

March 9, 2019

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EDUCATION

Ph.D., Experimental Psychology, University of Cincinnati, 2013.
M.A., Experimental Psychology, University of Cincinnati, 2010.
B.A., Psychology, California State University, Northridge, 2007.
Summa Cum Laude

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Kinesiology, Louisiana State University at Baton Rouge
August 2017 – present

Postdoctoral Fellow, Department of Kinesiology, University of North Carolina at Greensboro
July 2015 – July 2017 Advisor: Dr. Christopher Rhea

Postdoctoral Fellow, Department of Biology, Northeastern University
September 2013 – July 2015 Advisor: Dr. Dagmar Sternad

SOCIETY MEMBERSHIPS

2015-2016	American Society of Biomechanics
2014-2015, 2017-2018	Neural Control of Movement
2008-2013	Association for Psychological Science
2013-2015	Society for the Teaching of Psychology
2016	North American Society for the Psychology of Sport and Physical Activity

GRANTS

Submitted:

R61/R33 AT010699 Kuznetsov, N. (PI) 09/01/19-08/31/22
Adapted Guitar to Improve Motor Function After Stroke
The goal of this study is to develop a new active music supported therapy for individuals with hemiparesis due to stroke and to examine the contribution of learner autonomy to motor function improvement after this training.
Role: PI

Completed Research Support:

2018 Kuznetsov, N., Development of Mechatronic Guitar for Stroke Rehabilitation, LSU ORED, \$5000. (January 28, 2018 - August 1, 2018)

2012 University Research Council: Graduate Student Research Fellowship (University of Cincinnati). *Age-related changes in respiratory-postural interaction*. Amt.: \$3000.

2011 University Graduate Student Governance Association Research Award. *Multi-joint control of center of mass position during quiet stance*. Amt.: \$190

- 2010 Seeman-Frakes Graduate Student Research Fund (University of Cincinnati). *Modulation and coordination of respiratory rhythm with movement in manual precision aiming*. Amt.: \$305
- 2009 University Research Council: Graduate Student Research Fellowship (University of Cincinnati). *Dynamics of Motor Performance in Force Production*. Amt.: \$3000.
- 2009 Seeman-Frakes Graduate Student Research Fund (University of Cincinnati). *Respiratory-Motor Coordination in Force Production*. Amt.: \$700

PEER-REVIEWED PUBLICATIONS

1. Raisbeck, L., Yamada, M., Diekfuss, J.A., Kuznetsov, N. A. (submitted). The effects of attentional focus instructions and task difficulty in a paced fine motor skill. *Journal of Motor Behavior*.
2. Kodama, K., Yasuda, K., Kuznetsov, N. A., Hayashi, Y., & Iwata, H. (2019). Balance Training with a Vibrotactile Biofeedback System Affects the Dynamical Structure of the Center of Pressure Trajectories in Chronic Stroke Patients. *Frontiers in Human Neuroscience*, 13, 84.
3. Kuznetsov, N.A., Robins, R.K., Long, B., Jakiela, J.T., Haran, F.J., Ross, S.E., Wright, W.G., & Rhea, C.K. Validity and reliability of a smartphone app to quantify neuromotor function using a dynamic balance test (2018). *Physiological Measurement*, 39, 02NT01.
4. LoJacono, C., Pherson, R. M., Kuznetsov, N.A., Raisbeck, L. D., Ross, S., & Rhea, C. (2017). Obstacle Crossing in a Virtual Environment Transfers to a Real Environment. *Journal of Motor Learning and Development*, 1-27.
5. Kuznetsov N.A. & Rhea, C.K. (2017) Power considerations for the application of detrended fluctuation analysis in gait variability studies. *PLOS ONE*, 12(3): e0174144.
6. Rhea, C.K. & Kuznetsov, N.A. (2017). Using visual stimuli to enhance gait control. *Journal of Vestibular Research*, 27(1), 7-16.
7. Richardson, M. J., Paxton, A., & Kuznetsov, N. A. (2017). Nonlinear methods for understanding complex dynamical phenomena in psychological science. *Psychological Science Agenda*, 31(2).
8. Rhea, C.K., Kuznetsov, N.A., Ross, S.E., Long, B., Jakiela, J.T., Bailie, J.M., Yanagi, M.A., Haran, F.J., Wright, W.G., Robins, R.K., Sargent, P.D., & Duckworth, J.L. (2017). Development of a portable tool for screening neuromotor sequelae from repetitive low-level blast exposure. *Journal of Military Medicine*, 182(3/4), 147-154.
9. Huber, M., Kuznetsov, N.A., & Sternad, D. (2016). Persistence of reduced neuromotor noise in long-term motor skill learning. *Journal of Neurophysiology*, 116(6), 2922-2935.
10. Kuznetsov, N. A. & Riley, M. A. (2015). The role of task constraints in relating laboratory and clinical measures of balance. *Gait & Posture*, 42, 275-279.
11. Kuznetsov, N. A., Luberto, C. M., Avallone, K., Kraemer, K., McLeish, A. C., & Riley, M. A. (2015). Characteristics of postural control among young adults with asthma. *Journal of Asthma*, 52, 191-197.
12. Harrison, S. J., Kuznetsov, N. A., & Breheim, S. (2013). Flexible kinesthetic distance perception: When do your arms tell you how far you have walked? *Journal of Motor Behavior*, 45, 239-247.
13. Kuznetsov, N., Bonnette, S., Gao, J., & Riley, M. A. (2013). Adaptive fractal analysis reveals limits to fractal scaling in center of pressure trajectories. *Annals of Biomedical Engineering*, 41(8), 1646-1660.

14. Riley, M. A., Bonnette, S., Kuznetsov, N. A., Wallot, S., & Gao, J. (2012). A tutorial introduction to adaptive fractal analysis. *Frontiers in Fractal Physiology*, 3, 1-10. doi: 10.3389/fphys.2012.00371
15. Kuznetsov, N. A., & Riley, M. A. (2012). Effects of breathing on multijoint control of center of mass position during upright stance. *Journal of Motor Behavior*, 44, 241-253.
16. Kuznetsov, N. A., & Wallot, S. (2011). Effects of accuracy feedback on fractal characteristics of time estimation. *Frontiers in Integrative Neuroscience*, 5, 1-12.
17. Riley, M. A., Kuznetsov, N. A., & Bonnette, S. (2011). State-, parameter-, and graph-dynamics: Constraints and the distillation of postural control systems. *Science & Motricité*, 74, 5-18.
18. Kuznetsov, N. A., Shockley, K. D., Richardson, M. J., & Riley, M. A. (2011). Effect of precision aiming on respiration and the postural-respiratory synergy. *Neuroscience Letters*, 502, 13-17.
19. Kuznetsov, N. A., & Riley, M. A. (2010). Spatial resolution of visual feedback affects variability and structure of isometric force. *Neuroscience Letters*, 470, 121-125.

BOOK CHAPTERS

- Rhea, C.K., Kuznetsov, N.A., Wright, W.G., Haran, F.J., Ross, S.E., & Duckworth, J.L. (2018). Assessments for quantifying neuromotor functioning after repetitive blast exposure. In A. Srivastava and C. Cox (Eds.), *Pre-Clinical and Clinical Methods in Brain Trauma Research*. New York: Springer
- Sternad, D., Huber, M.E., & Kuznetsov, N. A. (2014). Acquisition of novel and complex motor skills: Stable solutions where intrinsic noise matters less. In M. F. Levin (Ed.), *Progress in Motor Control: A Multidisciplinary Perspective*, Advances in Experimental Medicine and Biology. New York, NY: Springer.
- Kuznetsov, N. A., Bonnette, S., & Riley, M. A. (2014). Nonlinear time series methods for analyzing behavioral sequences. In K. Davids, R. Hristovski, D. Araújo, N. Balague Serre, C. Button & P. Passos (Eds.), *Complex Systems in Sport*. New York, NY: Routledge.

CONFERENCE PROCEEDINGS

- Dechenaud, M., Laidig, D., Seel, T., Gilbert, H.B., Kuznetsov, N. A. (submitted). Development of Adapted Guitar to Improve Motor Functions After Stroke: Feasibility Study in Young Adults. 41st IEEE EMB Conference on Engineering in Medicine and Biology (EMBC), Berlin, Germany.
- Kuznetsov, N. A., Huber, M.E., Sternad, D. (2014). Exploratory aspects of variability in learning a novel skill. 40th Annual Northeast Bioengineering Conference (NEBEC). Boston, MA. doi: 10.1109/NEBEC.2014.6972847
- Kuznetsov, N. A., & Riley, M. A. (2009). Dynamics of motor performance in visually guided force production. In J. Wagman & C. Pagano (Eds.), *Studies in Perception and Action X* (pp. 26-29). New York: Lawrence Erlbaum Associates.

ORAL PRESENTATIONS

- Sugimoto Y.A., Kuznetsov N.A., Rhea C.K., Ross S.E. Stride-to-Stride Gait Variability in Individuals with Chronic Ankle Instability, Copers, and Healthy Individuals. (June 28, 2018). *69th National Athletic Trainers Association Clinical Symposia*, New Orleans, LA.
- Rhea, C.K., Kuznetsov, N.A., Robins, R.K., Jakiela, J.T., LoJacono, C.T., Ross, S.E., MacPherson, R.P., Long, B., Haran, F.J., & Wright, G.W. (June 25-29, 2017). Dynamic balance decrements last longer than 10 days following a concussion ISPGR World Congress, Fort Lauderdale, FL.

- Kuznetsov, N.A., Robins, R.K., Jakiela, J.T., LoJacono, C.T., Ross, S.E., MacPherson, R.P., Long, B., Haran, F.J., Wright, W.G. & Rhea, C.K. (June 2, 2017). Convergent validity of metrics provided by a portable gait assessment protocol. North American Society for the Psychology of Sport and Physical Activity, San Diego, CA.
- Kuznetsov, N.A., Jakiela, J.T., Ross, S.E., & Rhea, C.K. (March, 2017). Adaptive fractal analysis of the center-of-pressure during the sensory organization test in individuals with concussion. Human Movement Science & Biomechanics Research Symposium, Chapel Hill, NC.
- Jakiela, J.T., Labban, J.D., Kuznetsov, N. A., Ross, S.E., Norris, J.N., McCarron, R.M., Haran, F.J., & Rhea, C.K. (September 13-15, 2016). *Development of composite measures using neuromotor and neurocognitive assessments to predict return-to-full-duty duration in post-concussive military personnel*. 2016 Defense Centers of Excellence (DCoE) for Psychological Health and Traumatic Brain Injury Summit, Webinar.
- Kuznetsov, N. A., Cone, B., Schleich, K .N., Guthmann, D., Ross, S. E., Long, B., Robins, R. K., Wright, W. G., Haran, F. J. & Rhea, C. K. (June 18, 2016). *Reliability of movement timing metrics provided by a portable gait assessment protocol*. North American Society for the Psychology of Sport and Physical Activity, Montreal, Canada.
- Rhea, C.K., Kuznetsov, N. A., Long, B., MacPherson, R. P., Jakiela, J. T., Robins, R. K., Haran, F. J., Ross, S. E., Wright, W. G. (June 17, 2016). *Can a smartphone app be used to objectively measure neuromotor control after a concussion?* North American Society for the Psychology of Sport and Physical Activity, Montreal, Canada.
- Kuznetsov, N. A. & Sternad, D. (March 7, 2015). *The attraction of rhythm: How discrete events merge into a rhythmic sequence*. New England Sequencing and Timing (NEST), University of Massachusetts, Amherst, MA.
- Kuznetsov, N. A., & Wallot, S. (August, 2012). *Adaptive Fractal Analysis of temporal interval estimation: Effects of practice and feedback*. 3rd annual Cognition & Dynamics Workshop, Storrs, CT, University of Connecticut, CT.
- Kuznetsov, N. A., & Wallot, S. (July, 2012). *Fractal dynamics of temporal interval estimation*. Mathematical Psychology, Columbus, OH.
- Wallot, S., & Kuznetsov, N. A. (June, 2012). *Effects of accuracy feedback on fractal characteristics of time estimation*. 25th European Conference on Operational Research, Vilnius, Lithuania.
- Kuznetsov, N. A., Athreya, D., & Wallot, S. (April, 2011). *How do we perceive time?* Second Annual Conference on Cognition-Action-Perception. Cincinnati, OH.
- Kuznetsov, N. A., & Riley, M. A. (July, 2010). *Respiration and postural sway in manual precision aiming*. International Society for Ecological Psychology. Normal, IL.
- Kuznetsov, N. A. (May, 2010). *Distance matrix-based method for determining fractal dimension of time series*. First Annual Conference on Cognition-Action-Perception. Cincinnati, OH.

POSTER PRESENTATIONS

- Miller, N. T., Brandon, Z. W., Bryant, M. C., Douglas, A. L., Haase, M., Justice, K. R., Kirsch, J., Dechenaud, M., Gilbert, H. B., Kuznetsov, N.A. (July 23, 2018). *Development of adaptive mechatronic guitar for stroke rehabilitation*. Progress in Clinical Motor Control I: Neurorehabilitation, State College, PA.

- Winges, S., Acharya, P. A., Kuznetsov, N.A., (June 21, 2018) *Application of cross-recurrence quantification analysis to characterize finger entrainment during rhythmic tapping*. North American Society for the Psychology of Sport and Physical Activity, Denver, CO.
- Raisbeck, L. D., Kuznetsov, N.A., Yamada, M., (June 21, 2018) *The effects of using attentional focus in a virtual reality environment*. North American Society for the Psychology of Sport and Physical Activity, Denver, CO.
- Kuznetsov, N.A., (May 3, 2018). *Contributions of Action Selection and Execution to Spatiotemporal Interference in a Bimanual Rhythmic-Discrete Task*. Neural Control of Movement. Society for Neural Control of Movement, Santa Fe, NM.
- Kuznetsov, N. A., Robins, R. K., Ross, S. E., Wright, W. G., Haran, F. J., Jakiela, J. T., Bailie, J. M., Yanagi, M. A., Long, B., Duckworth, J. L., & Rhea, C. K. (August 16, 2016). *Neuromotor testing post-mTBI: Reliability of movement metrics from a smartphone application*. Military Health System Research Symposium, Kissimmee, FL.
- Kuznetsov, N. A. & Rhea, C.K. (August 5, 2016). *Power analysis for using detrended fluctuation analysis on short time series of gait variables*. American Society of Biomechanics, Raleigh, NC.
- Rhea, C. K., Kuznetsov, N. A., Bailie, J. M., Yanagi, M. A., Long, B., Haran, F. J., Ross, S. E., Wright, W. G., Robins, R. K., Jakiela, J. T., Sargent, P. D., & Duckworth, J. L. (August 3, 2016). *Concussion history influences neuromotor performance after exposure to repetitive low-level blast exposure*. American Society of Biomechanics, Raleigh, NC.
- Jakiela, J. T., Kuznetsov, N. A., Ross S.E., Labban, J.D., Norris, J.N., McCarron, R.M., Haran, F. J., & Rhea, C.K. (June 15, 2016). *Prognostic utility of neuromotor and neurocognitive testing in predicting return-to-full-duty duration after a concussion in military personnel*. North American Society for the Psychology of Sport and Physical Activity, Montreal, Canada.
- Kuznetsov, N.A. & Rhea, C.K. (February 26, 2016). *Characterizing correlations in short time series of gait using detrended fluctuation analysis: power analysis for study design*. Human Movement Science and Biomechanics Symposium, Chapel Hill, NC.
- Kuznetsov, N. A., Huber, M.E., Sternad, D. (April 20, 2015). *Neuromotor noise can decrease with long-term retention*. Neural Control of Movement, Charleston, SC.
- Harrigan, K., Kuznetsov, N. A., Sternad, D. (April 6, 2015). *Effects of tDCS on precision of finger force control and rhythmic tapping movements*. Research, Innovation, and Scholarship Expo (RISE), Boston, MA.
- Kuznetsov, N. A., Huber, M. E., & Sternad, D. (April, 2014). *Exploratory aspects of variability in learning a novel skill*. Northeast Bioengineering Conference. Boston, MA.
- Kuznetsov, N. A., Riley, M. A., Bonnette, S., Gao, J., & Vilinsky, I. (October, 2012). *Adaptive fractal analysis of postural sway*. Society for Neuroscience. New Orleans, LA.
- Munafò, J., Kuznetsov, N. A., & Riley, M. (May, 2012) *Perception of events: role of events*. Poster presented at the University of Cincinnati Undergraduate Conference, Cincinnati OH.
- Kuznetsov, N. A. & Riley, M. A. (July, 2011). *Effects of respiration modes on multi-joint control of center of mass position during upright stance: Uncontrolled manifold analysis*. Progress in Motor Control VIII. Cincinnati, OH.

Kuznetsov, N. A., Riley, M. A., Gottschall, J., & Lippens, V. (August, 2009). *Detecting deterministic structure in time series of human balance performance: A Comparison of RQA and the Langevin method.* 3rd Annual Recurrence Plot Conference. Montreal, QC.

Kuznetsov, N. A., & Riley, M. A. (July, 2009). *Prospective and reactive control of isometric force.* 15th International Conference on Perception and Action, Minneapolis, MN.

Kuznetsov, N. A., Hopkin, C., & Holden, J. G. (April, 2009). *Cognitive dynamics in perceptual decision task.* 89th Annual Convention of Western Psychological Association. Portland, OR.

TEACHING EXPERIENCE

Instructor of record:

Course Number	Title	Semester	Enrollment
KIN3514 SEC 002	Biomechanical Basis of Kinesiology	Fall 2018	67
KIN3514 SEC 003	Biomechanical Basis of Kinesiology	Fall 2018	48
KIN4900	Independent Study	Fall 2018	1
KIN 4571	Neuromotor Control of Human Movement	Spring 2018	43
KIN4900	Independent Study	Spring 2018	4
KIN 4571	Neuromotor Control of Human Movement	Fall 2017	21
15-PSYC-945	Dynamics in Perception and Action	Fall 2012	18
15-PSYC-280	Research Methods in Psychology	Fall 2009- Winter 2011	24
15-PSYC-275	Intermediate Psychology Statistics	Winter 2010	25

Teaching assistantships:

Course Number	Title	Semester	Enrollment
UNCG KIN 376	Biomechanics of Sport and Physical Activity	Fall 2016	105
UNCG KIN 711	Human System Variability	Fall 2015	15
15-PSYC-275	Intermediate Psychology Statistics	Fall 2009	25
15-PSYC-1010	Introduction to Psychology	Fall 2008	100

Other teaching experiences:

Nonlinear Methods for Psychological Science (24 students), University of Cincinnati
Fractal Methods, Instructor, June 2015, 2016, 2017, 2018

This 5-day course teaches novel data analysis and visualization techniques based on nonlinear dynamical system theory and fractal theory. I have taught the fractal analysis section of the course (1.5 days of teaching).

PRISM: Attracting Students to Mathematics, Physics, and Biology through Interdisciplinary Research and Discovery (20 students on average), Northeastern University

This is an intensive STEM overview course for Freshmen and Sophomores at Northeastern University. I taught programming section (Matlab) and supervised data collection for the laboratory part of the course.

Fall 2013 and Spring 2014

Ethnic Minority Enrichment in Research and Graduate Education Assistant at University of Cincinnati
Summers of 2009, 2010, 2011, 2012

Science, Technology, Engineering, Mathematics (STEM) Tutor at Hughes High School
Spring 2010

PROFESSIONAL SERVICE

Manuscript Ad-Hoc Reviewer (list of journals)

PLoS One, Frontiers in Physiology, Behavior Research Methods, Experimental Brain Research, Frontiers in Human Neuroscience, Journal of Neurophysiology, Sensors, Human Movement Science, Journal of NeuroEngineering and Rehabilitation

ACADEMIC and PROFESSIONAL HONORS

2011 Excellent poster presentation, Cognition-Action-Perception Conference, UC

2007 Undergraduate Quantitative Research Award, CSUN

2007 University Scholar Award, CSUN

2006 Helen Wills Neuroscience Institute Summer Scholars Program