

## CURRICULUM VITAE

**STEVEN A. LAVENDER, PH.D., C.P.E.**  
Industrial, Welding, and Systems Engineering, and  
Orthopaedics Departments  
The Ohio State University  
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### EDUCATION

The Ohio State University Ph.D. 1990 Industrial Engineering  
University of Montana M.A. 1985 Experimental Psychology  
University of Montana B.A. 1981 Psychology

### PROFESSIONAL EXPERIENCE

2002 – Present Associate Professor, Department of Industrial, Welding & Systems Engineering, and Orthopaedics, The Ohio State University, Columbus, Ohio  
Responsibilities include: Conducting research and disseminating findings through scientific journals and conference presentations, obtaining research support, teaching and advising graduate students.

1990 – Present Ergonomics Consultant specializing in the prevention of occupationally related low-back and upper extremity disorders.

1990 - 2002 Associate Professor, Dept. Orthopedic Surgery, Rush-Presbyterian-St. Luke's Medical Center  
Responsibilities include: Conducting research and disseminating findings through scientific journals and conference presentations, obtaining research support, and advising graduate students.

1997 – 2002 Adjunct Assistant Professor in Bioengineering Program at The University of Illinois at Chicago

1985 - 1990 Research associate, Biodynamics Laboratory, The Ohio State University

1982 - 1985 Research and Teaching Assistant, The University of Montana

## PROFESSIONAL SOCIETIES AND CERTIFICATION

- Certified Professional Ergonomist, Board of Certification in Professional Ergonomics #384
- Human Factors and Ergonomics Society
- Institute of Industrial Engineers
- American Society of Biomechanics
- Orthopaedic Research Society

## SERVICE

- Grant Reviews for National Institute for Occupational Safety and Health Study Sections.
- Human Factors (The journal of the Human Factors and Ergonomics Society): Editorial board member since September of 2000.
- Journal of Electromyography and Kinesiology: Editorial board member since December of 1999.
- Reviews for other journals include: Spine, Applied Ergonomics, Motor Control, American Industrial Hygiene Association Journal.
- American National Standards Institute Committee for the Control of Cumulative Trauma Disorders (ANSI Z365).
- American National Standards Institute Committee on Industrial Engineering Terminology (ANSI Z94).
- American Industrial Hygiene Assoc. Ergonomics White Paper Sub-Committee, 1996-1997.
- Annual Meeting Technical Program Chair for Industrial Ergonomics Technical Group within the Human Factors and Ergonomics Society, 1993.
- Chair of Industrial Ergonomics Technical Group within the Human Factors and Ergonomics Society, 1996/97
- Editorial board for the Journal of Electromyography and Kinesiology, effective 1/1/2000.

## RESEARCH FUNDING

Project Title: Designing ergonomic interventions for the fire service

Source: National Institute for Occupational Safety and Health

Role: Co- Investigator

Duration: 3 years (10/02-9/05)

Project Title: Evaluation of Rehabilitation for Wor-Related Low Back Disorders: Studying job risks in an unaffected autoworker population.

Source: UAW GM UAW-GM National Joint Committee on Health and Safety

Role: Co-Principal Investigator

Duration: 2 years

- Project Title: Identifying Safe Load Moment Exposures for the Back  
Source: National Institute for Occupational Safety and Health  
Role: Co-Principal Investigator  
Duration: 5 years (10/00-9/04)
- Project Title: A New Training Intervention To Prevent Back Injuries  
Source: National Institute for Occupational Safety and Health  
Role: Principal Investigator  
Duration: 3 years (9/98-8/01)
- Project Title: Workplace-Based Rehabilitation for Low Back Disorders  
Source: UAW-GM National Joint Committee on Health and Safety  
Role: Co-Investigator  
Duration: 4 years, (1/97-12/01)
- Project Title: Do Lifting Belts Protect the Back During Sudden Loading?  
Source: National Institute for Occupational Safety and Health  
September 1995- August 1997  
Role: Principal Investigator
- Project Title: Evaluation of Rehabilitation for Work-Related Low Back Disorders: Supplemental Funding.  
Source: UAW-GM National Joint Committee on Health and Safety  
Role: Co-Principal Investigator
- Project Title: Ergonomic Study of Fire Service Musculoskeletal Injuries  
Source: National Institute of Occupational Safety and Health  
October 1994 - September 1996  
Role: Co-Investigator
- Project Title: The Relationship Between Trunk Motion Profiles and the Risk of LBD's: A Prospective Study.  
Source: Nova-Care/ Coca-Cola Enterprises  
Role: Principal Investigator
- Project Title: A Biomechanical Study of Lifting Belts  
Source: Chattanooga Group, Inc.  
Role: Principal Investigator
- Project Title: The Effects of Lifting Belts on Trunk Motion Coupling  
Source: University Committee on Research  
Role: Principal Investigator

## TEACHING

- The Ohio State University, Industrial, Welding, and Systems Engineering: Analysis and Design of Workplace Environments (IWSE 672).
- University of Illinois at Chicago, Industrial Engineering Department: Ergonomics, IE 341, Fall Semester, 1993.
- Northwestern University Robert R. McCormick School of Engineering & Applied Science Continuing Profession Development: Ergonomics Control Programs, Annual Participation from 1991 to 1995.
- Ohio State University: The Annual Ohio State University Ergonomics Short Course, Columbus Ohio. Annual Participation from 1991 to 1996.
- University of Illinois at Chicago, Occupational Health Nursing Program, annual lectures on Ergonomics since 1995.

## ERGONOMICS CONSULTATION

- **Albertsons**, Boise, Idaho  
Services provided: Ergonomics Training
- **Alcoa**, Richmond, Virginia; Louisville, Kentucky; Rexdale, Ontario; Hot Springs, Arkansas; Newcastle, Ontario; Elyria, Ohio  
Services provided: Ergonomic analysis manufacturing operations.
- **American Stores Company**, Salt Lake City, Utah  
Services provided: Ergonomic analysis of distribution and selected retail operations, established ergonomic programs, conducted ergonomics training.
- **Ametek Electro-Motive Division**, Kent, Ohio  
Services provided: Ergonomic analysis of manufacturing operations, established ergonomic programs, conducted ergonomics training. Analysis of office work areas.
- **Andrew Corporation**, Orland Park, Illinois  
Services provided: Ergonomic analysis of manufacturing operations, established ergonomic programs, conducted ergonomics training.
- **Aramark Uniform Services**, Shamburg, Illinois  
Services provided: Ergonomic analysis of laundry operations.
- **Baxter Health Care**, McGaw Park, Illinois  
Services provided: Physiologic validation of delivery site rating process for renal products division.

- ***Biodynamics Associates, Columbus, Ohio***  
Services provided: Subcontractor providing ergonomic analysis, training, and program management services.
- ***Chattanooga Group, Inc., Chattanooga, Tennessee***  
Services provided: Consultation on hardware and software development for the Lumbar Motion Monitor, and conducted training programs on using the Lumbar Motion Monitor for industrial ergonomics applications.
- ***Coca-Cola Enterprises, Atlanta, Georgia***  
Services provided: Ergonomic analysis of distribution operations, and specific interventions designed to impact the risk of musculoskeletal injury.
- ***Coordinated Claims Services, L.L.C., Deerfield, IL***  
Services provided: Ergonomic awareness training and one-on-one consultations with call center employees (office ergonomics).
- ***Ford Motor Company, Dearborn, Michigan***  
Services provided: Conducted ergonomics training for engineering staff.
- ***General Motors, Flint, Michigan***  
Services provided: Ergonomic analysis of specific manufacturing operations.
- ***Innovative Sports Training, Chicago, Illinois***  
Services provided: Consultation on product development.
- ***Reynolds Aluminum Wheels, Richmond, Virginia***  
Services provided: Ergonomic analysis of manufacturing operations
- ***Rush Medical Center, Chicago, Illinois***  
Services provided: Ergonomic analysis of office, laboratory, and food service operations.
- ***Sears Logistic Services, Hoffman Estates, Illinois***  
Services provided: Reviewed ergonomic issues in distribution operations.
- ***Sherwin-Williams Company, Chicago, Illinois***  
Services provided: Ergonomic analysis of manufacturing and distribution operations, established ergonomic programs, conducted ergonomics training, reviewed office ergonomics procedures.

## PUBLICATIONS

- Lavender, S.A.**, Lorenz, E., Andersson, G.B.J. (2002) Does training on lifting techniques adversely affect case handling times? Professional Safety, 12, 30-35.
- Lorenz, E.P., **Lavender, S.A.** Andersson, G.B.J. (2002) The effectiveness of specific techniques taught in the lift training process. Physiotherapy Theory & Practice, 18, 175-191.
- Lavender, S.A.**, Marras, W.S., Sabol, R.J. (2002). Mexican anthropometric data for workstation design. American Industrial Hygiene Association Journal, 63, 300-304.
- Radwin, R.G., Marras, W.S. and **Lavender, S.A.** Biomechanical aspects of work related musculoskeletal disorders. Theoretical Issues in Ergonomic Systems, 2, 153-217.
- Lavender, S.A.** and Anderson G.B.J. (2001) Human Body Positioning Analysis. In Kawowoski, W. (ed.) International Encyclopedia of Ergonomics and Human Factors Taylor & Francis, Ltd., pg 1831-1835.
- Chen, B., **Lavender, S.**, Andersson, G.B.J. (2001). The magnetic resonance imaging of the lumbar spine in out-patients with low back pain. Journal of Musculoskeletal Research, 5, 261-267.
- Lavender, S.A.**, Conrad, K.M., Reichelt, P.A., Johnson, P.W., Meyer, F.T. (2000). *Biomechanical analyses of paramedics simulating frequently performed strenuous work tasks.* Applied Ergonomics, 31, 167-177.
- Lavender, S.A.**, Conrad, K.M., Reichelt, P.A., Meyer, F.T., Johnson, P.W. (2000). *Postural analysis of paramedics simulating frequently performed strenuous work tasks.* Applied Ergonomics, 31, 45-57.
- Lavender, S.A.**, Shakeel, K, Andersson, G.B.J., Thomas, J.T: The effects of lifting belt on spine moments and muscle recruitments following a sudden unexpected loading. Spine, 25, 1569-1578.
- Karen M. Conrad, KM, **Lavender, SA**, Reichelt, PA, Meyer, FT (2000). A Process for Initiating an Ergonomic Analysis in Jobs with Highly Variable Tasks. Occupational Health Nursing, 48, 423-429.
- Oleske, D.M., Andersson, G.B.J., **Lavender, S.A.**, Hahn, J.J. (2000). Association between recovery outcomes for work-related low back disorder and personal, family, and work relations, Spine, 25, 1259-1265.
- Thomas, J.T., **Lavender, S.A.**, Corcos, D.M., Andersson, G.B.J. (1999) The effect of lifting belts on trunk muscle activation during a suddenly applied load. Human Factors, 41, 670-676.

- Lavender, S.A.**, Oleske, D.M., Nicholson, L., Andersson, G.B.J., Hahn, J. (1999). A comparison of five methods used to determine low-back disorder risk in a manufacturing environment. Spine, 24, 1441-1448.
- Lavender, S.A.**, Li, Y.C., Andersson, G.B.J., Natarajan, R.N. (1999) The effects of lifting speed on the peak external forward bending, lateral bending and twisting spine moments. Ergonomics, 42, 111-125.
- Lavender, S.A.**, Andersson, G.B.J (1999) Ergonomic Principles applied to the prevention of injuries to the lower extremity. In W. Karwowski and W.S. Marras (eds.) CRC Handbook of Industrial Ergonomics, CRC Press Inc.: Boca Raton, FL, 883-894.
- Andersson, G.B.J. and **Lavender, S.A.** (1998). The function of the trunk muscles in health and with low back pain. Seminars in Spine Surgery, 10, 161-171
- Lavender, S.A.**, Chen, S.H., Li, Y.C., Andersson, G.B.J. (1998). The effectiveness of a lifting belt in reducing muscle loading of the spine during maximal and submaximal pulling tasks on slippery and non-slippery surfaces. Human Factors, 40, 159-172.
- Thomas, J.T., **Lavender, S.A.**, Corcos, D.M., Andersson, G.B.J.: Trunk kinematics and trunk muscle activity during a rapidly applied load. J. of Electromyography and Kinesiology, 8, 215-225.
- Lavender, S.A.** and Andersson, G.B.J. (1997). Job accommodation with respect to the lower extremity. In M. Nordin, G.B.J. Andersson, M.M. Pope, D. Leger (eds.) Musculoskeletal Disorders in the Workplace: Principles and Practice. St. Louis: Mosby, 528-535.
- Andersson, G.B.J. and **Lavender, S.A.** (1997). Evaluation of Muscle Function. In J.W. Frymoyer (ed.) The Adult Spine: Principles and Practice, 2nd Edition. Philadelphia: Lippincott-Raven Press, 341-380.
- Lavender, S.A.**, Thomas, J.S., Chang, D., Andersson, G.B.J. (1995). Effects of lifting belts, foot movement and lift asymmetry on trunk motions. Human Factors, 37, 844-853.
- Lavender, S.A.**, Kenyeri, R. (1995). Lifting belts: A psychophysical analysis. Ergonomics, 38, 1723-1727.
- Marras, W.S., **Lavender, S.A.**, Leurgans, S.E., Fathallah, F.A., Ferguson, S.A., Allread, W.G., Rajulu, S.L. (1995). Trunk motion and occupationally-related low back disorder risk. Ergonomics, 38, 377-410.
- Schipplein, O.D., Reinsel, T.E., Andersson, G.B.J., **Lavender, S.A.** (1995). The influence of horizontal weight placement on the loads at the lumbar spine while lifting. Spine, 17, 1895-1898.

- Mayer, R.S. Chen, I.H., **Lavender, S.**, Trafimow, J., Andersson, G.B.J. (1995). Variance in the measurement of sagittal lumbar spine range of motion among examiners, subjects, and instruments. Spine, 20, 1489-1493.
- McNeil, T.W., Andersson, G.B.J., Schell, B., Sinkora, G., Nelson, J., **Lavender, S.A.** (1995). Epidural administration of Methylprednisolone and morphine for pain a spinal operation. J. of Bone and Joint Surgery, 77A, 1814-1818.
- Lavender, S.A.**, Chen, I.H., Trafimow, J., Andersson, G.B.J. (1994). The effects of lateral trunk bending on muscle recruitments when resisting non-sagittally symmetric bending moments. Spine, 20, 184-191.
- Lavender, S.A.**, Marras, W.S. (1994). The effects of a temporal warning stimulus on the biomechanical preparations for sudden loading. J. of Electromyography and Kinesiology, 5, 45-56.
- Lavender, S.A.**, and Marras, W.S. (1994). The use of turnover rate as a passive surveillance indicator for potential low back disorders. Ergonomics, 37, 971-978.
- Lavender, S.A.**, Trafimow, J., Andersson, G.B.J., Mayer, R.S., Chen, I.H. (1994). Trunk muscle activation: The effects of torso flexion, moment direction, and moment magnitude. Spine, 19, 771-778.
- Lavender, S.A.** and Rajulu, S.L. (1993). Applications in ergonomics. In P. Allard, I.A.F. Stokes, J.P. Blanche (eds) Three-Dimensional Analysis of Human Movement. In Press: Human Kinetics Publishers: Champaign, pp 311-326.
- Hughes, R.E., Chaffin, D.B., **Lavender, S.A.**, Andersson, G.B.J. (1994). Evaluating muscle force prediction models of the lumbar trunk using surface electromyography. J. of Orthopaedic Research, 12, 689-698.
- Lavender, S.A.**, Marras, W.S., and Miller, R.A. (1993). The development of preparatory response strategies in anticipation of sudden loading of the torso. Spine, 18, 2097-2105.
- Lavender, S.A.**, Tsuang, Y.H., Andersson, G.B.J. (1993). Trunk muscle activation and cocontraction while resisting applied moments in a twisted posture. Ergonomics, 36, 1145-1157.
- Lavender, S.A.**, Andersson, G.B.J. (1993). Ergonomic principles applied to the lumbar spine. J. of Disability, 3, 1-15.
- Marras W.S., **Lavender, S.A.**, Leurgans S.E., Rajulu, S.L., Allread, W.G., Fathallah, F.A., Ferguson, S.A. (1993). The role of dynamic three-dimensional trunk motion in occupationally-related low back disorders: The effects of workplace factors, trunk position and trunk motion characteristics on risk of injury. Spine, 18, 617-628.
- Lavender, S.A.**, Tsuang, Y.H., Andersson, G.B.J., Hafezi, A., Shin, C.C. (1992). Trunk

Muscle Cocontraction: The effects of moment direction and moment magnitude. J. of Orthopaedic Research, 10, 691-700.

**Lavender, S.A.**, Tsuang, Y.H., Hafezi, A., Andersson, G.B.J., Chaffin, D.B., Hughes, R. (1992). Coactivation of the trunk musculature during asymmetric loading of the torso. Human Factors, 34,239-247.

Marras, W.S. and **Lavender, S.A.** (1991). The effects of method of use, tool design, and roof height on trunk muscle activities during underground scaling bar use. Ergonomics, 34, 221-232.

**Lavender, S.A.** and Marras, W.S. (1990). An electromyographic analysis of an ergonomic intervention with the jackleg drill. Applied Ergonomics, 21, 90-100.

**Lavender, S.A.**, Mirka, G.A., Schoenmarklin, R.W., Sommerich, C.M., Sudhakar, L.R., and Marras, W.S., (1989). The effects of preview and task symmetry on trunk muscle response to sudden loading. Human Factors, 31, 101-116.

Marras, W.S., Bobick, T.G., **Lavender, S.A.**, Rockwell, T.H., and Lundquist, R.L. (1988). Risks of hand tool injury in U.S. Underground mining from 1978 through 1983, Part I: Coal Mining. J. of Safety Research, 19, 71-85.

Marras, W.S., **Lavender, S.A.**, Bobick, T.G., Rockwell, T.H., and Lundquist, R.L. (1988). Risks of hand tool injury in U.S. Underground mining from 1978 through 1983, Part II: Metal-Nonmetal Mining. J. of Safety Research, 19, 115-124.

Marras, W.S., Rangarajulu, S.L., and **Lavender, S.A.** (1987). Trunk loading and expectation. Ergonomics, 30, 551-562.

### **Commissioned Paper(s)**

Radwin, R.G., and **Lavender, S.A.** (1999). Work factors, personal factors, and internal loads: Biomechanics of work stressors. Work-Related Musculoskeletal Disorders: Report, Workshop Summary, and Workshop Papers. Commission on Behavioral and Social Sciences and Education, National Research Council, National Academy Press, 116-151.

### **SUBMITTED PUBLICATIONS**

**Lavender, S.A.**, Andersson, G.B.J., Schipplein, O.D., Fuentes, H.J. The effects of initial lifting height, load magnitude, and lifting speed on the peak dynamic L5/S1 moments. International Journal of Industrial Ergonomics, In press.

**Lavender, S.A.**, Li, YC, Natarajan, R., Andersson, G.B.J. A biomechanical evaluation of the asymmetry factor in the 1991 NIOSH lifting equation. Human Factors, Submitted.

## INVITED LECTURES

**Does training on lifting techniques adversely affect case handling times?** American Society of Safety Engineers monthly meeting. January 14, 2002.

**An Aggressive Training Intervention Designed to Reduce Low Back Stress During Manual Material Handling.** The third annual BEACON symposium: Advances in Biodynamics and Ergonomics, Improving health and human performance and identifying opportunities for technology transfer. University of Connecticut Health Center, Farmington, Connecticut, October 27, 2000.

**Sudden Loading: What We Know About Minimizing Injury Potential.** International seminar for scientists with interest and experience in Low Back Pain among workers in the health care sector. National Institute of Occupation Health, Denmark, Copenhagen, October 3, 2000.

**Preventing Injuries That Result From Lifting: Taking the Science Behind Spine Biomechanics Into Industry.** Panel session that organized and spoke in at the American Society of Biomechanics annual meeting in Chicago, July 21, 2000.

**Discussant.** Back Belt Efficacy: NIOSH Laboratory and Epidemiologic Studies, American Public Health Association, Annual Meeting, Chicago, December, 1999.

**Effects of Sudden Loads on Low Back Tissues.** University of Michigan, December, 1998.

**The Role of Back Belts in the Prevention of Low Back Pain.** Program Title: Current Topics in Occupational and Environmental Medicine. Sponsored by: Michigan Occupational Environmental Medicine Association. Grand Rapids, MI, June 6, 1997.

**Measuring Ergonomic Hazards in Your Workplace.** Program Title: Practical applications in ergonomics today. Sponsor: National Safety Council, October 30, 1997.

**Ergonomics.** IIE Chapter 180 Divisional Meeting, December 12, 1995.

**Preventing Back Injuries.** IIE Chapter 180 Divisional Meeting, December 13, 1994.

**Dynamic 3-Dimensional Trunk Motion in Occupational Low Back Disorders.** Preventive Medicine Grand Rounds. Co-Presented with Sue Leurgans. Rush Presbyterian St. Luke's Medical Center, June 8, 1993.

## **ABSTRACTS AND CONFERENCE PROCEEDINGS**

- Lavender, S.A.,** Lorenz, E., Andersson, G.B.J. (2002). Do lifting techniques that measurably reduce spine load necessarily take longer? Transactions of the 48<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, paper number 777.
- Lavender, S.A.,** Lorenz, E., Andersson, G.B.J. (2001). Does training on lifting techniques adversely affect case handling times? Proceedings of the Human Factors and Ergonomics Society 45<sup>th</sup> Annual Meeting, 1059.
- Lavender, S.A.** and Andersson, G.B.J. (2000). How much can training of lifting techniques reduce the three dimensional moments on the spine? Transactions of the 46<sup>th</sup> Annual Meeting of the Orthopaedic Research Society, paper number 393.
- Lavender, S.A.,** and Andersson, G.B.J. (1999). Trunk flexion strategies during sudden loading. Proceedings of the Human Factors and Ergonomics Society 43<sup>rd</sup> Annual Meeting, Houston, TX, 668-669.
- Lavender, S.A.,** Shakeel, K., Thomas, J.S., Andersson, G.B.J. (1999). The effects of pre-load during “expected” and “unexpected” sudden loading. International Society for the Study of the Lumbar Spine: Abstracts, Number 154A.
- Lavender, S.A.,** Johnson, L, Masciopinto, J. (1999) A test of the LiftTrainer: An aggressive new approach for changing lifting behavior. 1999 American Industrial Hygiene Conference and Exposition: Abstracts. No. 47, page 10.
- Lavender, S.A.,** Shakeel, K, Andersson, J.S., Thomas, J.S.(1999). Does a lifting belt reduce the spine moments during sudden unexpected loading? Transactions of the 45<sup>th</sup> Annual Meeting Orthopaedic Research Society, Anaheim, California, no. 266.
- Lavender, S.A.,** Shakeel, K., Thomas, J.S., Andersson, G.B.J. (1998) Does a lifting belt protect the spine during sudden unexpected loading? In the Proceedings of the Human Factors and Ergonomics Society 42<sup>nd</sup> Annual Meeting, pp. 911.
- Lavender, S.A.,** Oleske, D.M., Nicholson, L., Andersson, G.B.J., Hahn, J. (1998). A comparison of four methods commonly used to determine low-back disorder risk in a manufacturing environment. In Transactions of the 44th Annual Meeting Orthopaedic Research Society, 1, 141.
- Lavender, S.A.,** Li, Y.C., Andersson, G.B.J., Natarajan, R.N., Amirouche, F.M. (1998). The effects of initial lift asymmetry on the forward bending, lateral bending, and twisting external moments acting on the lumbar spine. In Transactions of the 44th Annual Meeting Orthopaedic Research Society, 1, 143.
- Natarajan, R.N., Paruchuri, S., Andersson, G.B.J., **Lavender, S.A.,** (1998). Calculation of a

critical magnitude of facet resection responsible for sudden increase in flexibility of a lumbar spine motion segment. In Transactions of the 44th Annual Meeting Orthopaedic Research Society, 1, 254.

**Lavender, S.A.**, Oleske, D.M., Nicholson, L., Andersson, G.B.J., Hahn, J. (1997). A comparison of four methods commonly used to determine low-back disorder risk in a manufacturing environment. Proceedings of the Human Factors and Ergonomics Society 41st Annual Meeting., 1, 657-660.

**Lavender, S.A.**, Conrad, K., Reichelt, P.A., Johnson, P.W., Meyer, F.T. (1997). Biomechanical task analyses of frequently performed and physically strenuous emergency rescue tasks. 1997 American Industrial Hygiene Conference and Exposition Abstracts, No. 82, pg 19.

**Lavender, S.A.**, Chen, S.H., Li, Y.C., Andersson, G.B.J.(1997). Trunk muscle co-contraction when performing pulling tasks on a slippery and a non-slippery surface. Transactions of the 43rd annual meeting of the Orthopedic Research Society, Vol 2, 386.

Thomas, J.S., **Lavender, S.A.**, Corcos, D.M., Andersson, G.B.J. (1997). Trunk kinematics and trunk muscle activity during a suddenly applied bending moment. Physical Therapy, 77, S29-S30.

**Lavender S.A.**, Chen S.H., Li Y.C., Andersson, G.B.J. (1996). Pulling on slippery versus non-slippery surfaces: Can a lifting belt help? Proceedings of the Human Factor and Ergonomics Society 40th Annual Meeting, 1, 604-608.

**Lavender, S.A.**, Thomas, J.S., Corcos, D.M., Andersson, G.B.J. (1996). Lifting belts and trunk muscle electromyographic activity during sudden unexpected loading. International Society for the Study of the Lumbar Spine: Abstracts, no. 173.

Thomas, J.S., **Lavender, S.A.**, Corcos, D.M., Andersson, G.B.J. (1996). The effect of lifting belts on trunk muscle activity during a suddenly applied bending moment. Physical Therapy, 76, S81.

**Lavender, S.A.**, Andersson, G., Thomas, J., Corcos, D. (1996). The effectiveness of lifting belts in controlling trunk muscle electromyographic activity during sudden unexpected loading. 1996 American Industrial Hygiene Conference and Exposition Abstracts, No. 58, pg 12.

**Lavender, S.A.**, Li, Y.C., Natarajan, R.N. Andersson, G.B.J. (1996). Do lifting belts adversely affect the moments at the spine, hips, and knees during lifting? Transactions of the 42nd annual meeting of the Orthopedic Research Society, Vol 1., 166.

**Lavender, S.A.**, Li, Y.C., Natarajan, R.N., Andersson, G.B.J. (1995). Do lifting belts affect the L5/S1 moments during lifting and twisting. North American Spine Society 10th Annual Conference Proceedings, 55-56.

- Lavender, S.A.**, Li, Y.C., Natarajan, R.N., Andersson, G.B.J. (1995). The effects of lifting speed and load magnitude on the torsional and lateral bending moments during twisting. In The Proceedings of the 39th Annual Meeting of the Human Factors and Ergonomics Society, 954.
- Lavender, S.A.**, and Miller, J. (1995). The effects of cardboard slipsheets between layers of beverage products on side-load delivery trucks: A trunk motion study. Proceedings of the 39th Annual Meeting of the Human Factors and Ergonomics Society, 954.
- Andersson, G.B.J, **Lavender, S.A.**, Li, Y.C., Natarajan, R.N. (1995). Does a lifting belt affect the L5/S1 bending and twisting moments during asymmetric lifting? International Society for the Study of the Lumbar Spine: Abstracts, no. 87.
- Lavender, S.A.**, Li, Y.C., Natarajan, R.N., Andersson, G.B.J. (1995). Do lifting belts reduce the spine loading during material handling tasks that involve lifting and twisting? 1995 American Industrial Hygiene Conference and Exposition Abstracts, No. 132, pg 25.
- Lavender, S.A.**, Li, Y.C., Natarajan, R.N., Andersson, G.B.J., Schipplein, O.D., Nussbaum, M.A. Chaffin, D.B. (1995). The torsional and lateral bending moments during twisting: the effects of lifting speed and load magnitude. Transactions of the 41st Annual Meeting, Orthopaedic Research Society, 2, 657.
- Lavender, S.A.** Andersson, G.B.J., Chen, I.H., Trafimow, J., Nussbaum, M.A., Chaffin, D.B. (1994). Electromyographic activities of the trunk muscles in response to lateral flexion and non-sagittally symmetric applied moments. International Society for the Study of the Lumbar Spine: Abstracts, no. 152.
- Lavender, S.A.** Chen, I.H., Mayer, R.S., Trafimow, J., Andersson, G.B.J. (1994). Intra- and inter examiner reliability in measuring lumbar range of motion. International Society for the Study of the Lumbar Spine: Abstracts, no. 37.
- Lavender, S.A.**, Thomas, J.T., Chang, D., Andersson, G.B.J. (1994). The effects of lifting belts on trunk motions. International Society for the Study of the Lumbar Spine: Abstracts, no. 114.
- Lavender, S.A.**, Thomas, J.S., Chang, D., Andersson, G.B.J. (1994). The effect of lifting belts on trunk motions. In F. Aghazadeh (ed.) Advances in Industrial Ergonomics and Safety VI, 667-670.
- Andersson, G.B.J., Ke, J.H., Natarajan, R.N., **Lavender, S.A.**, Zong, L. (1994). Change in disc water content as a function of age, sex, vertebral level, and degenerated stage. International Society for the Study of the Lumbar Spine: Abstracts, no. 21.
- Natarajan, R.N., Li, Y.C., **Lavender, S.A.**, Andersson, G.B.J., Schipplein, O.D., Huang, T.J. , Amirouche, F.M.L (1994). A three dimensional dynamic biomechanical model to study asymmetric lifting. Advances in Bioengineering, ASME, BED-Vol. 28, 415-416.
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