behav Brain Sci*. A commentary on a target article by Vaesen K. “The cognitive biases of tool use”, pp 21, 22. PMID: 22697110

Dounskaia N (2010) Control of human limb movements: The leading joint hypothesis and its practical applications. *Exercise and Sport Sciences Reviews*, 4: 201-208 (review). PMID: 20871237

Dounskaia N (2005) The Internal Model and the Leading Joint Hypothesis: Implications for Control of Multi-Joint Movements. *Exp Brain Res*, 166: 1-16 (review). PMID: 16132966

### **Refereed Articles**

#### **In Press:**

Shimansky YP, Dounskaia N. Inclusion of neural effort in cost function can explain perceptual decision suboptimality. *Behav Brain Sci*. A commentary on a target article by Rahnev D. and Denison RN “Suboptimality in Perceptual Decision Making”.



**Published:**

**Zubair HN**, Stout EE, Dounskaia N, Beloozerova IN (2018) The role of inter-segmental dynamics in coordination of the forelimb joints during unperturbed and perturbed skilled locomotion. *J Neurophysiol* 120: 1547–1557 (Corresponding author).

Vidt, ME, **Marshall, D, Sansgiri, D, Sarbolandi, J**, Dounskaia, NV. Upper limb joint control during activities of daily living. American Society of Biomechanics Annual Meeting. Rochester, MN. Pages 1, 2. August 8-11, 2018. (Peer reviewed extended abstract)

Dounskaia N, Peterson D, **Bruhns R** (2018) Destabilization of the upright posture through elevation of the center of mass. *Ann Biomed Eng.* 46: 318-323. 5-year IF: 3.423.

**Wang W**, Dounskaia N (2016) Neural control of arm movements reveals a tendency to use gravity to simplify joint coordination rather than to decrease muscle effort. *Neuroscience*, 339: 418-432. 5-year IF 3.318.

**Wang W**, Dounskaia N (2015) Influence of Workspace Constraints on Directional Preferences of 3D Arm Movements. *Exp Brain Res.* 233: 2141-2153. PMID: 25912607, 5-year IF: 2.62.

Dounskaia N, **Wang W** (2014) A Preferred Pattern of Joint Coordination during Arm Movements with Redundant Degrees of Freedom. *J Neurophysiol.* 112:1040-1053. PMID: 24872537, 5-year IF: 3.45.

**Asmussen MJ**, Przysucha EP, Dounskaia N (2014) Inter-segmental dynamics shape joint coordination during catching in typically developing children but not in children with Developmental Coordination Disorder. *J Neurophysiol.* 111: 1417-1428. PMID: 24401708. 5-year IF: 3.45.

Dounskaia N, **Wang W**, Sainburg RL, Przybyla A. (2014) Preferred directions of arm movements are independent of visual perception of spatial directions. *Exp Brain Res.* 232 (2): 575-86. PMID: 24258530, 5-year IF: 2.62

**Wang W**, Dounskaia N. Load emphasizes muscle effort minimization during selection of arm movement direction (2012) *Journal of NeuroEngineering and Rehabilitation*, 9:70, <http://www.jneuroengrehab.com/content/9/1/70>. PMID: 23035925

**Wang W, Johnson T**, Sainburg RL, Dounskaia N (2012) Interlimb differences of directional biases for stroke production. *Exp Brain Res.* 216: 263-274. PMID: 22076406

Dounskaia N, **Goble J, Wang W** (2011) The role of intrinsic factors in control of arm movement direction: Implications from directional preferences. *J Neurophysiol.* 105: 999-1010. PMID: 21123658

Dounskaia N, **Goble J.** (2011) The role of vision, speed and attention in overcoming directional biases during arm movements. *Exp Brain Res.* 209: 299-309. PMID: 22697110

Dounskaia N, **Nogueira KG**, Swinnen SP, **Drummond E.** (2010) Limitations on coupling of bimanual movements caused by arm dominance: When the muscle homology principle fails. *J of Neurophysiol.* 102: 2027-2038. PMID: 20071629

- Kim YK**, Hinrichs RN, Dounskaia N. (2009) Multicomponent control strategy underlying production of maximal hand velocity during horizontal arm swing. *J Neurophysiol*, 102: 2889-2899. PMID: 19759324
- Dounskaia N, Van Gemmert A, Leis B, Stelmach G. (2009) Biased wrist and finger coordination in Parkinsonian patients during performance of graphical tasks. *Neuropsychologia*, 47: 2504-2514. PMID: 19410590
- Fradet L**, Lee G, Stelmach GE, Dounskaia N (2009) Joint-Specific Disruption of Control during Arm Movements in Parkinson's Disease. *Exp Brain Res*. 195: 73-87. PMID: 19277617
- Dounskaia N, **Fradet L**, **Lee G**, Leis B, Adler CH (2009) Submovements during pointing movements in Parkinson's disease. *Exp Brain Res*, 193: 529-544. PMID: 19048238
- Fradet L**, **Lee G**, Dounskaia N (2008) Origins of submovements in movements of elderly adults. *Journal of NeuroEngineering and Rehabilitation*, Nov. 13, 5: 28. PMID: 19014548
- Fradet L**, **Lee G**, Dounskaia N (2008) Origins of submovements during pointing movements. *Acta Psychologica*, 129: 91-102. PMID: 18550020
- Goble J**, **Zhang Y**, Shimansky Y, **Sharma S**, Dounskaia N (2007) Directional biases reveal utilization of arm's biomechanical properties for optimization of motor behavior. *J. Neurophysiol*. 98: 1240-1252. PMID: 17625062
- Dounskaia N (2007) Kinematic invariants during cyclical arm movements. *Biol Cybern*. 96: 147-163. PMID: 17031664
- Lee G**, **Fradet L**, Ketcham C, Dounskaia N (2007) Efficient control of arm movements in advanced age. *Exp Brain Res*. 177: 78-94. PMID: 16944112
- Wisleder D**, Dounskaia N (2006) The role of different submovement types during pointing to a target. *Exp Brain Res*. 176: 132-149. PMID: 16826410
- Ketcham CJ, Dounskaia N, Stelmach GE (2006) The role of vision in the control of continuous multijoint movements. *J Mot Behav* 38:29-44. PMID: 16436361
- Dounskaia N, Ketcham C, Leis BC, Stelmach GE (2005). Disruptions in Joint Control During Drawing Arm Movements in Parkinson's Disease. *Exp Brain Res*. 164: 311-322. PMID: 15891873
- Dounskaia N, **Wisleder D**, **Johnson TA** (2005) Influence of Biomechanical Factors on Substructure of Pointing Movements. *Exp Brain Res*. 164: 505-516. PMID: 15856206
- Swinnen SP, Li Y, Wenderoth N, Dounskaia N, Byblow W, Stinear C, Wagemans J (2004) Perception-action coupling during bimanual coordination: The role of visual perception in the coalition of constraints that govern bimanual action. *J Mot Behav*, 36: 394-397.
- Ketcham CJ, Dounskaia N, Stelmach GE (2004) Age-related differences in the control of multijoint movements. *Motor Control*, 8: 422-436.
- Ketcham, CJ., Dounskaia, N., and Stelmach, GE. (2003). Multijoint movement control: the importance of interactive torques. *Progress in Brain Research*, 143: 207-218.

Dounskaia, N.V., Ketcham, CJ, Stelmach GE (2002). Commonalities and differences in control of a large set of drawing movements. *Exp Brain Res*, 146: 11-25. PMID: 12192573

Dounskaia, N.V., Ketcham, CJ, Stelmach GE (2002). Influence of biomechanical constraints on horizontal arm movements. *Motor Control*, 6: 368-389.

Swinnen, S.P., Dounskaia, N., Levin, O., Duysens, J. (2002). Patterns of bimanual interference reveal movement encoding within a radial egocentric reference frame. *Journal of Cognitive Neuroscience*, 14: 463-471.

Walter C.B., Swinnen, S.P., Dounskaia N. (2002). Generation of bimanual trajectories of disparate eccentricity: Levels of interference and spontaneous changes over practice. *J. Mot Behav.*, 34, 183-195.

Ketcham, CJ., Dounskaia, N., Seidler, RD., and Stelmach, GE. (2001). Multijoint control is compromised in Parkinson's disease patients. *Journal of Human Kinetics*, 4: 85-95.

Dounskaia, N., Stelmach, G.E. (2001). Movement planning and movement execution: What is in between? *Behav Brain Sci*, 24: 41-42.

Swinnen, S.P., Dounskaia, N., Levin, O., Duysens, J. (2001). Constraints during bimanual coordination: the role of direction in relation to amplitude and force requirements. *Behavioural Brain Research*, 123: 201-218.

Walter C.B., Swinnen, S.P., Dounskaia N., Van Langendonk H. (2001). Systematic error in the organization of physical action. *Cognitive Science*, 25: 393-422.

Dounskaia, N.V., Van Gemmert, A.W.A., Stelmach, G.E. (2000). Interjoint coordination during handwriting-like movements. *Exp Brain Res*, 135: 127-140.

Verschueren, S. M.P., Swinnen, S. P., Cordo, P., Dounskaia, N. (1999). Proprioceptive control of multi-joint movement. Unimanual circle drawing. *Exp Brain Res*, 127: 171-181

Verschueren, S., Swinnen, S. P., Cordo, P., Dounskaia, N. (1999). Proprioceptive control of multi joint movement. Bimanual circle drawing. *Exp Brain Res*, 127:181-190.

Swinnen, S. P., Jardin, K., Verschueren, S., Meulenbroek, R., Franz, L., Dounskaia N., Walter C.B. (1998). Exploring interlimb constraints during bimanual graphic performance: effects of muscle grouping and direction. *Behavioral and Brain Research*, 90: 79-87.

Dounskaia, N.V., Swinnen, S.P., Walter, C.B., Spaepen, A.J., Verschueren, S.M.P. (1998). Hierarchical Control of Different Elbow-Wrist Coordination Patterns. *Exp Brain Res*, 121: 239-254.

Doonskaya N.V. (1998). The Artificial Potential Method for Control of Robot Constrained Motion. *IEEE Transactions on Systems, Man and Cybernetic*, 28: 447-453.

Swinnen SP, Verschueren SMP, Bogaerts H, Dounskaia N, Lee TD, Stelmach GE, Serrien DJ (1998). Age-related deficits in motor learning and differences in feedback processing during the production of a bimanual coordination pattern. *Cognitive Neuropsychology*, 15: 439-466.

Swinnen S.P., Jardin, K., Meulenbroek, R., Dounskaia N., Hofkens-Van Den Brandt, M. (1997). On the role of egocentric and allocentric iso-directional constraint in the expression of patterns of interlimb coordination. *Journal of Cognitive Neuroscience*, 9: 348-377.

Swinnen S.P., Dounskaia N., Walter C.B., Serrien, D.J. (1997). Preferred and induced coordination modes during the acquisition of bimanual movements with a 2:1 frequency ratio. *Journal of Experimental Psychology: Human Percept. Perform*, 23: 1087-1110.

Swinnen S.P., Verschueren, S., Dounskaia N. (1996). Is motor pathology associated with setting new CNS priorities or with increased difficulties in overcoming or suppressing the pre-existing CNS priorities. *Behavioral and Brain Sciences*, 19: 87-88.

Swinnen S.P., Walter C.B., Dounskaia N. (1996). We know a lot about the cerebellum but do we know what motor learning is? *Behavioral and Brain Sciences*. 19: 87-88.

Swinnen, S.P., Dounskaia, N., Verschueren, S., Serrien, D.J., Daelman, A (1995). Relative Phase Destabilization During Interlimb coordination: the disruptive role of Kinesthetic Afferences Induced by Passive Movement. *Exp Brain Res*, 105: 439-454.

#### **Submitted and in Revision:**

Raj S, Dounskaia N, Sethi A (Resubmitted) Effect of Stroke on Joint Control During Reach-to-Grasp Movements.

Dounskaia, N, *Marshall D, Sansgiri D, Sarbolandi J*, Yury Shimansky, Bryan K. Ganter, Meghan E. Vidt (Submitted) Joint control during 3D arm movements of daily living tasks.

#### **In Preparation:**

Dounskaia N, *Assmussen M* (In preparation) Circle drawing as an objective indicator of arm dominance.

#### **Chapters in Books**

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***Goble JA, Zang Y, Dounskaia N.*** Implications of directional biases to force control during Parkinson's disease. APTA Section on Research Retreat. Mechanisms underlying disordered movement: Impairments with force generation. August 9-13, 2009. Asilomar Conference Grounds, Pacific Grove, California

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