

Curriculum Vitae

Dr. Gary Allen Mirka, PhD



Contact Information

Department of Industrial and
Manufacturing Systems Engineering
3025 Black Engineering
Iowa State University
Ames, IA 50011

Phone: (515) 294-8661
email: mirka@iastate.edu

Education

The Ohio State University	PhD	1992	Industrial and Systems Engineering
The Ohio State University	MS	1988	Industrial and Systems Engineering
The Ohio State University	BS	1986	Industrial and Systems Engineering

Professional Experience

2021-Present	University Professor, The John Ryder Professor & Director of Graduate Education	Department of Industrial and Manufacturing Systems Engineering, Iowa State University (ISU)
2016-2020	The John Ryder Professor, Director of Graduate Education & Director of Research	Department of Industrial and Manufacturing Systems Engineering, ISU
2011-2016	The John Ryder Professor & Associate Dean for Academic Affairs	College of Engineering, ISU
2009-2011	The John Ryder Professor & Department Chair	Department of Industrial and Manufacturing Systems Engineering, ISU
2007-2009	Professor & Department Chair	Department of Industrial and Manufacturing Systems Engineering, ISU
2006-2007	Professor & Associate Department Head	Department of Industrial and Systems Engineering, North Carolina State University (NCSU)
2005-2007	Director of Graduate Programs	Department of Industrial and Systems Engineering
1993-2007	Associate Faculty	Biomedical Engineering, NCSU
1998-2006	Associate Professor	Department of Industrial Engineering, NCSU
1992-1998	Assistant Professor	Department of Industrial Engineering, NCSU
1986-1992	Graduate Research Assistant	Department of Industrial and Systems Engineering, The Ohio State University

Professional Honors and Awards

- (1) University Professor, Iowa State University (2020)
- (2) Fellow of the Ergonomics Society (2009)
- (3) The 1993 Volvo Award for Low Back Pain Research for a work entitled: "A Stochastic Model of Trunk Muscle Coactivation during Trunk Bending", presented at the 1993 Meeting of the International Society for the Study of the Lumbar Spine, Marseilles, France. (Full journal article appears in Spine 18(11), 1993 by Mirka GA and Marras WS).
- (4) The 2003 Clifton A. Anderson Outstanding Faculty Award, Department of Industrial Engineering, North Carolina State University.
- (5) Member Tau Beta Pi -The Engineering Honor Society, Ohio Gamma Chapter, The Ohio State University, 1985.

RESEARCH ACTIVITIES

ORCID: [0000-0002-6271-8064](https://orcid.org/0000-0002-6271-8064)

RESEARCHID: [D-8273-2012](https://researchid.org/D-8273-2012)

Publications in Peer-Reviewed Journals

Journal Articles in Print

- (1) Tetteh, E and GA Mirka (2021) “Trunk Kinematics Variability as a Function of Time During the Early Phase of a Repetitive Lifting Task”, *Human Factors and Ergonomics in the Manufacturing and Service Industries*, 1-9. (DOI: [10.1002/hfm.20888](https://doi.org/10.1002/hfm.20888))
- (2) Sarker P, H Norasi, J Koenig, MS Hallbeck and GA Mirka (2021) “Effects of Break Scheduling Strategies on Subjective and Objective Measures of Neck and Shoulder Muscle Fatigue in Asymptomatic Adults Performing a Standing Task Requiring Static Neck Flexion”, *Applied Ergonomics*, 92: 103311. (DOI:[10.1016/j.apergo.2020.103311](https://doi.org/10.1016/j.apergo.2020.103311))
- (3) Koenig, J, H Norasi, and GA Mirka (2020) “Technical Note: Using Johnson Distributions to Model Trunk Kinematics”, *Theoretical Issues in Ergonomics Science*, (DOI:[10.1080/1463922X.2020.1836285](https://doi.org/10.1080/1463922X.2020.1836285))
- (4) Sarker, P and GA Mirka (2020) “The Effects of Repetitive Bouts of a Fatiguing Exertion (with Breaks) on the Slope of Median Frequency of the EMG Power Spectrum”, *Journal of Electromyography and Kinesiology*, 51: 102383, (DOI:[10.1016/j.jelekin.2019.102382](https://doi.org/10.1016/j.jelekin.2019.102382)).
- (5) Tetteh, E, P Sarker, C Radley, MS Hallbeck and GA Mirka (2020) “Effect of Surgical Radiation Personal Protective Equipment on the Rate of Back and Shoulder Muscle Fatigue”, *Applied Ergonomics*, 84: 103029 (DOI:[10.1016/j.apergo.2019.103029](https://doi.org/10.1016/j.apergo.2019.103029)).
- (6) Norasi, H, J Koenig and GA Mirka (2019) “The Effects of Load Weight and Load Starting Height on Variability of Lifting Kinematics and Kinetics”, *International Journal of Industrial Ergonomics* 73:102830, (DOI: [10.1016/j.ergon.2019.102830](https://doi.org/10.1016/j.ergon.2019.102830)).
- (7) Jin, S, and GA Mirka (2017) “Combined Effect of Low Back Muscle Fatigue and Passive Tissue Elongation on the Flexion-Relaxation Response”, *Applied Ergonomics* 63: 72-78, (DOI:[10.1016/j.apergo.2017.04.022](https://doi.org/10.1016/j.apergo.2017.04.022)).
- (8) Jin, S, and GA Mirka (2015) “A Systems-Level Perspective of the Biomechanics of the Trunk Flexion-Extension Movement: Part I - Normal Low Back Condition”, *International Journal of Industrial Ergonomics* 46: 7-11, (DOI:[10.1016/j.ergon.2015.01.008](https://doi.org/10.1016/j.ergon.2015.01.008)).
- (9) Jin, S, and GA Mirka (2015) “A Systems-Level Perspective of the Biomechanics of the Trunk Flexion-Extension Movement: Part II – Fatigued Low Back Condition”, *International Journal of Industrial Ergonomics* 46: 1-6, (DOI:[10.1016/j.ergon.2015.01.007](https://doi.org/10.1016/j.ergon.2015.01.007)).
- (10) Haddad O, and GA Mirka (2013) “Trunk Muscle Fatigue and Its Implications in EMG-Assisted Biomechanical Modeling”, *International Journal of Industrial Ergonomics* 43: 425-429, (DOI:[10.1016/j.ergon.2013.08.004](https://doi.org/10.1016/j.ergon.2013.08.004)).
- (11) Hall M, ER Boyer, JC Gillette, and GA Mirka (2013) “Medial Knee Joint Loading During Stair Ambulation and Walking While Carrying Loads”, *Gait & Posture* 37: 460-462, (DOI:[10.1016/j.gaitpost.2012.08.008](https://doi.org/10.1016/j.gaitpost.2012.08.008)).
- (12) Ning X, S Jin, and GA Mirka (2012) “Describing the Active Region Boundary of EMG-Assisted Biomechanical Models of the Low Back”, *Clinical Biomechanics* 27: 422-427, (DOI:[10.1016/j.clinbiomech.2011.11.003](https://doi.org/10.1016/j.clinbiomech.2011.11.003)).
- (13) Jin S, X Ning, and GA Mirka (2012) “An Algorithm for Defining the Onset and Cessation of the Flexion-Relaxation Phenomenon in the Low Back Musculature”, *Journal of Electromyography and Kinesiology* 22: 376-382, (DOI:[10.1016/j.jelekin.2012.01.003](https://doi.org/10.1016/j.jelekin.2012.01.003)).
- (14) Mirka GA, X Ning, S Jin, O Haddad and KL Kucera (2011) “Ergonomic Interventions for Commercial Crab Fishermen”, *International Journal of Industrial Ergonomics* 41: 481-487, (DOI:[10.1016/j.ergon.2011.03.006](https://doi.org/10.1016/j.ergon.2011.03.006)).
- (15) Hageman ER, M Hall, EG Sterner and GA Mirka (2011) “Longitudinal Arch Deformation during Walking and Stair Navigation while Carrying Loads”, *Foot & Ankle International* 32:623-629, (DOI:[10.3113/FAL.2011.0623](https://doi.org/10.3113/FAL.2011.0623)).
- (16) Jin S and GA Mirka (2011) “The Effect of a Lower Extremity Kinematic Constraint on Lifting Biomechanics”, *Applied Ergonomics* 42: 867-872, (DOI:[10.1016/j.apergo.2011.02.003](https://doi.org/10.1016/j.apergo.2011.02.003)).
- (17) Ning X, O Haddad, S Jin and GA Mirka (2011) “Influence of Asymmetry on the Flexion Relaxation Response of the Low Back Musculature”, *Clinical Biomechanics* 26: 35-39, (DOI:[10.1016/j.clinbiomech.2010.08.012](https://doi.org/10.1016/j.clinbiomech.2010.08.012)).
- (18) Sorensen CJ, O Haddad, S Campbell and GA Mirka (2011) “The Effect of Stance Width on Trunk Kinematics and Trunk Kinetics during Sagittally Symmetric Lifting”, *International Journal of Industrial Ergonomics* 41: 147-152, (DOI:[10.1016/j.ergon.2010.12.007](https://doi.org/10.1016/j.ergon.2010.12.007)).
- (19) Ning X and GA Mirka (2010) “The Effect of Sinusoidal Rolling Ground Motion on Lifting Biomechanics”, *Applied Ergonomics* 42: 131-137, (DOI:[10.1016/j.apergo.2010.06.001](https://doi.org/10.1016/j.apergo.2010.06.001)).
- (20) Haddad O and GA Mirka (2010) “Hand-Hold Location and Trunk Kinematics during Box Handling”, *Ergonomics* 53: 1033-1038, (DOI:[10.1080/00140139.2010.494458](https://doi.org/10.1080/00140139.2010.494458)).
- (21) Dai B, S Jin, X Ning and GA Mirka (2010) “The Effects of Horizontal Load Speed and Lifting Frequency on Lifting Technique and Biomechanics”, *Ergonomics* 53: 1024-1032, (DOI:[10.1080/00140139.2010.493957](https://doi.org/10.1080/00140139.2010.493957)).

- (22) Xu X, SM Hsiang, and GA Mirka (2010) “An Empirical Validation of a Base-Excitation Model to Predict Harvestable Energy from a Suspended-Load Backpack System”, *Theoretical Issues in Ergonomics Science* 11: 546-560, (DOI:10.1080/14639220903373839).
- (23) Kucera, KL, D Loomis, HJ Lipscomb, SW Marshall, GA Mirka, and J Daniels (2009) “Ergonomic Risk Factors for Low Back Pain in North Carolina Crab Pot and Gill Net Commercial Fishermen”, *American Journal of Industrial Medicine* 52: 311-321, (DOI:10.1002/ajim.20676).
- (24) Anderson A, GA Mirka, SMB Joines, and DB Kaber (2009) “Analysis of Alternative Keyboards Using Learning Curves”, *Human Factors* 51: 35-45, (DOI:10.1177/0018720808329844).
- (25) Jin S, RS McCulloch and GA Mirka (2009) “Biomechanical Evaluation of Postures Assumed When Harvesting from Bush Crops”, *International Journal of Industrial Ergonomics* 39: 347-352, (DOI:10.1016/j.ergon.2008.07.005).
- (26) Xu X, SM Hsiang, and GA Mirka (2009) “The Effect of a Suspended-Load Backpack on Gait”, *Gait & Posture* 29: 151-153, (DOI:10.1016/j.gaitpost.2008.06.008).
- (27) Noack K, CM Sommerich and GA Mirka (2009) “College Students and Computers: Profile of Use and Musculoskeletal Discomfort”, *Work* 32: 285-298, (DOI:10.3233/WOR-2009-0827).
- (28) Mirka GA, S Jin, and J Hoyle (2009) “An Evaluation of Arborist Handsaws”, *Applied Ergonomics* 40: 8-14, (DOI:10.1016/j.apergo.2008.02.011).
- (29) Xu X, SM Hsiang and GA Mirka (2008) “Coordination Indices between Lifting Kinematics and Kinetics”, *International Journal of Industrial Ergonomics* 38(11): 1062-1066, (DOI:10.1016/j.ergon.2008.02.008).
- (30) Kucera KL, GA Mirka, D Loomis, SW Marshall, HJ Lipscomb, and J Daniels (2008) “Evaluating Ergonomic Stresses in North Carolina Commercial Crab Pot and Gill Net Fishermen”, *Journal of Occupational & Environmental Hygiene* 5: 182-196, (DOI:10.1080/15459620701873514).
- (31) Xu X, GA Mirka, SM Hsiang (2008) “The Effects of Obesity on Lifting Performance”, *Applied Ergonomics* 39: 93-98, (DOI:10.1016/j.apergo.2007.02.001).
- (32) Anderson AP, KA Meador, LR McClure, D Makrozhopoulos, DJ Brooks and GA Mirka (2007) “A Biomechanical Analysis of Anterior Load Carriage”, *Ergonomics* 50: 2104-2117, (DOI:10.1080/00140130701450195).
- (33) Shu Y, Z Jiang, X Xu, and GA Mirka (2007) “The Effect of a Knee Support on the Biomechanical Response of the Low Back”, *Journal of Applied Biomechanics* 23: 275-281.
- (34) Shin G, and GA Mirka (2007) “An In-Vivo Assessment of the Low Back Response to Prolonged Flexion: Interplay Between Active and Passive Tissues”, *Clinical Biomechanics* 22: 965-971, (DOI:10.1016/j.clinbiomech.2007.06.003).
- (35) Reid SA, and GA Mirka (2007) “Learning Curve Analysis of a Patient Lift-Assist Device”, *Applied Ergonomics* 38: 765-771, (DOI:10.1016/j.apergo.2006.10.006).
- (36) Southard SA and GA Mirka (2007) “An Evaluation of Backpack Harness Systems in Non-Neutral Torso Postures”, *Applied Ergonomics* 38: 541-547, (DOI:10.1016/j.apergo.2006.08.007).
- (37) Southard SA, JH Freeman, JE Drum and GA Mirka (2007) “Ergonomic Interventions for the Reduction of Back and Shoulder Biomechanical Loading when Weighing Calves”, *International Journal of Industrial Ergonomics* 37: 103-110, (DOI:10.1016/j.ergon.2006.10.016).
- (38) Shu Y and GA Mirka (2006) “A Laboratory Study of the Effects of Wrist Splint Orthoses on Forearm Muscle Activity and Upper Extremity Posture”, *Human Factors* 48: 499-510, (DOI:10.1518/001872006778606859).
- (39) Jiang ZL, Y Shu, J Drum, S Reid, and GA Mirka (2006) “Effects of Age on Muscle Activity and Upper Body Kinematics during a Repetitive Forearm Supination Task”, *International Journal of Industrial Ergonomics* 36: 951-957, (DOI:10.1016/j.ergon.2006.07.008).
- (40) Shin G, M Nance and GA Mirka (2006) “Differences in Trunk Kinematics and Ground Reaction Forces between Older and Younger Adults during Lifting”, *International Journal of Industrial Ergonomics* 36: 767-772, (DOI:10.1016/j.ergon.2006.05.008).
- (41) Joines SMB, CM Sommerich, GA Mirka, JR Wilson and SD Moon (2006) “Low-Level Exertions of the Neck Musculature: A Study of Research Methods”, *Journal of Electromyography and Kinesiology* 16: 485-497, (DOI:10.1016/j.jelekin.2005.09.007).
- (42) Bajaj K, GA Mirka, CM Sommerich, and H Khachatoorian (2006) “Evaluation of a Redesigned Self-Checkout Station for Wheelchair Users”, *Assistive Technology* 18: 15-24.
- (43) Lawrence BM, GD Buckner and GA Mirka (2006) “An Adaptive System Identification Model of the Biomechanical Response of the Human Trunk during Sudden Loading”, *Journal of Biomechanical Engineering* 128(2): 235-241, (DOI:10.1115/1.2165696).
- (44) Brandenburg DL and GA Mirka (2005) “Assessing the Effects of Positive Feedback and Reinforcement in the Introduction Phase of an Ergonomic Intervention”, *Human Factors* 47: 526-535, (DOI:10.1518/001872005774860078).
- (45) Lawrence BM, GA Mirka and GD Buckner (2005) “Adaptive System Identification Applied to the Biomechanical Response of the Human Trunk During Sudden Loading”, *Journal of Biomechanics* 38: 2472-2479, (DOI:10.1016/j.jbiomech.2004.09.038).
- (46) Shu Y, J Drum, SA Southard, G Shin and GA Mirka (2005) “The Effect of a Repetitive, Fatiguing Lifting Task on Horizontal Ground Reaction Forces”, *Journal of Applied Biomechanics* 21: 260-270.

- (47) Jiang Z, G Shin, JH Freeman, S Reid and GA Mirka (2005) "A Study of Lifting Tasks Performed on Laterally Slanted Ground Surfaces", *Ergonomics* 48: 782-795, (DOI:10.1080/00140130500123761).
- (48) Mirka G (2005) "Development of an Ergonomics Guideline for the Furniture Manufacturing Industry", *Applied Ergonomics* 36: 241-247, (DOI:10.1016/j.apergo.2004.10.003).
- (49) Sudhakaran S and GA Mirka (2005) "A Laboratory Investigation of Personality Type and Break-Taking Behavior", *International Journal of Industrial Ergonomics* 35: 237-246, (DOI:10.1016/j.ergon.2004.09.003).
- (50) Mirka GA, G Shin, K Kucera and D Loomis (2005) "Use of the CABS Methodology to Assess Biomechanical Stress in Commercial Crab Fishermen", *Applied Ergonomics* 36: 61-70, (DOI:10.1016/j.apergo.2004.08.001).
- (51) Duke K, GA Mirka, and CM Sommerich (2004) "Productivity and Ergonomic Investigation of Bent-Handle Pliers", *Human Factors* 46: 234-243, (DOI:10.1518/hfes.46.2.234.37341).
- (52) Shin G, Y Shu, Z Li, Z Jiang and GA Mirka (2004) "Influence of Knee Angle and Individual Flexibility on the Flexion-Relaxation Response of the Low Back Musculature", *Journal of Electromyography and Kinesiology* 14: 485-494, (DOI:10.1016/j.jelekin.2003.12.001).
- (53) Shin G and GA Mirka (2004) "The Effects of a Sloped Ground Surface on Trunk Kinematics and L5/S1 Moment during Lifting", *Ergonomics* 47: 646-659, (DOI:10.1080/00140130310001653066).
- (54) Leyman ELC, DB Kaber, GA Mirka and CM Sommerich (2004) "Cervicobrachial Muscle Response to Cognitive Load in a Dual-Task Scenario", *Ergonomics* 47: 625-645, (DOI:10.1080/00140130310001629766).
- (55) Mirka GA, MJ Monroe, DT Nay, H Lipscomb and DP Kelaher (2003) "Ergonomic Interventions for the Reduction of Low Back Stress in Framing Carpenters in the Home Building Industry", *International Journal of Industrial Ergonomics* 31: 397-409, (DOI:10.1016/S0169-8141(03)00025-8).
- (56) Shivers CL, GA Mirka and DB Kaber (2002) "Effect of Grip Span on Lateral Pinch Grip Strength", *Human Factors* 44: 569-577, (DOI:10.1518/0018720024496999).
- (57) Mirka GA, CA Smith, C Shivers and J Taylor (2002) "Ergonomic Interventions for the Furniture Manufacturing Industry: Part I – Lift Assist Devices", *International Journal of Industrial Ergonomics* 29: 263-273, (DOI:10.1016/S0169-8141(01)00067-1).
- (58) Mirka GA, C Shivers, CA Smith and J Taylor (2002) "Ergonomic Interventions for the Furniture Manufacturing Industry: Part II – Handtools", *International Journal of Industrial Ergonomics* 29: 275-287, (DOI:10.1016/S0169-8141(01)00068-3).
- (59) Smith CA, CM Sommerich, GA Mirka and MC George (2002) "An Investigation of Ergonomic Interventions in Dental Hygiene Work", *Applied Ergonomics* 33: 175-184, (DOI:10.1016/S0003-6870(01)00060-6).
- (60) Psihogios JP, CM Sommerich, GA Mirka and SD Moon (2001) "A Field Evaluation of Monitor Placement Effects in VDT Users", *Applied Ergonomics* 32: 313-325, (DOI:10.1016/S0003-6870(01)00014-X).
- (61) Lutz TJ, H Starr, CA Smith, AM Stewart, MJ Monroe, SMB Joines and GA Mirka (2001) "The Use of Mirrors during an Assembly Task: A Study of Ergonomics and Productivity", *Ergonomics* 44: 215-228, (DOI:10.1080/00140130120518).
- (62) Mirka GA, NF Glasscock, PM Stanfield and JR Wilson (2000) "An Empirical Approach to Characterizing Stochastic Trunk Muscle Coactivation Using Simulation Input Modeling Techniques", *Journal of Biomechanics* 33: 1701-1704, (DOI:10.1016/S0021-9290(00)00151-2).
- (63) Kelaher DP, GA Mirka and K Dudziak (2000) "Effects of Semi-rigid Arch-Support Orthotics: An Investigation with Potential Ergonomic Implications", *Applied Ergonomics* 31: 515-522, (DOI:10.1016/S0003-6870(00)00018-1).
- (64) Mirka GA, DP Kelaher, DT Nay and BM Lawrence (2000) "Continuous Assessment of Back Stress (CABS): A New Method to Quantify Low-Back Stress in Jobs with Variable Biomechanical Demands", *Human Factors* 42: 209-225, (DOI:10.1518/001872000779656525).
- (65) Davis JD and GA Mirka (2000) "Transverse Contour Modeling of Trunk Muscle Distributed Forces and Spinal Loads during Lifting and Twisting", *Spine* 25: 180-189.
- (66) Glasscock NF, KL Turville, SMB Joines and GA Mirka (1999) "The Effect of Personality Type on Muscle Coactivation during Elbow Flexion", *Human Factors* 41: 51-60, (DOI:10.1518/001872099779577318).
- (67) Turville KL, JP Psihogios, TR Ulmer and GA Mirka (1998) "The Effects of Video Display Terminal Height on the Operator: A Comparison of the 15 and 40 Degree Recommendations", *Applied Ergonomics* 29: 239-246, (DOI:10.1016/S0003-6870(97)00048-3).
- (68) Mirka GA, A Baker, AE Harrison and DP Kelaher (1998) "The Interaction between Load and Coupling During Dynamic Manual Materials Handling Tasks", *Occupational Ergonomics* 1: 3-11.
- (69) Mirka GA, DP Kelaher, A Baker, AE Harrison and JR Davis (1997) "Selective Activation of the External Oblique Musculature During Axial Torque Production", *Clinical Biomechanics* 12:172-180, (DOI:10.1016/S0268-0033(97)00061-2).
- (70) Mirka GA and A Baker (1996) "An Investigation of the Variability in Human Performance during Sagittally Symmetric Lifting Tasks", *IIE Transactions* 28: 745-752.
- (71) Marras WS and GA Mirka (1996) "Intra-Abdominal Pressure during Trunk Extension Motions", *Clinical Biomechanics* 11: 267-274, (DOI:10.1016/0268-0033(96)00006-X).

- (72) Marras WS and GA Mirka (1993) “Electromyographic Studies of the Lumbar Trunk Musculature During the Generation of Low Level Trunk Acceleration”, *Journal of Orthopaedic Research* 11: 811-817.
- (73) Mirka GA and WS Marras (1993) “A Stochastic Model of Trunk Muscle Coactivation during Trunk Bending”, *Spine* 18: 1396-1409.
- (74) Marras WS, FA Fathallah, RJ Miller, SW Davis and GA Mirka (1992) “Accuracy of a Three-Dimensional Lumbar Motion Monitor for Recording Dynamic Trunk Motion Characteristics”, *International Journal of Industrial Ergonomics* 9: 75-87.
- (75) Marras WS and GA Mirka (1992) “A Comprehensive Evaluation of Trunk Response to Asymmetric Trunk Motion”, *Spine* 17: 318-326.
- (76) Mirka GA (1991), “The Quantification of EMG Normalization Error”, *Ergonomics* 34(3): 343-352.
- (77) Mirka GA and WS Marras (1990) “Lumbar Motion Response to a Constant Load Velocity Lift”, *Human Factors* 32: 493-501.
- (78) Marras WS and GA Mirka (1990) “Muscle Activities during Asymmetric Trunk Angular Accelerations”, *Journal of Orthopaedic Research* 8: 824-832.
- (79) Marras WS and GA Mirka (1989) “Trunk Strength During Asymmetric Trunk Motion”, *Human Factors* 31: 667-677.
- (80) Lavender SA, GA Mirka, RW Schoenmarklin, CM Sommerich, LR Sudhakar and WS Marras (1989) “The Effects of Preview and Task Symmetry on Trunk Muscle Response to Sudden Loading”, *Human Factors* 31: 101-115.

Journal Articles Accepted

- (1) Norasi H, E Tetteh, P Sarker, GA Mirka and MS Hallbeck (Accepted) “Exploring the Relationship between Neck Postural Exposure and Neck Problems: A Systematic Review of the Literature”, To Appear in *Ergonomics* (DOI: 10.1080/00140139.2021.1976847)
- (2) Smyth C and GA Mirka (Accepted) “Impact of a Neck Strap Intervention on Discomfort, Force, and Muscle Activity of Clarinetists”, To Appear in *Medical Problems of Performing Artists*.

Review/Revision/Development

- (1) Norasi H, J Drum, T Baldus and GA Mirka (In Revision) “Development of a Test Battery for Fatigue Assessment of Agriculture Seating Systems: A Laboratory and Field Study”, In Revision in *Journal of Agromedicine*.
- (2) Norasi H, J Koenig, GA Mirka (In Revision) “Development and Assessment of a Method to Estimate Maximum Voluntary Contraction EMG from Submaximal EMG Data”, Submitted to *Journal of Applied Biomechanics*.
- (3) Norasi H, MS Hallbeck, GA Mirka (In Review) “A Systems-Level Evaluation of the Biomechanical Response of the Cervical Spine to Prolonged Sagittal Plane Flexion”, Submitted to *Applied Ergonomics*.
- (4) Tetteh E, MS Hallbeck, GA Mirka (In Review) “Effects of Passive Exoskeleton Support on EMG Measures of the Neck, Shoulder and Trunk Muscles While Holding Simulated Surgical Postures and Performing a Simulated Surgical Procedure”, Submitted to *Applied Ergonomics*.
- (5) Tetteh E, MS Hallbeck, GA Mirka (In Development) “An Algorithm for Prediction the Utility of Exoskeleton Intervention for Different Surgeries”, In preparation for submission to *Theoretical Issues in Ergonomics Science*.

Book Chapters

- (1) Mirka GA and CM Sommerich “Chapter 11: Management of Work-Related Musculoskeletal Injuries”, in *Ergonomics for Plant Managers*, Karwowski and Salvendy eds., SME Publishers.
- (2) Mirka GA and G Shin “Low Back Injury Risk Assessment Tools Chapter 35” in *Fundamentals and Assessment Tools for Occupational Ergonomics*, Karwowski ed, Taylor and Francis.
- (3) Mirka GA “Ergonomics Guidelines for the Furniture Manufacturing Industry Chapter 49” in *Interventions, Controls, and Applications in Occupational Ergonomics*, Marras ed, Taylor and Francis.

Refereed Conference Proceedings with Oral Presentation (First Author and Presenter only)

- (1) Mirka, GA, “The Effects of Asymmetry, Load Level, Start Position and Load Velocity on Lumbar Motion”, Proceedings of the Human Factors Society 32nd Annual Meeting, Anaheim CA, Oct. 24-28, 1988, Pages: 700-704.
- (2) Mirka, GA and WS Marras, “Velocities and Accelerations of the Lumbar Spine Associated with Varied Lifting Conditions”, *Advances in Industrial Ergonomics and Safety I*, Cincinnati, OH, 1989, Pages: 151-158.
- (3) Mirka, GA, CM Sommerich and WS Marras, “The Effects of Fatigue on Muscle Groups Under Dynamic Exertions”, Proceedings of the Human Factors Society 33rd Annual Meeting, Denver, CO, Oct. 16-20, 1989, Pages: 646-650.
- (4) Mirka, GA and WS Marras, “Toward a More Accurate Description of the EMG/Force Relationship of the Erector Spinae Muscles”, Proceedings of the Human Factors Society 35th Annual Meeting, San Francisco, CA, Sept. 2-6, 1991, Pages: 728-732.
- (5) Mirka, GA and WS Marras, “Modeling the Stochastic Nature of Trunk Muscle Forces”, Proceedings of the Human Factors Society 36th Annual Meeting, Atlanta, GA, Oct. 12-16, 1992, Pages: 747-751.

- (6) Mirka, GA and WS Marras, "A Stochastic Model of EMG Activity During Trunk Bending", Proceedings of the 2nd Industrial Engineering Research Conference, Los Angeles, CA, May 26-27, 1993, Pages: 515-519.
- (7) Mirka, GA and WS Marras, "Use of Isokinetic Dynamometry to Quantify Internal Trunk Forces During Bending", Ergonomics of Manual Work, Proceedings of the International Ergonomics Association World Conference on Ergonomics, Warsaw, Poland, 14-17 June, 1993, Pages: 93-96.
- (8) Mirka, GA and WS Marras, "A Stochastic Model of Trunk Muscle Coactivation during Trunk Bending Motions in the Sagittal Plane", Ergonomics of Manual Work, Proceedings of the International Ergonomics Association World Conference on Ergonomics, Warsaw, Poland, 14-17 June, 1993: 159-162.
- (9) Mirka, GA and WS Marras, "A Stochastic Model of Trunk Muscle Coactivation During Trunk Bending", Volvo Award Paper, International Society for the Study of the Lumbar Spine, Marseilles, France, June, 1993.
- (10) Mirka, GA, "Quantifying the Kinematics of the Torso during Occupational Lifting Tasks", Proceedings of the International Conference on Ergonomics in Occupational Safety and Health, Taipei, Taiwan, April 21-23.
- (11) Mirka, GA, "Quantifying Trunk Muscle Forces during Occupational Lifting Tasks", Proceedings of the International Conference on Ergonomics in Occupational Safety and Health, Taipei, Taiwan, April 21-23.
- (12) Mirka, GA, A Baker, AE Harrison, DP Kelaher and JR Davis, "A Study of the Interaction Between Load and Coupling during Dynamic Manual Materials Handling Tasks", Proceedings of the Human Factors and Ergonomics Society 38th Annual Meeting, Nashville, TN, Oct. 24-28, 1994, Pages: 644-648.
- (13) Mirka, GA and A Baker, "An Investigation of the Variability in Human Performance During MMH Activities", Proceedings of the Human Factors and Ergonomics Society 38th Annual Meeting, Nashville, TN, Oct 24-28, 1994, Pages: 578-582.
- (14) Mirka, GA and DP Kelaher, "The Effects of Lifting Frequency on the Dynamics of Lifting", Proceedings of the Human Factors and Ergonomics Society 39th Annual Meeting, San Diego, CA, Oct 9-13, 1995, Pages: 650-654.
- (15) Mirka, GA, NF Glasscock, PM Stanfield, JP Psihogios, and JR Davis, "The Use of Multivariate Johnson Distributions to Model Trunk Muscle Coactivation", Proceedings of the Human Factors and Ergonomics Society 40th Annual Meeting, Philadelphia, PA, Sept 2-6, 1996, Pages: 584-588.
- (16) Mirka, GA, NF Glasscock, PM Stanfield, JP Psihogios and JR Davis, "The Use Of Multivariate Johnson Distributions To Model Trunk Muscle Coactivation", International Mechanical Engineering Congress and Exposition, Atlanta, GA, Nov 17-22, 1996.
- (17) Mirka, GA, "Keynote Address: Occupational Low Back Pain: Placing an Emphasis on Interdisciplinary Research", Korean Society of Biomechanics, Seoul, Korea, October 31, 1997.
- (18) Mirka, GA, DP Kelaher, DT Nay, BM Lawrence and JS Reese, "Continuous Assessment of Back Stress (CABS) in Framers in the Home Building Industry", Proceedings of the Annual International Occupational Ergonomics and Safety Conference '98, Ann Arbor, MI, June 11-14, 1998, Pages: 293-296.
- (19) Mirka, GA, DP Kelaher, DT Nay, and BM Lawrence, "Assessing Low Back Stress in the Construction Industry Using the Continuous Assessment of Back Stress (CABS) Method", Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting, Chicago IL, October 5-9, 1998, Pages: 886-890.
- (20) Mirka, GA, DP Kelaher, DT Nay, M Monroe, TJ Lutz, "Ergonomic Interventions for the Home Building Industry", Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting, San Diego, CA, July 31-August 4, 2000, Vol. 5, Pages: 703-706.
- (21) Mirka, GA, GS Shin, K Kucera and D Loomis "Use of the CABS Methodology to Assess Biomechanical Stress in Commercial Crab Fishermen", Proceedings of the Human Factors and Ergonomics Society 46th Annual Meeting, Baltimore, MD, September 30-October 4, 2002, Pages: 1152-1156.
- (22) Mirka, GA, G Shin, Y Shu, Z Li, and T Costello, "Ergonomics of Harvesting from Ground Level", 2003 ASAE ANNUAL INTERNATIONAL MEETING - Las Vegas, NV, July 27 - July 30 2003 (Paper # 038021)
- (23) Mirka, GA, G Shin, K Kucera, and D Loomis, "Assessing Back Stress in Commercial Crab Fishermen", 2003 International Ergonomics Association Meeting - Seoul, South Korea, August 24-29 2003.
- (24) Mirka, GA, G Shin, K Noack, and S Sudhakaran, "Ergonomics in the Furniture Manufacturing Industry", 2003 International Ergonomics Association Meeting - Seoul, South Korea, August 24-29 2003.
- (25) Mirka, G, G Shin, K Kucera and D Loomis "Low Back Stress in Commercial Crab Fishermen" Industrial Engineering Research Conference, Houston, TX, May 15-19, 2004.
- (26) Mirka, G, G Shin, K Noack, S Sudhakaran and K Duke, "Voluntary Ergonomic Guidelines and Research for the Furniture Manufacturing Industry" Industrial Engineering Research Conference, Houston, TX, May 15-19, 2004.
- (27) Mirka, G and X Ning, "Ergonomic Interventions for Commercial Crab Fishermen" Industrial Engineering Research Conference, Miami, FL May 30- June 2, 2009.

Non-Technical Presentations

- (1) Mirka, GA, Long, C and Smith, C, "Delivering Cross Disciplinary Education: Can Students Innovate Anywhere?", Society for College and University Planning 2013 North Central Reg Conf, St. Louis MO, Oct. 14-16, 2013.

Pending Grant Applications

Title: "Assessing the Utility of Exoskeleton Technology in Surgery"

Investigators: Dr. Gary Mirka (PI), Dr. M. Susan Hallbeck (Mayo Clinic PI) and Dr. Jason Gillette (ISU))

Granting Agency: Centers for Disease Control and Prevention - National Institute for Occupational Safety and Health (NIOSH)

Temporary Research Grant No. 4448752_Egrant

Proposed Funding Amount: \$1,407,770

Proposed Project Duration: 04/01/2021 - 03/31/2024 (Submitted June 5, 2020)

Funded Research Project Record (Principal Investigator Only)

- (1) Title: "Fatigue Assessment of Seating Systems"

Investigators: Dr. Gary Mirka (PI)

Granting Agency: John Deere

Research Grant No. 144320

Funding Amount: \$56,149

Project Duration: 10/15/2018 - 08/31/2019

- (2) Title: "Ergonomic Interventions for Commercial Fishermen"

Investigators: Dr. Gary Mirka (PI) and Dr. Kristen Kucera (Duke PI)

Granting Agency: Centers for Disease Control and Prevention - National Institute for Occupational Safety and Health (NIOSH)

Research Grant No. R01 OH08249

Funding Amount: \$413,911

Project Duration: 08/01/2006 - 07/31/2009

- (3) Title: "Ergonomic Interventions in Agriculture"

Investigators: Dr. Gary Mirka (PI)

Granting Agency: NIOSH

Research Grant No.

Funding Amount: \$649,135

Project Duration: 09/30/2001-05/15/2007

- (4) Title: "Ergonomic Interventions in Furniture Industry"

Investigators: Dr. Gary Mirka (PI)

Granting Agency: Furniture Manufacturing and Management Center

Funding Amount: \$31,926

Project Duration: 07/01/2002-06/30/2006

- (5) Title: "Ergonomic Solutions for Furniture Manufacturers"

Investigators: Dr. Gary Mirka (PI) and Dr. Denis Cormier

Granting Agency: NIOSH

Research Grant No. R01-OH03701

Funding Amount: \$532,937

Project Duration: 09/30/1999 - 09/29/2003

- (6) Title: "Engineering Solutions to Reduce Work-Related Injuries"

Investigators: Dr. Gary Mirka (PI)

Granting Agency: Furniture Manufacturing and Management Center

Funding Amount: \$37,400

Project Duration: 07/01/2000-06/30/2001

- (7) Title: "Etiology of Injury in Drywall and Residential Carpentry"

Investigators: Dr. Hester Lipscomb (Duke University PI) and Dr. Gary A. Mirka (NCSU PI)

Granting Agency: NIOSH

Research Grant No. R01-OH03809

Funding Amount: \$755,405

Project Duration: 09/30/1998 - 09/29/2001

- (8) Title: "Engineering Solutions to Reduce Work-Related Injuries"

Investigators: Dr. Gary Mirka (PI)

Granting Agency: Furniture Manufacturing and Management Center

Funding Amount: \$35,841

Project Duration: 07/01/1999-06/30/2000

- (9) Title: "Back Injury Interventions for Small Contractors"
 Investigators: Dr. Gary A. Mirka (NCSU PI) and Dr. Sam Moon (Duke University PI.)
 Granting Agency: NIOSH
 Research Grant No. R01-CCR413061
 Funding Amount: \$424,989
 Project Duration: 9/30/96 - 9/29/99
- (10) Title: "Ergonomics Workshops for the Furniture Industry"
 Investigator: Dr. Gary A. Mirka (PI)
 Granting Agency: Furniture Manufacturing and Management Center
 Funding Amount: \$10,795
 Project Duration: 7/1/98 - 6/30/99
- (11) Title: "Engineering Solutions for Ergonomic Problems"
 Investigator(s): Dr. Gary A. Mirka (PI)
 Granting Agency: Furniture Manufacturing and Management Center
 Funding Amount: \$35,615
 Project Duration: 7/1/97 - 6/30/98
- (12) Title: "Ergonomics in the Furniture Industry: Applying of What We Have Learned"
 Investigator: Dr. Gary A. Mirka (PI)
 Granting Agency: Furniture Manufacturing and Management Center
 Funding Amount: \$34,237
 Project Duration: 7/1/97 - 6/30/98
- (13) Title: "Effects of Arch Support Orthotics on the Standing Human"
 Investigator: Dr. Gary A. Mirka (PI)
 Granting Agency: Quick'n Bestrom Marketing
 Funding Amount: \$4,129
 Project Duration: 9/1/96 - 5/1/97
- (14) Title: "Ergonomics in the Furniture Industry: Developing a Dose-Response Relationship for Cumulative Trauma Disorders and other Ergonomic Hazards"
 Investigator: Dr. Gary A. Mirka (PI)
 Funding Agency: Furniture Manufacturing and Management Center
 Funding Amount: \$40,118
 Project Duration: 7/1/95 - 6/30/96
- (15) Title: "Stochastic Model of Trunk Musculature During Lifting"
 Investigator(s): Dr. Gary A. Mirka (PI)
 Granting Agency: NIOSH
 Research Grant No. K01 OH00135
 Funding Amount: \$146,500
 Project Duration: 9/30/93 - 9/29/96

Technology Transfer

Patents

- (1) Patent No. US 5,012,819 A – Apparatus for monitoring the motion components of the lumbar spine. Co-Inventor with Marras, Miller and Davis.
- (2) Patent No. US 5,094,249 A – Apparatus for monitoring the motion of the lumbar spine. Co-Inventor with Marras, Miller and Davis.
- (3) Patent No. US 5,143,088 A – Apparatus for monitoring the motion components of the lumbar spine. Co-Inventor with Marras, Miller and Davis.

Patent Disclosures

- (1) Height Adjustable Upholstery Buck System - The Height Adjustable Upholstery Buck System is a system designed to eliminate the heavy lifting and reduce the static awkward postures associated with the task of upholstering furniture. Disclosed (1/2000)
- (2) Ergonomic Interface for a Random Orbital Sander - The Ergonomic Interface for a Random Orbital Sander is a device designed to eliminate the static grip forces required to operate a random orbital sander and to reduce the exposure to the vibration of the tool. Disclosed (1/2000)
- (3) Pneumatic Wall Lift - The Pneumatic Wall Lift is a device that greatly reduces the lifting force required to erect fully constructed walls in the home building industry. Disclosed (1/2000)

- (4) Ergonomic Upholstery Fabric Pulling Tool - The Ergonomic Upholstery Fabric Pulling Tool is a device that is designed to replace the harmful, repetitive pinch grips used by workers in the upholstered furniture manufacturing industry. Disclosed (1/2000)
- (5) Crab Boat Lift Assist Device – The crab boat lift assist device is a system developed to reduce the stress on the low backs and shoulders of commercial fishermen. The device helps to pull crab pots from the water and supports the weight of the pot as the crabs are removed. Disclosed (9/2009)

Software

- (1) Mirka, GA: "A Computerized NIOSH Lifting Guide Model Developed for the Furniture Manufacturing Industry" developed for the furniture manufacturing industry through a grant from the Furniture Manufacturing and Management Center.

INSTRUCTIONAL ACTIVITIES

Publications

- (1) Miller, T., Mirka, G., Gloster, C., Holder, T., Alderman, C., Brawner, C., Rettinger, L., Hewitt, K., and Crawley, T., (1998), "MBone Virtual Classroom for Engineering Distance Education", International Conference on Engineering Education, August 17-20 - Rio Othon Palace - Rio de Janeiro.

Instructional Grants

Training Grants

- (1) Title: "Occupational Safety Area of the Heartland Center for Occupational Health & Safety"
 Investigators: Dr. Nir Keren (ISU PI)
 Granting Agency: National Institute for Occupational Safety and Health (NIOSH)
 Training Grant No. T42/OH008491
 Funding Amount: \$183,359 (ISU funding only)
 Project Duration: 7/1/2019 - 6/30/2020
- (2) Title: "Safety and Ergonomics Program Area of the UNC-ERC"
 Investigators: Dr. Gary Mirka (NCSU PI) and Dr. Bonnie Rogers (Univ. of North Carolina-Chapel Hill PI)
 Granting Agency: National Institute for Occupational Safety and Health (NIOSH)
 Training Grant No. T42/OH008673
 Funding Amount: \$602,810 (NCSU funding only)
 Project Duration: 7/1/2006 - 6/30/2011
- (3) Title: "Safety and Ergonomics Program Area of the UNC-ERC"
 Investigators: Dr. Gary Mirka (NCSU PI) and Dr. Bonnie Rogers (UNC-CH PI)
 Granting Agency: NIOSH
 Training Grant No. T42/CCT422952
 Funding Amount: \$290,417
 Project Duration: 7/1/2003 - 6/30/2006
- (4) Title: "Occupational Safety and Health Training Grant"
 Investigators: Dr. Carolyn Sommerich and Dr. Gary Mirka (NCSU Co-PIs)
 Granting Agency: NIOSH
 Training Grant No. T01/CCT417979
 Funding Amount: \$37,584
 Project Duration: 7/1/2002 - 6/30/2003

Course Development Grants

- (1) "Title: "Web-Based IE 544 - Occupational Biomechanics"
 Investigator: Dr. Gary Mirka
 Granting Agency: Internal Grant from the NCSU College of Engineering
 Funding Amount: \$8,374
 Project Duration: 10/15/2000 – 6/30/2001

NCSU Courses Taught (and student evaluations Scale: 1-Poor – 5-Superior)

IE 352 Work Analysis and Design:	Course Rating: 4.3/5.0; Instructor Rating 4.5/5.0 (N=9 offerings)
IE 452 Ergonomics:	Course Rating: 3.8/5.0; Instructor Rating 4.3/5.0 (N=2 offerings)
IE 543 Musculoskeletal Mechanics:	Course Rating: 4.3/5.0; Instructor Rating 4.5/5.0 (N=4 offerings)
IE 544 Occupational Biomechanics:	Course Rating: 4.2/5.0; Instructor Rating 4.5/5.0 (N=10 offerings)
IE 767 Upper Extremity Biomechanics:	Course Rating: 4.0/5.0; Instructor Rating 4.5/5.0 (N=1 offering)
IE 768 Spine Biomechanics:	Course Rating: 4.5/5.0; Instructor Rating 4.7/5.0 (N=2 offerings)
IE 796 Research Practicum:	Course Rating: 4.5/5.0; Instructor Rating 4.7/5.0 (N=8 offerings)

Overall Department Averages in Period: Course Rating: 3.7/5.0; Instructor Rating 3.9/5.0

ISU Courses Taught (and student evaluations Scale: 1-Poor – 5-Superior)

IE 271 Applied Ergonomics and Work (SP 2008-10, 2017-20)	Instructor Rating 4.5/5.0 (N=6 offerings)
IE 501/601 Graduate Seminar (AU/SP 2007,08,2016-19)	N/A
IE 571 Occupational Biomechanics (AU 2008,10,17,18)	Instructor Rating 4.9/5.0 (N=4 offerings)
IE 671 Research Practicum in Ergonomics (SP 2009,10,18,19)	Instructor Rating 4.6/5.0 (N=4 offerings)
IE 673 Spine Biomechanics (AU 2009,18)	Instructor Rating 5.0/5.0 (N=2 offerings)
GR ST 565 Responsible Conduct of Research (SP 2012-17)	N/A

Overall Department Averages in Period: Instructor Rating 4.2/5.0

PhD Committees (Chair/Co-Chair)

- (1) Joseph Davis, PhD IE (NCSU), A transverse contour model of distributed muscle forces and spinal loads during lifting and twisting, 1997, Chair. **Current Position: Engineer & Project Manager at Engineering Economics Inc. – Raleigh, NC.**
- (2) Brad Lawrence, PhD IE (NCSU), Intelligent system identification applied to the biomechanical response of the human trunk during sudden loading, 2002, Co-Chair with Dr. Greg Buckner (Mechanical Engineering). **Current Position: Human Factors Engineer at Dell.**
- (3) Naomi Glasscock, PhD IE (NCSU), Exploring the relationships between psychosocial factors, biomechanical workstyle, muscle tension, and musculoskeletal discomfort reporting, 2003, Co-Chair with Dr. Katherine Klein (Psychology). **Current Position: Adjunct Assistant Professor – North Carolina State University.**
- (4) Gwanseob Shin, PhD IE (NCSU), Viscoelastic responses of the lumbar spine during prolonged stooping, 2005, Co-Chair with Dr. Elizabeth Lobo (Biomedical Engineering). **Current Position: School Head and Associate Professor – Ulsan National Institute of Science and Technology.**
- (5) Dan Kelaher, PhD IE (NCSU), Effects of trunk extensor muscle fatigue on trunk proprioception and biomechanics, 2006, Chair. **Current Position: Human Factors Engineer – Lenovo.**
- (6) Yu Shu, PhD IE (NCSU), Biomechanical analysis of eccentric and concentric lifting exertions, 2007, Chair. **Current Position: Research Scientist – Madonna Rehabilitation Hospital.**
- (7) Zongliang Jiang, PhD IE (NCSU), Application of an entropy-assisted optimization model in prediction of agonist and antagonist muscle forces, 2007, Co-Chair with Dr. Shu-Cherng Fang (Operations Research). **Current Position: Assistant Professor – North Carolina A&T State University.**
- (8) Sangeun Jin, PhD IE (ISU), A systems-level perspective of the flexion-relaxation phenomenon in the lumbar spine, 2011, Chair. **Current Position: Professor- Pusan National University.**
- (9) Xiaopeng Ning, PhD IE (ISU), Development of a new work-rest scheduling model based on inventory control theory, 2011, Chair. **Current Position: Assistant Professor – West Virginia University.**
- (10) Omid Haddad, PhD IE (ISU), Development and validation of a fatigue-modified, EMG-assisted biomechanical model of the lumbar region, 2011, Chair. **Current Position: Adjunct Assistant Professor – Sharif University.**
- (11) Hamid Norasi, PhD IE (ISU), A systems-level evaluation of the biomechanical response of the cervical spine to Ssagittal plane flexion, 2020, Co-chair with Susan Hallbeck. **Current Position: Post-Doctoral Research Associate – Mayo Clinic.**
- (12) Emmanuel Tetteh, PhD IE (ISU), Using biomechanical data to explore the utility of exoskeleton intervention for work-related musculoskeletal disorders in the surgeons, 2021, Co-chair with Susan Hallbeck. **Current Position: Post-Doctoral Research Associate – Mayo Clinic.**
- (13) Pramiti Sarker, (ISU Co-chair with Susan Hallbeck) In Progress.

PhD Committees (Member)

- (1) Tom Brugler, PhD Psychology (NCSU), Intersensory form perception involving touch and vision: three tests of rock's unitary processing hypothesis, 1993.
- (2) Sharon Joines, PhD IE (NCSU), Using surface electromyography to study cervical extensor muscle activity : an investigation of methodological considerations and the effects of age on fatigue development and recovery, 2001.

- (3) Susan Kahler, PhD Psychology (NCSU), A comparison of knowledge acquisition methods for the elicitation of procedural mental models, 2002.
- (4) Melanie Wright, PhD IE (NCSU), The effects of automation on team performance and team coordination, 2002.
- (5) Kristen Kucera, PhD Epidemiology (UNC-CH), Quantifying ergonomics stresses in North Carolina commercial crab pot fishermen and gill net fishermen, 2005.
- (6) Ruiqi Ma, PhD IE (NCSU), The effects of in-vehicle automation and reliability on driver situation awareness and trust, 2005.
- (7) Noa Segall, PhD IE (NCSU), Design and prototyping of a cognitive model-based decision support tool of anesthesia provider management of crisis situations, 2006.
- (8) Mohamed Sheiknainar, PhD IE (NCSU), Development and empirical assessment of a model of situation awareness for multitasking with locomotion, 2007.
- (9) Xu Xu, PhD IE (NCSU), Investigation of Interactivity between Suspended-load Backpack and Human Gait, 2008.
- (10) Beth Hanna, PhD Apparel, Educational Studies, & Hospitality Management (ISU), Assessment of Middle-Sized School Food Management Policies, 2008.
- (11) Kate Stafford, PhD Kinesiology (ISU), Biomechanical and Neuromuscular Changes in Jump Landings Due To Short or Long Term Ankle Bracing and Fatigue, 2012.
- (12) Carlos Lopez, PhD Educational Leadership and Policy Studies (ISU), Transfer Students in STEM majors at a Midwestern University: Academic and social involvement factors that influence student's success upon transfer, 2012.
- (13) Harsh Buddhadev, PhD Kinesiology (ISU), Age-associated redistribution of relative joint power during submaximal steady-state cycling, 2015.
- (14) Junsig Wang, PhD Kinesiology (ISU), L5/S1 joint moment over different loading conditions during stair negotiation, 2016.
- (15) Davood Hajinezhad, PhD IE (ISU), Distributed nonconvex optimization: Algorithms and convergence analysis, 2017.
- (16) Jeffrey McClellan, PhD Kinesiology (ISU), The effects of running speed, form, and fatigue on intervertebral disc pressures at L5/S1: A developmental musculoskeletal and finite element modeling approach, 2018.
- (17) Mitchell Stephenson, PhD Kinesiology (ISU), Perception and action coupling in the lower extremity control during jump landings, 2019.
- (18) Shekoofe Saadat, PhD Kinesiology (ISU), In Progress.
- (19) Jeff Mettler, PhD Kinesiology (ISU), In Progress

MS-Thesis Committees (Chair)

- (1) Angela Harrison, MS IE (NCSU), An evaluation of the dynamics of lifting under various lifting conditions, 1994.
- (2) Ann Baker, MS IE (NCSU), Effects of acceleration on the relationship between electromyographic activity and muscle force during elbow flexion, 1995.
- (3) Dan Kelaher, MS IE (NCSU), Substitution patterns of the quadriceps muscles before and after fatiguing isokinetic knee extensions, 1996.
- (4) Carrie Shivers, MS IE (NCSU), Effect of grip span on lateral pinch grip strength, 2001.
- (5) Kelly Duke, MS IE (NCSU), Productivity and ergonomic investigation of bent-handle pliers, 2002.
- (6) Todd Nay, MS IE (NCSU), Predicting trunk kinematics from static task parameters, 2002.
- (7) Gwanseob Shin, MS IE (NCSU), The effects of sloped ground on the hip, knee, and ankle joint kinetics and kinematics during lifting tasks, 2002.
- (8) David Brandenburg, MS IE (NCSU), Assessing the effects of positive feedback and reinforcement throughout the implementation phase of an ergonomic intervention, 2002.
- (9) Sunil Sudhakaran, MS IE (NCSU), Effect of personality type on performance of an overhead task, 2003.
- (10) Elizabeth Covalla, MS IE (NCSU), Visual posture observation error and training, 2003.
- (11) Komal Bajaj, MS IE (NCSU), Redesign and evaluation of the grocery store self-checkout systems from universal design perspectives, 2003.
- (12) Karen Noack, MS IE (NCSU), College student computer use and ergonomics, 2003.
- (13) Jonathan Drum, MS IE (NCSU), An investigation of the effects of fatigue and stance width on horizontal ground reaction forces and trunk kinematics, 2005.
- (14) Yu Shu, MS IE (NCSU), Effect of wrist splint orthoses on forearm muscle activity and upper extremity kinematics, 2005.
- (15) Jacklyn Freeman, MS IE (NCSU), An investigation of the variability in the lifting technique of older workers versus younger workers, 2005.
- (16) Stephanie Southard, MS IE (NCSU), Evaluating a new design for the NASA SCAPE harness, 2005.
- (17) Stephanie Reid, MS IE (NCSU), Learning curve analysis of a patient lift assist device, 2005.

- (18) Xu Xu, MS IE (NCSU), The effect of obesity on trunk kinematics and ground reaction forces during lifting, 2006.
- (19) Leigh McClure, MS IE (NCSU), Effects of time of day and warm-up on lifting kinematics, 2007.
- (20) Allison Anderson, MS IE (NCSU), Learning curve analysis for alternative keyboards, 2007.
- (21) Kristen Meador, MS IE (NCSU), Ergonomic interventions for an ultrasound transducer, 2007.
- (22) Steven Kryk, MS IE (ISU), Evaluation of decision support system for order picking warehouse design, 2019.
- (23) Jordyn Koenig, MS IE (ISU) (Co-chair with Susan Hallbeck) Assessing the Utility of Exoskeleton Technologies in Sonography, 2020.

MS Committees (Member)

- (1) Sharon Joines, MS IE (NCSU), Evaluating the risk of developing carpal tunnel syndrome: Part I - comparing the effectiveness of four ergonomic risk assessment techniques; Part II - an application of continuous simulation for ergonomic intervention assessment, 1996.
- (2) Jim Martin, MS IE (NCSU), The prioritization of multiple warnings and variability in warning instruction interpretation among industrial machine operators, 1997.
- (3) Jennifer Dikeman, MS BAE (NCSU), Experimental simulation of mechanism of injury for non-contact, isolated anterior cruciate ligament ruptures, 1998.
- (4) Jennie Psihogios, MS IE (NCSU), The effects of VDT placement on user posture and comfort: a field study, 1998.
- (5) Stephanie Hayden, MS NE (NCSU), Determination of partial volume and spillover effects in noninvasive measurement of arterial input functions using Positron Emission Tomography, 1999.
- (6) Mike Monroe, MS IE (NCSU), The influence of head, forearm and back support on myoelectric activity: performance/comfort during a VDT task, 2000.
- (7) Aaron Stewart, MS IE (NCSU), Human modeling and simulation: establishing parameters for an adjustable notebook computer display, 2000.
- (8) Christy Smith, MS IE (NCSU), The use of ergonomic interventions in dental hygiene work, 2000.
- (9) Danelle Eastham, MS CE (NCSU), Advancing ergonomics and productivity in masonry construction, 2001.
- (10) Heather Warren, MS IE (NCSU), Auditory cueing effects on human performance with an adaptive system, 2002.
- (11) Amanda Marley, MS BAE (NCSU), The mechanics of greater trochanter osteotomy stabilization with the use of the Dall-Miles Cable Grip System, 2002.
- (12) Jennifer Lossing, MS BME (NCSU), Quantification of chondrocyte death and proteoglycan content in mechanically impacted articular cartilage, 2004.
- (13) Sabrina Lamar, MS IE (NCSU), Investigation of factors associated with prevalence and severity of musculoskeletal symptoms among the workers in clinical specialties of radiologic technology, 2004.
- (14) Lashanda Lee, MS IE (NCSU), Assessing interactive system effectiveness with usability design heuristics and Markov models of user behavior, 2007.
- (15) Sangeun Jin, MS IE (NCSU), The effect of driver cognitive abilities and distraction on situation awareness and performance under hazard conditions, 2008.
- (16) Boyi Dai, MS Kinesiology (ISU), The effects of detraining on knee biomechanics in a stop-jump task: Implications for ACL injury, 2009.
- (17) Samuel Campbell, MS Kinesiology (ISU), The effect of step width on iliotibial band syndrome, 2009.
- (18) Chris Sorensen, MS Kinesiology (ISU), Biomechanical changes to the trunk and lower extremities during variations of the forward lunge exercise, 2009.
- (19) Minglu Wang, MS IE (ISU) TRUST, situation awareness and automation use: Exploring the effect of visual system degradation on human perceptions and performances in human-teleoperator system, 2010.
- (20) Chen-Shuang Wei, MS IE (ISU), The impact of inspector classification on performance in various visual inspection display tasks, 2010.
- (21) Michelle Hall, MS Kinesiology (ISU), Biomechanical and neuromuscular adaptations in those with anterior cruciate ligament reconstruction during functional movements, 2010.
- (22) Elizabeth Hageman, MS Kinesiology (ISU), Medial longitudinal arch mechanics before and after a prolonged run, 2010.
- (23) Hong Yul Jun, MS IE (ISU), The effect of composite vs. first person perspective view in real world Tele-robotic operations, 2010.
- (24) Eric Sterner, MS Kinesiology (ISU), The effect of shoe forefoot stiffness on the windlass mechanism in running, 2011.
- (25) Zach Sobczak, MS IE (ISU), The ergonomic design of pull-tabs for the elderly and others with limited upper extremity function, 2012.
- (26) Sicong Chen, MS IE (ISU), The effect of table tennis racket design on wrist motion, 2013.
- (27) Tami Janssen, MS Kinesiology (ISU), Loading of the lower extremity and low back when using wedge orthotics during walking and stair negotiation, 2013.
- (28) Evan Day, MS Kinesiology (ISU), Effect of wedged shoe inserts on iliotibial band strain, 2015.

- (29) Caleb Radley, MS Kinesiology (ISU), The effects of predisposition on ankle sprain risk predictive factors during jump landing, 2018.
- (30) Varun Ananthasivan Srikrishnan, MS IE (ISU), A user-centered engineering approach to storage and access in high priority scenarios, In Progress.
- (31) Laura Stacy, MS Kinesiology (ISU), Evaluating the effects of external load, incline and walking speed on iliotibial band strain in wildland firefighters, 2019.

Non-Thesis Masters Committees

- (1) Mary Bowen, MEng (NCSU), 2000.
- (2) Shruthi Dwakaranath, MIE (NCSU), 2000.
- (3) Hollis Dickens, MIE (NCSU), 2003.
- (4) Amanda Kirby, MIE (NCSU), 2003.
- (5) Chen Ruan, MIE (NCSU), 2003.
- (6) Ken Wright, MIE (NCSU), 2005.
- (7) Brian McGee, MIE (NCSU), 2006.
- (8) Asif Khan, MS (ISU), 2012.
- (9) Laura Wendorf, MEngIE (ISU), 2017.
- (10) Amit Sonar, MEngIE (ISU), 2017.
- (11) Vishnu Parthasurathy, MEngIE (ISU), 2017.
- (12) Karthik Kuttuva-Amarnath, MEngIE (ISU), 2017.
- (13) Christopher Ginn, MEngIE (ISU), 2017.

PROFESSIONAL AND UNIVERSITY SERVICE

Active Professional Society Memberships

- (1) The Ergonomics Society (Fellow-2009)
- (2) Human Factors and Ergonomics Society
- (3) Institute of Industrial & Systems Engineers
- (4) American Society of Engineering Education

Previous Professional Society Memberships

- (1) American Society of Biomechanics
- (2) American Society of Safety Engineers

Federal Study Section Activities

- (1) National Institute for Occupational Safety and Health (NIOSH) Safety and Occupational Health (SOH) Study Section Regular Member: (2001-2004).
- (2) National Aeronautics and Space Administration (NASA) Space Human Factors Engineering - Technical Working Group (SHFE TWG): (2003-2006).
- (3) NASA Space Human Factors Engineering – Discipline Integrated Product Team: (2009).
- (4) NIOSH Training Grant Reviewer: (2004-2006).
- (5) NIOSH Small Business Innovation Research Grant (SBIR) Study Section Temporary Member: (2001-2008).
- (6) National Institutes of Health (NIH) Musculoskeletal Rehabilitation Sciences Study Section Temporary Member: (1999-2001).
- (7) NIH Musculoskeletal, Oral, Skin Sciences Study Section Temporary Member: (1999-2001).
- (8) NIH SBIR Study Section Temporary Member: (2004).
- (9) National Science Foundation (NSF) Occasional Reviewer: (2003).
- (10) NIOSH SOH Study Section Temporary Member: (1999-2001; 2004-2008; 2014-Present).
- (11) National Institute of Environmental Health Sciences (NIEHS) Study Section Temporary Member: (2006).

Editorial Activities

Associate Editorships

- (1) *Human Factors* (2009-2012)
- (2) *Applied Ergonomics* (2016 – 2018)

Editorial Board Memberships

- (1) *Human Factors* (1997-2000; 2005-2009; 2012-Present)
- (2) *International Journal of Industrial Ergonomics* (2003-Present)
- (3) *Ergonomics* (2007-Present)
- (4) *IIE Transactions on Occupational Ergonomics and Human Factors* (2011-Present)
- (5) *Human Factors and Ergonomics in Manufacturing and Service Industries* (2015-Present)
- (6) *Journal of Electromyography and Kinesiology* (2000-2019)
- (7) *Habitation* (2004-2006)

Occasional Referee

- (1) *Journal of Biomechanics*
- (2) *Journal of Biomechanical Engineering*
- (3) *Applied Ergonomics*
- (4) *IIE Transactions*
- (5) *Clinical Biomechanics*
- (6) *Applied Occupational and Environmental Hygiene*
- (7) *IEEE Journal of Biological Engineering and Health Informatics*
- (8) *International Journal of Occupational Safety and Ergonomics*
- (9) *American Industrial Hygiene Association Journal*
- (10) *Theoretical Issues in Ergonomics Science*
- (11) *ASCE Journal of Construction Engineering and Management*
- (12) *Medical & Biological Engineering & Computing*
- (13) *Applied Bionics and Biomechanics*
- (14) *IIE Transactions on Occupational Ergonomics and Human Factors*
- (15) *Computers & Industrial Engineering*
- (16) *Computer Methods in Biomechanics and Biomedical Engineering*
- (17) *Gait and Posture*
- (18) *Journal of Applied Biomechanics*
- (19) *Perceptual and Motor Skills*
- (20) *Journal of Agricultural Safety and Health*
- (21) *Human Factors and Ergonomics in Manufacturing*
- (22) *Medicine & Science in Sports & Exercise*
- (23) *Journal of Healthcare Engineering*
- (24) *Biosystems Engineering*
- (25) *Human Factors and Ergonomics in Manufacturing & Service Industries*
- (26) *Safety and Health at Work*
- (27) *Frontiers in Neuroscience*

Professional Conference Activities

- (1) Program Chair: Industrial Ergonomics Technical Group of the Human Factors and Ergonomics Society/International Ergonomics Association Year 2000 Conference, 175 papers reviewed, San Diego CA.
- (2) Program Committee (Human Factors) for the Industrial Engineering Research Conference (IERC 2004), 75 papers reviewed, Houston, TX, (2004).

Academic Service/Administrative Activities

North Carolina State University

University

- (1) Chair, NCSU Institutional Review Board (IRB) for the Use of Human Subjects in Research (1997-2000)
- (2) Member, NCSU IRB for the Use of Human Subjects in Research (1995-1997; 2000-2001)

College of Engineering

- (1) NCSU College of Engineering Space and Renovation Committee (2001-2005)
- (2) Industrial Engineering Coordinator for the NCSU College of Engineering Open House (1995-1998)

Department of Industrial and Systems Engineering

- (1) Director of Graduate Programs (2005-2007)
- (2) Graduate Admissions Committee (1997-2007)
- (3) Department Head Search Committee (1998)
- (4) Chair, Faculty Search Committees (1996; 2000; 2003; 2004; 2005)

Iowa State University

University

- (1) ISU University Response Team (COVID19) – Member (2020-Present)
- (2) ISU Residency Review Committee – Member (2013-Present); Chair (2014-Present)
- (3) ISU Athletics Council – Member (2016-Present); Chair of Academic Performance Committee (2017-Present)
- (4) ISU Orientation Committee – Chair (2012-2020)
- (5) ISU Howard Hughes Medical Institute Project – Advisory Board Member (2014-2018)
- (6) ISU Leadership Studies Program – Advisory Board Member (2011-2019)
- (7) ISU Human-Computer Interaction Advisory Committee (2017-2019)
- (8) ISU English Proficiency Evaluation Committee – Member (2014-2016)
- (9) ISU Undergraduate Programs Council – Member (2011-2016)
- (10) ISU Computer Curriculum Coordinating Committee – Member (2011-2016)
- (11) ISU Entrepreneurship Supervisory Committee College of Business – Member (2011-2016)
- (12) ISU Associate Deans for Academic Personnel – Member (2012-2016)
- (13) ISU Teaching Awards Selection Committee – Member (2012-2016)
- (14) ISU Transportation Advisory Committee – Member (2013-2016)
- (15) ISU Data Sciences Academic Coordinating Group – Co-Chair with Arne Hallam (2015-2016)
- (16) ISU Associate Deans for Graduate Programs – Member (2011-2015)
- (17) ISU Writing and Media Center Advisory Board – Member (2012-2015)
- (18) ISU Presidential Initiative for Interdisciplinary Research Review Committee – Member (2013)
- (19) ISU Assistant Dean of Students/Director of Multicultural Student Affairs Search Committee – Member (2013)
- (20) ISU Student Enrollment & Engagement through Connections (NSF) Advisory Committee – Member (2008-2012)
- (21) ISU ADVANCE Council – Member (2011-2012)
- (22) ISU Institutional Operating Plan Committee – Member (2012)
- (23) ISU Student Innovation Center Advisory Committee – Member (2011-2015)
- (24) Iowa STEM Hub Advisory Committee – Member (2012-2015)
- (25) LAS Associate Dean for Academic Affairs Search Committee – Member (2013)
- (26) Iowa STEM Hub Manager Search Committee – Member (2012)
- (27) InTrans Review Team – Member (2010)
- (28) PFF (Preparing Future Faculty) Mentor
 - Katrina Williams (Education) AY 2015
 - Rui Ding (Kinesiology) AY 2018
 - Emmanuel Tetteh (IMSE) AY 2020
 - Mohammad Fili (IMSE) AY 2022

College of Engineering

- (1) Directors of Graduate Education (2016-Present)
- (2) Bioengineering/Biomedical Engineering Minor Advisory Committee – (Chair 2013; 2008-Present)
- (3) Directors of Research (2016-2020)
- (4) Engineering Dean Search Committee – Co-Chair with Luis Rico-Gutierrez – (2018-2019)
- (5) Dean’s Promotion and Tenure Advisory Committee – (2011-2016)
- (6) Engineering Associate Dean for Research Search Committee – Chair (2013)
- (7) College ABET Coordinator – (2011-2013)
- (8) Dean’s Education Initiative – Administrator (2011-2013)
- (9) Engineering Dean Search Committee – Member (2012)
- (10) Interim Director of Engineering College Relations (2011)
- (11) Overall Cost and Utility Cost Reduction Task Force – Chair (2010)
- (12) Department Chair of Electrical and Computer Engineering Search Committee – Chair (2009-2010)
- (13) Multidisciplinary Design Committee – Member (2008-2009)
- (14) Director of Engineering Communications & Marketing Search Committee – Chair (2008)
- (15) Professional Development Committee – Member (2007-2008)

Department of Industrial and Manufacturing Systems Engineering

- (1) IMSE Director of Graduate Education (2016-Present)
- (2) IMSE Graduate Committee – Chair (2008-Present)
- (3) IMSE Director of Research (2016-2020)
- (4) IMSE New Building Committee – Chair (2019-2020)
- (5) IMSE Faculty Mentor
 - Dr. Lizhi Wang (2008)
 - Iris Rivero (2016-2018)
 - Richard Stone (2008-2011; 2016-2018)