Exponent®
Engineering & Scientific Consulting


# Chason Coelho, Ph.D., CSP, CFI

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## Professional Profile

Dr. Coelho is a human factors, safety, and risk management professional with experience in several industries, including aviation, aerospace, on-shore and off-shore oil and gas, chemical, marine, mining, construction, manufacturing, utilities, wind, and rail transport. A cognitive neuroscientist whose research has focused on human motor control, he applies a uniquely interdisciplinary expertise in cognitive and physical behavior to issues such as warnings and labels, industrial and public safety, human error and reliability, decision making, safety in design, human-machine interfacing, and ergonomics.

Dr. Coelho addresses human performance in operations, maintenance, emergency, and public contexts. He also provides expert analysis and testimony in cases involving premises liability, personal injury, international arbitration, and product liability, among others. Dr. Coelho is a Team Oregon motorcycle safety instructor and avid motorcyclist, was a motorcycle safety instructor in Washington State, and has published and presented on motorcycle safety. Relatedly, he routinely evaluates incidents involving motorcycle safety and operator standard of care issues. Dr. Coelho is also a private pilot, certified forklift trainer, and certified traffic control flagger and provides expert human factors and safety analysis and testimony in cases involving aircraft mishaps, forklift incidents, and road construction zone incidents.

With his extensive experience in risk management, Dr. Coelho has conducted a variety of risk analyses aimed at reducing human error through incorporating human factors principles in design, policies, procedures, hardware, software, work environments, and team resource management. He also specializes in root cause analyses and incident investigations with respect to human performance gaps involved in adverse events such as explosions, fires, chemical releases, and major equipment failures.

Dr. Coelho is a published subject matter expert on multiple human performance topics, including action selection, manual object manipulation, handedness, hand choice, lateralized performance asymmetries of the arms, coordination of walking, standing, and reaching behaviors, decision making, learning, visual object recognition, human fatigue risk management, risk perception, motorcycle safety, and warnings. He holds a Certified Safety Professional (CSP) designation from the Board of Certified Safety Professionals, a Certified Fire Investigator (CFI) designation from the Texas Commission on Fire Protection, and a Safety Practice Certificate from Texas A&M University for advanced training in a variety of safety topics. Dr. Coelho is authorized to teach the 10- and 30-hour Outreach Courses in both OSHA General Industry and Construction Safety and Health Standards. He also has experience as a volunteer firefighter, technical and confined space rescuer, vehicle extrication technician, and emergency medical technician.

Dr. Coelho is practiced at evaluating compliance with regulatory requirements, including those set forth by the Occupational Safety and Health Administration (OSHA), Federal Aviation Administration (FAA), and others. He is also experienced at assessing conformance with industry consensus standards, including those published by the American National Standards Institute (ANSI), International Organization for Standardization (ISO), National Fire Protection Association (NFPA), and others.

Prior to joining Exponent, Dr. Coelho conducted his doctoral research at Pennsylvania State University after completing an internship at the University of Chicago and an undergraduate program with an emphasis in learning, memory, and cognition at UCLA. He started his applied professional career as a human factors design engineer supporting the International Space Station Program at NASA Johnson Space Center.

## Academic Credentials & Professional Honors

Ph.D., Psychology, Penn State University, 2013

M.S., Psychology, Penn State University, 2011

B.A., Psychology, University of California, Los Angeles (UCLA), 2007

Chair, Board of Directors, Evergreen Safety Council

Interstate Natural Gas Association of America (INGAA) steering committee member, fatigue risk management system guidelines

National Science Foundation Graduate Research Fellowship Program: Honorable Mention (2011)

Nominated Collegiate Scholar, International Scholar Laureate Program of the Golden Key International Honor Society (2007)

UCLA Departmental Highest Honors in Psychology (2007)

UCLA University Merit Grant (2005)

California Governor's Scholar Award (2001)

## Licenses and Certifications

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER)

Certified Ergonomics Assessment Specialist (CEAS)

Certified Fire Investigator (CFI) (TX)

Certified Safety Professional (CSP)

Helicopter Underwater Egress Training (HUET)

Instructor - Motorcycle Safety Program (OR)

PADI Advanced Open Water Scuba Certification

Powered Industrial Truck (PIT) Operator and Operator Trainer, Class I-V

Traffic Control Flagger (WA)

## Academic Appointments

Lecturer (Psychology, Research Methods, Statistics), Psychology Department, Pennsylvania State University, 2011-2013

## Professional Affiliations

Oregon State University College of Health

Board of Certified Safety Professionals (BCSP)

Human Factors & Ergonomics Society (HFES)

National Fire Protection Association (NFPA)

Aircraft Owners and Pilots Association (AOPA)

Evergreen Safety Council (ESC)

## Publications

Diebol, J.K., LoVoi, K., & Coelho, C.J. (2023). Behavioral compliance with safety signs and labels: An analysis of research methods from the past 25 years. In Proceedings of the Human Factors and Ergonomics Society 67th Annual Meeting.

Coelho CJ, Garets SB, Bailey JD, Frank TA, Scully ID, Cades DM. Human factors issues of advanced rider assistance systems. 14th International Conference on Applied Human Factors and Ergonomics, San Francisco, CA, United States. 2023, July 20-24.

Coelho, C.J., Bailey, J.D., Frank, T.A., Scully, I.D., & Cades, D.M. (2023). Motorcycle Safety and Advanced Rider Assistance Systems (ARAS). THEMIS.

Coelho, C.J., Bailey, J.D., Frank, T.A., & Cades, D.M. (2022). Advanced driver assistance systems (ADAS) for motorcycles? The Defense News - WDTL.

Coelho, C.J., Bailey, J.D., Frank, T.A., & Cades, D.M. (2022). Advanced Rider Assistance Systems (ARAS): A New Approach for Motorcycle Safety. DTCI.

Coelho, C.J., Lakhiani, S.D., & Morrison, D. (2020). Stay Alert: Incorporate Fatigue into Risk Management. Chemical Engineering Progress, 116(1), 40-45.

Coelho, C.J., Lakhiani, S.D., & Morrison, D. (2019). Staying Alert: Incorporating Human Fatigue in Risk Management. Proceedings of the International Annual Meeting of the Human Factors and Ergonomics Society, October 28-November 1, 2019.

Staying Alert: Incorporating Human Fatigue in Risk Management. Proceedings of the International Annual Meeting of the Human Factors and Ergonomics Society, October 28-November 1, 2019.

Pushing Past Prescription: Fatigue Risk Management Systems in the Utilities Industry. Operations Conference and Biennial Exhibition, Nashville, Tennessee, April 30-May 3, 2019.

Brown, A. & Coelho, C.J. (2017). Modeling Goal-Directed Movements in Modern Pistol Competition. IEEE International Conference on Systems, Man, and Cybernetics. Banff, Canada.

Solnik, S., Pazin, N., Coelho, C.J., Rosenbaum, D.A., Scholz, J.P., Zatsiorsky, V.M., & Latash, M.L. (2014). Postural sway and perceived comfort in pointing tasks. Neuroscience Letters, 569, 18-22.

Hollaway, D. M. A., Johnson, J. D., & Coelho, C.J. (2014). There will be blood: API 770 and Human Error Prevention in Process Safety. 17th Annual International Symposium, MKO Process Safety Center, Texas A&M University, College Station, TX, 773-786.

Coelho, C.J., Studenka, B.E., & Rosenbaum, D.A. (2013). End-state comfort trumps handedness in object manipulation. Journal of Experimental Psychology: Human Perception and Performance, 40, 718-730.

Rosenbaum, D.A., Chapman, K.C., Coelho, C.J., Gong, L., & Studenka, B.E. (2013). Choosing actions. Frontiers in Psychology, 4, Article 273.

Coelho, C.J. & Rosenbaum, D.A. (2013). Is handedness just response bias? Psychonomic Bulletin & Review, 20, 957-962.

Solnik, S., Pazin, N., Coelho, C.J., Rosenbaum, D.A., Scholz, J.P., Zatsiorsky, V.M., & Latash, M.L. (2013). End-state comfort and joint configuration variance during reaching. Experimental Brain Research, 225, 431-442.

Coelho, C.J., Przyblya, A., Yadav V., & Sainburg, R.L. (2013). Hemispheric differences in the control of limb dynamics: A link between arm performance and arm selection patterns. Journal of Neurophysiology, 109, 825-838.

Przyblya, A., Coelho, C.J., Akpinar, S., Kirazci, S., & Sainburg, R.L. (2012). Sensorimotor performance asymmetries predict hand selection. Neuroscience, 228C, 349-360.

Coelho, C.J., Nusbaum, H., Rosenbaum, D.A., & Fenn, K.M. (2012). Imagined actions aren't just weak actions: Task variability promotes skill learning in physical practice but not in mental practice. Journal of Experimental Psychology: Language, Memory, and Cognition, 38, 1759-1764.

Rosenbaum, D.A., Coelho, C.J., Rhode, J.D., & Santamaria, J.P. (2010). Psychologically distinct classes of motor behavior inferred from individual differences: Evidence from a sequential stacking task. Journal of Motor Behavior, 42, 187-194.

Knowlton, B.J., McAuliffe, S.P., Coelho, C.J., & Hummel, J.E. (2009). Visual priming of inverted and rotated objects. Journal of Experimental Psychology: Learning, Memory, and Cognition, 35, 837-848.

**Selected Presentations**

Coelho CJ. Human factors issues of advanced rider assistance systems. Paper presented at the 14th International Conference on Applied Human Factors and Ergonomics, San Francisco, CA, United States. 2023, July 20-24.

Coelho, C.J., McLean, S. Connecting Safety and Wearable Technology to Manage Human Fatigue Risk. Distributech International, Orlando, FL, February 27, 2024.

Diebol, J.K., Coelho, C.J. Hazard Communications for Hardgoods. Course taught at the 2023 meeting of the Society of Chemical Hazard Communication (SCHC), Washington D.C., October 1, 2023.

Coelho, C.J., Diebol, J.D., Toney-Bolger, M. (2023). Incorporating Human Factors and Biomechanics Expertise in Product Development and Evaluation of New Technologies. Association of Equipment Manufacturers (AEM) Product Safety & Compliance and Product Liability Seminar.

Coelho, C.J., McLean, S. Efficiently Integrating Technology with PSM to Address Worker Fatigue. 18th Global Congress on Process Safety, San Antonio, TX, April 11, 2022.

Coelho, C.J., Techera. U. Integrating Technology with Fatigue Risk Management Systems (Invited). Fatigue Workshop of the Interstate Natural Gas Association of America (INGAA) Foundation, Houston, TX, December 8, 2021.

Coelho, C.J., McLean, S. Connecting Safety Management and Technology to Manage Human Fatigue

Risk, American Gas Association, Orlando, FL, October 7, 2021.

Kahle, H., Coelho, C.J., Colman, J. Panel on Fatigue Risk Assessment and Control (Invited). International Ergonomics Association 21st Triennial Congress, June 17, 2021.

Coelho, C.J. Incorporating Human Fatigue in Risk Management (Invited). American Society of Safety Professionals (ASSP) Professional Development Conference, April 29, 2021.

Scheibe, R.R., Coelho, C.J. Engineering and Human Factors Design Considerations in Product Liability. Wisconsin Product Liability Conference, September 30, 2020.

Coelho C.J., Lakhiani S.D., Morrison D.R. How the Field of Human Factors Helps Solve the Riddle of Serious Injuries and Fatalities, 16th Global Congress on Process Safety, August 19, 2020.

Coelho C.J., Cullen P., Lakhiani S.D., Morrison D.R. Human Factors in Process Safety Management, Short Course. 15th Global Congress on Process Safety, New Orleans, Louisiana, March 31, 2019.

Coelho C.J., Cullen P., Lakhiani S.D., Morrison D.R. Staying Alert: Incorporating Fatigue in Risk Management. 15th Global Congress on Process Safety, New Orleans, Louisiana, April 1, 2019.

Coelho, C.J. (2016). Addressing Human Factors in Process Safety - Corporate and Plant Practices, 12th Global Congress on Process Safety, Houston, TX, American Institute of Chemical Engineers (AIChE).

Coelho, C.J. (2018). A Novel Approach to Reducing Human Error in Utility Industries, Electric Power, Nashville, TN.

Coelho, C.J. & Fiume, L. (2018). A Novel Approach to Reducing Human Error in Utility Industries, The Changing Face of Station Maintenance, Centre for Energy Advancement through Technological Innovation (CEATI) International.

## Additional Education & Training

High Speed Braking Clinic, Team Oregon Motorcycle Safety Program

Cornering Clinic, Team Oregon Motorcycle Safety Program

Braking Clinic, Team Oregon Motorcycle Safety Program

OSHA 500, Trainer Course in OSHA Standards for Construction

OSHA 501, Trainer Course in OSHA Standards for General Industry

OSHA 510, OSHA Standards for the Construction Industry

OSHA 511, OSHA Standards for General Industry

Working at Heights for Onshore Wind Turbines (WINDA, Opis Renewables)

Confined Space (General Industry, 360 Training)

NFPA 70E (2023): Standard for Electrical Safety in the Workplace (360 Training)

Human Factors in Aircraft Accident Investigation (US DOT Transportation Safety Institute)

MSHA Part 48 New Miner Training (Compliance Training)

ISO 45001, Occupational Health and Safety Management Systems (BSI)

ISO 19011, Auditing Management Systems (BSI)

Safety Practice Certificate, Mary K. O'Conner Process Safety Center, Texas A&M University

Vehicle Rescuer / Extrication Technician, Texas A&M Engineering Extension Service (TEEX)

Firefighter II (vol.), State Fire Fighters' and Fire Marshals' Association (SFFMA)

Technical and Confined Space Rescue Technician (SFFMA)

OSHA Process Safety Management (PSM) Compliance and Auditing (ABS)

EPA Risk Management Program (RMP) Compliance and Auditing (ABS)

Root Cause Analysis (RCA) and Incident Investigation (ABS)

Process Hazard Analysis (PHA) Leader (ABS)

Federal Emergency Management Agency (FEMA) Introduction to Incident Command System (ICS) 100

FEMA ICS for Single Resources and Initial Action Incident (ICS 200)

FEMA National Incident Management System (NIMS), An Introduction (IS-00700.a)

FEMA National Response Framework, An Introduction (IS-00800.b)

Cranes and Rigging in Construction (360 Training)

Overhead Crane – Operator Safety Course (360 Training)

Pedestal Mounted Crane – Operator Safety Course (360 Training)

Lattice Boom/Crawler Crane – Operator Safety Course (360 Training)

Boom Truck/Stiff Boom Crane – Operator Safety Course (360 Training)

Arc Mapping Basics (CFI Trainer)

Electrical Safety (CFI Trainer)

Fire Protection Systems (CFI Trainer)

Wildland Fires Investigation (CFI Trainer)

Physical Evidence at the Fire Scene (CFI Trainer)

Shodan (1st degree black belt), Tomiki Ryu Aikido

## Peer Reviews

Acta Psychologica

Cognition

Ergonomics in Design

Experimental Brain Research

Frontiers in Cognitive Psychology

Human Factors

Journal of Motor Behavior

Laterality