



ANGELA DiDOMENICO, Ph.D., CPE PROFESSIONAL BIOGRAPHICAL OUTLINE

BACKGROUND

Dr. DiDomenico earned a Ph.D. and an M.S. in Industrial and Systems Engineering, with an emphasis in Human Factors Engineering, at Virginia Polytechnic Institute and State University, Blacksburg, Virginia. Dr. DiDomenico also earned an M.S. in Mathematics from Virginia Polytechnic Institute and State University and a B.A. in Mathematics at The University of Connecticut, Storrs, Connecticut. She is a Certified Professional Ergonomist (CPE). Prior to joining ARCCA, Dr. DiDomenico spent 10 years working as a research scientist in the Center for Physical Ergonomics at the Liberty Mutual Research Institute for Safety in Hopkinton, Massachusetts. While at the Institute, she developed and conducted research projects in occupational biomechanics and human factors, focusing on the prevention of slips, trips, and falls and determining causal factors of related injuries. Findings were disseminated by Dr. DiDomenico through peer-reviewed journals, technical seminars, and presentations.

Dr. DiDomenico has completed research projects examining the mechanisms of balance control and the effect of task and environmental factors. Research projects have included the examination of microslips during gait, lateral reaching while working on stepladders, and postural transitions from non-erect postures to standing. Dr. DiDomenico investigated the relationship of kinematic, kinetic, and electromyographic data collected during laboratory studies performed on human participants to advance scientific knowledge regarding the interaction between human movement during task performance and the mechanisms of balance control as measured by the center of mass and the center of pressure. In addition to laboratory studies, Dr. DiDomenico gained valuable experience as part of a diverse interdisciplinary team that included engineers, safety professionals, physiologists, psychologists, and epidemiologists to identify high-risk tasks, particularly those in the construction industry, and potential causal factors of injuries related to falls. As part of the team, Dr. DiDomenico went on worksite visits, including commercial and residential construction sites, and interacted with various types of employees to obtain an accurate assessment of injury risks.

In addition to her work related to slips and falls, Dr. DiDomenico has extensive experience related to construction safety (including the New York Labor Laws), distracted walking, gait analysis, slip resistance testing, assessment of physical and mental workload, and effects of dual-tasking on performance. Dr. DiDomenico is also involved in accident and mishap investigation involving workplace injuries, ladder safety, falls from scaffolding and the biomechanics of injury. Dr. DiDomenico's work includes site and equipment inspections, applicable code compliance, testing, injury causation and tolerance analysis.

Dr. DiDomenico's academic and professional experience represents a unique combination of knowledge in slips, trips, and falls, occupational biomechanics, human factors, construction, general worksite safety, live subject kinematic and kinetic testing, and human anatomy. She has published in the areas of postural control, gait analysis, occupational biomechanics, safety, human factors, and ergonomics. Currently, she specializes in slip/trip/fall analysis, construction safety, human factors and ergonomics, and biomechanical and injury causation analysis.

SUMMARY OF EXPERIENCE

- Investigations of construction and industrial workplace accidents based on safety principles, human factors, proper equipment design and biomechanics.
- Developed and executed testing programs to assess various potential factors of workplace accidents, including personal protective equipment, fall protection, ladders and injury mechanisms.
- Investigations of slip, trip and fall mishaps utilizing expertise in codes, human factors, ergonomics and biomechanics.

- Evaluation of OSHA compliance/non-compliance in construction environments and general industry workplace settings.
- Conducted laboratory research studies involving identification techniques of microslips during gait and quantifying kinematic and kinetic differences between normal gait and slip events.
- Conducted laboratory research studies involving data collection from younger and older healthy participants, with a focus on age-related alterations in balance control mechanisms.
- Modified uni-planar methodological techniques for determining stabilization time after the application of an external perturbation during various tasks including manual materials handling, lateral reaching on stepladders, and multi-planar postural transitions.
- Conducted research on the interaction of physical and mental workload, including assessment (objective and subjective) and resource allocation.

AREAS OF SPECIALTY

- Slip/Trip/Fall Kinematics and Kinetics
- Ladder and Scaffolding Falls
- Injury Causation Biomechanics
- Human Kinematic Analysis and Testing
- Illumination Analysis and Testing
- Building Code Compliance
- Human Factors and Ergonomics
- OSHA and NYC DOB Certified
- Construction Safety
- Industrial Safety
- Balance Control Measurement
- ADA Compliance

CERTIFICATIONS AND AWARDS

- Certified Professional Ergonomist
- OSHA 30 Hour Outreach Training for the Construction Industry Certification (2013)
- OSHA Fall Protection for the Competent Person Certification (2013)
- OSHA Scaffolding Safety for the Competent Person Certification (2013)
- OSHA 10 Hour Outreach Training Program – General Industry Certification (2015)
- OSHA Industrial Truck Operator Certification (2017)
- NYC DOB 4-Hour Supported Scaffolding User Certification (2015)
- NYC DOB 32-Hour Supported Scaffold Installer/Remover Certification (2015)
- NYC DOB 8-Hour Site Safety Coordinator Training (2016)
- Designated as one of “100 Women Making a Difference in the Safety, Health and Environmental Profession” by ASSE’s Women in Safety Engineering (2011)
- National Academies member of the Committee on Review of NIOSH Construction Research Program (invited July 2007)

EDUCATION

Ph.D. Industrial and Systems Engineering, Human Factors Option (2003)

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

Dissertation: *An investigation on subjective assessments of workload and postural stability under conditions of joint mental and physical demands*

M.S. Industrial and Systems Engineering, Human Factors Option and Safety Certificate (1999)

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

Thesis: *Finger force capability: measurement and prediction using anthropometric and myoelectric measures*

M.S. Mathematics Department (1996)

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

B.A. Mathematics Department (1992)

University of Connecticut, Storrs, CT

PROFESSIONAL EXPERIENCE

June 2013 – Present | ARCCA, Incorporated | Human Factors/Biomechanics

- Investigates the cause, nature, and severity of injuries using biomechanics.
- Evaluates slip, trip and fall mishaps including ladder falls, scaffolding falls, and slip resistance testing of walkway surfaces
- Performs analysis of building, industrial and construction codes associated with personal injuries and premise liability
- Applies the principles of human factors and biomechanics to the anatomy and physiology of the human body to explore the cause, nature, and severity of injuries, particularly those caused by slip, trip, and fall incidents.
- Participates in biomechanical investigations involving human volunteers and anthropometric test devices that explore human response to injury mechanisms, tolerance thresholds, and injury prevention.
- Analysis of ingress and egress issues from buildings and vehicles as related to loss of balance and consequential injury risk.
- Provides instruction in the area of slip/trip/fall analysis, human factors, and biomechanical and injury causation analysis.

August 2003 – May 2013 | Center for Physical Ergonomics (LMRIS) | Research Scientist

- Developed and conducted research projects in human factors and occupational biomechanics, focusing on the prevention of slips, trips, and falls and determining causal factors.
- Disseminated results to scientific community and customers through peer-reviewed journals, technical seminars, and presentations.
- Accountable for the design and management of research projects and associated team and technical staff.
- Also provided internal and external peer review of publications and presentations.



August 1999 – July 2003 | Army Research Laboratories | Research Assistant

- Internship

January 1998 – August 1999 | National Institute of Occupational Safety and Health | Research Assistant

- Fellowship

Summer 1997 | Industrial Ergonomics Laboratory | Research Assistant

- Internship

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

- Member, American Society of Safety Engineers
- Member, American Society of Biomechanics
- Member, Human Factors and Ergonomics Society
- Member, American Society for Testing and Materials, F13 Committee, Pedestrian/Walkway Safety and Footwear
- Member, IEA Slips, Trips and Falls Committee
- Corresponding Member, American Industrial Hygiene Association Construction Committee
- Member, Ladder Subgroup for National Fall Prevention Campaign (2012-2013)
- Member, NIOSH Fall Prevention Work Group (2011-2013)
- Member, Massachusetts Dept. of Public Health Working Group on Falls in Construction (2008-2013)

PUBLICATIONS

Colman, J.H. and **DiDomenico, A.** (2017). A slippery slope: How counsel and experts can work together to detect slip and fall claims fraud, *The CLM*, April, 14-16.

DiDomenico, A. (2016). Injuries resulting from slips and trips on a construction site, *The Insurance Research Letter*, October, 21-23.

DiDomenico, A., McGorry, R.W. and Banks, J.J. (2016). Stabilization times after transitions to standing from different working postures, *Ergonomics*, 59(10), 1288-1293.

Li, Z., Chang, C.C., **DiDomenico, A.**, Qi, C., Chiu, S.L. (2015). Investigating gait adjustments and body sway while walking across flexible wooden scaffold boards, *Ergonomics*, 58(9), 1581-1588.

DiDomenico, A., McGorry, R.W. and Banks, J.J. (2015). Factors affecting time-to-contact during quiet standing, *Motor Control*, 19(1), 1-9.

DiDomenico, A. and Audino, D.C. (2014). Can worker behavior be the cause? How workplace pressure can lead to serious injury, *New Jersey Law Journal*, October.

DiDomenico, A., McGorry, R.W. and Banks, J.J. (2013). Methodological considerations of existing techniques for determining stabilization times following a multi-planar transition, *Gait and Posture*, 38(3), 541-543.

- Strang A., **DiDomenico A.**, Berg W., McGorry R.W. (2013). Assessment of differenced center of pressure time series improves detection of age-related changes in postural coordination, *Gait and Posture*, 38(2), 345-348.
- DiDomenico, A.** and Lesch, M.F. (2013). Taking risks: Reaching on ladders is affected by motivation and acclimation, *Professional Safety*, Feb, 50-53.
- DiDomenico, A.**, McGorry, R. W. and Banks, J. J. (2011). Effects of common working postures on balance control during the stabilisation phase of transitioning to standing, *Ergonomics*, 54(11), 1053-1059.
- Catena, R. D., **DiDomenico, A.**, Banks, J. J. and Dennerlein, J. T. (2011). Balance control during lateral load transfers over a slippery surface, *Ergonomics*, 54(11), 1060-1071.
- DiDomenico, A.** and Nussbaum, M. A. (2011). Effects of different physical workload parameters on mental workload and performance. *International Journal of Industrial Ergonomics*, 41(3), 255-260.
- DiDomenico, A.**, McGorry, R.W., Blair, M.F., and Huang, Y.H. (2011). Losing Balance Upon Standing: Do Construction Workers Perceive the Problem? *Professional Safety*.
- Catena, R. D., **DiDomenico, A.**, Banks, J.J. and Dennerlein, J.T. et al. (2010). The effect of load weight on balance control during lateral box transfers. *Ergonomics*, 53(11), 1359-1367.
- Strang, A. J. and **DiDomenico, A.** (2010). Postural Control: Age-related changes in working-age men. *Professional Safety*, 55(12), 27-3
- DiDomenico, A.**, Gielo-Perczak, K., McGorry, R. W. and Chang, C. C. (2010). Effects of simulated occupational task parameters on balance. *Applied Ergonomics*, 41, 484-489.
- DiDomenico, A.**, McGorry, R. W., Huang, Y. H., and Blair, M. F. (2010). Perceptions of postural stability after transitioning to standing among construction workers. *Safety Science*, 48, 166-172.
- McGorry, R. W., **DiDomenico, A.**, and Chang, C. C. (2010). The anatomy of a slip: Kinetic and kinematic characteristics of slip and non-slip matched trials. *Applied Ergonomics*, 41, 41-46.
- DiDomenico, A.** and Nussbaum, M. A. (2008). Interactive effects of physical and mental workload on subjective workload assessment. *International Journal of Industrial Ergonomics*, 38(11-12), 977-983.
- DiDomenico, A.** and Nussbaum, M.A. (2008). Estimation of forces exerted by the fingers using standardized surface EMG. *Ergonomics*, 51(6), 858-871.
- McGorry, R. W., Chang, C. C. and **DiDomenico, A.** (2008) Rearward movements of the heel at heel strike. *Applied Ergonomics*, 39(6), 678-684.
- DiDomenico, A.**, McGorry, R. W. and Chang, C. C. (2007). Association of subjective ratings of slipperiness to heel displacement following contact with the floor. *Applied Ergonomics*, 38(5), 533-539.
- McGorry, R. W., **DiDomenico, A.** and Chang, C. C. (2007). The use of a heel mounted accelerometer as an adjunct measure of slip distance. *Applied Ergonomics*, 38(3), 369-376.
- Gielo-Perczak, K., Maynard, W., and **DiDomenico, A.** (2006). Multidimensional Aspects of Slips and Falls. In R.C. Williges (Ed.), *Reviews of Human Factors and Ergonomics Volume 2* (pp. 165-194). Santa Monica, CA: Human Factors and Ergonomics Society.
- DiDomenico, A.** and Nussbaum, M. A. (2005). Interactive effects of mental and postural demands on subjective assessment of mental workload and postural stability. *Safety Science*, 43, 485-495.



DiDomenico, A. and Nussbaum, M. A. (2003). Measurement and prediction of single and multi-digit finger strength. *Ergonomics*, 46(15), 1531-48.

DiDomenico, A. and Nussbaum, M.A. (1998) Intraabdominal Pressure, in *Industrial and Occupational Ergonomics: Users Encyclopedia*, Mital, A. (ed.), The International Journal of Industrial Engineering.