CURRICULUM VITAE

**WILLIAM S. MARRAS**

**PERMANENT ADDRESS OFFICE ADDRESS**

2655 Wyndbend Blvd. The Ohio State University

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Columbus, Ohio 43210

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**EDUCATION**

Ph.D. Major: Bioengineering and Ergonomics

July 1982

Wayne State University

Detroit, Michigan

M.S.I.E. Industrial Engineering

Major: Human Factors Engineering

June 1978

Wayne State University

Detroit, Michigan

B.S. Systems Engineering - Human Factors Engineering

June 1976

Wright State University

Dayton, Ohio

**Honorary Degrees**

Dr. Sci. University of Waterloo

(honoris causa) October 23, 2004

Waterloo, Ontario

Canada

**LICENSURE**

CPE Board Certified Ergonomist (Certified Professional Ergonomist Certification Number 153

F. Erg. S. (Profession Ergonomics Registration) The Ergonomics Society United Kingdom

**ACADEMIC POSITIONS**

2013 to present Institute Director and Scientific Director

Spine Research Institute, The Ohio State University

2007 to present Director

Center for Occupational Health in Automotive Manufacturing (COHAM)

2005 to present Professor (Adjunct)

Department of Orthopaedic Surgery

College of Medicine

The Ohio State University

1998 to present Honda Chaired Professor (endowed chair)

The Ohio State University

College of Engineering

1992 to present Professor

The Ohio State University

Department of Integrated Systems Engineering

Director

Biodynamics Laboratory

The Ohio State University

Department of Integrated Systems Engineering

Executive Director

Institute for Ergonomics

The Ohio State University

Professor (Adjunct)

The Ohio State University

Department of Physical Medicine

Professor (Adjunct)

The Ohio State University

Department of Biomedical Engineering

1987 to 1992 Associate Professor

The Ohio State University

Department of Industrial and Systems Engineering

Director

Biodynamics Laboratory

The Ohio State University

Associate Professor

The Ohio State University

Department of Physical Medicine

Associate Professor

The Ohio State University

Biomedical Engineering Center

1982 to 1987 Assistant Professor

The Ohio State University

Department of Industrial and Systems Engineering

Director

Biodynamics Laboratory

The Ohio State University

Assistant Professor

The Ohio State University

Department of Physical Medicine

1981 to 1982 Research Associate (Principal Investigator)

Wayne State University

Directing research on the biomechanics of back motion for the Rehabilitation Institute Foundation

1978 to 1981 Instructor

Wayne State University

Taught probabilistic and statistical methods for engineers, Human Factors Engineering and Work Measurement

Research Associate

Investigations of the Static Muscle Strength Control System

Sponsored by the U.S. Air Force

Principal Investigator

Strength Testing of Aging Effects Sponsored by the Institute of Gerontology

Co-Investigator

Investigation of Dynamic Testing of Human Lifting Strength

Sponsored by the National Institute of Occupational Safety and Health

Military Ohio Air National Guard, 1971-1977

251st Headquarters Communication Group

Rank: Sergeant, Honorable Discharge December 1977

**PROFESSIONAL SOCIETY MEMBERSHIPS**

American Society of Biomechanics (ASB)

American Industrial Hygiene Association (AIHA)

Ergonomics Society

Human Factors and Ergonomics Society (HFES)

International Society of Biomechanics (ISB)

Institute of Industrial Engineers (IIE)

International Ergonomics Association (IEA)

International Foundation for Industrial Ergonomics and Safety Research (IFIESR)

International Society for the Study of the Lumbar Spine (ISSLS)

Orthopaedic Research Society (ORS)

International Commission on Occupational Health (ICOH)

North American Spine Society (NASS)

New York Academy of Sciences

National Academy of Engineering (NAE)

American Association for the Advancement of Science (AAAS)

**PROFESSIONAL SERVICE**

***Society Service***

Delegate to NATO Symposium on Anthropometry and Biomechanics, 1980.

Chairman, Ergonomics Committee, Ohio Safety and Health Congress, 1985-1987.

Chairman, Ergonomics Division, Institute of Industrial Engineers, Fall Conference 1986.

Chairman of Z-94 ANSI Subcommittee on Industrial Engineering Terminology for Anthropometry, Biomechanics and Human Factors 1985-1991.

Research Officer, IIE Human Factors Technical Group, 1987-1989

Ergonomics Committee, American Industrial Hygiene Association, 1984-present

Assistant Program Chairman, American Industrial Hygiene Association,

Board of Directors, Mid Central Ergonomics/Human Factors Conf., 1983-1987 Industrial Ergonomics Technical Group, Human Factors Society, 1982-present

Chairman, Industrial Ergonomics Technical Group, Human Factors Society, 1989-1990

Program Chairman, Ergonomics Committee, American Industrial Hygiene Association,

1989-1990.

Chairman, Ergonomics Committee, American Industrial Hygiene Association, 1990-1991

Technical Program Chair, International Ergonomics Association World Conference '93 on Ergonomics of Materials Handling, June 14-17, 1993.

Food Marketing Institute Ergonomics Task Force, 1989-1994.

Technical Program Chair, Human Factors and Ergonomics Society, Industrial Ergonomics Technical Group, 1996-1997.

Executive Committee, Midwestern United States Representative, International Society

for the Study of the Lumbar Spine (ISSLS) (2001-2004).

Research Needs Committee co-chair (occupational issues) American Association of

Orthopaedic Surgeons 2001-2003

Outcomes Compendium Task Force, North American Spine Society (2003- present)

International Society for the Study of the Lumbar Spine (ISSLS) Surgical Course

Committee Co-Chair (2006-present).

HFES Delegate to IEA (chairman) 2006-2009.

Executive Committee, Scientific Research Chair, International Society for the Study of

the Lumbar Spine (ISSLS) (2004-present).

Secretary-Treasurer, Human Factors and Ergonomics Society, 2007

Executive Council, Human Factors and Ergonomics Society, 2006-2008.

***Editorial Board Service***

Editorial Board, *Human Factors*, 1986 - 1993, 1995 - present.

Editorial Board, *International Journal of Industrial Ergonomics*,1985-1993.

Editorial Board (Advisory Editorial Board), *Spine*, 1993 - 2004.

Editorial Board (Associate Editorial Board), *Spine*, 2004 – 2005.

Deputy Editor, *Spine,* 2006 – present

Editorial Board, *Clinical Biomechanics*, 1995-present.

Editorial Board, *Occupational Ergonomics*, 1996-present.

Editorial Board, *Journal of Electromyography and Kinesiology*, 1998-present.

Advisory Board, *Journal of Electromyography and Kinesiology*, 1999-present.

Editorial Board, *The Spine Journal*, 2000-present

Editorial Board, *European Spine Journal*, 2007-present.

Editorial Board, *Human Factors and Ergonomics in Manufacturing,* 1997-present.

Department Editor (Ergonomics and Human Factors), *IIE Transactions,* 1992-1996.

Consulting Editor, *Ergonomics*, 1998-2007.

Senior Editor, *Theoretical Issues in Ergonomics Science*, 2000-present.

Associate Editor, *Human Factors,* 2001-2009.

Editor-in-Chief, *Human Factors,* 2010 – 2013.

Track Editor, *Human Factors,* 2014 – present.

***Government/National Service***

Integrated Ergonomic Modeling Committee, National Academy of Sciences, 1985-1986.

NIOSH-SOH Study Section, Proposal Reviewer, 1991- 1998.

National Academies (National Research Council) Steering Committee on Work-Related Musculoskeletal Disorders (1998-1999)

Member, National Academies (National Research Council) Committee on Human Factors (1999-present)

Member, National Academies (National Research Council/Institute of Medicine) Musculoskeletal Disorders Committee, (1999-2001)

Chair, National Academies (National Research Council) Committee on Human Factors (2006-2008)

Member, National Academies (National Research Council) Recruitment of Youth in the Military Committee (2004-2006)

NIOSH–North American Research Agenda (NORA) Musculoskeletal Committee (1997-2003)

Chair, National Academies (National Research Council) Committee on Human-Systems Integration (2009-2010)

NIOSH–North American Research Agenda (NORA II) Manufacturing Sector Committee (2010 - Current)

Chair, National Academies (National Research Council) Board on Human-Systems Integration (2010-2011)

Member, The National Academies (National Academy of Engineering) Soldier Systems Panel (2009-present)

Member, The National Academies, (National Research Council) Advisory Committee Division of Behavioral and Social Sciences and Education (2012-present)

Member, National Academies (National Academy of Engineering) peer review committee (2011-2014)

Chair, National Academies, (National Research Council) Essential Components of Self-Escape in Mining Committee (2011- 2013)

Member, National Academies Panel on Ballistics Science and Engineering at the Army Research Laboratory (2013-2014)

***University Service***

BioMedical Engineering Center Coordinating Committee, The Ohio State University, 1982-present.

Graduate Faculty (Category III), The Ohio State University, 1983.

College of Engineering's Intellectual Property Council (2003-present)

College of Engineering Research Committee (2000-present)

University College of Engineering Dean Search Committee (2003)

Search Committee for Chair of Orthopaedic Surgery Department, College of Medicine

(2006).

Faculty Advisory Committee, Center for Automotive Research (CAR) 2007-2010

College of Engineering Promotion and Tenure Committee (2007-2009)

College of Engineering Dean Search Committee (2009-2011)

College Center Directors Committee (2011-2013)

College Research Committee (2013-present)

***Fellow***

Fellow, Human Factors and Ergonomics Society, Santa Monica, CA (1995)

Fellow, Ergonomics Society, Loughborough, UK (1999)

Fellow, American Institute for Medical and Biological Engineering (1999)

Fellow, International Ergonomics Association (IEA), (2007)

Fellow, American Industrial Hygiene Association (AIHA), (2010)

Fellow, American Association for the Advancement of Science (AAAS) (2013)

***International Awards***

1993 Volvo Award for Low Back Pain Research: Bioengineering, Gotenborg,

Sweden

1993 Vienna Award for Physical Medicine, Vienna, Austria

Best Paper Award (2000), The International Society for the Study of the Lumbar Spine,

Adelaide, Australia

2002 Volvo Award for Low Back Pain Research in Biomechanics, Gotenborg, Sweden

2002 Outstanding Poster Award, North American Spine Society, Montreal, Canada

2003 Best Poster Award, International Society for the Study of the Lumbar Spine Annual Meeting, Vancouver, Canada

2003 Liberty Mutual Prize in Occupational Safety and Ergonomics, International Ergonomics Association, Seoul, Korea.

2004 Honorary Doctor of Science Degree, Waterloo University, Ontario Canada

2013 Liberty Mutual Award (best paper published in *Ergonomics* in 2012). A strategy for human factors/ergonomics: developing the discipline and profession. Jan Dul,

Ralph Bruder, Peter Buckle, Pascale Carayon, Pierre Falzon, William S. Marras,

John R. Wilson & Bas van der Doelen

***National Awards***

1992 Dr. David F. Baker Distinguished Research Award, Institute of Industrial Engineers, Atlanta GA

Jack A. Kraft Innovator Award (1999), The Human Factors and Ergonomics Society, Houston, TX

2003 Alice Hamilton Science Award, (Outstanding Scientific Publication) National Institute for Occupational Safety and Health (NIOSH), Washington D.C.

2003 Distinguished Engineering Alumni Achievement Award, Wayne State University, Detroit MI

Wayne State University College of Engineering Hall of Fame (inducted 2003)

2004 Bernice Owen Award for Research, Orlando, FL

***National Academy of Engineering*** (elected 2009)

2009 Paul M. Fitts Education Award, Human Factors and Ergonomics Society, Santa Monica, CA

2010 Wright State University Outstanding Alumni Award

***Ohio State University Awards***

1987 College of Engineering Research Award

Battelle Professor, 1986-1987

1992 College of Engineering Lumley Research Award

1996 College of Engineering Lumley Research Award

Designated Chair of the Biodynamics Laboratory sponsored by NCR Corporation, Atlanta GA (1993-1996)

Honda Endowed Chair in Transportation (Ergonomics) (1998)

2004 College of Engineering Lumley Research Award

The Clara M. and Peter L. Scott Award for Outstanding Academic Achievement (2009)

**PATENTS**

Apparatus for Monitoring Motion Components of the Spine.

Patent No. 5,012,819

Apparatus for Monitoring the Motion of the Lumbar Spine.

Patent No. 5,094,249

Apparatus for Monitoring the Motion Components of the Spine

Patent No. 5,143,088

**CONSULTING** (selected)

FORD Motor Company, Dearborn, MI

National Beef Packing Company, Liberal, KS

Occupational Safety and Health Administration (OSHA), Washington D.C.

U. S. Department of Labor, Philadelphia, PA

Industrial Commission of Ohio, Columbus, OH

Institute for Behavioral Medicine, Providence, RI

National Institute for Occupational Safety and Health, Cincinnati, OH

RCA Corporation, Columbus OH

PPG Industries, Delaware OH

Food Marketing Institute (FMI), Washington D.C.

Ross Laboratories, Columbus, OH

Ametek Electric, Cambridge & Kent, OH, Racine WI, Grahm NC, Woostock NY

# Big Bear Food Warehouse, Columbus, OH

# National Association of Chain Drug Stores, Washington D.C.

Hanaford Brothers Food Distribution, Portland ME

Steelcase, Grand Rapids, MI (Scientific Advisory Board)

Biomec, Cleveland, OH (Scientific Advisory Board)

Creative Ergonomic Solutions, Detroit, MI, (Board of Directors)

Honda of America, Marysville, OH

Liberty Pacific Medical Imaging, Seattle, WA, (Scientific Advisory Board)

The Limited (Columbus, OH)

Target Inc. (Minneapolis, MN)

Sears, Inc. (San Francisco, CA)

Safeway, Inc. (San Francisco, CA)

Costco, Inc. (San Francisco, CA)

**PUBLICATIONS**

***Refereed Journals***

1. Marras, W. S., and K. H. E. Kroemer, (1980), "A Method to Evaluate Human Factors/Ergonomics Design Variables of Distress Signals," *Human Factors*, 22(4), 389-400.
2. Kroemer, K. H. E. and W. S. Marras, (1980), "Ergonomics of Visual Emergency Signals," *Journal of Applied Ergonomics*, 11(3), 137-144.
3. Kroemer, K. H. E. and W. S. Marras, (1980), "Towards an Objective Assessment of the Maximal Voluntary Contraction Component in Routine Muscle Strength Measurements," *European Journal of Applied Physiology*, 45, 1-9.
4. Kroemer, K. H. E., and W. S. Marras, (1981), "Evaluation of Maximal and Sub-Maximal Static Muscle Exertions," *Human Factors*, 23(6), 643-654.
5. Marras, W. S., King, A. I., and R. L. Joynt, (1984), "Measurements of Loads on the Lumbar Spine Under Isometric and Isokinetic Conditions," *Spine*, 9(2), 176-188.
6. Marras, W. S., Joynt, R. L., and A. I. King, (1985), "The Force Velocity Relation and Intra-abdominal Pressure During Lifting Activities," *Ergonomics*, 23(3), 603-613.
7. Marras, W. S., and T. H. Rockwell, (1986), "An Experimental Evaluation of Method and Tool Effects in Spike Maul Use," *Human Factors*, 28(3), 267-281.
8. Rockwell, T. H., and W. S. Marras, (1986), "An Evaluation of Tool Design and Method of Use of Railroad Leverage Tools on Back Stress and Tool Performance," *Human Factors*, 28(3) 303-315.
9. Marras, W. S., and P. E. Wongsam, (1986), "Flexibility and Velocity of the Normal and Impaired Lumbar Spine," *Archives of Physical Medicine and Rehabilitation*, 67, 213-217.
10. Marras, W. S., Wongsam, P. E., and S. L. Rangarajulu, (1986), "Trunk Motion During Lifting: The Relative Cost," *International Journal of Industrial Ergonomics*, 1(2), 103-113.
11. Marras, W. S., Rangarajulu, S. L., and P. E. Wongsam, (1987), "Trunk Force Development During Static and Dynamic Lifts," *Human Factors*, 29(1), 19-29.
12. Marras, W. S., (1987), "Trunk Motion During Lifting: Temporal Relations Among Loading Factors," *International Journal of Industrial Ergonomics*, 1(3), 159-167.
13. Marras, W. S., Rangarajulu, S. L. and S. A. Lavender, (1987), "Trunk Loading and Expectation," *Ergonomics*, 30(3), 551-562.
14. Kim, J. Y. and W. S. Marras, (1987), "Quantitative Trunk Muscle Electromyography During Lifting at Different Speeds," *International Journal of Industrial Ergonomics*, 1(3), 219-229.
15. Treaster, D., and W. S. Marras, (1987), "Measurement of Seat and Back Pressure Distributions," *Human Factors*, 29(5), 563-575.
16. Marras, W. S., Bobick, T. G., Lavender, S. A., Rockwell, T. H., and R. L. Lundquist, (1988), "Risks of Hand Tool Injury in U.S. Underground Mining from 1978 through 1983, Part I: Coal Mining," *Journal of Safety Research*, 19, 71-85.
17. Marras, W. S., Lavender, S. A., Bobick, T. G., Rockwell, T. H., and R. L. Lundquist, (1988), "Risks of Hand Tool Injury in U.S. Underground Mining from 1978 through 1983, Part II: Metal-Non Metal Mining," *Journal of Safety Research*, 19, 115-124.
18. Marras, W. S., and C. H. Reilly, (1988), "Networks of Internal Trunk Loading Activities Under Controlled Trunk Motion Conditions," *Spine*, 13(6), 661-667.
19. Marras, W. S., (1988), "Predictions of Forces Acting Upon the Lumbar Spine Under Isometric and Isokinetic Conditions: A Model-Experiment Comparison," *International Journal of Industrial Ergonomics*, 3(1), 19-27.
20. Gallagher, S., Marras, W. S., and T. G. Bobick, (1988), "Lifting in Stooped and Kneeling Postures: Effects on Lifting Capacity, Metabolic Costs and Electromyography of Eight Trunk Muscles," *International Journal of Industrial Ergonomics*, 3(1), 65-76.
21. Reilly, C. H., and W. S. Marras, (1989), "SIMULIFT: A Simulation Model of Human Trunk Motion During Lifting," *Spine*, 14(1), 5-11.
22. Lavender, S. A., Mirka, G. A., Schoenmarklin, R. W., Sommerich, C. M., Sudhaker, L. R., and W. S. Marras, (1989), "An Investigation into the Effects of Preview and Symmetry on Trunk Loading," *Human Factors*, 31(1) 101-115.
23. Schoenmarklin, R. W. and W. S. Marras, (1989), "Effects of Angle and Work Orientation on Hammering: I. Wrist Motion and Hammering Performance," *Human Factors*, 31(4), 397-411.
24. Schoenmarklin, R. W. and W. S. Marras, (1989), "Effects of Angle and Work Orientation on Hammering: II. Muscle Fatigue and Subjective Ratings of Body Discomfort," *Human Factors*, 31(4), 413-420.
25. Gray, B. A., and W. S. Marras, (1989), "An Experimental Analysis of Railroad Spike Maul Methods," *Human Factors*, 31(3), 335-344.
26. Marras, W. S. and G. A. Mirka, (1989), "Trunk Strength During Asymmetric Trunk Motion," *Human Factors*, 31(6), 667-677.
27. Mirka, G. A. and W. S. Marras, (1990), "Lumbar Motion Response to a Constant Load Velocity Lift," *Human Factors*, 32(4), 493-501.
28. Marras, W. S. and G. A. Mirka, (1990), " Trunk Responses to Asymmetric Acceleration," *Journal of Orthopaedic Research*, 8(6), 824-832.
29. Lavender, S. A. and W. S. Marras, (1990), "An Electromyographic Analysis of an Ergonomic Intervention with the Jack Leg Drill," *Applied Ergonomics*, 21(2), 90-100.
30. Marras, W.S., (1990), "A Guide to Industrial Applications of Electromyography," *International Journal of Industrial Ergonomics*, 6, 89-93.
31. Kroemer, K. H. E., Marras, W. S., McGlothlin, J. D., McIntyre, D. R., and M. Nordin, (1990), "On the Measurement of Human Strength," *International Journal of Industrial Ergonomics*, 6, 199-210.
32. Ahern, D. K., Follick, M. J., Lucas, P., Parziale, J., Marras, W. S., Wilkin D. and Wolf, S., (1990), "Interdisciplinary perspectives on mechanisms and management of low back pain," *Rhode Island Medical Journal*, January, 21-31.
33. Marras, W. S. and Ferguson, S. A. and Simon S. R. (1990), "Three dimensional dynamic motor performance of the normal trunk," *International Journal of Industrial Ergonomics*, 6, 211-224.
34. Marras, W. S. and S. A. Lavender, (1991), "The Effects of Method of Use, Tool Design, and Roof Height on Trunk Muscle Activities During Underground Scaling Bar Use," *Ergonomics*, 34(2), 221-232.
35. Marras, W. S. and Sommerich, C. M., (1991), "A Three Dimensional Motion Model Of Loads On The Lumbar Spine, Part I: Model Structure," *Human Factors*, 33(2), 123-137.
36. Marras, W. S. and Sommerich, C. M., (1991), "A Three Dimensional Motion Model Of Loads On The Lumbar Spine, Part II: Model Validation," *Human Factors*, 33(2), 139-149.
37. Marras, W. S. (1991), "A Model for the Objective Assessment of Automobile Restraint Systems," *International Journal of Industrial Ergonomics,* 8(1), 59-65.
38. Marras, W. S. and G. A. Mirka, (1992), "A Comprehensive Evaluation of Asymmetric Trunk Motions," *Spine* 17(3), 318-326.
39. Marras, W.S. Fathallah, F., Miller R.J., Davis S.W. and G.A. Mirka (1992), "Accuracy of a Three Dimensional Lumbar Motion Monitor for Recording Dynamic Trunk Motion Characteristics," *International Journal of Industrial* *Ergonomics*, 9(1), 75-87.
40. Sommerich, C.M. and W.S. Marras (1992), "Temporal Patterns of Trunk Muscle Activity Throughout a Dynamic, Asymmetric Lifting Motion," *Human Factors*, 34(2), 215-230.
41. Ferguson S.A., W.S. Marras and T.R. Waters (1992), "Quantification of Back Motion During Asymmetric Lifting," *Ergonomics*, 35(7/8), 845-859.
42. Ferguson, S.A., and Marras W.S. (1992), “Quantification of Velocity Coupling During Asymmetric Lifting,” *International Journal of Industrial Ergonomics*, 10, 207-215.
43. Lavender, S.A., Marras, W.S., and R.A. Miller (1993), "The Development of Preparatory Response Strategies in Anticipation of Sudden Loading to the Torso," *Spine*, 18(14), 2097-2105.
44. Sommerich, C.M., McGlothlin, J.D., and W.S. Marras (1993), "Occupational Risk Factors Associated with Soft Tissue Disorders of the Shoulder: A review of Recent Investigations in the Literature,” *Ergonomics*, 36(6), 697-717.
45. Marras, W. S., McGlothlin, J. D., McIntyre, D. R., Nordin, M., and Kroemer, K. H. E., (1993), "Dynamic Measures of Low Back Performance," *American Industrial Hygiene Association Ergonomics Guide*, ISBN 0-932627-52-8, Stock No. 174-ER-93.
46. Marras, W.S. and Schoenmarklin, R.W., (1993), “Wrist Motion in Industry,” *Ergonomics*, 36(4), 341-351.
47. Schoenmarklin, R.W. and Marras, W.S., (1993), "Dynamic Capabilities of the Wrist Joint in Industrial Workers," *International Journal of Industrial Ergonomics*, 11(3), 207-224.
48. Marras, W.S., Lavender, S.A, Leurgans, S., Rajulu, S., Allread, W.G., Fathallah F. and 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 Injury,” *Spine,* 18(5), 617-628.
49. Granata, K.P. and W.S. Marras, (1993), “An EMG-Assisted Model of Loads on the Lumbar Spine During Asymmetric Trunk Extensions,” *Journal of Biomechanics*, 26(12), 1429-1438.
50. Marras, W.S. and Kim, J. Y. (1993), “Anthropometry of Industrial Populations,” *Ergonomics*, 36(4), 371-378.
51. Marras, W.S. and G.A. Mirka, (1993), “Electromyographic Studies of the Lumbar Trunk Musculature During the Generation of Low Level Trunk Acceleration,” *Journal of Orthopaedic Research*, 11(6), 811-817.
52. Mirka G.A., and Marras, W.S. (1993), “A Stochastic Model of Trunk Muscle Activities During Trunk Bending,” *Spine*, **Volvo Award for Low Back Pain Research**, 18(11), 1396-1409.
53. Lavender, S.A, and Marras, W.S. (1993),"The Use of Turnover Rate as a Passive Surveillance Indicator For Potential Low Back Disorders," *Ergonomics,* 37(6), 971-978.
54. Marras. W.S., Parnianpour, M., Ferguson, S.A., Kim, J.Y., Crowell, R.R., and Simon, S.R. (1993), "Quantification and Classification of Low Back Disorders Based on Trunk Motion," *European Journal of Physical Medicine*; **Vienna Physical Medicine Award 1993**, 3(6), 218-235.
55. Gallagher, S., Hamrick, C. A., Love, A. C. and Marras, W. S., (1994), "Dynamic Biomechanical Modeling of Symmetric and Asymmetric Lifting Tasks in Restricted Postures,” *Ergonomics*, 37(8), 1289-1310.
56. Kim, J.Y., Stuart-Buttle, C., and Marras W.S. (1994), “The Effects of Mats on Back and Leg Fatigue,” *Applied Ergonomics*, 25(1), 29-34.
57. Schoenmarklin, R.W., Marras, W.S., and Leurgans S.E. (1994), "Industrial Wrist Motions and Risk of Cumulative Trauma Disorders in Industry," *Ergonomics*, 37(9), 1449-1459.
58. Marras, W.S., Parnianpour, M. Kim, J.Y., Ferguson, S.A., Crowell, R.R, and Simon, S.R. (1994) "A Normal Database of Dynamic Trunk Motion Characteristics During Repetitive Trunk Flexion and Extension as A Function of Task Asymmetry, Age and Gender," *IEEE Transactions,* 2(3), 137-146.
59. Marras, W.S., Lavender, S.A, Leurgans, S., Fathallah F., Allread, W.G., Ferguson, S.A., and Rajulu, S. (1995), “Biomechanical Risk Factors for Occupationally­ Related Low Back Disorder Risk,” *Ergonomics*, 38(2), 377-410.
60. Lavender, S.A., and Marras W.S. (1995), “The Effects of Temporal Warning Stimulus on the Biomechanical Preparations for Sudden Loading,” *Journal of Electromyography and Kinesiology*, 5(1) 45-56.
61. Marras, W.S., Schoenmarklin, R.W., Greenspan, G. J., and K.R. Lehman (1995), "Quantification of Wrist Motions During Scanning," *Human Factors*, 37(2) 412-423.
62. Parnianpour, M., Kaushik, G., Barin, K., and Marras, W.S. (1995) "Quantification of Trunk Motion in Response to Complex Platform Perturbations While Holding Weights in an Upright Posture," *IEEE Transactions,* (in review).
63. Marras, W.S., Parnianpour, M., Ferguson, S.A., Kim, J.Y., Crowell, R.R, Bose, S and Simon, S.R. (1995), "The Classification of Anatomic and Symptom Based Low Back Disorders Using Motion Measure Models," *Spine,* 20(23), 2531-2546.
64. Marras, W.S. and Granata, K.P. (1995), "A Biomechanical Assessment and Model of Axial Twisting in the Thoraco-Lumbar Spine," *Spine,* 20(13), 1440-1451*.*
65. Granata, K.P. and Marras, W.S. (1995), "An EMG-Assisted Model of Trunk Loading during Free-Dynamic Lifting," *J. Biomechanics,* 28(11), 1309-1317.
66. Granata, K.P., and Marras, W.S. (1995), "The Influence of Trunk Muscle Coactivity Upon Dynamic Spinal Loads," *Spine*, 20(8), 913-919.
67. Fathallah, F., Marras, W.S., and Wright, L.P. (1995), "Diurnal Changes in Trunk Motion Throughout the Day," *J. Spinal Disorders*, 8(1), 20-25.
68. Marras, W.S. and Mirka G.A. (1996), “Intraabdominal Pressure During Extension Motions,” *Clinical Biomechanics*, 11(5), 267-274.
69. Allread, W.G., Marras, W.S., and Parnianpour, M. (1996), "Trunk Kinematics Of One-Handed Lifting And Effects Of Asymmetry And Load Weight," *Ergonomics,* 39(2) 322-334.
70. Kim, J.Y., Parnianpour, M., and Marras W.S. (1996) “Quantitative Assessment Of The Control Capability Of The Trunk Muscles During Oscillatory Bending Motion Under A New Experimental Protocol,” *Clinical Biomechanics*, 11(7), 385-391.
71. Sommerich, C.M., Marras, W.S. and Parnianpour, M. (1996), “A Quantitative Description Of Typing Biomechanics,” *Journal of Occupational Rehabilitation*, 6(1), 33-55.
72. Sommerich, C.M., Marras, W.S. and Parnianpour, M. (1996), “Observations On The Relationship Between Key Strike Force And Typing Speed,” *American Industrial Hygiene Association Journal,* 57, 1109-1114.
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2. "Evaluation of Controlled Static Exertions in Various Muscle Groups," NATO Symposium on Anthropometry and Biomechanics, Cambridge, England, July 5-11, 1980.
3. "An Analysis of Isometric and Isokinetic Spinal Lifting Motions," Human Factors Society 26th Annual Meeting, Seattle WA, Oct. 25-29, 1982.
4. "A Biomechanical Analysis of Isometric and Isokinetic Lifting Motion," Institute of Industrial Engineers, Fall IE Conference, Cincinnati, OH, Nov. 14-17, 1982.
5. "Measurements of Load Upon the Lumbar Spine During Isometric and Isokinetic Lifting Activities," 7th Annual Conference of the American Society of Biomechanics, Mayo Clinic, Rochester, MN, Sept. 23-30, 1983.
6. "A Model-Experiment Comparison of Loads Upon the Lumbar Spine," Human Factors Society 27th Annual Meeting, Norfolk, VA, Oct. 10-14, 1983.
7. "Biomechanical Modeling in Ergonomics," Seminar on Integrated Ergonomic Modeling", National Academy of Sciences, Washington, D.C., June 17-18, 1985.
8. "Data Acquisition Control Software," Human Factors Society 29th Annual Meeting, Baltimore, MD, September 29 - October 3, 1985.
9. "Statistical Analysis for Biomechanical Data," Human Factors Society 29th Annual Meeting, Baltimore, MD, September 29 -October 3, 1985.
10. "An Experimental Evaluation of Method and Tool Effects in Spike Maul Use," 9th Annual conference of the American Society of Biomechanics, Ann Arbor, MI, October 2-4, 1985
11. "Measurements of Spine Loading Components During the Usage of Large Hand Tools," in W. Karwowski (ed.), *Trends in Ergonomics/Human Factors III*, also presented at the Annual International Industrial Ergonomics and Safety Conference '86, Louisville, KY, June 12-14, 1986.
12. "The Effects of Expectation on Trunk Loading,” Proceedings of the Human Factors Society 30th Annual Meeting, Dayton, Ohio, Sept. 29 - Oct. 3, 1986.
13. "The Assessment of Strength Under Dynamic Conditions," Proceedings of the Human Factors Society 30th Annual Meeting, Dayton, Ohio, Sept. 29 ­Oct. 3, 1986.
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23. "The Effects of Seam Height, Scaling Method and Bar Weight Distribution on Scaling Effectiveness and Electromyographic Activity," Proceedings of 31st Annual Meeting, Human Factor Society, New York, NY, Oct. 19-23, 1987.
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38. "Wrist Movements and Cumulative Trauma Disorders," Proceedings of Occupational Disorders of the Upper Extremities, Ann Arbor, MI, March 29-30, 1990.
39. "A Biomechanical Analysis of Voluntary Trunk Acceleration," International Society for the Study of the Lumbar Spine Annual Meeting, Boston, MA, June 13-17, 1990.
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74. Fathallah, F. A., Marras, W.S., and Parnianpour, M., “Spinal Combined Loading During Symmetric and Asymmetric Lifting Tasks,” International Society for the Study of the Lumbar Spine Abstracts of the Annual Meeting, Burlington, Vermont, June 25 - 29, 1996.
75. Marras, W.S., Granata, K.P., Davis, K.P., Davis, K.G., Allread, W.G., and Jorgensen, M.J. “The Effects of Box Weight, Size, and Handle Coupling on Spine Loading During Depalletizing Operations,” Proceeding of the Human Factors and Ergonomics Society, 40th Annual Meeting, Philadelphia, PA, September 2 - 6, 1996.
76. Allread, W.G., Marras, W.S., Granata, K.P., Davis, K.G., and Jorgensen, M. J. “The Effects of Box Differences and Employee Job Experience on Trunk Kinematics and Low Back Injury Risk during Depalletizing Operations,” Proceeding of the Human Factors and Ergonomics Society, 40th Annual Meeting, Philadelphia, PA, September 2 - 6, 1996.
77. Granata, K.P., Marras, W.S., and Ferguson, S.A. “Relation Between Biomechanical Spinal Load Factors and Risk of Occupational Low Back Disorders,” Proceeding of the Human Factors and Ergonomics Society, 40th Annual Meeting, Philadelphia, PA, September 2 - 6, 1996.
78. Fathallah, F.A., Marras, WS. and Parnianpour, M. “Three-Dimensional Spinal Loading During Complex Lifting Tasks,” Proceeding of the Human Factors and Ergonomics Society, 40th Annual Meeting, Philadelphia, PA, September 2 - 6, 1996.
79. Ferguson, S.A., Marras, W.S., and Crowell, R.R. “Three-Dimensional Functional Capacity of Normals and Low Back Pain Patients,” Proceeding of the Human Factors and Ergonomics Society, 40th Annual Meeting, Philadelphia, PA, September 2 - 6, 1996.
80. Granata, K.P., Marras, W.S. and Kirking, B. “Influence of Experience on Lifting Kinematics and Spinal Loading,” Conference Proceedings of the Twentieth Annual Meeting of the American Society of Biomechanics, Atlanta, GA, October 17-19, 1996.
81. Marras, W.S. “Spine Loading During Whole-Body Free-Dynamic Lifting,” Proceedings of the 11th Congress of the International Society of Electrophysiology and Kinesiology, Enschede, The Netherlands, October 27-30, 1996.
82. Marras, W.S. and Granata, K.P. “Spine Loading During Trunk Lateral Bending Motions,” Transactions of the 43rd Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 9-13, 1997.
83. Marras, W.S. and Granata, K.P. “An EMG-Assisted Model and Validation of Spine Loads Occurring During Trunk Forward Bending, Lateral Bending, and Twisting,” Proceedings of the 13th Triennial Congress of the International Ergonomics Association, Tampere, Finland, June 29 – July 4, 1997.
84. Marras, W.S., Allread, W.G., Jorgensen, M.J., and Fathallah, F.A. “A Prospective Validation of the LMM Low Back Disorder Risk Model,” Proceedings of the 13th Triennial Congress of the International Ergonomics Association, Tampere, Finland, June 29 – July 4, 1997.
85. Marras, W.S., Parnianpour, M., Ferguson, S.A., and Keefer-Lewis, K. “The Objective Assessment of Low Back Disorders Using Trunk Motion Measure Models,” Proceedings of the 13th Triennial Congress of the International Ergonomics Association, Tampere, Finland, June 29 – July 4, 1997.
86. Marras, W.S., Granata, K.P., Davis, K.G., Allread, W.G., and Jorgensen, M.J. “The Effects of Box Features on Spine Loading in Warehouse Operations,” Proceedings of the 13th Triennial Congress of the International Ergonomics Association, Tampere, Finland, June 29 – July 4, 1997.
87. Allread, W.G., Marras, W.S., Fathallah, F.A. “The Relationship Between Occupational Musculoskeletal Discomfort and Workplace, Personal, and Trunk Kinematic Factors,” Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting, Chicago, IL, October 5-9, 1998.
88. Marras, W.S., Davis, K.G., Kirking, B.C., Bertsche, P.K. “Low Back Disorder Risk and Spinal Loading During Patient Transfer,” Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting, Chicago, IL, October 5-9, 1998.
89. Davis, K.G., and Marras, W.S. “Is Changing Box Weight an Effective Ergonomic Control?” Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting, Chicago, IL, October 5-9, 1998.
90. Treaster, D.E., and Marras, W.S. “A Biomechanical Assessment of Alternative Keyboards Using Tendon Travel,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
91. Marras, W.S. Plenary – “Occupational Low Back Disorder Causation and Control,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
92. Marras, W.S., Davis, K.G., Jorgensen, M.J. “Assessment of Anatomical Representations of the Trunk Muscles in EMG-Assisted Spinal Load Models,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
93. Davis, K.G., Marras, W.S., Heaney, C.A., Maronitis, A.B. “Influence of Job Stress on Muscle Activity and Spinal Loads,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
94. Fathallah, F.A., Marras, W.S., Parnianpour, M. “Combined Spinal Motion and Loading in Occupational Low Back Disorders,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
95. Davis, K.G., Marras, W.S., Young, D.P. “A Comparison of Males and Females during Asymmetric Lifting,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
96. Maronitis, A.B., Kovacs, K.M. Splittstoesser, R.E. Marras, W.S. “The Effectiveness of Whole-Body and Localized Measures of Fatigue,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
97. Lee, W., Karwowski, W., Marras, W.S. “A Neuro-Fuzzy System for Predicting the EMG of Trunk Muscles Based on Lifting Task Variables,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
98. Marras, W.S. “Overview of Electromyography in Ergonomics,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
99. Ferguson, S.A., Marras, W.S., Heaney, C.A., Gupta, P. “Predicting Low Back Functional Performance Recovery,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
100. Cutlip, R.G., Marras, W.S., Warren, G.L., Rempel, D.M., Stauber, W.T. “Soft Tissue Pathomechanics and Its Application to Ergonomics [Panel],” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
101. Splittstoesser, R.E., Davis, K.G., Marras, W.S. “Trade-Offs between Trunk Flexion, Hip Flexion, and Knee Angle in Lifting Below Waist Level,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
102. Marras, W.S., Allread, W.G., Burr, D.L., Fathallah, F.A. “Validation of a Low-Back Disorder Risk Model in a Prospective Study of Ergonomic Interventions into Manual Materials Handling Jobs,” Proceedings of the IEA 2000/HFES 2000 Congress, San Diego, CA, July 29 – August 4, 2000.
103. Edgar, R., Karas, C., Baig, M., Shaw, A., Slittstoesser, R., Ferguson, S., Marras, W., Mendel, E., and Schiraldi, D. “**The Use of Positional Magnetic Resonance Imaging to Assess Patients with Low Back Pain**” American Academy of Neurosurgeons Annual Meeting, November, 2009
104. Edgar, R., Karas, C., Baig, M., Shaw, A., Slittstoesser, R., Ferguson, S., Marras, W., Mendel, E., and Schiraldi, D. “**The Use of Positional Magnetic Resonance Imaging to Assess Patients with Low Back Pain**” American Association of Neurosurgeons Spine Section Annual Meeting, September, 2009
105. “Tissue Load and Low Back Disorder Risk as a Function of Load Handling,” in Soft Tissue Disorders and Injuries of the Spine: Controversies in Ethiopathogenesis, Management and Costs. (eds. R. Gundsburg and M Szpalski) XVIth Brussels International Spine Symposium. Brussels, Belgium, November 20 & 21, 2009; p. 59.
106. Lavender, S.A., Marras, W.S., Ferguson, S.A., Splittstoesser, R.E., Yang, G. (2011).  Developing biomechanical exposure based LBD risk models for manual lifting jobs in distribution centers. In the *Transactions of the 2011 Annual Meeting of the Orthopaedic Research Society*, paper 783.

**SELECTED PRESENTATIONS**

1. "Evaluation of Controlled Static Exertions in Various Muscle Groups," NATO Symposium on Anthropometry and Biomechanics, Cambridge, England, July 5-11, 1980.
2. "Ergonomic Evaluations of Back Trauma in Industry," Seminar presented at American Industrial Hygiene Association/Nation Safety Council Professional Development Conference, Denver, CO, March 7-11, 1983.
3. "Measurements of Load Upon the Lumbar Spine During Isometric and Isokinetic Lifting Activities," 7th Annual Conference of the American Society of Biomechanics, Mayo Clinic, Rochester, MN, Sept. 23-30, 1983.
4. "The Effects of Motion Loading on the Lumbar Spine," 1983, Brouha Conference, Princeton, NJ, Nov. 9-11, 1983.
5. "Modeling Muscle Strength," University of Michigan Ergonomics Seminar, Ann Arbor, MI, December 6, 1983.
6. "An Overview of Human Factors in Ohio," 54th All Ohio Safety Congress, April 24-26, 1984.
7. "Corporate Strategies for Managing Back Injuries and Backache," The Ohio Manufacturers Association, Columbus, OH, Jan. 30, 1985.
8. "Biomechanical Modeling in Ergonomics," Seminar on Integrated Ergonomic Modeling", National Academy of Sciences, Washington, D.C., June 17-18, 1985.
9. "Human Factors Issues in Hand Tool Use," 1985 Society of Automotive Engineers International Off Highway and Power Plant Congress and Exposition", Milwaukee, WI, September 9-12, 1985.
10. "Occupational Low Back Disorder Research," University of Michigan Human Factors Seminar, Ann Arbor, Michigan, Feb. 13, 1987.
11. "Industrial Low Back Research," American Society of Safety Engineers, J. Leonard Camera Center, Columbus, Ohio, Feb. 24, 1987.
12. "The Development of a Dynamic Spine Model," Brouha Symposium, Blacksburg, VA, Sept. 8-11, 1987.
13. "The Ergonomics of Low Back Disorders," American Academy of Industrial Hygiene Annual Conference, San Diego, CA, Sept. 14-16, 1987.
14. "Recent Advances in Assessing Low Back Dysfunction," The Injured Back: Medical and Economic Consequences (Symposium), Savannah, GA, Sept. 25, 1987.
15. "Ergonomics Overview of Manual Materials Handling," presented at Topics of Ergonomics II: Ergonomics Overview for the Occupational Health and Safety Practitioner, Medical College of Ohio, Toledo, OH, July 19, 1988.
16. "Towards an Understanding of Three Dimensional Motion Components During Materials Handling," University of Michigan Ergonomics Seminar, Ann Arbor, MI, Nov. 23, 1988.
17. "Examination of Current Technology for Measuring Trunk Forces," Third Annual B.A.C.K.S. Symposium, Phoenix, AZ Aug. 10-12, 1989.
18. "Wrist Motions and the Use of Retail Scanners," Brouha Symposium, Estes Park, CO, Aug. 29-Sept. 1, 1989.
19. "Ergonomics Problems in the Rubber Industry," 11th Annual URW Joint Labor /Management Health and Safety Seminar, Daytona Beach, FL, Sept. 17-23, 1989.
20. "Biodynamics in Ergonomics," Seminar given at NIOSH, Cincinnati, Ohio Feb. 23, 1990.
21. "Wrist Movements and Cumulative Trauma Disorders," Occupational Disorders of the Upper Extremities, Ann Arbor, MI, March 29-30, 1990.
22. "Lumbar Motion Monitoring in Industry," American Back Society Spring Symposium on Back Pain, Chicago, IL, May 3-6, 1990.
23. "Testing for Deficits in Functional Performance, "American Back Society Spring Symposium on Back Pain, Chicago, IL, May 3-6, 1990.
24. "Development and Implementation of Ergonomics Programs in Industry," (Roundtable) American Industrial Hygiene Conference, Orlando, FL, May 13-­18, 1990.
25. "Biodynamics and Ergonomics," Forty-fifth Annual Federal Safety and Health Conference (National Safety Council Congress and Exposition), Las Vegas, NV, October 29-31, 1990.
26. "Cumulative Trauma Disorders and Scanning," Sunoco Ergonomics and Front­ End Productivity Seminar, Chicago IL, November 5-7, 1990.
27. "Ergonomics and Biodynamics," Food Marketing Institute Risk Managers Conference, Phoenix, AZ, February 7, 1991.
28. "Industrial Medicine: The Challenge of the 1990's,” Chattecx Corporation, Baltimore, MD, March 15, 1991.
29. "Biodynamic Research and Industry," NCR Corporation Technical Conference, Atlanta GA, April 18, 1991.
30. "Towards an Understanding of Spine Loading During Occupationally related Dynamic Trunk Activity," International Ergonomics Association, 11th Congress, Paris, France, July 15-20, 1991.
31. "Wrist Motions and CTD Risk in Industrial and Service Environments," International Ergonomics Association, 11th Congress, Paris, France, July 15-20, 1991.
32. "Scanning and Upper Extremity Cumulative Trauma Disorders," Food Marketing Institute Ergonomics Conference, Dayton, Ohio, September 9-11, 1991.
33. "New Research Findings in Occupational Low Back Disorders," Food Marketing Institute Ergonomics Conference, Dayton, Ohio, September 9-11, 1991.
34. "Work Place Analysis," Occupational Spinal Disorders: Prevention, Diagnosis & Treatment, Chicago, IL, September 22-24, 1991.
35. "Pre-Employment Screening, Is It Worthwhile? (Con Position)," Occupational Spinal Disorders: Prevention, Diagnosis & Treatment, Chicago, IL, September 22-24, 1991.
36. "Trunk Muscle Activity and Intra-Abdominal Activity During Changes in Trunk Position, Velocity and Acceleration," XIIIth International Congress on Biomechanics, The University of Western Australia, Perth, Australia, December 9-13, 1991.
37. "The Role of Trunk Motion in Occupationally-Related Low Back Disorder," International Society for the Study of the Lumbar Spine, 19th Annual Meeting, Chicago, IL, May 20-24, 1992.
38. "The Biodynamics of Occupationally-Related Low Back Disorders," The Cleveland Clinic, Cleveland, OH, June 24, 1992.
39. "Towards an Understanding of Spine loading During Occupationally Related Dynamic Trunk Activities," (Plenary Address) International Ergonomics Association World Conference on Ergonomics Of Materials Handling and Information Processing at Work, Warsaw, Poland, June, 14, 1993
40. "A Stochastic Model of Trunk Muscle Coactivation During Trunk Banding Motions," International Society for the Study of the Lumbar Spine Annual Meeting, Marseilles, France, June 18, 1993.
41. "Three-Dimensional Dynamic Trunk Motions and the Risk of Occupationally-Related Low Back Disorder," International Society of Biomechanics XIVth Congress, Paris, France July 4, 1993.
42. “Dynamic Factors of Occupationally-Related Upper Limb Disorders,” International Conference on Occupational Disorders of the Upper Extremities, San Francisco, CA, December 1-2, 1994.
43. Keynote Address “The Effects of Dynamic Trunk Motion on the Risk of Low Back Disorders During Lifting,” Ergonomics Society of Australia Annual Meeting, Sydney, Australia, December 5-8, 1994.
44. “Biomechanical Exposure Measurements and their relation to occupational musculoskeletal disorders,” Third seminar on Current Trends in Research on Work-Related Musculoskeletal Disorders, Copenhagen, Denmark, April 24-28, 1995.
45. “Changes in Spine Loading During Repetitive Exertions,” International Society for the Study of the Lumbar Spine Annual Meeting, Burlington, Vermont, June 25 - 29, 1996.
46. “The Effects of Box Weight, Size, and Handle Coupling on Spine Loading During Depalletizing Operations,” Human Factors and Ergonomics Society, 40th Annual Meeting, Philadelphia, PA, September 2 - 6, 1996.
47. “Spine Loading During Whole-Body Free-Dynamic Lifting,” (Keynote Lecture) 11th Congress of the International Society of Electrophysiology and Kinesiology, Enschede, The Netherlands, October 27-30, 1996
48. “The Quantification of Low Back Disorders,” (Annual Low Back Disorder Lecture) University of Vermont, Low Back Rehabilitation Engineering Center, Burlington, Vermont, February 17, 1998.
49. “The Prevention of Occupationally-Related of Low Back Disorders and the Clinical Assessment of those Disorders that Do Occur,” The University of Iowa Caterpillar Lecture, Iowa City, Iowa, April 22, 1999.
50. “Back Research Studies”, Ohio Safety Congress & Expo., Columbus, Ohio, April, 3, 2000.
51. “Potential Biomechanical Mechanisms for Psychosocial Stress,” **Best Paper Award**, International Society for the Study of Lumbar Spine Annual Meeting, Adelaide, Australia, April 10-13, 2000.
52. “Occupational Low Back Disorder Causation and Control, Plenary Session, IEA/HFES 2000 Conference, San Diego, CA, July 29 – August 4, 2000.
53. “Low Back Disorder Biomechanics and the Workplace”, University of Illinois, Champaign, IL, October 10, 2000.
54. “The Relationship Between Psychosocial Stress and Low Back Spine Forces”, Invited address, International Conference on Applications of Human Performance in Health and Disability, March 26-29, 2001.
55. “The Evidence for Causality and Low Back Pain”, The University of Alberta, Alberta, Canada, April 18, 2001.
56. “Clinical Assessment of Low Back Disorders using Biomechanics” Louisiana State University, School of Medicine, Visiting Professor Lecture, February 22, 2001.
57. “Job Analyses via Goniometric Based Instrumentation Methods”, American Industrial Hygiene Association Annual Conference, Invited Presentation, New Orleans, LA, June 4, 2001.
58. “Full Case Ergonomic Issues in Distribution Centers”, American Industrial Hygiene Association, Annual Conference, Invited Presentation, New Orleans, LA, June 6, 2001.
59. “Research in Academic Environments”, NASS Research Workshop. North American Spine Society Annual Meeting, Seattle WA, November 3, 2001.
60. “Towards the Development of a Cumulative Trauma Metric for Occupationally-Related Musculoskeletal Disorders”, Invited Presentation, World Congress on Biomechanics, Calgary, Canada, August 5-9, 2002.
61. “Work-Related Low Back Disorder Causation and Control”, Keynote Address, ABERGO  
    2002 - the VII Latin-American Congress of Ergonomics, XII, Brazilian Ergonomics Congress and I Brazilian Seminar on Accessibility. Recife, Brazil September 1 to 5, 2002.
62. “The Future of Research in Understanding and Controlling Work-Related Low Back Disorders”, Plenary Address, XVth Triennial Congress of the International Ergonomics Association, Seoul, South Korea, August 24-29, 2003.
63. “The Elements of Success” Convocation address at the University of Waterloo, Waterloo, Ontario, Canada, October 234, 2004.
64. “Biomechanics of Low Back Disorders,” Graduate Advanced Ergonomics Course for the State of California, San Diego, California, March 16, 2005.
65. “The Evaluation and Control of Occupationally Related Musculoskeletal Disorders,” Ergonomics Society of South Africa Workshop, Pretoria, South Africa, September 13, 2005.
66. “The Evaluation and Control of Occupationally Related Musculoskeletal Disorders,” Ergonomics Society of South Africa Workshop, Pietermaritzburg, South Africa, September 15, 2005.
67. “The Control of Work Related Low Back Disorders, “Rhodes University, South Africa, September 19, 2005.
68. “The Control of Work Related Low Back Disorders,” University of South Africa, Grahmstown, South Africa, September 20, 2005.
69. “Low Back Disorders During Patient Handling,” (keynote address) Minnesota Nurses Association 50th Annual Meeting. St. Paul, Minnesota, October 21, 2005.
70. “Understanding and Controlling Low Back Disorder Risk,” National Institute for Occupational Safety and Health (NIOSH), Morgantown, WV, January 18, 2006.
71. “Working Hurt: The Downward Spiral of Low Back Pain” 6th Annual Safe Patient Handling and Movement Conference, Keynote Address, Clearwater Beach, Florida, February 28, 2006.
72. "Low Back Disorder Risk During Patient Handling" Alaska State Nurses Conference” (keynote address), March 31, 2006, Anchorage, Alaska.
73. “Lumbar spinal biomechanics in industrial setting - ramifications for discogenic injury” and “Functional assessment of the patient suffering from lumbar axial pain” First Annual Central Virginia Spine Symposium, Richmond VA - April 28, 2006.
74. "Biomechanics of Low Back Disorders" University of Chicago Surgery Grand Rounds, Chicago IL, May 10, 2006
75. "Low Back Pain and Patient Handling" Health Care Ergonomics Conference - Keynote Address, Portland OR, June 28, 2006
76. “Biomechanical Models and Back Pain,” Occupational Biomechanics Symposium: Celebrating 35 years of Progress and Looking Toward the Future, University of Michigan, Ann Arbor, MI, November 16-17, 2006.
77. “Working Hurt: The Downward Spiral of Low Back Pain” New England Safe Patient Handling conference Keynote Address” (keynote Address), Mass. Nurses Association, January 12, 2007.
78. “Biomechanical Evidence that Manual Lifting is Not Safe,” 7th Annual Safe Patient Handling & Movement Conference, Lake Buena Vista, FL, March 12-16, 2007.
79. “The Working Back,” Ohio Safety Congress and Expo, Cleveland, OH, March 20-22, 2007.
80. “The Biomechanics of Low Back Pain,” (Grand Rounds). Beaumont Hospital, Detroit, Michigan, September 17, 2007.
81. “The Working Back,” (Invited Plenary Lecture), Industrial Ergonomics Technical Group, Human Factors and Ergonomics Society, Baltimore MD., October 3, 2007.
82. “Low Back Disorders in Distribution Centers,” Plenary Address, FMI Risk Management Conference, Dallas TX, October 15, 2007
83. “The Working Back” (Keynote Address), Conference on Industrial Risk Engineering, Montreal, Canada, December 17, 2007.
84. “The Trade-off in Spine Loads during Patient Pushing and Pulling,” Geoff Kelafant Lecture (plenary address), 8th Annual Patient Handling and Movement Conference, Orlando FL, March 12, 2008.
85. “The Biodynamics of Occupational Low Back Disorders,” (invited plenary address) 6th International Conference on Occupational Risk Prevention. A Coruna, Galicia, Spain. May 15,2008.
86. “Biomechanical Risk to the Low Back and Patient Handling” (keynote address), Department of Veterans Affairs, Safe Patient Handling Conference, Tampa, FL. September 15-18, 2008.
87. “Lumbar Spine Biomechanics, Spinal Loading and Musculoskeletal Disorder Causation and Control” (plenary address), 2d Neuromechanical Symposium, Phoenix, AZ. November 8-9, 2008.
88. “Risk to the Low Back During Patient Handling,” Massachusetts Nurses Association 2nd Annual Safe Patient Handling Conference. Randolph, MA, November 21, 2008.
89. “What We Know About Risk to the Low Back Due to Occupational Exposure and Patient Handling,” Oregon Governor’s Occupational Safety and Heath Conference / Health Care Ergonomics Conference (Keynote Address), Portland, OR, March 11, 2009.
90. “Evaluation of Biomechanical Risks to the Low Back due to Patient Handling,” 17th Congress of the International Ergonomics Association, Beijing, China, August 9-14, 2009.
91. “Tissue Load and Low Back Disorder Risk as a Function of Load Handling,” XVIth Brussels International Spine Symposium. Brussels, Belgium, November 20 & 21, 2009.
92. “Biomechanics of Patient Handling,” Ergonomics Interventions and Research: Workplace Musculoskeletal Disorder Rehabilitation and Prevention, San Francisco Bay Area, CA; December 10-11, 2009.
93. “The Biomechanics of Patient Handling,” (Keynote Address) Risk Management from Manual Patient Handling Conference at Universita Degli Studi Di Milano Hospital, Milan, Italy, February 24, 2010.
94. “Low Back Pain Development and Patient Handling,” Goeff Kelafant Lecture (plenary address), 10th Annual Safe Patient Handling and Movement Conference, Orlando, FL. March 30, 2010.
95. “Biomechanical Modeling of the Lumbar Spine,“ National Aeronautics and Space Administration (NASA), Houston, TX; April 5, 2010.
96. “Quantifying Low Back Pain,” National Center for Complementary and Alternative Medicine (NCCAM), National Institutes of Health (NIH), Workshop on Deconstructing Back Pain (also presented as webcast). Rockville, MD, May 10-11, 2011.
97. “The Evolution of a Personalized Biodynamic Model of the Lumbar Spine,” (Keynote Address) Complex Spine Study Group Conference, Phoenix, AZ, January 14, 2011.
98. “Biomechanics of Patient Handling” (keynote address), Massachusetts Nursing Association 6th Annual Clinical Nursing Practice Conference. Worcester, MA. May 13, 2011.
99. “Biomechanical Differences Between the Intact Spine and the Spine Instrumented with a Total Disc Replacement (TDR), International Society for the Study of the Lumbar Spine (ISSLS) 38th Annual Meeting, Gothenburg, Sweden. June 14-18-2011.
100. “The Complex Spine: The multi-dimensional system of causal pathways for low back disorders,” International Ergonomics Association Triennial Meeting. (Keynote Address), Recife, Brazil. February 13-16, 2012.
101. “Low Back Pain Development and Patient Handling,” Safe Patient Handling and Movement Conference: East (keynote address), Orlando FL, March 20, 2012.
102. “The Evolution of a Personalized Biomechanical Model of the Lumbar Spine,” Sam Bloomfiled Distinguished Engineer-in-Residence Lecture, Wichita State University, Wichita, KS. April 4, 2012.
103. “Low Back Pain and Your Brain” TEDx Ohio State University, Columbus, OH. April 13, 2013.
104. “Low Back Pain and Patient Handling,” Keynote address. 5th Annual Safe Patient Handling West Conference, San Diego, CA. September 10, 2013
105. “The Working Back: A Systems View,” Keynote address. Puget Sound Human Factors and Ergonomics Society Occupational Ergonomics Symposium, Museum of Flight, Seattle, WA, September 18, 2013.
106. “Low Back Biomechanics and Patient Handling,” National Research Council, Patient Handling and Movement National Workshop, Washington D.C., October 17, 2013.
107. “The Working Back: A Systems View,” Epstein Lecture, University of Southern California, Los Angeles, CA, October 29, 2013.
108. “Low Back Disorder Development and Patient Handling,” Johns Hopkins University, Baltimore MD, November 5, 2013.

### CONFERENCE / SHORT COURSE ORGANIZATION

Marras, W.S. (Symposium Director) State-of-the Art Developments in Low Back Pain Control, Columbus Ohio, April 14-15, 1993 (Attendance: 350).

Marras, W.S. (Organizer) VDT-Related CTD Research Symposium, Deer Creek State Park, Mt. Sterling, OH (Attendance: 45).

Marras, W.S., Andersson, G.B. (Symposium Co-Directors) State-of-the Art Developments in Low Back Pain Prevention, Control, and Treatment, St. Louis, MO, March 11-13, 1996 (Attendance: 300).

Marras W.S. and Smith P.J. (Short Course Developers and Instructors) “Ergonomics for Engineers” Taught to Ford Motor Company (6 times / year - 1985 to present).

Marras W.S. and Smith P.J. (Short Course Developers and Instructors) “Ergonomics for Industry” offered nationwide (twice per year).

Marras, W.S. (Symposium Director with Thomas Waters) State-of-the Art Research Perspectives on Musculoskeletal Disorder Causation and Control, Columbus, Ohio, May 21 and 22, 2003. Published in a special issue of the *Journal of Electromyography and Kinesiology,* 14(1), 2004.

Phillips, F., Marras, W.S., Lola, C., and Gruenberg, M., (course chairmen). ISSLS Instructional Course on Spine Surgery. Buenos Aires, Argentina, March 25-26, 2010.

**STUDENT ADVISING / MENTORING**

**Ph.D. (major advisor)**

Dr. Steven Lavender, (1990), Dissertation: The role of cognitive functions and biomechanical preparatory responses in maintaining spinal stability during sudden loading of the torso

Dr. Sudhakar Rajulu (1990) Dissertation: **Decomposition of electromyographic signals for biomechanical interpretation**

**Dr. Richard Schoenmarklin (Marklin) (1991)** Biomechanical analysis of wrist motion in highly repetitive, hand-intensive industrial jobs

**Dr. Gary Mirka (1992)** Dissertation: A stochastic simulation model of the muscles of the trunk during lifting.

Dr. Kevin Granata (1993) Dissertation: An EMG-assisted model of biomechanical trunk loading during free-dynamic lifting

Dr. Carolyn Sommerich (1994) Dissertation: A biomechanical analysis of repetitive finger motion during typing activities

Dr. Fadi Fathallah (1995) Dissertation: Coupled spine motions, spine loading and risk of occupationally-related low back disorders

Dr, Jung-Yong Kim (1995) Dissertation: Patterns of trunk neuromuscular performance in normal subjects and low-back patients.

Dr. Sue Ferguson (1998) Dissertation:Quantification of low back pain recovery using biomechanical, symptom, activities of daily living and work status measures

Dr. W.Gary Allread (2000) Dissertation: An investigation of the relationship between personality and risk factors for musculoskeletal disorders.

Dr. Kermit Davis (2001) Dissertation: Interaction between biomechanical and psychosocial workplace stressors: implications for biomechanical responses and spinal loading

Dr. Michael J. Jorgensen (2001) Dissertation: Quantification and modeling of the lumbar erector spinae as a function of sagittal plane torso flexion

Dr. Sean Gallagher (2003) Dissertation: Dissertation: **Effects of torso flexion on fatigue failure of the human lumbosacral spine**

**Dr. Delia Treaster (2003)** Dissertation: An investigation of postural and visual stressors and their interactions during computer work

Dr. Naira Campbell-Kyureghyan (2004) Dissertation: Computational analysis of the time-dependent biomechanical behavior of the lumbar spine.

Dr. Gang Yang (2010) Dissertation: The biochemical response to biomechanical loading on the low back during physical work exposure.