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Some recent New Zealand research which contributes to evidence-based physiotherapy.

Physiotherapy Research at the University of Otago

- **Effects of occupational whole body vibration using quad bikes**
- **How much exercise for Achilles Tendinopathy?**
- **Visual Acuity in Young Elite Motorsport Athletes**
- **Physical activity for people with neurological conditions**
- **More effective rehabilitation for amputees**
- **Measuring outcomes for musculoskeletal patients**

Effects of occupational whole body vibration on balance and kinaesthetic performance
(Researcher 1)

There is a strong association between occupational whole body vibrations (WBV) and low back pain (LBP). WBV is thought to cause adverse spinal structural changes leading to LBP when driving. Recent research has also hypothesised that WBV can adversely influence articular mechanoreceptors leading to altered spinal proprioception and poor kinaesthetic control. A recent study gathered the WBV exposure of 130 Otago farmers using quad bikes for one day and found a high level of exposure to vibrations at harmful frequencies. WBVs from quad bike use may adversely affect proprioceptive, vestibular and ocular systems during physically demanding tasks within farming, leading to an increased risk of LBP, and loss of vehicle control leading to accidents.

Eccentric Exercise Protocols for Chronic Non-insertional Achilles Tendinopathy: How Much is Enough?
(Researcher 2)

Eccentric exercises for the calf muscles have been shown to be effective for chronic non-insertional Achilles Tendinopathy (AT). However, the relative effectiveness of various exercise dosages is unknown. A systematic review of RCTs was designed to determine whether it is possible to recommend an optimum dose of eccentric exercises. Three selected RCTs showed positive effects from very similar eccentric exercises protocols for chronic non-insertional AT. Due to insufficient reported compliance data, a conclusion about the relative effectiveness of various compliances was not feasible. According to our review and compliance data analysis, the relative effectiveness of various dosages of eccentric exercises for AT is still unclear. However, it appears that one treatment session per day may have effects similar to two sessions per day. These findings highlight the need for further investigation.

Visual Acuity in Young Elite Motorsport Athletes: A Preliminary Report.
(Researcher 3)

This project investigated whether elite motorsport athletes demonstrate levels of visual acuity superior to age- and sex-matched controls. A cross-sectional observational study measured gaze stabilisation, visual acuity and perception time in male motorsport athletes and healthy age- and sex-matched controls Descriptive statistics were calculated for each variable and independent t-tests were used to compare statistical differences between groups.
The motorsport athletes and matched control group ranged from 14 to 25 years of age, with a mean of 17.6 years. Motorsport athletes demonstrated superior visual acuity compared to the controls for all measures. This preliminary investigation demonstrated that motorsport athletes may have superior visual performance ability when compared to controls. Increased visual acuity and perception time may act to increase performance and the study highlights the need for further research into the area of visual sports performance, particularly in motorsport, where such skills are considered integral to performance and injury reduction.

Physical activity for people with neurological conditions
(Researcher 4)

Physical activity has physical and psychological benefits for people with neurological conditions. Levels of physical activity in this population are, however, known to be low both during rehabilitation in a hospital setting and after discharge into the community. Three different but related studies have investigated the perspectives of patients, their carers and health professionals on physical activity, using qualitative methodology. Findings will enable healthcare professionals to promote and enhance physical activity, through better understanding of processes that drive people with neurological conditions to engage in physical activity.

Postural responses to functional tasks in unilateral transtibial amputees with Diabetes and Peripheral Vascular Disease
(Researcher 5)

Lower leg amputation in older people is predominantly due to the complications of chronic diseases such as diabetes and peripheral vascular disease (PVD). Recent statistics from the New Zealand Artificial Limb Board show that 60% of new referrals are due to diabetes and/or PVD. Patients' quality of life after amputation is directly related to their ability to perform activities of daily living (ADL) with their prosthesis. Balance underpins the capacity to execute a wide range of ADL such as walking and climbing stairs. The balance requirements for these activities are highly complicated for amputees and involve the visual, vestibular and somatosensory systems, all of which are compromised in patients with diabetes and PVD. Active community-dwelling individuals with transtibial amputation secondary to diabetes and/or PVD, fitted with prosthesis will be asked to perform a series of static and dynamic balance evaluation tests. A pilot study will inform the development of the main study, aiming for more effective rehabilitation programmes specific to these patients.

Mapping the Patient-Specific Functional Scale (PSFS) to the International Classification of Functioning (ICF)
(Researcher 6)

Routine assessment of patient outcomes is recommended best practice. It is also recommended best practice that patient status and outcome assessment should reflect the International Classification of Functioning (ICF) framework. We have established that the Patient-Specific Functional Scale (PSFS)

is a form of outcome measure applicable to all musculoskeletal patients. The extent to which the PSFS reflects the ICF is unknown.

This observational content validity study aims to investigate the extent to which items nominated by patients completing the PSFS represent the domains of the ICF. The data will come from a large outcome study, which recruited a prospective cohort of patients presenting with musculoskeletal disorders, between May and December 2007. The new study will compile the PSFS item data for each case. We will collate all of the items nominated by each case, categorise each item, and map the items, using thematic analysis techniques, to the pre-defined domains of the ICF. We will report the descriptive statistics for each category, proportion of items per domain, and proportion of cases fulfilling each ICF domain. The results of this study will support ongoing research into the use of the PSFS in physiotherapy practice.

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