

Implementation of Measurement Instruments in Physical Therapist Practice: Development of a Tailored Strategy

J.G. Anita Stevens, Anna J.M.H. Beurskens

Background and Purpose. The use of measurement instruments has become a major issue in physical therapy, but their use in daily practice is infrequent. The aims of this case report were to develop and evaluate a plan for the systematic implementation of 2 measurement instruments frequently recommended in Dutch physical therapy clinical guidelines: the Patient-Specific Complaints instrument and the Six-Minute Walk Test.

Case Description. A systematic implementation plan was used, starting with a problem analysis of aspects of physical therapist practice. A literary search, structured interviews, and sounding board meetings were used to identify barriers and facilitators. Based on these factors, various strategies were developed through the use of a planning model for the process of change.

Outcomes. Barriers and facilitators were revealed in various domains: physical therapists' competence and attitude (knowledge and resistance to change), organization (policy), patients (different expectations), and measurement instruments (feasibility). The strategies developed were adjustment of the measurement instruments, a self-analysis list, and an education module. Pilot testing and evaluation of the implementation plan were undertaken. The strategies developed were applicable to physical therapist practice. Self-analysis, education, and attention to the practice organization made the physical therapists aware of their actual behavior, increased their knowledge, and improved their attitudes toward and their use of measurement instruments.

Discussion. The use of a planning model made it possible to tailor multifaceted strategies toward various domains and phases of behavioral change. The strategies will be further developed in programs of the Royal Dutch Society for Physical Therapy. Future studies should examine the use of measurement instruments as an integrated part of the process of clinical reasoning. The focus of future studies should be directed not only toward physical therapists but also toward the practice organization and professional associations.

J.G.A. Stevens, PT, MSc, is Researcher and Teacher, Center of Research Autonomy and Participation of People With Chronic Illnesses, Department of Physiotherapy, Zuyd University, Nieuw Eickholt 300, PO Box 550, 6400 AN Heerlen, the Netherlands. Address all correspondence to Ms Stevens at: a.stevens@hszuyd.nl.

A.J.M.H. Beurskens, PT, PhD, is Associate Professor, Center of Research Autonomy and Participation of People With Chronic Illnesses, Department of Physiotherapy, Zuyd University.

[Stevens JGA, Beurskens AJMH. Implementation of measurement instruments in physical therapist practice: development of a tailored strategy. *Phys Ther*. 2010; 90:953–961.]

© 2010 American Physical Therapy Association



Post a Rapid Response to
this article at:
ptjournal.apta.org

Monitoring the health status of patients through the use of outcome measures is considered to be an aspect of good clinical practice in physical therapy.¹⁻³ The clinical guidelines of the Royal Dutch Society for Physical Therapy recommend the use of measurement instruments. Until now, this recommendation has been implemented in a passive way by mailing the clinical practice guidelines containing the measurement instruments. Despite the overall positive attitude of physical therapists, the daily use of outcome measures in physical therapist practice is remarkably low.^{2,4-8}

In Europe and Australia, “implementation” is a common term for what in the United States is called “knowledge translation or exchange.” In this article, the term “implementation,” which means a systematic process in which innovations or changes of proven value become structurally embedded in professional practice, was used. It is well known that passive implementation strategies are not effective.^{9,10} Systematic reviews of the effectiveness of implementation interventions have shown that strategies should be targeted toward specific barriers to and facilitators of change that have been assessed in a thorough problem analysis of the target group and setting.^{9,11-18} Although education is an important strategy, implementation should not be restricted to educational interventions for individual health professionals only. Factors concerning practice policy and organization, patients,

and the measurement instruments themselves also are important.^{4,12}

The Dutch Scientific College of Physiotherapy of the Royal Dutch Society for Physical Therapy has made a systematic approach to the implementation of outcome measures in daily practice a focal point of its policy. The aims of this case report were to develop and evaluate a systematic implementation plan for the use of 2 measurement instruments frequently recommended in Dutch physical therapy clinical guidelines: the Patient-Specific Complaints (PSC) instrument,¹⁹ which is comparable to the Pain-Specific Functional Scale,²⁰ and the Six-Minute Walk Test (6MWT).²¹ To meet our aims, we sought answers to 2 questions:

1. Which barriers and facilitators contribute to the use of the PSC and 6MWT in physical therapist practice?
2. Which implementation strategies can be tailored to these barriers and facilitators and applied to physical therapist practice?

Target Setting

The implementation plan was aimed at physical therapists in private practice in the community. This group is the largest group of physical therapists in the Netherlands; they are easily accessible and are not restricted by complicated and formal institutional rules. It also appears that these physical therapists use fewer measurement instruments than their colleagues in hospitals and other institutions.⁷

Development and Application of the Process

As a guideline for a systematic approach, the implementation model of Grol et al¹⁰ was used. The 5 steps in this model and the methods used in this case report are shown in the Figure.

Step 1: Proposal for Improvement

We focused on the implementation of 2 easily applicable measurement instruments that are frequently recommended in Dutch physical therapy guidelines. The first instrument was the PSC, a Dutch instrument that is comparable to the Pain-Specific Functional Scale.^{19,20} In both instruments, patients must list 3 activities and score them. Differences are the scoring method (visual analog scale versus numerical rating scale), the time frame on which the score is based (1 week versus 1 day), and the availability of a sample activity list in the PSC to help patients identify their main complaint. The second instrument was the 6MWT, which is used to assess the aerobic exercise capacity of a patient by measuring the walking track length in 6 minutes.²¹

Step 2: Problem Analysis

To obtain a complete and valid overview of relevant barriers and facilitators, we used various methods to collect information. First, a literature search of the PubMed and Cochrane databases was carried out to identify studies about barriers and facilitators in the use of measurement instruments and clinical guidelines. From this information a topic list was formulated (the list is available on request from the authors). Second, physical therapists in several private practices were interviewed. We searched for a wide variety in terms of expertise and number of employees and considered the use of clinimetrics (purposive sampling).

The semistructured interviews (45–60 minutes) were digitally audiotaped, summarized, and member checked by the physical therapists. The interviews started with general inquiries on the following themes: information about the practice, patient categories, and measurement instruments used. Thereafter, open



Available With
This Article at
ptjournal.apta.org

• Audio Abstracts Podcast

*This article was published ahead of
print on April 22, 2010, at
ptjournal.apta.org.*

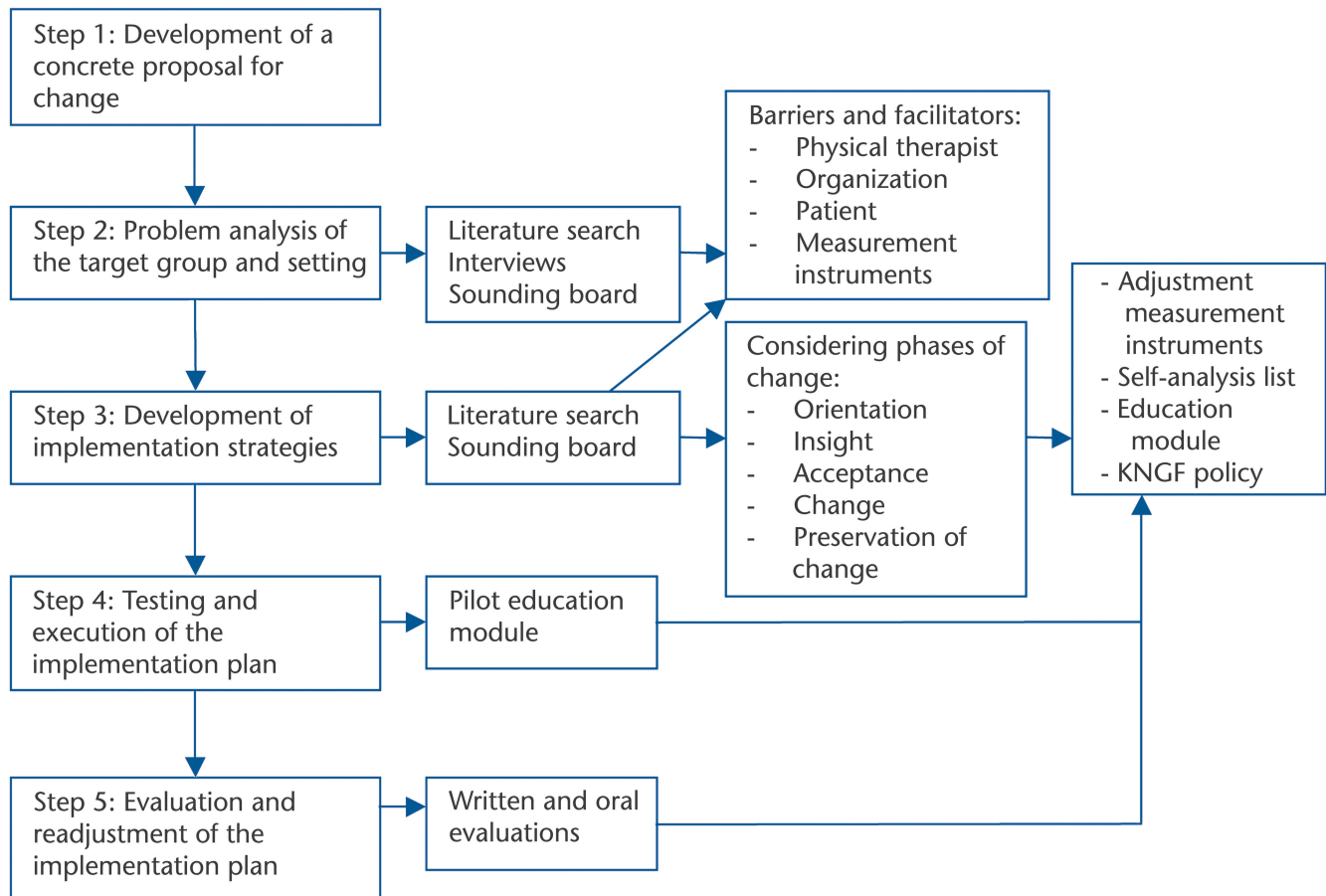


Figure.

Implementation model of Grol et al¹⁰ and the methods used in this case report. KNGF=Koninklijk Nederland Genootschap voor Fysiotherapie (Royal Dutch Society for Physical Therapy).

questions were asked about perceived barriers and facilitators in the use of measurement instruments in daily practice. At the end of each interview, the topic list was presented to the interviewees, and additional relevant items could be indicated. The barriers and facilitators identified were ordered in various domains: the physical therapist, the organization, patients, and the measurement instruments themselves. The number of interviews was estimated at between 15 and 20, and the interviews were stopped when a saturation of data was reached.²²

Step 3: Development of Implementation Strategies

The information from step 2 guided the selection of both the type and

the specific content of the implementation strategies developed; a planning model for the process of change was used.^{10,16} In addition, a literature survey on how to select and tailor strategies to the information from the problem analysis was performed. Until now, not many implementation studies have been based on a problem analysis. Therefore, studies about the effect of implementation on general health were used. The results from both the literature search and the interviews were discussed with the project group (experts in the field of guideline implementation) and a sounding board (the interviewed physical therapists). Subsequently, implementation strategies were selected and developed.

Steps 4 and 5: Testing and Evaluation of the Implementation Plan

In the literature, recommendations were made about testing interventions initially in small groups, in which active education and professional support seemed to be effective in improving physical therapists' attitudes and adherence.^{4,23,24} Therefore, pilot testing of the implementation plan was undertaken with 2 groups of physical therapists from 4 physical therapist practices. The evaluation focused on feasibility and readjustment of the strategies developed. The results of the first pilot program were used to make adjustments in the second pilot program. It was not our intention to evaluate the effectiveness of the strategies, but the

Implementation of Measurement Instruments

Table 1.

Summary of Barriers to and Facilitators of the Use of Measurement Instruments Reported in the Interviews

Domain	Barriers	Facilitators
Physical therapist		
Competence	Lack of knowledge, education, routine, and experience	Sufficient knowledge and education
	Diagnosis focused on ICF ^a domain: body functions	Measurement instruments are already used in daily routine
Attitude	Resistance to change	Readiness to change
	No conviction of additional value on the plan of care	Positive attitude toward the use of measurement instruments
	Being overloaded with information	Conviction of contribution to quality of physical therapy care
	Headstrong in own working method	
	Defining therapy outcome otherwise	
	Lack of confidence in own skills	
Organization		
Practice	Takes too much time	Patient computer system
	No financial compensation	
	Absence of practice policy	Presence of practice policy
Colleagues	Lack of discussions, meetings, and feedback from colleagues	Regular meetings and feedback from colleagues
	No adherence to the agreements made	Innovative team and cooperative colleagues
Patient	Different expectations and preferences: needs no measurement instruments, wants only therapy, and puts pressure on therapist	Patient wants objectives to evaluate outcome of therapy
	Linguistic problems and lack of understanding	
Measurement instrument	Poor availability	Good availability
	Difficult choice	
	Feasibility: extensive, difficult interpretation, and unclear instructions	

^a ICF=International Classification of Functioning, Disability and Health.

therapists were asked whether their knowledge, attitudes, and use of measurement instruments had changed.

Outcome

Step 2: Problem Analysis

All of the physical therapists who were invited for the interviews attended the interviews. After 11 interviews with 13 physical therapists, a saturation of data was reached, and the interviewing was stopped. The physical therapists, whose ages ranged from 22 to 54 years (median=43), were interviewed in the southern region of the Netherlands. Their working experience varied from 2 to 30 years (median=21), and

the number of colleagues in the practice varied from 1 to 11 (median=6). The interviewed physical therapists specialized in different areas. The report of the interview was sent to each therapist for member checking, and the reports were all in agreement.

The 13 therapists indicated that they were familiar with the PSC and 6MWT, but less than half of them indicated that they used these measures. Almost all interviewed physical therapists were motivated to use the instruments and were convinced of the additional value. Barriers and

facilitators reported in the interviews are summarized in Table 1.

In the sounding board, discussions about the identified barriers and facilitators took place. During these discussions, some physical therapists were very honest and admitted that they did not use the measurement instruments as often as they claimed. Because of the gap between claiming to use and actually using the instruments, the physical therapists made a commitment to use the PSC and 6MWT for 1 month and then discuss their experiences in a subsequent meeting. In the second meeting, they indicated that the instruments

Table 2.
Planning Model for the Process of Change^a

Domain	Phase of Behavioral Change and Implementation Goals	Implementation Strategies
Physical therapist		
Competence	Orientation: Awareness, interest, and involvement Insight: Increasing knowledge and understanding	KNGF: Dissemination by publications Offering education possibilities Education: Homework tasks Practical training and role playing
Attitude	Insight: Insight into own working method Acceptance: Positive attitude and motivation Intention and decision to change Change: Confirmation of the benefit	Self-analysis list: Increasing awareness, self-reflection, and insight into own working method Education: Discussions about resistance, advantage, and added value of clinimetrics Coaching style, own responsibility, individual learning goals, and interactions with colleagues
Organization	Insight: Insight into own working method Acceptance: Positive attitude and motivation Intention and decision to change Change: Implementation in daily practice Preservation of change: Integration in daily routines Anchoring in the organization	Self-analysis list: Insight into practice policy Education: Discussions and agreements with colleagues, development of practice policy, and formulation of learning and practice goals KNGF: Embedding in future electronic patient dossier
Measurement instrument	Insight: Increasing knowledge and understanding Acceptance: Positive attitude and motivation Change: Implementation in daily practice Preservation of change: Integration in daily routines Anchoring in the organization	Adjustments in PSC and 6MWT: Increasing feasibility and simplifying instructions Extending PSC activity lists Education: Practical training and homework tasks Formulation of practice policy

^a The developed implementation strategies are based on various domains and phases of behavioral change, each with specific implementation goals.^{10,16} KNGF=Koninklijk Nederland Genootschap voor Fysiotherapie (Royal Dutch Society for Physical Therapy), PSC=Patient-Specific Complaints instrument, 6MWT=Six-Minute Walk Test.

were useful in daily practice. For example, 1 therapist previously thought that he could not use the instruments because his patients only wanted therapy and no measurements; however, the patients appreciated the use of the measurement instruments and asked him to use them regularly to monitor their progress. These experiences led to the identification of new barriers and facilitators, which made the implementation a cyclic process.

Step 3: Development of Implementation Strategies

There is no consensus about the best general implementation strategy.^{9,17,25,26} It is clear, however, that active, multifaceted strategies tailored to a problem analysis are the most effective.^{13,16,18,24} In addition, different models of behavioral change are recommended, but there is no agreement about which model should be used.^{10,12,14-16} Grol and colleagues^{10,16} described a planning model for the process of change in

which different theories of behavioral change are integrated to induce changes in professional behavior. Table 2 shows various domains, phases of behavioral change (orientation, insight, acceptance, change, and preservation of change), and specific implementation goals. On the basis of this information, we tailored the outcome of the problem analysis to the appropriate implementation strategies. The definitive strategies, resulting from the project group and sounding board discussions, were

Implementation of Measurement Instruments

critically evaluated and readjusted several times. An overview of these strategies is shown in Table 2.

To improve the feasibility of using the PSC and 6MWT, we made several adjustments:

- The instructions were slightly adjusted to improve interpretation.
- The original PSC was developed for patients with low back pain, and the sample activity list contained activities with which only those patients would have difficulties. A list of sample activities was made for patients with other disorders.
- The visual analog scale of the original PSC was replaced with an 11-point numerical rating scale. Practical use by the physical therapists and information from the literature revealed that this scoring method was more feasible for some (older) patients.²⁷ Changing the visual analog scale to a numerical rating scale did not change the principle of the test; the scoring methods are highly correlated.²⁸ A numerical rating scale also is used in the Pain-Specific Functional Scale.²⁰

A self-analysis list was developed to provide insight into and self-awareness of barriers and phases of behavioral change. This list was based on a questionnaire on the self-reported use of outcome measures in physical therapy and was obtained, along with other items, from the problem analysis.⁷ It contained 3 sections with questions concerning the phases of change for the physical therapist, the organization and its policy, and an inventory of the actual use of measurement instruments in daily practice. A few examples of questions from sections 1 and 2, rated on a Likert scale, are shown in the Appendix. The self-analysis list was pretested by the physical therapists of the sounding board and was used as a guide for the education module.

An education module focusing on the physical therapist and the practice organization was developed. The aims of the education module were to provide insight into the use of measurement instruments and phases of behavioral change, to optimize the use of the PSC and 6MWT in the process of clinical reasoning, and to fit the use of the PSC and 6MWT to practice policy. The education module consisted of 3 sessions of 2.5 hours. The first 2 sessions were planned to take place within 1 month, and the last session was planned to take place after 2 months. The program was not completely determined in advance but was tailored to the professionals. Active teaching methods, such as discussion and role playing, were used in a coaching style instead of a teaching style. We expected the attendees to show an active learning attitude, initiative, and responsibility.

Steps 4 and 5: Testing and Evaluation of the Implementation Plan

Pilot testing and evaluation of the implementation plan were undertaken. The adjusted instruments, the self-analysis list, and the education program were tested with 2 groups of physical therapists from 4 private practices in the community. The first group consisted of colleagues from the same practice (n=11); the second group consisted of colleagues from 3 different practices (n=10). After each session, the process and the program were evaluated orally; after the third session, an evaluation form was filled out.

The strategies developed could be applied to physical therapist practice. The evaluation of the adjusted measurement instruments was positive. The adjusted instructions were easier to interpret, and the additional activity lists were useful for determining treatment goals. The self-analysis list appeared to be valuable

because physical therapists became aware of their own barriers in daily practice. The link with their phases of behavioral change was revealing and stimulated them to use the instruments in daily practice. Working with heterogeneous groups made it difficult to accommodate the individual barriers of the physical therapists but, on the other hand, they could learn from one another.

After the evaluation of the first pilot education program, the second program was adjusted at several points. The program became more fixed in advance. In the first session, attendees began to devise a practice policy. Individual learning goals were discussed, and homework tasks were checked. More time was allocated for practical rehearsal of the tests. The outline of the final education program is shown in Table 3.

All of the physical therapists appreciated the active teaching methods, discussions, and role playing during training. Developing a practice policy was an issue of major importance, especially for the preservation of change. During busy daily practice, the therapists never took the time to discuss these matters.

The physical therapists indicated that they were interested in practicing with other instruments besides the PSC and 6MWT and would appreciate sets of short, feasible, and methodologically sound instruments. At the last meeting, most physical therapists indicated that they actually used both instruments.

Discussion

In this report, we have shown that it is possible to develop and evaluate a systematic implementation plan for the use of 2 measurement instruments. A thorough analysis was used to identify practical barriers and facilitators. In the interviews and discussions, we could continue asking

Table 3.
Outline of the Education Program^a

Day	Main Issues	Goals	Working Methods
1	Introduction	Explicating expectations of therapists: active learning attitude, responsibility, initiative, active teaching methods, and coaching style	Plenary
	Self-analysis list	Insight into own working method and phase of behavior	Individual
	Individual learning goals and practice policy	Responsibility for own learning process in professional and practice organization domains	Working group of 3 or 4 people
	Advantages and disadvantages of PSC and 6MWT	Insight and acceptance	Plenary
	Training on PSC: clarification of the patient's main complaint	Increasing knowledge and practical skills	Working group of 3 or 4 people
	Homework on PSC	Using PSC in practice for the next month	Plenary
	Evaluation of the session	Reflection	Plenary
2	Results of self-analysis list	Insight on working method and phase of behavior	Presentation
	Evaluation of homework task	Insight and acceptance	Plenary
	Training on 6MWT: standardization and interpretation	Knowledge and practical skills	Working group of 3 or 4 people
	Use of measurement instruments in practice policy	Integration in the practice organization to obtain (or preserve) change	Working group of 3 of 4 people
	Homework on 6MWT	Using 6MWT in practice for the next 2 mo	Plenary
	Evaluation of the session	Reflection	Plenary
3	Evaluation of homework task	Insight and acceptance	Plenary
	Theory of clinimetrics	Insight and knowledge	Lecture
	Step-by-step plan to search for other measurement instruments	Transfer to the use of other instruments	Lecture
	Evaluation of practice policy	Integration in the practice organization to obtain (preserve) change	Working group of 3 or 4 people
	Integration of instruments in clinical reasoning and daily practice	Preservation of behavioral change	Plenary
	Written and oral evaluations of total education module	Reflection	Plenary and individual

^a PSC=Patient-Specific Complaints instrument, 6MWT=Six-Minute Walk Test.

about underlying thoughts and possible solutions and strategies. In this way, the problem analysis produced a larger amount of information than earlier reports, in which only written inquiries were used.^{4-8,29-31} The revealed factors matched the barriers and facilitators described in the literature.^{4,6-8,29,30,32}

Many studies^{2,4-8,14,29-32} have focused on identifying the extent of use of measurement instruments as well as factors that affect that use.

We took the additional steps of developing various strategies based on these factors and evaluating their applicability in a pilot program in several physical therapist practices. The involvement of a sounding board during the development phase guaranteed interest in and acceptance of the implementation strategies by the target group.^{12,14,15}

Starting education with self-analysis provides therapists with the opportunity to formulate their own learn-

ing goals, and trainers can tailor strategies to the professionals as well as the organization. This approach has been recommended in other studies.^{13,18}

Using the planning model of Grol and colleagues^{10,16} for the process of change, we were able to tailor multifaceted strategies to various barriers and phases of behavioral change. In this way, a change in behavior was initiated. The physical therapists indicated that they used the measure-

ment instruments more often, and they were convinced that doing so contributed to the process of clinical reasoning. For the preservation of change, more time is needed.

It is evident that quality improvements should start with small, simple projects.²³ This case report involved a small group of selected physical therapists in the southern region of the Netherlands; therefore, generalization of the results is unjustifiable. Further studies and additional designs with other measurement instruments are needed to evaluate the effects of implementation strategies.

Our recommendations for the policy of the Royal Dutch Society for Physical Therapy are as follows. First, information about measurement instruments should be disseminated through publication in professional journals, newsletters, and guidelines. This strategy represents the orientation phase, in which awareness of the existence and use of measurement instruments is an important issue. The information should not be restricted to the measurement instruments alone but also should focus on how to use and interpret the results of the instruments in daily practice. Second, educational opportunities should be offered for physical therapists to increase their knowledge and skills regarding the use of these and other measurement instruments in the process of clinical reasoning, with attention to behavioral change. This education should be included in mainstream physical therapist schools. Third, the measurement instruments should be embedded in the future electronic patient dossier.

The actual use of measurement instruments should not be the only objective in implementation programs. The integration of the instruments in the process of clinical reasoning is of major importance. Therefore, future programs should focus not only on

the physical therapist but also on the practice organization and professional associations.

Both authors provided concept/idea/project design, writing, and project management. Ms Stevens provided data collection and analysis. Dr Beurskens provided fund procurement and facilities/equipment.

The authors are grateful to members of the project group (Dr Rob de Bie, Dr Erik Hendriks, Mr Pieter Wolters, Dr Raymond Swinkels, Mrs Anja van den Donk, and Mr John Meijers) and the sounding board (the physical therapists interviewed).

This work was funded by the Dutch Scientific College Physiotherapy of the Royal Dutch Society for Physical Therapy (TD/2008/01).

This work, in part, was presented at the Annual Congress of the Royal Dutch Society for Physical Therapy; November 9, 2007; Amsterdam, the Netherlands.

This article was received March 30, 2009, and was accepted February 24, 2010.

DOI: 10.2522/ptj.20090105

References

- 1 Glasziou P, Irwig L, Mant D. Monitoring in chronic disease: a rational approach. *BMJ*. 2005;330:644-648.
- 2 Haigh R, Tennant A, Biering-Sorensen F, et al. The use of outcome measures in physical medicine and rehabilitation within Europe. *J Rehabil Med*. 2001;33:273-278.
- 3 Jette DU, Bacon K, Batty C, et al. Evidence-based practice: beliefs, attitudes, knowledge, and behaviors of physical therapists. *Phys Ther*. 2003;83:786-805.
- 4 Abrams D, Davidson M, Harrick J, et al. Monitoring the change: current trends in outcome measure usage in physiotherapy. *Man Ther*. 2006;11:46-53.
- 5 Leemrijse CJ, Plas GM, Hoffhuis H, van den Ende CH. Compliance with the guidelines for acute ankle sprain for physiotherapists is moderate in the Netherlands: an observational study. *Aust J Physiother*. 2006;52:293-299.
- 6 Maher C, Williams M. Factors influencing the use of outcome measures in physiotherapy management of lung transplant patients in Australia and New Zealand. *Physiother Theory Pract*. 2005;21:201-217.
- 7 Van Peppen RP, Maissan FJ, Van Genderen FR, et al. Outcome measures in physiotherapy management of patients with stroke: a survey into self-reported use, and barriers to and facilitators for use. *Physiother Res Int*. 2008;13:255-270.
- 8 Pisters M, Leemrijse C. Het gebruik van aanbevolen meetinstrumenten in de fysiotherapiepraktijk. Weten is nog geen meten! [The use of measurement instruments in physiotherapy practice. Knowing it isn't measuring it!] *Nederlands Tijdschrift voor Fysiotherapie*. 2007;5:176-180.
- 9 Grimshaw JM, Shirran L, Thomas R, et al. Changing provider behavior: an overview of systematic reviews of interventions. *Med Care*. 2001;39(8 suppl 2):112-145.
- 10 Grol R, Wensing M, Eccles M. *Improving Patient Care: The Implementation of Change in Clinical Practice*. Edinburgh, Scotland: Elsevier Butterworth Heineman; 2005.
- 11 Grimshaw JM, McAuley LM, Bero LA, et al. Systematic reviews of the effectiveness of quality improvement strategies and programmes. *Qual Saf Health Care*. 2003;12:298-303.
- 12 Berwick DM. Disseminating innovations in health care. *JAMA*. 2003;289:1969-1975.
- 13 Bosch M, van der Weyden T, Wensing MG, Grol R. Tailoring quality improvement interventions to identified barriers: a multiple case analysis. *J Eval Clin Pract*. 2007;13:161-168.
- 14 Garland AF, Kruse M, Aarons GA. Clinicians and outcome measurement: what's the use? *J Behav Health Serv Res*. 2003;30:393-405.
- 15 Grol R, Grimshaw JM. From best evidence to best practice: effective implementation of change in patients' care. *Lancet*. 2003;362:1225-1230.
- 16 Grol R, Wensing M. What drives change: barriers to and incentives for achieving evidence-based practice. *Med J Aust*. 2004;180(6 suppl):S57-S60.
- 17 Haines A, Kuruwilla S, Borchert M. Bridging the implementation gap between knowledge and action for health. *Bull World Health Organ*. 2004;82:724-731; discussion 732.
- 18 Shaw B, Cheater F, Baker R, et al. Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev*. 2005;3:CD005470.
- 19 Beurskens AJ, de Vet HC, Koke AJ. Responsiveness of functional status in low back pain: a comparison of different instruments. *Pain*. 1996;65:71-76.
- 20 Stratford PW, Gill C, Westaway M, Binkley JM. Assessing disability and change on individual patients: a report of a patient-specific measure. *Physiother Can*. 1995;47:258-263.
- 21 Butland RJ, Pang J, Gross ER, et al. Two-, six-, and 12-minute walking tests in respiratory disease. *Br Med J (Clin Res Ed)*. 1982;284:1607-1608.
- 22 Strauss ALC. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. Thousand Oaks, CA: Sage Publications; 1998.

- 23 Geboers H, Mokkink H, van Montfort P, et al. Continuous quality improvement in small general medical practices: the attitudes of general practitioners and other practice staff. *Int J Qual Health Care*. 2001;13:391-397.
- 24 van der Wees PJ, Jamtvedt G, Rebbeck T, et al. Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: a systematic review. *Aust J Physiother*. 2008;54:233-241.
- 25 Bekkering GE, Engers AJ, Wensing M, et al. Development of an implementation strategy for physiotherapy guidelines on low back pain. *Aust J Physiother*. 2003;49:208-214.
- 26 Grimshaw JM, Thomas RE, MacLennan G, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess*. 2004;8:iii-iv, 1-72.
- 27 Peters ML, Patijn J, Lame I. Pain assessment in younger and older pain patients: psychometric properties and patient preference of five commonly used measures of pain intensity. *Pain Med*. 2007; 8:601-610.
- 28 Williamson A, Hoggart B. Pain: a review of three commonly used pain rating scales. *J Clin Nurs*. 2005;14:798-804.
- 29 Metcalfe CL, Lewin R, Wisher S, et al. Barriers to implementing the evidence base in four NHS therapies: dieticians, occupational therapists, physiotherapists, speech and language therapists. *Physiotherapy*. 2001;87:433-441.
- 30 Pollock AS, Legg L, Langhorne P, Sellars C. Barriers to achieving evidence-based stroke rehabilitation. *Clin Rehabil*. 2000; 14:611-617.
- 31 Jette DU, Halbert J, Iverson C, et al. Use of standardized outcome measures in physical therapist practice: perceptions and applications. *Phys Ther*. 2009;89:125-135.
- 32 Copeland JM, Taylor WJ, Dean SG. Factors influencing the use of outcome measures for patients with low back pain: a survey of New Zealand physical therapists. *Phys Ther*. 2008;88:1492-1505.

Appendix.

Examples of Questions in the Self-Analysis List^a

Questions	Fully Disagree	Disagree	Neither Agree nor Disagree	Agree	Fully Agree
Section 1: questions about yourself					
I am able to interpret the outcome of measurement instruments in the right way					
I think it is important to document patient data in an objective way					
I think that the use of measurement instruments does not take too much of my time					
The use of measurement instruments is a fixed part of my methodical approach					
Section 2: questions about policy in your practice					
In my practice, enough measurement instruments are available					
My supervisor supports employees in using measurement instruments					
The colleagues in my practice use measurement instruments					

^a The complete list is available on request from the authors.