

## CURRICULUM VITAE

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### Education:

1971 Bachelor of Science, Honours  
S.K.S.J.T. Institute  
Bangalore University  
Bangalore, India

1977 Bachelor of Physical Education  
Department of Physical Education and Sport Studies  
University of Alberta, Edmonton, Alberta  
Field: Physical Education - Athletic Training and Conditioning  
*Passed with First Class standing*

1979 Master of Science  
Department of Physical Education and Sport Studies  
University of Alberta, Edmonton, Alberta  
Field: Exercise Physiology.  
Thesis Title: *'The energy cost of level walking and running in males and females.'*

1982 Doctor of Philosophy  
Department of Physical Education and Sport Studies,  
University of Alberta, Edmonton, Alberta  
Field: Exercise Physiology.  
Thesis Title: *'Ventilatory thresholds during a graded exercise test: the effects of three training intensities in males.'*

## Employment and Positions Held

- 1983 - 1984    **Research Officer**, Department of Community Health  
Government of Alberta, Edmonton, Alberta.  
Primary responsibility: to review the health effects of hydrogen sulfide in humans;  
compile a report pertaining to the health effects of Albertans as a result of the  
Lodgepole gas well blow in 1982.
- 1984 - 1986    **Post Doctoral Fellow**, Faculty of Physical Education and Recreation  
University of Alberta, Edmonton, Alberta.
- 1986 - 1991    **Assistant Professor**, Department of Occupational Therapy  
Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Alberta.
- 1991 - 1996    **Associate Professor**, Department of Occupational Therapy  
Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Alberta.
- 1996 - present **Professor**, Department of Occupational Therapy  
Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Alberta.
- Adjunct Professor**, Faculty of Physical Education and Recreation  
University of Alberta, Edmonton, Alberta.
- 2006 - present **Adjunct Professor**, Faculty of Kinesiology and Health Studies  
University of Regina, Regina, Saskatchewan.

## Awards

- 1994 - 1995    *McCalla Research Professor*  
This competitive award at the University of Alberta is granted to individuals who have  
demonstrated excellence in research during their academic careers. During this period,  
the awardee is relieved of teaching responsibilities and focuses primarily on his  
research. The value of this award is equivalent to the awardee's salary during the tenure  
of the grant.

## Visiting Professorships

1. University of Rome, La Sapienza, Faculty of Medicine, June to July 2008. Funding was received through a competitive grant from the University of Rome. During these two months, I worked with Dr. Marco Bernardi, Medical Director of the Italian Paralympic Committee on the physiological assessment of athletes competing in the Beijing 2008 Paralympic Games.
2. University Gama Filho, Faculty of Sport Sciences, May to July 2007. Funding was received through a competitive grant from the CAPES Foundation, Government of Brazil. During these three months, I worked with Dr. Paulo Gomes, Professor in Exercise Science, and two of his master's degree students in the application of near infrared spectroscopy during whole body

vibration and resistance exercise performance.

### **Administrative Responsibilities**

Fall, 2005 to present: Coordinator, Graduate Program, Department of Occupational Therapy, University of Alberta. Some of the responsibilities of this position include: liaising with the Faculty of Graduate Studies and Research regarding admissions, evaluating student files, assigning graduate teaching and research assistantships, notifying graduate students on pertinent grants and scholarships, reviewing scholarship applications, updating graduate student handbooks, and organizing student seminar presentations for graduation.

### **Services to the University/Faculty/Department**

#### University

1. Member of the General Occupational Health and Safety Committee, 1990 - 2000.
2. Member of the Health Research Ethics Board, 2005 – present.
3. Member of the Faculty of Graduate Studies and Research, 2005 to present.

#### Faculty

1. Ethics Review Committee, Physical Education and Sport Studies, 1994-1999.
2. Ad Hoc Computer Committee, 1986-87.
3. Doctoral Program Development Committee, 1987-88.
4. Research in Rehabilitation Conference Committee, 1986-88.
5. Visiting Committee, 1992-95.
6. Research Committee, 1987-88.
7. Revisions Committee, 1988-90.
8. Academic Appeals Committee, 1994.
9. Ethical Review Committee, Faculty of Rehabilitation Medicine, 1990-94.
10. Faculty Evaluation Committee, 1991-95.
11. First Fund Committee, 1995-present.
12. Advisory Council for Graduate Studies and Research, 1996-present.

#### Department

1. Chair, Departmental Ethics Review Committee, 1986-88.
2. Member, Department Committee, 1986 – present.
3. Member, Department Council, 1986 - present.
4. Member, Research and Graduate Curriculum Committee, 1986-88.
5. Member, Graduate Program Committee, 1988 - present.
6. Member, Undergraduate Curriculum Review Committee, 1988-95.
7. Member, Basic Sciences Curriculum Committee, 1986-95; Chair, 1988-95.
8. Member, Revisions Committee, 1994 to 1996.
9. Member, Undergraduate Curriculum Review Committee, 1994 - 1996.
10. Member, Curriculum Development Committee for Course Based M.Sc. OT program, 2004 to present.

## **University Teaching Responsibilities**

I have taught undergraduate and graduate level courses in the Faculty of Rehabilitation Medicine to students enrolled in the Occupational Therapy and Physical Therapy programs. As well, I have taught undergraduate and graduate level courses in the Faculty of Physical Education Recreation to students enrolled in the masters and doctoral programs in Exercise Science. The work physiology course listed below (REHAB 362) has been developed for *WebCT*.

### Undergraduate Courses

REHAB 362: Work Physiology for Rehabilitation Therapists (Rehabilitation Medicine)

- Undergraduate course open to occupation therapy and physical therapy students; 150 students

PTHER 459: Exercise Physiology for Rehabilitation (Rehabilitation Medicine)

- Undergraduate course open to occupation therapy and physical therapy students; 150 students

PESS 497: Advanced Exercise Physiology (Physical Education as needed)

- Undergraduate course open to physical education students; 40 students

### Graduate Courses

OCCTH 505: Measurement and Instrumentation in Occupational Therapy (Rehabilitation Medicine)

- Graduate level course in Occupational Therapy; 6 to 10 students

OCCTH 598: Special Seminar (Rehabilitation Medicine)

- Graduate level course in Occupational Therapy; 6 to 10 students

REHAB 603: Seminars in Rehabilitation Science (Rehabilitation Medicine)

- Graduate level course in Rehabilitation medicine; 6 to 10 students

PESS 610: Physiological Factors Affecting Performance (Physical Education as needed)

- Graduate level course in Physical Education; 6 to 10 students

### Modules for Students in the Course Based M.Sc. Occupational Therapy Program

OCCTH 543; Measurement of Energy Expenditure During Activities of Daily Living. *First offering in new course based master's degree in Occupational Therapy Curriculum in October 2008.*

OCCTH 543: Measurement of Physical Work Capacity in Healthy Subjects and Individuals with Disabilities. *First offering in new course based master's degree in Occupational Therapy Curriculum in January 2009.*

## Graduate Student Supervision

### (a) Doctoral Degree Students

1. Grant, H. Faculty of Rehabilitation Medicine, University of Alberta. *Physiological and Psychosocial Antecedents to Essential Hypertension. (Supervisor, In Progress).*
2. Groves, E. Faculty of Kinesiology, University of Calgary. *A novel test for evaluating maximal exercise performance in humans. (Supervisory Committee Member, In Progress).*
3. Harrison, M. School of Human Movement Studies, University of Regina, Saskatchewan. *Effects of night vision goggles on muscle oxygenation responses in helicopter pilots. (Supervisory Committee Member, In Progress).*
4. Tomczak, C. Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Canada. *Effects of training on oxygen uptake kinetics in cardiac patients. (Supervisory Committee member, In Progress).*
5. Matsuura C. Department of Exercise Science, University Gama Filho, Rio de Janeiro, Brazil. *Effects of hypoxia on cerebral and muscle oxygenation during unilateral knee flexion and extension. (Co-supervisor).*
6. Pereira, M. Department of Exercise Science, University Gama Filho, Rio de Janeiro, Brazil. *Thesis title: Cerebral and muscle oxygenation during resistance exercise, 2006. (External Examiner).*
7. Kell, R. Faculty of Rehabilitation Medicine. *Thesis title: Low-back muscle oxygenation and blood volume responses during static and dynamic work in healthy and low back pain subjects, 200 (Co-supervisor).*
8. Maikala, R. Faculty of Rehabilitation Medicine. *Thesis title: Tissue oxygenation and blood volume during low-back intensive occupational tasks, 2002. (Supervisor).*
9. King, S. Faculty of Rehabilitation Medicine. *Evaluation of the effects of education and exercise in women with fibromyalgia, 2000. (Co-supervisor).*
10. Laskin, J. Department of Physical Education and Sport Studies. *Thesis title: Physiological adaptations to concurrent strength and aerobic endurance training in wheelchair users, 1999. (Committee Member).*
11. Norris, S. Department of Physical Education and Sport Studies. *Thesis title: Application of oxygen uptake kinetics in exercise physiology, 1995. (Committee Member).*
12. Osine, M. Department of Physical Education and Sport Studies. *Thesis title: Bone density, strength, body composition, image, and performance capacity of selected women soldiers, 1993. (Committee Member).*

13. Bell, G. Department of Physical Education and Sport Studies. Thesis title: *Physiological adaptations of oarsmen to endurance and resistance training performed sequentially or concurrently*, 1989. (Committee Member).
14. Gomes, P. Department of Physical Education and Sport Studies. Thesis title: *Effects of continuous and intermittent training on body composition and selected physiological parameters*, 1989. (Committee Member).
15. Okoro, B. Department of Physical Education and Sport Studies. Thesis title: *Effects of different resistance training methods on strength, impulsive force and body composition*, 1987. (Committee Member).

(b) Master's Degree Students

1. Van Os, D. Project title: *Cardiovascular and metabolic responses during snow removal in healthy men*. (Supervisor).
2. Gasior, S. Project title: *Measurement of Energy Expenditure During Common Household Tasks in Healthy Women Aged 30-50 Years*, 2006. (Supervisor).
3. Malik, R. Proposed thesis title: *Effects of music and motivation on cerebral and muscle oxygenation responses during resistance exercise*, 2005. (Supervisor).
4. Kashyap, G. Thesis title *Muscle deoxygenation as a determinant of static back muscle endurance*, 2002. (Co-supervisor).
5. MacLean, A. Department of Occupational Therapy. Project Title: *Keyboard performance, preference and wrist position in individuals with rheumatoid arthritis*, 2001. (Supervisor).
6. Cavaliere, N. Department of Physical Education and Sport Studies. Thesis title: *Goal structures and achievement motivation*, 1999. (Committee Member).
7. Ting, W. Department of Occupational Therapy. Thesis title: *Validity of the Baltimore Therapeutic Equipment Work Simulator in measuring lifting endurance*, 1998. (Supervisor).
8. Kennedy, M. Department of Physical Education and Sport Studies. Thesis title: *A comparison of critical velocity estimates to actual velocities in predicting simulated rowing performance*, 1997. (Committee Member).
9. Moss, S. Department of Physical Education and Sport Studies. Thesis title: *Immune responses to endurance training and unloading in high performance male cyclists*. 1997. (Committee Member).
10. Andrew, M. Department of Occupational Therapy. Thesis title: *Analysis of household tasks performed by healthy women*, 1996. (Supervisor).

11. Kirker, K. Department of Occupational Therapy. Thesis title: *Factors determining return to work in Alberta Workers' Compensation Board clients, 1996. (Supervisor).*
12. Ellerington, K. Department of Physical Education and Sport Studies. Thesis title: *Effects of delayed onset of muscle soreness during submaximal cycling in trained males. 1996. (Committee member).*
13. Rowland, G. Department of Occupational Therapy. Thesis title: *Exercise testing and training in traumatic brain injury, 1995. (Supervisor).*
14. Bloxham, L. Department of Physical Education and Sport Studies. Thesis title: *Time motion analysis and physiological profile of elite level wheelchair basketball players, 1995. (Committee member).*
15. Hanson, K. Department of Physical Education and Sport Studies. Thesis title: *The effects of fast velocity controlled resistance training on individuals with Cerebral Palsy, 1995, (Committee Member).*
16. Brohman, J. Department of Pulmonary Medicine. Thesis title: *Comparison of the metabolic and perceptual costs of transporting oxygen delivery systems by patients with COPD, 1995, (Committee Member).*
17. Buckley, S. Department of Occupational Therapy. Thesis title: *Effects of camber on physiological responses during simulated wheelchair exercise: age and gender comparisons, 1994, (Supervisor).*
18. Esmail, S. Department of Occupational Therapy. Thesis title: *Work simulation: gender comparisons and physiological relationships in healthy subjects, 1993. (Supervisor).*
19. Grant, H. Department of Educational Psychology. Thesis title: *The impact of aerobic endurance enhancement on chronic pain from work related injury, 1993. (Committee Member).*
20. Payette, E. Department of Physical Education and Sport Studies. Thesis title: *Isokinetic dynamometer norms of trunk muscle extension for registered female nurses, 1993, (Committee Member).*
21. Holland, L. Department of Physical Education and Sport Studies. Thesis title: *Cardiorespiratory fitness in wheelchair athletes with Cerebral Palsy, 1991. (Committee Member).*
22. Macdonald, L. Department of Physical Therapy. Thesis title: *Effect of physiotherapy intervention on early knee recovery following arthroscopic partial meniscectomy, 1989. (Committee Member).*
23. Bakshi, R. Department of Occupational Therapy. Thesis title: *Effects of purposeful vs. non-purposeful conditions during the most and least preferred activities, 1989. (Supervisor).*

24. Kellock, J. Department of Physical Education and Sport Studies. Thesis title: *Physiological characteristics of competitive male triathletes and sport specific intensities for optimal training success*, 1989. (Committee Member).
25. Sigurdardottir, S. Department of Physical Therapy. Thesis title: *Isokinetic evaluation of knee flexor and knee extensor muscle endurance*, 1988. (Committee Member).
26. Kennedy, L. Department of Occupational Therapy. Proposed thesis title: *A validation study of the Baltimore Therapeutic Equipment work simulator*, 1988. (Supervisor).

(c) External Examiner for Graduate Theses

1. Fradkin, A. On par with preventing golf injuries: the importance of warm-up. Doctor of Philosophy, Monash University, Victoria, Australia, 2007.
2. Cote, C. Cerebral oxygenation and blood volume in exercising concussed athletes. Master of Science, University of New Brunswick, Fredericton, New Brunswick, 2005.
3. Dibski, D. Reliability of non-Invasive acetylene uptake techniques for the measurement of cardiac output. Master of Science, University of Calgary, Alberta, Canada, 2003.
4. Ahmed, K. Comparative investigation of performance of jumpers in relations to physical, physiological and anthropometric measures of SAI athletes. Doctor of Philosophy, Banaras Hindu University, Varanasi, India, 2003.

**Overview of Research Program**

I have developed an active research program in the following four areas: (1) Applied Exercise Physiology in Healthy Individuals, (2) Exercise in Special Populations, (3) Paralympic Sport Physiology, and (4) Occupational Medicine. A brief description of the research undertaken in each of these areas is given below.

**(1) Applied Exercise Physiology**

My initial studies focused on: (a) the central (cardiorespiratory) and peripheral factors limiting performance during various modes of dynamic exercise in healthy men and women, and (b) alterations in the lactate (anaerobic) threshold as a result of exercise training in healthy subjects. During the last decade, I have combined this expertise with the application of near infrared spectroscopy (NIRS), a non-invasive optical technique, to examine the cerebral (neuronal) and peripheral factors implicated in muscle fatigue in healthy subjects in situ during whole body aerobic and resistance exercise. The application of NIRS to evaluate both cerebral and muscle oxygenation levels simultaneously during exercise has recently gained a lot of attention in the scientific literature because of its feasibility to evaluate the localized responses during whole body exercise, thereby increasing our understanding of the factors implicated in fatigue. I have published 30 articles on this topic, including a major review in the Canadian Journal of Applied Physiology and a book chapter. As well, I have reviewed approximately 50 manuscripts pertaining to this topic for peer reviewed journals during the last 10 years. I have also reviewed numerous grant applications pertaining to the application of NIRS on exercise performance for both national and international granting agencies.



## **(2) Exercise in Special Populations**

As a Professor in the Faculty of Rehabilitation Medicine, I have developed an active research program in the area of exercise rehabilitation for people with disabilities. I have conducted several exercise studies in the clinical population including those with: spinal cord injury, cerebral palsy, fibromyalgia, and low back pain. More recently, I have developed an interest in the exercise rehabilitation of patients with moderate to severe traumatic brain injury (TBI). I have collaborated with clinicians (physiatrists and occupational therapists) in the Brain Injury Rehabilitation Program at the Centennial Centre, a long term rehabilitation facility located in Ponoka, Alberta. As a result of funding obtained from the Alberta Heritage Foundation for Medical Research, we have completed a major project which has examined the efficacy of circuit training on the physiological fitness, body composition and functional capacity of patients with TBI. We have also used NIRS to examine the alterations in cerebral oxygenation in these patients as a result of these interventions. To date, we have published three papers on this topic and two more are currently under preparation. As a result of my expertise in this area, I was invited by the American College of Sport Medicine to write a chapter for the book entitled: *ACSM's Resources for Clinical Exercise Physiology: Musculoskeletal, Neuromuscular, Neoplastic, Immunologic, and Hematologic Conditions. This book chapter has been accepted and will be published in early 2009.*

From 1993 to 2002, I served as the Chair of the Leadership Development for Persons with a Disability Committee (a subcommittee of the Canadian Society for Exercise Physiology). During my tenure on this committee, the following monographs were prepared as a result of a special initiative taken by Health Canada for promoting physical activity for persons with chronic disabilities

1. Shephard, R., Bhambhani, Y. (Editors). Recommendations for the Fitness Assessment, Programming, and Counselling of Persons with a Disability. *Canadian Journal of Applied Physiology* 23, April, 1998.
2. Canadian Society for Exercise Physiology. INCLUSIVE FITNESS AND LIFESTYLE SERVICES FOR ALL disABILITIES. (Eds.) Bhambhani, Y., Coutts, K., Gillespie, M., Lyons, R., Longmuir, P., Seidl, C., Wheeler, G. 2002.

## **(3) Paralympic Sport Physiology**

As a researcher in the area of sport science, I have conducted numerous studies pertaining to sport performance of elite Paralympic Athletes with Spinal Cord Injury and Cerebral Palsy. These studies have been published in numerous peer-reviewed scientific journals including: *Spinal Cord, Archives of Physical Medicine and Rehabilitation, Adapted Physical Activity Quarterly, Canadian Journal of Applied Physiology and Clinical Journal of Sports Medicine*. The research on *Autonomic Dysreflexia* (also known as "boosting" in athletic circles) is particularly noteworthy as the results were used by the IPC in developing its By-Laws pertaining to this technique. As a member of the IPCSSC, I took the lead role in developing a research project entitled: "Boosting in high level spinal cord injury: awareness, knowledge and attitudes of athletes, coaches and trainers." This project, which has been funded by the World Anti Doping Agency, (US \$17,400) is currently in progress. Data for this study were collected at the Beijing 2008 Paralympic Games and are currently being analysed. This project will be completed by March 2009 and a final report will be submitted to WADA and the IPC.

I was a member of the *International Paralympic Committee Sport Science Committee (IPCSSEC)* from 1994 to 2006. It was established by the International Paralympic Committee in 1993 because there

was need for professional researchers and educators to be involved with the Paralympic movement. The committee is Chaired by Dr. Yves Vanlandewijck from the Catholic University of Leuven, Belgium and currently has five other members from Canada, United States, South Africa and the United Kingdom. Each member has expertise in specific areas related to sport science for persons with disabilities. The mandate of this committee is to: (i) provide recommendations to the International Paralympic Committee regarding developments in sport science for individuals with disabilities, (ii) liase with the national organizations for disability sport on topics and issues pertaining to disability sport, (iii) review search proposals for studies to be conducted at the Paralympic games held every four years, and (iv) provide consultation on sport science issues from athletes and coaches.

During my tenure on this committee, I represented the IPCSSC at the following Paralympic Games: Atlanta, 1996; Nagano, 1998; Sydney, 2000; Athens, 2004. At these games, I fulfilled a variety of responsibilities that were assigned by the Chair of the committee. As a member of this committee, I served on the Scientific Committee of the VISTA Congresses which are organized by the IPC: VISTA 1999, Cologne, Germany; VISTA 2003; Bollnas, Sweden; VISTA 2006, Bonn, Germany. This involved reviewing the abstracts that were submitted for presentation, editing and reviewing articles for publication in the conference proceedings, etc.

At the National level, I was appointed to the *High Performance Working Group* for the Canadian Paralympic Team. I serve as a consultant for two of these teams: Nordic Skiing and Wheelchair Athletics. I work closely with the Performance Enhancement Teams (coaches, nutritionists, physical therapists and psychologists) to optimize the physiological testing and training programs of these athletes. I have been working with Athletics Canada in developing physiological testing programs for the elite Canadian Track athletes. In 2005, this organization provided funding for a wheelchair racing training camp that was conducted the Roosevelt Institute in Warm Springs, Atlanta for elite wheelchair racers. At this two week camp, 55 athletes from six different countries participated in physiological testing and training, nutritional counselling, psychological training programs in order to enhance their performance.

In 2003, I Chaired a Mini-Symposium at the American College of Sports Medicine Meeting in Indianapolis which was entitled: "*Paralympic Sport Science Series.*" At this symposium, several members of the IPCSSC presented research pertaining to elite Paralympic Sport. All the papers were extremely well received and the event certainly increased the awareness and need for Paralympic Sport Science research at the international level.

#### **(4) Occupational Medicine**

During my two year post doctoral fellowship, I received funding form the Alberta Occupational Health and Safety Heritage grant program to investigate the effects of hydrogen sulphide in exercising humans. As a result of this research, and subsequent studies that were funded by Albert Lung Association, I have published five research papers and one review article pertaining to the effects of hydrogen sulphide in exercising humans. These are the only controlled human hydrogen sulphide exercise studies that have been conducted to date. The findings of these studies have been used to develop ambient air quality guidelines and occupational exposure limits for hydrogen sulphide in North America and Europe. As one of the leading international researchers on this topic, I have consulted with the following governmental, eductional and private organizations in North America.

1. *Agency for Toxic Substances and Disease Registry, Atlanta, Georgia.* From January to April 1998 I consulted with this agency on a hydrogen sulphide exposure investigation. My role was to evaluate the data that was collected by this agency on the hydrogen sulphide exposures of the general population in Dakota City/South Sioux City, Nebraska and prepare a comprehensive report on these exposure levels. I was then invited by the agency to consult on the development of the *Minimum Risk Levels* for hydrogen sulphide so as to protect the health of the general population.
2. *Nebraska Department of Environmental Quality and Nebraska Department of Health:* From March 10 June, 1997, I consulted with representatives from these departments while they were developing their ambient air quality standards for total reduced sulphur. I had extensive discussions pertaining to our research on the physiological effects of hydrogen sulphide inhalation in exercising men and women.
3. *Nebraska Cattlemen's Association:* In May, 1997 this agency recruited me to evaluate the Technical Report prepared by the Nebraska Department of Environmental Quality for establishing their ambient air quality standards for total reduced sulphur. A confidential report was submitted to the Nebraska Cattlemen's Association for their perusal in the Public Hearings that were held in Lincoln, Nebraska, June 1997.
4. *Scott Wildman Joint Legislative Audit Committee, California Legislature, 1999.* Consultant on toxicity of hydrogen sulfide in humans.
5. *American Congress of Governmental Industrial Hygienists, 1998-99:* I have had consultations with the chair of the standards committee regarding the influence of research pertaining to the validity of the current threshold limit value for hydrogen sulphide which is set at 10 ppm.
6. *Alberta Energy Utilities Board.* Member of Advisory Committee on Public Safety and Sour Gas Responses on Toxicity of H<sub>2</sub>S and SO<sub>2</sub>, 2000-2001.
7. *Environment and Occupational Health Sciences Institute, Piscataway, New Jersey, 2002:* Invited member on the science and ethics advisory panel for a research grant entitled: "*Human Health Effects of Controlled Exposure to Hydrogen sulphide.*" As one of the leading experts on human exposures to hydrogen sulfide, I served as a consultant on the scientific merit and the ethics of this proposal that was submitted for funding by a group of researchers from this agency to the American Petroleum Institute

## **Publications**

### Journal Articles

1. Bhambhani, Y., Singh, M. Ventilatory thresholds during a graded exercise test. *Respiration* 47:120-128, 1985.
2. Bhambhani, Y., Singh, M. The effects of three training intensities on VO<sub>2</sub> max and V<sub>E</sub>/VO<sub>2</sub> ratio. *Canadian Journal of Applied Sport Sciences* 10:44-51, 1985.
3. Bhambhani, Y., Singh, M. Metabolic and cinematographic analysis of walking and running in men and women. *Medicine and Science in Sports and Exercise* 17:131-137, 1985.

4. Bhambhani, Y., Clarkson, H., Gomes, P. Effects of training on the physiological and perceptual responses during arm ergometry in females. *Canadian Journal of Rehabilitation* 1: 213-223, 1988.
5. Bhambhani, Y., Burnham, R., Singh, M., Gomes, P. Ankle and wrist weights: their effect on physiologic responses during treadmill running. *Archives of Physical Medicine and Rehabilitation* 70:291-296, 1989.
6. Bhambhani, Y., Clarkson, H. Acute physiological and perceptual responses during three modes of ambulation: walking, axillary crutch walking and running. *Archives of Physical Medicine and Rehabilitation* 70:445-450, 1989.
7. McColl, E., Wheeler, G., Gomes, P., Bhambhani, Y., Cumming, D. The effects of acute exercise on pulsatile LH release in high-mileage male runners. *Clinical Endocrinology* 31:617-621, 1989.
8. Clarkson, H., Bhambhani, Y. Complications from using axillary crutches. *Canadian Journal of Rehabilitation* 3:233-39, 1990.
9. Bhambhani, Y., Gomes, P., Wheeler, G. Physiologic and perceptual responses during treadmill running with ankle weights. *Archives of Physical Medicine and Rehabilitation* 71:231-235, 1990.
10. Bhambhani, Y., Clarkson, H., Gomes, P. Axillary crutch walking: effects of three training programs. *Archives of Physical Medicine and Rehabilitation* 71:481-89, 1990.
11. Kennedy, L., Bhambhani, Y. Baltimore Therapeutic Equipment Work Simulator: reliability and validity at three work intensities. *Archives of Physical Medicine and Rehabilitation* 72:511-516, 1991.
12. Bhambhani, Y., Eriksson, P., Steadward, R. Reliability of peak physiological responses during wheelchair ergometry in persons with spinal cord injury. *Archives of Physical Medicine and Rehabilitation* 71:559-562, 1991.
13. Bakshi, R., Bhambhani, Y., Madill, H. Effects of task preference on performance during purposeful and non-purposeful activities. *American Journal of Occupational Therapy* 45:912-916, 1991.
14. Bhambhani, Y., Eriksson, P., Gomes, P. Transfer effects of endurance training with the arms and legs. *Medicine and Science in Sports and Exercise* 23:1035-1041, 1991.
15. Bhambhani, Y., Singh, M. Physiological effects of hydrogen sulfide inhalation during exercise in healthy men. *Journal of Applied Physiology* 71:1872-1877, 1991.
16. Bhambhani, Y., Holland, L., Steadward, R. Validity and reliability of the maximal aerobic power in cerebral palsied wheelchair athletes. *Archives of Physical Medicine and Rehabilitation* 73:246-252, 1992.

17. Bhambhani, Y., Holland, L., Steadward, R. Anaerobic threshold in wheelchair athletes with cerebral palsy: validity and reliability. *Archives of Physical Medicine and Rehabilitation* 74:305-311, 1993.
18. Wheeler, G., Cumming, D., Burnham, R., MacLean, I., Sloley, D., Bhambhani, Y., Steadward, R. Testosterone, cortisol, and catecholamine responses to exercise stress and autonomic dysreflexia in elite quadriplegic athletes. *Paraplegia* 32:292-299, 1994.
19. Burnham, R., Wheeler, G., Bhambhani, Y., Belanger, M., Eriksson, P., Steadward, R. Intentional induction of autonomic dysreflexia among quadriplegic athletes for performance enhancement: efficacy, safety and mechanism of action. *Clinical Journal of Sports Medicine* 4: 1-10, 1994.
20. Holland, L., Bhambhani, Y., Ferrara, M., Steadward, R. Reliability of maximal aerobic power and ventilatory threshold in adults with cerebral palsy. *Archives of Physical Medicine and Rehabilitation* 75:291-299, 1994.
21. Bhambhani, Y., Esmail, S., Brintnell, S. The Baltimore Therapeutic Equipment work simulator: biomechanical and physiological norms for three attachments in healthy men. *American Journal of Occupational Therapy* 48:19-25, 1994.
22. Bhambhani, Y., Norris, S., Bell, G. Prediction of stroke volume from oxygen pulse measurements in untrained and trained men. *Canadian Journal of Applied Physiology* 19: 49-59, 1994.
23. Bhambhani, Y., Holland, L., Eriksson, P., Steadward, R. Physiological responses during wheelchair racing in quadriplegics and paraplegics. *Paraplegia* 32:253-260, 1994.
24. Bhambhani, Y., Burnham, R., Snyder, G., MacLean, I., Martin, T. Comparative physiological responses of exercising men and women to 5 ppm hydrogen sulfide exposure. *American Industrial Hygiene Association Journal* 55: 1030-1035, 1994.
25. Esmail, S., Bhambhani, Y., Brintnell, S. Gender differences in work performance on the Baltimore Therapeutic Equipment Work Simulator. *American Journal of Occupational Therapy* 49:405-411, 1995.
26. Bhambhani, Y., Burnham, R.S., Wheeler, G.D., Eriksson, P., Holland, L.J., Steadward, R.D. Physiological correlates of wheelchair racing performance in trained quadriplegics. *Canadian Journal of Applied Physiology* 20:65-77, 1995.
27. Neary, J., Bhambhani, Y., and Quinney, A. Validity of breathing frequency to monitor exercise intensity in trained cyclists. *International Journal of Sports Medicine* 16:255-259, 1995.
28. Bhambhani, Y. Prediction of stroke volume during upper and lower body exercise in males and females. *Archives of Physical Medicine and Rehabilitation* 76:713-718, 1995.

29. Bhambhani, Y., Burnham, R., Wheeler, G., Eriksson, P., Holland, L., Steadward, R. Ventilatory threshold in untrained and endurance trained quadriplegics during wheelchair exercise. *Adapted Physical Activity Quarterly* 12:333-343, 1995.
30. Bhambhani, Y., Burnham, R., Snyder, G., MacLean, I., Martin, T. Effects of 5 ppm hydrogen sulfide inhalation on biochemical properties of skeletal muscle in exercising men and women. *American Industrial Hygiene Association Journal* 57: 464-468, 1996.
31. Bhambhani, Y., Burnham, R., Snyder, G., Maclean, I., Lovlin, R. Effects of 10 ppm hydrogen sulfide inhalation on pulmonary function in healthy men and women. *Journal of Occupational and Environmental Medicine* 38:1012-1017, 1996.
32. Bhambhani, Y., Burnham, R., Snyder, G., Maclean, I. Effects of 10 ppm hydrogen sulfide inhalation in exercising men and women: cardiovascular, metabolic and biochemical responses. *Journal of Occupational and Environmental Medicine* 39:122-129, 1997.
33. Bhambhani, Y., Buckley, S., Susaki, T. Detection of ventilatory threshold using near infrared spectroscopy in men and women. *Medicine and Science in Sports and Exercise* 29:402-409, 1997.
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#### **Scientific and Professional Presentations**

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91. Rowland G, Farag M, *Bhambhani Y*. Circuit training improves peak cardiorespiratory fitness in patients with traumatic brain injury. *Annual Meeting of the American College of Sports Medicine*, San Francisco, California, 2003.
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93. Neary JP, Blissett LN, *Bhambhani Y*. Simultaneous measurement of and muscle tissue oxygenation using NIRS. *Annual Meeting of the American College of Sports Medicine*, San Francisco, California, 2003.
94. Kennedy MD, *Bhambhani Y*. Cerebral oxygenation and blood volume trends during graded exercise in healthy males. *Annual Meeting of the American College of Sports Medicine*, San Francisco, California, 2003.
95. Bhambhani Y, Maikala R. Relationship between maximal exercise performance and changes in cerebral/muscle oxygenation/blood volume measured by near infrared spectroscopy. *8<sup>th</sup> Annual Meeting of the European College of Sport Sciences*, Salzburg, 2003.
96. Maikala R, *Bhambhani Y*. Gender differences in cardiopulmonary responses during submaximal arm cranking and task-specific pushing-pulling. *Annual meeting of the American Association for Respiratory Care*, 2003.
97. Maikala R, *Bhambhani Y*. Simultaneous measurements of regional cerebral and muscle

oxygenation and blood volume responses in healthy men during exposure to seated whole-body vibration (WBV). *7<sup>th</sup> International Congress of the International Society for Adaptive Medicine*, San Diego, California, 2003.

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101. Bhambhani Y, Malik R, Mookerjee S. Detection of the respiratory compensation threshold from cerebral blood volume measurements using near infrared spectroscopy. *9<sup>th</sup> Annual Congress of the European Congress of Sport Science*, Clermont-Ferrand, France, 2004.
102. Bhambhani Y., Malik R. Cerebral and muscle oxygenation/blood volume responses during maximal cycling exercise in untrained and moderately trained males. *10<sup>th</sup> Annual Congress of the European College of Sport Science*, Belgrade, Serbia, 2005.
103. Bhambhani Y, Farag M, Rowland G. Improvements in aerobic fitness are correlated with enhanced cerebral hemodynamics in traumatic brain injured patients. *Annual Meeting of the American College of Sports Medicine*, Denver, Colorado, 2006.
104. Rowland G., Farag M, *Bhambhani Y*. Circuit training improves submaximal cardiorespiratory fitness in patients with moderate to severe traumatic brain injury. *Annual Meeting of the American College of Sports Medicine*, Denver, Colorado, 2006.
105. Pereira M, Gomes P, *Bhambhani Y*. Muscle oxygenation measured by near infrared spectroscopy with different rest intervals between sets of resistance exercise. *Annual Meeting of the American College of Sports Medicine*, Denver, Colorado, 2006.
106. Gomes OP., Pereira M, *Bhambhani Y*. Muscle oxygenation measured by near infrared spectroscopy with different loads and velocities of resistance exercise. *Annual Meeting of the American College of Sports Medicine*, Denver, Colorado, 2006.
107. Matsuura C, Gomes P, *Bhambhani Y*. Reliability of cerebral and muscle oxygenation/blood volume during hand-gripping measured simultaneously by near infrared spectroscopy. *Annual Meeting of the American College of Sports Medicine*, Denver, Colorado, 2006.
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110. Bhambhani, Y., Mandic, S., Tymchak, W., Kim, D., Taylor, D., Quinney, A., Haykowsky, M. Peak oxygen uptake is limited by oxygen transport and not peripheral oxygen extraction in congestive heart failure patients. *Annual Meeting of the American College of Sports Medicine, New Orleans, 2007.*
111. Matsuura, C., Gomes, P.S.C., Haykowsky, M., Bhambhani, Y. Cardiorespiratory responses to resistance exercise under hypoxia in healthy subjects. *Annual Meeting of the American College of Sports Medicine, New Orleans, 2007.*
112. Gomes, P.S.C., Matsuura, C., Bhambhani, Y. Cerebral and muscular oxygenation/blood volume responses to resistance exercise under normoxia and hypoxia in healthy subjects. *Annual Meeting of the American College of Sports Medicine, New Orleans, 2007.*
113. Bhambhani, Y., Van Os, D. Comparison of physiological responses during snow removal in sedentary men and women. *13<sup>th</sup> Annual Meeting of the European College of Sport Science, Estoril, Portugal 2008.*
114. Bernardi, M., Squeo, MR., Faiola, F., Federico, E., Castellano, V., Bhambhani, Y. Intensity and energy expenditure of sports in elite paralympic athletes with locomotor disabilities. *Annual Meeting of the American College of Sports Medicine Seattle, 2009.*
115. Bhambhani, Y., Malik, R., Erikssen, P., Biceps and triceps oxygenation competitive wheelchair racers with spinal cord injury. *Annual Meeting of the American College of Sports Medicine Seattle, 2009.*

Invited Research Presentations:

1. Effects of hydrogen sulphide inhalation on cardiovascular and metabolic responses during exercise. *Division of Occupational Medicine, University of Alberta Hospitals, 1991.*
2. Oxygen uptake in wheelchair athletes: relationship to sports performance. *VISTA '93 Conference, Jasper, Alberta, 1993.*
3. Lactate and ventilatory thresholds during exercise. *Department of Physical Education and Sport Studies, University of Alberta, 1993.*
4. Effects of hydrogen sulphide inhalation on human work performance. *Division of Pulmonary Medicine, University of Alberta, 1994.*

5. Effects of hydrogen sulphide in humans: acute exercise responses and chronic health effects. *Agency for Toxic Substances and Disease Registry*, Atlanta, Georgia, 1998.
6. Development of a disability module for the fitness assessment, programming and counselling of persons with disabilities. *Canadian Society For Exercise Physiology*, Fredericton, New Brunswick, 1998.
7. Bridging the gap between research and practice in Paralympic Sport. *VISTA '99 Conference*, Cologne, Germany 1999.
8. Quadriceps muscle oxygenation during functional electrical stimulation exercise in spinal cord injury. *Invited Keynote Address at the 5<sup>th</sup> Scientific Congress, Sydney Paralympic Games*, Sydney, 2000.
9. Mini symposium entitled: Detection of metabolic and hemodynamic abnormalities of human muscle and brain by near infrared spectroscopy. *Annual Meeting of the American College of Sports Medicine*, St. Louis, Missouri, 2002.
10. Mini symposium paper entitled: Muscle Oxygenation and blood volume trends during dynamic exercise measured by Near Infrared Spectroscopy. *Annual Meeting of the Canadian Society for Exercise Physiology*, St. Johns, New Foundland, 2002.
11. Non-invasive measurement of the anaerobic threshold: application to different populations. *VII International Symposium on Physical Activity*, Rio de Janeiro, 2003.
12. Training and detraining: influence on the central and peripheral factors that determine  $VO_{2max}$  and the anaerobic threshold. *VII International Symposium on Physical Activity*, Rio de Janeiro, 2003.
13. Non-invasive assessment of muscle and cerebral oxygenation during dynamic exercise using near infrared spectroscopy. *II<sup>nd</sup> International Congress on Physical Education, Sports Medicine and Exercise Science*, Goa, India, 2003.
14. Acute and chronic responses to exercise in athletes with spinal cord injury. *Canadian Association of Physical Medicine and Rehabilitation Annual Scientific Meeting*, Edmonton, June 2003.
15. Mini Symposium entitled Paralympic Sport Science Series: Physiological Aspects of Wheelchair Racing: How Much Do We Really Know? *Annual Meeting of the American College of Sports Medicine*, Indianapolis, 2004.
16. Effects of Functional Electrical Stimulation on the Rehabilitation of Patients with Spinal Cord Injury. Glenrose Rehabilitation Hospital Research Seminars.
17. Physiological responses in elite wheelchair athletes with a disability. *Sports Science Through*

*the Ages. 2004 Pre-Olympic Congress, Thessaloniki/Hellas, 2004.*

18. Mini Symposium entitled Performance Optimization of Athletes with a Disability: Physiological responses to exercise in athletes with Cerebral Palsy. *10<sup>th</sup> Annual Meeting of the European College of Sports Sciences, Belgrade, Serbia, 2005.*
19. Exercise starts and ends in the brain. *Simposio Internacional De Fisiologia Do Exercice, Rio de Janeiro. Brazil, April 2007.*
20. Cardiorespiratory responses during exercise in individuals with spinal cord injury. *Simposio Internacional De Fisiologia Do Exercice, Rio de Janeiro. Brazil, April 2007.*
21. Physiological characteristics of elite Paralympic athletes. *Simposio Internacional De Fisiologia Do Exercice, Rio de Janeiro. Brazil, April 2007.*
22. Bhambhani, Y. Evaluation of central and peripheral fatigue during exercise: evidence from near infrared spectroscopy studies. *III International Congress on Sports Medicine, Exercise Science, Physical Education & Yogic Science, Gwalior, India, February 2008.*
23. Bhambhani, Y. Exercise in the rehabilitation of individuals with Traumatic brain injury. *IX Congresso Nazionale S.I.R.N., Rome, Italy, May 2009.*

## **Research Grants Held**

### External Funding

1. Bhambhani, Y., Clarkson, H. Efficacy of three physical training programs on submaximal axillary crutch walking performance. *M.S.I. Foundation, Alberta, 1986.* Amount: \$19936.
2. Watt, J., Bailey, C., Burnham, R., Toller, J., *Bhambhani, Y.* Energetics of braced ambulation and wheelchair locomotion in Duchenne muscular dystrophy. *Glenrose Rehabilitation Hospital Research Fund, 1987.* Amount: \$4085.
3. Guthrie, J., Watt, J., Toller, J., Warden-Flood, B., *Bhambhani, Y.* The reciprocating gait orthosis: An energy consumption study and comparison with wheelchair ambulation. *Glenrose Rehabilitation Hospital Research Fund, 1988.* Amount: \$1875.
4. Bhambhani, Y., Singh, M. Effects of hydrogen sulphide on selected metabolic and cardiorespiratory variables during rest and exercise. *Alberta Occupational Health and Safety Heritage Grant Program, 1988.* Amount: \$74200.
5. Bhambhani, Y., Martin, T., Burnham, R. Comparative physiological responses of exercising men and women to 5 ppm hydrogen sulphide inhalation. *Alberta Lung Association, 1992-93.* Amount: \$21479.
6. Bell, G., Syroituik, D., Quinney, A., *Bhambhani, Y.* Off-season training and fitness evaluation for Edmonton rowers. *Universiade '83 Foundation, 1995.* Amount: \$2100.

7. Bell, G., Syrotuik, D., Quinney, A., *Bhambhani, Y.* Off-season training and fitness evaluation for Edmonton rowers: Central vs peripheral changes with training. Universiade '83 Foundation, 1996: Amount: \$2000.
8. Wessel, J., *Bhambhani, Y.* Evaluation of the effect of exercise and education for women with fibromyalgia. *Alberta Heritage Foundation for Medical Research*, 1996-98. Amount: \$65,000.
9. Bhambhani, Y., Wheeler, G., Andrews, B. A home based electrical stimulation assisted rowing exercise program for persons with spinal cord injury. *Alberta Paraplegic Foundation*, 1998-1999. Amount: \$40,000.
10. Bhambhani, Y., Rowland, G., Wass, P. Aerobic conditioning in traumatic brain injury. *Alberta Heritage Foundation for Medical Research*, 1999-2001. Amount: \$85,500.
11. Bhambhani, Y., Ting, W. Prediction of endurance performance for an 8-hour workday in patients with work-related low back injuries. *Alberta Workers' Compensation Board*, 2001-2003. Amount: \$145,364.
12. Gross, D. Bhambhani, Y., Haykowsky, M., Carrie, A., Rashid, S. The influence of opioid analgesia on functional work capacity. Alberta Workers' Compensation Board, 2006-2007. Phase I funding amount: \$10,300.
13. Bhambhani, Y., Bouke, J., Bressan, E., Hedman, B., Mactavish, J., Pascual, J., Thompson, W., Webborn, A., Vanlandewijck, Y. Boosting in high level spinal cord injury. World Anti Doping Agency, Amount: US \$17,400, 2007 to 2009.
14. Bhambhani, Y., Craven B., Rodgers, C. 1. Effects of respiratory muscle training on endurance performance of Canadian Paralympic Nordic Skiers. Canadian Olympic Committee, Own The Podium Program, \$28400, 2007 to 2008.
15. Neary, Y., Goodman, D., *Bhambhani, Y. (Collaborator)*. Multimodal brain imaging: Applications with respect to the pathophysiology of mild traumatic brain injury from insult to recovery. Canadian Institutes of Health Research. Amount: 391,171, July 2007 to June 2010.

#### Internal Funding

1. Bhambhani, Y. Individual and combined effects of two physical therapy programs on ventilatory muscle function and exercise performance. *Small Faculties Committee*, University of Alberta, 1987. Amount: \$5000.
2. Bhambhani, Y., Brintnell, S. Anaerobic power output during arm ergometry in males of different age groups: reliability and validity against job criterion tasks. *Central Research Fund (Medical)*, University of Alberta, 1987. Amount: \$5500.
3. Bhambhani, Y. Comparative physiological responses of hand carried and wrist supported weights during walking and running in males and females. *Small Faculties Committee*, University of Alberta, 1988. Amount: \$5000.



4. Bhambhani, Y. Comparison of arm and leg training on the central and peripheral factors influencing exercise performance. *Small Faculties Committee*, University of Alberta, 1989. Amount: \$4927.
5. Bhambhani, Y. Effects of continuous and interval wheelchair training on the cardiovascular fitness, body composition and lipid profiles in quadriplegics. *Small Faculties Committee*, University of Alberta, 1990. Amount: \$4700.
6. Bhambhani, Y. Use of tissue oximetry to determine skeletal muscle deoxygenation during exercise. *Central Research Fund (Medical)*, University of Alberta, 1992. Amount: \$5000.
7. Bhambhani, Y., Burnham, R. Effects of hydrogen sulphide inhalation on pulmonary function in healthy men and women. *Small Faculties Committee*, University of Alberta, 1993. Amount: \$4485.
8. Bhambhani, Y. Submaximal test to predict peak oxygen uptake during upper body exercise in men and women. *Small Faculties Committee*, University of Alberta, 1994. Amount: \$2530.
9. Bhambhani, Y. Muscle metabolism and muscle oxygenation during simulated work and recovery in men and women. *Small Faculties Committee*, University of Alberta, 1998. Amount: \$2750.
10. Bhambhani, Y. Dose response effects of whole body vibration on acute physiological responses in healthy men and women. *Small Faculties Committee*, University of Alberta, 2000. Amount: \$2603.
11. Bhambhani, Y. Evaluation of erector spinae oxygenation trends during static and dynamic work using near infra-red spectroscopy. *Small Faculties Committee*, University of Alberta, 2001. Amount: \$2458.
12. Bhambhani, Y. Can the ventilatory threshold be detected from cerebral oxygenation measurements during exercise? *Small Faculties Committee*, University of Alberta, 2002. Amount: \$2495.
13. Bhambhani, Y. Effects of hypoxia on muscle and cerebral oxygenation during exercise in healthy males. *Small Faculties Committee*, University of Alberta, 2003. Amount: \$2497.
14. Bhambhani Y. Impact of music on cerebral and muscle oxygenation during wheelchair exercise in healthy males. *Small Faculties Committee*, University of Alberta, 2005. Amount: \$2499.
15. Bhambhani Y. Effects of unilateral and bilateral exercise on cerebral, muscular and cardiovascular hemodynamics. *Small Faculties Committee*, University of Alberta, 2006. Amount: \$1850.

#### Travel Grants

I received the following travel grants for presentation of research papers at national and international scientific conferences.

1. Annual meeting of the American Academy of Physical Medicine and Rehabilitation, Orlando, Florida, 1987. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1300.
2. International Conference on Exercise Fitness and Health in Toronto, and annual meeting of the Canadian Association of Vocational Evaluation and Work Adjustment in Montreal, 1988. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1500.
3. Annual meeting of the American College of Sports Medicine, Baltimore, Maryland, 1989. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1400.
4. Annual meeting of the American College of Sports Medicine, Salt Lake City, Utah, 1990. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1460.
5. Annual meeting of the American College of Sports Medicine, Orlando, Florida, 1991. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1000.
6. Annual meeting of the American Academy of Physical Medicine and Rehabilitation and American Congress of Rehabilitation Medicine, San Francisco, California, 1992. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1787.
7. Annual meeting of the American Academy of Physical Medicine and Rehabilitation, Miami, Florida, 1993. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1200.
8. Annual meeting of the American Lung Association and American Thoracic Society, New Orleans, Louisiana, 1996. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1200.
9. Biannual meeting of the International Federation of Adapted Physical Activity, Quebec City, Quebec, 1997. *Small Faculties Committee, University of Alberta*. Amount: \$994.
10. Annual meeting of the American College of Sports Medicine, Denver, Colorado, 1997. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1500.
11. Annual meeting of the American College of Sports medicine, Orlando, Florida, 1998. *Funded by the Small Faculties Committee, University of Alberta*. Amount: \$1087.
12. Annual meeting of the Canadian Society for Exercise Physiology, Fredericton, New Brunswick, 1999. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1200.
13. Annual meeting of the American College of Sports Medicine, Baltimore, Maryland, 2001. Funded by the *Alberta Heritage Foundation for Medical Research*. Amount: \$1500.

14. Biannual meeting of the International Federation of Adapted Physical Activity, Vienna, Austria, 2001. *Funded by the Small Faculties Committee, University of Alberta.* Amount: \$2500.
15. Annual meeting of the American College of Sports Medicine, St. Louis, Missouri, 2002. *Funded by the Alberta Heritage Foundation for Medical Research.* Amount: \$1500.
16. Annual meeting of the European College of Sports Sciences, Athens, Greece, 2002. *Funded by the Small Faculties Committee, University of Alberta.* Amount: \$2480.
17. Physical Medicine and Rehabilitation Foundation Conference, Toronto, October, 2002. *Funded by the Alberta Workers' Compensation Board.* Amount: \$2645.
18. Annual meeting of the European College of Sports Sciences, Salzburg, Austria. *Funded by the Small Faculties Committee, University of Alberta.* Amount: \$2500.
19. Annual meeting of the European College of Sports Sciences, Clermont-Ferrand, France. *Funded by the Small Faculties Committee, University of Alberta.* Amount: \$2500.
20. Annual meeting of the European College of Sports Sciences, Belgrade, Serbia. *Funded by the Small Faculties Committee, University of Alberta.* Amount: \$2500.
21. Annual meeting of the European College of Sports Sciences, Lausanne, Switzerland. *Funded by the Small Faculties Committee, University of Alberta.* Amount: \$2500.
22. Annual meeting of the American College of Sports Medicine, New Orleans, Louisiana. *Funded by the Heart and Stroke Foundation of Alberta, Northwest Territories and Nunavut.* Amount \$1000.

Government of Alberta: Summer Temporary Employment Program Awards

- 1<sup>st</sup> May to 31<sup>st</sup> August, 1988; Amount: \$4000.
- 1<sup>st</sup> May to 31<sup>st</sup> August, 1990; Amount: \$4000.
- 1<sup>st</sup> May to 31<sup>st</sup> August, 1991; Amount: \$4000.
- 1<sup>st</sup> May to 31<sup>st</sup> August, 1993; Amount: \$4000.

**Representation on National Committees**

1. Member, Canadian Paralympic Committee, Professional Development Subcommittee; 2007 to present.
2. Chair, Leadership Development Initiative for Persons with a Disability Committee, Canadian Society for Exercise Physiology (CSEP), 1993 to 2002. The mandate of this committee was to establish guidelines for fitness testing and exercise prescription for persons with disabilities. As a result of funding obtained by CSEP from the Fitness Directorate, Health Canada, the committee has prepared two monographs listed earlier. As chair of this committee, I played a major role in the entire preparation of these documents.

3. Executive Member, National Committee on Fitness Appraisal Certification and Accreditation for the Canadian Society for Exercise Physiology; 1994 to 2002.
4. Board Member, Canadian Association of Researchers in Rehabilitation; 1990 to 2000.

### **Occupational Performance Analysis Unit**

The *Occupational Performance Analysis Unit (OPAU)* was established in 1986 under the directorship of Professor Sharon Brintnell. The OPAU is a non-profit, private practice enterprise operated by the Department of Occupational Therapy at the University of Alberta. It provides a range of services to the legal community, including case consulting and management, functional assessment, and court testimony. Proceeds from service delivery support the unit's educational and research mandate in the area of work-related assessment and treatment.

As a member of the OPAU since its establishment, I have completed physical work capacity assessments for over 600 clients that have been referred to the unit. For each client, this involves: (a) a review of the file submitted by the referral agency, (b) discussion with the clinical coordinator of the OPAU regarding the client's history and disability, (c) evaluation of the client's physical work capacity, and (d) submission of a report to the clinical coordinator. This procedure takes approximately 2.5 hrs to complete for each client. Over the years, my interaction with the clients has provided me with tremendous experience in applying my expertise in work physiology to individuals with a variety of disabilities.

The OPAU database provides a wealth of information pertaining to the lifestyle, physical and functional capacity of persons with a variety of disabilities. Much of this information has been presented at international conferences and workshops, and several manuscripts have been published in peer reviewed journals and conference proceedings.

### **Membership in Professional/Scientific Committees:**

1. 1987 - present: American College of Sports Medicine
2. 1988 - present: Canadian Society for Exercise Physiology
3. 2001 - present: European College of Sport Science
4. 1990 - present: Alberta Lung Association
5. 1992 - present: Sports Medicine Council of Alberta

### **Expert Reviewer for Journals and Research Organizations**

#### Peer Reviewed Journals

1. Medicine and Science in Sports and Exercise.
2. European Journal of Applied Physiology.
3. Canadian Journal of Applied Physiology.
4. International Journal of Sports Medicine.
5. Spinal Cord.
6. Canadian Journal of Rehabilitation.
7. Disability and Rehabilitation.
8. International Journal of Industrial Ergonomics.

9. Paraplegia.
10. Adapted Physical Activity Quarterly.
11. Journal of Sport Sciences.
12. European Journal of Sport Sciences.
13. Clinical Physiology and Functional Imaging.
14. Journal of Sports Science and Medicine.
15. Applied Physiology, Nutrition and Metabolism.
16. Journal of Applied Physiology.
17. Journal of Biomedical Optics.
18. Cochrane Reviews.

### Research Grants

#### *Canadian Agencies:*

1. Canadian Fitness and Lifestyle Research Institute, Ontario.
2. Sport Canada, Ontario.
3. Rick Hansen Man in Motion Foundation, British Columbia.
4. Ontario Ministry of Health, Training and Research Branch.
5. Saskatchewan Health Board.
6. Glenrose Rehabilitation Hospital Research Fund, Alberta.
7. E.P. Taylor, University of Guelph Research Fund, Ontario.
8. British Columbia Workers' Compensation Board.
9. Public Health Agency of Canada.
10. Michael Smith Foundation for Health Research, British Columbia.

#### *International Agencies:*

1. New Zealand Lottery Grants Board.
2. Programme Sport, Physical Activity and Health of ZonMw, Switzerland.
3. Association Francaise Contre Les Myopathies, France.
4. Cochrane Injuries Group, Nutrition and Public Health Intervention Research Unit, London.

### **Continuing Education Workshops**

*Edmonton Police Service Staff Development Workshop:* From 1987 to 1995, I organized exercise testing and training workshops in liaison with the exercise physiologist of the Edmonton Police Services for their new recruits. These officers completed fitness test batteries that were developed for the police force and they were provided individual feedback regarding their fitness levels.

*International Workshops:* I have been invited by several universities and organizations to conduct workshops in order to train physicians and rehabilitation medicine professionals in clinical exercise testing. These workshops included both theoretical and practical sessions and focussed on the following conditions: coronary artery disease, chronic lung disease, spinal cord injury and cerebral palsy.

1. Hong Kong Polytechnic University: January 1995, February 1998 and September 2005.
2. University of Indonesia: Jakarta, September, 2005 and Solo, September 2005.
3. Hospital for Sports Medicine, Arthritis and Trauma: Bangalore, India, October 2005.

## **Community Activities**

1. *Commonwealth Games*, Edmonton 1978: Technical Official for the Badminton Section.
2. *Universiade '83*, Edmonton 1983: appointed as a Technical Official for the Tennis section.
3. *Canadian National Badminton Championships*; Member of the Organizing Committee, 2002.