

CURRICULUM VITAE

M. MELISSA GROSS

Division of Kinesiology
The University of Michigan
401 Washtenaw Avenue
Ann Arbor, MI 48109-2214

(734) 764-9663
(734) 936-1925 (fax)
mgross@umich.edu
www.umich.edu/~mgross

Education

1984	Ph.D.	University of California, Los Angeles	Kinesiology (Biomechanics)
1979	M.S.	University of California, Los Angeles	Kinesiology
1976	B.A.	University of Colorado, Boulder	Dance (with High Distinction)

Professional Experience

2006- Associate Dean for Research, Division of Kinesiology, University of Michigan, Ann Arbor
2006- Active Faculty Member, University of Michigan Depression Center, University of Michigan, Ann Arbor
2005- Associate Professor, School of Art & Design, University of Michigan, Ann Arbor (courtesy)
1999- Associate Professor, Movement Science Dept., Div. of Kinesiology, University of Michigan, Ann Arbor
1991- Assistant Research Scientist, Institute of Gerontology, University of Michigan, Ann Arbor (courtesy)
2001-02 Co-Director, Rackham Summer Interdisciplinary Institute, University of Michigan, Ann Arbor
2000 Fellow, Rackham Summer Interdisciplinary Institute, University of Michigan, Ann Arbor
1999-00 President, American Society of Biomechanics
1998-01 Faculty, Center for Biomedical Engineering Research, University of Michigan, Ann Arbor
1993-01 Faculty, Center for Human Motor Research, Kinesiology, University of Michigan, Ann Arbor
1991-96 Faculty, Bioengineering Program, University of Michigan, Ann Arbor
1991-95 Research Health Scientist, Veterans Affairs Medical Center, Ann Arbor, Michigan
1991-99 Assistant Professor, Dept. of Movement Science, Div. of Kinesiology, Univ. of Michigan, Ann Arbor
1985-91 Research Health Scientist, Rehabilitation Res & Dev Ctr, VA Medical Center, Palo Alto, California
1985-91 Visiting Scholar, Design Division, Mechanical Engineering Dept., Stanford University, California
1985 Visiting Lecturer, Department of Kinesiology, University of California, Los Angeles
1984-85 Post-doctoral Researcher, Department of Kinesiology, University of California, Los Angeles
1980-84 Research Associate, Department of Kinesiology, University of California, Los Angeles
1978 Teaching Associate, Department of Kinesiology, University of California, Los Angeles
1977-81 Graduate Research Trainee, Bureau of Education for the Handicapped, University of California
1977-78 Teaching Assistant, Department of Kinesiology, University of California, Los Angeles

Grants

NSF Grant 0444301 "Perceived Facial Expressions of Emotion as Motivational Incentives", M.M. Gross (PI), Total costs \$84,756 (Direct costs \$55,761; Indirect costs \$28,995), 2007-09

NIH Grant "Functional Status and the Menopausal Transition", M.F. Sowers (PI), M.M. Gross (Co-I), Total direct costs \$603,864; Indirect costs \$157,00, 2000-05

SATECH Corporation gift to Neuromuscular Biomechanics Lab (M.M. Gross, Director); \$14,491, 1995-98

State of Washington contract (CTED #96-220-014): "Fatigue and Playing Surfaces", B.J. Martin and M.M. Gross, Costs for M.M. Gross: Direct costs \$19,853, Indirect costs \$5,108, 1996-97

KAF Industries "Evaluation of Hydrobics Devices" contract (with V. Katch), \$3,000, 1995-95

Veterans Affairs Rehabilitation Research and Development Merit Review Grant (#E642-R): "Effects of Muscle Strength on Balance During Movement in the Elderly", M.M. Gross and N.B. Alexander (Co-Principal Investigators), \$462,600, 1992-95

Veterans Affairs Rehabilitation Research and Development Merit Review Grant (#B554-R): "Surgery Simulation: Computer Models to Study Reconstructive Surgeries", M.G. Hoy, J. M. Rosen and F.E. Zajac (Co-Principal Investigators), \$353,200, 1991-94

University of Michigan – Research Grants

Elizabeth Caroline Crosby Fund award, NSF Advance, University of Michigan, M. Gross, \$5,000, 2004-05

"Embodying Emotion: Translating the Languages of Meaning and Movement", Project Extension – Rackham Interdisciplinary and Collaborative Grant, Rackham School of Graduate Studies, University of Michigan, M. Gross, Co-PI with D. Koditschek, \$8,000, 2003-04

"Embodying Emotion: Translating the Languages of Meaning and Movement", Rackham Interdisciplinary and Collaborative Grant, Rackham School of Graduate Studies, University of Michigan, M. Gross, Co-PI with D. Koditschek, \$50,000, 2002-03

"Role of a professional society in the careers of women scientists: 25 years of participation in the American Society of Biomechanics", Seed Grant Program, Institute for Research on Women and Gender, University of Michigan, M. Gross, PI, \$9,162, 2001-02

Office of the Vice-President for Research Discretionary Funds Grant "Statistical Analysis of Biomechanical Data", \$4200, Division of Kinesiology cost sharing \$600, 1995-96

Office of Provost and Executive Vice-President for Academic Affairs, Career Development Fund for Women Faculty, Michigan Agenda for Women, \$5000, 1995-96

University of Michigan – Research Support for Graduate Students

Spring/Summer Research Grant, Office of the Vice President for Research, University of Michigan, \$4000, 2006

University of Michigan Rackham Research Partnership Grant "Functional implications of Neandertal pelvic and hindlimb morphology", M.M. Gross and J.A. Miller, \$14,214, 1994-95

University of Michigan – Research Support for Undergraduates

University of Michigan Undergraduate Research Opportunity Program: 2007-08 (\$250), 2006-07 (\$300), 2005-06 (\$245), 2004-05 (\$810), 2003-04 (\$598), 2002-03 (\$288), 2001-02 (\$390), 1995-96 (\$250), 1994-95 (\$210)

University of Michigan Center for Research on Teaching and Learning Faculty Development Fund "Computer Tools for Engaging Kinesiology Undergraduates in Research", \$5816; Division of Kinesiology cost-share \$6040, 1999-00

University of Michigan GE Undergraduate Research Fellowship, Sponsor for T. Israel, \$5000, 1993-94

Division of Kinesiology – Research Support

Division of Kinesiology, Associate Director for Research and Scholarly Activities Interdisciplinary Funds "Dynamics of Expressive Movement in Dance", \$3000, 1997-98

Division of Kinesiology, Associate Director for Research and Scholarly Activities Interdisciplinary Funds "Effects of Purposive Activity on Elbow Movement", \$1000, 1997-98

Division of Kinesiology-Office of Instructional Technology Partnership Project "Development of CHMR website", M. Gross, R. Angulo-Kinzler, S. Brown, \$3640, 1997-98

Preddoctoral Fellowships

1982	Edith Hyde Scholarship, Department of Kinesiology, University of California, Los Angeles
1981	Alan S. Tetelman Scholarship, Failure Analysis Associates
1980-83	University Grant, Graduate Division, University of California, Los Angeles
1977-81	Bureau of Education for the Handicapped Graduate Research Fellowship

Publications (note that M.M. Gross formerly published under the name M.G. Hoy)

Journal Articles (Refereed)

1. Crane, E.A., **Gross, M.M.** and Fredrickson, B.L. Feasibility of concurrent assessment of dynamic bodily and facial expressions. (submitted)
2. **Gross, M.M.**, Crane, E.A. and Fredrickson, B.L. Methodology for assessing bodily expression of emotion. (submitted)
3. Borer, K.T., Fogleman, K., **Gross, M.M.**, LaNew, J.M., and Dengel, D. Walking intensity for postmenopausal bone mineral preservation and accrual. *Bone* 41: 713-721, 2007.
4. Sowers, M.F., Jannausch, M.L., **Gross, M.M.**, Karvonen, C.A., Palmieri, R.M., Crutchfield, M. and Richards-McCullough, K. Performance-based physical functioning in African-American and Caucasian women at mid-life: Considering body composition, quadriceps strength, and knee osteoarthritis. *American Journal of Epidemiology* 163(10): 950-958, 2006.
5. Sowers, M.F., Crutchfield, M., Richards, K., Wilkin, M., Furniss, A., Jannausch, M. Zhang, D. and **Gross, M.M.** Sarcopenia is related to physical functioning and leg strength in mid-aged women. *Journal of Gerontology: Medical Sciences* 60A(4): 486-490, 2005.
6. Garcia, A.W., Langenthal, C.R., Angulo-Kinzler, R.M. and **Gross, M.M.** A comparison of accelerometers in school-age children for predicting energy expenditure and vertical ground reaction force. *Measurement in Physical Education and Exercise Science*, 8(3): 119-144, 2004.
7. Alexander, N.B., **Gross, M.M.**, Medell, J.M., and Hofmeyer, MR. Effects of functional ability and training on chair-rise biomechanics in older adults. *Journal of Gerontology: Medical Sciences*, 56A:M538-M547, 2001.
8. Streepey, J.W., **Gross, M.M.** Martin, B.J., Sudarasan, S., and Schiller, C. Floor composition affects performance and muscle fatigue following a basketball task. *Journal of Applied Biomechanics*, 16:157-168, 2000.
9. **Gross, M.M.** Analysis of human movement using digital video. *Journal of Educational Multimedia and Hypermedia*, 7:375-395, 1998.
10. **Gross, M.M.**, Stevenson, P.J., Charette, S.L., Pyka, G. and Marcus, R. Effect of muscle strength and movement speed on chair-rise biomechanics in young and healthy elderly women. *Gait & Posture*, 8:175-185, 1998.
11. Miller, J.A. and **Gross, M.M.** Locomotor advantages of Neandertal skeletal morphology at the knee and ankle. *Journal of Biomechanics*, 31:355-361, 1998.
12. **Gross, M.M.** Motion Analysis. Case Study #98440. Permanent Research Collection, Smithsonian Institution, Information Technology and Society Archive, National Museum of American History, 1998.
13. Alexander, N.B., Schultz, A.B., Ashton-Miller, J.A., **Gross, M.M.** and B. Gordon. Difficulty in rising from a chair: a question of insufficient strength? *Muscle and Nerve*, Suppl. 5: S56-S59, 1997.
14. Aragon, L.F. and **Gross, M.M.** Kinesiological factors in vertical jump performance. I. Among subjects. *Journal of Applied Biomechanics*, 13:24-44, 1996a.
15. Aragon, L.F. and **Gross, M.M.** Kinesiological factors in vertical jump performance. II. Within subjects. *Journal of Applied Biomechanics*, 13:45-65, 1996b.
16. Trotman, C-A., **Gross, M.M.**, and Moffatt, K.S. Reliability of a 3-dimensional method for measuring facial animation. *Angle Orthodontics*, 66:195-198, 1996.
17. **Gross, M.M.**, Trotman, C-A., and Moffatt, K.S. A comparison of three-dimensional and two-dimensional analyses of facial motion. *Angle Orthodontics*, 66:189-194, 1996.

18. Koshland, G.F., **Hoy, M.G.**, Smith, J.L., and Zernicke, R.F. Coupled and uncoupled limb oscillations during paw-shake response. *Experimental Brain Research*, 83: 587-597, 1991.
19. Delp, S., Loan, P., **Hoy, M.**, Zajac, F., Topp, E., and Rosen, J. An interactive graphics-based model of the lower extremity to study orthopaedic surgical procedures. *IEEE Transactions of Biomedical Engineering*, 37:757-767, 1990.
20. **Hoy, M.G.**, Zajac, F.E. and Gordon, M.E. A musculoskeletal model of the human lower extremity: the effect of muscle, tendon, and moment arm on the moment-angle relationship of musculotendon actuators at the hip, knee, and ankle. *Journal of Biomechanics*, 23:157-169, 1990.
21. **Hoy, M.G.** and Zernicke, R.F. The role of intersegmental dynamics during rapid limb oscillations. *Journal of Biomechanics*, 19:867-877, 1986.
22. **Hoy, M.G.**, Zernicke, R.F. and Smith, J.L. Contrasting roles of inertial and muscular moments at knee and ankle during paw-shake response. *Journal of Neurophysiology*, 54:1282-1294, 1985.
23. Smith, J.L., **Hoy, M.G.**, Koshland, G.F., Phillips, D.M. and Zernicke, R.F. Intralimb coordination of the paw-shake response: a novel mixed synergy. *Journal of Neurophysiology*, 54:1271-1281, 1985.
24. **Hoy, M.G.** and Zernicke, R.F. Modulation of limb dynamics in the swing phase of locomotion. *Journal of Biomechanics*, 18:49-60, 1985.
25. Smith, J.L., Bradley, N.S., Carter, M.C., Giuliani, C.A., **Hoy, M.G.**, Koshland, G.F. and Zernicke, R.F. Intralimb synergies of rhythmical movements in spinal cats: requirements for a central pattern generator. In: *Development and Plasticity of the Mammalian Spinal Cord*. M.E. Goldberger and A. Gorio (Eds.), pp.347-362, 1985.
26. Zernicke, R.F., **Hoy, M.G.** and Whiting, W.C. Ground reaction forces and center of pressure patterns in the gait of children with amputation - a preliminary report. *Archives of Physical Medicine and Rehabilitation*, 66:736-741, 1985.
27. **Hoy, M.G.**, Whiting, W.C. and Zernicke, R.F. Stride kinematics and kinetics of child amputee gait. *Archives of Physical Medicine and Rehabilitation*, 63:74-82, 1982.
28. Smith, J.L., Smith, L.A., Zernicke, R.F. and **Hoy, M.G.** Locomotion in exercised and non-exercised cats cordotomized at two or twelve weeks. *Experimental Neurology*, 76:393-413, 1982.

Conference Proceedings (Refereed)

1. Edgeworth, R., Keen, B., Crane, E. and Gross, M. Effect of speed on emotion-related kinematics during walking. North American Congress on Biomechanics, Ann Arbor, MI, August, 2008 (submitted)
2. Crane, E. and Gross, M. Motion capture and emotion: Affect detection in whole body movement. *Affective Computing and Intelligent Interaction Conference*, Lisbon, Portugal, September, 2007.
3. Gross, M.M., Crane, E.A. and Fredrickson, B.L. Effect of felt and recognized emotions on gait kinematics. *American Society of Biomechanics Conference*, Palo Alto, CA, August, 2007.
4. Cluss, M.B., Crane, E.A., Gross, M.M. and Fredrickson, B.L. Effect of emotion on the kinematics of gait. *American Society of Biomechanics*, September 6-9, 2006, Blacksburg, VA
5. Crane, E., Gross, M.M. and Fredrickson, B.L. Concurrence of facial and bodily expression: a feasibility study. *2006 CHI Conference Workshop: HCI and the Face*, Montreal, CA, April, 2006.
6. Crane, E. and Gross, M.M. Emotion issues in HCI: working definitions and gold standards. *Workshop on the Role of Emotion in Human Computer Interaction*, Edinburgh, UK, September 6, 2005.
7. Gross, M.M., Gerstner, G.E., Koditschek, D.E., Fredrickson, B.L. and Crane, E.A. Emotion recognition from body movement kinematics. *Proc. American Society of Biomechanics Annual Meeting*, Portland, OR, September 2004.
8. Gross, M., Sowers, M.F., Lenard, K. and Furniss, A. Functional ability in mid-life women. *Proc. American Society of Biomechanics Annual Meeting*, Toledo, OH, October 2003.
9. O'Reilly, D., James, J., Fredrickson, B., Smith, B. and Gross, M. Effect of body representation on perception of affect. *Proc. American Society of Biomechanics Annual Meeting*, Toledo, OH, October 2003.
10. Meckmongkol, T.T. and Gross, M.M. Biomechanics of ballet arm movements: how does expression affect gesture kinematics? *Gesture Workshop*, April 18-20, London, England, 2001

11. Chai, H. and Gross, M.M. Effect of COM acceleration on dynamic stability limit. Proc. American Society of Biomechanics Annual Meeting, Pittsburgh, PA, October 1999.
12. Miller, J.A. and Gross, M.M. Modeling hominid locomotion: biomechanical influences of Neandertal pelvic morphology and anatomical orientation. Proc. American Association of Physical Anthropology, Columbus, Ohio, April 1999.
13. Chai, H. and Gross, M.M. Dynamic balance control during maximum reach movements in elderly and young adults. Proc. North American Congress on Biomechanics, Waterloo, Ontario, August, 1998, pp. 249-250.
14. Streepey, J. and Gross, M.M. Influence of emotional intent on dance kinematics. Proc. North American Congress on Biomechanics, Waterloo, Ontario, August, 1998, pp.167-168.
15. Miller, J.A. and Gross, M.M. Biomechanical consequences of Neandertal pelvic morphology compared to recent humans. Proc. North American Congress on Biomechanics, Waterloo, Ontario, August, 1998, pp. 163-164.
16. Chai, H. and Gross, M.M. Effects of age and target direction on fast reach-reversal movements. Proc. American Society of Biomechanics Annual Meeting , Clemson, SC, September, 1997, pp. 240-241.
17. Streepey, J., Sudarsan, S., Gross, M. and Martin, B. Fatigue in a simulated basketball task on two playing surfaces. Proc. American Society of Biomechanics Annual Meeting, Atlanta, GA, 1996, pp. 43-44.
18. Moffatt, K., Gross, M., and Trotman, C-A. Three-dimensional analysis of facial motion. Proc. American Society of Biomechanics Annual Meeting, Stanford, CA, 1995, pp. 233-234.
19. Gross, M.M., Neil, N.B., Hofmeyer, M.R., Duren, W.L., and O'Bannon, T.O. Effect of an exercise program on chair-rise biomechanics in frail elderly. Proc. American Society of Biomechanics Annual Meeting, Stanford, CA, 1995, pp. 19-20.
20. Buck, J.L., Gross, M.M., and Alexander, N.B. Effect of age on performance during a strength-training program. Proc. American Society of Biomechanics Annual Meeting, Columbus, Ohio, 1994, pp. 71-72.
21. Gross, M.M. Effect of age and speed on the biomechanics of sitting down onto a chair. Proc. American Society of Biomechanics Annual Meeting, Iowa City, Iowa, 1993, pp. 21-22.
22. Gross, M.M. Neuromuscular coordination during chair-rise in the elderly. Proc. XIV Int. Soc. Biomechanics Congress, Paris, France, 1993, pp. 514-515.
23. Hoy, M.G. and Marcus, R. Effect of age and muscle strength on coordination of rising from a chair. Posture and Gait: Control Mechanisms, 1992, M. Woollacott and F. Horak (eds.), Vol. II, XIth International Symposium of the Society for Posture and Gait Research, Portland, May 24-27, 1992, pp. 187-190.
24. Delp, S., Loan, P., Hoy, M., and Rosen, J. Computer simulation of lower-extremity tendon transfers. Trans. Orthopaedic Research Society 36th Annual Meeting, p. 537, New Orleans, LA, 1990.
25. Delp, S., Loan, P., Hoy, M., and Zajac, F. Sensitivity of isometric muscle force to change in tendon length. Proc. First World Congress on Biomechanics, Vol. II, San Diego, CA, 1990, p. 211.
26. Hoy, M.G. and Stevenson, P.J. Coordination of rising from a chair in young and elderly women. Proc. 13th Annual Conference on Rehabilitation Technology (RESNA), pp. 113-114, Washington, D.C., 1990.
27. Hoy, M.G., Stevenson, P., Snow-Harter, C. and Marcus, R. Effects of a strength-training program on the dynamics of rising from a chair in elderly women. Proc. American Society of Biomechanics Annual Meeting, pp. 113-114, Miami, FL, 1990.
28. Schutte, L., Hoy, M.G., and Zajac, F.E. Biomechanical analysis of the limitations on performance of rising from a chair. 1990 Advances in Bioengineering, S.A. Goldstein (ed.), BED Vol 17, ASME Winter Annual Meeting, Dallas, TX, 1990.
29. Delp, S.L., Loan, J.P., Hoy, M.G., Topp, E.L., and Zajac, F.E. An interactive graphics-based model of the lower extremity to study tendon transfer surgeries. Advances in Bioengineering, B. Rubinsky (ed.), BED Vol 15, pp. 167-168, ASME Winter Annual Meeting, San Francisco, CA, 1989.
30. Pandy, M.G., Zajac, F.E., Hoy, M.G., Topp, E.L., Tashman, S., Stevenson, P.J., and Cady, C.T. Sub-optimal control of maximum-height, countermovement jump. Proc. Symp. on Modeling and Control Issues in Biomechanical Systems, pp. 27-44, ASME Winter Annual Meeting, Chicago, IL, 1988.

31. Yamaguchi, G.T., Hoy, M.G. and Zajac, F.E. Simulation of knee joint mechanics in two dimensions. Proc. North American Congress on Biomechanics, Vol. II, pp. 95-96, Montreal, Quebec, 1986.
32. Hoy, M.G., Zajac, F.E., Topp, E.L., Cady, C.T., Gordon, M.E. and Levine, W.S. Musculotendon energetics of human jumps. Proc. North American Congress on Biomechanics, Vol. II, pp. 247-248, Montreal, Quebec, 1986.
33. Gordon, M.E., Hoy, M.G., Zajac, F.E. and MacLean, K.E. A musculoskeletal model of the human lower extremity. Proc. 9th Annual Conference on Rehabilitation Technology (RESNA), pp. 448-450, Minneapolis, MN, 1986.
34. Hart, T.J., Cox, E.M., Hoy, M.G., J.L. Smith and Zernicke, R.F. Intralimb kinetics of perturbed paw-shake response. In: Biomechanics X. B. Jonsson (Ed.), Human Kinetics Publ., Champaign, IL, pp. 471-478, 10th International Congress on Biomechanics, Umea, Sweden, 1985.
35. Hoy, M.G., Zernicke, R.F. and Smith, J.L. Emergence of stable limb oscillations during paw-shake response. In: *Biomechanics X*. B. Jonsson (Ed.), Human Kinetics Publ., Champaign, IL, pp. 465-470, 10th International Congress on Biomechanics, Umea, Sweden, 1985.

Abstracts (Refereed)

1. Borer, K.T., Daoud, A., Lash, R., Gross, M. and Kernozek, T. Forty, not not 20, minutes of downhill walking increases the ratio of markers of bone formation relative to bone resorption in postmenopausal women. American College of Sports Medicine annual meeting, 2008.
2. Gross, M.M., Crane, E.A. and Fredrickson, B.L. Effect of felt and recognized emotions on body movements during walking. 4th International Conference on The (Non) Expression of Emotions in Health and Disease, Tilburg, The Netherlands, October, 2007.
3. Gross, M.M., Crane, E.A. and Fredrickson, B.L. Expression of emotion changes gait kinematics. International Society for Posture and Gait Research, Burlington, VT, July, 2007.
4. Crane, E.A., Gross, M.M. and Fredrickson, B.L. Expression of emotion in body and face. 6th International Conference on Intelligent Virtual Agents, In: Lecture Notes in Artificial Intelligence, J. Gratch, M. Young, R. Aylett, D. Ballin and P. Olivier (eds.), Springer-Verlag, Berlin, 2006, p. 452.
5. Gross, M.M., Crane, E.A. and Fredrickson, B.L. Comparison of front and side views in recognition of emotion in body movement. International Society for Research on Emotion Conference, Atlanta, GA, August, 2006.
6. Crane, E.A., Gross, M.M. and Fredrickson, B.L. Methods analysis for studying the concurrence of facial and bodily expression. International Society for Research on Emotion Conference, Atlanta, GA, August, 2006.
7. Gross, M. and Kirshner, A. Interdisciplinary learning: motion capture course for the arts and sciences. International Digital Media and Arts Association and Miami University Interactive Media Studies Conference, Miami, OH, April 2006.
8. Gross, M.M., Crane, E.A. and Fredrickson, B.L. Effort shape analysis of emotion in body movements. Proceedings of Emotion Pre-Conference, Society of Personality and Social Psychology Conference, Palm Springs, CA, January 25-56, 2006.
9. Fogleman, K.M, Gross, M.M. and Borer, K.T. Fitness level and vertical forces generated during walking in post-menopausal women. American College of Sports Medicine Annual Meeting, Nashville, TN, May 2005.
10. Crane, E.A., Gross, M.M., Fredrickson, B.L., Koditschek, D.E. and Gerstner, G.E. Validation of emotion in body movements. International Society for Research on Emotions Conference, New York, NY, July 2004.
11. Gross, M.M., Fredrickson, B.L., Koditschek, D.E., Gerstner, G.E. Kinematics of emotion in body movements. International Society for Research on Emotions Conference, New York, NY, July 2004.
12. Bartsch, M.A., Wakefield, G.H., Gross, M., Turnblom, M. and Shirley, G.I. Singer, hear thyself: matching of acoustic targets in a singer's own voice. Voice Foundation's 32nd Annual Symposium: Care of the Professional Voice, Philadelphia, PA, June 4-8, 2003.
13. Meckmongkol, T.T. and Gross, M.M. Effect of expressiveness on the kinematics of arm gestures. World Congress on Biomechanics, Calgary, AB, Canada, August, 2002.
14. Tyler, A.E., Karst, G.M. and Gross, M.M. The effect of reach distance on postural behavior. CSM.

15. Chai, H. and Gross, M.M. Effect of age, target direction, and end position on reaching movements. *Physical Therapy*, p. S67, Orlando, FL, June, 1998.
16. Gross, M.M. Using digital video for motion analysis. ASEE/IEEE Frontiers in Education Conference, Pittsburgh, PA, November, 1997 (abstract #1488).
17. Chai, H. and Gross, M.M. Effect of target direction on reaching movements in young and elderly subjects. *Neuroscience Abstracts*, p.1634, Washington, D.C., November, 1996.
18. Miller, J.A. and Gross, M.M. Biomechanical implications of Neandertal knee and ankle morphology. *Proc. American Association of Physical Anthropologists Ann. Mtg.*, Oakland, CA, April, 1995.
19. Gross, M.M., Neil, N.B., Hofmeyer, M.R., Duren, W.L., and O'Bannon, T.O. Effect of an exercise program on coordination of chair-rise biomechanics in frail elderly. Multisegment motor control: Interfacing biomechanical, neural, and behavioral approaches, Research Section, American Physical Therapy Association, New Hampton, NH, August, 1995.
20. Chai, H. and Gross, M.M. Effect of age and target direction on reaching movements. *American Physical Therapy Association Ann. Mtg* , p.S21, San Diego, CA, June, 1997.
21. Alexander, N.B., Gu, M.J., Branch, M. Schultz, A.B., Ashton-Miller, J.A., and Gross, M.M. Influence of leg strength on rising from a chair in older adults. *Proc. Gerontological Society of America Ann. Mtg*, Atlanta, November, 1994.
22. Alexander, N.B., Gross, M.M., Buck, J., Grunwalt, J.A. and Jacobs, K.T. Exercise training affects how older adults rise from a chair. *Proc. American Geriatric Society Ann. Mtg.*, Los Angeles, May, 1994, p. SA5.
23. Gross, M.M. Neuromuscular coordination during chair-rise in the elderly. *J. Biomechanics*. 27: 728, 1994.
24. Alexander, N.B., Gu, M.J., Branch, M. Schultz, A.B., Ashton-Miller, J.A., and Gross, M.M. Contributors to lack of success in rising from a chair in healthy old and Parkinson's old adults. *Gerontologist* 33: 49, 1993.
25. Zajac, F.E., Gordon, M.E., Hoy, M.G. and Loan, J. P. Accelerations of human lower-extremity joints induced by muscle forces: theoretical considerations. *J. Biomechanics*, 20: 890, 1988.
26. Hoy, M.G., Gordon, M.E. and Zajac, F.E. A human musculoskeletal model for predicting isometric musculotendon torques in the sagittal plane. *J. Biomechanics*, 20: 890, 1988.
27. Hoy, M.G., Gordon, M.E. and Zajac, F.E. A musculoskeletal model of the human lower extremity for predicting musculotendon torques in the sagittal plane. *Neuroscience Abstracts*, 13: 872, 1987.
28. Koshland, G.F., Zernicke, R.F., Hoy, M.G. and Smith, J.L. Comparison of transient oscillatory states during paw-shake response. *Neuroscience Abstracts*, 12: 686, 1986.
29. Zajac, F.E., Gordon, M.E. and Hoy, M.G. Physiological classification of muscles into agonist-antagonist muscle action groups: a theory and methodology based on mechanics. *Neuroscience Abstracts*, 12: 1424, 1986.
30. Gordon, M.E., Zajac, F.E. and Hoy, M.G. Postural synergies dictated by segmental accelerations from muscles and physical constraints. *Neuroscience Abstracts*, 12: 1425, 1986.
31. Hoy, M.G., Zajac, F.E., Topp, E.L., Cady, C.T. and Levine, W.S. Synergistic control of uniaxial and biaxial muscles in human jumping: a computer simulation study. *Neuroscience Abstracts*, 12: 1425, 1986.
32. Hart, T.J., Cox, E.M., Hoy, M.G., Smith, J.L. and Zernicke, R.F. Intralimb kinetics during paw shakes with disrupted knee motion. *Neuroscience Abstracts*, 11: 882, 1985.
33. Hoy, M.G., Zernicke, R.F. and Smith, J.L. The role of hip muscles during paw-shake response. *Neuroscience Abstracts*, 11: 881, 1985.
34. Hoy, M.G., Zernicke, R.F. and Smith, J.L. Organization of limb dynamics during rapid oscillatory movements. *J. Biomechanics*, 19: 470-471, 1985.
35. Hoy, M.G. and Zernicke, R.F. Modulation of limb dynamics in the swing phase of locomotion. *Medicine & Science Sports Exercise*, 16: 65, 1984.
36. Koshland, G.F., Hoy, M.G., Smith, J.L. and Zernicke, R.F. Neuromechanical organization: the emergence of unstable limb oscillations during paw-shake responses. *Neuroscience Abstracts*, 10: 339, 1984.

37. Hoy, M.G., Zernicke, R.F., Smith, J.L. and Garfinkel, A. Neuromechanical organization: the emergence of stable limb oscillations during paw-shake responses. *Neuroscience Abstracts*, 10: 339, 1984.
38. Hoy, M.G., Zernicke, R.F. and Smith, J.L. Intersegmental dynamics of the paw shake response *Neuroscience Abstracts*, 9: 63, 1983.
39. Zernicke, R.F., Butler, D.L., Groot, E.S., Noyes, F.R. and Hoy, M.G. Strain distributions and failure mechanisms of young human fascia and tendons. *Medicine & Science Sports Exercise*, 14: 130, 1982.
40. Hoy, M.G. and Zernicke, R.F. Mechanical synergy of cat medial and lateral gastrocnemius during isometric and isotonic contractions in situ. *J. Biomechanics*, 15: 347, 1982.
41. Zernicke, R.F., Smith, J.L., Sabin, C., Hoy, M.G. and Meyerott, N. Motor capacities of the chronic spinal cat: treadmill locomotion. *J. Biomechanics*, 14: 499-500, 1981.
42. Zernicke, R.F., Smith, J.L., Hoy, M.G. and Stewart, H.D. Kinetics of slow and fast ankle extensors of cat during jumping. *J. Biomechanics*, 13: 191, 1980.
43. Hoy, M.G. and Keller, D.P. Dynamic stability during basic ballet movements. *Seventh Dance in Canada Conference Monograph*, D. Taplin (Ed.), Pergamon Press, Toronto, 1979.

Invited Research Presentations

Expressing emotion in body movement. Workshop on Biomechanics and Dance, Interdisciplinary Studies, University of Minnesota, Minneapolis, MN, November 13, 2004.

Kinematics of emotion in body movement. Upper Midwest Student Regional Meeting, American Society of Biomechanics, Minneapolis, MN, November 12, 2004.

Dynamic stability during chair-rise in older adults: does strength or balance limit performance? Neural Control of Movement Satellite Meeting, Cozumel, Mexico, April, 1997

Human performance and leg fatigue related to flooring. Seminars in Ergonomics, Department of Industrial and Operations Engineering, University of Michigan, October, 1996

Coordination of chair-rise in frail elderly. Department of Physical Therapy, McGill University, Montreal, Quebec, Canada, April, 1996

Dynamics biomechanics in the elderly. Department of Bioengineering, Wayne State University, Detroit, Michigan, March, 1996

Mobility in the elderly: a biomechanical approach. Department of Kinesiology, University of Waterloo, Waterloo, Ontario, March, 1993

Effect of muscle strength on rising from a chair in the elderly. Department of Biomedical Engineering, Case Western Reserve University, Cleveland, Ohio, March, 1992

Modeling the human musculoskeletal system: application to surgery simulation. Neurological Sciences Institute, Portland, Oregon, July, 1990

Modeling the human musculotendinoskeletal system during locomotion. Engineering Foundation Conference, Henniker, New Hampshire, July, 1987

Intersegmental dynamics: decoupled equations of motion and muscle-induced accelerations. Department of Kinesiology, UCLA, Los Angeles, California, February, 1987

Biomechanics and neural control: application to oscillating movements. Rehabilitation Research and Development Center, Veterans Affairs Medical Center, Palo Alto, California, January, 1985

Emergence of stable limb oscillations during paw-shake responses. NINCDS, NIH, Bethesda, Maryland, January, 1985

Limb dynamics during non-weightbearing movements in the cat. Neurological Sciences Institute, Portland, Oregon, March, 1984

Biomechanics of dance movements. Two-week course, Repertory Dance Theater Summer Workshop, Salt Lake City, Utah, June, 1982

Mechanisms of dance injuries. Repertory Dance Theater Summer Workshop, Salt Lake City, Utah, June, 1981

Teaching

Honors and Awards

1998 Computerworld Smithsonian Award Program Laureate - "Motion Analysis"

1997 Kinesiology Nominee for University of Michigan Henry Russel Teaching Award

University of Michigan – Teaching Grants

"The Body in Motion: Motion Capture for the Arts and Sciences", Whitaker Fund for the Improvement of Teaching, University of Michigan, M. Gross, \$10,000; \$2,405 Division of Kinesiology; \$2,405 School of Art and Design, 2005-06

University of Michigan Life Sciences Initiative for Undergraduate Education, funding for new course "Stradivarius as Biologist: Cultivating Bel Canto Through Sound & Vision", \$120,000, 2002-03

University of Michigan Center for Research on Learning and Teaching Instructional Development Fund "Purchase of MathSoft for MVS 330", \$500, 1996-97

Division of Kinesiology – Teaching Support

Division of Kinesiology-Academic Program Coordinator for Movement Science 230: 2006-07 (\$3440), 2005-06 (\$5282), 2004-05 (\$730)

Division of Kinesiology-Office of Instructional Technology Partnership Project for Movement Science 330: 1997-98 ("Muscles in Action - Part 2", \$3900; "Conversion of existing ADAM tutorials in MVS 330 to web-based format", \$400; "Development of web-based homework problems for MVS 330 using StudyWorks", \$800; "Website maintenance for MVS 330", \$500); 1996-97 ("Website for Biomechanics", \$2000; "Digital Video", M.M. Gross and C.J. Worringham, \$1000); 1995-96 ("Digital Video", M.M. Gross and C.J. Worringham, \$5000; "Muscle Action in Movement", \$5000)

Division of Kinesiology-Office of Instructional Technology Partnership Project "Interactive ADAM-based tutorials for MVS 110", \$600, 1997-98

Invited Presentations

"Course Design and Redesign: Online Pedagogy and Media", CIC Learning Technology Conference, Ann Arbor, MI, May 1, 2003, Faculty Panel Member

"Retropioneering: Using technology to discover the basics of human movement. Preparing Future Faculty Program, Arizona State University, Tempe, Arizona, April 1, 1999

Can wrong turns lead to the right path? Finding your way at a research I university. Preparing Future Faculty Program, Arizona State University, Tempe, Arizona, March 31, 1999

Retropioneering: Using technology to discover the basics of human movement. Keynote address, Enriching Scholarship: Integrating Teaching, Information, and Technology Faculty Conference, Teaching and Technology Collaborative, University of Michigan, Ann Arbor, Michigan, May, 1998

Digital video and the web: using instructional technology to serve educational goals. Presentation to Teaching Board of Advisors to Indiana University South Bend's Center for Excellence in Teaching, Office of Instructional Technology, University of Michigan, Ann Arbor, January, 1997

Using digital video for motion analysis. Project Showcase, Expo '97, Office of Instructional Technology, University of Michigan, Ann Arbor, Michigan, February, 1997

Climbing the walls - Kinesiology and ITD partnership. Video presentation, M-Quality Symposium, University of Michigan, October, 1996

Using digital video for active learning in movement science. Faculty In-Service, Learning Technologies Department, Washtenaw Community College, November, 1996

Using digital video for motion analysis. Limb Integrative Neuromotor Control Group (LINC) Symposium, University of Western Ontario, London, Ontario, Canada, September, 1996

Using digital video for motion analysis. Focus on Teaching Seminar Series, Office of Instructional Technology, University of Michigan, Ann Arbor, Michigan, March, 1996

Undergraduate Courses

Movesci 110	Biological and Psychological Bases of Human Movement (F95)
Movesci 230	Human Musculoskeletal Anatomy (W02, W03-W06; F07)
Movesci 305	Human Movement and Aging: Biomechanics and Motor Control Issues (F94, W96)
Movesci 313	Biomechanics of Musculoskeletal Injuries (F05)
Movesci 313	The Body in Motion: Motion Capture for the Arts and Sciences (W06, W07)
Movesci 330	Biomechanics of Human Movement (W94-W00; W08)
Movesci 411	Instrumentation and Measurement in Motor Control and Biomechanics (F93, W98, F99)
Movesci 430	Biomechanics of Human Movement II (F92, F93)
Movesci 433	Human Movement and Aging: Functional Ability (F98, W00, W03, W05)

University Courses

UC 263 Stradivarius as Biologist: Cultivating Bel Canto through Sound and Vision (Life Sciences Initiative Undergraduate Course) (F02, W04)

Graduate Courses

Kineslgy 500	Topical Seminar in Biomechanics (W93)
Kineslgy 510	Research Methods in Biomechanics (F04)
Kineslgy 530	Graduate Seminar in Biomechanics (W97, W99)

Mentoring

Postdoctoral Scholars

1993-95 Amy Tyler, Ph.D.

Ph.D. Students - Dissertation Committee Chair

Elizabeth Crane	2008	
Paul Moga	2002	On the relation between thoracic kyphosis, athletic training, hamstring tightness, and anthropometry in the developing spine (J. Ashton-Miller, Co-Chair)
Huei-Ming Chai	1999	Dynamic balance control during maximum reach movements
Luis Aragon-Vargas	1994	Kinesiological limits of vertical jump performance

Ph.D. Students - Kinesiology Dissertation Committee Member

Christopher Herman	2008	A meta-analysis and methodological review of the association between leisure-time physical activity and the risk of colon and breast cancer
Gregory Sawicki	2007	Mechanics and energetics of walking with powered exoskeletons
Gerry Conti	2007	Coordination of bimanual arm movements in the elderly
Tal Liberzon	2003	Role of auditory cueing in the performance of rhythmic arm movements
Cathy Larson	2002	Reaching, prehension and obstacle clearance in essential tremor
Carol Cross	1997	The role of knowledge of results & sensory feedback in the error detection process

Ph.D. Students - Dissertation Committee Member (Other Departments)

Trina Buhr	1998	Effects of leg muscle constraints on a lifting task examined through inverse kinematics analyses, direct dynamics modeling, and EMG biofeedback techniques (Industrial and Operations Engineering)
Ulrich Raschke	1994	Development and validation of a dynamic lumbar torso model for common sagittal plane manual materials handling motions (Bioengineering)
Heo-sek Park	1993	Neurophysiological analysis of hand vibration effects on sensorimotor control (Industrial and Operations Engineering)
Jeff Miller		Functional implications of Neandertal pelvic and hindlimb morphology (Biological Anthropology)

Ph.D. Students - Preliminary Examination Committees

2007	Elizabeth Crane (Chair)
2005	Gregory Sawicki
2004	Kathe Fogleman
2000	Jake Streepey (Chair)
1998	Gerry Conti
1997	Paul Moga (Chair)
1997	Huei-Ming Chai (Chair)
1997	Kathy Hinderer (Chair)
1997	Trina Buhr (Biomedical Engineering)
1996	Cathy Larson
1996	Shirley Musich
1996	Tal Liberzon
1994	Terry O'Bannon (Mechanical Engineering)
1993	Adi Wang
1993	Luis Aragon-Vargas

Ph.D. Students - Guidance Committees

2007-	Lan Wei (Chair)
2006-07	Alissa Harakal (Chair)
2004-07	Elizabeth Crane (Chair)
2003-05	Gregory Sawicki
2002-04	Jodi James (Chair)
2001-03	Kathy Fogleman
1998-00	Jake Streepey (Chair)
1996-97	Huei-Ming Chai (Chair)
1992-93	Luis Aragon-Vargas (Chair)

Masters Degree Students with Thesis

Melanie Cluss	2006	Kinematics of emotional expression during walking
Hyun Heo	2004	Comparison of kinematic analyses using two software packages: Visual3D and Kintrak

Daniel O'Reilly	2003	Effect of body representation on perception of affect in movement (Biomedical Visualization Program. School of Art and Design)
Teerin Meckmongkol	2001	How does expression affect gesture kinematics in ballet arm movements?
Elizabeth Crane	2000	Simulation of human motion with expressive dynamics
Jake Streepey	1998	Assessment of muscle fatigue on two surfaces after a simulated basketball task
Anne Wagoner	1995	Strength and balance training for balance improvement in older adults

Honors Students with Thesis

Rebecca Edgeworth	2008	Role of gait speed in emotional expression during walking
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Professional Service

Research Proposal Reviews

2004	CDC Injury Prevention – Biomechanics, April 12-13
1993	NIH Special Study Section "Alternative Medicine", July 26-27
1989	The Hospital for Sick Children, Toronto, Ontario

Editorial Boards

1998-00	Journal of Applied Biomechanics
1992-94	Journal of Applied Biomechanics

Manuscript Reviews

1991-	Clinical Biomechanics
	Clinical Orthopaedics and Related Research
	Gait and Posture
	Journal of Applied Biomechanics
	Journal of Applied Physiology
	Journal of Biomechanical Engineering
	Journal of Biomechanics
	Journal of Gerontology
	Journal of Motor Behavior
	Journal of Theoretical Biology
	Medicine and Science in Sports and Exercise

American Society of Biomechanics

2008	Member, Abstract Review Committee
2007	Member, Awards Committee
2006	Session Chair, ASB Annual Meeting
2003	Member, Abstract Review Committee
2001-02	Member, Awards Committee
2001-02	Past President
1999-00	President
1998-99	President-Elect
1997-98	Co-Chair, Third North American Congress on Biomechanics Meeting Committee
1997-98	Chair, ASB Program Committee
1997-98	Member, Research Review Committee, Grant-In-Aid Program
1997	Session Chair, ASB Annual Meeting
1996-97	Chair-Elect, Program Committee
1993	Session Chair, ASB Annual Meeting
1994	Session Chair, ASB Annual Meeting
1992	Session Chair, Second North American Congress on Biomechanics
1992-95	Chair, Membership Committee
1989-92	Secretary/Treasurer
1987-88	Member, Program Committee

International Society of Biomechanics

1993 Scientific Committee, 2nd International Symposium on 3D Analysis of Human Movement
 Session Chair, 2nd International Symposium on 3D Analysis of Human Movement

Membership in Professional Societies

2006- International Society for Research on Emotion
2005- International Society for Posture and Gait Research
1983- International Society of Biomechanics
1979- American Society of Biomechanics

University Service

University of Michigan Committees

2008- Member, Kinesiology Dean Search Advisory Committee
2007- Member, Health Sciences Education Building Committee
2006- Member, Research Associate Deans Group
2005-07 Member, Multidisciplinary Learning and Team Teaching Steering Committee
2005-07 Member, Governing Committee for the Undergraduate Science Building
2005-07 Member, CTools Faculty Advisory Committee
2004-07 Health Sciences Scholars Program, Kinesiology representative
2002-04 Member, Cognate Panel, Faculty Grievance Review Boards
2000 Member, Grievance Review Committee
1997-99 member, Academic Computing Advisory Committee
1997-98 Member, Faculty Steering Committee, University of Michigan Instructional Environment
1996 Member. Women in Science and Engineering Residential Program Ad Hoc Committee

Kinesiology Committees

2006-07 Chair, Movement Science Faculty Search Committee
2005-06 Co-Chair, Movement Science Faculty Search Committee
2001-03 Member, Sport Management Faculty Search Committee
2001-05 Member, Executive Committee
Member, Curriculum Committee
Chair, Movement Science Faculty Committee
1999-00 Chair, Movement Science Faculty Search Committee
1996-99 Member, Kinesiology Learning Resources Group
1994-95 Member, Planning Committee for Feasibility of Joint Ph.D. Program
1994-96 Member, ITD Partnership Advisory Committee (Kintech)
1994-95 Member, Executive Committee
1991-94 Member, Graduate Committee