

Rajal G. Cohen

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PRESENT POSITION

Postdoctoral Fellow, Balance Disorders Laboratory

- Supervisor: Fay Horak, P.T., Ph.D.
- Department: Neurology
- Institution: Oregon Health & Science University

EDUCATION

Pennsylvania State University	Psychology (minor in Kinesiology)	Ph.D.	2008
Pennsylvania State University	Psychology	M.S.	2005
Wesleyan University (Connecticut)	Psychology	B.A.	2002

GRANTS

Pacific Northwest Udall Center, Pilot Award 2010- 2012

- Which executive dysfunctions are most associated with freezing of gait?
- \$60,000 (PI)

Medical Research Foundation of Oregon, Early Clinical Investigator Award 2011-2012

- Posture and gait stability in Parkinson's disease: An investigation of two behavioral interventions that aim to influence axial tone
- \$20,000 (PI)

ACADEMIC HONORS & AWARDS

Fellowships

- Post-Doctoral Training Fellowship, CAM Training in Neuroscience & Stress 2010-2011
- Post-Doctoral Training Fellowship, Neurological Sciences Institute, OHSU 2008-2010
- Penn State College of Liberal Arts Dissertation Award 2008
- Penn State University Graduate Fellowship 2002-2005

Travel & Training

- NIH award to fMRI training in Ann Arbor, MI 2009
- Penn State Travel Award to European Workshop on Movement Science 2007
- CMU Young Scientist Travel Award to Carnegie Symposium on Cognition 2006
- Penn State Psychology Department Travel Award to Psychonomics 2004

RESEARCH INTERESTS

The Mind in Motion

- Role of cognitive factors in posture, gait, and action
- Neurophysiology of action, posture, and postural preparation for action
- Spectrum of movement dis/ability (aging, Parkinson's disease, skilled performance)

TEACHING

Classroom Teaching Interests

- Cognitive Psychology, Motor Control, Learning and Memory, Motor Learning, Sensation and Perception, Introduction to Psychology, Brain and Behavior, Research Methods

Instructor (Penn State, Fall 2006 & Spring 2007)

- Introduction to Cognitive Psychology

Teaching Assistant (Penn State, Fall 2003 - Spring 2006)

- MATLAB for Behavioral Scientists (graduate course)
- Introduction to Cognitive Psychology (including some lecturing)
- Child Development (including leading 3 discussion sections and organizing other T.A.s)
- Introduction to Research Methods (including leading 2 lab sections)
- Biological Psychology (including exam preparation)
- Emotions (including grading and exam preparation)
- Advanced Learning and Conditioning (including grading and exam preparation)

Alexander Technique (1997-present)

- workshops and private lessons for musicians, equestrians, actors, dancers, and people with posture- and movement-related pain and discomfort

SERVICE

Peer Reviews

- *Brain*
- *Cognition*
- *Cognitive Brain Research*
- *Consciousness & Cognition*
- *European Journal of Neurology*
- *Experimental Brain Research*
- *Journal of Experimental Psychology: Human Perception & Performance*
- *Journal of Neurophysiology*
- *Journal of Motor Behavior*
- *Journal of Psychophysiology*
- *Motor Control*
- *Movement Disorders*
- *Neurorehabilitation & Neural Repair*
- *Public Library of Science (PLoS) One*

Departmental

- Brown Bag Coordinator, Cognitive Area, Penn State Psychology Department 2004-2005

Alexander Technique

- Web Development Team, American Society for the Alexander Technique (AmSAT) 2010
- Government Relations Committee, AmSAT 2002-2005

Community

- Volunteer mentor for NSF program to increase participation in science, technology, engineering and math (STEM) among high school students with disabilities 2010

SCIENTIFIC & PROFESSIONAL AFFILIATIONS

- International Society for Posture and Gait Research
since 2009
- Society for Neuroscience since 2004
- American Society for the Alexander Technique since 1997

PROFESSIONAL CERTIFICATION

Teacher of the Alexander Technique

- American Society for the Alexander Technique since 1997

JOURNAL ARTICLES

- Cohen, R.G.**, Nutt, J., & Horak, F.B. (2011). Errors in initial postural preparation lead to increased choice reaction times for step initiation in older adults. *Journal of Gerontology A: Biological and Medical Sciences*, 66, 705-713.
- Cohen, R.G.** & Rosenbaum, D.A. (2011). Prospective and retrospective effects in human motor control: Planning grasps for object rotation and translation. *Psychological Research*. 75, 341-349.
- Cohen, R.G.**, Biddle, J., & Rosenbaum, D.A. (2009). Manual obstacle avoidance takes into account visual uncertainty, motor noise, and biomechanical costs. *Experimental Brain Research*, 201, 587-592.
- Cohen, R.G.** & Sternad, D. (2009). Variability in motor learning: Relocating, channeling and reducing noise. *Experimental Brain Research*, 193, 69-83.
- Cohen, R.G.**, & Rosenbaum, D.A. (2007). Directional bias of limb tremor prior to voluntary movement. *Psychological Science*, 18, 8-12.
- Weigelt, M., **Cohen, R.**, Rosenbaum, D.A. (2007). Returning home: location memory versus posture memory in object manipulation. *Experimental Brain Research*, 179, 191-198.
- Rosenbaum, D.A., **Cohen, R.G.**, Jax, S., Weiss, D. & van der Wel, R.G.J. (2007). The problem of serial order in behavior: Lashley's Legacy. *Human Movement Science*, 26, 525-554.
- Rosenbaum, D.A., Halloran, E.S, & **Cohen, R.G.** (2006). Grasping movement plans. *Psychonomic Bulletin & Review*, 13, 918-922.
- Cohen, R.G.** & Rosenbaum, D.A. (2004). Where objects are grasped reveals how grasps are planned: Generation and recall of grasps. *Experimental Brain Research*, 157, 486-495.

MANUSCRIPTS UNDER REVIEW

- Cohen, R.G.** & Sternad, D. (invited revision submitted). State space analysis of timing: Exploiting task redundancy to reduce sensitivity to timing.
- Cohen, R.G.**, Chao, A., Nutt, J.C. & Horak, F.B. (invited revision submitted). Freezing of gait is associated with a mismatch between motor imagery and motor execution, not with failure to judge doorway passability.
- Lomond, K.V., Henry, S.M., Jacobs, J.V., Hitt, J.R., Horak, F.B., **Cohen, R.G.**, DeSarno, M. (submitted). Development of a non-ballistic task that elicits anticipatory postural adjustments.
- Cohen, R.G.** & Rosenbaum, D.A. (submitted). What can tremor bias tell us about movement preparation?

BOOK CHAPTERS

- Rosenbaum, D.A., Vaughan, J., Meulenbroek, R.G.J., Jax, S. & **Cohen, R.G.** (2008). Smart moves: the psychology of everyday perceptual-motor acts. In P. M. Gollwitzer, J. A. Bargh, & E. Morsella (Eds.), *Oxford Handbook Of Human Action*. pp. 121-135. Oxford University Press.
- Rosenbaum, D.A., **Cohen, R.G.**, Dawson, A.M., Jax, S.A., Meulenbroek, R.G., van der Wel, R., & Vaughan, J. (2008). The posture-based motion planning framework: new findings related to object manipulation, moving around obstacles, moving in three spatial dimensions, and haptic tracking. In D. Sternad (Ed.), *Progress in Motor Control- A Multidisciplinary Perspective* (pp. 485-497). Springer.
- Rosenbaum, D.A., Cohen, **R.G.**, Meulenbroek, R.G. J., & Vaughan, J. (2006). Plans for grasping objects. In M.L. Latash & F. Lestienne (Eds.), *Progress in Motor Control* (pp 9-25). Springer-Verlag.
- Rosenbaum, D., Augustyn, J., **Cohen, R.**, & Jax, S. (2006). Perceptual-motor expertise. In K.A. Ericsson, N. Charness, P.J. Feltovich, R.R. Hoffman (Eds.), *Cambridge Handbook of Expertise and Expert Performance* (pp. 505-520). Cambridge University Press.

CONFERENCE ABSTRACTS

- Cohen, R.G.** & Sternad, G. (2011). State space analysis of intrinsic timing. Talk presented at New England Sequencing and Timing, Amherst, MA, March 5.
- Cohen, R.G.**, Nutt, J., & Horak, F.B. (2010). Does faulty body schema contribute to freezing of gait in subjects with Parkinson's disease? Poster presented at Society for Neuroscience, San Diego, CA, November 17.
- Cohen, R.G.**, Nutt, J., & Horak, F.B. (2010). The role of executive function in step initiation in young and older healthy adults, and in subjects with Parkinson's disease. Poster presented at Gait and Mental Function, Washington, D.C., Feb 22.

- Cohen, R.G.**, Nutt, J., & Horak, F.B. (2009). Failure to synchronize postural preparation and stepping may trigger freezing of gait in Parkinson's disease. Poster presented to the Society for Neuroscience, Chicago, IL, October 18.
- Cohen, R.G.**, Nutt, J., & Horak, F.B. (2009). Multiple APAs during voluntary step initiation in healthy subjects. Poster presented to the International Society for Gait and Posture Research, Bologna, Italy, June 25.
- Cohen, R.G.** & Sternad, D. (2007). Variability is more than just noise: quantification of exploration, sensitivity to error, and covariation. Poster presented at the annual meeting of The Society for Neuroscience, San Diego, CA, November 2-7.
- Abe, M., **Cohen, R.G.** & Sternad, D. (2007). Influence of success criteria on trial-to-trial fluctuations in a discrete goal-directed task. Poster presented at the annual meeting of The Society for Neuroscience, San Diego, CA, November 2-7.
- Cohen, R.G.** & Sternad, D. (2007). Shift, shuffle, and shrink: Three components of performance improvement in a throwing task. Talk presented at European Workshop on Movement Science, Amsterdam, Netherlands, May 31-June 2.
- Cohen, R.G.** & Rosenbaum, D.A. (2007). Directionally specific preparatory activity. Poster presented at European Workshop on Movement Science, Amsterdam, Netherlands, June 2.
- Cohen, R.G.** & Sternad, D. (2007). Skill learning and refinement in a redundant task: minimizing timing errors with an "equifinal trajectory." Talk presented at New England Sequencing and Timing, New Haven, CT, March 5.
- Cohen, R.G.** & Sternad, D. (2006). Skill learning and refinement: the role of timing, noise reduction, and equifinality in a throwing task. Poster presented at the annual meeting of the Society for Neuroscience, Atlanta, GA, October 14-18.
- Rosenbaum, D. A. & **Cohen, R. G.** (2005). Looking into the future: How we grasp objects reflects anticipation of future positions. Talk presented at the 46th annual meeting of The Psychonomics Society, Toronto, ONT, November 12.
- Cohen, R.G.** & Rosenbaum, D.A. (2005). Still moving. Talk presented at New England Sequencing and Timing, New Haven, CT, March 5.
- Cohen, R.G.** & Rosenbaum, D.A. (2004). Moving and holding still: Two control systems or one? Poster presented at Psychonomics, Minneapolis, MN, November 18.

CONFERENCE PRESENTATIONS

- Cohen, R.G.** & Sternad, G. (2011). State space analysis of intrinsic timing in throwing. Poster presented at Neural Control of Movement, 4/26-5/01, San Juan, Puerto Rico.
- Cohen, R.G.**, Johnson, M., Mancini, M., Priest, K., Horak, F. (2011). Changes in coordination associated with long-term practice of the Alexander Technique are opposite those associated with Parkinson's disease. Poster presented at Symposium for Portland Area Research on Complementary and Alternative Medicine, Portland, OR, April 16.

- Cohen, R.G.** & Rosenbaum, D.A. (2008). Tremor as a window into the mind. Poster presented at Penn State Graduate Exhibition, Penn State University, University Park, PA, March 30.
- Cohen, R.G.** & Rosenbaum, D.A. (2005). Are movement and stillness essentially the same? Poster presented at Progress in Motor Control V, University Park, PA, August 17-20.
- Cohen, R.G.**, Ludwig, A., McCullough, J., New, A., Parkins, A., Rosenbaum, D.A. (2005). Does the end-state comfort effect hold when objects are rotated? Talk presented at the Second International Workshop on Posture-Based Motion Planning, University Park, PA, April 4.
- Cohen, R.G.** & Rosenbaum, D.A. (2003). The end-state comfort effect holds for continuous tasks. Talk presented at The Canadian Society for Psychomotor Learning and Sport Psychology (SCAPPS), Hamilton, ONT, October 16-18.
- Cohen, R.** & King, J. (2002). How does Ritalin affect the electrical activity of the brain? An EEG study of children diagnosed with Attention Deficit Disorder. Talk presented at Radford University Undergraduate/Graduate Research Forum, Radford, VA, April 25.

SELECTED INVITED TALKS

- Cohen, R.G.** (2011). Executive dysfunction and freezing of gait in Parkinson's disease. Pacific Northwest Udall Center Retreat, Skamania Lodge, Stevenson, WA, June 18.
- Cohen, R.G.** & Johnson, M. (2011). Alexander Technique research update. Annual General Meeting of the American Society for the Alexander Technique, Las Vegas, NV, June 3.
- Cohen, R.G.** (2011). A possible role for body schema in freezing of gait. Basal Ganglia Coterie, Columbia Gorge Hotel, Hood River, OR, May 19.
- Cohen, R.G.** (2010). Balance and falls: New research. OASIS Education Center, Portland, OR, September 25.
- Cohen, R.G.** (2008). Microkinematics of movement preparation: Tremor as a window into the mind. Action Club, Penn State University, University Park, PA, April 25.
- Cohen, R.G.** (2005). Why should cognitive psychologists care about motor control? Department of Psychology, Jagellonian University, Krakow, Poland, May 20.

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References

Graduate advisor

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Minor advisor

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