Review of the Way in Which Physiotherapy Services are Funded and Accredited by ACC

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Introduction

My name is Duncan Reid. I am Head of School, Rehabilitation and Occupation Studies, Auckland University of Technology. I am a trained physiotherapist, with my career now devoted to teaching and research. I have achieved an MHSc (Hons), PGD (Manip Physiotherapy), Dip MT, Dip Phys, BSc, and MNZCP.

I understand that the issue has now arisen as to whether it is best practice to have a gymnasium or other exercise area in a modern physiotherapy practice. I would like to provide relevant details as to the teaching programme undertaken, how this might manifest in a practice setting, and relevant research into the benefits of an exercise prescription as part of physiotherapy treatment.

Place of Exercise Generally, Teaching of Exercise Prescription

Physiotherapists deal with a wide range of musculoskeletal disorders, which as a part of the rehabilitation process require the prescription of strengthening exercises. It is recognised that people who have suffered significant injury can be left with deficits of strength that affect their ability to return to full function and that these deficits can persist for many months and years if not adequately addressed (Bressel & McNair, 2001; Reid & McNair, 2000).

In both physiotherapy undergraduate and post graduate education in recent years there has been a greater emphasis given to improving student competence in exercise prescription and exercise physiology. To that end the AUT University School of Physiotherapy has papers in the undergraduate programme called *Exercise Physiology and Prescription* and at post graduate level a paper in the Master of Health Science pathway called *Therapeutic Exercise*.

In the undergraduate programme students are given extensive instruction on the physiology of strength training, the ability to assess levels of strength in injured and normal populations and how to set appropriate strength programmes. The ability to utilise relevant gym equipment is a part of this training as well as the ability to use other specialised physiotherapy testing equipment such as Isokinetic dynamometers. At post grad level these skills are extended to more complex conditions and increase the level of competency required for use of the equipment, testing procedures and exercise programme delivery.

One of the basic physiological tenants of such programmes is to gradually and systematically increase the amount of resistance applied to the muscle (Kraemer & Ratamess, 2004).

Practical Implementation

The early stages of this process may involve the application of exercise in a controlled environment in a treatment cubicle. However, as part of a structured progression of the exercises the only way to increase this resistance is by the use of relevant gym equipment. Also, there may be practical reasons for the need to move from the cubicle to a gym area, such as the cubicle being too small or psychosocial reasons such as integrating the patient back into a group setting.

While exercise equipment is available in commercial gyms the ability of the therapist to be close at hand is compromised. It is safer if the gym equipment is in the clinical environment. Gym instructors while trained in strengthening principles are not trained with indepth knowledge of pathophysiology such as for tissue healing Therefore to transfer the care of these patients to the gym instructors is not warranted until the patient is approaching more normal levels of function and strength.

Relevant Research

To understand the basis for this, we need to refer to the extensive amount of research literature on strength deficits following injury, and as well as rehabilitation programmes to address such deficits. The following are examples of areas where progressive strengthening programmes are required to achieve rehabilitation goals. (Note: This is not an extensive list given the short time frame).

Knee ACL

The ACC knee guidelines (ACC & NZGG, 2003) recommend that following ACL injury an active functional programme supervised by a physiotherapist is recommended.

In a recent well designed RCT by Mikklesen Werner et al (2000) comparing open chain exercises with closed chain exercises the authors demonstrated that the introduction of open chain knee extension exercises at week six increased the strength of these patients and improved the return to sport time frames more effectively than closed chain alone. In order to deliver such an open chain programme a knee extension programme using gym equipment is required. Inadequate rehabilitation not using such programmes can leave patients with significant strength and functional deficits (Reid & McNair, 2000).

In a recent review of the current literature compiled for ACC (Wilkins & Reid, 2006), investigating factors that affect the ability of patients to return to sport following an ACL injury or repair, it was found that having strength of at least 85% in the unaffected limb was requirement for a successful return to sport. Furthermore a number of functional tests such as hop tests also needed to be at a level of 85% or better. These figures would also add weight to the requirement of having well designed strength programmes in Gym type settings to achieve these goals.

Achilles tendon

In one of the land mark studies investigating the rehabilitation of Achilles tendon injuries Alfredson et al (1998) utilised a progressive strengthening programme initially utilising body weight, progressing to a back pack with weights and then a

gym based calf raising machine. In this programme it took 12 weeks to achieve a full return to running compared to a much longer time for those who required surgery. This type of programme is now considered best practice for the management of such a condition and several further RCT's by Alfredson's group have added to the evidence in support of this approach.

Recent WCPT Paper

A systematic review on the value of therapeutic exercise (Taylor, Dodd, Shields, & Bruder, 2007) presented at the WCPT Congress in Vancouver earlier this year concluded:

"In musculoskeletal practice, therapeutic exercise reduced pain and improved activity levels in people with chronic low back pain, and osteoarthritis of the knee; reduced sick leave in people with sub-acute and chronic low back pain; and improved activity and led to a faster return to work after lumbar disc surgery. There was also moderate or limited evidence to support the effectiveness of therapeutic exercise in such diverse clinical groups as ankylosing spondylitis, cervicogenic headache, whiplash associated disorders, acute mechanical neck disorders, fractures of the proximal femur and humerus, shoulder pain, lateral epicondylitis, patellofemoral pain syndrome, and acute lateral ankle sprain. There were indications that exercise programs were more effective when they were relatively intense and individualised, but in many areas of practice one form of exercise was no more beneficial than another. Very few adverse effects of exercise were reported."

Donaldson et Al

A randomised controlled trial based in Christchurch compared the effectiveness of a gym based rehabilitation programme to normal care for patients following lumbar discectomy (Donaldson, Shipton, Inglis, Rivett, & Frampton, 2006). The gym based exercise improved outcomes for the patients across several quality of life measures, and also indicated that the cost effectiveness of the gym based exercise programme was significant. The participants in the programme returned to work six days earlier than the control group and accessed their GP less. I understand that Barry Donaldson is providing a summary of this trial directly to the Reviewer.

ACC Injury Guidelines

As noted, exercise forms part of the ACC-supported injury treatment guidelines for a knee injuries, which is also the case for some shoulder and ankle injuries – see Appendix 1. It is fair to say that much of this is based on expert opinion, which supplements and draws conclusions from available research. In these areas we don't have answers definitively yet, but the guidelines and teaching practice (which is based on guidelines) accept that a robust expert consensus on these areas indicates exercise as part of treatment.

Conclusion

There is evidence that strength deficits need to be addressed as part of injury rehabilitation, and that this leads to earlier and more effective return to work. This is supported by expert opinion in relation at least to some shoulder, knee and ankle injuries.

The use of exercise with clinical supervision is an important way to integrate rehabilitation techniques, such as mobilisation, with exercise. This also ensures that exercise does not stress injury sites through poor technique or overloading.

This is translated into teaching practice in New Zealand, following treatment guidelines. I would expect the recommendations supported in guidelines and teaching to be implemented in practice. In my view this is likely to require use of a gym or exercise facility for many commonly presenting injuries, as part of a best practice New Zealand treatment regime.

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Appendix 1
Examples of Guidelines supporting exercise programmes for musculoskeletal injuries

The New Zealand Guidelines Group in conjunction with the Accident Compensation Corporation has produced guidelines to assist the clinician in their treatment of some common musculoskeletal injuries.
1. The key messages in the Management *of Soft Tissue Knee Injuries: Internal Derangements* (Accident Compensation Corporation, 2003) gives the following rehabilitation goals:
Non-operative Management Goals
• Regain joint motion and muscle strength, educate and motivate, return to work and sport, advise on activity modification if appropriate
Pre-operative Rehabilitation Goals
• Initiate rehabilitation process prior to surgery, familiarise the patient with post-operative treatment methods to gain joint motion and muscle strength. Aim for full knee extension and at least 120˚ flexion
Post-operative Rehabilitation Goals
• As for non-operative management, achieve clinical milestones within appropriate timeframes:
Suggested Clinical Milestones:
Acute Phase (1-3 weeks) - Full passive knee extension, 90-100˚ flexion, SLR, FWB /normal gait Intermediate Phase (weeks 4–12) – Full flexion within 8 weeks, 75-80% isometric quads strength, open kinetic chain limited to between 45-90˚ (refer to text) Functional Training (4-6 months) – Return to sport 6-9 months (85-90% isometric or isokinetic quads strength).

2. The key messages in *The Diagnosis and Management of Soft tissue Shoulder Injuries and Related Disorders (Accident Compensation Corporation, 2004)* are as follows
Rotator Cuff Disorders: Trial of rehabilitation
Frozen shoulder: Consider trial of rehabilitation if poor response or refer to specialist
AC Joint Sprain: If poor response, consider trial of rehabilitation 4 -6 weeks
Anterior/Recurrent Dislocation: Refer for trial of rehabilitation
Instability Disorders: Comprehensive rehabilitation programme 3 – 6 months

3. The key conclusions for the rehabilitation of ankle sprains in *Managing Soft Tissue Ankle Injuries* (Accident Compensation Corporation, 2002) are:
Supervised rehabilitation and the use of proprioceptive training should be recommended as part of ankle sprain management.