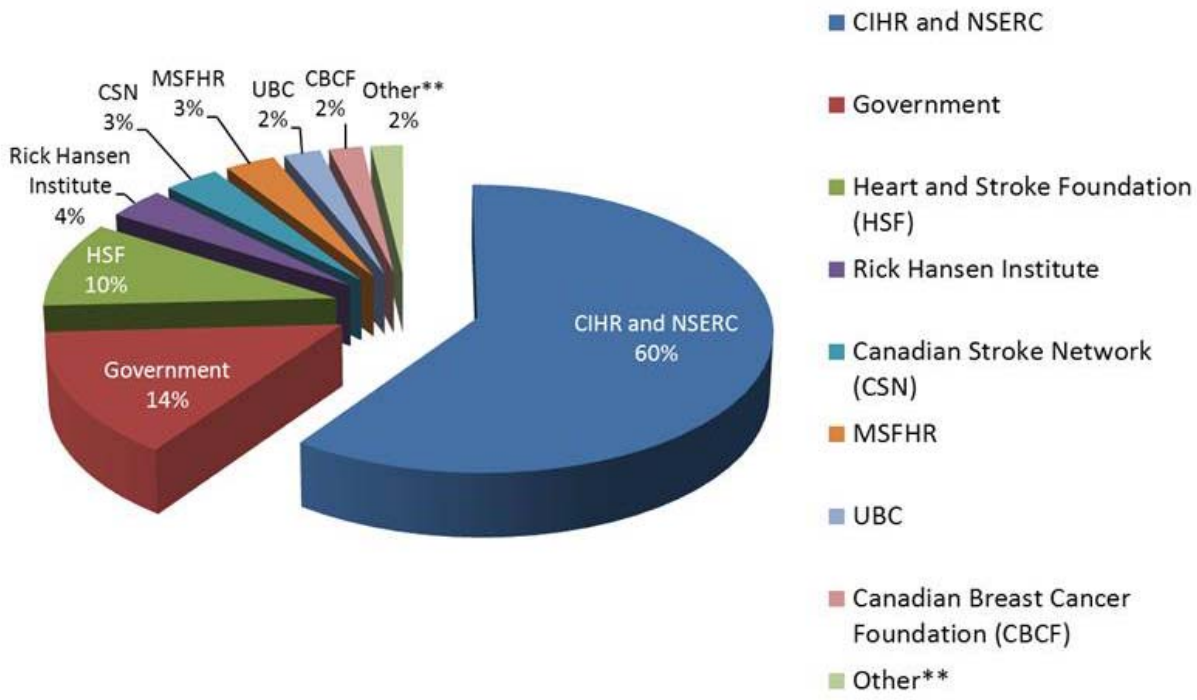
UBC

PHYSICAL THERAPY

MOVEMENT AND FUNCTION FOR LIFE

2011 RESEARCH SUMMARY HIGHLIGHTS

Sources of PI Operating Grant Funding 2011 = $7,403,581*



** Other contributing granting agencies: Canadian Lung Association, Canadian Rheumatology Association, Association of Workers' Compensation Boards of Canada, BC Cancer Foundation, Physiotherapy Foundation of Canada, The Arthritis Society/Arthritis Health Professions Association, BC Sports Medicine Research Foundation

SUMMARY RESEARCH STATISTICS (JAN 1, 2011 - DEC 31, 2011)

FUNDING

*Total PI Grant Funding in 2011
(over the tenure of the grants) = **$7,403,581**

Total Grant Funding
(PI + Collaborative over the tenure of the grants) = **$52,313,697**

PUBLICATIONS

- Peer Reviewed Publications in 2011 = **88**
- "In Press" = **37**

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FACULTY OF MEDICINE

UBC

PHYSICAL THERAPY

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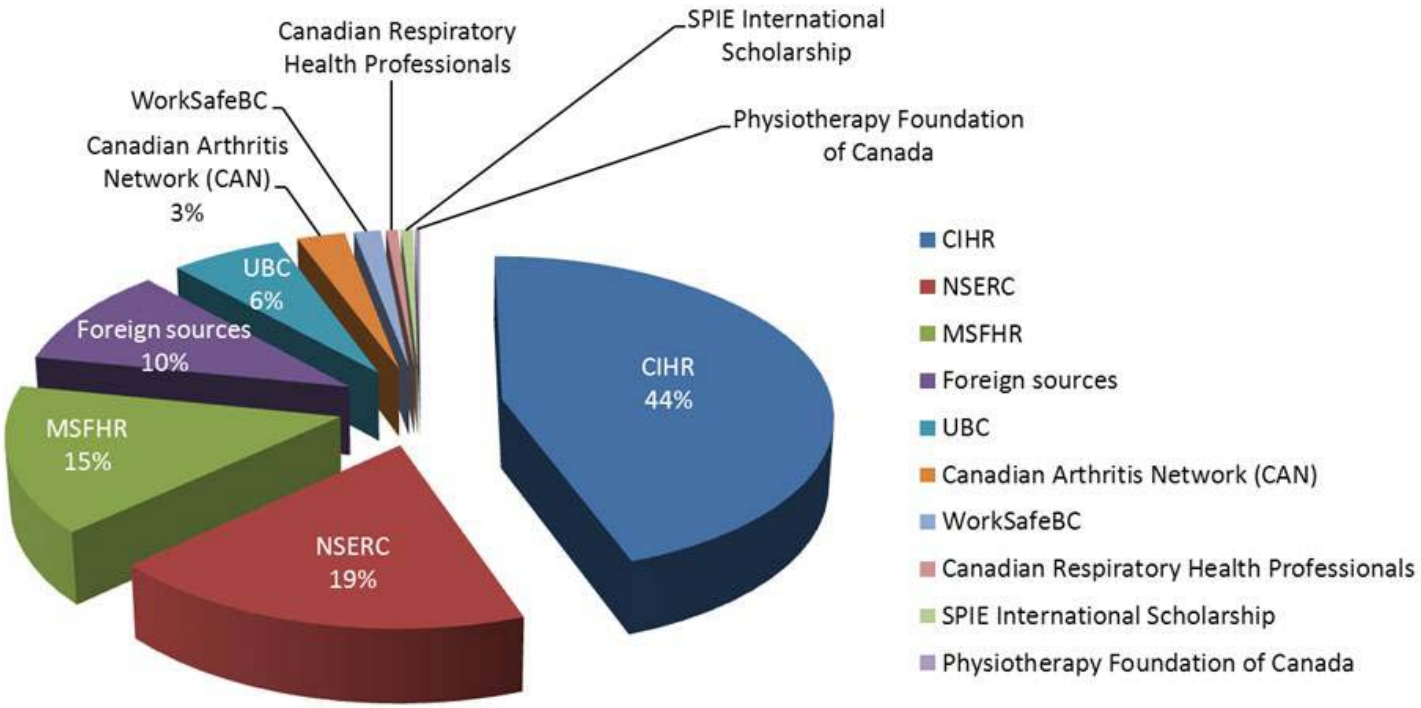
2011 RESEARCH SUMMARY HIGHLIGHTS

Trainees supervised by Department Faculty members come from various high quality programs at UBC including Rehabilitation Sciences, Neuroscience, Population and Public Health and Experimental Medicine. We strive to create outstanding learning and research experiences for our research trainees and offer training in diverse fields of interest using a variety of research methodologies and the latest technology. Our faculty members have an excellent record of scholarly productivity and include several Scholars and Research Chairs.

Sources of Research Trainee Funding 2011 = $1,447,065



SUMMARY RESEARCH STATISTICS (JAN 1, 2011 - DEC 31, 2011)

Funding held by trainees supervised by PT Faculty in 2011

- **M.Sc. Students = $119,000**
- **Ph.D. Students = $894,065**
- **Post-Doctoral Fellows = $474,000**

Number of trainees supervised by PT Faculty in 2011

- **M.Sc. Students = 18**
- **Ph.D. Students = 25**
- **Post-Doctoral Fellows = 8**

UBC

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DEPARTMENT OF PHYSICAL THERAPY 2011 RESEARCH PROGRAMS

Research and training in the Department of Physical Therapy would not be possible without the generous support not only from the funding agencies listed but of our health authority partners, our professional organization and affiliated research centres:

Arthritis Research Centre
Biomedical Research Centre
The Brain Research Centre
Canadian Breast Cancer Foundation BC/Yukon and Canadian Cancer Society BC/Yukon
Cancer Control Program at British Columbia Cancer Research Centre
Centre for Hip Health and Mobility
Child and Family Research Institute
Computing, Information and Cognitive Systems
International Collaboration on Repair Discoveries
James Hogg iCAPTURE Centre
Providence Health Care Research Institute
Physiotherapy Association of British Columbia
Robert H.N. Ho Research Centre
Vancouver Coastal Research Institute

In 2011 Several faculty members were supported by Michael Smith for Health Research Scholar Awards: Lara Boyd, Pat Camp, Linda Li, Teresa Liu-Ambrose and Alex Scott all are supported by MSFHR Scholar awards and Janice Eng a Senior Scholar award. Lara Boyd is also a Canada Research Chair in Neurobiology of Motor Learning. Teresa Liu-Ambrose is also a CIHR New Investigator. Linda Li is supported by the only Chair in arthritis rehabilitation research in Canada, The Harold Robinson-Arthritis Society Chair in Arthritic Diseases and is also a CIHR New Investigator and an American College of Rheumatology Research & Education Foundation Health Professional New Investigator.

Neural Control of Force Production and Movement

(http://www.physicaltherapy.med.ubc.ca/research/Neural_Control_of_Force_Production_and_Movement.htm)

Faculty: Dr. Jayne Garland, jayne.garland@ubc.ca

On top of her duties as department head, Dr. Garland maintains a very active research laboratory. Her research has two main foci: neural control of force production and movement, particularly under conditions of muscle fatigue; and recovery of motor control following stroke, with emphasis on postural control. She employs sophisticated single motor unit analysis to investigate fundamental motor control principles as well as force platform technology to measure postural sway and isokinetic equipment to measure force production.

Motion Analysis and Biofeedback Laboratory

(http://mablab.rehab.med.ubc.ca/)

Faculty: Dr. Michael Hunt, michael.hunt@ubc.ca

Dr. Hunt's research focus is in the area of clinical biomechanics with a particular emphasis on knee injuries. His previous work has examined the effectiveness of surgical and exercise interventions on knee biomechanics and quality of life in patients with knee osteoarthritis. He typically uses various testing methods for his research, including motion analysis and strength assessment, he plans, evaluates, and implements the use of visual feedback mechanisms to improve gait retraining strategies for patients with varying pathologies. His clinical and teaching interests lie in the areas of clinical and orthopaedic biomechanics as well as musculoskeletal injuries.

Exercise and Chronic Disease

Faculty: Dr. Kristin Campbell, kristin.campbell@ubc.ca

Dr. Campbell's research interests are focused on the role of physical activity in the prevention and rehabilitation of chronic disease, particularly cancer. She has investigated the role of physical activity in cancer prevention by examining the effect of exercise on proposed biomarkers of breast and colon cancer risk, such as sex hormones, inflammatory markers and tissue protein expression. In terms of rehabilitation from cancer treatment and cancer survivors, her research has focused on examining the benefits of physical activity on physical function, quality of life, fatigue and lymphedema, and she is interested in starting to examine the emerging evidence for the role of physical activity in lowering risk of cancer recurrence. Her research spans a range from small scale intervention studies to multi-center randomized controlled trials and large cohort studies.

Rehabilitation Aimed at Muscle Performance & Muscle Biophysics Laboratory

(http://www.muscle.rehab.ubc.ca/Home.htm)

Faculty: Dr. Darlene Reid, darlene.reid@ubc.ca

The Muscle Biophysics Laboratory (located on the 6th floor of the Research Pavilion at Vancouver General Hospital) examines muscle performance using a variety of techniques including in vitro skinned fibre preparation and isolated vessel preparation to analyze immunohistochemical features of skeletal muscle. The *Rehabilitation Aimed at Muscle Performance* (RAMP) research team is exploring the dose-response of rehabilitative exercise protocols in the elderly with chronic disease across the spectrum from molecular to clinical studies. The team is a core group of clinical and basic scientists with established collaborative links to Orthopaedics, Geriatrics, Human Kinetics, Sports Medicine and Respiratory Medicine at Vancouver Coastal Health and UBC.

Tendon pathophysiology, injury prevention and rehabilitation

(http://www.physicaltherapy.med.ubc.ca/research/Tendon_injury_prevention_and_rehabilitation.htm)

Faculty: Dr. Alex Scott, Alex.Scott@ubc.ca

The goal of Dr. Scott's research group is to understand the influence of movement on tendon biology, and to incorporate this knowledge into new clinical strategies for tendonopathy. New treatments currently being examined include movement based therapies, physical therapy modalities, and novel drug strategies.

In adult tendons, tenocytes are a specialized, load-responsive fibroblast responsible for adaptive and repair responses. Certain types of movement (e.g., exercise) are beneficial for tendon adaptation, much like in muscle or bone. Conversely, excessive repetitions or high loads can lead the development of tendon overuse pathology – a chronic, painful condition known as tendonopathy. Identifying the optimal loading parameters for tenocytes will allow us to improve injury-prevention and rehabilitation strategies.

Epidemiology and Management of Chronic Obstructive Pulmonary Disease

Faculty: Dr. Pat Camp, Pat.Camp@hli.ubc.ca

Dr. Pat Camp is a physical therapist and clinician-scientist at St. Paul's Hospital. Her position is the first clinician-scientist appointment jointly supported by the University of British Columbia Department of Physical Therapy and the Providence Health Care Research Institute. As the clinical-specialist for the Respiratory Rehabilitation Program at St. Paul's Hospital, Dr. Camp directs the clinical care and research activities associated with the program. Dr. Camp's research interests focus on the diagnosis and management of individuals with chronic obstructive pulmonary disease (COPD). Her research pursuits in COPD include epidemiology and health outcomes, gender differences, gaps in care, and the development of clinical decision-making tools for exercise prescription for patients with COPD.

Brain Development: Perception to Action Lab

(http://ipal-pt-med.sites.olt.ubc.ca)

Faculty: Dr. Naznin Virji-Babul, naznin.virji-babul@ubc.ca

Dr. Virji-Babul is a physical therapist and a neuroscientist. Her group uses a combination of behavioural and brain imaging tools (i.e., MEG) to probe the brain and investigate the patterns of brain activation as they relate to perceptual-motor and social-emotional development in children and adults with developmental disabilities. Their research has shown that in adults with Down syndrome, there are distinct differences in the timing, pattern and location of brain activity during functional tasks. They are exploring how information based on brain dynamics can be effectively integrated into intervention for children and adults with developmental disabilities.

Arthritis, Joint Health Services Research & Knowledge Translation Research Program

(http://arthritis.rehab.med.ubc.ca/)

Faculty: Dr. Linda Li, lli@arthritisresearch.ca

Dr. Li's research program is located at the Arthritis Research Centre of Canada (ARC). Affiliated with UBC and VCHRI, ARC conducts patient/consumer driven clinical and health services research related to arthritis diagnosis, prognosis, prevention, care outcomes and quality of life issues. Dr. Li is also an affiliated investigator at the Arthritis Community Research & Evaluation Unit (ACREU) in Toronto. Her research focuses on two areas: development of cost-effective health services interventions for arthritis care, and the development and evaluation of knowledge translation strategies. The main goal of her work is to improve the care and quality of life of people living with arthritis.

Brain Behaviour Laboratory

(http://brain.rehab.med.ubc.ca/)

Faculty: Dr. Lara Boyd, lara.boyd@ubc.ca

The Brain Behaviour Laboratory, led by Dr. Lara Boyd, is located on the third floor of UBC Hospital. The Brain Behaviour Laboratory examines the relationships between brain function and behaviour after central nervous system damage from stroke. The lab integrates two fields of study: the neurobiology of motor learning and the neural science of stroke recovery, in order to understand how best to stimulate neural plasticity to facilitate motor learning and recovery of function after stroke or other forms of acquired brain injury. Ultimately, the goal of this work is to understand how the stroke-damaged brain learns in order to inform rehabilitation interventions.

Aging, Mobility and Cognitive Neuroscience Lab

(http://cogmob.rehab.med.ubc.ca/)

Faculty: Dr. Teresa Liu-Ambrose, teresa.ambrose@ubc.ca

Dr. Liu-Ambrose is a member of the UBC Brain Research Centre and a principal investigator of the CFI-funded Centre for Hip Health, located on the 3rd floor of the Willow Chest Centre at VCHRI. The centre brings together researchers from a wide range of disciplines to investigate and treat persons with hip fractures and osteoarthritis, and create new surgical solutions. Dr. Liu-Ambrose's research program focuses on reducing the incidence of falls and fall-related fractures in older adults, using a transdisciplinary approach, and collaborates with experts in psychology, neuro-imaging, geriatrics, kinesiology and health care and epidemiology.

Interprofessional Education and Practice

Faculty: Dr. Lesley Bainbridge, lesleyb@interchange.ubc.ca

Dr. Bainbridge is the Director of Interprofessional Education, Faculty of Medicine, and Associate Principal, College of Health Disciplines. Her office is located on the 4th floor of the Woodward Instructional Resources Centre at UBC. Her research program is aimed primarily at understanding interprofessional education (IPE) and collaborative practice in health. Specific research initiatives include the testing of an Interprofessional education model that enables integration of IPE into any curriculum using pain management as the pilot, examining the role of patient or community teachers in an IPE context, exploring the role of narrative to break down interprofessional barriers and examining the links between interprofessional collaboration and health human resource issues such as retention and recruitment.

Neurological Rehabilitation Program (http://neurorehab.med.ubc.ca/)

Faculty: Dr. Janice Eng, Janice.Eng@ubc.ca

Dr. Eng's program is located in the Rehabilitation Research Laboratory (GF Strong Rehab Centre, Vancouver Coastal Health). This laboratory serves as a multi-user, interdisciplinary facility dedicated to excellence in rehabilitation research. Dr. Eng's clinical trials have measured the effects of rehabilitation treatments on mobility, arm and hand function, cardiovascular fitness, balance, falls, bone density and quality of life in people with stroke and spinal cord injury. She works closely with clinicians, the Canada Stroke Network, ICORD (International Collaboration on Repair Discoveries) spinal cord research centre, and the Brain Research Centre to develop collaborative research projects which span mechanistic research, clinical trials to best practice implementation.

Health, Lifestyle and Cultural Diversity

Faculty: Dr. Elizabeth Dean, elizabeth.dean@ubc.ca

Dr. Dean has a primary interest in promoting physical therapy practice that is consistent with global epidemiological indicators in the 21st century, including the promotion of health, and the effectiveness of non invasive interventions (e.g., health education and exercise) and the prevention of lifestyle conditions. Her research focuses on health and the global crisis of conditions such as heart disease, smoking-related disorders, cancer, hypertension and stroke, obesity, diabetes and osteoporosis. Her investigations cover ways of maximizing health outcomes using health education and exercise in culturally diverse populations. She focuses on multicultural populations in Canada and internationally. Currently she is focusing on knowledge translation of existing and new knowledge that promotes health and wellbeing, and the integration of this knowledge by physical therapists globally in their practices to address the health care needs of their countries in the 21st century at both the health policy and individual levels.

Knowledge Broker

Faculty: Alison Hoens, alison.hoens@ubc.ca

Alison helps bring research to clinical practice and practice into our research through clinical connections.

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