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**Physiotherapists' perceptions of patient adherence to prescribed self- management strategies: A cross-sectional survey of Australian physiotherapists.**

**Authors:**

Kerry Peek<sup>1,2</sup> , A/Prof Mariko Carey<sup>1,2</sup>, L/Prof Robert Sanson-Fisher<sup>1,2</sup>, Dr Lisa Mackenzie<sup>1,2</sup>

**Affiliation:**

<sup>1</sup> Priority Research Centre for Health Behaviour, School of Medicine and Public Health, University of Newcastle, University Drive, Callaghan, NSW, Australia.

<sup>2</sup> Hunter Medical Research Institute, Newcastle, NSW, Australia.

**Physiotherapists' perceptions of patient adherence to prescribed self- management strategies: A cross-sectional survey of Australian physiotherapists.**

**Abstract**

**Purpose:** Physiotherapists often prescribe self-management strategies for their patients. However, the effectiveness of these strategies in improving patient outcome is related to the rate of patient adherence. The aims of this study were to explore physiotherapists' views on the importance and perceived rates of patient adherence to physiotherapist prescribed self-management strategies; the perceived importance of methods physiotherapists can employ to aid patient adherence and the barriers to employing these methods.

**Method:** A cross-sectional web-based survey was emailed to 808 physiotherapist members of the Australian Physiotherapy Association. To maximise response rates, two reminder emails were utilised.

**Results:** In total 352 physiotherapists completed the survey (response rate 44%). A majority of physiotherapists (89%) believed that patient self-management strategies were important in improving patient outcomes; however, the mean perceived rate of patient adherence across all strategies was only 67%. Physiotherapists reported that there were a number of important methods which can be employed to aid patient adherence such as providing patient education and allowing time for patient practice; with minimal perceived barriers to employing these methods.

**Conclusions:** Results indicate that physiotherapists perceive that patient outcomes can be positively impacted by patient adherence to a range of self-management strategies. Physiotherapists should be encouraged to implement into their routine clinical practice evidence-based methods to aid patient adherence.

**Key words:** Patient compliance, self-care, physical therapy, physiotherapy, survey, Australia

## **Background**

The World Confederation for Physical Therapy state that physiotherapists are required to make recommendations for patient self-management (1). Self-management refers to “the ability of the individual, in conjunction with family, community, and healthcare professionals, to manage symptoms, treatments, lifestyle changes, and psychosocial, cultural, and spiritual consequences of health conditions” p.261 (2). Physiotherapist prescribed self-management strategies including exercise can contribute to improved patient outcomes (3, 4).

A review of motor accident insurance data reported that the median number of physiotherapy services for whiplash patients was 15 consultations (5). Therefore, frequent contact with patients ideally place physiotherapists to initiate and follow-up with patients regarding their own role in injury management. It has been suggested that physiotherapists should encourage self-management early in the rehabilitative process to reduce treatment dependency (5). However, if evidence-based self-management strategies are to improve treatment outcomes, patients must adhere to them (6-9).

Adherence refers to “ the extent to which a person’s behaviour... corresponds with agreed recommendations from a healthcare provider” (10). The impact of poor treatment adherence is considered an important issue across a number of healthcare disciplines which includes physiotherapy (6). Systematic reviews have suggested that only 30-67% of patients were completely adherent to their home physiotherapy programmes (8, 11).

A further systematic review identified a range of factors which may influence adherence including: the lack of positive feedback from the therapist; low patient self-efficacy; presence of depression; poor social support or activity and; greater number of perceived barriers to adherence (12). The authors concluded that physiotherapists should be concerned about the attitudes, beliefs and barriers facing their patients and act collaboratively with them to design realistic treatment plans which are customised to patients’ life circumstances (12). Due to the multi-dimensional nature of non-adherence, the interventions to improve patient adherence with physiotherapy treatment are likely to be broad in spectrum (6). Therefore, physiotherapists should be aware of a wide range of interventions which may help to optimise patient adherence (6, 8).

Self-management strategies prescribed by physiotherapists include advice, exercise, knee and elbow braces, taping and orthotics (4, 13-15). However, there is a paucity of research examining physiotherapists' perceptions of the importance of self-management strategies in improving patient outcomes and the impact of poor patient adherence. Unless physiotherapists perceive self-management strategies to be an important treatment adjunct and consider patient adherence to be an essential outcome determinant then the results of adherence research may be of little value clinically.

The aims of this study were to assess physiotherapists' perceptions regarding the:

1. Importance of patient adherence to physiotherapist prescribed self-management strategies in improving patient outcomes;
2. Rate of patient adherence to a physiotherapist prescribed self-management strategy encountered in their practice;
3. Importance of methods employed to increase patient adherence to a physiotherapist prescribed self-management strategy and the;
4. Barriers to employing methods to aid adherence.

## **Methods**

### **Study Design**

We conducted a cross sectional web-based survey among practising physiotherapist members of the Australian Physiotherapy Association (APA). Ethics approval for the survey was granted through the University of Newcastle, (Australia), Human Research Ethics Committee.

### **Participants**

The APA 'find a physio' web-link was used to identify potential participants (available at: <http://www.physiotherapy.asn.au/apawcm/controls/findaphysio.aspx>). The APA is a national, professional organisation representing the interests of physiotherapists within Australia which maintains a publically accessible electronic database of physiotherapists.

Previous national survey research has accessed representative samples of physiotherapists via the professional registration databases associated with state-based

physiotherapy boards in Australia (16). With the recent move to a single national Physiotherapy Board of Australia (PhysioBA), accessing member mailing lists or initiating survey delivery through the PhysioBA now breaches privacy regulations. These changing administrative processes mean that, alternative approaches to accessing representative views of physiotherapists were required in Australia (17). Survey distribution through the professional association, APA, was seen as a way forward (18). Eligible physiotherapists included any physiotherapist regardless of scope of practice, who were located within 150km radius of each Australian state and territory capital city. These parameters were chosen to locate the broadest range of listed members, with the minimal inputs required by the search engine being postcode, state/territory and radius. We selected the post code for the capital city (to make this uniform across all states/territories) and 150km was the furthest radius that was accepted by the search engine. Eligible physiotherapists were also required to work clinically more than 15 hours during an average week, and who had an adult caseload of 80% or greater.

## **Materials**

An electronic survey method was developed for this study based on response rates of previous electronic survey studies (14, 19, 20). A survey method was used in preference to focus groups or interviews to capture the views of a large nationally representative sample of physiotherapists (21, 22).

The survey questions were identified and developed by a team of health professionals experienced in health behaviour research, including survey studies (23-25). The survey was then pilot tested for acceptability and feasibility using an expert panel of health behaviour researchers and physiotherapists before the final survey was sent to participants.

The survey included socio- demographic questions and a number of additional questions regarding:

*Perceived importance of self-management strategies.* Physiotherapists were asked to indicate the extent to which they agreed or disagreed with statements about the perceived importance of patient self-management strategies (including exercise, self-taping, removable bracing and advice). Physiotherapists responded using a four point Likert scale (strongly agree, agree, disagree, strongly disagree).

*Perceived adherence:* Physiotherapists were asked to consider the last 10 patients to whom they prescribed exercise; self-taping; removable bracing; advice. They were then asked how many of these 10 patients they believed had adhered to more than 80% of this strategy (response options included; 0 to 10; or 'have never prescribed this strategy').

*Perceived importance of factors that affect adherence:* Physiotherapists were provided with a list of factors which may affect patient adherence including patient characteristics, modifiable and non-modifiable; physiotherapist characteristics; characteristics of the self-management strategy; and social factors. Physiotherapists were then asked to rank these factors in order of importance (1 as most important and 5 as least important).

*Perceived importance of methods used to aid patient adherence:* Physiotherapists were provided with a list of methods to aid patient adherence including patient education, individualising the self-management strategy, patient practise, monitoring of adherence, social support, professional support and communication. Physiotherapists were then asked to rank these factors in order of importance (from 1 most important to 8 least important).

*Perceived barriers to employing methods to aid patient adherence:* Physiotherapists were provided with a list of statements such as "I don't have enough time to assess patient adherence"; "I have limited access to resources such as patient education materials"; Physiotherapists were asked to indicate the extent to which they agreed or disagreed with these statements using a four point Likert scale (strongly agree, agree, disagree, strongly disagree). A four point Likert scale (without a middle 'neutral' option) was used in preference to a five point scale in order to minimise neutral opinions; this technique is sometimes referred to as a 'forced choice' scale (26).

## **Procedure**

The APA, 'find a physio' web-link was used to generate a list of potentially eligible physiotherapists that included their practice name, telephone number and e-mail address. Physiotherapists were contacted via e-mail to request completion of an online survey. The e-mail included a participant information statement with a web-link to the survey. Submitting the survey implied informed consent. All responses were



anonymous. The invitation e-mail was followed by two blanket reminder emails sent at two and four weeks after the initial contact. Participants could request a paper based survey if preferred.

### **Data analysis**

Data analysis was conducted using the statistical software package, Stata® 14 (USA). Descriptive statistics (proportions and means) were calculated for the survey sample socio-demographics, and compared to Australian physiotherapy workforce data using one sample Pearson's chi-square tests.

"Agree" and "Strongly agree" responses to the closed questions of the survey were combined and reported as frequencies and percentages with 95% confidence intervals (95%CI).

Rank order data are reported as frequency and percentage (95%CI) of first rank, and the mean score of importance (calculated by the overall total number of points awarded per item divided by the number of responses).

## **Results**

### **Response rate**

Of the 2261 physiotherapists who met the initial geographical inclusion criteria 1250 were excluded; 524 physiotherapists had no e-mail address listed; 221 physiotherapists were listed more than once due to working at two or more practices; and 505 who only had practice/ generic e-mail addresses listed. Therefore, in total 1011 physiotherapists were e-mailed an invitation to complete the survey. Of these, 203 e-mails were returned as undeliverable. Three hundred and fifty four physiotherapists returned surveys of which 352 were completed (response rate 44%). The first two questions of the survey were screening questions to exclude those physiotherapists who did not meet the study's inclusion criteria. Twenty-eight physiotherapists were excluded because they did not work clinically more than 15 hours per week; and 26 physiotherapists were excluded because adult patients did not represent more than 80% of their clinical case load. Therefore, 298 completed surveys were included in the data analysis.

**Physiotherapist sample**

Survey respondents had a similar socio-demographic profile to national physiotherapist workforce data collated by the Physiotherapy Board of Australia (27) and Health Workforce Australia (28) with respect to gender, domestic physiotherapy qualification and distribution of survey respondents from each state and territory (Table 2.1).

However, compared to national data, a larger percentage of the survey respondents had post-graduate qualifications and worked in a metropolitan private practice.

Table 2.1: Comparison of socio-demographic characteristics of physiotherapist survey sample (n=352) to Australian physiotherapy workforce datasets

	Survey sample	Dataset source, date			One-sample Pearson chi square	
		HWA, 2012	PhysioBA, 2014	APA, 2014	Coefficient	p value
% female	64%	69%	69%	69%	0.004	0.948
% working > 15 hrs/week	92%	-	-	87%	0.011	0.916
Mean years since qualification	21-30 years	-	-	-	-	-
% graduated Australia	82%	85%	-	85%	0.028	0.866
% with post-graduate qualifications	48%	22%	-	25%	0.168	0.681
% working in private practice	81%	41%	37%	63%	0.770	0.380
State/territories:						
NSW	28%	29%	29%	-	0.064	1.000
Vic	20%	26%	25%			
Qld	19%	19%	15%			
SA	12%	8%	8%			
WA	13%	12%	12%			
Tas	4%	2%	2%			
NT	2%	1%	1%			
ACT	2%	2%	2%			
Not stated			4%			
% metropolitan	95%	80%	-	85%	0.160	0.689

*NB. The survey data was compared to data collected by the Physiotherapy Board of Australia (PhysioBA)(27), however, where this data was unavailable, data was compared to Health Workforce Australia (HWA) (28) or in the case of working hours to the Australian Physiotherapy Association (APA) (29) data.*

*Key: – represents data that was not available from this source.*

### **Perceived importance of patient adherence to physiotherapist prescribed self-management strategies and the perceived rate of adherence.**

More than 89% (95%CI 83-95%) of physiotherapists strongly agreed or agreed that adhering to physiotherapist prescribed self-management strategies was important in positively influencing patient outcomes (Table 2.2). Physiotherapists were invited to add any additional self-management strategies which they felt also positively impacted on treatment outcomes. Responses included self-massage (n=2), postural advice (n=5), cognitive-behavioural advice (n=1), walking/ general fitness programs (n=4), follow up management (n=1), weight management (n=1), increasing physical activity (n=1), group exercise (n=1) and other general well-being programs (n=2).

The mean perceived rate of patient adherence for exercise programs was 70% (95%CI 61-79%), self-taping was 64% (95%CI 55-73%), removable braces was 75% (95%CI 67-83%) and following advice was 58% (95%CI 48-68%).

*Table 2.2: Frequency and percentage of physiotherapists who agree or strongly agree that treatment outcomes can be positively impacted by patient adherence to a range of physiotherapist prescribed self-management strategies (n=298).*

<b>Treatment outcomes can be positively impacted by patients adhering to:</b>	<b>Frequency (n)</b>	<b>Percentage (95%CI)</b>
Independent exercise programs	295	99% (97-100%)
Independent self-taping	265	89% (83-95%)
Use of removable bracing	283	95% (91-99%)
Verbal or written advice	292	98% (95-100%)

Physiotherapists ranked in order of importance, factors which they perceived as determining patient adherence to physiotherapist-prescribed self-management strategies. Table 2.3 presents the frequency with which each factor was ranked as the most important. Modifiable patient characteristics were endorsed by the largest proportion of physiotherapists as the most important, followed by physiotherapist characteristics, characteristics of the self-management strategy and social factors including family support. Physiotherapists perceived non-modifiable patient characteristics to be the least important factor determining patient adherence to physiotherapist-prescribed self-management strategies.

*Table 2.3: Physiotherapists' (n = 298) perceptions of the most important characteristic determining patient adherence to physiotherapist prescribed self-management strategies; listed by first rank frequency and percentage; and overall mean rank of importance out of 5.*

<b>Characteristics determining patient adherence to physiotherapist prescribed self-management strategies</b>	<b>Frequency (n)</b>	<b>Percentage (95%CI)</b>	<b>Overall mean rank of importance</b>
Patient characteristics – modifiable: including self-motivation, self-confidence, belief the exercises will help, willingness to exercise	98	33% (23-43%)	2.2
Physiotherapist characteristics: Including communication skills, use of reminders, time devoted to prescribing strategy, monitoring of adherence, skill and knowledge of physiotherapist	95	32% (23-41%)	2.3
Characteristics of the self-management strategy: including ease to complete, individualised to patient, lack of pain when completing, flexibility of strategy	63	21% (16-26%)	2.7
Social factors: Including emotional support / encouragement from family / friends, work place support, assistance with household tasks (if needed) from family/ friends	24	8% (7-9%)	3.6
Patient characteristics – non-modifiable: Including age, gender, ethnicity, presence of co-morbidities	18	6% (5-7%)	4.1

*Note: 1 is considered most important and 5 is considered least important.*

**Perceived importance of methods employed to increase patient adherence to a physiotherapist prescribed self-management strategy.**

Physiotherapists ranked in order of importance methods to improve patient adherence to physiotherapist-prescribed self-management strategies (Table 2.4). It was perceived that the more important methods included individualising the self-management strategy to the patient; providing patient education including clear rationale for the strategy, and practising the strategy within the consultation.

*Table 2.4: Physiotherapists' perceptions (n=298) of the most important method for aiding patient adherence to physiotherapist prescribed self-management strategies; listed by first rank frequency and percentage; and overall mean rank of importance out of 8.*

<b>Methods to aid patient adherence to physiotherapist prescribed self-management strategies</b>	<b>Frequency (n)</b>	<b>Percentage (95%CI)</b>	<b>Overall mean rank of importance</b>
Individualising the self-management strategy to the patient (e.g. reduction in complexity, tailoring to patient lifestyle, modification for pain response, individually tailored information)	125	42% (30-54%)	2.2
Providing patient education (either printed or verbal) including providing clear rationale for the strategy, expected outcomes, supportive materials or links to additional information	86	29% (21-37%)	2.8
Practising the strategies within the consultation including physiotherapist demonstration, patient practice and feedback, checking the patient understands the instructions	57	19% (15-23%)	3.0
Physiotherapist communication skills, including active listening and being more empathetic or persuasive with the patient	12	4% (3-5%)	3.8
Providing professional support to the patient including motivational support/counselling, questioning the	7	2% (1-3%)	4.8

patient about barriers to adherence and ways to overcome these			
Monitoring of patient adherence, including use of reminders, follow up (face to face or via telephone), use of exercise diaries	5	2% (1-3%)	5.4
Addressing the general health of the patient, including referral to GP or Allied Health colleague regarding issues which may impact on adherence such co-morbidities, medication or diet	4	1% (1-2%)	5.8
Involvement of the patient's support person, such as including them in the consultation, showing them how to assist with use of strategy (e.g. donning/ doffing brace), exercising alongside the patient.	2	1% (1-2%)	6.4

*Note: 1 is considered most important and 8 is considered least important.*

### **Barriers to employing methods to aid patient adherence.**

Almost all physiotherapists [98% (n = 292; 95%CI 95-100%)] believed that they could change their patients' adherence rate. However, 89% (n=265; 95%CI 83-95%) of physiotherapists responded that they believed patient adherence was a problem with their patients and that improving patient adherence was relevant to their clinical practice (99%- n=295/298; 95%CI 97-100%).

Physiotherapists reported they had time to assess adherence (83%- n=247; 95%CI 76-90%); time to use methods to aid adherence (82%- n= 244; 95%CI 74-90%); had sufficient knowledge/ skills in assessing patient adherence (84%- n=250; 95%CI 77-91%) and; employing methods to aid adherence (92%- n=274; 95%CI 87-97%). All physiotherapist respondents had access to patient education material (100%- n=298; 95%CI 100%) and 87% reported that their patients received continuity of care by the same physiotherapist (n=259; 95%CI 80-94%).



## Discussion

The principle findings of this national survey provides new evidence that physiotherapists believe that patient self-management strategies are important, that the rates of adherence could be improved and that there are a number of methods that physiotherapists can employ to positively influence patient adherence.

Physiotherapists overwhelmingly agreed that exercise, self-taping, removable braces, advice and other self-management strategies were important in improving treatment outcomes. This view is supported by earlier research with regard to exercise (3, 4), taping (30), removable braces (31) and advice (32).

Although physiotherapists agreed self-management strategies were important, they also reported less than optimal adherence rates. The perceived mean rate of patient adherence in this study ranged from 58% for advice to 75% for removable braces. It is typical of physiotherapy studies to report adherence rates of approximately 67-73% for exercise (7, 8, 33, 34), with varying rates of adherence for other self-management strategies including mitten wear in stroke (74%) (35), wearing of heel lifts (38%) (36) and splinting regimes (33%) (37). A qualitative study on non-adherence to home physiotherapy programs for osteoarthritis reported that there was a high degree of concordance between the physiotherapist assessments of adherence with the patient's self-report of adherence (38). This suggests that physiotherapists may have a reasonably accurate perception of the likely level of adherence by their patients. Poor patient adherence has been linked to poor treatment outcomes (3, 4, 8). Therefore, the challenge for physiotherapists, who acknowledge less than optimal rates of patient adherence, is to research methods that they can integrate into clinical practice to aid adherence.

Poor adherence may be due to a number of factors. Modifiable patient characteristics such as self-confidence and motivation were the most commonly reported factors affecting patient adherence in our study. This is supported by a systematic review which reported that low patient self-efficacy, depression, anxiety, greater perceived number of barriers to adherence and increased pain levels during exercise all had a negative impact on patient adherence (12). A qualitative study found that patients with a positive attitude towards exercise had greater motivation and adherence; while those who

perceived the self-management strategy as effective were more likely to continue adhering (38).

Respondents also perceived that physiotherapist characteristics can be an important influence on patient adherence. This is supported by studies which showed that initial levels of adherence can relate to the relationship between the patient and physiotherapist particularly with regard to high levels of trust and a desire not to let the physiotherapist down (38, 39). It has been suggested that communication which enhances the physiotherapist-patient relationship is vital for achieving the desired treatment outcome (40). Therefore, physiotherapists should review the evidence related to best-practice communication skills.

In addition, other studies have indicated the importance of characteristics of the self-management strategy in determining adherence. For example, it has been reported that the most common reasons for non-adherence to exercise and chest clearance techniques was the time taken to complete the strategy (41, 42). Therefore, it is important for physiotherapists to consider the characteristics of the self-management strategy when prescribing this to patients to promote adherence. Physiotherapists and patients should work collaboratively to evaluate individual considerations, identify barriers to adherence and design a patient-specific program that is acceptable and feasible (42).

The survey results indicate that physiotherapists perceive that adherence could be improved by patient education including clear rationale for the strategy, expected outcomes and supportive materials. This is supported by a study on patients' perceptions of self-management of chronic low back pain which reported that the provision of education and support may improve patients' ability to self-manage their condition (43). It was also perceived by a majority of respondents that physiotherapist characteristics such as their communication skills, time devoted to patient self-management and expert knowledge were important determinants of patient adherence. Consistent with this, a systematic review on patient-centred communication identified a number of communication skills to help clinicians engage better with patients such as listening more, asking questions and showing sensitivity to patients' emotional concerns leading to increased patient participation in their care (44).

One of the most encouraging findings of our study is that the majority of physiotherapists do not perceive that a lack of time, limited adherence knowledge, inability to discuss adherence, lack of continuity of care or limited resources as barriers to implementing methods to aid adherence. Physiotherapists overwhelmingly perceived that they could alter their patient's ability to adhere and that it is relevant to physiotherapy practice. However, given that a majority of physiotherapists surveyed responded that adherence is a problem with their patients further research is needed to investigate whether methods to improve adherence are being implemented, and if so, why these are not positively influencing adherence.

### **Limitations**

The main limitations of our study relate to sampling methods. We acknowledge that the survey distribution method excluded physiotherapists who were not members of the APA or with a listed e-mail address. The inclusion criteria may have restricted access to physiotherapists working in more rural locations. We were prevented on collecting data regarding non-responders due to limitations respecting the anonymity of the survey responders. However, we examined sample representativeness by comparing our survey sample with Australian workforce data from a range of sources (Table 2.1). The generalisability of results may be limited due to the majority of respondents being employed in a metropolitan area and almost half having post graduate qualifications. In addition, due to the percentage of APA members working in private practice (Table 2.1) the data is slightly skewed towards the perceptions of private physiotherapy practitioners (although this was not statistically significant). Although we did not assess participants' scope of practice, given that the majority of the physiotherapists worked in private practice, it is likely that a large proportion of the sample worked in the treatment of musculoskeletal injuries, rather than cardio-respiratory or neurological conditions.

### **Conclusions**

Results suggest physiotherapists perceive that patient outcomes can be positively impacted by patient adherence to a range of self-management strategies. However, physiotherapists perceive that the rates of patient adherence could be improved. Therefore, physiotherapists should be encouraged to assess patient adherence and implement evidence-based methods to aid adherence during routine clinical practice.

This survey provides a good foundation in which future adherence research can be developed.

### **Implications for physiotherapy practice**

The results of our survey provides new evidence that physiotherapists do consider a range of patient self-management strategies as important for improving patient treatment outcomes. However, the effectiveness of these strategies are dependent on patient adherence. Physiotherapists in our study perceive that patient rates of adherence could be improved which adds further support that clinical physiotherapists should review and incorporate best-practice adherence research into practice. These findings are consistent with a critical review on patient adherence which concluded that the assessment of patient adherence should be integrated into routine clinical practice (9). Physiotherapists should assess patients for barriers to adherence related to modifiable patient characteristics such as motivation and willingness to carry out the self-management strategy; as well as those related to the self-management strategy itself so that patients can easily incorporate it into their everyday lifestyles.

Physiotherapists may be able to positively influence patient adherence by using methods to aid adherence such as patient education, supportive written material, and professional support in addition to the use of good communication skills and motivational techniques. If physiotherapists can adopt a collaborative approach with their patients to address barriers to adherence, patients may be more able to adhere leading to improved patient outcomes.

### **Implications for physiotherapy research**

Further research should focus on the extent to which physiotherapists address patient adherence to self-management strategies during routine patient consultations, to investigate whether there is consistency between the perceptions of physiotherapists as reported in our study and what physiotherapists actually do in practice. Research into medicine adherence has indicated that patient adherence can be aided by using a frank, non-judgemental and open approach to asking about adherence; acknowledging how common non-adherence is; exploring barriers and facilitators to adherence; providing verbal and written evidence-based information without medical jargon; tailoring communication to suit the patient's preferences for the quantity and style of communication; and a patient-centred approach with shared decision making as well as

recognising that patient's decisions may ultimately not be in accord with medical recommendations (45, 46). Given the positive attitudes towards methods to aid adherence demonstrated in this study, there is a need to examine the extent to which such methods are effective in physiotherapy practice, and whether or not they are used routinely by physiotherapists.

**Declaration of interest:**

The authors report no declaration of interest.

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**References**

1. World Confederation for Physical Therapy. World Confederation for Physical therapy. Policy statement. Description of physical therapy London, UK: WCPT; 2011 [cited 2015 7th May]. Available from: [http://www.wcpt.org/sites/wcpt.org/files/files/PS\\_Description\\_PT\\_Sept2011\\_FORMATTED\\_edit2013.pdf](http://www.wcpt.org/sites/wcpt.org/files/files/PS_Description_PT_Sept2011_FORMATTED_edit2013.pdf).
2. Richard AA, Shea K. Delineation of self-care and associated concepts. J Nurs Scholarsh. 2011;43(3):255-64.
3. Taylor NF, Dodd KJ, Shields N, Bruder A. Therapeutic exercise in physiotherapy practice is beneficial: a summary of systematic reviews 2002-2005. Aust J Physiother. 2007;53(1):7-16.
4. Page CJ, Hinman RS, Bennell KL. Physiotherapy management of knee osteoarthritis. Int J Rheum Dis. 2011;14(2):145-51.
5. Grimmer-Somers K, Milanese S, Kumar S, Brennan C, Mifsud I. Number and Frequency of Physiotherapy Services for Motor Vehicle-induced Whiplash: Interrogating Motor Accident Insurance Data 2006 & 2009. J Rehabil Med. 2012;44(9):774-80.
6. McLean SM, Burton M, Bradley L, Littlewood C. Interventions for enhancing adherence with physiotherapy: a systematic review. Man Ther. 2010;15(6):514-21.
7. Kolt GS, McEvoy JF. Adherence to rehabilitation in patients with low back pain. Man Ther. 2003;8(2):110-6.

8. Peek K, Sanson-Fisher R, Mackenzie L, Carey M. Interventions to aid patient adherence to physiotherapist prescribed self-management strategies: A systematic review. *Physiother*. 2016;102(2):127-35.
9. Peek K, Sanson-Fisher R, Mackenzie L, Carey M. Patient adherence to physiotherapist prescribed self-management strategies: A critical review. *Int J Ther Rehabil*. 2015;22(11):535-43.
10. World Health Organisation. Adherence to long-term therapies: evidence for action. WHO library. Switzerland 2003.
11. Beinart NA, Goodchild CE, Weinman JA, Ayis S, Godfrey EL. Individual and intervention-related factors associated with adherence to home exercise in chronic low back pain: a systematic review. *Spine J*. 2013;13(12):1940-50.
12. Jack K, McLean SM, Moffett JK, Gardiner E. Barriers to treatment adherence in physiotherapy outpatient clinics: a systematic review. *Man Ther*. 2010;15(3):220-8.
13. Liddle SD, Baxter GD, JH G. Physiotherapists' use of advice and exercise for the management of chronic low back pain: A national survey. *Man Ther*. 2009;14:189-96.
14. Fidvi N MS. Physiotherapy management of low back pain in India- a survey of self-reported practice. *Physiother Res Int*. 2010;15:150-9.
15. Struijs PA, Korthals-de Bos IB, van Tulder MW, van Dijk CN, Bouter LM, Assendelft WJ. Cost effectiveness of brace, physiotherapy, or both for treatment of tennis elbow. *Br J Sports Med*. 2006;40(7):637-43; discussion 43.
16. Chipchase LS, Williams MT, Robertson VJ. A national study of the availability and use of electrophysical agents by Australian physiotherapists. *Physiother Theory Pract*. 2009;25(4):279-96.
17. Hall AE, Sanson-Fisher RW, Lynagh MC, Threlfall T, D'Este CA. Format and readability of an enhanced invitation letter did not affect participation rates in a cancer registry-based study: a randomized controlled trial. *J Clin Epidemiol*. 2013;66(1):85-94.
18. McKiernan SC, P. Warren-Forward, H. A survey of diagnostic ultrasound within the physiotherapy profession for the design of future training tools. *Radiography*. 2011;17:121-5.
19. Parr S, May S. Do musculoskeletal physiotherapists believe the NICE guidelines for the management of non-specific LBP are practical and relevant to their practice? A cross sectional survey. *Physiother*. 2014;100(3):235-41.

20. Denscombe M. Web-Based Questionnaires and the Mode Effect: An Evaluation Based on Completion Rates and Data Contents of Near-Identical Questionnaires Delivered in Different Modes. *Social Sci Comp Rev*. 2006;24(2):246-54.
21. Grieve R, Palmer S. Physiotherapy for plantar fasciitis: a UK-wide survey of current practice. *Physiother*. 2016.
22. Milne N, Choy NL, Leong GM, Hughes R, Hing W. Child obesity service provision: a cross-sectional survey of physiotherapy practice trends and professional needs. *Aust J Prim Health*. 2016;22(2):140-6.
23. Passey ME, Sanson-Fisher RW. Provision of Antenatal Smoking Cessation Support: A Survey With Pregnant Aboriginal and Torres Strait Islander Women. *Nicotine Tob Res*. 2015;17(6):746-9.
24. Carey M, Turon H, Goergen S, Sanson-Fisher R, Yoong SL, Jones K. Patients' experiences of the management of lower back pain in general practice: use of diagnostic imaging, medication and provision of self-management advice. *Aust J Prim Health*. 2015;21(3):342-6.
25. Mackenzie LJ, Sanson-Fisher RW, Carey ML, D'Este CA. Radiation oncology outpatient perceptions of patient-centred care: a cross-sectional survey. *BMJ Open*. 2013;3(2; e001265. doi:10.1136/bmjopen-2012-001265).
26. Froman RD. The Ins and Outs of Self-Report Response Options and Scales. *Res Nurs Health*. 2014;37(6):447-51 5p.
27. Physiotherapy Board of Australia. Physiotherapy registrant data: December 2014 Melbourne, Australia 2014 [cited 2015 7th May ]. Available from: <http://www.physiotherapyboard.gov.au/About/Statistics.aspx>.
28. Health Workforce Australia. Australia's Health Workforce Series – Physiotherapists in Focus. Adelaide, Australia: Health Workforce Australia; 2014.
29. Dripps M. Utilising private sector capacity in clinical training- challenges and opportunities. 2014 [cited 2015 5th May]. Available from: <http://www.slideshare.net/informaoz/marcus-dripps-australian-physiotherapy>.
30. Someeh M, Norasteh AA, Daneshmandi H, Asadi A. Immediate effects of Mulligan's fibular repositioning taping on postural control in athletes with and without chronic ankle instability. *Phys Ther Sport*. 2015;16(2):135-9.

31. Kemler E, van de Port I, Backx F, van Dijk CN. A systematic review on the treatment of acute ankle sprain: brace versus other functional treatment types. *Sports Med.* 2011;41(3):185-97.
32. Michaleff ZA, Maher CG, Lin C-WC, Rebbbeck T, Jull G, Latimer J, et al. Comprehensive physiotherapy exercise programme or advice for chronic whiplash (PROMISE): a pragmatic randomised controlled trial. *The Lancet.* 2014;384(9938):133-41.
33. Groeneveldt L, Mein G, Garrod R, Jewell AP, Van Someren K, Stephens R, et al. A mixed exercise training programme is feasible and safe and may improve quality of life and muscle strength in multiple myeloma survivors. *BMC Cancer.* 2013;13:31-5.
34. Mailloux J, Finno M, Rainville J. Long-Term Exercise Adherence in the Elderly with Chronic Low Back Pain. *Am J Phys Med Rehabil.* 2006;85(2):120-6.
35. Burns A, BurrIDGE J, Pickering R, Turk R. Does the use of a constraint mitten to encourage use of the hemiplegic upper limb improve arm function in adults with subacute stroke? *Clin Rehabil.* 2007;21(10):895-904.
36. Goss DL, Moore JH. Compliance wearing a heel lift during 8 weeks of military training in cadets with limb length inequality. *J Ortho Sports Phys Ther.* 2004;34(3):126-31.
37. Sandford F, Barlow N, Lewis J. A Study to Examine Patient Adherence to Wearing 24-Hour Forearm Thermoplastic Splints after Tendon Repairs. *J Hand Ther.* 2008;21(1):44-53.
38. Campbell R, Evans M, Tucker M, Quilty B, Dieppe P, Donovan JL. Why don't patients do their exercises? Understanding non-compliance with physiotherapy in patients with osteoarthritis of the knee. *J Epidemiol Comm Health.* 2001;55(2):132-8.
39. Melander Wikman A, Fätholm Y. Patient empowerment in rehabilitation: "Somebody told me to get rehabilitated". *Adv Physiother.* 2006;8(1):23-32.
40. Hiller A, Guillemin M, Delany C. Exploring healthcare communication models in private physiotherapy practice. *Patient Educ Couns.* 2015;98(10):1222-8.
41. Myers LB, Horn SA. Adherence to chest physiotherapy in adults with cystic fibrosis. *J Health Psychol.* 2006;11(6):915-26.
42. Quinn L, Busse M, Khalil H, Richardson S, Rosser A, Morris H. Client and therapist views on exercise programmes for early-mid stage Parkinson's disease and Huntington's disease. *Disabil Rehabil.* 2010;32(11):917-28.



43. Cooper K, Smith B, Hancock E. Patients' perceptions of self-management of chronic low back pain: evidence for enhancing patient education and support. *Physiother*. 2009;95:43-50.
44. Pinto RZ, Ferreira ML, Oliveira VC, Franco MR, Adams R, Maher CG, et al. Patient-centred communication is associated with positive therapeutic alliance: a systematic review. *J Physiother*. 2012;58(2):77-87.
45. National Institute for Health and Clinical Excellence. Medicines adherence (CG76); 2009. [cited 2015 27th November ]. Available from: <http://publications.nice.org.uk/medicines-adherence-cg76>.
46. Butow P, Sharpe L. The impact of communication on adherence in pain management. *Pain*. 2013;154 Suppl 1:S101-7.