

Section D: Tunik Curriculum Vitae

DATE: September 13, 2017

NAME: Eugene Tunik

PRESENT TITLE: Associate Professor - Tenured

OFFICE ADDRESS: 360 Huntington Ave, 301 RB
Northeastern University, Bouve College of Health Sciences
Dept. of Physical Therapy, Movement, and Rehabilitation Science
Boston, MA, 02115
T: 617-373-2924 / E: e.tunik@northeastern.edu

CITIZENSHIP: USA

LANGUAGE FLUENCY: English, Russian

EDUCATION: B.S. in Physical Therapy, Northeastern University, 1997
Ph.D. in Neuroscience, Center for Molecular and Behavioral
Neuroscience, Rutgers, 2003

POST DOCTORAL TRAINING:

Dept. of Psychology and Brain Science, Dartmouth College, Hanover, NH, 2003 – 2006

CLINICAL EMPLOYMENT/WORK EXPERIENCE:

Physical Therapist, Florida Institute for Neurological Rehabilitation (TBI), 1997 – 1998

Head Physical Therapist, Hudson PT, Hoboken, New Jersey (outpatient), 1998 – 1999

Physical Therapist, Fair Lawn, New Jersey (private practice), 1999 – 2004

Physical Therapist, School-based physical therapy (grade 1-9), Teaneck, NJ, 2008 – 2015

MILITARY: NA

ACADEMIC APPOINTMENTS:

Assistant Professor, Department of Physical Therapy, NYU
09/2006 – 07/2008

Assistant Professor, Department of Rehabilitation and Movement Science, Rutgers
07/2008 – 06/2012

Associate Professor (Tenured), Dept. of Rehabilitation and Movement Science, Rutgers
07/2012 – 8/2015

Co-Developer and Track Coordinator, Dual Degree DPT-PhD Program
Department of Biomedical Sciences, Dept. Rehabilitation & Movement Science, Rutgers
9/2012 – 8/2015

Associate Professor (Tenured), Physical Therapy, Movement, & Rehab Science,
Northeastern
08/2015– Present

Director of Research, Physical Therapy, Movement, & Rehab Science, Northeastern
09/2016– Present

Affiliated Faculty, Electrical & Computer Engineering, BioEngineering, Biology,
Northeastern
2015 – Present

Associate Dean of Research, Bouve College of Health Sciences, Northeastern University
07/2017 – Present

LICENSURE:

Licensed Physical Therapist, MA / 22046 / 2015 - *Present* (Currently Active)

Licensed Physical Therapist, NJ / 40QA00782000 / 1997 - *Present* (Currently Inactive)

HONORS AND AWARDS:

Dean's list, Golden Key National Honor Society, Northeastern University, 1993-1997

Pre-Doctoral Johnson & Johnson Foundation Excellence Award (\$5,000), Rutgers, 1999

Scientific Travel Award, Rutgers University, 2001 & 2002

Best poster presentation, Neuroscience Minisymposium, Rutgers University, 2002

Best teaching assistant award, Rutgers University, 2003

Visiting Professor, Department of Psychology, UCSB, 07/2007

Visiting Professor, Department of Rehabilitation Science, Rutgers, 08/2007

Innovative, Development, Exploratory Award, (\$4,840), NYU, 2008-2009

Graduate Fellowship to fund PhD Student Award (3-years), NYU, 2008-2011

Excellence in Research Award, Rutgers, School of Health Related Professions, 2012

APTA publication PT in Motion. "Virtual Realities: Visions of Science, Technology, and Physical Therapy". *June, 2012 Issue*

Career Development Award, NIH-NICHD, 2009-2014

Research Leadership Development Initiative Awardee (ReDI), Northeastern, 2016

MEMBERSHIPS AND POSITIONS HELD IN PROFESSIONAL SOCIETIES:

A. NATIONAL

1. American Physical Therapy Association (General, Neurology, Research, Orthopedic, Pediatric sections), Member, 1997-*Present*
2. Cognitive Neuroscience Society, Member, 2003-2008
3. American Physiological Society, Member, 2015-*Present*

B. INTERNATIONAL

1. Society for Neural Control of Movement, Member, 2003-2008 & 2013-*Present*
2. Society for Neuroscience, Member, 1999-*Present*
3. International Society of Motor Control, Member, 2015-*Present*
4. International Society of Virtual Reality
5. Organizing Committee Member and Workshops Chairperson for International Conference on Virtual Reality, Philadelphia, PA, *August, 2013*

BOARDS OF DIRECTORS/TRUSTEES POSITIONS:

Board Member (volunteer). 2016-Present. Friends of Windham Hockey, Windham, NH

SERVICE ON NATIONAL GRANT REVIEW PANELS, STUDY SECTIONS, COMMITTEES:

1. City University of New York (CUNY), External grant panel member, 2006
2. Michael J. Fox Foundation for Parkinson's Disease, Grant Review Member, 2008-*Present*
3. National Institute of Health - National Institute of Child Health and Human Development

NICHD's Scientific Vision: The Next Decade, Panel Member, June 23-24, 2011

4. NIH-SMI Study Section Member, *February 3, 2012*
5. ICVR Organizing Member & Workshop Co-Chair, Philadelphia, PA, *August, 2013*
6. VA-Rehab Research & Development Service, Study Section Member, *May 4, 2014*
7. NIH-MFSR, Study Section Member, *Feb 11-12, 2016*
8. Belgium Research Grant Foundation-Flanders, Study Section Member, *March 9, 2016*
9. ICVR-REHAB-Tech & Rehab, Committee Member, Lisbon, Spain, *October 13-14, 2016*
10. Motor Learning & Motor Control Conf, Review Committee Member, *2014-Present*
11. NIH-NINDS, NST-2 Study Section Member, Alexandria VA, *March 13-14, 2017*
12. NSF, Perception, Action, & Cognition Program, Study Section Member, *March 15, 2017*
13. United Kingdom Stroke Association, Grant Reviewer, *April 26, 2017*
14. NIH-MFSR Study Section Member, Washington DC, *June 5-6, 2017*
15. NIH-NINDS, NST-2 Study Section Member, June 19, 2017, Chicago, IL

SERVICE ON JOURNALS/PUBLICATIONS:

A. EDITORIAL BOARDS

- a. Journal Restorative Neurology and Neuroscience, Associate Editor, *2011-Present*
- b. Journal of Neurologic Physical Therapy, Board Member, *2011-Present*
- c. Journal of Novel Physiotherapies, Board Member, *2011-Present*
- d. Frontiers in Human Neuroscience, Review Editor, *2016-Present*

B. ADHOC REVIEWER (2003-PRESENT)

Brain Res, Cerebral Cortex, EBR, J Cog Neurosci, Motor Control, Phys Ther, J Neuro Phys Ther, Neurosci, Neuroimage, J Neurosci, J Neurophysiol, Frontiers

SERVICE ON INSTITUTIONAL COMMITTEES:

1. Faculty Professional Development Committee, NYU, *2006-2008*
2. Research Advisory Council to the Dean of Research, NYU, *2006-2008*
3. GSBS PhD Admissions Committee (interviewer), Rutgers, *2010-2011*
4. Dean's Strategic Planning Committee Member – Neuroscience Group, Rutgers, *2014*
5. Dean's Strategic Planning Committee Member – Biomed Imaging, Rutgers, *2014*
6. Faculty Research Advisory Committee Member, RBHS Office of Research and Economic Development (ORED), Rutgers, *2014-2015*
7. Faculty Council, RBHS-Rutgers University, *2014-2015*
8. University Graduate Council (Elected), Northeastern (Bouve Rep), *2015-Present*

SERVICE ON SCHOOL COMMITTEES:

1. Research Committee Member, Dept. of Rehab & Movement Science, Rutgers, *2009-2012*
2. Research Committee Chair, Dept. of Rehab & Movement Science, Rutgers, *2010-2011*
3. Executive Council Member, Rutgers University-SHRP, *2012-2015*
4. Faculty Senate, Elected Member, Rutgers University-RBHS, *2014-2015*
5. RBHS Advisory Council (Invited Member), Rutgers University-RBHS, *2014-2015*
6. Faculty Search Committee, Member, Biology Dept, Northeastern, *2015-2016*
7. BioE PhD Track Co-Director (with D. Sternad), Northeastern, *2016-Present*

SERVICE ON DEPARTMENT/PROGRAM COMMITTEE:

1. PhD Program Committee Member, Rehab & Movement Science, Rutgers, *2011-2015*
2. DPT-PhD Program Coordinator, GSBS / Rehab & Movement Sci., Rutgers, *2011-2015*
3. Faculty Merit Review Committee Member, PTMRS, Northeastern, *2015-Present*

4. PTMRS Research Committee Chair, Northeastern, *2016-Present (2015, Member)*
5. PTMRS Tenure and Promotion Committee Member, Northeastern, *2015-Present*
6. PTMRS Administrative Council Committee Member, Northeastern, *2016-Present*
7. PTMRS Graduate Admissions Committee Member, Northeastern, *2016-Present*
8. PTMRS Performance Review Committee Member, Northeastern, *2016-Present*
9. PTMRS Director of Research, *2016-Present*

SERVICE TO THE COMMUNITY:

1. Intel Project Mentor, Bronx School of Science, *September 2007 - June 2008*
2. Friends of Windham Hockey, Board Member (503c1 organization), *2016-Present*

SPONSORSHIP OF STUDENTS FOR UNDERGRADUATE RESEARCH:

1. Anna Adamovich (Rutgers), *July – August, 2010-2012*
2. Rita Palladino (Ramapo), *August – December, 2010*
3. Krisa Varghese (NJIT), *June – September, 2011*
4. Megan Guidry (NJIT), *November, 2012 – 2013*
5. Kevin Fan (NJIT), *October, 2012 – 2013*
6. Akriti Sharma (Rutgers), *September, 2012 – 2014*
7. Reem Salem (Rutgers), *September, 2013 – 2014*
8. Nailah Mubin (Teachers College of New Jersey), *July-August 2014*
9. Anita Albanese (University of Nevada-LV), *July-August 2014*
10. Prashant Naidu (Co-op student, ECE, Northeastern), *July-Dec 2016*
11. Jose Castillo (Co-op student, ECE, Northeastern), *July-Dec 2016*
12. Jonathon Stout (Research Engineer, BioE-2019), *Sept, 2016-Present*
13. Lauren Enright (Research Assistant, Neuroscience-2019), *Sept, 2016-Present*
14. Alberto Prieto (Research Assistant, Neuroscience-2017), *Sept, 2016-Present*
15. Samuel Berin (Co-op student, CCIS, Northeastern), *Jan-June 2017*
16. Alex Huntoon (Co-op student, CCIS, Northeastern), *Jan-June 2017*

SPONSORSHIP of MASTER’S THESIS/PROJECTS:

1. Erik Johnson, BME, NJIT-Rutgers, M.S. Lab Rotation Supervisor, *2012 – 2013*
2. Greg Ames, BME, NJIT-Rutgers, M.S. Dissertation Co-Chair, *2012 – 2014*
3. Jared Paster, BME, NJIT-Rutgers, M.S. Lab Rotation Supervisor, *2014*
4. Neil Weiss, New Jersey Medical School, M.D. Student Lab Rotation Supervisor, *2014*
5. Yifei Wei, BME, NJIT-Rutgers, M.S. Lab Research Supervisor, *2014-2015*
6. Connor King, BME, NJIT-Rutgers, Post-Bac Research Engineer, *2016-2017*
7. Dan Tanis, BME, NJIT-Rutgers, Post-Bac Research Engineer, *2016-Present*
8. Regina DeGeorge (Research Assistant, DPT-2020), *Sept, 2016-Present*
9. Amanda Chan (Research Assistant, DPT-2021), *Jan, 2017-Present*
10. Kayla Gomes, PTMRS-Northeastern, (Honor’s Capstone), *Sept, 2016-Present*
11. Anna Rubakhina, PTMRS-Northeastern, (Honor’s Capstone), *Sept, 2016-Present*
12. Seth Gordon, PTMRS-Northeastern, (Honor’s Capstone), *Sept, 2016-Present*

DISSERTATION CHAIR, COMMITTEE MEMBER, REVIEWER:

A. COMMITTEE MEMBER

1. Ilan Dinstein, Psychology (NYU), *2006-2008*
Currently: Associate Professor, Zlotowski Center for Neuroscience, Ben Gurion
2. Katherine August, BME (Rutgers-NJIT), *2006-2011*
Currently: Whitaker Foundation Fellow, ETH-Zurich

3. Kai Chen, BME (Rutgers-NJIT), 2008-2010
4. Gerry Fluet, Rehabilitation & Movement Science (Rutgers), 2008-2012
Currently: Assistant Professor, Movement & Rehabilitation Science, Rutgers
5. Yi Guo, BME (Rutgers -NJIT), 2010-2014
6. Soha Saleh, BME (Rutgers -NJIT), 2008-2012
Currently: Associate Research Professor, Kessler Institute of Rehabilitation
7. Priyanka Shah, BME (Rutgers -NJIT), 2008-2012
8. Yelda Alkan, BME (Rutgers -NJIT), 2008-2012
9. Jony Sheynin, BME (Rutgers-NJIT), 2013-2014
Currently: Postdoctoral Research Fellow, Dept. of Psychiatry, U Michigan
10. Inbal Maidan, Rehabilitation and Movement Science (Rutgers), 2013-2014
Currently: Associate Research Professor, Tel-Aviv Sourasky Medical Center
11. Ian LaFond, BME (Rutgers-NJIT), 2013-2016
Currently: Medical School (New Jersey Medical School)
12. Zhaoran Zhang, BioEngineering (Northeastern), 2015-Present
13. Ian Zuzarte, BioEngineering (Northeastern), 2016-Present

B. COMMITTEE CHAIR

1. Jean Timmerberg, Rehabilitation and Movement Science (Rutgers), 2008-2011
Currently: Associate Professor & Clin Ed Director, Dept of PT, Columbia U.
2. Hamid Bagece, BME (Rutgers-NJIT), 2008-2012
Currently: Medical Resident, Columbia University
3. Mathew Yarossi, BME (Rutgers-NJIT), 2011-2017
4. Thushini Manuweera, BME Science (Rutgers-NJIT), 2012-Present

SPONSORSHIP OF POSTDOCTORAL FELLOWS:

1. Soha Saleh, PhD, June, 2012 – 2013
Currently: Associate Research Professor, Kessler Institute of Rehabilitation
2. Qinyin Qiu, PhD, June, 2012 – 2015
Currently: Associate Research Professor, BME, NJ Institute of Technology
3. Ge “Paul” Chen, MD, July, 2016 – Present
4. Mariusz Furmanek, PhD, March, 2017 – Present
5. Mathew Yarossi, PhD, October, 2017 - Present

EXTERNAL TENURE REVIEWER:

1. Wendy Huddleston, Assistant Professor, Dept. of Kines, UW-Milwaukee, Oct, 2013
2. Luis Schettino, Assistant Professor, Dept. of Psychology, Lafayette Univ., June, 2015
3. Lee Baugh, Assistant Professor, Department of PT, U of South Dakota, Sept, 2016
4. Inbal Maidan, Assistant Professor, Sackler Faculty of Medicine Tel-Aviv University, Tel-Aviv, Israel, Sept, 2017

MENTORSHIP OF JUNIOR FACULTY:

1. Alicia Markowski, Associate Clinical Professor, Northeastern, 2016
2. Danielle Levac, Assistant Professor (TT), Northeastern, 2015 - Present
I am serving as Sponsor on her K01 grant, to be awarded Fall 2017
3. CJ Hasson, Assistant Professor (TT), Northeastern, 2015 - Present
4. Steve Yen, Assistant Professor (TT), Northeastern, 2015 - Present
5. Pei-Chun Kao Assistant Professor (TT), U-Mass Lowell, 2015 - Present
I am Sponsor on her K01 grant application to be submitted in Fall 2017

TEACHING RESPONSIBILITIES:

A. CURRENT

1. Motor Control Learning and Development, NU-PTMRS (PT5151)
2. Neurological Rehabilitation 1, NU-PTMRS (PT5209)
3. PT Project 1 & 2, NU-PTMRS
4. Functional NeuroAnat, NU-BIO (PT5410)
5. Functional NeuroAnat Lab, NU-BIO (PT5411)
6. Musculoskeletal Biomechanics, NU-BioE (ME5665) [invited lecture]

B. PAST

Curriculum Design

7. Literature Review-Basic (Rutgers, PTDR7450), 1 Credit
8. Literature Review-Advanced (Rutgers, PTDR7460), 1 Credit
9. Research Lab Rotation (Rutgers, PTDR7470), 2 Credits

Primary Instructor

10. Clinical Inquiry 1 (Rutgers, PTDR5410), 3 Credits
11. Clinical Inquiry 2 (Rutgers, PTDR6420), 2 Credits
12. Literature Review-Basic (Rutgers, PTDR7450), 1 Credit
13. Literature Review-Advanced (Rutgers, PTDR7460), 1 Credit
14. Research Design & Applied Statistics (Rutgers, PTDR7311), 3 Credits (2008-09)

Co-Instructor

15. Neuroscience (Rutgers, PTDR5140), 4 Credits

CURRENT GRANT SUPPORT:

1. NIH – National Institute of Neurological Disorders and Stroke
Mechanism: R01 (NS085122)
Title: Planning and Updating in Frontoparietal Networks for Grasping
Funding Period: 02/01/2014 – 12/30/2017
Budget: \$1,299,108
Role: PI (NU is Prime)
2. NIH – National Institute of Neurological Disorders and Stroke
Mechanism: R01 (2R01HD058301)
Title: Optimizing Hand Rehabilitation Post-Stroke Using Interactive Virtual Environments
Funding Period: 09/01/2017 – 05/31/2022
Budget: \$3,571,060
Role: MPI (Sub-award to NU: Total: \$706,262; Direct: \$449,848)
3. NIH - National Institute of Child Health and Human Development
Mechanism: Career Development Award (K01)
Title: Enhancing Transfer of Motor Skill Learning from Virtual to Physical Environments in Children with Cerebral Palsy
Funding Period: 09/01/2017 – 08/31/2022
Budget: \$632,702
Role: KP (PI: Levac)

4. Tier 2 Grant, Northeastern University
Mechanism: Federally Designated Centers / Major Programs Initiative
Title: Modeling muscle and synergy representations in M1
Funding Period: May 1, 2017
Budget: \$12,000 (split between Bouve, COE, Office of the Provost)
Role: PI

PENDING GRANT SUPPORT:

5. NIH - National Institute of Child Health and Human Development
Mechanism: R01
Title: Modeling Human M1-Muscle Control via TMS, Deep Learning, and Validation in Macaques
Funding Period: 1/1/2018 – 12/31/2023
Budget: Total: \$3,892,421 (DC: \$2,848,310)
Role: PI (*Submitted June, 2017*)
6. NIH-National Institute of Neurological Disorder and Stroke
Mechanism: R21
Title: MirroRobot: Augmented Stroke Rehabilitation through Coupled Mirror and Robot-assisted therapies
Funding Period: 1/1/2018 – 12/31/2021
Budget: \$750,000 (DC: \$500,000)
Role: Co-I (PI: Yen) (*Submitted Oct, 2017*)
7. NSF
Mechanism: NSF-BME (00009668)
Title: Collaborative Research: Understanding Motor Cortical Organization through Engineering Innovation to TMS-Based Brain Mapping
Funding Period: 05/01/2018 – 04/30/2021
Budget: \$600,000
Role: PI (*Panel Rating: "Competitive". Re-submitted Oct, 2017*)

COMPLETED GRANT SUPPORT:

1. NIH – National Institute of Neurological Disorders and Stroke
Mechanism: F31 (NS092268)
Title: Brain Circuits in Motor Learning
Funding Period: 03/01/2015 – 10/01/2017
Budget: \$94,009
Role: Sponsor/Mentor of PhD trainee Mathew Yarossi
2. NIH - National Institute of Child Health and Human Development
Mechanism: Career Development Award (1 K01 HD059983)
Title: Visual Augmentation through Virtual Reality to Rehabilitate the Hand after Stroke
Funding Period: 06/01/2009 – 08/31/2014
Budget: \$680,392
Role: PI

3. SHRP Education Research Award
 Title: The use of biofeedback to augment the acquisition of skills in performing joint mobilization techniques among physical therapy students
 Funding Period: 07/01/2009 – 07/01/2010
 Budget: \$2,000
 Role: PI
4. UMDNJ Foundation
 Title: Non-invasive cortical stimulation to improve attention and language function in high functioning children with autism spectrum disorder (57-07)
 Funding Period: 07/01/2009 – 07/01/2010
 Budget: \$20,000
 Role: PI
5. NIH - National Institute of Neurological Disorder and Stroke
 Mechanism: F30 NRSA (5 F30 NS071945)
 Title: Augmenting neuroplasticity through visual and proprioceptive feedback
 Funding Period: 07/01/2009 - 07/01/2012
 Budget: \$83,709
 Role: Sponsor/Mentor of Trainee (Trainee: Bagce)
6. NIH - National Institute of Neurological Disorder and Stroke
 Mechanism: F31 NRSA (HD067014)
 Title: Transcranial magnetic stimulation & virtual reality training in neurorehabilitation
 Funding Period: 07/01/2010 - 07/01/2014
 Budget: \$108,339
 Role: Co-Sponsor/Co-Mentor (Trainee: LaFond)

RESEARCH PUBLICATIONS:

A. REFEREED ORIGINAL ARTICLE IN JOURNAL

1. Messier J, Adamovich S, Berkinblit M, **Tunik E**, Poizner H. (2003) Influence of movement speed on accuracy and coordination of pointing to memorized targets in 3-D space in a deafferented subject. *Exp Brain Res*, 150(4):399-416
2. **Tunik E**, Poizner H, Levin MF, Adamovich SV, Messier J, Lamarre Y, Feldman AG. (2003) Arm-trunk coordination in the absence of proprioception. *Exp Brain Res*, 153(3):343-355
3. **Tunik E**, Poizner H, Adamovich SV, Levin MF, Feldman AG. (2004) Deficits in adaptive upper limb control in response to trunk perturbations in Parkinson's disease. *Exp Brain Res*, 159(1):23-32
4. **Tunik E**, Adamovich SV, Poizner H, Feldman AG. (2004) Deficits in rapid adjustments of movements according to task constraints in Parkinson's disease. *Mov Disord*, 19(8):897-906
5. **Tunik E**, Johnson-Frey SH, Grafton ST. (2005) Virtual lesions of the human anterior intraparietal area disrupt goal-dependent online adjustments of grasp. *Nat Neurosci*, 8(4):505-511
6. Schettino LF, Adamovich SV, Hening W, **Tunik E**, Sage J, Poizner H. (2006) Hand preshaping in Parkinson's disease: effects of visual feedback and medication state. *Exp Brain Res*, 168(1-2):186-202

7. Rice N, **Tunik E**, Grafton ST. (2006) Role of the anterior intraparietal area in movement planning versus updating. *J Neurosci*, 26(31):8176-8182
8. **Tunik E**, Schmitt PJ, Grafton ST. (2007) BOLD coherence reveals segregated functional circuits subserving adaptation to distinct force perturbations. *J. Neurophysiol*, 97(3):2107-2120
9. **Tunik E**, Rice NJ, Hamilton A, Grafton ST. (2007) Beyond grasping: Representation of action in human anterior intraparietal sulcus. *NeuroImage*, 36(2):77-86
10. Rice NJ, **Tunik E**, Cross, ES, Grafton ST. (2007) On-line grasp control is mediated by the contralateral hemisphere. *Exp. Brain Res*. 1175C:76-84
11. **Tunik E**, Poizner H, Feldman AG. (2007) Effect of L-dopa replacement therapy on on-line adaptive motor control in Parkinson's disease. *Parkinson's Disease and Related Disorders*. 13(7):425-33
12. Farrer C, Frey SH, Van Horn J, **Tunik E**, Turk D, Inati S, Grafton ST. (2008) The angular gyrus computes action awareness representations. *Cerebral Cortex*. 18(2):254-61
13. **Tunik E**, Lo OY, Adamovich SV. (2008) TMS to the Frontal Operculum and Supramarginal Gyrus Disrupts Planning of Outcome Based Hand-Object Interactions, *J Neurosci*. 28(53):14422-7
14. **Tunik E**, Ortigue S, Adamovich SV, Grafton ST. (2008) Differential recruitment of anterior intraparietal sulcus and superior parietal lobule during visually guided grasping revealed by electrical neuroimaging, *J Neurosci*. 28(50):13615-20
15. Moisello C, Crupi D, **Tunik E**, Quartarone A, Bove, M, Tononi G, Ghilardi MF. (2009) The Serial Reaction Time Task Revisited: a Study On Motor Sequence Learning With Arm-Reaching Tasks, *Exp Brain Res*. 194(1):143-55
16. Rice NJ, Cross ES, **Tunik E**, Grafton ST, Culham JC. (2009) Ventral and Dorsal Stream Contributions to Immediate and Delayed Grasping: A TMS Approach, *Neuropsychologia* 47(6):1553-1562
17. Merians AS, **Tunik E**, Fluet GG, Qiu Q, Adamovich SV. (2009) Innovative Approaches to the Rehabilitation of Upper Extremity Hemiparesis using Virtual Environments. *Eur J Phys Rehabil Med* 45:123-33
18. Adamovich SV, August K, Merians A, **Tunik E**. (2009) A Virtual Reality-Based System Integrated with fMRI to Study Neural Mechanisms of Action Observation-Execution: A Proof of Concept Study, *Restor Neurol Neurosci*. 27:209-223
19. **Tunik E**, Houk JC, Grafton ST. (2009) Basal Ganglia Contribution to the Initiation of Corrective Submovements. *NeuroImage*, 47(4):1757-66
20. Merians AS, **Tunik E**, Adamovich SV. (2009) Virtual reality to maximize function for hand and arm rehabilitation: exploration of neural mechanisms. *Stud Health Technol Inform*. 145:109-25.
21. Adamovich SV, Fluet GG, **Tunik E**, Merians AS. (2009) Sensorimotor training in virtual reality: A review. *NeuroRehabilitation*, 25(1):29-44
22. **Tunik E** and Adamovich S. (2009) Remapping in the Ipsilateral Motor Cortex after VR-based Training: a Pilot fMRI Study. *IEEE Eng Med Biol Mag*. 1:1139-42
23. Grafton ST and **Tunik E**. (2011) Human Basal Ganglia and the Dynamic Control of Force during On-Line Corrections. *J Neurosci*. 31(5):1600-5
24. Bagee HF, Saleh S, Adamovich SV, **Tunik E**. (2012) Visuomotor Discordance in Virtual Reality: Effects on Online Motor Control. *Conf Proc IEEE Eng Med Biol Soc*. 2011 Aug;2011:7262-5

25. Saleh S, Bagece H, Qiu Q, Fluet G, Merians A, Adamovich S, **Tunik E**. (2012) Mechanisms of Neural Reorganization in Chronic Stroke Subjects after Virtual Reality Training. *Conf Proc IEEE Eng Med Biol Soc*. 2011 Aug;2011:8118-21
26. Poizner H, Lancaster J, **Tunik E**, Narayana S, Franklin C, Rogers W, Li X, Fox P, Robin D. (2012) Towards a Healthy Human Model of Neural Disorders of Movement. *IEEE Trans Neural Syst Rehabil Eng*. 20(6):853-7
27. Bagece HF, Saleh S, Adamovich SV, **Tunik E**. (2012) Visuomotor Gain Distortion Alters Online Motor Performance and Enhances Primary Motor Cortex Excitability in Patients With Stroke. *Neuromodulation*. 15(4):361-6
28. Bagece H, Adamovich SV, Saleh S, Krakauer JW, **Tunik E**. (2012) Corticospinal excitability is enhanced after visuomotor adaptation and depends on learning rather than performance or error. *J Neurophysiol*. 109(4):1097-106
29. Saleh S, Adamovich SV, **Tunik E**. (2012) Resting state functional connectivity and task-related effective connectivity changes after robot-assisted virtual reality rehabilitation. *Proc IEEE Eng Med Biol Soc*. 4559-62.
30. **Tunik E**, Saleh S, Adamovich S. (2013) Visuomotor discordance during visually-guided hand movement in Virtual Reality modulates sensorimotor cortical activity in healthy and hemiparetic subjects. *IEEE-Transactions on Neural Systems & Rehabilitation Engineering*. TNSRE. 21(2):198-207
31. Lukos JR, Snider J, Hernandez ME, **Tunik E**, Hillyard S, Poizner H. (2013) Parkinson's disease patients show impaired corrective grasp control and eye-hand coupling when reaching to grasp virtual objects. *Neuroscience*. 254:205-21
32. Saleh S, Adamovich SV, **Tunik E**. (2014) Mirrored Feedback in Chronic Stroke: Recruitment and Effective Connectivity of Ipsilesional Sensorimotor Networks. *Neurorehabil Neural Repair*. 28(4):344-54
33. Yarossi M, Adamovich S, **Tunik E** (2014) Sensorimotor Cortex Reorganization in Subacute and Chronic Stroke: a Neuronavigated TMS Study. *Conf Proc IEEE Eng Med Biol Soc*. Aug:5788-91.
34. Schettino LF, Adamovich SV, Bagece H, Yarossi M, **Tunik E** (2015) Disruption of activity in ventral premotor but not the anterior intraparietal area interferes with online correction to a haptic perturbation during grasping. *J Neurosci*. 35(5):2112-7.
35. Fluet G, Patel J, Qiu Q, Yarossi M, Massood S, Adamovich A, **Tunik E**, Merians A (2016) Motor skill changes and neurophysiologic adaptation to recovery-oriented virtual rehabilitation of hand function in a person with subacute stroke: a case study. *Disabil Rehabil*. Sep 27:1-8.
36. Saleh S, Yarossi M, Manuweera T, Adamovich S, **Tunik E** (2016) Network interactions underlying mirror feedback in stroke: A dynamic causal modeling study. *NeuroImage: Clinical*, 13:46-54
37. Patel J, Qiu Q, Yarossi M, Merians A, Massood S, **Tunik E**, Adamovich A, Fluet G (2017) Exploring the impact of visual and movement based priming on a motor intervention in the acute phase post-stroke in persons with severe hemiparesis of the upper extremity. *Disabil Rehabil*. 39(15):1515-1523
38. Schettino LF, Adamovich SV, **Tunik E** (2017) Coordination of the pincer grasp and transport following a haptic perturbation of the index finger. *J Neurophysiol*. 117(6); 2292-2297

39. Yarossi M, Adamovich SV, **Tunik E** (2017) Facilitation of Ipsilateral Corticospinal Excitability During Mirror Visual Feedback Requires Target Directed Actions. *Frontiers Human Neuroscience*. 11:242
40. Fluét G, Patel J, Qiu Q, Yarossi M, Adamovich S, **Tunik E**, Merians A (2017) Early versus delayed VR-Based hand training in persons with stroke. *Disabil Rehabil*. 39(15):1524-1531
41. Yarossi M, Dannhauer M, Erdogmus D, Brooks D, Tunik E (2017) Multi-muscle TMS mapping using subject-specific FEA models of induced currents. *Brain Stimulation*. 10(4):e28, ISSN 1935-861X, <http://dx.doi.org/10.1016/j.brs.2017.04.032>
42. Chen G, Yarossi M, Gordon S, Gomes S, Rubakhina A, Adamovich S, Tunik E (2017) Concurrent tDCS and Mirror Feedback has additive effects on M1 excitability, *Brain Stimulation*. 10(4):e39-e40, ISSN 1935-861X, <http://dx.doi.org/10.1016/j.brs.2017.04.071>
43. Saleh S, Fluét G, Qiu Q, Merians A, Adamovich S, **Tunik E** (In Press) Neural Mechanisms of Reorganization after Robot-Assisted Virtual Reality Therapy in Persons with Chronic Stroke. *Frontiers in Neurology*
44. Yarossi M and **Tunik E**. (In Preparation) Placing TMS off the grid: Comparing gridded and user-guided neuronavigated brain stimulation approaches.
45. Manuweera T, Yarossi M, Saleh S, Adamovich S, Tunik E (In Preparation) Mirror feedback during target oriented behavior lateralizes parietal activation.
46. Yarossi M and **Tunik E**. (In Preparation) TMS-based mapping of hand synergies
47. Yarossi M, Krakauer JW, **Tunik E**. (In Preparation) The time course of motor learning in primary motor cortex.
48. Adamovich SV, Schettino LF, Yarossi M, **Tunik E**. (In Preparation) An fMRI-guided TMS study of parietal-premotor interactions for planning movements in intrinsic versus extrinsic space.
49. Rohafza M, Alokaily A, Manuweera T, Yarossi M, **Tunik E**, Adamovich SV (In Preparation) Temporal interactions between bilateral motor and somatosensory cortices for processing mirror feedback: an EEG study.
50. Alokaily A, Yarossi M, **Tunik E**, Adamovich S. (In Preparation) Optimal conditions for paired associative stimulation effects.

B. BOOKS, MONOGRAPHS AND CHAPTERS

1. Merians AS, **Tunik E**, Adamovich SV (2009) Virtual reality to maximize function for hand and arm rehabilitation: exploration of neural mechanisms, in: *Innovation in Rehabilitation Technology*, Andrea Gaggioli (Ed), IOS Press, 2009
2. Cheung KL, **Tunik E**, Adamovich S, Boyd L (2014) Neuroplasticity and Virtual Reality In: *Virtual Reality Technologies for Health and Clinical Applications: Physical and Motor Rehabilitation*. Emily Keshner and Paul Sharkey (Ed). Springer.

C. OTHER ARTICLES (REVIEWS, EDITORIALS, ETC.)

1. **Tunik E**. Neuro-Developmental Treatment Text is Coherent and Comprehensive. Review of book: “Neuro-Developmental Treatment Approach: Theoretical Foundations and Principles of Clinical Practice” by Janet M. Howle. *Advance Magazine for Physical Therapists and PT Assistants*. April 25, 2005:57

D. ABSTRACTS

1. Yarossi M, Dannhauer M, Erdogmus D, Brooks D, **Tunik E**. Multi-muscle TMS mapping using subject-specific FEA models of induced currents. NeuroModec Conference, New York City, Jan 13-15, 2017
2. Manuweera T, Yarossi M, Adamovich SV, **Tunik E**. Effect of target-directed movements on Mirror visual feedback processing in ipsilateral brain areas. Society for Neuroscience Abstracts. Washington DC, November 11-15, 2017
3. Gomes K, Gordon S, Rubakhina A, Chen G, Yarossi M, **Tunik E**. Exploring the concurrent effects of transcranial direct current stimulation and virtual mirror therapy on cortical excitability. Research Innovation and Scholarship Expo (RISE), Northeastern University, Boston, MA, April 13, 2017
4. Alokayli A, Yarossi M, **Tunik E**, Adamovich SV. The Effect of Volitional Movement on Paired Associative Stimulation-Induced Cortical Excitability. 2nd Moscow International Conference “Noninvasive Brain Stimulation and Functional Brain Mapping”. Moscow, Russia, May 25-27, 2017
5. Yarossi M, Patel J, Qiu Q, Fluet G, Merians A, **Tunik E**, Adamovich SV. 2nd Moscow International Conference “Noninvasive Brain Stimulation and Functional Brain Mapping”. Moscow, Russia, May 25-27, 2017
6. Patel J, Yarossi M, Qiu Q, Adamovich SV, Tunik E, Merians A, Fluet G. Early virtual reality based hand training post-stroke elicits better than expected outcomes. Society for Neuroscience Abstracts. Washington DC, November 11-15, 2017
7. Yarossi M, Dannhauer D, Erdogmus D, Brooks D, **Tunik E**. Comparison of muscle synergies derived from of voluntary movement and those derived from multi-muscle TMS mapping using subject-specific FEA models of induced currents. Progress in Motor Control XI, Miami, FL, July 19-22, 2017
8. Chen G, Yarossi M, Gordon S, Gomes K, Rubakhina A, Adamovich S, **Tunik E**. Concurrent tDCS and Mirror Feedback has Additive Effects on M1 Excitability, NeuroModec Conference, New York City, Jan 13-15, 2017
9. Alokayli A, Yarossi M, **Tunik E**, Adamovich SV. The Effect of Volitional Movement on Paired Associative Stimulation-Induced Cortical Plasticity. Society for Neuroscience Abstracts. Washington DC, November 11-15, 2017
10. **Tunik E**, Schettino LF, Adamovich SV Interactions between grasp and transport components during reach-to-grasp actions. Society for Neural Control of Movement. Montego Bay, Jamaica, April 24-29, 2016
11. Yarossi M, Patel J, Qiu Q, Fluet G, Merians A, Adamovich S, **Tunik E**. Functional and Neurophysiological Effects of Intensive Hand Retraining in the Acute Phase Post Stroke: A Pilot Study. Society for Neuroscience Abstracts. San Diego, CA, November 12-16, 2016
12. Manuweera T, Yarossi M, Saleh S, Adamovich S, **Tunik E**. Structural-Functional Interactions Underlying Mirror Feedback in Cortical and Non-Cortical Stroke. Society for Neuroscience Abstracts. San Diego, CA, November 12-16, 2016
13. Yarossi M, Manuweera T, Adamovich S, **Tunik E**. Effects of Goal-Directed Mirror Visual Feedback on Cortical Excitability in the Untrained Hemisphere. Society for Neuroscience Abstracts, Chicago, IL, October 17-21, 2015
14. Yarossi M, Wei Y, Adamovich S, **Tunik E**. Comparison of TMS elicited and voluntary synergies of the human hand. Society for Neuroscience Abstracts, Chicago, IL, October 17-21, 2015

15. Manuweera T, Saleh S, Yarossi M, Adamovich SV, **Tunik E**. Functional and Structural Connectivity: Relationship to Mirror Visual Feedback in Stroke Patients. Society for Neuroscience Abstracts, Washington DC, November 15-19, 2014.
16. Yarossi M, Adamovich SV, Krakauer JW, **Tunik E**. Motor behavior and associated primary motor cortex excitability differ during relearning of visuomotor gain when unlearning occurs either via washout or a period of inactivity. Society for Neuroscience Abstracts, Washington DC, November 15-19, 2014.
17. **Tunik E**, Grafton ST, Adamovich SV. Ventral Premotor Area and Anterior Intraparietal Sulcus Contributions for Updating Hand Preshaping during Perturbations of Object Shape. Society for Neural Control of Movement, San Juan, Puerto Rico, April 15-20, 2013.
18. Yarossi M, Ames G, **Tunik E**. Increased motor output is associated with M1 motor map expansion during isometric finger contraction. Society for Neural Control of Movement, San Juan, Puerto Rico, April 15-20, 2013.
19. Schettino LF, Bagce H, Adamovich SV, **Tunik E**. Virtual Lesions of PMv but not aIPS Disrupt On-Line Correction to Perturbation of Motor Output During Grasping. Society for Neuroscience Abstracts, 38, New Orleans, LA. October 13-17, 2012, Poster 89.05
20. Saleh S, Bagce H, Adamovich S, **Tunik E**. Changes in effective connectivity for mirror visual feedback in stroke patient. Program No. 381.28. Neuroscience 2012 Abstracts. New Orleans, LA: Society for Neuroscience, 2012. Online.
21. **Tunik E**, Saleh S, Qiu Q, Fluet G, Merians A. fMRI effective connectivity and TMS mapping to characterize brain reorganization after robot-assisted virtual reality training of upper extremity in chronic, Program No. 276.05. Neuroscience 2012 Abstracts. New Orleans, LA: Society for Neuroscience, 2012. Online.
22. Saleh S, Bagce H, Merians M, Adamovich S, **Tunik E**. Feedback augmented in virtual reality facilitates ipsilesional motor cortex in chronic stroke. Program No. 185.12. Neuroscience 2011 Abstracts. Washington, DC: Society for Neuroscience, 2012. Online.
23. Bagce B, Saleh S, Adamovich S, **Tunik E**, “ Effects of visuomotor discordance in virtual reality on online performance and motor cortex excitability in patients with Stroke,” Program No. 185.11. Neuroscience 2011 Abstracts. Washington, DC: Society for Neuroscience, 2012. Online.
24. Bagce HF, Saleh SH, Adamovich S, **Tunik E**, Integrating Virtual Reality with Brain Stimulation: Visual Error During a Motor Task Enhances Primary Motor Cortex Excitability. UMDNJ 3rd Annual Technology Symposium (Piscataway, NJ), poster # 29. April, 2011
25. Bagce H, Adamovich SV, Krakauer JW, Saleh S, **Tunik E**. Error-based visual feedback during goal-directed movements enhances primary motor cortex excitability in healthy subjects and stroke patients. Society for Neuroscience. November, 2010. 2010-S-15744-SfN
26. Bagce H, Adamovich S, Saleh S, **Tunik E**. Augmenting Neuroplasticity Through Visual Feedback. April, 2010. Naples, FL, poster number: I-20.
27. Bagce H, Saleh S, Adamovich S, Krakauer JW, **Tunik E**. Exaggeration of visual errors during goal-directed movements enhances primary motor cortex excitability in healthy subjects and stroke patients. Society for Neuroscience, November, 2010. San Diego, CA, poster number: 2010-S-15744-SfN.

28. Saleh SH, Bagce H, Qui Q, Fluet G, Merians A, Adamovich S, **Tunik E** (November, 2010) Strengthened functional connectivity in bilateral sensorimotor cortex of chronic stroke patients after robot-assisted training in virtual reality: A pilot study. Society for Neuroscience, San Diego, CA, poster number: 2010-S-17048-SfN.
29. Saleh S, Qinyin Q, Adamovich S, **Tunik E** (March, 2010) fMRI Study of the Effects of Visual Feedback Manipulation on Sensorimotor Circuits. 36th Annual Northeast Bioengineering Conference (NEBEC), Columbia University, NY.
30. Saleh S, Adamovich SV, **Tunik E**. Effects of virtual reality-altered perception of hand movement on sensorimotor neural circuits measured with fMRI. November, 2009. 2009-S-6296-SfN
31. Adamovich S, Merians AS, Qiu Q, August K, **Tunik E**. Neural mechanisms underlying interactions in a virtual environment: a pilot fmri study. Virtual Rehabilitation International Conference, June 29-July 2, 2009, Haifa, Israel
32. **Tunik E**, Ortigue S, Adamovich SV, Grafton ST. Fronto-parietal information processing for online adjustments during visually-guided reach-to-grasp revealed by electrical neuroimaging. Soc. Cog. Neurosci. March 2008; San Francisco, CA
33. **Tunik E**, Lo Y, Adamovich SV. TMS to the Frontal Operculum and Supramarginal Gyrus Disrupts Planning of Outcome Based Hand-Object Interactions. Movement Disorder Society: Third International Conference on Transcranial Magnetic and Direct Current Stimulation October 1-4, 2008; Goettingen, Germany.
34. Moisello C, **Tunik E**, Crupi D, Bove M, Ghilardi MF. Movement duration and onset time change differently in both incidental and intentional sequence learning tasks. Society for Neural Control of Movement. April 29-May 4, 2008, Naples, FL, USA.
35. **Tunik E**, Merians A, Adamovich SV. Mirrored Feedback in Virtual Reality Enhances Corticospinal Excitability. Movement Disorder Society: Third International Conference on Transcranial Magnetic and Direct Current Stimulation October 1-4, 2008; Goettingen, Germany.
36. Roy SA, **Tunik E**, Bastionen C, Fishbach A, Grafton ST, Houk JC. Firing patterns of GPI neurons associated with primary movements and corrective submovements. Society for Neuroscience. 2008-S-1638-SfN. November 2008, Washington D.C.
37. Grafton ST, **Tunik E**, Roy SA, Houk JC. Basal Ganglia Activity During Submovement Formation Is Different For Errors Of External Perturbation And Accuracy Requirements. Soc. Neurosci. November 2008, Washington D.C.
38. **Tunik E**, Roy SA, Houk JC, Grafton ST. Basal ganglia contribution to the initiation of corrective submovements. Soc. Neurosci. November 2008, Washington D.C.
39. **Tunik E**, Rice NJ, Hamilton A, Grafton ST. Beyond grasping: Representation of action in human anterior intraparietal sulcus. *NeuroImage*. 2007;36(2):77-86.
40. Adamovich S, Merians A.S., Qiu Q, August K, **Tunik E**. Neural mechanisms underlying interactions in a virtual environment: a pilot fmri study. International Workshop Innovations in Rehabilitation Technology, Dec 2007, Jerusalem, Israel
41. **Tunik E**, August K, Merians A, Adamovich SV. Integration of real-time finger measurement, virtual reality, and functional MRI. Virtual Reality Congress. Jerusalem, Israel. December 2006.
42. Bennett CM, Kraemer DJ, Cross ES, **Tunik E**, Ortigue S. Prediction of subjective behavior ratings using statistical analysis of BOLD signal covariance in flatmapped brains. *Human Brain Mapping*. June 2006; Florence, Italy.

43. Farrer C, Frey SH, Van Horn J, **Tunik E**, Turk D, Grafton ST. The angular gyrus is equally involved in different aspects of action awareness. *Human Brain Mapping*. June 2006; Florence, Italy.
44. Burtet L, Raptis H, **Tunik E**, Latash ML, Forget R, Feldman AG. Threshold control of wrist movements revealed by transcranial magnetic stimulation of the motor cortex. *Soc. Neurosci*. November 2006; New Orleans, LA.
45. **Tunik E** and Grafton ST. Contribution of the anterior intraparietal area to trial-to-trial adaptation. *Neural Control of Movement*. May 2006; Key Biscayne, Florida.
46. Rice N, **Tunik E**, Grafton ST. Role of the anterior intraparietal area in movement planning versus updating. *Neural Control of Movement*. May 2006; Key Biscayne, Florida.
47. **Tunik E**, Poizner H, Feldman AG. L-dopa improves flexible control of movement in Parkinson's disease patients when moving in altered contexts. *World Parkinson Congress*. January 2006; Washington D.C.
48. **Tunik E**, Schmitt PJ, Grafton ST. Learning to adapt to two distinct perturbations to the motor system leads to the establishment of distinct, field-specific, representations. *Neural Control of Movement*. 2005; Key Biscayne, Florida.
49. **Tunik E**, Poizner H, Adamovich SV, Levin MF, Feldman AG. Compensatory arm-trunk coordination in Parkinson's disease. *Soc. Neurosci*. 2000; San Diego, CA
50. St-Onge N, Yahia H, Tunik E, Feldman AG. Hip, Knee, and Ankle Coordination during squatting movements. *Soc Neurosci*. 2000; San Diego, CA.
51. **Tunik E**, Poizner H, Levin MF, Adamovich SV, Messier J, Lamarre Y, Feldman AG. Role of proprioception in arm-trunk coordination during reaching with unexpected perturbation of the trunk. *Soc Neurosci*. 1999. New Orleans, LA.
52. Messier J, Adamovich S, Berkinblit M, **Tunik E**, Poizner H. Influence of movement speed on accuracy and coordination of pointing to memorized targets in 3-D space in a deafferented subject. *Soc. Neurosci*. 1999; New Orleans, LA.

SCIENTIFIC PLATFORM PRESENTATIONS:

A. NATIONAL

1. **Tunik E**. Motor control, learning, and the clinic. April 2000, UMDNJ, Newark, NJ.
2. **Tunik E**. Attention fingers! Telling your muscles what to do. November 2001, Rutgers University, Newark, NJ.
3. **Tunik E**. fMRI and TMS investigations of on-line and trial-to-trial adaptation. March, 2005, Haskins Institute. New Haven, CT.
4. **Tunik E**. Grasp wide shut: virtual lesions of the human anterior intraparietal area disrupt rapid online adjustments of grasp. August, 2005. Rehabilitation Institute of Chicago. Chicago, IL.
5. **Tunik E**. Role of the parietal cortex in the updating of goal-dependent grasp." Vision Sciences Society Symposium: *From Eye to Hand: The Role of Vision in Grasping*. April 2005, Sarasota, FL.
6. **Tunik E**. TMS explorations of parietal involvement in online and trial-to-trial motor performance. Cognition and Perception Seminar Series. October 15, 2006. Department of Neural Science, NYU. New York, NY.
7. **Tunik E**. Neural circuits underlying adaptive control of reach and grasp. March 23, 2005. Depts. of Psychology and Neural Science. NYU. New York, NY.

8. **Tunik E.** Neural circuits underlying learning of internal models of adaptive control. April 26, 2005. Department of Physiology, Northwestern University, Chicago, IL.
9. **Tunik E.** Ask not what your brain can do for you. Ask what you can do for your brain. Lessons from neuroscience and perspectives for neurorehabilitation, April 2006, Dept. of Physical Therapy. University of Connecticut. Hartford, CT.
10. **Tunik E.** TMS investigations of the frontal and parietal lobe's role in movement updating. November 2006, Department of Psychology, NYU. New York, NY.
11. **Tunik E.** Bridging the gap between neuroscience and therapeutic intervention. March 8, 2008. Department of Rehabilitation and Movement Science. UMDNJ. Newark, NJ.
12. **Tunik E.** Use of TMS to study cortical control of planning and guidance of grasp. March 19, 2008. Dept. of Psychiatry - Division of Brain Stimulation and Therapeutic Modulation. Columbia University. New York, NY.
13. **Tunik E.** Wonders of the Brain. December 10, 2009. *Radburn School, Fair Lawn, NJ.*
14. **Tunik E.** Virtual reality feedback to target cortical remapping. *IEEE Eng Med Biol Soc. Pre-Conference Workshop: ARO: Beyond Brain Machine Interface: Motor, Cognitive, Virtual.* September 2, 2009. Minneapolis, MN.
15. Timmerberg, PT, Edmonds S, Bagce H, **Tunik, E.** Variability of force, displacement, and orientation of the hand during simulated joint mobilizations performed by skilled Physical Therapists. October, 2010. American Physical Therapy Association of New Jersey. Clinical Research Session.
16. **Tunik E.** Virtual reality and rehab II: Effects on cortical activity. Course on Clinical, Assessment, and Intervention Updates in Neurorehabilitation. November 19-20, 2010. Harvard University, Boston, MA.
17. **Tunik E.** Visuomotor error enhances excitability of sensorimotor cortex. November 3, 2010. Dept. of Psychology, Ramapo College of New Jersey. Mahwah, NJ.
18. **Tunik E.** Characterizing human neuroplasticity after stroke with integrated motion capture, virtual reality, and functional MRI, and Transcranial Magnetic Stimulation. Innovative Research Technologies: Advances in Imaging and Genomics; Innovative Research Tech to Bridge Bench to Bedside. UMDNJ. Piscataway, NJ *April 12, 2011*
19. **Tunik E.** Fluet G, Fregni F. Neurologic physical therapy in the 21st Century: Cortical stimulation, virtual reality, and plasticity. Workshop Chair, Education Workshop, APTA *Perspectives in Neurology Educational Session. National Harbor, MD., June 8-11, 2011*
20. **Tunik E.** TMS to study the role of frontal and parietal lobes in prehension. Kessler Foundation. West Orange, NJ, *June 27, 2012*
21. **Tunik E.** Mirror, mirror on the wall, which motor cortex is the fairest of them all? University of South Dakota, Vermillion, SD, *August 22-23, 2014*
22. **Tunik E.** The brain in action: New insights about motor control and learning. March 26, 2015, Dept of Applied Physiology and Kinesiology, University of Florida, Gainesville, FL
23. **Tunik E.** The neuroscience of upper limb VR therapy following stroke. Spaulding Rehabilitation Hospital, Boston, MA, *August 24, 2016*
24. Patel J, Yarossi M, **Tunik E.** A Collaborative Project to Advance Upper Limb Recovery Following Stroke using Robotics and Virtual Reality. St. Joseph's Rehabilitation Hospital, Wayne, NJ, *June 24, 2016*
25. **Tunik E.** Movement representations in the human motor system investigated with non-invasive brain stimulation. BioEngineering, Northeastern, Boston, MA, *Nov 30, 2016*

26. Yarossi M, **Tunik E**. Decomposing Muscle Synergies in the Human Motor Cortex using Non-Negative Matrix Factorization. Department of Molecular and Behavioral Neuroscience, Rutgers, Newark, NJ, *October 12, 2016*
27. **Tunik E**. Movement Neuroscience Laboratory, Lecture, Academic, Non-Peer Reviewed, Motor Control Course Research Lab Demo, Dept, of Physical Therapy, Northeastern, Boston, MA, Seminar, Regional, Invited, *November 29, 2016*
28. Patel J, Yarossi M, Adamovich S, Fluet G, **Tunik E**, Merians A. A Collaborative Project to Advance Upper Limb Recovery Following Stroke using Robotics and Virtual Reality, Podium Presentation, Non-Academic, Non-Peer Reviewed, St. Joseph Regional Medical Center, Wayne, NJ, Bouve College of Health Sciences, Seminar, Regional, Invited, *June 24, 2016*
29. **Tunik, E**. Movement representations in the human motor system investigated with non-invasive brain stimulation, Podium Presentation, Non-Academic, Non-Peer Reviewed, BioEngineering Seminar Series, BioEngineering, Northeastern, Boston, MA, Seminar, Regional, Invited, *November 30, 2016*

B. INTERNATIONAL

30. **Tunik E**. Neural substrates of learning two distinct motor perturbations, Department of Physiology, University of Parma. Parma, Italy, *June 2005*
31. Saleh S, Adamovich SV, **Tunik E**. Effects of virtual reality-altered perception of hand movement on sensorimotor neural circuits measured with fMRI. *October 17-21, 2009* Society for Neuroscience, Nanosymposium on Visuomotor Hand Control. Chicago IL.
32. **Tunik E**. Mirrored feedback in virtual reality elicits ipsilesional motor activation in patients with chronic stroke. International Society of Virtual Reality, Zurich, Switzerland, *May 27-30, 2011*
33. **Tunik E**. Arm training by virtual reality. Mini Symposium 2: Innovative concepts in stroke rehabilitation, Hamburg, Germany, *May 24-27, 2011*
34. **Tunik E**. Virtual reality to entrain adaptation and M1 excitability. International Society of Virtual Reality. Zurich, Switzerland. *May 27-30, 2011*
35. **Tunik E**. Adaptive motor control. Invited (declined). Progress In Motor Control X. Budapest, Hungary, *July 22-25, 2015*
36. **Tunik E**, Schettino LF, Adamovich SV. Interactions between grasp and transport components during reach-to-grasp actions. Conference for the Society of Neural Control of Movement, Montego Bay, Jamaica, *April 23-30, 2016*
37. Manuweera T, Yarossi M, Saleh S, Adamovich SV, **Tunik E**. Structural-functional interactions underlying mirror feedback in cortical and non-cortical stroke. Society for Neuroscience, San Diego, California, *November 12-16, 2016*
38. Yarossi M, Patel J, Qiu Q, Fluet G, Merians A, Adamovich SV, **Tunik E**. Functional and neurophysiological effects of intensive hand retraining in the acute phase post stroke: a pilot study. Society for Neuroscience, San Diego, California, *November 12-16, 2016*
39. Schettino LF, Barnes J, Laws M, McKeown L, Steinberg N, **Tunik E**. Seamless prismatic-circular precision grasp reorganization in a naturalistic shape perturbation paradigm. International Society for Neural Control of Movement. Dublin Ireland, *May 2-5, 2017*

PATENTS HELD:

Provisional Patent: Methods for Mapping Cortical Physiology and Methods of Use Thereof