The concept of maintenance physiotherapy

Tony Flanagan¹ and Sally Green²
¹Private Practice, Melbourne  ²Monash University, Melbourne

This paper explores the concept of maintenance physiotherapy. Firstly, a consensus definition of maintenance physiotherapy is proposed following consultation with 11 senior physiotherapists throughout Australasia. This consensus definition is compared retrospectively with a definition of maintenance physiotherapy given in response to interview of 91 physiotherapists treating non-catastrophically injured motor vehicle patients more than five years post-accident (treating physiotherapists). Comparison was made by distilling the experts' definition into nine check points and scoring definitions given by the treating physiotherapists against these nine points. The results demonstrated a concurrence between the two groups of between zero and seven with a median of four. This paper supports maintenance physiotherapy as an accepted treatment form. To adhere more closely to the consensus definition of maintenance physiotherapy, treating physiotherapists should consider referral to non-physiotherapy alternatives, to ensure all possible treatment options are exhausted before the rehabilitation phase is complete. In addition, current objective outcome measures to justify and measure continued treatment should be used regularly. Patient education, consistent clinical diagnosis and categorisation of long-term patient groups should be more fully incorporated into the practice of maintenance physiotherapy. The paper aims to provide a reference from which the concept of maintenance physiotherapy can evolve. [Flanagan T and Green S (2000):The concept of maintenance physiotherapy, Australian Journal of Physiotherapy 46: 271-278]

Key words: Accident, Traffic; Patient-Centered Care; Patient Education; Rehabilitation

Background

Maintenance, as opposed to rehabilitation, is a rationale for ongoing physiotherapy management, which has gained some acceptance in recent years (Crawford 1997). The aim of maintenance physiotherapy is to prevent objectively measurable deterioration in a patient’s condition and sustain quality of life. Despite this acceptance, maintenance physiotherapy as a form of treatment has not previously been investigated in the literature. The application of maintenance physiotherapy is relevant to trauma cases, especially motor vehicle trauma. This paper investigates a more formal definition and description of maintenance physiotherapy in order to describe the parameters maintenance physiotherapy should encapsulate.

The Victorian Transport Accident Commission (TAC) is a compulsory third party insurance company with an obligation, once liability has been established, to fund reasonable medical costs of people injured in transport accidents in the State of Victoria (Transport Accident Act 1986). During 1998, 2,086 people whose motor vehicle accidents had occurred more than five years previously were receiving physiotherapy. The cost of treating these long-term patients was $1,009,989 or 16% of total physiotherapy costs ($6,377,018) in 1998. Two hundred and thirty-two (11%) of these patients had sustained catastrophic injuries (severe head, spinal cord, limb amputation and/or serious internal injuries) and this group utilised 20% of the physiotherapy services ($202,543). The rest of the group (1,854) comprised the non-catastrophically injured. Of these, 21% had sustained whiplash associated disorders, 35% limb and other fractures, 5% sprain/strains, 5% minor head injuries and 33% other injuries. The non-catastrophically injured group (80% of those receiving physiotherapy for more than five years) resulted in an annual physiotherapy cost to the TAC of $807,536 (TAC unpublished internal analysis report).
Given the natural course of the injuries sustained, the mode of treatment being supplied at this point post-injury is likely to be maintenance rather than rehabilitation. Recent peer review by TAC consultant physiotherapists of practitioners treating long-term patients resulted in the treating physiotherapists justifying continuing treatment because it helped to maintain the patient's condition. Despite this, maintenance physiotherapy has never been formally described. To justify and explain the use of this modality, a clear description of maintenance physiotherapy, in addition to when its application is appropriate, is important for all stakeholders.

This study aimed to firstly establish a consensus definition of maintenance physiotherapy, and then assess and analyse the differences between the consensus definition and the definition of maintenance physiotherapy volunteered by physiotherapists treating non-catastrophic transport accident victims.

**Methods**

In order to establish if there was an existing definition of maintenance physiotherapy, a literature review was undertaken utilising the computer databases MEDLINE, CINAHL, Embase and the Cochrane Clinical Trials Register. These databases were searched back to 1964 using the terms “maintenance” or “management” and “physiotherapy” or “rehabilitation”. Key authors published in the field or known by the investigators to have an interest in maintenance treatment and chronic conditions were searched, and the citations of all identified studies reviewed, in an effort to identify additional references. As no studies in the literature search identified the concept of maintenance physiotherapy as a mode of treatment, an expert panel of physiotherapists was convened to establish a definition of “maintenance physiotherapy”.

Eleven physiotherapists were selected from throughout Australasia for their clinical and/or academic standing. Each panel member was asked to define maintenance physiotherapy for those injured in transport accidents and discuss the appropriate application of maintenance physiotherapy. Individual responses were collected and each expert panel member was subsequently asked and agreed to be involved further in establishing a consensus definition of maintenance physiotherapy for all patients in general and those injured in transport accidents in particular.

A draft definition and description of maintenance physiotherapy collated from the 11 original responses was sent to each of the expert panel members. Their next task was to revise the draft definition to coincide with what they believed to be a definition of maintenance physiotherapy. Changes suggested by members of the panel were incorporated into further drafts and a consensus definition was established and ratified by all members of the expert panel. For the purposes of comparison, the consensus definition was distilled by the authors into a criteria list of nine points encompassing all concepts of the consensus definition of maintenance physiotherapy.

In order to explore differences in understanding of maintenance physiotherapy between the expert panel and those physiotherapists treating long term transport accident victims, a sample of 101 TAC patients was selected from the non-catastrophically injured group according to criteria stipulated in Table 1. Physiotherapists involved in the treatment of these 101 patients were sent a letter outlining the intention of the TAC to investigate maintenance physiotherapy. Therapists were informed that a TAC consultant physiotherapist would contact them by telephone to discuss the concept of maintenance physiotherapy in relation to the transport accident patient they were treating. Each physiotherapist was contacted by telephone by one of four TAC consultant physiotherapists. Each contact was undertaken and recorded using a pre-determined proforma. This proforma had been piloted prior to the data collection phase and was used for consistency of approach. It comprised questions relating specifically to the treatment of the patient in question. It also requested that each treating physiotherapist propose a definition of maintenance physiotherapy. This survey was undertaken as an internal TAC quality assurance activity and the exploration of differences between that offered by the treating physiotherapists and the consensus definition of maintenance physiotherapy was added retrospectively.

**Data management and analysis** Descriptive statistics were used to interpret the data. The median and range of the number of criteria volunteered by the treating physiotherapists and matching the criteria list developed from the expert panel's definition were calculated. The number of responses volunteered by
the treating physiotherapists and matching each individual criteria was calculated and additional responses (ie volunteered by the treating physiotherapists and not included in the expert panel definition) tabulated.

As the comparison was between treating physiotherapists, and not patients, the sample was reduced to 91. Five physiotherapists had two patients in the 101 patients from the sample group, three were treated by members of the expert panel and two physiotherapists did not give a definition of maintenance physiotherapy. All treating physiotherapists interviewed described their treatment of the patient in question as aimed at maintenance.

Results

Eleven panel members contributed to the following consensus definition of maintenance physiotherapy:

**“Maintenance physiotherapy** is fully justifiable if, despite the best efforts of patients, there still occurs a significant deterioration in their condition.

**“Maintenance physiotherapy** begins when all other avenues of rehabilitation to return injured persons to their former status have been exhausted and/or the best efforts of patients have failed to return them to their best outcome of rehabilitation. The result of this failure is a significant deterioration in patients’ functional capacity and quality of life. Further physiotherapy in the form of maintenance physiotherapy is deemed appropriate to prevent further deterioration and/or optimise the patients’ functional capacity and quality of life. There must be a clinical diagnosis, which supports justification of maintenance physiotherapy.

“The efficacy of **maintenance physiotherapy** must be consistently demonstrated by currently recognised outcome measures. Without measurable outcome effects, maintenance physiotherapy is not justifiable. For instance, a quantifiable deterioration in the patient’s condition should be demonstrated in the absence of maintenance physiotherapy. Conversely, a progressive return to optimal function should be quantifiable with re-commencement of maintenance physiotherapy.

**“Maintenance physiotherapy** should always focus on patients being at the centre and responsible for the management of their condition, and the interaction between patients and therapists should always reinforce this process. The primary objective of maintenance physiotherapy should be to educate

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**Table 1.** Data criteria for selection of Victorian Transport Accident Commission (TAC) patients.

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<tr>
<td>1. All non-serious injury codes (ie excluding fatal, spinal, head, internal, other serious).</td>
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<tr>
<td>2. Greater than 5 years post-accident (taken from last service paid for prior to end of August 1998).</td>
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<tr>
<td>3. Had physiotherapy consultation services between April and June 1998.</td>
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<td>4. Paid at least $350 for physiotherapy in each of the last two financial years.</td>
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<td>5. No current appeals and/or pending Common Law cases against TAC in place.</td>
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**Table 2.** Criteria list developed from consensus definition of expert panel.

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<td>1. All other avenues of management (including non-physiotherapy interventions) as well as the best efforts of the patient tried and exhausted.</td>
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<tr>
<td>2. The patient is not at best outcome and demonstrably worsens without treatment.</td>
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<tr>
<td>3. The patient exhibits decreased function and quality of life.</td>
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<tr>
<td>4. There is a clinical diagnosis which has been consistent throughout the post accident course.</td>
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<td>5. Recognised outcome measures are being used in the monitoring and management of the patient.</td>
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<td>6. There is a self-management component to the management plan.</td>
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<td>7. The physiotherapy management incorporates patient education.</td>
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<td>8. The physiotherapy management may or may not include hands-on treatment.</td>
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<tr>
<td>9. The physiotherapy management may or may not be ongoing (ie there is some consideration of eventual discharge).</td>
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patients about the nature of their condition (including a clinical diagnosis), a conceptual framework to understand their pain or disorder and how to apply posture, therapeutic exercise and activities of daily living to maintain optimal function.

“Maintenance physiotherapy may necessitate direct physiotherapist hands-on treatment to facilitate and maximise optimal function. In the main, however, maintenance physiotherapy should be more in keeping with patient guidance and management.

“Various stages in maintenance physiotherapy are accepted. There will be patients who will eventually become independent of maintenance physiotherapy. Other patients will require maintenance physiotherapy for an indefinite period, while there will be a group of patients who will require concurrent management from other health professionals. All groups should be evaluated by currently recognised outcome measures and a clinical diagnosis must be consistent through the natural course of their disorder from the date of injury.”

Criteria list adapted from the consensus definition

The consensus definition outlined above was adapted into the criteria list summarised in Table 2.

Legend:
1. All other avenues of management (including non-physiotherapy interventions) as well as the best efforts of the patient tried and exhausted.
2. The patient is not at best outcome and demonstrably worsens without treatment.
3. The patient exhibits decreased function and quality of life.
4. There is a clinical diagnosis which has been consistent throughout the post accident course.
5. Recognised outcome measures are being used in the monitoring and management of the patient.
6. There is a self-management component to the management plan.
7. The physiotherapy management incorporates patient education.
8. The physiotherapy management may or may not include hands-on treatment.
9. The physiotherapy management may or may not be ongoing (ie there is some consideration of eventual discharge).

Figure 1. Number of treating physiotherapists identifying each criterion.
Ninety-one treating physiotherapists were interviewed. There was 100% agreement between the two authors with respect to the extracting and matching of criteria from the interview recording sheets.

The median number of criteria from the consensus definition correctly identified by the treating physiotherapists was 4 (range 0-7).

The number of treating physiotherapists correctly identifying each criterion is outlined in Figure 1. Criterion 2 ("patient is not at best outcome and demonstrably worsens without treatment") was the most commonly identified criterion, with 64 matches. Criterion 8 ("physiotherapy management may or may not include hands-on treatment"), Criterion 3 ("the patient exhibits decreased function and quality of life") and Criterion 6 ("there is a self management component to the management plan") were also commonly identified, with 60, 57 and 47 matches respectively.

Few of the physiotherapists interviewed volunteered Criterion 1 ("all other avenues of management [including non physiotherapy interventions] tried and exhausted") and Criterion 5 ("recognised outcome measures are being used in the monitoring and management of the patient") as being criteria to define maintenance physiotherapy, with only seven and eight matches respectively.

The remaining three criteria for comparison, Criterion 4 (consistent clinical diagnosis), Criterion 7 (patient education) and Criterion 9 (physiotherapy management may or may not be ongoing) were matched by 22, 21 and 22 members of the treating physiotherapy group respectively.

There were no additional points raised by the treating group of physiotherapists that were not already included in the consensus definition of maintenance physiotherapy.

**Discussion**

This study demonstrates that a consensus definition of maintenance physiotherapy is achievable, and that there are areas in which treating physiotherapists’ concept of maintenance physiotherapy reflects expert opinion. Other areas demonstrate differences. However, there are limitations to the methods employed in this study and as such, it is intended as an introductory work to stimulate discussion and further exploration of this important issue by the physiotherapy community. The selection process used to convene the expert physiotherapy panel may have been biased, thereby establishing a definition that is not encompassing of the views of all. However, all possible attempts were made to gain objectivity by selecting a cross-section of experts representing broad clinical views and experiences.

The selection of the sample of treating physiotherapists was based upon TAC records identifying the physiotherapists as treating at least one long-term patient. The assumption that the treating physiotherapists believed their role to be one of maintenance was confirmed by direct questioning at the time of interview.

The establishment of the consensus definition of maintenance physiotherapy by the expert panel was considered over time, with repeated communication between the panel of a concept in general and not in relation to a particular patient. Much of this process involved commitment of ideas to writing. Consequently, the expert panel had substantially more time to consider a definition of maintenance physiotherapy and opportunities to compare drafts. In comparison, the interview of the treating physiotherapy group consisted of one conversation by telephone in order to gain from each a definition of maintenance physiotherapy. Despite written notification of an impending telephone interview, members of the treating physiotherapy group had substantially less time to consider a definition of maintenance physiotherapy.

To aid consistency, a set proforma was used by each consultant physiotherapist involved in interviewing the treating physiotherapists. Each treating physiotherapist was interviewed by one of four TAC consultant physiotherapists. Although each consultant used the same proforma for every interview, it is possible that each could have prompted, interpreted and recorded the respondent’s view of maintenance physiotherapy in a different way. This process possibly led to inconsistency between interviews.

The consensus definition states that “all avenues of rehabilitation” within and outside the physiotherapy
profession should be explored before rehabilitation is ceased and the patient is classified as a maintenance physiotherapy candidate. Only seven responses from the treating physiotherapists included “all avenues of rehabilitation should have been tried”. This may imply that patients continued to attend physiotherapy not because all avenues of rehabilitation had been exhausted, but because the treating physiotherapists did not consider referral to alternative forms of assessment or treatment.

Fifty-seven of the treating physiotherapists noted deterioration in function as being a prerequisite for maintenance physiotherapy. However, the measurement of this deterioration was generally based on subjective reports to the physiotherapist by their patients. There was little evidence of any attempt (eight respondents from sample of 91) to measure this deterioration with appropriate outcome assessment tools and hence justify the continuation of maintenance physiotherapy.

The expert panel agreed that “the efficiency of maintenance physiotherapy must be consistently demonstrated by currently recognised outcome measures”. Beatty and Maher (1997) discussed the measurement of the effects of physiotherapy treatment using traditional physiotherapy measures such as range of movement and straight leg raise. They suggested that, in some cases, functional status questionnaires can be used to demonstrate the efficacy of treatment, especially when the more traditional methods of measuring the effect of treatment have not been found to demonstrate improvement or deterioration. A possible explanation for the treating physiotherapists not using functional questionnaires is their lack of training in the implementation and interpretation of these questionnaires. In long-term cases, or in cases in which maintenance physiotherapy is the stated mode of treatment, a standard outcome measure is indicated and functional indices may be appropriate. Outcome measures more appropriate to maintenance physiotherapy may be developed in the future, and alternative means of measuring improvement or lack of deterioration should be explored. The consensus definition does require maintenance physiotherapy to be justified by some type of demonstrable effect on outcome. There must be an attempt to measure objectively the subject status (Felson et al 1993) in the practice of maintenance physiotherapy.

Ritchie (1999, p. 253) broadens the concept of the measurement of the effect of maintenance physiotherapy when she writes that “appraising the quality of this care must therefore always have two dimensions, the objective, technical one derived from the research evidence and the subjective one as experienced by the individual”. The impending challenge for the physiotherapy profession is to allow appropriate measures of these two dimensions to evolve in order to justify maintenance physiotherapy. This process is accounted for in the consensus definition’s open-ended phrase “currently recognised outcome measures”.

Self management in the form of “posture, therapeutic exercise and advice regarding activities of daily living” was recognised by 47 respondents in the treating physiotherapy group, and many mentioned a problem or concern with patients’ compliance.

The delivery of self management strategies by physiotherapists does not ensure that these measures are adhered to in the long term (Aker et al 1996). The consensus definition refers to “the interaction between patients and therapists” and this interaction is likely to result in more effective delivery of maintenance physiotherapy in clinical practice.

The consensus definition of maintenance physiotherapy emphasises the role of the patient when it states that maintenance physiotherapy “should always focus on patients being at the centre and being responsible for the management of their condition”. One of the key implications of the consensus definition is that physiotherapists treating long-term patients should not encourage them to search for an unrealistic cure but instead, provide them with realistic, evidence-based information.

The consensus definition describes how maintenance physiotherapy should educate patients about “the nature of their condition (including a clinical diagnosis), a conceptual framework to understand their pain or disorder and how to apply posture, therapeutic exercise and activities of daily living to maintain optimal function”. It is important to inform patients, especially those with chronic conditions, of their pathology and what it is that is being treated in order to involve them in the process (Lefort et al 1998).
Twenty-two of the treating physiotherapists mentioned education in their definition. However, it is not possible within the limitations of this study to further analyse if all components of education included in the consensus definition of maintenance physiotherapy were addressed.

A proposed conceptual model of pain which may be appropriate in the education of patients undergoing maintenance physiotherapy is that of Gifford (1998) who places patients at the centre of treatment and able to better understand the role of pain in the management of their condition. Gifford (1998) suggested that physiotherapists should teach their patients not to equate pain with damage. Zusman (1998) indicated that a conceptual framework to understand pain must focus on not only physical or tissue-based considerations but also psychosocial factors that influence pain behaviour. The consensus definition of maintenance physiotherapy supports this broader concept of pain in order that patients may attain optimal function and be “at the centre and responsible for the management of their condition”.

Sixty respondents in the treating physiotherapy group incorporated the need for hands-on treatment in their definition of maintenance physiotherapy, despite the consensus definition ranking manual treatment as less appropriate than self-management strategies in this population. This trend is understandable however, given the emphasis on manual treatment in current and recent physiotherapy undergraduate courses in Victoria (La Trobe University School of Physiotherapy 1999). Patients should only have manual treatment if the “best efforts of patients have failed to return them to the best outcome of rehabilitation”. Shacklock (1999) reinforced the delicate balance that exists between manual treatment, patient education and self-management strategies.

There was no mention in the consensus definition, or in the definitions provided by most treating physiotherapists, of when a patient ceases rehabilitation and starts maintenance physiotherapy. In addition, no direction is given as to the end point of maintenance physiotherapy and commencement of self-management only.

The implication of time is perhaps best appreciated in the consensus definition of maintenance physiotherapy when it states that “various stages in maintenance physiotherapy are accepted”. Twenty-two treating physiotherapists acknowledged that the concept of maintenance physiotherapy involves different stages. There is a patient type who will require treatment in the form of maintenance physiotherapy but who progresses to a stage where treatment no longer has effect. These patients will maintain themselves independently. There is another patient type who, despite their own best efforts and the best educational efforts of the treating physiotherapists, will continue to require some ongoing maintenance physiotherapy treatment. There is a final category for which maintenance physiotherapy alone may or may not be helpful, and this group exhibits a multi-faceted problem with symptoms additional to those attributable to physical injury. The consensus definition states that this chronic group will require “concurrent management from other health professionals”.

The consensus definition clarifies the groups of patients to whom maintenance physiotherapy can be applied. Approximately 24% of treating physiotherapists alluded to these categories, and clearly the consensus definition would encourage more widespread application in clinical practice.

The consensus definition of maintenance physiotherapy confirms the need for a consistent clinical diagnosis. By doing so, it confines treatment of maintenance physiotherapy patients to those conditions consistent with a specific injury and/or event. It insinuates that the development of non-tissue-based signs and symptoms should be treated with maintenance physiotherapy only if the original clinical diagnosis is consistent with the presenting symptoms and the efficacy of treatment can be demonstrated by appropriate “currently recognised outcome measures”.

**Conclusion**

This paper supports maintenance physiotherapy as an accepted form of treatment and shows that a sample physiotherapist population does, on the whole, adhere to a consensus definition of maintenance physiotherapy. The project demonstrated that exhausting all avenues of rehabilitation and using currently recognised outcome measures to justify maintenance physiotherapy were not routinely considered as part of maintenance physiotherapy.
practice. It is these two criteria that should be incorporated into the practice of maintenance physiotherapy.

Maintenance physiotherapy, as practised by the treating physiotherapy group, addresses the issues of self-management and the role of hands-on treatment in maintenance physiotherapy. It also relates maintenance physiotherapy to preventing deterioration in function and quality of life. The project suggested that the treating physiotherapy group did not adequately address the relationship of maintenance physiotherapy to clinical diagnosis, patient education or categorisation of patients into types appropriate for maintenance physiotherapy.

The provision of a consensus definition of maintenance physiotherapy will provide a basis for future research examining the effectiveness and components of maintenance physiotherapy.

In addition, such a definition provides a benchmark to guide clinical practice and a framework for justification of the role of the physiotherapist in long-term patient care.

Authors  Tony Flanagan, Fairfield Physiotherapy Sports Injuries Centre, 181 Station Street, Fairfield, Victoria 3078. E-mail: outlook@alphalink.com.au (for correspondence). Sally Green, Institute of Public Health, Monash University, Wellington Road, Clayton, Victoria 3168.

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