George Erich Brogmus

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EXPERIENCE

Senior Risk Control Consultant, ***EPIC Brokers & Consultants***. Risk Management and Safety consultant to clients in California. Key clients include infrastructure, commercial, and residential general contractors, hospitality, manufacturing, and an amusement park. Notable accomplishments:

- Created multiple safety programs to comply with California regulations.
- Initiated and conducted a new monthly series of safety webinars on topics including California new regulations (workplace violence, indoor heat), back pain, aging workforce, measuring safety climate, wearable technology, impact of work scheduling on productivity and injury risk, and ergonomics of mental health.
- Created two web-based risk assessment tools for EPIC consultants related to work scheduling.

June 2023 to present.

Part-Time Instructor, ***California State University Northridge***. Instructor for the graduate course offered every Fall Semester, Occupational Safety & Ergonomics, 2014 to present and Global Perspectives of Environmental Health, Spring 2023. Also taught the upper division courses, "Accident Prevention" and "Occupational Safety" Spring Semester, 2015.

Teaching Associate, ***University of California Los Angeles***. Instructor for the graduate course offered every spring, Occupational Safety and Ergonomics, 2008 to present.

Teaching Associate, ***University of California Los Angeles***. Monthly Webinar Series on Ergonomics. One to two Ergonomic topics each month at Basic/Intermediate and Advanced levels since January, 2008 through to present.

Product Director – Science & Research, 8/31/2020 to 7/30/2021. ***Liberty Mutual Insurance Company***, Risk Control Services. Responsible for harvesting and commissioning science and research relevant to the business interests of Liberty Mutual's Risk Control Services department. Notable accomplishments:

- Co-development of Liberty Mutual Manual Materials Handling Equations – published in the journal Ergonomics 2021.
- Co-developed and launched the Liberty Mutual/Kinetica iPhone App, ErgoValuator to approximately 100 users (Liberty consultants and customer users) – July 2020.
- Continued oversight of the Liberty Mutual Workplace Index.
- Coordinated joining MIT's Consortium on Systems Approaches to Safety & Security, Research Partner.
- Appointed Industry Advisory Board Chair for the Industry-University Cooperative Research consortium, Center for Disruptive Musculoskeletal Innovations (CDMI).
- Member of ASSP Research Committee
- Voting Member of ASTM F48 Exoskeleton Committee
- Commissioned research and participated in development of: Meta-analysis of fatigue-related medical errors, Wearables to capture task parameters and weights/forces, and exoskeleton effectiveness.

Technical Director – Science & Technology, 1/2018 to 8/31/2020. ***Liberty Mutual Insurance Company***, Risk Control Services. Directly responsible for managing all activities necessary to identify, develop, and spread knowledge on scientific and emerging technology trends within occupational safety and health. Primary duties include strategic planning, product identification, product development, training, dissemination of information, and handling assigned administrative and operational functions. Noteworthy accomplishments have included:

- Promoted and became a member of a musculoskeletal injury prevention center consortium for an Industry-University Cooperative Research Centers (IUCRCs) sponsored by the National Science Foundation, led by Dr. William Marras and Dr. Gary Allread at Ohio State University. Center for Disruptive Musculoskeletal Innovations (CDMI).
- Joined the Office Ergonomics Research Committee (OERC) to help guide pilot research project grants related to office ergonomics.
- Joined as an individual member of ASTM F48 committee on exoskeletons.

- Creation of an Intranet site for Liberty Mutual to collect and summarize research relevant to safety consulting disciplines.
- Leading (Platinum) sponsorship of ErgoX Symposium, starting in 2017.
- Creator of the Liberty Mutual Annual Innovation Award (1st award 2020) to promote development of specific technological advancements needed in the field of safety. Partnered with CPWR for a focus on Construction Safety.
- Commissioned multiple projects including sponsorship of UCSF, University of Michigan, and Harvard University projects.
- Led development of a Liberty Mutual Lifting/Lowering iPhone app through Kinetica Labs and University of Michigan.

Technical Director-Ergonomics, 9/1996 to 12/2017. ***Liberty Mutual Insurance Company***. Responsible for quality of risk management and ergonomic services and development of field service tools for application of ergonomic principles countrywide. Providing training and consulting to National customers and Liberty Mutual Loss Prevention consultants. Providing advice and project management for customer research in ergonomic interventions. Completing reviews of recent research for applicability to field consulting operations. Noteworthy projects have included creation and development of:

- Regression of data on the NIOSH Revised Lifting Equation into a back-injury risk prediction equation based on the best published field validation research.
- Reconstitution of Liberty Mutual's "raw" data which was embedded in the C++ code of CompuTask. This project ensures the ongoing proprietary value of decades of psychophysical research by Liberty Mutual under the direction of Stover Snook and Vince Ciriello.
- A manufacturing technology proficiency evaluation system for consultants.
- An ergonomics proficiency evaluation system for consultants.
- A Tablet-based paperless inspection system for Disney Stores while serving as acting Safety Director.
- Equations based on Liberty Mutual psychophysical research data for use in Liberty Mutual's Manual Materials Handling Task Evaluator. Designed the scaling of the parameters for this program as well.
- A risk estimation model based on work scheduling parameters – the Liberty Mutual Work Scheduling Injury Risk Estimator™ (SIRE™), a computer spreadsheet that models the risk of injury based on differences in work scheduling: hours per day, consecutive days, type of shift (day, afternoon, night), and time between rest breaks.
- A demographic analysis tool for aging worker trends
- A Same-Level Falls Control Guidelines Intranet site with over 400 pages of content
- An Ergonomics CD Toolkit (a compendium of ergonomic resources for consultants)
- Armrest research for office chairs
- A multifunction Job Hazard Analysis Methodology, which facilitates creation of transitional duty positions for injured workers
- Assisted with foundational research and product development of a video-based lifting technique biomechanical analysis system (VidLiTeC™)
- Accident proneness research
- Participative Ergonomics Improvement Development Process for the order-processing operations of a computer products distribution operation
- Ergonomics programs for many industries
- An organizational, cultural, and workplace factors evaluation tool for injury rate reduction
- Macroergonomics training development for office and industrial applications

Project Director, Engineering Solutions (a division of the ***Liberty Mutual Research Institute for Safety***, formerly called the Liberty Mutual Research Center for Safety and Health), 1995 to 8/96. Hopkinton Massachusetts. Responsible for product development, project contract negotiation, and implementation of Engineering Solutions projects. Helped develop service products including Total Immersion in Ergonomics, Systematic Workplace Analysis and Design, Organizational Ergonomics Development, Research Project Management, and Investigative Data Extraction and Analysis. Developed conference booth demonstration and videotape and helped develop printed and audiovisual marketing materials. Project involvement includes development of an Intranet Ergonomic Analysis Tool which includes 3D motion analysis of the workplace and manual materials handling tasks. Completed projects include: Route Sales Delivery Vehicle Redesign for Safety and Productivity (Schwan's), Hand Truck Evaluation (UPS), Unintended Riders on Delivery Vehicle (UPS), Cumulative Trauma Disorders and Manual Materials Handling Custom Analysis (Digital), Data Entry Device Re-Design (UPS), and Manual Material Handling Evaluation Of Carrying Strap (Best Buy Corporation).

Senior Research Associate, 3/93 to 8/96. ***Liberty Mutual Research Center for Safety and Health***, Hopkinton Massachusetts. Projects included: shift-work accident prevalence analysis, development of Occupational Stress Service protocols and service materials for Liberty Mutual's Loss Prevention Department, development of functional requirements and user interface design for multidepartment computer systems (EFS), developing quantitative measurement systems for cumulative trauma disorder risk factors (MSMS), testing the effectiveness of a behavior modification safety program system (LQSP with Milliken), testing the effectiveness of a retail safety program, development of a video-based lifting technique analysis method and investigation into the relationship between lifting technique and low back pain (VidLiTeC^{TM} System), analysis of trends in cumulative trauma disorders of the upper extremities and their relation to VDT and computer mouse work, and biomechanical analysis of hand truck use.

Technical Consultant, 8/82 to 2/93. ***Liberty Mutual Insurance Company***. Responsibilities included analysis of client company operations and products to provide clients with recommendations for improving materials handling, production flow, workstation design, handtool use and design, lighting, repetitive tasks re-design, robotic safety, product safety, and the design of warning labels. Clients have included: Lockheed Corp. (Lockheed Advanced Development Company - Lockheed Skunkworks, Calcomp, & Lockheed Air Terminal), Hughes Corporation, The Dial Corp, UPS, United Technologies, IBM, Raytheon, Avery Dennison, Digital Equipment Corporation, Hewlet Packard, Teradata, Paracelsus Healthcare Corp., Bassett Furniture, Kal Kan, Orowheat Bakeries, Baskin Robins, Crown City Plating, J. C. Penny, International Aluminum, Marquart, Dresser Industries, Gannett, Warnaco (Olga), Rohm & Haas, Seagate Technology, American Greetings Corporation, UNOCAL, Atlantic Oil, Atlas Carpet Mills, T. M. Cobb, Clayton Mfg., Food-4-Less, Carter Hawley Hale Stores, Inc., Anthony Macaroni, Museum of Contemporary Art, Spears Mfg. Co., Thacker Container, City National Bank, and many others. Duties also included extensive training of new Liberty Mutual consultants and client training seminars in Ergonomics, Accommodating the Disabled, Anthropometry, Workstation Design, Manual Materials Handling, Machine Operations Safeguarding, Repetitive Motion Disorders of the Upper Limbs, Computer Workstation Safety and Design, Hazard Recognition and Control, Accident Investigations, and Supervisory Safety Responsibilities.

Test Engineer, 12/81 to 8/82. ***West Coast Research Corporation***, Santa Monica, CA. Responsible for testing and analysis of transducers.

Field Management Assistant, 6/81 to 9/81. ***C F Braun Constructors, Inc***., Van Nuys construction site. Responsible for gathering and reporting electrical system installation data as the project progressed.

Plan Checker, 7/80 to 8/80. ***Vogel Properties***, Walnut, CA. Performed energy calculations for proposed buildings.

Assistant to Systems Analysts and Engineers, 6/79 to 8/79 and 6/78 to 8/78. ***McDonnell Douglas Corp***., Long Beach, CA. Developed a computer program for personnel reports, assisted in technical writing of a user's guide for engineering computer programs, organized switching information for a circuit trace program for DC-10 wiring, and verified operation of various wiring information computer programs.

GUEST LECTURING

Speaker for numerous ***Liberty Mutual*** Seminars and custom client training sessions on various occupational safety and health and ergonomic topics 1982 through 2021. Training venues have included traditional classroom style workshops as well as on-line live Internet-based training. Duration lasting from an hour (Webinar) to three-days. Content across the entire range of occupational safety and ergonomics topics.

Guest Lecturer, ***Harvard T.H. Chan School of Public Health***. Executive and Continuing Professional Education. Short course: Ergonomics and Human Factors: Strategic Solutions for Workplace Safety and Health. Lectured on Upper Extremity Metrics and Analysis Tools, Aging Workforce Issues, and Exoskeletons. May, 2019.

Guest Lecturer, ***California State University Northridge***. Safety/Ergonomics Course (Barry Berson, instructor) Presented, "Applying Ergonomics to Occupational Safety." February 15, 2010.

Invited Speaker, ***University of California Los Angeles*** in conjunction with ***University of Michigan***. Ergonomics in tourism. As part of UCLA/ University of Michigan conference, "Preventing and Managing Workplace Musculoskeletal Disorders: Current Research and Ergonomic Programs That Work." June 25, 2008.

Invited Speaker, ***University of California Los Angeles***. Recognizing Workplace Injury and Illness and Helping Your Patient Prevent It. Clinical presentation for controlling injuries to low-wage workers. June 19, 2008.

Guest Lecturer, ***California State University Northridge***. Safety/Ergonomics Course (Barry Berson, instructor) Presented, "Applying Ergonomics to Occupational Safety." October 7, 2008.

Instructor, ***University of California Los Angeles***. Selected Topics in Healthcare Ergonomics: Back Pain Disability; Aging Workforce, October 16, 2007. UCLA.

Guest Lecturer, ***California State University Northridge***. Safety/Ergonomics Course (Barry Berson, instructor) Presented, "Applying Ergonomics to Occupational Safety." October 8, 2007.

Guest Lecturer, ***University of California Los Angeles***. Presented "Reducing Low Back Pain Disability." Occupational Safety and Ergonomics EHS 259a Graduate course, May 17, 2007.

Guest Lecturer, ***California State University Northridge.*** Guest Lecturer in the course, Workers Compensation in California (instructor: Dickerson). Presented, "Ergonomics and Injury (Claim) Prevention." March 21, 2007. CSUN.

Invited Speaker, ***California State University Long Beach.*** California State University Regional Human Factors Conference. Presented, "From Research To Reality™: Applying Ergonomics to Occupational Safety," February 24, 2007. CSULB. Sponsored by the CSULB student chapter of the Human Factors and Ergonomics Society.

Instructor, ***University of California Los Angeles***. Ergonomics Seminar - Ergonomic Insights to Reduce Occupational Injury -- Basic to New Research, October 26, 2006. UCLA.

Speaker, ***University of California Los Angeles*** in conjunction with ***University of Michigan.*** Ergonomic Conference -- Preventing and Managing Workplace Musculoskeletal Disorders: Current Research and Ergonomic Programs That Work. Presented: Productivity Gains Through Ergonomic Improvements. June 22, 2006. UCLA.

Invited Speaker, ***UC Berkeley***, ***UC Davis***, and ***UC San Francisco***. Fifth Annual COEH (Center for Occupational and Environmental Health) Symposium. Oakland, CA, October 22, 2004. A NIOSH-funded Education and Research Center out of University of California Berkeley, Davis, and San Francisco. Presented, "Injury Prevention at Liberty Mutual."

Guest Speaker, ***Uniform and Textile Services Association*** Spring 2004 Plant Operations Conference. Delivered a research-based presentation titled, "Perspectives and Practical Principles to Reduce Workers Compensation Losses." Las Vegas, Nevada, April 14, 2004.

Workshop Facilitator, ***Glendale Public Library***. Provided facilitation for a workshop of community representatives and organizational sponsors to identify areas the Library can work on to improve services to people with disabilities and seniors. March 15, 2003.

Guest Lecturer , ***Harvard School of Public Health***. Lectured on cumulative trauma disorders of the upper extremities and macroergonomics for the short course, Ergonomic Guidelines for Computer Use. April, 1996.

Guest Lecturer , ***University of Connecticut***. Lectured on ergonomics research, ergonomics consulting , the systems approach to ergonomic interventions and careers in ergonomics. March, 1996.

Instructor, ***Liberty Mutual Research Center***. Lectured on "Macroergonomics" during the Advanced Ergonomics Seminar, November, 1995.

Guest Lecturer, ***Harvard School of Public Health***. Assisted with an ergonomics solution development workshop for the short course, Industrial Ergonomics: Human Factors in Occupational Health and Safety. September, 1995.

Facilitator, ***Harvard School of Public Health***. Assisted with a workshop for the short course, Ergonomic Guidelines for Computer Use. April, 1995.

Instructor, ***Liberty Mutual Research Cente***r. Lectured on "Systematic Task Analysis Techniques" and Psychosocial Occupational Stress", Advanced Ergonomics Seminar, November, 1994.

Guest Lecturer, ***University of Southern California***. Lectured on Manual Materials Handling during the course "Introduction to Ergonomics", Fall, 1991.

Guest Lecturer, ***Arizona State University***. Lectured on Manual Materials Handling, Cumulative Trauma Disorders of the Upper Extremities, and Computer Workstation Safety and Design, during the course "Ergonomics", Fall, 1991.

Guest Lecturer, ***University of Southern California***. Lectured on Cumulative Trauma Disorders of the Upper Extremities and Computer Workstation Safety and Design, during the course "Human Factors of Engineered Systems", and Manual Materials Handling during the course "Human Factors in Accident Causation", Spring, 1991.

Guest Lecturer, ***University of Southern California***. Lectured on Manual Materials Handling, Cumulative Trauma Disorders of the Upper Extremities, and Computer Workstation Safety and Design, during the course "Introduction to Ergonomics", Fall, 1990.

SKILLS

Measurements Systems - including activity sampling, link analysis, force, torque, all popular repetitive motion measurement systems, IMU-based motion capture systems, familiarity with Lumbar Motion Monitor, sound level meters, vibrometers, light meters, noise sampling and dosimetry, industrial hygiene exposure collection methods, and slip measurement devices.

Video Systems - multiplex video systems for data collection, digitizing, linear and non-linear editing systems.

Computer Systems - Mac and Intel platforms and Pen (Tablet) Computers - Word, Excel, PowerPoint, FrontPage, STATA, Statistica, FoxPro, BMDP, MS Project, CompuTask®, Photoshop, Freehand, Premiere™. Familiarity with various programming languages.

EDUCATION

Doctor of Philosophy - UCLA, School of Public Health, Environmental Health Sciences Department, Industrial Hygiene program. Required coursework completed March, 2010; written and oral qualifying exams successfully passed December 8, 2011 and May 4, 2012, respectively. Defense: December 8, 2021. Dissertation: Workplace Intervention to Reduce Back Pain Through the Control of Early Morning Flexion. Degree Conferred December 10, 2021.

Master of Science in Human Factors - Human Performance and Aging option, University of Southern California. Institute of Safety and Systems Management. Graduated Phi Kapa Phi, May, 1991.

Institute of Biblical Counseling, Sexual Abuse Seminar, 1/89.

Institute of Biblical Counseling, Basic Biblical Counseling Seminar, 1/89.

Human Factors Society 1988 Annual Meeting, "Biomechanical Assessment of Manual Tasks", 10/88.

Liberty Mutual Ins. Co. Training Courses/Seminars. Low Back Pain Institute (10/88), Consulting Skills Seminar (1987), Advanced Ergonomics Course taught by Stover H. Snook, Ph.D. (1986), Advanced Industrial Safety Training Course (1985), Ergonomics Institutes (various, 1983 to present), Safety Training Institutes (various, 1983 to present), and Basic Loss Control (1982).

Robotics Industry Association, Robotic Safety Workshop, 1987.

Rockford Systems, Inc., Machine Safeguarding Seminar, 1985.

National Safety Council, Power Press Guarding Seminar, 1984.

Bachelor of Science, Electrical Engineering, University of California, Los Angeles, 4/78 to 6/82.

University of California, Davis, two quarters of undergraduate work, 9/77 to 3/78.

California Institute of Technology, Animal Technician Course, 2/77.

PROFESSIONAL SOCIETIES AND CERTIFICATION

30-Hour OSHA Construction DOL training certification, August 8, 2023.

Field Safety Representative (FSR), Texas Workers' Compensation Commission, April 5, 2000. File #00-049.

Field Safety Representative (FSR), Arkansas Workers' Compensation Commission, March 13, 2000. Qualification Number AWCC# 00-029.

Certified Professional Ergonomist, Board of Certification in Professional Ergonomics, Since February, 1, 1993. Certificate Number 58.

Creation Research Society, Ordinary Member, 1991 to present. Sustaining Member, 1989 to 1991.

Institute of Ergonomics and Human Factors (formerly the Ergonomics Society), Registered Member on the Professional Register with Practitioner Designation, since 1992. Ordinary Member, 1988 to present.

Human Factors and Ergonomics Society, Member number 12188. Member since 1987.

AWARDS , HONORS, AND SERVICE

Bravo Award Gold Level, January 21, 2015, for authorship of aging article published in Professional Safety, January, 2015, pages 33-41.

Bravo Award Platinum Level, September 25, 2012, for development of a paperless tablet-computer-based safety assessment system with automated confirmation for The Walt Disney Stores.

HRSA Fellowship Grant, March, 2011. U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA) Fellowship grant. Support for academic pursuit of workplace interventions that help protect minorities from workplace hazards.

Bravo Award Gold Level, December, 23, 2009, for same-level fall prevention consulting, to Raytheon in California and Texas, that set the standard for Raytheon fall survey services.

UCLA Freshman Scholarship Review Committee . Reviewed scholarship applications to UCLA's prestigious Freshman Scholarship program under the direction of Svjetlana Tepavcevic, Chair, Scholarship Committee (Area I District 4). Involved rating of written applications and participation in in-person interviews. March – April, 2007

Bravo Award Platinum Level, December, 2006, for development of Liberty Mutual's Work Scheduling Impact Risk Estimator (SIRE™), a calculator that integrates the findings from research on the impact of work scheduling elements on the risk of injury.

Bravo Award Emerald Level, December, 2005, for research and creation on the Business Markets Intranet site

for Slips and Falls Control Guidelines, which was a key component of the Business Markets success in reducing slips and falls losses at targeted customer locations.

Bravo Award Gold Level, June, 2004, for high customer satisfaction from a Web-Based "live" office ergonomics training delivered during six on-line sessions to 300 management representatives of Navigant.

Peer Reviewer of journal articles, Psychological Reports and Perceptual and Motor Skills, since 2006.

Peer Reviewer of journal articles, Applied Ergonomics, since 2004.

Peer Reviewer of conference articles, Human Factors and Ergonomics Society, since 1998.

Peer Reviewer of journal articles, American Industrial Hygiene Association Journal, since 1997.

Peer Reviewer of journal articles, Journal of Occupational and Environmental Medicine, since 1997.

Peer Reviewer of journal articles, Ergonomics, since 1996.

RISE Award, "Recognizing Information Systems Excellence", for outstanding performance in development of Managed Care Reporting Release 2.6, an accident data reporting and analysis computer system used across all departments. April, 1996.

Expert Witness Role, Liberty Mutual Advanced Advocacy Training Course for experienced trial attorneys. Served in the expert witness role as part of a training program for Liberty Mutual attorneys. March, 1996.

Guest Speaker, Hopkinton High School. Discussed careers in ergonomics to high school juniors and seniors. February, 1996.

Significant Achievement Award, 1995, for "Outstanding Contribution to Liberty Mutual Research Center Publications in 1995" - published or had accepted for publication the most papers in 1995.

Co-inventor of the Liberty Mutual Musculoskeletal Stress Measurement System, Patent Number 5,467,656, granted November, 21, 1995, a system for measurement of torques, forces, repetitiveness and awkward postures associated with manual materials handling and repetitive motion tasks.

Elected Newsletter Editor of the Industrial Ergonomics technical group of the Human Factors and Ergonomics Society, 1994. Published four newsletters in 1994 (more than any previous editor).

Phi Kappa Phi academic honor society, University of Southern California chapter, for academic achievement within the top 4% of the graduating class, initiated into the society, May, 1991.

Employee Recognition Award for outstanding service, Liberty Mutual Insurance Group, January, 1990.

Employee Suggestion Award, Liberty Mutual Insurance Group, wrote a computer program for downloading and automatically analyzing accident information for client companies, 1989.

Employee Suggestion Award, Liberty Mutual Insurance Group, wrote a computer program that assists management in organizing work assignments geographically and also helps consultants in planning efficient work schedules, 1988.

SPECIAL PROJECTS

Technical Advisor on Liberty Mutual Commercial shoot. Provided scene safety advice to producers on a series of Liberty Mutual commercials that were being filmed in Southern California. October 24-27, 2010.

Author of the UCLA/OSHA "Ergonomic Fact Sheets" for Groundskeepers. Eleven fact sheets were created to help groundskeepers, their supervisors and health care providers reduce musculoskeletal injuries. Produced under grant number 46J6-HT26 from the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor. May, 2007

Scriptwriter of the UCLA/OSHA Clinical Videos for Groundskeepers. Wrote the script for a video used to instruct health care providers on how to counsel injured workers on back care and low-cost ergonomic interventions. Video broken into three parts and integrated into a related clinical presentation. Produced under grant number 46J6-HT26 from the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor. April, 2007

Creator of the Liberty Mutual Work Scheduling Injury Risk Estimator™ (SIRE™). A computer spreadsheet that models the risk of injury based on differences in the work scheduling elements of hours per day, consecutive days, type of shift (day, afternoon, night), and time between rest breaks. August, 2005

Creator of the Business Markets Same-Level Falls Control Process Guidelines Intranet Site. A systematic approach for reducing the risk of same-level slips and falls. This website was a key reason for the successful reduction (17% - 10% higher reduction than at non-targeted accounts) of same-level slips and falls losses at targeted customers in 2005.

Co-Developer of VidLiTeC™ . A Computerized Video-based Lifting Technique Coding and analysis system. Co-developed initial experimental design. Collected all field pilot data. Principal investigator: Simon Hsiang, Ph.D.

NIOSH Lifting Guide. Piloted field data collection and outlined implementation strategy for data collection of NIOSH-LMRCSH-Texas Tech NIOSH Lifting Formula - 3-year prospective validation study. Project begun March, 1996.

Electronic Folders System (EFS). Worked on team to develop and test a computer program now in use for sharing business cycle information during prospecting and renewal. 1993.

Occupational Stress Project. Developed a stress checklist anchor point scale and corresponding recommendations for stress reduction. Edited a Liberty Mutual Stress Seminar videotape for use in consultant and customer training. 1992

Technical Advisor to 1991/1992 Advertising Campaign. Provided technical input to producers and writers of Liberty Mutual's advertising campaign during filming of the Back add and the Boston Elbow add.

Computer Systems Design. Participated as part of a team in building specifications and functional capabilities of computer systems for use by Liberty Mutual Consultants.

Tutorial Program Development. University of Southern California, participated in the final development stages of a computer based tutorial program for teaching the use of a workload (lifting) assessment program (6/89). Demonstrated the program and research results at the Human Factors Society Annual Meeting in Denver, Colorado in October. 1989.

Early Return-to-Work Pilot Project. Liberty Mutual Insurance Group, participated in a pilot project to return injured workers back to work by modifying their jobs to fit their restrictions. Developed criteria for selecting cases, evaluated the success of the project and submitted recommendations for future project improvements and implementation. (5/88 to 3/89).

Designed Various Computer Programs for Safety-Related Applications for customers and Liberty Mutual employees, Liberty Mutual Insurance Group.

PUBLICATIONS

Brogmus, G. Workplace Intervention to Reduce Back Pain Through the Control of Early Morning Flexion. PhD dissertation. December, 2021. https://escholarship.org/content/qt2gf211h9/qt2gf211h9.pdf

Brogmus, S. and Brogmus, G. Otic Barotrauma and Ear Popping in Children and Adults: Average Pressure Differential Prompting Ear Popping by Direction of Travel and Nasal Condition – A Pilot Study. Submitted for publication to The Journal of Laryngology and Otology on August 22, 2021.

Lee, G., Lee, S., and Brogmus, G., 2021. Feasibility of Wearable Heart Rate Sensing-Based Whole-Body Physical Fatigue Monitoring For Construction Workers. Proceedings of the CSCE 2021 Annual Conference Inspired by Nature – Inspiré par la Nature, 26-29 May 2021.

Potvin JR, Ciriello VM, Snook SH, Maynard WS, Brogmus GE. The Liberty Mutual manual materials handling (LM-MMH) equations. *Ergonomics*. 2021 VOL. 64, NO. 8, 955–970.

Fox, R.R., Brogmus, G.E., and Maynard, W.S., 2015. The aging workforce and ergonomics: Not as bad off as you might think. Professional Safety, January, 2015. 33-41.

Brogmus, G.E., 2008. How to reduce the other two thirds of your back pain losses. Proceedings of the ASSE PDC and Exposition, "Safety 2008," Las Vegas, NV. June 9-12, 2008.

Brogmus, G.E. and Maynard, W. 2008. Shiftwork design and safety: modeling injury risk. In Proceedings of the IIE Applied Ergonomics Conference and Exposition, Las Vegas, NV, March, 2008.

Brogmus, G.E. and Maynard, W. 2008. Hope, tactics and strategies for an aging workforce. In Proceedings of the IIE Applied Ergonomics Conference and Exposition, Las Vegas, NV, March, 2008.

Maynard, W. and Brogmus, G., 2007. Reducing Slips, Trips and Falls in Stairways. Occupational Hazards, October 1, 2007.

Brogmus, G. 2007. A well-grounded workforce: Steps to reducing same-level slips, trips and falls. Scheduled for publication in Liberty Directions Magazine, 2007.

Brogmus, G., Leone, W., Butler, L., and Hernandez, E. 2007. Best Practices in OR Layout and Equipment Choices to Reduce Slips, Trips, and Falls. AORN Journal. 86(3).

Maynard, W. and Brogmus, G. 2007. Going beyond the 'welcome' mat. Occupational Hazards. June, 2007.

Brogmus, G. and Maynard, W., 2007. Shiftwork, Work Scheduling and Safety: How Much Is Too Much? Proceedings of the 10th Annual Applied Ergonomics Conference, Dallas, TX, March 12-15th, 2007. Institute of Industrial Engineers, Norcross, Georgia.

Brogmus, G. 2007. Day-of-the-week lost time occupational injury trends in the US by gender and industry and their implications for work scheduling. Ergonomics 50 (3), 446-474.

Brogmus, G., 2006. The impact of work scheduling on injury risk. Proceedings of the Human Factors and Ergonomics Society (HFES) 50th Annual Meeting. Human Factors and Ergonomics Society: Santa Monica, CA.

Brogmus, G., 2006. Injury risk by day of the week. Proceedings of the Human Factors and Ergonomics Society (HFES) 50th Annual Meeting. Human Factors and Ergonomics Society: Santa Monica, California.

Maynard, W. and Brogmus, G. 2006. Staying one step ahead of work-related slips and falls. Occupational Health and Safety, October, 2006. http://www.ohsonline.com

Brogmus, G. and Maynard, W. 2006. Safer shiftwork through more effective scheduling. Occupational Hazards. October 4, 2006. http://www.occupationalhazards.com Also in Occupational Health and Safety, December, 2006. http://www.ohsonline.com

Brogmus, G., 2005. Low Back Pain Research – Garbage and Gold Nuggets: Can back injuries REALLY be prevented? Proceedings of the ASSE PDC, Safety 2005 in New Orleans, LA, June 12-15, 2005.

Murphy, P., McGorry, R., Teare, P., Brogmus, G., 2000. Design and performance of a manual task evaluator. International Journal of Industrial Ergonomics, 25, 257-264.

McGorry, R., Young, S. L., Murphy, P., and Brogmus, G., 2000. Experimental appraisal of a manual task evaluator. International Journal of Industrial Ergonomics, 25, 265-274.

Fathallah, F. A. and Brogmus, G. E., 1999. Hourly trends in workers' compensation claims. Ergonomics, 42 (1), pp. 196 – 207.

Brogmus, G., 1998. Cumulative trauma Disorders of the upper extremities (CTDUEs): How big a problem? American Pain Society Bulletin, 8 (1), pp. 1, 6-7.

Brogmus GE (1997) Effects of age and sex on speed and accuracy of hand movements and the refinements they suggest for Fitts'Law. In WA Rogers (Ed) Designing for an aging population. Santa Monica CA: Human Factors and Ergonomics Society, pp.25-29.

Young, S. L., Brogmus, G. E., and Bezverkhny, I., 1997. The forces required to pull loads up stairs with different handtrucks. Proceedings of the Human Factors and Ergonomics Society (HFES) 41st Annual Meeting, Human Factors and Ergonomics Society: Santa Monica, California.

Fathallah, F. and Brogmus, G., 1997. Hourly trends in occupational injuries. Proceedings of the Human Factors and Ergonomics Society (HFES) 41st Annual Meeting, Human Factors and Ergonomics Society: Santa Monica, California.

Hsiang, S., Brogmus, G., Martin, S., and Bezverkny, I., 1998. Video based lifting technique coding system. Ergonomics, 41 (3), pp. 239-256.

Hsiang, S. M., Brogmus, G. E., and Courtney, T. K., 1997. Low back pain (LBP) and lifting technique - A review. International Journal of Industrial Ergonomics, 19, pp. 59-74.

Fathallah, F. A. Krawczyk, S. Brogmus, G. E. Snook, S. H. Lim, S.-Y. Swanson, N. G. Marras, W. S. and Volinn, E., 1996. Role of Psychosocial Factors in Occupational Musculoskeletal Disorders. Proceedings of the Human Factors and Ergonomics Society (HFES) 40th Annual Meeting, Human Factors and Ergonomics Society: Santa Monica, California.

Brogmus, G., 1996. Rethinking the scope of ergonomics in an increasingly technology-driven economy. Work Process Improvement TODAY, March-April, 1996.

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