CENTRE FOR HEALTH, ACTIVITY, AND REHABILITATION RESEARCH

Research Activity 2013

Centre for Health, Activity, and Rehabilitation Research
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OVERVIEW

The Centre for Health, Activity, and Rehabilitation Research is based at the School of Physiotherapy on the University’s main campus in Dunedin, but also has members in Wellington and in Christchurch. Currently, it comprises 14 research active staff and three dedicated research support staff.

We are committed to excellence in research, and to the transfer of research informed knowledge to our learning activities and clinical practice. Our research has expanded rapidly over the last ten years, during which our research outputs, funds, and research student numbers have more than trebled: we are the fastest growing research area within the University in terms of quantifiable indicators of research quality (these consist of the number of research outputs, research students, and research income).

RESEARCH DEVELOPMENT

The School of Physiotherapy moved back to the University from the Otago Polytechnic in 1996. At that time, none of the academic physiotherapy staff who transferred had a doctoral degree, and there was no culture of research. This has changed significantly in the intervening period: all of the academic staff now hold PhD degrees, and a strong research culture has been developed.

The School and the Centre for Health, Activity, and Rehabilitation Research are now recognised nationally as the pre-eminent centre for allied health research, evidenced by PBRF ratings, the Centre’s leadership role in the University’s Rehabilitation and Disability Research Theme (2007-2011), and Professor Baxter’s appointment to the TEC-funded STAR Advisory Panel.

In 2013 the Centre changed its title to the Centre for Health, Activity, and Rehabilitation Research, to better reflect the expansion of its research activities and its multidisciplinary engagement. CHARR has also developed a strong network of
research partners, ranging from community groups (through its group-based exercise and physical activity programmes) to commercial partners nationally and internationally.

2013 research highlights included success in PBRF. CHARR is the top rated research group in this area in New Zealand and improved its overall rating from a 3.6 to a 4.1. The Centre also celebrated the employment of three new academic members of staff: Dr Cathy Chapple, Dr Ram Mani, and Dr Dan Ribeiro. Notably, all three new members of staff were successful in applying for research grant funding in 2013.

RESEARCH NETWORKS AND THEMES

We have developed strong linkages with colleagues and research groups nationally and internationally, as well as across the University.

In 2013, CHARR led the development of two research networks; Physical Activity and Health, and the Caregivers network:

The Physical Activity and Health network brings together established researchers from departments around the University, and maintains links with collaborators around the world. The activity of this network culminated in a one and half day meeting in December 2013 to set a collaborative research agenda for the future.

The Caregivers network works with researchers from the University and Otago Polytechnic, as well as with relevant support services. CHARR hosted a one day symposium in the middle of 2013 to discuss the diverse issues facing Caregiving in today’s society.

We have contributed to two additional University Research Themes: The Arthritis Research Theme, (Director: Associate Professor Lisa Stamp) and – particularly – the Health of Veterans, Serving Personnel and Their Families (Director: Associate Professor David McBride, Deputy and Acting Director Professor David Baxter); this has served to increase our engagement and collaboration with departments within the University, and key agencies externally (including Arthritis New Zealand, and the New Zealand Defence Force).

INTERNATIONAL: COLLABORATIONS AND ADVISORY BOARD

We have well-established links with research groups internationally, as evidenced by joint publications, grant applications and supervisory arrangements. Key research collaborations include University of Ulster (UK; physical activity, low back pain); University of Melbourne (Australia; concussion, sports medicine); and University of
Sydney (falls and intellectual disability). We also continue active collaborations with previous staff from the School who have moved overseas, including Professor Stephan Milosavljevic (University of Saskatchewan), Dr Paul Hendrick (University of Nottingham), and Dr Leica Claydon (Anglia Ruskin University).

The work of the Centre is supported by an International Advisory Board comprised of international experts in relevant research fields who aid the centre through staff and student exchanges, contributing to PhD programmes through supervisory or advisory roles, reviewing grants/publications, and networking on research developments at the international level.

In 2013 the following were visitors to the School:

- Professor Louise Ada, University of Sydney, Australia (Neurological rehabilitation, stroke)
- Professor Elizabeth Dean, University of Vancouver (William Evans Fellow)

### CONFERENCES AND EVENTS

**PhysioForward April 2013:** This conference showcased innovative and thought-provoking research in the areas of physiotherapy and rehabilitation from across the world and New Zealand. The fundamental theme of the conference was the future of physiotherapy practice in a changing health delivery climate. The conference was divided into four presentation themes key to the physiotherapy and rehabilitation professions both clinically and at a research and policy level. These themes were: prevention, intervention, participation, and evaluation.

**100 Years of Physiotherapy April 2013:** The School of Physiotherapy celebrated 100 years in April 2013. The anniversary was marked by two days of celebration attended by Alumni.

**Reaching Out: Celebrating 100 Years of Otago Physiotherapy Graduates 1913-2013.** There was an exhibition, supporting the centenary, in the De Beer Gallery Special Collections, Library, University of Otago from 27th September – 13th December 2013. [http://www.otago.ac.nz/library/exhibitions/physio100/](http://www.otago.ac.nz/library/exhibitions/physio100/)
RESEARCH LEADERS

**Professor David Baxter**
BSc (Hons), DPhil, MBA
Position: Dean and Professor

David’s work has largely focused on physical therapy interventions to reduce pain and disabilities, and the impact of non-communicable diseases: physical activity and rehabilitation; low back pain; complementary and alternative medicine; photomedicine and laser therapy; surveys; controlled trials; and systematic reviews of clinical effectiveness of physical interventions for non-communicable diseases. Recently participated as a team member on a major HRC-funded trial of non-pharmacological management of osteoarthritis (MOA Trial), with several multinational network projects focused on the use of activity monitors in rehabilitation (including UK, Ireland, Sweden), and non-pharmacological pain management (including Korea, USA, UK and Ireland).

**Associate Professor Leigh Hale**
BSc (Physio), MSc, PhD (WITS)
Position: Associate Professor, Associate Dean for Research

Leigh’s work has focused on the needs of people with disabilities, and developing community-based interventions to improve function, participation and engagement: Neurological rehabilitation and disability research; community-based rehabilitation; virtual reality in rehabilitation; falls prevention; using both qualitative and quantitative methodology (with people with multiple sclerosis, stroke, Parkinson’s disease, intellectual disability, older adults, diabetes)

**Professor S. John Sullivan**
DipPhEd (Otago) MSc PhD (Wat)
Position: Professor

John’s international research has led to publications in the areas of: clinical neurophysiology and motor control; therapeutic massage; traumatic brain injury and physical activity; sports-related concussion; sports injury and the use of the world wide web and apps in sports concussion and sports medicine. Professor Sullivan and his collaborators are focusing their sports concussion research on: the understanding of the physical and social consequences of a sports concussion, the use of emerging social networking technologies in concussion awareness and management, the development of a safe return-to-play protocol and sideline screening assessment tools.
KEY AND EMERGING STAFF

Dr Cathy Chapple  
BSc (Hons), Grad Dip Phty, Post Grad Dip Phty, MManipPhty, PhD (Otago)  
Position: Lecturer

Research Interests  
Cathy’s research focuses on Osteoarthritis of the knee and hip focusing on:  
effectiveness of physiotherapy intervention, predictors of treatment outcome;  
models of care, patient consulting behaviour, levels of physical activity, and pain with osteoarthritis. She has an interest in translating research into physiotherapy clinical practice by exploring: facilitators and barriers to implementation of research findings, and alternative/new models of physiotherapy practice e.g. working in orthopaedic clinics. Her interest in clinical education focuses on the use of simulation to augment clinical practice, models of clinical practice, and clinical reasoning in students and experienced physiotherapists.

Dr Gill Johnson  
Dip Phty, MSc, PhD (Otago)  
Position: Senior Lecturer

Research Interests  
Gill’s main research focus is in the area of spinal health and factors impacting on self-reports of low back pain. Her more recent research interests include the examination of balance performance in different patient populations and quantifying coupled movement patterns between the jaw and cervical spine using kinematic analysis. Gill’s clinical interests include musculoskeletal dysfunction and professional practice issues.

Dr Ramakrishnan Mani  
B.P.T (Physiotherapy) M.P.T (Manipulative Physiotherapy), PGCertC (Biostatistics, Epidemiology and Research methodology), PhD (Otago).  
Position: Lecturer

Research Interests  
Ram’s primary research interest is to encompass modern pain sciences [centrally mediated neurophysiological mechanisms, and psychosocial factors] in routine clinical assessment and intervention. Other key research interests include sedentary behaviours and structured physical activity in health and disease, rural occupational health (injury prevention-quad bikes) and clinimetrics. He is a member of various national and international professional organisations such as International Association for study of pain (IASP), New Zealand Pain society (NZPS) and Injury Prevention Network, Aotearoa, New Zealand (IPNANZ).
Dr Hilda Mulligan  
BSc, MHSc, PhD (Otago)  
Position: Lecturer (School of Physiotherapy, Christchurch)  

Research Interests  
Hilda’s teaching and research interests lie in disability and rehabilitation, with a broad and participatory approach to the meaning of rehabilitation. She particularly enjoys working with children and adults with disabling neurological conditions, and with older adults to address falls prevention.

Dr Meredith Perry  
BPhty, MManipTh, PhD (Otago)  
Position: Lecturer (School of Physiotherapy, Wellington)  

Research Interests  
Meredith has an interest in the development of relationships between health care providers and their clients particularly in the area of primary health, chronic conditions (including low back pain) and health behaviours, particularly with respect to the design of physical activity interventions, inter-professional learning, and older adult’s recovery following orthopaedic surgery. She has experience in qualitative and mixed methods research.

Dr Daniel Ribeiro  
BPhty (IPA), MSc (UFRGS) PhD (Otago)  
Position: Lecturer  

Research Interests  
Dan’s research programme has two main research themes. The first is focused on clinical biomechanics, with special interest in shoulder and low back biomechanics. This is a laboratory-based research focusing on the association between musculoskeletal injury and neuromuscular and movement impairments. The second theme explores the use of biofeedback in rehabilitation, combining laboratory with field-based research. This theme aims to identify ideal forms of feedback provision and its effectiveness as an intervention tool. My final goal is to use the information gathered from these research themes to inform and develop new strategies for musculoskeletal rehabilitation and injury prevention.
Dr A. G. Schneiders  
DipPhy (Otago), PGCertTertT (Otago), PGDipManipTh (Curtin), MSc (Curtin), PhD (Otago)  
Position: Senior Lecturer  
Research Interests  
Tony has a focus on sports and manipulative physiotherapy. His specific research interests include sports injury prevention, sports-related concussion, complementary and alternative medicine for sports injury and chronic condition management, biomechanics (3D motion analysis and electromyography), exercise prescription, exercise compliance/adherence issues, balance, proprioception and laterality.

Dr Margot Skinner  
Dip PhTy, MPhEd, PhD (Otago)  
Position: Deputy Dean, Associate Dean of Undergraduate Studies, Senior Lecturer  
Research Interests  
Margot had developed her interest in the conservative management of patients with obstructive sleep apnoea, and comparison of posture and 3D movement of the cervicothoracic region to include a wider range of participants such as young female rowers, those with asthma, with obesity and other non-communicable diseases. She also has an interest in research into interprofessional education, and global health initiatives, each of which links well with her teaching commitments and involvement in physiotherapy professional affairs at an international level.

Dr Catherine Smith  
DipPhy, PhD (Otago)  
Position: Associate Dean Graduate Research, Research Fellow  
Research Interests  
Cath’s current research interests include facilitation of participation in physical activity and exercise for people with disability and chronic health problems, in particular Multiple Sclerosis. She also has a special interest in how dog-walking contributes to the health and well-being of healthy adults and adults with chronic health conditions.
Dr Gisela Sole  
BSc (Physio) (Stellenbosch), MSc (Med) Exercise Science (UCT), PhD (Otago)  
Position: Senior Lecturer

Research Interests  
Gisela contributes to sports and musculoskeletal research and teaching at the School. Her research into ‘Developing a motor control model for individuals with hamstring injuries’; has contributed towards the understanding of the high recurrence rate of this injury and is leading towards more effective prevention and management strategies. Current research focuses on decreasing risk for osteoarthritis following ACL and other knee injuries, and the role that footwear may have on these. She is also contributing towards research on the association of shoulder pain and various functional limitations.

Dr Steve Tumilty  
GradDipPhys (Northumbria); PGDipPhty(Manip), PGCertTertT, MPhty (Otago), PhD (Otago)  
Position: Associate Dean for Postgraduate Studies, Senior Lecturer

Research Interests  
Steve’s passion is for clinically applicable musculoskeletal research. His recent focus has been exploring the use of low level laser therapy in the treatment of tendinopathies. His research directions include translational research projects that will bring new knowledge to the profession. Current projects include Anterior Cruciate Ligament rehabilitation, the use of outcome measures to monitor progress in a rehabilitation setting, and the incidence of low back pain in the amputee population.
FULL PUBLICATIONS (2013)

Chapter in Book


Journal – Research article


for low back pain in people with lower limb amputation? Medical Hypotheses. Advance online publication. doi: 10.1016/j.mehy.2013.11.012


Sampath, K. K., Mani, R., & Tumilty, S. (2013). Effectiveness of manual therapy (MT) or exercise therapy (ET) or both on pain, physical function and quality of life in patients with hip osteoarthritis (OA): A systematic review and meta-analysis. PROSPERO: International Prospective Register of Systematic Reviews


Professional and other non-research articles


Published proceedings – full paper


Published proceedings - abstract

nurses conducting functional assessments of injury risk? Asics Conference of Science and Medicine in Sport – 2013


Conference contribution – verbal presentation and other Conference outputs


Ashby, J., & Morey, S. (2013, August). Healthy food is yum! It's good for your tum! Verbal presentation at the ECE Research Hui, Dunedin, New Zealand.


Clay, L. (2013, April). Quad bike accidents on NZ farms: "She'll be 'right', it won't happen to me"! Verbal presentation at the PhysioForward Scientific Conference, Dunedin, New Zealand.


Skinner MA Physical therapy in critical care – respiratory and rehabilitation management update. Symposium on Critical Care WCPT-Asia Western Pacific & ACPT Congress 6-8 September 2013, Taichung Taiwan.

Skinner MA Physical therapy entry level educational reforms in Asia Western Pacific countries WCPT Symposium. WCPT-Asia Western Pacific & ACPT Congress 6-8 September 2013, Taichung Taiwan


Smith, C Invited speaker: Exploring health status of paid caregivers in NZ. Caregiver symposium, Centre for Health, Activity and Rehabilitation Research, June 2013
Smith, C Invited speaker: Control, choice, support: Could these three little words facilitate participation in exercise for life? Physiotherapy New Zealand Neurology group. June 2013, Wellington.


Awarded Doctoral Degree


Mani, Ramakrishnan (2013) Does all-terrain vehicle vibration (ATV) influence postural control in New Zealand farmers?

Ribeiro, Daniel (2013) The effectiveness of the spineangle as a real time biofeedback device for modifying trunk posture during daily activity.

Exhibition

http://www.otago.ac.nz/library/exhibitions/physio100/
## Appendix 1: SIGNIFICANT FUNDING AWARDS 2013

<table>
<thead>
<tr>
<th>PI</th>
<th>Evaluation of a walking programme for people with rheumatoid arthritis</th>
<th>Associate Professor Leigh Hale</th>
<th>MPPT</th>
<th>$9,019</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mobility Scooters: are they keeping older New Zealanders on the move?</td>
<td>Prof John Sullivan</td>
<td>Lotteries Health</td>
<td>$49,500</td>
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<td></td>
<td>Framework for teaching clinical reasoning skills to undergraduate physiotherapy students and models for learning</td>
<td>Dr Gisela Sole</td>
<td>CALT</td>
<td>$9,867</td>
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<td></td>
<td>Effects of aerobic training on menstrual pain in women with primary dysmenorrhea: A randomized controlled trial</td>
<td>Dr Cathy Chapple</td>
<td>PNZ</td>
<td>$2,918</td>
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<td></td>
<td>Do footwear variations influence the magnitude and direction of forces across the knee in people who have sustained a knee injury?</td>
<td>Dr Gisela Sole</td>
<td>PNZ</td>
<td>$7,618</td>
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<td></td>
<td>Blue Prescription: Enhancing physical activity for people living with disability.</td>
<td>Associate Professor Leigh Hale</td>
<td>PNZ</td>
<td>$11,438</td>
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<td></td>
<td>Spinal muscle activity patterns during functional tasks in persons with lower limb amputation: An exploratory study</td>
<td>Dr Daniel Ribeiro</td>
<td>NZALS</td>
<td>$2,721</td>
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<td></td>
<td>Self-management of fatigue for people with multiple sclerosis: The Minimise Fatigue Maximise Life Project</td>
<td>Dr Hilda Mulligan</td>
<td>UORG strategic</td>
<td>$15,000</td>
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<td></td>
<td>Are Mobile Methods a feasible way to ask people with chronic conditions about dog-walking and health?</td>
<td>Dr Cath Smith</td>
<td>UORG</td>
<td>$6,091</td>
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<td></td>
<td>Investigating visual performance of farmers who have a history of quad bike loss of control events</td>
<td>Dr Ram Mani</td>
<td>UORG</td>
<td>$18,463</td>
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## Appendix 2: PHD STUDENTS AND TOPICS

### PhD Students (2013)

<table>
<thead>
<tr>
<th>Student</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Alimansi, Suliman</td>
<td>Feasibility of a pedometer-driven walking programme in an occupational health setting</td>
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<tr>
<td>Arumugam, Ashokan</td>
<td>Exploring the interaction between the pelvic segment and gluteal and thigh muscles</td>
</tr>
<tr>
<td>Balasundaram, Arun</td>
<td>Are symptoms provoked by exercise/physical activity the same as those resulting from a sports concussion?</td>
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<tr>
<td>Baxter, Susan</td>
<td>Health and exercise psychology: walking for people with rheumatoid arthritis</td>
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<tr>
<td>Clay, Lynne</td>
<td>Psychological risk factors for quad bike accidents among rural workers in New Zealand</td>
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<tr>
<td>Devan, Hemakumar</td>
<td>Exploring the relationship between physical activity and low back pain in traumatic above-knee amputees</td>
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<tr>
<td>Diab, Abdulkareem</td>
<td>Body composition: balance in older adults with Parkinson’s Disease</td>
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<tr>
<td>Donaldson, Gail</td>
<td>Does the use of silicon oil change the post-operative outcomes after Dupuytrens contracture release surgery?</td>
</tr>
<tr>
<td>Kanagasabai, Parimala</td>
<td>Participation of disabled children in New Zealand</td>
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<tr>
<td>Lui, Lizhou</td>
<td>Non-pharmacological interventions for knee osteoarthritis: evaluation of the effectiveness of walking versus walking plus laser acupuncture</td>
</tr>
<tr>
<td>Mabire, Leon</td>
<td>The influence of body weight on the effectiveness of brisk walking for the management of obesity in adults</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
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<tr>
<td>Macznik, Alexsandra</td>
<td>Complementary and Alternative Medicine (CAM) in sports medicine</td>
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<tr>
<td>Mehta, Nidhi</td>
<td>Relationships between key lifestyle factors and back pain in New Zealand adolescent girls</td>
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<tr>
<td>Mehta, Poonam</td>
<td>Neuropathic pain: minimum clinically important changes (MCIC) in pain and functional outcome measures</td>
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<tr>
<td>Mesbah, Normala</td>
<td>Postural stability in older adults with early diagnosed Alzheimer's disease</td>
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<tr>
<td>Moran, Rob</td>
<td>Musculoskeletal injury prediction in high intensity strength and conditioning athletes</td>
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<tr>
<td>Ward, Lesley</td>
<td>Feasibility of yoga practices for the management of chronic pain</td>
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<tr>
<td>Stanley, Winser</td>
<td>Clinical outcome measures for balance and postural control in cerebellar ataxia</td>
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**Secondary Supervisor School of Physiotherapy**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
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<tbody>
<tr>
<td>Adhia, Divya</td>
<td>Pelvic girdle pain disorders: innominate mobility test using hip abductor and external rotation</td>
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<tr>
<td>Aldabe, Daniela</td>
<td>A prospective study of muscle activity and innominate bone motion patterns during pregnancy</td>
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<tr>
<td>Baxter, Marian</td>
<td>What are the psychometric properties of the novel overuse injury screening protocol &quot;FootFAST&quot;</td>
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<tr>
<td>Darlow, Ben</td>
<td>Low back pain: reducing fear and anxiety to prevent disability.</td>
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<tr>
<td>Kermat Kar, Maryam</td>
<td>Nursing and physiotherapy [Working Title]</td>
</tr>
<tr>
<td>Quick, Andrew</td>
<td>The influence of orthognathic therapy on mandibular motion</td>
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