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Diane Salter  
Project Manager and Principal Analyst  
Review of Physiotherapy Services  
Department of Labour  
PO Box 3705  
Wellington

Dear Diane

This joint submission is made on behalf of the University of Otago, School of Physiotherapy, and the Auckland University of Technology, School of Physiotherapy. These two institutions are the sole providers of physiotherapy undergraduate education in New Zealand. Although around 200 students graduate per year there is a chronic shortage of physiotherapists in the workforce. One reason often given for this is the low rates of remuneration in New Zealand forcing many new graduates to seek employment overseas.

Physiotherapy is a four-year degree course and admission is highly contested. It is a major challenge for us to ensure we retain our graduates in this country to fulfil the health needs of the New Zealand public.

Yours sincerely



Peter Larmer  
MPH (Hons), MNZSP, Dip MT, Dip Acup.  
Head, School of Physiotherapy  
Division of Rehabilitation and Occupation Studies  
Faculty of Health and Environmental Sciences  
Auckland University of Technology  
Private Bag 92006  
Auckland 1020  
New Zealand  
Ph (09) 921-9999 ext 7322  
Fax (09) 921 -9620  
email: peter.larmer@aut.ac.nz

# Evidence for Physiotherapy

## ***Background: Physiotherapy Education in New Zealand***

World-wide, physiotherapy training started shifting from a hospital- based training to a university-based undergraduate degree in the United States in the 1970s; in New Zealand this shift to an undergraduate baccalaureate degree occurred in 1991.

In accordance with the requirements of the Physiotherapy Board of New Zealand ( the regulatory body for the profession), the two programmes currently accredited in New Zealand (i.e. BPhy at the University of Otago, and the BHSc (Physiotherapy) at Auckland University of Technology) are four-year full-time equivalent degrees with mandated *minimum* of 1000 hours of supervised clinical practice. (For further information on Physiotherapy Education see Appendix 3). The Board's requirement for registration also requires students to meet ten specific competencies (Appendix 4), and on graduation, newly qualified physiotherapists are autonomous practitioners registered to work as primary contact practitioners (effectively primary care health professionals within their field). Physiotherapy (and physiotherapy education) in New Zealand is respected internationally, not least given the contributions to the profession of New Zealand physiotherapists such as Robin McKenzie and Brian Mulligan.

There is an expectation nationally and internationally for physiotherapy programmes to be evidence-based and research-lead. New Zealand physiotherapy research has progressed substantially in the past decade. However the research base, although growing rapidly, is still small, as it is recognised that it takes time for the development of research capability and capacity within an emerging academic discipline area (e.g. for suitably qualified and motivated individuals to progress through to a Masters-level qualification or beyond). In addition, there has been until comparatively recently limited resources and opportunities for physiotherapists to undertake research training, or to secure support for research projects. This situation is not unique to New Zealand, and has been recognised as an issue globally.

Systematic reviews such as those undertaken by the Cochrane Library, review the results of randomised controlled trials (RCT) of a treatment intervention, and then reach a conclusion on the effectiveness or otherwise of that intervention. If the initial data are limited (as is still the case for many physiotherapy interventions), then conclusions are frequently reached stating there is insufficient evidence to recommend or refute an intervention. It should be stressed that this does not mean the interventions are ineffective. Some physiotherapists also question the value of RCT to evaluate the effectiveness of physiotherapy intervention due to the difficulties associated with such ‘controlled’ research, including ethical issues, around providing sham or placebo treatments or advice (Stack, 2006).

The bulk of the evidence to date focuses on the prescription of therapeutic exercise programmes. Physiotherapists are the health professionals with the skills to provide these programmes: e.g. this is reflected in the curriculum for undergraduate programmes, and the required competencies set by the Physiotherapy Board of New Zealand).

Physiotherapy has an increasing role in health care, particularly given the growth in knowledge of the importance of physical health. Mounting evidence favours physical therapy over drugs or surgery for many conditions, particularly chronic conditions that dominate health care costs. As the average New Zealander’s lifespan increases, chronic conditions and associated costs will increase, and health care directed at improving the physical health of the population will grow in importance.

It is beyond the scope of the current submission to provide an exhaustive account of the evidence to support the effectiveness of physiotherapy; however the following summarises and highlights the effectiveness and thus potential role and benefit, for physiotherapy in a number of key areas:

### ***Ankle Injuries***

Functional rehabilitation has been found to be more effective than immobilisation for ankle ligament injuries (Kerkhoffs et al., 2002; van Os et al., 2005; Zoch, Fialka-

Moser, & Quittan, 2003); the same is also apparent following surgical intervention (de Vries, Krips, Sierevelt, & Blankevoort, 2006).

There is evidence for the effectiveness of supervised exercise programmes following an ankle injury for preventing a recurrence (Handoll, Rowe, Quinn, & de Bie, 2001; van der Wees et al., 2006), enhancing return to work and sport, and increasing patient satisfaction. Proprioception exercises using a wobble board (ankle disc) have been shown to be effective (van der Wees et al., 2006; Zoch et al., 2003). Furthermore in two recent New Zealand studies of physiotherapy for ankle sprains, the participants (n = 111) made a significant improvement in their ankle function over the duration of the course of physiotherapy (mean number of clinic appointments  $7.31 \pm 3.91$ ; Bassett, 2006). In these studies, the physiotherapy programme consisted of a raft of modalities such as RICE (Rest Ice Compression Elevation) in the acute stages, which was progressed to mobilising, strengthening, and balancing activities in the latter stages of recovery.

### ***Elbows/Epicondylitis***

There is limited evidence for any physical intervention for epicondylitis and further research particularly into exercise and manipulation is required (Bisset, Paungmali, Vicenzino, & Beller, 2005). However, long-term results for physiotherapy compared to corticosteroid injections or no treatment reported a small difference in favour of physiotherapy (Bisset et al., 2006; Smidt et al., 2002). The improvement from corticosteroid injections tended to give only six weeks relief then a high level of recurrence; in contrast the improvements from physiotherapy were more sustainable and carried less risk of side or adverse effects as this group had a far lower use of analgesics and anti-inflammatory drugs (Bisset et al., 2006; Smidt et al., 2002). There is also a role for physiotherapy interventions focusing on the prevention of these injuries through appropriate strengthening exercises, bio-mechanically sound sport techniques, and use of appropriate sports equipment (Hume, Reid, & Edwards, 2006).

## ***Falls prevention***

There is strong evidence available on the value of balance exercises for those over 80 years of age who are identified as at risk of falls (Gillespie et al., 2003; Moreland et al., 2003). Physiotherapists are the best qualified health professionals to deliver these programmes or to undertake the training of other health professionals to deliver the programme. In New Zealand a falls prevention programme, the Otago Exercise Programme is funded by ACC. Current research work in conjunction with the two Schools of Physiotherapy is also assessing the value of Tai Chi as a specific form of exercise in the prevention of falls in the elderly.

## ***Fibromyalgia***

Supervised aerobic exercise training has a beneficial effect on improving the symptoms of fibromyalgia (Busch, Schachter, Peloso, & Bombardier, 2002; Jones, Adams, Winters-Stone, & Burckhardt, 2006). Exercise combined with education and cognitive behavioural therapy is also recommended based upon current evidence (Adams & Sim, 2005; Goldenberg, Burckhardt, & Crofford, 2004).

## ***Hand Injuries***

Physiotherapy is recommended following flexor tendon injuries of the hand, but there is currently insufficient evidence to define the best mobilisation strategy (Thien, Becker, & Theis, 2004).

## ***Joint replacement surgery/ Hip fracture***

An article in *NZ Doctor* (Cameron, 2006) looked at a systematic review of referrals for elective surgery. It found that only 46% are actually referrals requesting surgery; the rest are referred for other reasons – an opinion, diagnosis, management advice or a test or investigation. With the present debate on waiting list management there is scope for physiotherapists to be involved in helping screen and give management advice (and sometimes treatment) to some of these patients. Overseas research has shown that physiotherapists can play an important role in waiting list management –

frequently physiotherapy intervention meant the person could successfully be removed from the waiting list (Daker-White et al., 1999).

There is weak evidence that a pre-operative education package for joint replacement surgery may reduce length of stay (Ackerman & Bennell, 2004).

The value of physiotherapy following hip fracture and joint replacement surgery is recognised, but there is no research yet on the advantages of one form of physiotherapy intervention over another (Handoll, Sherrington, & Parker, 2004).

### ***Knee Injuries***

The guidelines produced by ACC and the New Zealand Guidelines Group (NZGG):

*The Management of Soft Tissue Injuries: Internal Derangements* (ACC 2003)

supports functional rehabilitation with an individualised exercise programme.

Conservative treatment of ACL ruptures with exercises results in a more rapid recovery from injury than surgical intervention (Linko, Harilainen, Malmivaara, & Seitsalo, 2005). A similar endorsement for therapeutic exercise was found for patellar tendinopathy (Bahr, Fossan, Loken, & Engebretsen, 2006).

### ***Low back pain***

Low back pain (LBP) is one of the commonest conditions treated by musculoskeletal physiotherapists. There is strong evidence supporting advice to remain active and continue as far as possible with normal activities, and this is recommended by the *New Zealand Acute Low Back Pain Guide* (Accident Compensation Corporation, 2004b; Australian Acute Musculoskeletal Guidelines Group, 2002). Spinal manipulative therapy is effective in the treatment of acute LBP (Accident Compensation Corporation, 2004b; Bronfort, Haas, Evans, & Bouter, 2004; Smith, McMurray, & Disler, 2002; UK BEAM Trial Team, 2004) and recent research (Abbott et al., 2005; Brennan et al., 2006; Childs et al., 2004; Fritz, Brennan, & Leaman, 2006; Fritz, Delitto, & Erhard, 2003; May, 2006), has identified sub-groups by a clinical predication rule or classification system so that interventions can be targetted to those patients most likely to respond. Early intervention has been shown to be cost-effective (Pinnington, Miller, & Stanley, 2004), and patients often also

perceive benefits from treatment not captured by quantitative data (Underwood, Harding, & Klaber Moffett, 2006).

Evidence is increasing for individually designed exercise programmes in improving pain and function in non-specific LBP, which represents by far the largest group of patients seeking treatment (J. A. Hayden, M. W. van Tulder, A. Malmivaara, & B. W. Koes, 2005a; J. A. Hayden, M. W. van Tulder, A. V. Malmivaara, & B. W. Koes, 2005b; Hayden, van Tulder, & Tomlinson, 2005; Philadelphia Panel, 2001a). There is strong evidence that exercise significantly reduces sick days during the first follow up year (Hayden, van Tulder et al., 2005a; Kool et al., 2004).

There is also increasing evidence that physiotherapy intervention for chronic LBP is cost-effective and produces better long-term sustainable outcomes compared to spinal surgery (Fairbank et al., 2005; Koes, 2005; Rasmussen, Nielsen, Hansen, Jensen, & Schioetz-Christensen, 2005; Rivero-Arias et al., 2005). An exercise programme is often delivered as a component of a multidisciplinary approach to the treatment of chronic LBP.

### ***Neck pain/whiplash***

It has been found that advice to remain active and to avoid the use of soft collars (Australian Acute Musculoskeletal Guidelines Group, 2002), combined with therapeutic exercise (Philadelphia Panel, 2001b) is an effective intervention for acute neck pain. There is strong evidence to support the combination of exercise with mobilisation and manipulation (Gross et al., 2004a, 2004b; Gross et al., 2002; Kay et al., 2005). Manipulation and exercise have also both been found to be effective interventions for cervicogenic headaches (Jull et al., 2002)

### ***Osteoarthritis***

Osteoarthritis is fast becoming a significant burden on health resources due to the ageing population and increasing longevity, and as a consequence effective management strategies for osteoarthritis are crucial. The consequences of this condition are significant, with individuals often afflicted by considerable pain, loss of function, disability and impaired quality of life (Guccione, 1994). Treatments are typically directed at the management of symptoms, such as pain relief, with exercise

therapy being commonly used. Exercise therapy has been recommended by the American College of Rheumatology (American College of Rheumatology, 2000) as a conservative management approach for osteoarthritis of the knee and hip. The objective of exercise therapy is to strengthen muscles, maintain or increase joint mobility and improve aerobic fitness, thereby attenuating impact loads, providing joint stability, reducing pain, enhancing function and limiting disability.

The efficacy of exercise therapy for the treatment of knee joint osteoarthritis has been established within the literature, with the majority of published reviews demonstrating reduced pain and improved functional ability following exercise therapy (Brosseau et al., 2004; Fransen, McConnell, & Bell, 2002; Fransen, McConnell, & Bell, 2004; Pelland et al., 2004; Roddy et al., 2005; van Baar, Assendelft, Dekker, Oostendorp, & Bijlsma, 1999). These systematic reviews examined all types of exercise programmes, including strengthening programmes, aerobic, hydrotherapy and land-based programmes. There is a paucity of literature investigating exercise therapy use in the management of osteoarthritis of the hip (Fransen et al., 2004; Puett & Griffin, 1994; Zhang et al., 2005). However, evidence from recent randomised controlled trials suggest exercise may be beneficial in terms of pain relief and self-reported function (Stener-Victorin, Kruse-Smidje, & Jung, 2004; Sylvester, 1990; Tak, Staats, Van Hespén, & Hopman-Rock, 2005). Exercise and strength training are also very cost-effective and may result in surgery not being required (Deyle et al., 2000; Segal, Day, Chapman, & Osborne, 2004). There is also some evidence that TENS is effective in pain control (Osiri et al., 2000). Finally physiotherapy is a non invasive intervention that does not result in any of the well documented side effects from NSAIDs (Bjordal, 2005).

### ***Pulmonary Rehabilitation***

Pulmonary rehabilitation has become one of the most widely used, efficacious interventions for people with chronic airflow limitation. The combination of breathing retraining, aerobic and anaerobic exercise, functionally targeted goals and patient education has been demonstrated to be highly effective in numerous studies (Garrod, Marshall, Barley, & Jones, 2006; Singh, Sodergren, Hyland, Williams, & Morgan, 2001) including a number of Cochrane reviews which show it to be more

effective in moderating the course of chronic lung disease than any other intervention (Lacasse, Goldstein, Lasserson, & Martin, 2006; Nici et al., 2006). Pulmonary rehabilitation is delivered by a multidisciplinary team of specialists, led most often by a physiotherapist. In the UK and Australia especially, much work has been undertaken to develop sensitive objective markers of improvement and the work of Sally Singh (Leicester), Rachel Garrod (London) and Sue Jenkins (Perth) has added greatly to the physiotherapy literature in this area.

### ***Shoulder Injuries***

ACC and the NZGG have jointly published *The diagnosis and management of soft tissue shoulder injuries and related disorders* which discusses the different shoulder pathologies and the role of physiotherapy. This recommends exercises as the most effective rehabilitation for rotator cuff disorders, frozen shoulder and acromioclavicular joint sprain. (Accident Compensation Corporation, 2004a), and this is supported by Australian guidelines (Australian Acute Musculoskeletal Guidelines Group, 2002). Exercises have been shown to improve pain and function as well as increasing range of movement. Ultrasound is effective for the treatment of calcific tendonitis (Australian Acute Musculoskeletal Guidelines Group, 2002; Philadelphia Panel, 2001c).

A cost-effectiveness study has shown a graduated exercise programme for chronic shoulder complaints is more effective in the short and long term and reduces health care costs, although the initial costs of providing the treatment are higher than no intervention (Geraets et al., 2006).

Evidence indicates that effective rehabilitation following proximal humeral fractures involves an exercise programme (Hodgson, 2006). There is some evidence that early intervention, without routine immobilisation, results in less pain and potentially better recovery (Handoll, Gibson, & Madhok, 2003).

### ***Spinal Cord Injury***

Physiotherapists have a crucial role in the rehabilitation of people with spinal cord injuries from admission until agreed goals are met, and further rehabilitation is unlikely to continue to produce significant improvements in function. There is

minimal research on the most appropriate forms of treatment but it usually consists of a mixture of strength training, aerobic fitness and functional activities (Bizzarini et al., 2005; Kirshblum, 2004; Myslinski, 2005).

### ***Traumatic Brain Injury***

The evidence-based best practice guideline *Traumatic Brain Injury: Diagnosis, Acute Management and Rehabilitation* (Accident Compensation Corporation, 2006), is a joint publication from ACC and NZGG. In this there is a strong emphasis a multidisciplinary team approach to rehabilitation, with physiotherapists an integral part of this team.

## **Appendixes**

**Appendix 1:** WCPT Keynotes EBP(2005): Evidence Based Practice – an overview  
Evidence Based Practice 2 – the New Zealand experience.

**Appendix 2:** Stack E (2006): Editorial – Physiotherapy: the ultimate placebo.  
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**Appendix 3:** Physiotherapy Education in New Zealand

**Appendix 4:** Physiotherapy Board of New Zealand Registration Competencies

**Appendix 5:** Advanced Practitioner Background paper

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