

# Curriculum Vitae of Geoff Fernie



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## Personal and Contact Information

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DEGREES: BSc(Hons) in Mechanical Engineering, Department of Applied Sciences  
University of Sussex, England, 1969

PhD in Bioengineering, Bioengineering Unit, School of Mechanical and  
Chemical Engineering and Naval Architecture, University of Strathclyde,  
Scotland, 1973

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## **Current Primary Appointments**

- 2003- Vice President, Research, Toronto Rehabilitation Institute  
1986- Professor, Department of Surgery, University of Toronto

## **Current Cross Appointments**

- 1981- Institute of Biomaterials and Biomedical Engineering, University of Toronto  
1985- Department of Mechanical and Industrial Engineering, University of Toronto  
1986- School of Graduate Studies, University of Toronto  
1986- Department of Occupational Science and Occupational Therapy, University of Toronto  
1986- Department of Physical Therapy, University of Toronto  
1993- Institute for Human Development, Life Course and Aging , University of Toronto  
1995- Graduate Department of Rehabilitation Science, University of Toronto  
1999- Institute of Medical Science, University of Toronto

## **Previous Primary & Cross Appointments**

- 1972-73 Research Fellow, Bioengineering Unit, University of Strathclyde  
1973-77 Research Associate, Department of Surgery, University of Toronto  
1973-86 Research Director, West Park Research, West Park Hospital  
1975-86 Lecturer, George Brown College, Prosthetic and Orthotic Programme, Toronto  
1977-81 Assistant Professor, Department of Surgery, University of Toronto  
1977-86 Director, Biomedical Engineering, West Park Hospital, Toronto  
1979-88 Associate Member, Faculty of Graduate Studies, University of Guelph  
1981-86 Associate Professor, Department of Surgery, University of Toronto  
1981-92 Scientific Staff, Department of Surgery, Division of Orthopaedic Surgery, Toronto General Hospital  
1984-89 Associate Director, Orthopaedic Biomechanics Lab, Toronto General Hospital  
1986-03 Director, Centre for Studies in Aging, Sunnybrook and Women's College Health Sciences Centre  
1989-91 Managing Director (unpaid part-time), Lifestyle Innovations Inc., Oakville, Toronto  
1989-03 Member, Interdepartmental Division of Geriatrics, University of Toronto  
1990-96 Director, Research Program in Aging, Sunnybrook Health Science Centre  
1992-04 Member, Department of Exercise Science (later known as Graduate Dept of Community Health), University of Toronto  
1996-01 Director of Research in Aging, Sunnybrook and Women's College Health Sciences Centre  
2003-08 Associate Scientist, Sunnybrook Health Sciences Centre

## Scholarships

- 1980-1991 National Health Research Scholar, Health and Welfare, Canada.  
1992-1992 Visiting Fellow, Japan Foundation for Aging and Health.  
2005-2005 Lecture tour of four cities sponsored by The National Speaker Series coordinated by the Minister for Ageing in the Australian Government.

## Professional Qualifications

- 1973 Chartered Member of the Institute of Mechanical Engineers (UK) - MIMechE, CEng  
1975 Member of the Association of Professional Engineers of Ontario - PEng  
1980 Clinical Engineering Certification, International Certification Commission - CCE

## Professional Societies

- 1974-90 Canadian Society of Biomechanics  
1974-94 International Society of Prosthetics and Orthotics  
1974-90 Biomaterials Society (Canadian)  
1974-94 Canadian National Society of Prosthetics and Orthotics (Vice-President, 1976) (President, 1977-1982)  
1976-94 Clinical Research Society of Toronto  
1976-90 Society for Biomaterials (American)  
1976-present Canadian Medical and Biological Engineering Society  
1979-present Rehabilitation Engineering Society of North America (founding member)  
1981-83 Canadian Foundation for Prosthetics and Orthotics Education (President)  
1982-92 The International Society for Optical Engineering  
1983-92 Society of Photo-Optical Instrumentation Engineers  
1983-88 Bioelectrical Repair & Growth Society

## Committee Work

- 1977-86 Member of Committee on Technology for the Handicapped, Canadian Standards Association
- 1977-82 Member of Review Committee 51, Health and Welfare Canada
- 1978-86 Member of Medical Advisory Committee, West Park Hospital
- 1978-82 Member of Advisory Committee on Prosthetics And Orthotics, George Brown College
- 1979-81 Chairman of Curriculum Committee for the new programme in Clinical Prosthetics and Orthotics, George Brown College and West Park Hospital
- 1979-81 Chairman Interagency Committee on Technical Aids Information Service
- 1980-86 Member of Board of Examiners for Clinical Engineering Certification (Canada)
- 1981-86 Member of Research and Planning Committee at West Park Hospital
- 1982-85 Member of Ontario Ministry of Health's Advisory Committee on Assistive Devices
- 1982-82 Member of Metropolitan Toronto District Health Council Treatment and Rehabilitation Committee
- 1982-89 Member of Ontario March of Dimes Professional Advisory Committee
- 1982-84 Chairman of Ad Hoc Committee on Rehabilitation Engineering, Canadian Med. & Biol. Eng. Soc
- 1982-85 Member of Advisory Council of Bioengineering Institute of University of New Brunswick
- 1982-85 Chairman of Review Committee 51 National Health and Welfare Canada
- 1982-85 Member of Advisory Committee for National Health Research and Development Program
- 1982-86 Chairman of Advisory Committee on Prosthetics and Orthotics of George Brown College
- 1982-90 Member of Research Committee Division of Orthopaedics, University of Toronto
- 1982-98 Member Research Committee, Department of Surgery, University of Toronto
- 1983-86 Member (by Order-in-Council), Metropolitan Toronto District Health Council
- 1983-84 Member, Metropolitan Toronto District Health Council Long Term Care sub-committee
- 1984-86 Chairman, Metropolitan Toronto District Health Council Long Term Care sub-committee
- 1984-86 Member, Metropolitan Toronto District Health Council Executive Committee
- 1984-91 Member, National Prof. Associations Committee, Canadian Rehabilitation Council for the Disabled
- 1985-87 Member, Medical Research Council Biomedical Engineering Grants Committee

- 1985-86 Member, Dean's Task Force on Geriatrics and Gerontology, Faculty of Medicine
- 1986-91 Member, Rehabilitation Medicine Programme Committee, Faculty of Medicine
- 1986-88 Chairman, Task Force on Technology for the Elderly, Metro Toronto District Health Council
- 1987-88 Chairman, Ways and Means Committee for Geriatrics, University of Toronto, Faculty of Medicine
- 1987-01 Member, Research Committee, Sunnybrook and Women's College Health Sciences, Toronto
- 1988-90 Director (Acting), Program in Aging, Sunnybrook Medical Centre
- 1988-89 Member MCSS Lottery Review Committee, Ontario Mental Health Foundation
- 1989-91 Member, University/Industry Review Committee, Medical Research Council, Canada
- 1989-90 Member, University/Industry Advisory Committee, Faculty of Medicine, University of Toronto
- 1990-91 Member, Task Force on Physical and Occupational Therapy, University of Toronto
- 1990-91 Member, Promotions Committee, Department of Rehabilitation Medicine, University of Toronto
- 1990-91 Member, Search Committee for the Director, Interdepartmental Div. Geriatrics, Univ. of Toronto
- 1990-94 Member, Aging Program Strategic Planning Committee, Sunnybrook Health Science Centre
- 1991-96 Member, Research Executive Committee, Sunnybrook Health Science Centre.
- 1991-05 Team leader, Mobility Team and member, Management Comm. Ontario Rehab. Tech. Consortium
- 1992-92 Chairman, Task Force on Faculty of Medicine Response to Canadian Institutes of Health in the MRC Strategic Planning Process
- 1993-93 Guest Reviewer, University/Industry Review Committee, Medical Research Council, Canada
- 1993-94 Member, Research and Innovation Working Group, Health Industries Advisory Comm. Ontario Min. of Health
- 1995-05 Member, Board of Examiners, Occupational Therapy and Physical Therapy, University of Toronto
- 1995-05 Member, Graduate Affairs Committee, Graduate Dept. Rehabilitation Science, Univ. of Toronto
- 1995-97 Member, Strategic Planning Committee, Program in Aging, Sunnybrook Health Science Centre
- 1996-98 Member, Quality Assurance Committee, Rehabilitation Eng. Society of North America (RESNA)

- 1996-03 Member, Management Committee, Program in Aging, Sunnybrook and Women's College Health Sciences Centre
- 1996-06 Chair, Ontario Falls and Mobility Network. (Annual meetings with attendance increasing steadily to 200 representing approximately 100 organizations at 2002 meeting)
- 1997-98 Chair, Research Day, Sunnybrook Health Science Centre
- 1998-04 Member, National Advisory Group, Rehabilitation Research and Design Center, Veterans Administration Medical Center (VAMC), Atlanta
- 1998-05 Member, Technical Committee on Barrier Free Design, Canadian Standards Association
- 1998-99 Member, Research Task Force, Sunnybrook and Women's College Health Sciences Centre
- 1999 Member, NIH Scientific Review Special Emphasis Panel ZRG1 SSS-5 (04), Washington
- 1999-05 Member, Canadian Advisory Group to the International Standards Organization (ISO) Committee on Consumer Policy (COPOLCO) Working Group on the needs of the elderly and persons with disabilities
- 1999-05 Director and Board Secretary, Nimble Inc
- 1999-03 Chair, Steering Committee, Proposed Canadian Network of Centres of Excellence in Rehabilitation Engineering (CNCERE)
- 2001-05 Member, Institutional Advisory Board, Institute of Aging, Canadian Institutes of Health Research
- 2001-present Member, Editorial Board, Gerontechnology, Holapress, Netherlands
- 2001-04 Member, Steering Committee, Medical Technology Consortium, Medical Devices Canada
- 2001 Member, Rehabilitation Proposals Review Panel, Canadian Foundation for Innovation
- 2002-08 Member, Advisory Board, Ontario March of Dimes
- 2002-07 Member, Advisory Board, Sheridan Elder Research Centre, Sheridan College, University of Toronto, Oakville
- 2002 Member, Rehabilitation Engineering Research Centers Program 2002 Review, NIDRR, Washington
- 2002 Invited member, Biomedical Engineering Committee, CIHR
- 2003 Member, CIHR Interdisciplinary Capacity Enhancement (ICE) Team Grant Review Panel
- 2003-present Senior Management Committee, Toronto Rehabilitation Institute
- 2004-07 Member, Advisory Board, RERC for Wheeled Mobility, CATEA, Georgia Tech, Atlanta
- 2005-present Member, Research Advisory Council, Workplace Safety & Insurance Board, Ontario

- 2006 Chair, CIHR Review Panel 200509MIA, strategic competition on mobility
- 2007-10 Member, CIHR University-Industry Peer Review committee
- 2007-present Member, Ontario Health Research Advisory Council
- 2007-present Member (Order in Council), Ontario Accessible Built Environment Standards Development Committee
- 2007-08 Member, Aging in the Community Expert Panel, Medical Advisory Secretariat, Ontario Health Technology Advisory Committee
- 2007-present Member, Executive Steering Committee, Network of Excellence in Simulation for Clinical Teaching and Learning
- 2008-2009 Member (Order in Council), Steering Committee, Ontario Commercialization Network Review, Ontario Ministry of Research and Innovation
- 2009-2011 Dean's Advisory Committee for International Research (DACIR), Faculty of Medicine, University of Toronto
- 2009-2010 Chair, Technical Review Task Force (TRTF), Accessibility Directorate of Ontario

## **Organizational Roles in Major Conferences**

- 1978 Chairman, "Priorities in Prosthetics and Orthotics Education, Research and Service in Canada", ISPO Seminar, Winnipeg.
- 1980 Co-Chairman of Technical Workshops Programme, International Conf. on Rehabilitation Eng., Toronto.
- 1980 Chairman, ISPO Special Seminar, World Congress Rehabilitation International, Winnipeg.
- 1980 Chairman, "Orthopaedic Footwear in Canada", ISPO Special Seminar, Banff.
- 1981 Chairman, Workshop on Geriatric Incontinence, Joint Meeting of the Gerontological Society of America and the Canadian Association on Gerontology, Toronto.
- 1982 Chairman, "Plastics Fabrication Methods", ISPO Seminar, Ottawa.
- 1983 Chairman, "Research in Prosthetics and Orthotics", Technology in Rehabilitation Workshop, First Canadian Congress on Rehabilitation, Ottawa.
- 1984 Chairman, Prosthetics and Orthotics Day, 2nd International Conference on Rehabilitation Eng., Ottawa.
- 1988 Scientific Program Chairman, International Conference of Association for the Advancement of Rehabilitation Technology (ICAART 88), Montreal.
- 1989 Chairman, "Ventilation and Air Conditioning of Homes for the Aged", Special Workshop, Ministries of Health and Community and Social Services, Toronto.
- 1998 Member, Program Committee (role was limited to reviewing and selecting approx. 100 papers only), TIDE Congress, Helsinki.
- 1998 Chair of Annual Meeting of Ontario Falls and Mobility Network (a one-day conference

- each November from 1999 to present with approximately 170 registrants from across the Province)
- 1999 Reviewer, 4<sup>th</sup> International Conference on Occupational Health for Health Care Workers, Montreal.
  - 2000 Member, Organizing Committee, The Future of Rehabilitation Research in Canada: CIHR Consensus Conference, Toronto.
  - 2001 Chair, Organizing Committee, International Conference on Technology and Aging, Toronto.
  - 2002 Facilitator, Workshop to foster collaboration between three mobility aids projects sponsored by Health Canada and Veterans Affairs Canada, Victoria.
  - 2002 Co-chair, Organizing Committee, Canadian Institutes of Health Research Mobility Consensus Conference, Toronto.
  - 2007 Co-chair, Festival of International Conferences on Disability, Aging and Technology, (5 conferences jointly held June 16-19, 2007), Toronto.
  - 2011 Co-chair, Festival of International Conferences on Disability, Aging and Technology, (7+ conferences to be jointly held June 5-8, 2011, Toronto).



## Design Awards

- 1997 Nightingale Award for new product design in the US awarded to Staxi™ by Facilities Design and Management Magazine and The Center for Health Design, New York.
- 1998 Design Engineering Awards Competition sponsored by The Design Exchange and Design Engineering Magazine (honourable mention for Staxi™).
- 2000 Best New Canadian Product Award at the Canadian Hardware and Building Materials Show. Toilevator™ was selected as the only winner from nearly 100 new product entries that were evaluated for Auniqueness, originality, consumer value, user-friendliness and market appeal.

## Honours

- 1986 Awarded Honorary Membership of Canadian Association of Prosthetists and Orthotists in recognition of my role in helping to restructure education for prosthetists and orthotists.
- 2002 Award of Recognition by MEDEC presented at the TechMed Conference at the

University of Western Ontario for “exceptional accomplishments, exemplary leadership and tireless commitment to the advancement of medicine in Canada and internationally”.

- 2002 Dr Jonas Salk Award for “outstanding achievements in developing technologies that ameliorate numerous physically disabling conditions”. The award is co-sponsored by the Ontario March of Dimes and Aventis-Pasteur Limited.
- 2004 2003 MEDEC Annual Award for Medical Achievement for “innovative leadership and inventions in the research and development of mobility technology”. MEDEC is Canada’s medical and assistive devices industry association and this is its highest award.
- 2008 Inducted into the Terry Fox Hall of Fame
- 2009 Inducted as a Fellow into the Canadian Academy of Health Sciences

## Special Reports

1. Maki, BE and Fernie, GR. Biomechanical Assessment of Handrail Parameters, with Special Consideration to the Needs of Elderly Users. Contract # OSX82-00180, National Research Council, May, 1983.
2. Fernie, GR et al. An Ergonomic Evaluation of the Elswick Envoy. Contract TP# 4939E, Transport Canada, Transportation and Development Centre, 1983.
3. Fernie, GR et al. Report of the Review Committee on Kickboxing and Full Contact Karate to the Minister of Consumer and Commercial Relations of the Ontario Government. Ed. Hudson, AR. 1983.
4. Maki, BE, Fernie GR and Holden JM. Experimental Investigation of the Impact Attenuation Provided by Floor Coverings in Human Falling accidents. Prepared under contract, Health & Welfare Canada, March 1986.
5. Holden JM, Fernie GR, Young M and Hayto S. Evaluation of Wheelchair Loaders for Personal Vehicles. Contract #TP8451E, Transportation Development Centre, Transport Canada, April 1987.
6. Holden JM, Fernie GR, Lunau K, Young M and Frensel D. An Ergonomic Evaluation of a Modified Full Sized Ford Van and a Modified Chrysler Minivan for Disabled Drivers. Contract #TP 8452E, Transportation Development Centre, Transport Canada, April 1987.
7. Fernie GR (ed). Prevention of Heat Stress in Long-Term Care Facilities for the Elderly. Prepared under contract, Ontario Ministry of Community and Social Services, March 1989.
8. Fernie GR, Lunau K, Reed S. with James F. Hickling Consultants Ltd. and Delcan Corporation. Accessibility of Small Aircraft to Disabled Travellers: Preliminary Design Study. Contract #TP 9566E, Transportation Development Centre, Transport Canada, December 1988.
9. Fernie GR, Topper A, Van Sickle J, Nissen J, with APC Ltd. Emergency Response Systems. Volume 2: Technical Report. Prepared under contract, Ontario Ministry of Housing, September 1989.
10. Fernie G, Fernie B, Granek G, Maki B, Muniak L and Smith E. Post-Occupancy Evaluation of Upper Canada Lodge, Niagara-on-the-Lake and Gilmore Lodge, Fort Erie. Prepared under contract, Regional Municipality of Niagara and Ontario Ministry of Community and Social Services, August 1991.
11. Fernie GR, Holliday P, Adams A and Miller B. Accessibility of Queen's University Campus. A special report for the Principal on the feasibility of a project to improve the

accessibility of the Queen's campus for elderly people and people with disabilities.  
Prepared under contract, Queen's University, December 1992.

- 12 Pippin K and Fernie GR. A Comparison of the NCR (model 5675) and Interbold (model 4782ix) Automated Teller Machines (ATMs) from the Perspective of People with Disabilities. Prepared under contract, Toronto Dominion Bank, July 1996.
- 13 Fernie GR, Miller B and Holliday PJ. Toward a Standard for Accessibility of Automated Banking Machines. Prepared under contract, Canadian Bankers Association, October 1996. (This report formed the substance of a submission to the Canadian Standards Association by the Canadian Bankers Association entitled Guidelines for Development of a Canadian Standard for Automated Banking Machines (ABMs) for Persons with Disabilities and Seniors, November 1997, and subsequently became the foundation of a new Canadian Standard)



## Full Papers In Peer-reviewed Journals

1. Bell F, Fernie GR and Barbenel JC. Pressure sores, their cause and prevention. Nursing Times May 16, 1974:740-745.
2. Kostuik JP and Fernie GR. Research at the Toronto Hospital, Amputee Centre. Canadian Ortho-Pros Fall, 1974.
3. Zimnicki B and Fernie GR. Biofeedback and the lower extremity amputee. Physiotherapy Canada 1976;28:2-3.
4. Fernie GR, Kostuik JP, Lobb RJ, Pilliar RM, Wong E and Binnington AG. A percutaneous implant using a porous metal surface coating for adhesions to bone and a velour covering for soft tissue attachment: Results of trials in pigs. Journal of Biomedical Materials Research 1977;11:883-891.
5. Ruder K, Fernie GR and Kostuik JP. Techniques of the lower limb prosthetic manufacture using Lightcast II. Prosthetics and Orthotics International 1977;1:84-88.
6. Holliday PJ, Dornan J and Fernie GR. Assessment of postural sway in above-knee amputees and normal subjects. Physiotherapy Canada 1978;30:1:5-9.
7. Fernie GR, Holden J and Soto M. Biofeedback training of knee control in the above-knee amputee. American Journal of Physical Medicine 1978;57:4:161-166.
8. Dornan J, Fernie GR and Holliday PJ. Visual Input: Its importance in the control of postural sway. Archives of Physical Medicine and Rehabilitation 1978;59:586-591.
9. Fernie GR and Holliday PJ. Postural sway of amputees and normal subjects. Journal of Bone and Joint Surgery 1978;60/A:3:895-898.
10. Fernie GR, Holliday PJ and Lobb RJ. An instrument for monitoring stump oedema and shrinkage in amputees. Prosthetics and Orthotics International 1978;2:69-72.
11. Holden J, Fernie GR and Soto M. An assessment of a system to monitor the activity of patients in a rehabilitation programme. Prosthetics and Orthotics International 1979;3:2:99-102.
12. Fernie GR. An instrument for the measurement of foot and ankle volume. Journal of Medical Engineering and Technology 1979;3:14.3:140.
13. Holliday PJ and Fernie GR. Changes in the measurement of postural sway resulting from repeated testing. Agressologie 1979;20:4: 225-228.
14. Jewett MAS, Fernie GR, Holliday PJ and Pim M. Urinary dysfunction in a geriatric long-term care population: prevalence and patterns. Journal of the American Geriatrics Society 1981;29:5:211-214.
15. Fernie GR and Holliday PJ. Volume fluctuations in the residual limbs of lower limb amputees. Archives of Physical Medicine and Rehabilitation 1982;63:4:162-165.

16. Fernie GR, Gryfe CI, Holliday PJ and Llewellyn A. The relationship of postural sway in standing to the incidence of falls in geriatric subjects. Age and Ageing 1982;11:11-16.
17. Halsall AP, James DF, Kostuik JP and Fernie GR. An experimental evaluation of spinal flexibility with respect to scoliosis surgery. Spine 1983;8:5:482-489.
18. Fernie GR, Jewett MAS, Halsall AP and Zorzitto ML. Urodynamic characterization of incontinence in the elderly by bladder volume. Journal of Urology 1983;129:772-774.
19. Fernie GR and Holden J. A data-logger for recording patterns of activity. J.M. Journal of Medical Engineering & Technology 1983;7:2:93-95.
20. Fernie GR, Jewett MAS, Autry D, Holliday PJ and Zorzitto ML. The prevalence of geriatric urinary dysfunction in a chronic care hospital. Canadian Medical Association Journal 1983;128:1085-1086.
21. Holden JM and Fernie GR. Minimal Walking level essential for amputees to live at home. Physiotherapy Canada 1983;35:6:317-320.
22. Fernie GR, Halsall AP and Ruder K. Shape sensing as an educational tool for student prosthetists. Prosthetics and Orthotics International 1984;8:87-90.
23. Maki BE, Bartlett SA and Fernie GR. Influence of stairway handrail height on the ability to generate stabilizing forces and moments. Human Factors 1984;26:6:705-714.
24. Fernie GR. Computer aided design and manufacture for prosthetics and orthotics. Biomedizinische Technik 1984;29:335-337.
25. Maki BE, Bartlett SA and Fernie GR. Effect of stairway pitch on optimal handrail height. Human Factors 1985;27:355-359.
26. Fernie GR, Griggs G, Holliday PJ and Jewett MAS. An electronic monitoring system for voiding events. Journal of Neurourology & Urodynamics 1985;4:2:135-137.
27. Fernie GR, Griggs G, Bartlett S and Lunau K. Shape sensing for computer aided trans-tibial prosthetic socket design. Prosthetics and Orthotics International 1985;9:12-16.
28. Holliday PJ, Fernie GR, Maki BE and Lauzon FS. Some bioengineering approaches to the falling problem. Geriatric Medicine 1985;1:3:161-164.
29. Fernie GR. Rechnergestutzte Konstruktion und Fertigung in der Prothesen-und Orthesentechnik. (Computer aided design and manufacture for prosthetics and orthotics) Orthopadie Technik 1985;6:377-379.
30. Zorzitto ML, Jewett MAS, Fernie GR, Holliday PJ and Bartlett S. Effectiveness of propantheline bromide (PB) in the treatment of geriatric patients with detrusor instability. Neurourology & Urodynamics 1986;5:2:133-144.
31. Schwartz ML, Hudson AR, Fernie GR, Hayashi K and Coleclough AA. Biomechanical study of full contact karate contrasted with boxing. Journal of Neurosurgery 1986;64:248-252.

32. Cotterill PC, Kostuik JP, D'Angelo G, Fernie, GR and Maki BE. An anatomical comparison of the human and bovine thoracolumbar spine. Journal of Orthopaedic Research 1986;4:3:298-303.
33. Bartlett SA, Maki BE, Fernie GR, Holliday PJ and Gryfe CI. On the classification of a geriatric subject as a faller or non-faller. Medical and Biological Engineering & Computing 1986;24:219-222.

34. Fernie GR. CAD/CAM Approaches to the development of seating and mobility aids for the elderly. Canadian Journal of Public Health 1986;77,supplement 1:114-118.
35. Holden JM and Fernie GR. The results of the pilot phase of a clinical evaluation of computer aided design of trans-tibial prosthesis sockets. Prosthetics and Orthotics International 1986;10:3:142-148.
36. Lowenberg BF, Pilliar RM, Aubin JE, Fernie GR and Melcher AH, Migration, attachment and orientation of human gingival fibroblasts to root slices, naked and porous-surfaced titanium alloy discs and zircalloy 2 discs in vitro. Journal of Dental Research 1987;66:5:1000-1005.
37. Cotterill PC, Kostuik JP, Fernie GR and Maki BE. Production of a reproducible spinal burst fracture for use in biomechanical testing. Journal of Orthopaedic Research 1987;5:3:462.
38. Maki BE, Holliday PJ and Fernie GR. A posture control model and balance test for the prediction of relative postural stability. IEEE Transactions on Biomedical Engineering 1987;BME-34:10:797-810.
39. Holden JM and Fernie GR. Extent of artificial limb use following rehabilitation. Journal of Orthopaedic Research 1987;5:562-568.
40. Maki BE and Fernie GR. A system identification approach to balance testing. (invited paper) Progress in Brain Research 1988;76:297-306. ("Vestibulospinal Control of Posture and Locomotion", Pompeiano O and Allum JHE (eds), Amsterdam: Elsevier).
41. Holden JM, Fernie GR and Lunau KR. Chairs for the elderly - design considerations. Applied Ergonomics 1988;19:4:281-288.
42. Holden JM and Fernie GR. Specifications for a mass producible static lounge chair for the elderly. Applied Ergonomics 1989;20:1:39-45.
43. Fernie GR and Holliday PJ. The role of technology in urinary dysfunction in the elderly. Soma: Engineering for the Human Body, The American Society of Mechanical Engineers, 1989;3:1:61-66.
44. Zorzitto ML, Holliday PJ, Jewett MAS, Herschorn S and Fernie GR. Oxybutynin chloride for geriatric urinary dysfunction: a double blind placebo controlled study. Age and Ageing 1989;18:195-200.
45. Maki BE, Holliday PJ and Fernie GR. Aging and postural control: A comparison of spontaneous and induced sway balance tests. Journal of American Geriatrics Society 1990;38:1-9.
46. Maki BE and Fernie GR. Impact attenuation of floor coverings in simulated falling accidents. Applied Ergonomics 1990;21:2:107-114.
47. Fernie BL and Fernie GR. Organizing group programs for cognitively impaired elderly residents of nursing homes. Clinical Gerontologist 1990;9:3:123-134.

48. Fernie GR and Fernie BL, Technological innovations for individuals with alzheimer's disease. American Journal of Alzheimer's Care and Related Disorders and Research 1990;5:3:9-14.
49. Topper AK and Fernie GR. Computer-aided design and computer-aided manufacturing (CAD/CAM) in prosthetics. Clinical Orthopaedics and Related Research 1990;256:39-43.
50. Fernie BL, Brown J and Fernie GR. A survey of attitudes toward group programs for Alzheimer's disease patients. American Journal of Alzheimer's Care and Related Disorders and Research 1990;5:6:27-31.
51. Topper AK and Fernie GR. A comparative evaluation of CASD (CANFIT) designed and conventionally designed trans-tibial sockets. Prosthetics and Orthotics International 1990;14:136-142.
52. Hedman TP, Kostuik JP, Fernie GR and Hellier WG. Design of an intervertebral disc prosthesis. Spine 1991;16:256-260.
53. Smith TG and Fernie GR. Biomechanics of the spine. Spine 1991;16:10:1197-1203.
54. Topper AK, Holliday PJ and Fernie GR. Bladder volume estimation in the elderly using a portable ultrasound based measurement device. Journal of Medical Engineering and Technology 1993;17:3:99-103.
55. Fernie GR. Technology to assist safe mobility of elderly people. Experimental Aging Research 1994;20:3:219-226.
56. Fernie GR, Griggs G, Holliday PJ and Topper AK. Increasing the accessibility of a conventional cooking range for wheelchair users. American Journal of Occupational Therapy 1994;48:463-468.
57. Holliday PJ, Plowman S and Fernie GR. The impact of new lifting technology in long term care: a pilot study. American Association of Occupational Health Nursing (AAOHN) Journal 1994;42:12:1-7. Edited and reprinted in French with permission as: Evaluation de l'impact d'un nouveau systeme de LRSAP. Objectif Prevention 1994;17:2:36-38.
58. Fernie GR and Maki BE. Research and Development in Assistive Technology at the Centre for Studies in Aging, Toronto. Technology and Disability 1994;3:4:315-320. (invited article).
59. Hedman TP and Fernie GR. In-vivo measurement of lumbar spinal creep in two seated postures. Spine 1995;20:2:178-183.
60. Holliday PJ, Topper AK and Fernie GR. Communication tools to enhance user involvement in assistive technology design: a pilot study. Canadian Journal of Rehabilitation 1996;9:2:137-145.
61. Hedman TP and Fernie GR. Mechanical response of the lumbar spine to seated postural loads. Spine 1997;22:7:734-743.
62. Chen-Wing SLN, Schuller R and Fernie GR. An interface to enhance mobility for people with hemi-spatial neglect. Assistive Technology 1997;9:55-61.

63. Pippin K and Fernie GR. Designing devices that are acceptable to frail elderly: A new understanding based upon how older people perceive a walker. Technology and Disability 1997;7:1-2:93-102.
64. Finkel J, Fernie GR and Cleghorn W. A guideline for the design of a four-wheeled walker. Assistive Technology 1997;9:116-129.

Note: My emphasis was switched to patents and technology transfer for a period (see patents section).

65. Fernie G and Maki B. Research and development at the Centre for Studies in Aging, Sunnybrook and Women's College Health Sciences Centre. RESJA Journal 1999;14:2:28-34.
66. Perry SD, McIlroy WE, Maki BE and Fernie GR. The efficacy of head immobilization techniques during simulated vehicle motion. Spine 1999;24:17:1839-1844.
67. Mihailidis A, Fernie GR and Cleghorn WL. The development of a computerized cueing device to help people with dementia to be more independent. Technology and Disability 2000;13:23-40.
68. Mihailidis A, Fernie GR, Barbenel JC. (2001) The COACH: A Computerized Cueing Device to Help People with Dementia to be More Independent. Gerontology 2001;47(Suppl.1):388-
69. Mihailidis A, Fernie GR and Barbenel JC. The use of artificial intelligence in the design of an intelligent cognitive orthosis for people with dementia. Assistive Technology 2001;13:23-39.
70. Pinkney S and Fernie GR. Product development using 3D computer modelling to optimise the stability of the Rocket powered wheelchair. Assistive Technology 2001;13:46-58.
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## Technology Transferred

Note - Products listed below were conceived, designed, developed and licensed to industry under my leadership. Products that have not yet reached the market and products that were only partly developed under my direction are not included. I have played a key role in starting companies, finding finance and in all aspects of commercializing these products. All manufacturing drawings have been produced in our laboratory. Sourcing of suppliers, design of tooling and testing to meet standards are all essential roles for researchers in this field if technology transfer is to be a reality.

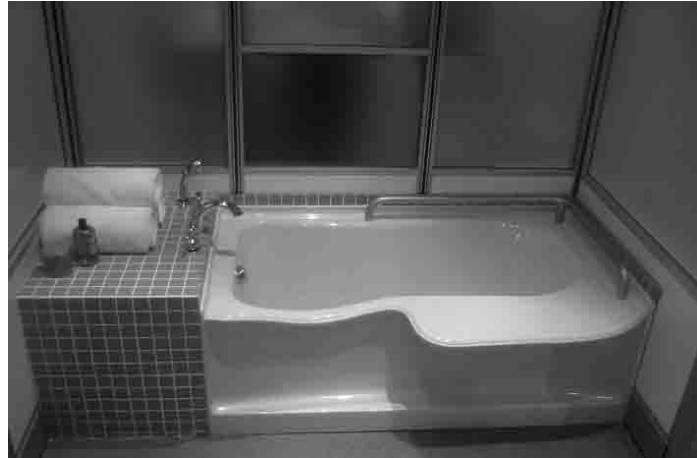
1. **SturdyLift™** The first battery powered portable overhead patient lift system in the world provides the added safety and reduced stress to the caregiver of overhead lifts at a much lower cost than fixed installations. The system includes advances in sling design and ergonomics. This lift has provided reliable service for over 10 years and numerous manufacturers now produce similar devices around the world.



2. **SturdyGrip™** A safety support pole that is held in place by compression between the floor and ceiling. Features include a ceiling pad that has a flexible rim and that is mounted to the pole on a ball joint. The system automatically applies the correct load to the ceiling to hold it in place without fasteners and without knowledge of the position or orientation of joists. The handgrip has a profile that provides a better grasp even with wet hands. The system comprises injection moulded components that are shipped in a compact container and easily assembled. SturdyGrip was manufactured in Quebec for over 10 years and has paved the way for many similar products that are now manufactured by other companies in North America.



3. **Access Bathtub.** A universally designed bathtub that provides easier and safer access for people with mobility limitations or who have a fear of falling. This bathtub fits the installation dimensions of standard bathtubs in North America and is sold for a much lower price than bathtubs specially designed for use by people with disabilities. It is attractive and offers advantages to all users. The product is manufactured in the US.



4. **Toilevator™** A product that makes it easier for elderly people and many people with disabilities to retain the ability to rise from a toilet independently. It consists of an injection moulded pedestal that fits under the toilet raising its height safely and inconspicuously. The kit includes a special extender for the soil pipe and all other components needed for a very simple installation. The novelty lies with the concept and with the geometrical solution that enables it to be matched to all common toilet models in North America. Toilevator was winner of the “Best New Canadian Product Award” at the Canadian Hardware and Building Materials Show in 2000. Toilevator was selected by the Canadian Hardware and Housewares Manufacturers Association as the only winner from nearly 100 new product entries that were evaluated for “uniqueness, originality, consumer value, user-friendliness and market appeal”.



- Staxi™.** The first wheelchair that is designed specifically to enable people to be transported easily over distances that are beyond their comfortable range in environments such as airports, hospitals, shopping malls and theme parks. The chairs nest inside each other like shopping carts to reduce storage space and enable coin-operated dispensing systems to be used. Staxi™ features include easy pushing and manoeuvring, a brake that is always engaged unless held released during pushing, storage spaces for



luggage and a medical chart, and durable finishes that allow it to be used for extended periods in outdoor locations such as car parks. This product was one of five winners of a Nightingale Award for new product design in the US in 1997 and won an honourable mention in the 1998 Design Engineering Awards Competition sponsored by The Design Exchange and design Engineering Magazine. Staxi installations are growing in number rapidly.

Rocket™. This is the first practical multidirectional powered wheelchair to obtain approval by the FDA. It has extraordinary manoeuvrability that enables users to function in restricted spaces easily and without the need for environmental modification. These indoor capabilities have been achieved without compromising outdoor performance. Innovations in seating design are also incorporated.



SoleSensor. A shoe insole to improve balance. (Developed in collaboration with Brian Maki & Stephen Perry). Licensed for production and distribution.



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24. Von Bertoldi A, Boger J, Hoey J, Poupart P, Fernie GR, Boutilier C, Mihailidis A. Autonomous guidance through handwashing using a partially observable Markov decision process. In: Mihailidis A, Boger J, Kautz H, Normie L, eds. *Technology and Aging*. Amsterdam: IOS Press 2008;43-50
25. Dutta T, Holliday PJ, Fernie GR. Design of novel sling interface systems for patient lifting. In: Mihailidis A, Boger J, Kautz H, Normie L, eds. *Technology and Aging*. Amsterdam: IOS Press 2008;77-84
26. Maki BE, Cheng KC, Corbeil C, Fernie GR, Gorski S, King EC, Holliday PJ, Lee TA, Liu BA, Mansfield A, McIlroy WE, McKay SM, Mihailidis A, Perry SD, Peters AL, Popovic MR, Pratt J, Scovil CY and Tung JY. Interventions to prevent falls by promoting more effective balance-recovery reactions. In: Vincent ML, Moreau TM (eds), *Accidental Falls: Causes, Preventions and Interventions*. Nova Science Publishers. Hauppauge, NY (in press).

## Guidelines in Book Form

1. Fernie GR, Fernie BL, Granek G, Holliday PJ, Muniak L, Poulin P, Schwartz S, Topper A and VanSickle J. Nursing Homes in Ontario: Planning, Care and Design. Toronto: Ontario Ministry of Health 1990.
2. Fernie GR, Bernard TE and Kenney WL. Prevention and management of hot weather-related illness in long-term care facilities for the elderly. Guidelines, Ministry of Community and Social Services and Ministry of Health of Ontario. Queen's Printer for Ontario 3M/07/90, ISBN 0-7729-7360-1, May 1990.

## Other Publications

1. Fernie GR. Biomechanical aspects of decubitus ulcer formation. PhD Thesis University of Strathclyde, 1973.
2. Ruder K, Fernie GR and Kostuik JP. Instruction manual for the use of Lightcast II in prosthetics. Published by Merck Sharp & Dohme.
3. Kostuik JP and Fernie GR. Pressure sores in the elderly patients (editorial). Journal of Bone and Joint Surgery 1985;67B:1-2.
4. Fernie GR, Chairs for the elderly. Pin Dot News, October, 1988.
5. Descriptive brochures, instruction manuals, installation guides, packaging and other materials for the SturdyGrip and SturdyLift product lines.
6. Fernie GR. Past, present and future of assistive technology for the elderly - the clock is ticking. Insight: Newsletter of the Canadian Adaptive Seating and Mobility Association (CASMA), 1996;4,1:1-2.
7. Fernie GR. Technology helps older people stay safely mobile. Hospital News 1999;12,11:13 & 20.
8. Fernie GR. Lifting and moving your patients. Rehab & Community Care Management November 1999:30-33.
9. Fernie GR. Moving up in the world: safe handrails for seniors. Geriatrics & Aging 1999;2,6:1 & 27
10. Fernie GR. Solving the problem of low toilets. Geriatrics & Aging 2000;3,2
11. Fernie GR and Milner M. An eventful conference. Gerontechnology 2001;1,2:35-37
12. Fernie GR. A festival of international conferences on care giving, disability, aging and technology. (Editorial) Gerontechnology 2006, 4,4:185-186

## **Videotapes**

1. A series of 19 videotapes on the theory and practice of prosthetics and orthotics. Funded by The Max Bell Foundation and distributed widely in North America, Europe, Australia and New Zealand, 1982.
2. Holliday PJ, Gryfe CI, Griggs GT and Fernie GR. Accidental Falls of Elderly People. Funded by NIH and distributed widely, 1989.

## **Major Presentations** (first author presented)

1. Fernie GR. A bioengineer views decubiti. Canadian Association of Physical Medicine & Rehabilitation, Annual Conference, London, Ontario, 1973.
2. Fernie GR. Electrical properties of bone. Toronto District Canadian Physiotherapy, 7th Annual Symposium, Toronto, 1974.
3. Fernie GR. Training devices incorporating biofeedback techniques. Clinical Research Society of Toronto, Annual Meeting, Toronto, 1974.
4. Fernie GR. A simple prototype device for providing an above-knee amputee with continuous sensory feedback of the angle of flexion of his prosthetic knee joint. Canadian Medical and Biological Engineering Society, 5th Annual Conference, Montreal, 1974.
5. Fernie GR. A portable biofeedback training system and performance monitor for amputees. Canadian Medical and Biological Engineering Society, 5th Annual Conference, Montreal, 1974.
6. Fernie GR and Ruder K. First phase of an evaluation of Lightcast II as a material in lower limb prosthetics. International Society For Prosthetics and Orthotics, World Congress, Montreax, Switzerland, 1974.
7. Fernie GR. Training devices for lower extremity amputees incorporating biofeedback techniques. International Society For Prosthetics and Orthotics, World Congress, Montreax, Switzerland, 1974.
8. Fernie GR. Biofeedback applied to the above-knee amputee. Canadian Orthopaedic Association, Annual Meeting, Ottawa, 1975.
9. Fernie GR and Holden J. The cost and effectiveness of amputee rehabilitation. Canadian Orthopaedic Association, Annual Meeting, 1975.
10. Fernie GR. Rehabilitation engineering as a route to independence. (Invited Paper)
11. Biological Engineering Society, 15th Anniversary International Conference, Edinburgh, Scotland, 1975.
12. Fernie GR and Dornan J. The problems of clinical trials with new systems for preventing or healing decubiti.(invited). Biomechanics of Tissue Viability and Clinical Applications. An International Seminar, Glasgow, Scotland, 1975.
13. Fernie GR. Biofeedback gait training for amputees. International Rehabilitation Symposium, Toronto, 1975.
14. Fernie GR. Biofeedback and the lower extremity amputee. A new training aid. Canadian Physiotherapy Association, National Congress, Winnipeg, 1975.
15. Fernie GR. New developments in amputee research. Annual Rehabilitation Symposium, Toronto, 1975 & 1976.
16. Fernie GR. The training of prosthetists and orthotists. Canadian Association Of Prosthetists and Orthotists Annual Convention, Hamilton, 1976.

17. Fernie GR. Biofeedback training for amputees. 7th International Congress Of Physical Medicine and Rehabilitation, Rio De Janeiro, Brazil, 1976.
18. Fernie GR, Holliday PJ and Lobb R. A system for monitoring oedema and stump shrinkage in amputees. 7th International Congress of Physical Medicine and Rehabilitation, Rio De Janeiro, Brazil, 1976.
19. Fernie GR. Postural sway and balancing mechanisms in above-knee amputees. 7th International Congress of Physical Medicine and Rehabilitation, Rio De Janeiro, Brazil, 1976.
20. Fernie GR. The effects of age upon the judgement of visual vertical and horizontal in normal subjects and in an amputee population. 7th International Congress of Physical Medicine And Rehabilitation, Rio De Janeiro, Brazil, 1976.
21. Fernie GR. A method of measuring quantitatively postural sway and balancing mechanisms in above-knee amputees and normals. Royal College Of Physicians and Surgeons Of Canada, Annual Meeting, Toronto, 1977.
22. Fernie GR. The judgement of visual vertical and horizontal in normal subjects and in an amputee population. Royal College of Physicians and Surgeons, Annual Meeting, Toronto, 1977.
23. Fernie GR. A quantitative assessment of postural sway in amputees and normal subjects. Canadian Orthopaedic Research Society, Annual Meeting, Toronto, 1977.
24. Fernie GR. An instrument for monitoring oedema and stump shrinkage in amputees. International Society for Prosthetics and Orthotics, World Congress, New York, 1977.
25. Fernie GR. Prosthetic implantation in amputees. International Society for Prosthetics and Orthotics, World Congress, New York, 1977.
26. Fernie GR. A quantitative assessment of the postural sway of amputees and normal subjects. International Society for Prosthetics and Orthotics, World Congress, New York, 1977.
27. Fernie GR. Biofeedback training for amputees. International Society for Prosthetics and Orthotics, World Congress, New York, 1977.
28. Fernie GR. Theory and practice of orthotics. Physiotherapy Association of Alberta, Annual Meeting, Calgary, Alberta, 1977.
29. Fernie GR. The rehabilitation engineer in prosthetics. Canadian Clinical Engineering Conference, Montreal, 1977.
30. Fernie GR. Theory and practice of the prevention and treatment of decubitus ulcers. Special Seminar, Humber Memorial Hospital, Toronto, 1977.
31. Fernie GR. Biofeedback in rehabilitation medicine. Department of Rehabilitation Medicine, Annual Staff Meeting, St. Michael's Hospital, Toronto, 1977.
32. Fernie GR. New prosthetic devices. Workmen's Compensation Board of Ontario, Annual Fracture Course, Toronto, 1978.

33. Fernie GR. Load bearing transcutaneous implants. Canadian Biomaterials Society, Annual Meeting, Toronto, 1978.
34. Fernie GR and Holden J. The ambulatory activity of lower limb amputees. Canadian Association of Prosthetists and Orthotists, Annual Convention, Winnipeg, 1978.
35. Fernie GR. West Park Hospital education report. Canadian Association of Prosthetists and Orthotists, Annual Convention, Winnipeg, 1978.
36. Fernie GR. Posture, balance and walking. University of Toronto and American Geriatrics Society-Geriatric Medicine for the Practising Physician, Toronto, 1978.
37. Fernie GR. Locomotion studies. Ontario Association for Amputee Care., First Annual Meeting, Sudbury, 1978.
38. Fernie GR. Bioengineering. Canadian Orthopaedic Nurses Association, 2nd Annual Conference, Toronto, 1979.
39. Fernie GR. Above-knee prostheses - description of components, sockets and mechanics. Refresher day in Lower Extremity Amputee Training. The University of Western Ontario, London, Ontario, 1979.
40. Fernie GR. Knee joints. Ontario Association for Amputee Care, 2nd Annual Meeting, Toronto, 1979.
41. Fernie GR. School for prosthetists and orthotists. Ontario Association for Amputee Care, 2nd Annual Meeting, Toronto, 1979.
42. Fernie GR. West Park Research. Ontario Association for Amputee Care, 2nd Annual Meeting, Toronto, 1979.
43. Fernie GR. Lower limb prosthetics - present and future. International Electrical Electronics Conference and Exposition, Toronto, 1979.
44. Fernie GR. West Park Research looks at three specific problems in geriatric care: (Falls, Incontinence and Decubiti). Gerontological Nursing Association, Toronto, 1979.
45. Fernie GR. The War Amputations of Canada's contribution to the new Prosthetic/Orthotic Clinicians Programme at West Park. (invited). The War Amputations of Canada, Annual Dinner, Toronto, 1979.
46. Fernie GR. An overview of prosthetic appliances and aids available. (invited). The Citadel Assurance Group, Toronto, 1980.
47. Fernie GR. Prosthetics school progress report. Ontario Association for Amputee Care, 3rd Annual Meeting, London, Ontario, 1980.
48. Fernie GR. Clinical Prosthetics/Orthotics. A West Park educational program. Canadian Association of Prosthetists and Orthotists, Annual Convention, Banff, Alberta, 1980.
49. Fernie GR. Facets of amputee research. Toronto Western Hospital, Department of Nursing Symposium, Toronto, 1980.

50. Fernie GR. Gait laboratory, electro limbs and dynamic orthotics. Ontario Crippled Children's Clinical Day, Toronto, 1980.
51. Fernie GR and Johnson A. Politics and rehabilitation. (invited). Special Seminar. McMaster University, Hamilton, 1980.
52. Fernie GR. Rehabilitation engineering for the geriatric population. Science Association, National Research Council, Ottawa, 1980.
53. Fernie GR. Research at West Park: Where is rehabilitation engineering going? British Columbia Biomedical Engineering Society, Shaughnessy Hospital, Vancouver, British Columbia, 1981.
54. Fernie GR. The evaluative component of information systems related to physical disability. National Rehabilitation Information Seminar, Toronto, 1981. Organized by CRCDC.
55. Fernie GR. The application of technology to the problem of incontinence in the elderly. Case Western Reserve University, Cleveland, 1981
56. Fernie GR. The application of automated shape sensing to prosthetics. The Ontario Association for Amputee Care, Annual meeting, Kingston, 1981.
57. Fernie GR. Aids: decision & provision. COTA, International Year of the Disabled Seminar, Toronto, 1981.
58. Fernie GR. Biomechanics of decubitus ulcers, Academy of Medicine, 4th Annual Post-Graduate Dermatology Seminar, Toronto, 1981
59. Fernie GR. The human synovial joint-an engineer's view. Department of Rehabilitation Medicine Symposium on Human Synovial Joints-Structure, Function and Dysfunction. Toronto, 1981.
60. Fernie GR. Environmental controls and technical aids. University of Toronto, School of Continuing Studies: Lunch and Learn Club. Toronto, 1981
61. Fernie GR. A comparison of the suitability of porous metal, porous polyurethane and dacron velour covered silicone for use as the soft tissue interface in percutaneous implants. Percutaneous Implant Workshop, Southwest Research Institute, San Antonio Texas, 1981.
62. Fernie GR. Current projects and research at West Park Hospital. CRCDC National Meeting of Rehabilitation Treatment Centres Toronto, 1982.
63. Fernie GR. A comparison of suitability of porous metal, porous polyurethane and dacron velour covered silicone for use as the soft tissue interface in percutaneous implants. 16th Annual Meeting of The Canadian Orthopaedic Research Society, June, 1982.
64. Fernie GR. Shape sensing in physical rehabilitation. 15th Annual Meeting of the Human Factors Association of Canada, September, 1982.
65. Fernie GR. Rehabilitation engineering for the geriatric population. First Canadian Congress of Rehabilitation, Ottawa, March, 1983.

66. Fernie GR. Engineering solutions to unglamorous problems of ageing. Perspectives in Rehabilitation. A symposium on Social, Medical and Technical Topics in Rehabilitation in Honour of the Late Dr. F.R. Tucker. Winnipeg, Manitoba, May, 1983.
67. Fernie GR. The falling problem. Ontario Medical Association Annual Meeting - Geriatric Section, Toronto, June, 1983
68. Fernie GR. Biomechanics of prosthetics. Annual Meeting of the Royal College in co-operation with the Canadian Association of Physical Medicine and Rehabilitation, Calgary, September, 1983.
69. Maki BE, Bartlett S and Fernie GR. Influence of handrail height on the generation of stabilizing forces and moments. Human factors Society, Annual Meeting, Norfolk, Virginia, October, 1983.
70. Fernie GR. Biomechanics of alignment. The 14th Annual Human Kinetics Symposium - Prosthetic & Orthotics: Overcoming Barriers to Human Movement, University of Guelph, January, 28, 1984.
71. Fernie GR. Very minor head injury. (invited). Medical/Legal Society of Toronto, Osgoode Hall, February 8, 1984.
72. Fernie GR. Experiences with the application of shape sensing to prosthetic education. Canadian Association of Prosthetists & Orthotists, National Convention, Vancouver, British Columbia, April 2 - 6, 1984
73. Fernie GR. Patterns of prosthesis use. Canadian Association of Prosthetists & Orthotists, National Convention, Vancouver, British Columbia, April 2 - 6, 1984
74. Saunders CG and Fernie GR. CAD/CAM for orthopaedic footwear. Workshop on State-of-the Art 3-D Profilometers and CAD/CAM Systems, National Institute of Handicapped Research, Washington, DC, May 15-17, 1984
75. Fernie GR. Automated prosthetic fitting. Second International Conference on Rehabilitation Engineering, Ottawa, June 17-22, 1984.
76. D'Angelo G, Kostuik JP, Maki BE, Fernie GR. and Halsall AP. A dynamic loading apparatus for the controlled evaluation of orthopaedic spinal fixation devices. Canadian Orthopaedic Research Society, Eighteenth Annual Meeting, Winnipeg, June, 1984.
77. Schwartz M, Hudson A, Fernie GR, Hayashi K and Elgie R. Full contact karate is just as dangerous as boxing: A Biomechanical Study. 14th Canadian Congress of Neurological Sciences, Edmonton, June 19, 1984.
78. D'Angelo G, Kostuik JP, Maki BE and Fernie GR. A dynamic loading apparatus for the controlled evaluation of orthopaedic spinal fixation devices. Scoliosis Research Society, Annual Meeting, Orlando Florida, September 1984.
79. Fernie GR. The future of technology for the elderly. Canadian Association of Gerontology, 13th Annual Scientific & Educational Meeting, Vancouver, November 1-4, 1984.

80. Fernie GR. Gadgets for grandma: technical approaches to problems of aging. Ontario Science Centre - Making Life Easier: New Medical Technologies a Series of Presentations by Innovative Medical Specialists, Toronto, March 16, 1985.
81. Fernie GR. Geriatrics 2000 The wonders to come? Tenth Annual Clinic Day. The Art & Science of Geriatric Care, Baycrest Centre for Geriatric Care, May 17, 1985
82. Maki BE and Fernie GR. Rehabilitation engineering research for the elderly. (Invited). IEEE Perspectives in Rehabilitation Symposium, Winnipeg, May 1985.
83. Cotterill P, Kostuik JP, Fernie, GR and Maki BE. Anatomical comparison of the human and bovine thoracolumbar spine for use in biomechanical testing. Phase I: A Reproducible Burst Fracture. Canadian Orthopaedic Research Society, 19th Annual Meeting, Hamilton, June 2-3, 1985
84. Fernie GR & Saunders CG. Shape sensing and computer aided prosthetic socket design. 38th Annual Conference on Engineering in Medicine and Biology, Chicago Illinois, September 30-October 2, 1985.
85. Fernie GR. Technology to keep the elderly active, independent and mobile. International Federation of Adapted Physical Activity, 5th International Symposium, Toronto, October 1-4, 1985.
86. Fernie GR. Technology as a means of enabling the elderly to remain in their homes. Canadian Association on Gerontology, 14th Annual Scientific and Educational Meeting, Hamilton, October 17-20, 1985.
87. Fernie GR. CAD/CAM approaches to the development of seating and mobility aids for the elderly. Public Health and Health Services Research, Present - Future. 10th Anniversary of the National Health Research and Development Program, Health & Welfare Canada. Ottawa, December 3-4, 1985.
88. Fernie GR. Seating for the elderly. (invited speaker). Second International Seating Symposium, University of British Columbia, Vancouver, BC. February 20-22, 1986,
89. Maki BE and Fernie GR. The finite base-of-support non-linearity and its relationship to postural instability. Eighth International Symposium on Posturography, Amsterdam, May 12-15, 1986.
90. Maki BE, Holliday PJ and Fernie GR. A balance stress test to predict falling liability in the elderly. Eighth International Symposium on Posturography, Amsterdam, May 12-15, 1986.
91. Fernie GR. Rehabilitation engineering research in geriatrics. (Invited). Seminar on Geriatrics. Ninth Annual Conference on Rehabilitation Technology - RESNA 86. Minneapolis, Minnesota, June 23-26, 1986.
92. Fernie GR. Potential role of robotics for the elderly. (Invited). Special Interest Workshop, World Rehabilitation Fund. Ninth Annual Conference on Rehabilitation Technology - RESNA 86. Minneapolis, Minnesota, June 23-26, 1986.

93. Fernie GR. Implications of CAD/CAM technology for prosthetics and orthotics education. (Invited). CAD/CAM Applications Session, International Society for Prosthetics and Orthotics V World Congress, Copenhagen June 29-July 4, 1986.
94. Fernie GR. Shape sensing for prosthetics and footwear. The Current State of Application Session. International Society for Prosthetics and Orthotics, V World Congress, Copenhagen, June 29-July 4, 1986.
95. Fernie GR. Timely changes for changing times. (Invited). Technology to Promote Independence. Ontario Association of Homes for the Aged, 67th Annual Meeting and Convention, Hamilton, September 15, 1986.
96. Fernie GR. Opportunities for technology to promote independent living for the elderly. (Invited). Technology and Aging Conference, University of Massachusetts Medical Centre, Worcester Massachusetts, September 29-30, 1986.
97. Fernie GR. CASD/CAM-key to the future. (Invited). Ontario Association for Amputee Care, 9th Annual Conference, Toronto, October 31-November 1, 1986
98. Fernie GR. Computer aided socket design in prosthetic manufacturing. (Invited). First Rehabilitation Symposium, National University Hospital, Singapore, January 16-18, 1987.
99. Fernie GR. Biomechanics of prosthesis socket fit. (Invited). First Rehabilitation Symposium, National University Hospital, Singapore, January 16-18, 1987.
100. Fernie GR. Biomechanics of transtibial alignment. (Invited). First Rehabilitation Symposium, National University Hospital, Singapore, January 16-18, 1987.
101. Fernie GR. Biomechanics of transfemoral alignment. (Invited). First Rehabilitation Symposium, National University Hospital, Singapore, January 16-18, 1987.
102. Fernie GR. Rehabilitation in the elderly. (Invited). First Rehabilitation Symposium, National University Hospital, Singapore, January 16-18, 1987.
103. Fernie GR. Mobility technology and independent living of the elderly. (Invited). Mobility: Innovations & Applications in Rehabilitation, The Rehabilitation Research & Teaching Program, John A Burns School of Medicine, University of Hawaii, Hawaii, February 7-8, 1987
104. Fernie GR. Technology to promote independent living in the elderly. (Invited). Canadian Engineering Centennial Convention, Montreal May, 1987.
105. Fernie GR. Furniture selection for the elderly. (Invited). Ontario Association for Homes for Aged, Annual Meeting, Toronto, September 13 - 15, 1987.
106. Fernie GR. Spinal biomechanics. (Invited). Scoliosis Research Society, Twenty Second Annual Meeting, Vancouver, September 15 - 19, 1987.
107. Fernie GR. Technology and assistive devices. (Invited). Action Centre 87, Planning Decision Making Priority Setting, Thunder Bay October 1 - 3, 1987.

108. Fernie GR. Technology in the Home - Caring and Coping. (Invited). Home Care Program for Metropolitan Toronto, Annual Meeting, Toronto October 14, 1987.
109. Fernie GR. Falls; posturographic study of balance in the elderly. (Invited). Department of Otolaryngology, Annual Scientific Day, Program on Spatial Orientation, Toronto, November 3, 1987.
110. Fernie GR. Engineering solutions to common problems of aging. University Rounds, Toronto, January 8, 1988.
111. Fernie GR, Saunders CG. Computer aided design and manufacturing in prosthetics and orthotics. (Invited). Canadian Association of Prosthetics and Orthotics, Annual Meeting, Montreal, June 1988.
112. Fernie GR. Principles of geriatric seating - product selection. (Invited). Rehabilitation Engineering Society of North America, Montreal, June 25 - 30, 1988.
113. Fernie GR. The elderly. (Invited). International Conference on Wheelchairs and Special Seating, Dundee, September 12 - 16, 1988.
114. Fernie GR. Evaluation of CAD/CAM in prosthetics. (Invited). Progress in Bioengineering - An International Seminar, Strathclyde, September 20 - 22, 1988.
115. Fernie GR. Practical aspects of physical design. (Invited). Ontario Non-Profit Homes and Services for Seniors, 8th Annual Spring Conference, Toronto, April 4-5, 1989.
116. Fernie GR. Ethical dilemmas for a research team developing new products for elderly people. (Invited). Canadian Association of Gerontology, 18th Annual Scientific Meeting, Ottawa, October 26-29, 1989.
117. Fernie GR. Product design strategies for the elderly. (Invited). Canadian Association of Gerontology, 18th Annual Scientific Meeting, Ottawa, October 26-29, 1989.
118. Fernie GR. Preventing needless falls: action planning for resident safety. (Invited). Ontario LongTerm Residential Care Association, Hamilton, November 5-7, 1989.
119. Fernie GR, Fernie BL. Technological innovations for individuals with Alzheimer's disease. (Invited). Alzheimer's Disease and Environmental Design, Toronto, January 26, 1990.
120. Fernie GR. Innovative approaches to enhancing independence. (Invited). Aging with a Lifelong Disability, Ontario Federation for the Cerebral Palsied, Toronto, February 14, 1990.
121. Fernie GR. Progress in research toward a CAD/CAM seating system. (Invited). Sixth International Seating Symposium, Vancouver, February 15-17, 1990.
122. Fernie GR. Technology and quality of life in the frail elderly. (Invited). Special Clinical Seminar, Encino Hospital, Los Angeles, February 20, 1990.
123. Fernie GR. Supportive devices, robotics, and quality of life of the frail elderly. (Invited). The Concept and Measurement of Quality of Life in the Frail Elderly, U.C.L.A., Los Angeles, February 21-23, 1990.

124. Fernie GR. Recent advances in biomedical technology for the senior adult. (Invited). Special combined lecture for Office of Gerontological Studies and Faculty of Engineering, McMaster University, March 22, 1990.
125. Holliday PJ, Maki BE and Fernie GR. Balance training device for the rehabilitation of patients with hemiparesis. Annual Convention of the Ontario Physical Therapy Association, Toronto, March, 1990.
126. Fernie GR. Technological advances. (Invited keynote presentation). Second Annual Conference on Programs for the Elderly with Special Needs, Humber College, May 31, 1990.
127. Fernie GR. Research and technology transfer for an aging population. (Invited keynote presentation). Canadian Medical and Biological Engineering Society, Sixteenth Annual Conference, Winnipeg, June 11, 1990.
128. Fernie GR and Fernie BL. Heat-related illness in the elderly: Seminar. (Invited). Welland Campus of Niagara College, June 14, 1990.
129. Fernie GR. Innovative approaches to enhancing safe mobility. (invited). First Canadian Home Care Show, Toronto, June 25, 1990.
130. Gryfe CI, Holliday PJ, Fernie GR and Griggs GT. A video-record study of falling events in a geriatric centre: biomechanics, environmental factors and social reactions. Annual meetings of the Royal College of Physicians and Surgeons of Canada and the Canadian Society of Geriatric Medicine, Toronto, September. 1990.
131. Fernie GR. Engineering studies of falls. (invited). Dizziness Update '90, Toronto, October, 1990.
132. Fernie GR. Enhancing safe mobility in the home. (invited). First Annual Community Pharmacy Forum, Canadian Pharmaceutical Association, Toronto, October 28, 1990.
133. Fernie GR. Design for the elderly. (invited). Construction 2000, Toronto, December 6, 1990.
134. Fernie GR. SturdyGrip and SturdyLift product presentations. (invited). Medichair 4th Annual Dealers' Conference, Saskatoon, February 8, 1991.
135. Fernie GR. Gadgotix. (invited). Alpha Club (Canadian orthopaedic surgeons). Annual Conference, Port St Lucie, Florida, April 8-12, 1991.
136. Fernie GR. Safety in institutional environments for people who are elderly and persons with developmental and physical disabilities. (invited). Workshop on Safety in Institutional Environments, CRCO and Ministry of Community & Social Services, Toronto, April 26, 1991.
137. Fernie GR. Rehabilitation engineering for the elderly population. (invited). 17th Annual Conference, Canadian Medical and Biological Engineering Society, Banff, May, 1991.
138. Fernie GR. The debate, the dilemma and the dream. (invited). 5th Canadian Congress on Rehabilitation, Canadian Rehabilitation Council for the Disabled, Prince Edward Island, May 11, 1991.

139. Fernie GR. Technology in ageing. (invited). Ontario chapter of the Canadian Biomaterials Society, Toronto, May 22, 1991.
140. Fernie GR. A modular support system to aid safer mobility. Gerontechnology: First International Conference on Technology and Aging, Eindhoven, August 26-29, 1991.
141. Fernie GR. Automation of custom seating for the elderly. Ontario Seating Symposium, Toronto September 12-13, 1991.
142. Fernie GR. Technology to assist safe mobility of elderly people. (invited). Stein Conference - Engineering Design for an Aging Society, Drexel University, Philadelphia, October 23-25, 1991.
143. Fernie GR. The role of technology research in rehabilitation. (invited). Third Atlantic Rehabilitation Symposium, Halifax, November 7-9, 1991.
144. Fernie GR. Environmental design and the nature of the consultative process. (invited). Assisted Living - Challenges of Implementation. Edmonton, May 7-8, 1992.
145. Fernie GR. Issues in health care for the elderly in Canada and the role of rehabilitation technology. (Invited). Japan College of Social Work, June 5, 1992.
146. Fernie GR. Rehabilitation engineering research into mobility, falls and incontinence of elderly people. (Invited). Advanced Nursing Seminar, Sai-Sei-Kai, Tokyo, June 15, 1992.
147. Fernie B and Fernie GR. The development of technical aids for priority problems of elderly people in Canada. (Invited). Faculty of Engineering, University of Tokyo, June 16, 1992.
148. Fernie GR. Rehabilitation engineering research into mobility, falls and incontinence of elderly people. (Invited). National Centre for the Disabled, Tokyo, June 16, 1992.
149. Fernie GR. Technology for transferring and lifting patients. The Gerontological Society of America, 45th Annual Scientific Meeting, Washington, November 18 - 22, 1992.
150. Fernie GR. The feasibility of a mobile custom seat fitting service. Seizing Our Future: Innovation in Action, Premier's Council on health, Well-being and Social Justice, Toronto, April 23, 1993.
151. Fernie GR. Mobility-related products for the elderly. Rehabilitation Engineering Society of North America, Eighth Northeast Regional Conference, Buffalo, April 16 - 17, 1993.
152. Plowman S, Holliday PJ and Fernie GR. The impact of new lifting technology in a long-term care nursing unit. 7th National Conference on Gerontological Nursing, Vancouver, May 7, 1993.
153. Fernie GR. Lighting for institutions for the elderly.(Invited keynote address). Professional Development Seminar, Illuminating Engineering Society of North America, Ottawa, May 28, 1993.
154. Fernie GR. Inventing products for seniors. (Invited keynote address). One day seminar, Canadian Industrial Innovation Centre, Toronto, May 7, 1994.

155. Fernie GR, Fernie BL and Verburg G. Eliciting consumer input: effective communication of new ideas and concepts. (Invited). 7th Annual Educational Centre for Aging and Health Conference, McMaster University, Hamilton, May 12, 1994.
156. Fernie GR. Statement of the challenge for technology transfer of mobility-related assistive devices. (Invited keynote address). Special Conference: Improvement of Assistive Technology Devices for Home Care of Persons with Physical Impairments. Medical College of Wisconsin, Milwaukee, June 3-5, 1994.
157. Fernie GR, Doyle B, Holliday P and Topper A. Bathrooms for the elderly. 12th Triennial Congress of the International Ergonomics Association, Toronto, August 15-19, 1994.
158. Fernie GR. Prototyping. (Invited keynote address). One day seminar, Canadian Industrial Innovation Centre, Design Exchange, Toronto, April 7, 1995.
159. Fernie GR. Mass market assistive technology: devices for elderly consumers. (invited). Annual Fall Meeting of the Biomedical Engineering Society, Boston, October 6-8, 1995.
160. Fernie GR. Bringing the product from the design concept to the marketplace. (invited). One day special seminar -Technology Innovation for an Aging Society: Blending Research, Public and Private Sectors. Annual Meeting of the Canadian Association of Gerontology, Vancouver, October 26-29, 1995.
161. Fernie GR. Making Kobe barrier-free for ages and abilities. (Invited keynote address). International Seminar on Reconstruction and a New Barrier Free Environment: Toward a Society for All. Special conference following the Kobe earthquake. Kobe, Japan, October 31, 1995.
162. Fernie GR, Holliday PJ. The impact of walker design on performance and safety. Special continuing education seminar. Medtrade / National Home Health Care Exhibition (NHHCE) , Atlanta, November 15-19, 1995.
163. Fernie GR. Trends in design for accessibility. (Invited keynote address). Accessibility Idea Exchange. Special conference organized by the Ontario March of Dimes. Toronto, April 24, 1996.
164. Holliday PJ, Fernie GR. Trends in design for accessibility. (Invited keynote address). Grey Bruce Abilities Expo. Owen Sound, Ontario, April 24, 1996.
165. Fernie GR. The potential of technology to provide help at home. (invited). Exploring New Frontiers. 18th Annual Conference of Alzheimer Canada. Ottawa, April 25-27, 1996.
166. Fernie GR. Designing for aging in place in a new retirement community. (Invited). The Continuing Care Retirement Community: Housing Options for the Long Term. Conference organized by Canada Forum. Toronto, April 28-29, 1997.
167. Fernie GR. A future for rehabilitation engineers? (Keynote address). 23rd Annual Conference of The Canadian Medical and Biological Engineering Society. Toronto, May 28-31, 1997.

168. Fernie GR. Barriers to use of technology and how to overcome them. (Invited). Annual Conference of The Ontario Gerontological Association. Toronto, 5 May 2000.
169. Fernie GR. Developments in assistive technology for seniors. (Invited). 17<sup>th</sup> Annual McMaster Summer Institute on Gerontology. Hamilton, June 1, 2000.
170. Fernie GR. Invited keynote Address. Third Annual Unicamp Conference on Alternative/Augmentative Communication and Mobility. Sao Paulo, Brazil, November 4-6, 2000.
171. Fernie GR. Function and performance of the Rocket multidirectional powered wheelchair. 17<sup>th</sup> International Seating Symposium. Orlando, February 22-24, 2001.
172. Fernie GR. (invited). Promoting independence through assistive technology and home modifications. American Society on Aging Annual Conference. New Orleans, March 8-11, 2001.
173. Mihailidis A, Fernie G. The use of an intelligent cueing device for activities of daily living. Annual Conference of the Alzheimer Society of Canada. Halifax, NS, 5-8 April, 2001.
174. Mihailidis A, Fernie GR. (Invited). The use of technology in developing supportive environments for people with dementia. Designs for Dementia Care: Integrating Systems of Care: Home, Community, Acute and Long-term Care - Special conference of the Alzheimer Society of Ontario. Toronto, 24-25 May, 2001.
175. Fernie GR. (invited). Assistive technology and home modification strategies: New ways to promote your clients= independence. 5<sup>th</sup> International Care/Case Management Conference of the American Society on Aging. Vancouver, June 28-July 1, 2001.
176. Fernie GR, Griggs GT, Holliday PJ, Pacitto M, Wilcox P. The first known practical multi-directional powered wheelchair. 17<sup>th</sup> Congress of the International Association of Gerontology. Vancouver, July 1-6, 2001.
177. Fernie GR, Holliday PJ, Pacitto M, Wilcox P. Design and testing of a transport chair system. 17<sup>th</sup> Congress of the International Association of Gerontology. Vancouver, July 1-6, 2001.
178. Mihailidis A, Fernie GR. The COACH: a computerized cueing device to help people with dementia to be more independent. 17<sup>th</sup> Congress of the International Association of Gerontology. Vancouver, July 1-6, 2001.
179. Rolfson R, Mihailidis A, Frydrych P, Holliday P, Fernie GR. The functional value of sideways movement on a powered chair. International Conference on Technology and Aging, Toronto, Canada, September 12-14, 2001.
180. Mihailidis A and Fernie GR The use of an intelligent cueing device for activities of daily living. Alzheimer Society of Canada Annual Conference. Halifax, NS, April 2001.
181. Fernie GR. (invited annual lecturer). Innovative technologies for independence. Annual lecture sponsored by the Cove Guest Home. University College of Cape Breton, Sidney, Nova Scotia, March 2002.

182. Fernie GR. (invited keynote). Technological innovations to reduce dependency and help caregivers: a Canadian perspective. Engineering and Physical Sciences Research Council EQUAL Initiative Network Meeting. Glasgow, Scotland, April 2002.
183. Fernie GR and Holliday PJ. (Featured exhibit and keynote speaker). Design for older persons. IIDEX/NeoCon Canada, Toronto, September 2002.
184. Fernie GR. LifeRail. TechMed 2002. University of Western Ontario, London, Ontario, September 2002
185. Fernie GR, Holliday PJ, Mihailidis A, Rolfson R. Does sideways movement increase mobility and manoeuvrability in a powered wheelchair? Gerontechnology, Miami, November 2002.
186. Fernie GR. (invited keynote) Rehabilitation Engineering. 27<sup>th</sup> Annual Conference of the Canadian Medical and Biological Engineering Society (CMBEC27), Ottawa, November, 2002.
187. Fernie GR. Assistive technology and rehabilitation research. (Invited panel presentation). CIHR Institute of Musculoskeletal Health and Arthritis. Special conference "IMHA On the Move", Calgary, January 31<sup>st</sup>, 2003.
188. Fernie GR. CIHR Mobility Consensus Workshop Report. (Invited presentation) Stakeholders' Meeting. IMHA, Calgary, February 1<sup>st</sup>, 2003.
189. Fernie GR and Maki BE. Handrails and grab bars (invited scientific presentation and conference dinner speaker). Population Health Initiative on Falls: Making the Connections to Tackle Stairs and Grab Bars. Ottawa, March 2003.
190. Fernie GR, Bateni H, Gafouri M, Griggs G, Holiday P, Maki B, McIlroy W, Perry S, Safaie R, Shoham G and Wilcox P. Overview of research on aging: maintenance of functional autonomy. (Invited panel presentation). National Seniors' Forum on Research, Ottawa, May 2003.
191. Fernie GR, Bateni H, Gafouri M, Griggs G, Holiday P, Maki B, McIlroy W, Perry S, Safaie R, Shoham G and Wilcox P. Technology to prevent falls: opportunities for research. (Invited presentation). Defining Canadian Research Direction: Prevention of Injurious Falls. CIHR Consensus Workshop, Vancouver, June 2003.
192. Fernie GR. Northern exposure: an overview of rehabilitation engineering in Canada. (Invited panel presentation). Colin McLaurin International Exchange, 26<sup>th</sup> Annual International Conference of RESNA, Atlanta, June 2003.
193. Fernie GR. Technical Innovations that improve safety and accessibility. (Invited). Third Annual Kunin-Lunenfeld Applied Research Unit Conference. "Promoting Well-Being in Older Adults: Environment, Body, Mind and Spirit", Toronto, October 2003.
194. Fernie GR. From research to products. (Invited presentation). Enhancing Aging Research Capacity in Canada: Teams in Aging Workshop. CIHR Institute of Aging, Toronto, October 2003.

195. Fernie GR. Low-technology solutions to assist people of all ages with disabilities. (Invited track keynote). International Conference on Aging, Disability and Independence, Washington, December 2003.
196. Fernie GR. Changes to the research culture at TRI. (Invited dinner speaker). Ontario Rehabilitation Research Network Workshop, Toronto, February 2004.
197. Fernie GR. What do we need to know for the future? (Invited). Better Decisions...Better Choices, Making the System Work for Everyone. Ontario Hospital Association Workshop, Toronto, April 2004.
198. Fernie GR. Assistive device development is an important and challenging activity for academic bioengineers. (Invited keynote). Annual Research Day, School of Biomedical Engineering, Dalhousie University, Halifax, May 2004.
199. Fernie GR. Investing in technology to improve lives. (Invited). 31<sup>st</sup> Annual General Meeting of MEDEC (Canada's medical device company association), Medical Devices as an Economic Driver, Mississauga, May 2004.
200. Fernie GR. Healthcare technologies and devices for the aging Canadian. (one of two invited speakers). Living Colours, a mini-symposium organized by PricewaterhouseCoopers, Toronto, June 2004.
201. Fernie GR. From research to product. (invited). CIHR Regional Seniors' Workshop on Research (The Prairies). CIHR Institute on Aging, Regina, June 2004.
202. Fernie GR. Strategies to help older, frail seniors remain independent in their homes for as long as possible. (Invited keynote). National Housing Research Committee, Canadian Mortgage and Housing Corporation, Ottawa, November 2004.
203. Fernie GR. From problem to product. (invited dinner speaker). CIHR Regional Seniors' Workshop on Research (Atlantic Region). CIHR Institute on Aging, Halifax, November 2004.
204. Row BS, Paul JC, and Fernie GR. What is keeping older adults shut-in during the winter? Annual meeting of the Gerontological Society of America, Washington D.C., November 2004.
205. Fernie GR. The topic and future of technical aids for posture and mobility. (invited opening keynote). 4<sup>e</sup> Colloque Québécois: Positionnement et mobilité. Saint-Hyacinthe, Quebec, April 2005.
206. Fernie GR. Managing risks for those caring for increasingly obese people. (invited). The changing nature of musculoskeletal disorder risk: the effects of obesity and aging on the American workplace, a working research conference organized by the Northwest Center for Occupational Health and Safety, University of Washington, Seattle, September 2005.
207. Row BS and Fernie GR. The role of the environment and technology on Frailty in older adults. Oral presentation as part of a symposium with the Canadian Initiative on Frailty

- and Aging at the Canadian Association of Gerontology, Halifax, NovaScotia, October 2005.
208. Fernie GR. Developing technology that meets the ageing population's needs. (invited keynote). Engineering and Physical Sciences in Medicine 29<sup>th</sup> Annual Conference, EPSM 2005, incorporating the inaugural Australian Biomedical Engineering Conference, Adelaide, Australia, October 2005.
  209. Fernie GR. iDAPT: the new Canadian rehabilitation technology research and development program. (invited). Engineering and Physical Sciences in Medicine 29<sup>th</sup> Annual Conference, EPSM 2005, incorporating the inaugural Australian Biomedical Engineering Conference, Adelaide, Australia, October 2005.
  210. Fernie GR. Funding research – how can it be done to achieve the best and most commercialisable outcomes? (invited). Engineering and Physical Sciences in Medicine 29<sup>th</sup> Annual Conference, EPSM 2005, incorporating the inaugural Australian Biomedical Engineering Conference, Adelaide, Australia, October 2005.
  211. Fernie GR. The future of assistive technology for safe mobility. (invited). Engineering and Physical Sciences in Medicine 29<sup>th</sup> Annual Conference, EPSM 2005, incorporating the inaugural Australian Biomedical Engineering Conference, Adelaide, Australia, October 2005.
  212. Fernie GR. Developing technology that meets the ageing population's needs & iDAPT: the new Canadian rehabilitation technology research and development program. (invited). Two special presentations, Canberra Hospital, Australia, October 2005.
  213. Fernie GR. Developing technology that meets the ageing population's needs. (invited). Special lecture hosted by Engineers Australia, Engineering House, Brisbane, Australia, November 2005.
  214. Fernie GR. Experiences in the transfer of assistive devices from university research laboratories to the market. (invited keynote). International Symposium on the Development of Orphan Products – Advanced Technology and User Participation. Tokyo, Japan, February 2006
  215. Fernie GR. Inventive solutions to everyday problems. (invited keynote). Long Term Care and Retirement Communities Convention & Trade Show 2006, Toronto, April, 2006.
  216. Carmichael B, Dutta T and Fernie G. Forceshoes: portable ground reaction sensors for biomechanical analysis in the work place. 5<sup>th</sup> World Congress of Biomechanics, Munich, Germany. July 2006.
  217. Perry S, McIlroy WE, Fernie GR and Maki BE. Development and efficacy of a balance-enhancing insole: 'SoleSensor'. IEA (International Ergonomics Association) World Congress on Ergonomics (Slips, trips and falls symposium), Maastricht, The Netherlands, July 2006.
  218. Maki B, Perry SD, Scovil C, Mihailidis A and Fernie GR. Getting a grip on stairs: research to optimize effectiveness of handrails. IEA (International Ergonomics

- Association) World Congress on Ergonomics (Slips, trips and falls symposium), Maastricht, The Netherlands, July 2006.
219. Lever A and Fernie G. The efficacy of a double handrail configuration for stair ascent of subjects with simulated disabilities (hobbled subjects). Canadian Society for Biomechanics, Waterloo, Ontario. August 2006.
  220. Carmichael B, Dutta T and Fernie G. Forceshoes: portable ground reaction sensors for biomechanical analysis in the workplace. Canadian Society for Biomechanics, Waterloo, Ontario. August 2006
  221. Dutta T, Carmichael B and Fernie G. Predicting loads on the low back in the workplace: a portable posture sensor. Canadian Society for Biomechanics, Waterloo, Ontario, August 2006.
  222. Carmichael B, Dutta T and Fernie G. Forceshoes: portable ground reaction sensors for biomechanical analysis in the work place. Annual Meeting of the American Society of Biomechanics, Blacksburg, Virginia, September 2006.
  223. Fernie GR, Mihailidis A and Row B. (invited). Innovative rehabilitation research for people in challenging environments. Special Joint CAG/CIHR Institute on Aging Symposium 1 on Innovative Approaches to Optimize Balance and Mobility in Older Adults. 35<sup>th</sup> Annual Scientific and Educational Meeting of the Canadian Association of Gerontology, Quebec City, October 2006.
  224. Perry S, Radtke A, McIlroy M, Fernie G and Maki B. (invited). Development of balance-enhancing footwear. Special Joint CAG/CIHR Institute on Aging Symposium 1 on Innovative Approaches to Optimize Balance and Mobility in Older Adults. 35<sup>th</sup> Annual Scientific and Educational Meeting of the Canadian Association of Gerontology, Quebec City, October 2006.
  225. Maki B, Scovil C, Corbeil P, Perry S, Gorski S, Lever A, Holliday P, Mihailidis A, Hoey J, Snoek J and Fernie G. (invited). Research to optimize effectiveness of handrails. Special Joint CAG/CIHR Institute on Aging Symposium 1 on Innovative Approaches to Optimize Balance and Mobility in Older Adults. 35<sup>th</sup> Annual Scientific and Educational Meeting of the Canadian Association of Gerontology, Quebec City, October 2006.
  226. Fernie GR. (invited). Discussant of 15<sup>th</sup> Annual Labelle Lectureship by Lehoux P "Technology innovation in health Care: who's calling the shots?", Hamilton, October 2006.
  227. Fernie GR (invited keynote). Technology and disability. Annual Meeting of the Inter Disciplinary CIHR Strategic Research Training Project on "Communication and Social Interaction in Healthy Aging, Orford, Eastern Townships, Quebec, February 2007.
  228. Holliday PJ, Carmichael B, Dutta T, Gorski S, Wenk S, Wilcox P and Fernie G. Design and efficacy of novel interface sling systems for lifting patients. 7<sup>th</sup> Annual Safe Handling & Movement Conference, Florida, March 2007.
  229. Fernie GR (invited keynote). Current and emerging research themes and approaches. National Forum on Mobility in Aging, Ottawa, September 2007.

230. Fernie GR (invited). Leading edge technologies to improve quality of life. Ontario Long Term Care Association Winter Forum 2008, Collingwood, Ontario, February 2008
231. Fernie GR (invited keynote). Assistive technology. International Conference on Aging, Disability and Independence, St Petersburg, Florida, February 2008
232. Fernie GR (invited keynote). New technology for age-old needs. 24<sup>th</sup> International Seating Symposium, Vancouver, March 2008
233. Fernie GR (invited). Technology for safety – hand hygiene and patient lifting. Toronto Central CCAC Home Healthcare Expo, Toronto, April 2008
234. Fernie GR (invited). Environment, aging and disability: current research and prospects for the future”, Kingston, Rhode Island, April 2008
235. Fernie GR (invited) The Evidence Base for Universal Design Practice. Workshop. An International Multidisciplinary Conference on Technology and Disability – RESNA 2008. Washington DC, June 26-30, 2008
236. Fernie GR (invited keynote). A holistic approach to AT development, use and evaluation – the iDAPT story – ARATA 2008, Adelaide, Australia, September 2008
237. Fernie GR (invited). Technology transfer. Special Symposium presented at the Association of Engineers of Australia, Adelaide, September 2008
238. Fernie GR (invited). Early Career Course Workshop, ACRM-ASNR Joint Educational Conference, Toronto, October 2008
239. Fernie GR (invited) International Workshop on the Implementation of Assistive Technology for People with Dementia Part 1, Toronto, October 2008
240. Fernie GR (invited). A minimum standard for new dwellings to facilitate aging in place. Canadian Building and Health Sciences Workshop, National Research Institute for Research in Construction, Montreal, November 2008
241. Fernie GR (invited panel speaker). Dwellings and Streets. Bracing for the Demographic Tsunami: From Health Care to Community Building, Canadian Urban Institute, Toronto, December 2008
242. Fernie GR (invited) International Workshop on the Implementation of Assistive Technology for People with Dementia Part 2, Bath, UK, March 2009
243. Fernie GR (invited) The New Engineer in Society: Design for aging and disability, National Engineering Summit, Montreal, May 2009
244. Fernie GR (invited) What is Needed to Conduct a Successful Program in the Application of Technology to Geriatrics? Scott Named Visiting Professor, Mayo Clinic, Rochester MN, May 2009
245. Fernie GR (invited) Solutions for Everyday Living. The Greying Nation Conference 2009: Keeping Ahead of the Wave, Edmonton, June 2009
246. Fernie GR (invited) Videoconference – overview of iDAPT for Glenrose Rehabilitation Hospital, Edmonton, June 2009

247. Fernie GR (invited) “How we can help people stay on their feet as they age”, CIHR Marketing & Communications CIHR-IMHA Journalist Workshop, Toronto, November 2009
248. Fernie GR (invited panelist) “Inclusive Design for Health and Wellness” at Cultural Knowledge and the Healthy Society: A Research & Innovation Summit, Ontario College of Art & Design, Toronto, November 2009
249. Fernie GR (invited keynote) Toronto Rehabilitation Institute Living With/Living Well public education event “Safe home living for seniors”, Toronto, November 2009
250. Fernie GR (invited) “From Assistive Devices to Bringing Health and Support Services to the Homes of the Elderly” American Jewish Joint Distribution Committee, Israel Eshel Sub-Committee, New York, December 2009
251. Fernie GR (invited) “How to solve the every-day problems faced in later life” The Science of Age-Supportive Built Environments Seminar – Canada/UK Study Tour, London, March 2010
- 252.

## **Poster Presentations at major national or international conferences (2005 onward)**

1. Row BS, Paul JC, McKeever P, Fernie GR. Winter presents barriers to physical and social activity in functionally impaired older adults. Poster presented at the annual meeting of the American College of Sports Medicine, Nashville, Tennessee, June 2005.
2. Row BS, Fernie GR, Paul JC and Maki BE. Stairs and winter weather: barriers to activity and mobility for many older adults. Poster presented at the annual meeting of the American College of Sports Medicine, Nashville, Tennessee, June 2005.
3. Carmichael B, Dutta T and Fernie G. Forceshoes: portable ground reaction sensors for biomechanical analysis in the work place. Proceedings of the 5<sup>th</sup> World Congress of Biomechanics, Munich, Germany. July 2006
4. Carmichael B, Dutta T and Fernie G. Forceshoes: portable ground reaction sensors for biomechanical analysis in the workplace. Proceedings of Canadian Society for Biomechanics, Waterloo, Ontario, August 2006
5. Dutta T, Carmichael B and Fernie G. Predicting loads on the low back in the workplace: a portable posture sensor. Proceedings of Canadian Society for Biomechanics, Waterloo, Ontario, August 2006.
6. Dutta T, Carmichael B and Fernie G. Predicting loads on the low back in the workplace: a portable posture sensor. Proceedings of the Annual Meeting of the American Society of Biomechanics, Blacksburg, Virginia, September 2006
7. Carmichael B, Dutta T, Fernie G. Forceshoes: Portable ground reaction sensors for biomechanical analysis in the work place. Proceedings of the Annual Meeting of the American Society of Biomechanics, Blacksburg, Virginia, September 2006
8. Wang RH, Holliday PJ and Fernie GR. Enabling safe powered wheelchair mobility with long term care residents with cognitive limitations. International Seating Symposium, Orlando, Florida, March 2007
9. Advani SK and Fernie GR. Walking on ice – the CEAL rehabilitation simulator. Poster presented at Workshop Cyberwalk, Max Planck Institute for Biological Cybernetics, Tübingen, Germany, April 2008
10. Boscart V, Levchenko A, Fernie G. Hand hygiene compliance monitoring and prompting technology for healthcare staff. Institute for Healthcare Improvement's National Forum on Quality Improvement in Health Care, April 2009, Toronto, Canada.
11. Boscart V, Levchenko A, Fernie G. Testing of a portable hand hygiene dispenser with data logging capabilities to enhance supported learning in the clinical setting. Health Professions Education, Global Best Practices in Simulation, May, 2009, Toronto, Canada

## Externally-Awarded Grants, Contracts and Awards during the Last Five Years

Year	Individual/ Group	Grantor & Short Title	Total Amount
2002-2007	Maki BE GR Liu B McIlroy WE Popovic M	Canadian Institutes of Health Research (CIHR) New Emerging Team - Balance and mobility in elderly	1,101,385
2002-2009	Coyte PC McKeever P Fernie GR et al	Canadian Institutes of Health Research (CIHR) Health Care Technology and Place - research training program	\$2,268,250
2004	Fernie GR	Canada Foundation for Innovation (40%), with matching from Ontario Innovation Trust (40%) and TRI Foundation (20%)  iDAPT Innovative Rehabilitation for People in Challenging Environments	\$18,398,069
2003-2006	Fernie GR	Canadian Institutes of Health Research (CIHR) Design and efficacy of novel interface sling systems for lifting patients	\$316,327
2004-2009	Maki BE McIlroy WE Fernie GR Pratt JW	Canadian Institutes of Health Research (CIHR) Control of balance reactions in the complex environments of daily life: effects of age-related changes in visual processing and the development of novel approaches for fall prevention	\$886,113
2004-2007	Mihailidis A Fernie GR Boutilier C	Alzheimer's Association An intelligent environment to support aging-in-place and independence	USD 172,000
2004-2005	Fernie GR	Ontario Ministry of Enterprise, Opportunity & Innovation Ontario Rehabilitation Technology Consortium Mobility Team	\$136,264

2004	Fernie GR	Research Hospitals Fund (program administered by CFI) Laboratories and workspaces for scientists and graduate students engaged in the iDAPT Research Program NB provincial match not yet confirmed	\$17,531,726
2005-2006	Fernie GR	The Health Technology Exchange Pre-commercialization development of Cloud Nine	\$57,000
2005-2006	Fernie GR	CIHR matching grant Acceleration of Pre-commercialization development of Cloud Nine	\$28,500
2005-2006	Fernie GR	The Health Technology Exchange Completion of pre-commercialization development of RoboNurse	\$85,000
2005-2006	Fernie GR	CIHR matching grant Acceleration of pre-commercialization development of RoboNurse	\$42,500
2005-2007	Fernie GR Carswell A Cott C Herrmann N Jutai J Kiss A	Canadian Institutes of Health Research (CIHR) Safe Independent powered wheelchair mobility for residents in long term care institutions with complex physical and cognitive impairments	\$195,970
2005-2009	Steinfeld E Fernie G	National Institute on Disability and Rehabilitation Research (NIDRR) Rehabilitation Engineering Research Center on Universal Design and the Built Environment at Buffalo	US\$4,749,979  CAN \$5,538,000 .
2006-2007	Fernie GR McGeer AJ Mihailidis A	The Health Technology Exchange Infection Control "Turnstile"	\$85,000
2006-2007	Fernie GR McGeer AJ Mihailidis A	CIHR matching grant Infection Control "Turnstile"	\$42,500

2006-2007	Fernie GR McGeer AJ Mihailidis A	The Health Technology Exchange Monitored Portable Handwash	\$26,667
2006-2007	Fernie GR McGeer AJ Mihailidis A	CIHR matching grant Monitored Portable Handwash	\$13,333
Feb 2007 - March 2007	Zabjek KF McIlroy WE Black SE Fernie GR, Gage WH et al	CIHR - Institute of Aging - Pilot Project Competition The determinants of safe mobility in the elderly who use assistive mobility devices	\$47,615
2007-2008	Fernie GR McGeer AJ Mihailidis A McGilton K	Canadian Institutes of Health Research (CIHR) Advanced hand hygiene system to reduce hospital-acquired infections	\$40,000
2007-2008	Fernie GR McGeer AJ Mihailidis A McGilton K	The Health Technology Exchange Matching grant Advanced hand hygiene system to reduce hospital-acquired infections	\$40,000
2007-2008	Fernie GR McGeer AJ Mihailidis A McGilton K	Andrew J. Hart Enterprises Limited Advanced hand hygiene system to reduce hospital-acquired infections	\$30,000
04/2007 - 09/2007	Fernie GR	ORCP: BioDiscovery Toronto SlingSerter Patient Lifter	\$50,000
01/2007 - 2008	Fernie GR	Institute for Work & Health (OPLES) 2 vs 1 Caregiver Substudy	\$25,000
10/2007 - 09/2009	Fernie GR	Workplace Safety & Insurance Board A biomechanical assessment of floor and overhead lifts using one or two caregivers for patient transfers	\$61,088
02/2008 - 01/2009	Fernie GR	ORCP- BioDiscovery Toronto Cloud Nine	\$50,000
02/2008- 12/2008	Alshaer H Fernie GR Bradley TD	ORCP-Technology Transfer Toronto (Ministry of Research and Innovation) Portable Sleep Apnea Diagnostic Device For Home Use	\$10,000

04/2008-03/2009	Ferne GR	ORCP-Technology Transfer Toronto Intelligent multiple user mounted hand hygiene dispenser	\$50,000
04/2008-03/2009	Ferne GR McGeer A Muller M	Mississauga Halton Infection Control Network (MOHLTC- Regional Infection Control Networks) Hand hygiene compliance audit tool	\$43,142.50
04/2008-03/2009	Ferne GR	Ministry of Health and Long-Term Care, Health Research Grants Clinical Trial of Novel Technology to Improve Hand Hygiene (year1)	\$177,165
09/2008-09/2009	Ferne GR Marquez Chin C	ORCP-Technology Transfer Toronto Data Processing and Performance Feedback Software for an Advanced Hand Hygiene Compliance System	\$10,000
09/2008-09/2009	Bradley TD Ferne GR Alshaer H	ORCP-Technology Transfer Toronto Portable Sleep Apnea Diagnostic Device for Home Use	\$30,500
10/2008-09/2009	Ferne GR McGeer A McGilton K Mihailidis A Jaglal S	Ontario Centres of Excellence Hand Hygiene System	\$168,122
10/2008-03/2009	Ferne GR Lefebvre N	Ministry of Health and Long-Term Care Development of products to reduce burden of care at home	\$250,000
10/2008-09/2014	Maki BE, Ferne GR, Flint A, Liu B, McIlroy WE, et al	Canadian Institutes of Health Research (CIHR) CIHR Team for the Development, Testing and Knowledge Translation of Innovative Approaches to Optimize Gait and Balance of Older Adults	\$1,456,012
03/2009-02/2012	Mihailidis A, Boutilier C, Cameron J, Ferne GR,	Canadian Institutes of Health Research (CIHR) Towards the development of a pervasive prompting system for	\$265,155

	Naglie G	older adults with dementia: Developing the COACH task guidance system for use in the home	
05/2009- 03/2011	Fernie GR McGeer A	Ministry of Health and Long-Term Care Improvement in the methods of handling human waste to reduce the probability of cross-infection in healthcare institutions: problem analysis and concept development phase	\$300,000
04/2009- 04/2015	Chau TTK Baecker R Fernie GR Maki BE et al	Collaborative Academic Rehabilitation Engineering (CARE)  Natural Sciences and Engineering Research Council, Collaborative Research and Training Experience (CREATE) Program Grant No: 370871-2009	\$1,650,000
10/2009- 09/2012	Fernie GR Dongyun G Hart A Gilbert P Wei Ming Jun Kerong Dai et al	ISTP Canada  Advanced prototyping and testing of an intelligent patient lifting and handling device	\$550,000
02/2009- 12/2009	Fernie G	ORCP-Technology Transfer Toronto Spreader Bar for Patient Lifting	\$15,000
2009-2015	Coyte PC Andrews G, Fernie G, et al	Canadian Institutes of Health Research (CIHR) Health Care, Technology and Place: A Strategic Training Initiative	\$1,950,000
03/2010- 02/2011	Fernie, GR	Workplace Safety and Insurance Board Effectiveness of winter footwear on various surface conditions for use by Canadian postal workers	\$55,594.52

<p>01/2010 – 03/2013</p>	<p>Fernie GR Muller MP Thorpe, KE Levchenko A, McGeer AJ</p>	<p>Canadian Institutes of Health Research (CIHR) Technology to Improve Hand hygiene Compliance in Health Care Workers</p>	<p>\$371, 652</p>
<p>04/2010 – 03/2015</p>	<p>Fernie GR Lefebre N Mihailidis A</p>	<p>Ministry of Research and Innovation Ontario Research Fund for Research Excellence Funding – Round 4 Development of products to reduce burden of care at home</p>	<p>\$4,621,011</p>

## Teaching Contributions

- 1975-86 Biomechanics full course taught to clinical students in prosthetics and orthotics, George Brown College
- 1983-96 Annual 2 hour lecture contribution to the Rehabilitation Engineering (elective) Post-graduate program, Biomedical Engineering Institute, University of Toronto
- 1993-98 Annual 3 hour seminar contribution to the undergraduate course in Assistive Technology, Department of Occupational Therapy, University of Toronto.
- 1995-98 Annual 3 hour lecture on Technology and Aging, Graduate course on “Environmental Planning for the Aged”, University of Toronto.
- 1996-98 Annual 3 hour lecture contribution to graduate course “Constraints to Rehabilitation of the Elderly” in Rehabilitation Science, University of Toronto.
- 1999-00 REH 1540H (together with Reid D) “Research Topics in Assistive Technology”. Graduate Department of Rehabilitation Science, University of Toronto.
- 2001-02 AGE2500H “Current Research Topics in Aging and the Life Course”. Conduct one class in first term and mentor a student writing a major paper in the second term.
- 2003-04 AGE2500H (as above)
- 2003 -04 BME1456H “Health Care Technologies, People & Places”. Course lead organizer. (24 registered students) This is the flagship course on technology for the CIHR Training Program on Health Care Technologies and Place.

## Research Students

### PhD Students (*p*=primary, *s*=co-supervisor or secondary supervisor)

- 1984-1987 Maki BE. Stability of gait and posture of the elderly. Bioengineering Unit, School of Mechanical and Chemical Engineering and Naval Architecture, University of Strathclyde. (*p*)
- 1991-1995 Hedman T. Postural biomechanics of the lumbar spine. Bioengineering Unit, School of Mechanical and Chemical Engineering and Naval Architecture, University of Strathclyde. (*p*)
- 1994-2001 Santaguida L. Mechanisms of lifting injury. Department of Exercise Science and Graduate Department of Community Health, University of Toronto. (*p*)
- 1998-2002 Mihailidis A. The development of an intelligent cognitive orthosis to facilitate handwashing for persons with moderate-to-severe dementia. Biomedical Engineering, University of Strathclyde. (*p*)

- 2004-present Wang R. Clinical trials of an anti-collision system for powered wheelchair users with cognitive impairments living in institutional environments (provisional title). Rehabilitation Sciences, University of Toronto. (p)
- 2006-present Momen K. Optimization and acceptability of a new infection control technology (provisional title). Institute of Biomaterials and Biomedical Engineering and the CIHR Graduate Research Training Program in Health Care, Technology and Place (HCTP), University of Toronto. (p)
- 2007-present Dutta T. Measurement of low back loading on caregivers in the field (provisional title). Department of Mechanical and Industrial Engineering in Collaboration with the Institute of Biomaterials and Biomedical Engineering, University of Toronto. (p)
- 2006-present Hsu J. Observing physiological changes and variations in gait of pedestrians on icy surfaces. Mechanical and Industrial Engineering, University of Toronto. (p)
- 2007-present Tsang M. Application of contextual information to hand hygiene compliance (provisional title). Department of Computer Science, University of Toronto. (s)
- 2008-present King E. Reducing the burden of care at home (provisional title). Department of Mechanical and Industrial Engineering, University of Toronto. (p)
- 2009-present Alshaer, H. Portable device for diagnosing sleep apnea syndrome. Institute of Biomaterials and Biomedical Engineering, University of Toronto.

#### PhD Students (Committee Member)

- 1991-1995 Cooper BA. The function of colour: its effectiveness and acceptance as a cuing agent in the residential environment of elderly people. School of Architecture and Urban Planning, University of Wisconsin-Milwaukee.
- 1995-1999 Perry SD. The role of plantar cutaneous mechanoreceptors in the control of compensatory stepping in the young and older adult. Institute of Medical Science, University of Toronto.
- 1995-2000 Gousheh M. Aging and shiftwork tolerance. Department of Mechanical and Industrial Engineering, University of Toronto.
- 1997-1998 Ball K. Rigid and pliant movement analysis: use of invasive and external observations to determine tibial and femoral motion during gait. Graduate Department of Community Health, Exercise Sciences Division, University of Toronto.
- 2003-2006 Zettel J. Gaze behaviour and visuospatial attention in compensatory stepping responses. Graduate Department of the Institute of Medical Science & Graduate Department of Biomaterials and Biomedical Engineering, University of Toronto.
- 2003-2007 Mansfield M. Development and evaluation of a perturbation-based balance-training program for older adults. Institute of Medical Sciences, University of Toronto.

- 2004-present Pauley T. Falls in amputees. Institute of Medical Sciences, University of Toronto.
- 2004-present Lynch CL. Closed-loop control of electrically stimulated muscle contractions.
- 2005-2007 Biddis E. User-based design and implementation of novel actuator for upper extremity prostheses. Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2006-present Young, V. Automatic speech recognition, dysarthria and older adults: factors affecting system performance in speech-to-text application. Graduate Department of Rehabilitation Sciences University of Toronto.
- 2009-present Leung, B. Using physical and physiological signals to infer user interaction context during single-switch access by individuals with severe physical disabilities. Institute of Biomaterials and Biomedical Engineering, University of Toronto

PhD Student (Internal Appraiser/Examiner)

- 1993 Vaillancourt H. Finite element analysis of bone remodeling around porous-coated dental implants. Department of Mechanical Engineering, University of Toronto. (examiner).

MSc Students (Supervisor, p=primary, s=secondary or co-supervisor)

- 1978-1980 Halsall AP. A study of human spinal flexibility with respect to scoliosis surgery. Institute of Biomedical Engineering, University of Toronto. (s)
- 1980-1982 Cheung C. Design of a microcomputer based system for measuring the temporal factors of amputee gait. Department of Human Kinetics, University of Guelph. (s)
- 1981-1983 Holliday PJ. Postural sway during low frequency floor oscillation in young subjects. Department of Anatomy, University of Toronto. (p)
- 1984-1987 D'Angelo G. A biomechanical study of spinal fracture fixation. Department of Mechanical Engineering McMaster University. (s)
- 1986-1988 Wilson J. Biomechanics of spinal fracture fixation. Institute of Biomedical Engineering, University of Toronto. (s)
- 1987-1989 Cinats GC. The calibration of an instrumented spatial linkage electrogoniometer. Institute of Medical Sciences, Department of Surgery, University of Toronto. (s)
- 1988-1990 Reed S. Knee goniometry. Institute of Medical Sciences, Department of Surgery, University of Toronto. (s)
- 1992-1994 Sinha T. Effect of forward lean on postural stability. Institute of Biomedical Engineering, Department of Electrical Engineering, University of Toronto. (s)

- 1993-1996 Chen-Wing SLN. Development of an interface to enhance mobility for persons with hemi-spatial neglect. Institute of Biomedical Engineering, Department of Mechanical Engineering, University of Toronto. (*p*)
- 1994-1995 Stover L. Braking performance of wheeled walkers. Institute of Biomedical Engineering and Department of Electrical Engineering, University of Toronto. (*p*)
- 1994-1996 Pippin K. A phenomenological analysis of the concept of normalization for the elderly and its value for understanding the design, commercialization and use of assistive mobility devices. Department of Behavioural Science and Graduate Department of Community Health, University of Toronto. (*s*)
- 1995-1997 Finkel J. A Guideline for the design of a four-wheeled walker. Department of Mechanical Engineering, University of Toronto. (*p*)
- 1996-1998 Young J. Development and validation of a model for analyzing the stability of a power wheelchair. Institute of Biomedical Engineering and Department of Mechanical Engineering, University of Toronto. (*p*)
- 1996-1998 Mihailidis A. The use of an automated cueing device to assist people with dementia during hand washing. Institute of Biomedical Engineering and Department of Mechanical Engineering, University of Toronto. (*p*)
- 1999-2000 Pinkney S. The stability and manoeuvrability of powered wheelchairs. Institute of Biomedical Engineering (Clinical Engineering), University of Toronto. (*p*)
- 2001- 2003 Rolfson R. Patient lifting and moving (provisional title). Institute of Biomedical Engineering and Department of Mechanical Engineering, University of Toronto. (*p*)
- 2002-2004 Boger J. Design of a Markov decision process system to guide people with moderate-to-severe dementia through the activity of handwashing. Institute of Biomedical Engineering, University of Toronto. (*p*)
- 2003-2005 Huang H. The development and evaluation of the laser line object detection system for powered wheelchairs. Institute of Biomedical Engineering, University of Toronto. (*p*)
- 2003-2006 Carmichael B. Development and Testing of a Portable Force Sensing System for Biomechanical Assessment of Actual Workplace Settings. Institute of Biomedical Engineering, University of Toronto. (*p*)
- 2004-2005 Gorski S. Getting a grip on stairs: investigating the ease of stair navigation with single or double handrail support. Clinical Engineering Program, Institute of Biomaterials & Biomedical Engineering, University of Toronto. (*p*)
- 2004-2006 Dutta T. Development of a portable motion capture system for biomechanical assessment of caregivers in the field. Mechanical and Industrial Engineering, University of Toronto. (*p*)
- 2004-2006 Lever A. The efficacy of a double handrail configuration for stair ascent of subjects with simulated disabilities (hobbled subjects). Mechanical and Industrial

- Engineering & Institute of Biomaterials & Biomedical Engineering, University of Toronto. (*p*)
- 2006-2008 Pierce E. Mental Workload Measurement Using the Intersaccadic Interval. Institute of Biomaterials & Biomedical Engineering, University of Toronto. (*p*)
- 2007-2009 Baharvandy M. The safety of an innovative new powered patient lift. Institute of Biomaterials and Biomedical Engineering, University of Toronto (*p*)
- 2009– Crichlow, L. Design of a Manual Wheelchair Motion Simulator Platform for Integration with iDAPT's CEAL, Institute of Biomaterials & Biomedical Engineering, University of Toronto. (*p*)

MSc Students (Committee Member)

- 1989-1991 Cheng SL. Studies in uncemented total hip arthroplasty. Institute of Medical Sciences, Department of Surgery, University of Toronto.
- 1989-1991 Acito A. The structure and mechanical properties of canine cortical bone treated with APD. Centre for Biomaterials, University of Toronto.
- 1993-1995 Chachra D. The effect of IGF-1 on the mechanical properties of bone in ovariectomized rats. Centre for Biomaterials, University of Toronto.
- 1993-1995 Walsh M. Functional outcome measures: a comparison of individuals 1 to 3 years post total knee arthroplasty vs. healthy controls. Department of Exercise Science, Graduate Department of Community Health, University of Toronto.
- 1998-2001 Tripp B. On-line mutability of compensatory stepping reactions. Institute of Medical Sciences, University of Toronto.
- 1998-2000 Quant S. The influence of sensory and attentional components of ongoing movement on the timing of compensatory upper limb balance reactions. Graduate Department of Rehabilitation Sciences, University of Toronto.
- 1999-2000 Barker D. Meanings of wheelchair use among elderly persons with stroke: a continuity theory analysis. Graduate Department of Rehabilitation Sciences, University of Toronto.
- 1999-2001 Zettel JL. The modifiability of triggered stepping reactions: effects of environmental demands. Institute of Medical Sciences, University of Toronto.
- 2003-2005 Tschirhart C. Biomechanics and prophylactic treatment of spinal metastases: a finite element based study. Institute of Biomaterials and Biomedical Engineering, University of Toronto.

- 2003-2006 Cheng K. Towards the design and development of a safer walker: How can we modify a standard pick up walker to reduce its adverse effects on postural re-stabilization?. Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2003-2005 Cossever D. Prediction for a non-contact pediatric communication aid. Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2005-2007 Lam PTY. Development of a non-restraining haptic-robotic platform for moderate level upper-limb stroke rehabilitation . Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2007–present Singh D. Taking advantage of the spinous process to accomplish a less invasive posterior spinal fusion. Institute of Biomaterials and Biomedical Engineering, University of Toronto
- 2007-2008 Tan J. "Closed-loop control of the ankle joint using functional electrical stimulation". Institute of Biomaterials and Biomedical Engineering, University of Toronto
- 2008– Chang M. “Stride interval dynamics of treadmill and compliant-surface walking in young able-bodied adults” Institute of Biomaterials and Biomedical Engineering, University of Toronto
- 2009– McCarthyA. “Detecting intention in upper extremity movement in children with dyskinetic cerebral palsy”. Department of Rehabilitation Sciences and Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2009– How TV. "Anti-collision and navigation system for powered wheelchairs". Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2009– Griffin M. “An Examination of the Effectiveness of Applying Human Factors Methodology to Develop Recommendations for Mitigating Safety and Medication Management Risks in the Home Care Environment”. Institute of Biomaterials and Biomedical Engineering, University of Toronto.
- 2009– Lu, Elaine “Participatory design approach in the development of a robotic platform for stroke rehabilitation”. Institute of Biomaterials and Biomedical Engineering (Clinical Engineering), University of Toronto,

MSc Student (Internal Appraiser/Examiner)

- 1993 Wong P. Reconstruction of large acetabular defects using allogenic and autogenic morselized bone grafts: An in vivo and mathematical study using uncemented total hip (THA) model. Institute of Medical Science, University of Toronto. (internal appraiser and examiner).
- 1996 Yee AJM. Bone ingrowth into cementless acetabular components in total hip arthroplasty: a comparison of biodegradable and titanium screw fixation in an in vivo canine model. Institute of Medical Science, University of Toronto. (internal appraiser and examiner).

- 1998 Lau JT. The effects of tarsal tunnel release and stabilization procedures on tibial nerve tension in a surgically created pes planus foot. Institute of Medical Science, University of Toronto. (internal appraiser and examiner).
- 1998 Fourie J. Development of an ocular biological marker for Alzheimer=s disease. Department of Pharmacology, University of Toronto. (external appraiser and examiner).
- 2000 Wade S. The validity and reliability of a range of motion assessment of smile for children with facial palsy. Institute of Medical Science, University of Toronto. (internal appraiser and examiner).
- 2002 Oyanarte R. Peri-implant bone response to continuous horizontal loading: a comparison between porous-surfaced and threaded osseointegrated implants used as orthodontic anchorage units. Graduate Department of Dentistry, University of Toronto. (internal appraiser and examiner).
- 2002 Rizvi S. (external appraiser and examiner).
- 2004 Silva J. Mechanomyography sensor design and multisensor fusion for upper-limb prosthesis control. Graduate Department of Mechanical and Industrial Engineering, University of Toronto. (examiner).
- 2004 MacGregor S. The effect of micro-implant surface geometry on peri-implant bone adaptation under orthodontic loading in the rabbit tibia. Graduate Department of Dentistry, University of Toronto. (extradepartmental voting member).
- 2006 Nedeljkovic J. Quantitative descriptions of the temporal dynamics of physiological time series: towards a method for detecting dynamical change. Graduate Department of Mechanical and Industrial Engineering, University of Toronto. (examiner).

#### Post-Doctoral Research Fellows

- 2003-2006 Row B. Effects of seasonal climate changes on mobility, safety and participation of seniors (co-supervised with Dr. P McKeever). CIHR Training Program “Health Care Technology & Place”, University of Toronto.
- 2006–2009 Li Y. Universal Design of the outdoor environment for accessibility in the winter and the physiological responses to cold weather
- 2007–2008 Alshaer H. Development of a screening tool for obstructive sleep apnea (co-supervised with Dr Douglas Bradley)
- 2009– French M. Making an asset of afflicted populations (co-supervised with Dr F Miller) CIHR Training Program “Health Care Technology & Place”, University of Toronto

#### Clinical Research Fellows

- 1981-1982 Zorzitto M. Geriatric Urologic Dysfunction (co-supervised with Dr. MAS Jewett). Division of Urology, University of Toronto.
- 1984-1985 Cotterill P. Anatomical studies of the spine and spinal fractures. Division of Orthopaedics, University of Toronto.
- 1985-1986 Brooks P. Hip arthroplasty design. Division of Orthopaedics, University of Toronto.
- 1986-1988 Zukor D. Hip arthroplasty design. Division of Orthopaedics, University of Toronto.

#### Undergraduate Research Projects

- 1980-1985 Several students have been supervised from the School of Industrial Design, Carlton University.
- 1986-1997 One or two students have been supervised each year from the Departments of Physical Therapy and Occupational Therapy (formerly the Department of Medicine and Rehabilitation) University of Toronto.
- 1982-1986 8 students each year have been supervised in their research projects from George Brown College - West Park School of Prosthetics and Orthotics
- 1989-1993 Approximately one engineering student has been supervised each year from the Co-op. program at the University of Waterloo.
- 1996-2004 Supervisor for final year undergraduate theses in the Department of Mechanical Engineering, University of Toronto.  
1996-1997 Six students  
1997-1998 Six students  
1998-1999 Seven students  
2000-2001 Two students  
2001-2002 Ten students  
2002-2003 Five students  
2003-2004 Three students
- 2002-2003 Two occupational therapy student projects.
- 2005-2006 King E. Design of a sling insertion aid. University of Waterloo, Faculty of Engineering
- 2006-2007 Pham D. Development of a force measuring shoe. Visiting student from Flinders University, Australia.

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