Adherence to therapeutic exercise – how do we help our patients adhere to physiotherapy

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All clinicians will be aware of the frustrations of patients who do not seem to adhere to general treatment plans and, for physiotherapists in particular, patient adherence with therapeutic exercise programmes can be especially difficult to achieve. This article examines the problems with patient adherence in general, and discusses exercise adherence in particular, with ideas that focus on promoting therapeutic exercise, together with some key points that the reader may wish to adopt in their practice.

LEARNING OUTCOMES

1 Understand how (non) adherence to exercise impacts on physiotherapy.
2 Understand the terminology used in exercise adherence.
3 Appreciate the common myths relating to non-adherence of exercise.
4 Identify behaviour change techniques and strategies that can be used by physiotherapists to facilitate exercise adherence.

Introduction

The literature on adherence is most advanced in relation to medication (Horne *et al* 2005), where the cost attributed to poor medication adherence reveals how big this problem is. The figures are staggering and the full benefits of many medications cannot be realised at the levels of adherence that are currently being achieved (Nieuwlaat *et al* 2014).

In 2015, the cost of prescriptions dispensed in the community (England) was £9.27 billion, this represented an increase of 4.68% from £8.85 billion in 2014 (Digital NHS UK 2016). Reviews conducted across diseases / countries are consistent; an estimated 30% to 50% of prescribed medication is not taken as recommended (Sabaté 2003; Horne *et al* 2005). This is not only due to people not taking any of their prescribed medication, but also the expensive consequences of those who do not take medication correctly, for example adverse drug reactions accounts for 6.5% of hospital admissions in the UK (Pirmohamed *et al* 2004). Historically, the figures are similar for other interventions with 15% to 93% of patients failing to act on healthcare recommendations (Myers & Midence 1998; Turk & Meichenbaum 1991).

While uptake of exercise programmes during supervised programmes can be reasonable, participants often stop exercising after their treatment programme is finished, and, for a specific example, up to 63% of low back pain patients do not adhere sufficiently to exercise therapy to gain benefit (Sluijs *et al* 1993, 1998). This overall poor adherence to exercise and physical activity may limit long-term effectiveness of many interventions (Jordan *et al* 2010), and more recent reviews highlight that we, as clinicians and as researchers, are not very good at assessing adherence to rehabilitation based exercise (Bollen *et al* 2014; Beinart *et al* 2013), nor are we particularly strong at intervening to promote adherence (McLean *et al* 2010; Peek *et al* 2016).

Terminology

With the case made that treatment of non-adherence is a big problem generally, as well as one that specifically undermines the therapeutic benefit that is potentially possible from physiotherapy, here are some key terms and definitions to assist with a common understanding of later discussion.

The topic of **adherence** has two alternative terms; **compliance** and **concordance**. These terms are defined as follows:

- Compliance denotes the "extent to which a person's behaviour (in terms of taking medications, following diets or executing lifestyle changes) coincides with medical or health advice" (Haynes *et al* 1979). This suggests that the patient adopts a passive role with no choice over the prescription and that non-compliance is the patient's fault.
- Adherence can be conceptualised as empowering the patient and "implies a more active and collaborative involvement of the patient, working together with the clinician in planning

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and implementing the treatment regimen" (Myers & Midence 1998).

- Concordance is a term that has been mainly adopted for work investigating the extent to which health care professionals and patients develop a shared view of the problem and treatment involving medication with agreement reached after negotiation between patient and health professional that respects the beliefs and wishes of the patient (Marinker 1997).

Of these three terms, I always recommend "adherence". It is less likely to imply blame or regard the patient as a passive recipient of care than the word compliance and, although concordance was more recently introduced as a "better" term, it has not been widely adopted and tends to be used more with regard to medication taking from the medical sociology perspective. Concordance is also mostly about the therapeutic alliance, something that is very important but arguably does not explicitly determine whether or not a patient has actually undertaken their treatment as prescribed; it is this assessment that is needed in order to optimise the dose of treatment being prescribed.

There are a number of concepts that are also worth describing at this stage. Firstly, non-adherence can be distinguished into two distinct types (Myers & Midence 1998):

Unintentional non-adherence: where the patient may wish to adhere but something outside of their control, such as poor memory, lack of instruction, or the inability to travel to appointments, or pay for exercise classes, etc, prevents this from happening.

Intentional non-adherence: this concerns people who make the conscious decision not to take up their treatment (see case study). Such patients expect a quick-fix, do not believe in the exercise approach, or just do not want to exercise.

There are also several different phases of adherence:

Initial uptake or **adoption phase** of a treatment often occurs during a period of clinical supervision. This tends to be the phase when adherence, if it happens, is likely to be highest.

Maintenance phase is less likely to be supported by a clinician. The patient self-manages their condition. Adherence typically drops off in this phase, although if a routine has been established in the first phase then some ongoing adherence may still occur. The key is to make sure the patient understands the difference between their maintenance exercise dose versus the on-treatment dose, and to give them strategies to manage relapses, resume the on-treatment regimen if their condition flares up, and manage breaks in their exercise routine that can occur due to life events such as holidays or an acute illness.

Closure or discontinuation phase may occur for some patients when all treatment comes to an end and their condition has resolved fully (Vrijens *et al* 2012).

Another concept to discuss is that of the **healthy adherer effect**, where people do well just by the "adhering" regardless of the efficacy of a treatment. This effect was first reported in a trial of medication to reduce high blood pressure. Patients who adhered to 80% of their prescription had significantly lower cardiovascular related mortality at five-year follow up, and this was regardless of whether or not they were adhering to the active anti-hypertensive drug or the sugar placebo pill (Horwitz *et al* 1990). This effect has been summarised further in the review by Simpson *et al* (2006) that shows while adherence is typically seen as **the process** by which therapeutic outcome is achieved, it is also a potentially beneficial **outcome** in its own right. There are two implications here for our practice. First, we can promote this effect, encouraging this healthy adherence as much as possible, and second, it means we should be careful and only do this for evidence-based treatments or, when no evidence exists, only for the treatments that we can be certain do no harm.

There are also a number of myths about non-adherence. First, it is not condition specific or a feature of a particular disease, instead it is common across most long-term conditions, e.g. heart disease (Horwitz *et al* 1990), rheumatoid arthritis (Hill *et al* 2001), osteoporosis (Cramer *et al* 2007), and there is considerable literature showing patient and clinical features account for very little variance in adherence outcomes. Instead, other factors such as patient beliefs, which are discussed later, may be more important.

Second, there is no "adherent" personality and it is not consistently related to gender, educational experience, intelligence, marital status, occupation or income, or ethnic

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"PHYSIOTHERAPISTS ALREADY USE A NUMBER OF BEHAVIOURAL CHANGE TECHNIQUES"

background (Horne & Clatworthy 2010). Instead, adherence patterns vary between patients and within the same patient over time and across treatments. Adherence is not an "all or nothing" phenomenon, as an individual can be adherent some of the time and in varying degrees. The concept of "partial adherence" may be useful here as it gives permission for a patient to declare honestly that they have done some, but maybe not all, of their exercises without feeling too guilty. However, we do need to know when this partial adherence is "sufficient" for therapeutic benefit to occur, which again requires robust measurement or assessment tools.

Finally, non-adherence is seldom "fixed" by providing patients with more education, reminders or by giving frightening messages (known as fear appeals) or by being overly authoritative with a patient and telling them what they must do.

Given that we have not yet solved the problem of poor adherence, the current direction of travel in the research literature is that concerning health behaviour change. From my perspective this is synonymous with helping someone adhere to their physiotherapy exercises, as promoting adherence is the same as helping them to change their health behaviour, such as engaging in a healthy lifestyle, adopting advice for self-management or doing the prescribed treatment, i.e. exercises. All these require behaviour change and the next section in this article will tackle some of the psychological literature on this topic.

The psychology of health behaviour change

There are many theoretical models that attempt to explain health behaviours, but it is beyond the scope of this article to cover them all. Of note is that which pertains to patient beliefs and expectations about their health condition and the proposed treatment. John Weinman and Rob Horne are lead researchers in this area, describing how patients have **general** versus **specific beliefs** (**necessities** and **concerns**) about their health condition and its treatment (Horne & Weinman 2002). For example, asthma patients may have a general belief that all medicines are poison, therefore potentially harmful, but have specific beliefs about their inhalers; their reliever is necessary, but their steroid inhaler gives them great concern. These concerns may be because of possible long-term side effects but also because, unlike the reliever inhaler, there is no perceived immediate benefit from using them so they wonder why they are necessary.

This leads beautifully to the next psychological consideration, that of patient **expectations**. In the asthma example, if a patient expects to see benefit from a treatment and this does not happen in their perceived timeframe, then why would they continue to adhere to a treatment? This highlights how important it is for clinicians to check patient expectations and give timeframes for when treatment benefits or recovery should occur. Similarly, in some of my own work, led by New Zealand based colleagues, it is clear that patients' expectations of treatment can be hugely influenced by what clinicians say to them. Darlow *et al* (2013; 2015) reveals the enduring impact of a GP's negative explanations of non-specific low back pain to patients, and the work required by the physiotherapist to undo these negative beliefs for the patients who subsequently attend physiotherapy. The "lay" explanation that "their back is worn out" or has "degenerated" or has signs of "wear and tear" means that many patients will rest, or be more cautious than necessary, they might even be concerned that exercise and activity will make things worse. This means patients can attend physiotherapy with a set of beliefs and expectations that are at complete odds with what is likely to be offered; why would such a patient adhere to a programme of exercises for their low back pain?

However, no single psychological theory or model provides sufficient explanation of how behaviour can be changed for all people in all settings, and few models take into account time, or they have a strict linear approach to behaviour change. This tells us that there really is not yet a theory that captures the complexity of adherence behaviour. In our review of the theories underpinning behaviour change in relation to adherence to pelvic floor muscle exercises (McClurg *et al* 2015), it became clear that no single model stands out, but some of the better models do include consideration of readiness for change, phases of adherence, relapse management and maintenance strategies.

Behavioural change taxonomy

One solution to the plethora of models has been to condense them into key strategies or techniques as seen in the Michie *et al* (2012) behaviour change taxonomy. This is a great start in helping us classify evidence-based behaviour change techniques (BCT) and allows us to select what we need rather than be constrained by a particular theoretical approach. It allows clear reporting of what we do in our research trial interventions, which then affords the opportunity of replication if, and when, the approach is implemented into clinical practice. Physiotherapists already regularly use a number of the BCTs and some, for example goal setting, would be regarded

as core business for all rehabilitation professionals. The taxonomy does have its critics, for example Ogden (2016) who argues against the use of "recipes" for promoting behaviour change. However, as with all classification systems it will evolve over time and more work is needed to fine-tune BCT specifications. Furthermore, it is often how these BCTs are delivered in a therapeutic relationship, along with other contextual factors, that actually matters and not just the BCT itself. These aspects of promoting behaviour change still need further investigation.

By taking a closer look at the taxonomy it is possible to show how some BCTs naturally fit into physiotherapy practice but could be fine-tuned to enhance adherence. This is because many are "common sense" approaches physiotherapists already use, but tend not to name them as BCTs, or indicate in their clinical records that they are being used to promote adherence.

Goal setting

The best example in the BCT is goal setting and planning, something that will be very familiar to those working in rehabilitation, and which now has a high-quality Cochrane review showing some evidence of effectiveness for promoting self-efficacy and quality of life (Levack *et al* 2015). In the taxonomy, my goal setting includes monitoring, reviewing progress and detailed planning, as well as goals that are strategically split into the setting and reviewing of **outcome goals**, e.g. health outcomes such as alleviating the problem of leaking urine, or having no more back pain, and the setting and reviewing of **behavioural goals**, e.g. the number of exercise sessions needed during a week in order to get the muscle training effect that will progress the patient towards their outcome goal.

Behavioural goals are closely linked with **action planning**, but how specific are we in agreeing these with our patients? Do we specify and include sets, repetitions, intensity of work, frequency and duration of sessions, recovery time, etc (Slade *et al* 2016)? Do we help patients with their plans to meet all the components of an effective exercise training programme and then also how to fit them in to their everyday lives? A final comment about goals relates to a BCT that may be much less familiar to physiotherapists: that of making a **behavioural contract** with their patient. This means asking the patient to say aloud to you that they are going to do their exercises! It may feel silly to ask this but it does help to have a verbal contract. Even better is getting the patient to sign a sheet detailing their agreed exercise programme. This type of behavioural contract has been used to good effect in occupational therapy trials of exercises for people with hand rheumatoid arthritis (Lamb *et al* 2015; Adams *et al* 2016).

Some of the work I have had the privilege to be part of is in pelvic floor muscle training for urinary incontinence. This area of work is a strong contender for the research leader in terms of exercise adherence, possibly because pelvic floor exercises, involving a hidden set of muscles, are so hard to teach, and it is such a private, seldom talked about condition that non-adherence is a big problem. It is also because researchers in this area have already established a strong evidence base for the efficacy of exercise interventions. They are now in the position to tackle the adherence issue, particularly the long-term adherence that is needed to maintain the benefits of the initial intensive, and often supervised, programme. The consensus statement and accompanying articles we have written provide a "state of the science" summary of this work (Dumoulin *et al* 2015).

Stemming from this collaboration are two exciting ongoing projects. The first is the optimising pelvic floor muscle training to achieve long-term benefits (OPAL) trial; a multi-centre trial to determine whether the BCT known as **biofeedback** makes a difference to long-term adherence and outcomes for 600 women with stress or mixed urinary incontinence, this trial is due for reporting in 2019. The second is the five-year antenatal prophylactic pelvic floor exercises and localisation (APPEAL) programme which began in 2016 and is investigating if, and how, we can implement pelvic floor muscle training into the antenatal care pathway in order to prevent incontinence.

While I suggest the pelvic floor muscle training researchers and clinicians have taken the lead, it is clear that other areas related to physiotherapy are catching up. For example, in October 2016 Arthritis UK held a workshop specifically to identify a research agenda for tackling treatment adherence for people with osteoarthritis and rheumatoid arthritis. My notes from this meeting identified at least four key areas for prioritisation:

- The need for robust measures of adherence
- Elucidating the best education strategies for patients and clinicians
- The design and use of interventions to facilitate adherence
- The promotion of adherence in health professionals so that they follow best practice and evidence-based ways of working.

In closing this article, I ask two questions: If you cannot change your behaviour is it reasonable to expect your patients to? What can you do to promote adherence?

The following is a brief checklist to consider putting into your practice:

- Be aware of your assumptions and dispel the myths
- Address barriers and the unintended reasons for poor adherence
- Check the patient's understanding, beliefs and expectations. Do they match your proposed treatment?
- Avoid overloading patients with more information or more "education"
- Make explicit use of behaviour change techniques to facilitate adherence.

About the author

Sarah has extensive experience of working in interdisciplinary environments, both teaching and in research at the Universities of Southampton, Otago (New Zealand) and

CASE STUDY

Male patient A, with a typical presentation of non-specific low back pain.

Following the standard assessment, I discussed my findings with him before agreeing a plan of action; some in-clinic treatment, some home exercises, together with implementing any advice or self-management strategies. Once I had shown him the exercises, checked he could do the techniques and had a list to remind him, we agreed a review date.

A week later my patient returned, smiling and happy, his back was better. I re-assessed and then checked his exercise techniques. He told me he had been doing them each day, and that he had taken on board the advice to adjust his chair and his posture at his work station. To me this fantastic result was what being a physiotherapist was all about. This patient was the sort we all love to treat, and one I came to call a "green-light" patient. However, the excitement in my abilities as a physiotherapist did not last.

Male patient B, almost identical in terms of low back pain presentation.

He seemed to take on board my advice, agreed to do the home exercise programme and adopt the changes to his work station. However, when he returned a week later his back was no better. Physiotherapy had not worked for him and what was I going to do about it? I felt a failure, but on further investigation, it quickly became apparent that he had not carried out many, if any, of the daily exercises or acted on any of the postural advice.

It was clear that this patient's expectations had not been met because I was unable to offer him an in-clinic quick fix. His disillusion manifested fully when he failed to turn up for the next appointment.

On reflection

Thinking about these two very typical patients I asked questions that I still have to find the full answers for. Why had one patient adhered, but not the other? What had been different about me, as a physiotherapist, when I had seen each of them? What were the differences in each patient's condition that meant the exercises were right for one, but not the other? Had I mismatched my assessment and treatment plan?

I wished I could bottle the magic I had when working with my first patient; I'd be rich and famous now! Instead, the experience started me on a research career to investigate treatment adherence. My passion for the topic was further fuelled when, while studying for my Masters, I read an article about a non-significant result of a clinical trial of physiotherapy exercise for low back pain (Faas *et al* 1993). I was incensed that all patients had been given exactly the same exercise programm. This seemed to me to be an unfair test of physiotherapy in that some patients may have been expected to adhere to exercises that might be inappropriate for them. I was already passionate about treatment adherence from my own experiences, but once I started to read more I realised how enormous the problem is, and not just for physiotherapy.

Exeter, and including her current role in the South West Peninsula Collaboration for Leadership in Applied Health Research and Care (PenCLAHRC).

She started her career at the University of Birmingham with a joint degree in psychology and physical education and went on to obtain a dual professional background, training to be a Chartered Physiotherapist at Guy's Hospital. She then completed two higher degrees in health psychology to become a Chartered Psychologist. Sarah worked clinically in the NHS and private sector, specialising in musculoskeletal rehabilitation, particularly exercise therapy for sports injuries and cardiac rehabilitation. During this time she was also training and competing as an international athlete for Great Britain in the 400m hurdles. Her expertise in health psychology includes recent work in behaviour change taxonomy, and methodological input for the process evaluation component of large multi-centre clinical trials and her research applies psychology to rehabilitation, such as goal-setting and facilitating adherence to exercise for stroke, back pain and urinary incontinence.

Sarah designs and evaluates research trials for assessing interventions based on therapeutic exercise, with a particular focus on how to assess and promote treatment adherence, she has recently become the deputy director of the Exeter Clinical Trials Unit, and she is lead editor of the textbook *Interprofessional Rehabilitation: a person-centred approach*.

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For more information

Arthritis Research UK: www.arthritisresearchuk.org/research/research-funding-and-policy/our-clinical-study-groups/adult-inflammatory-arthritis.aspx

OPAL: Optimising Pelvic Floor Muscle Training to Achieve Long-term benefits. www.opaltrial.co.uk/