

## A system of networks and continuing education for physical therapists in rheumatology: a feasibility study

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### Abstract

**Purpose:** To evaluate the feasibility of regional physical therapy networks including continuing education in rheumatology. The aim of these networks was to improve care provided by primary care physical therapists by improving specific knowledge, technical and communicative skills and the collaboration with rheumatologists.

**Methods:** In two regions in The Netherlands continuing education (CE) programmes, consisting of a 5-day postgraduate training course followed by bimonthly workshops and teaching practices, were organised simultaneously. Network activities included consultations, newsletters and the development of a communication guideline. Endpoint measures included the participation rate, compliance, quality of the CE programme, teaching practices, knowledge, network activities, communication, number of patients treated and patient satisfaction.

**Results:** Sixty-three physical therapists out of 193 practices (33%) participated in the project. They all completed the education programmes and were formally registered. All evaluations of the education programmes showed positive scores. Knowledge scores increased significantly directly after the training course and at 18 months. A draft guideline on communication between physical therapists and rheumatologists was developed, and 4 newsletters were distributed. A substantial proportion of physical therapists and rheumatologists reported improved communication at 18 months. The mean number of patients treated by physical therapists participating in the networks increased significantly. Patients' satisfaction scores within the networks were significantly higher than those from outside the networks at 18 months.

**Conclusions:** Setting up a system of networks for continuing education for physical therapists regarding the treatment of patients with rheumatic diseases is feasible. Further research will focus on the effectiveness of the system and its implementation on a larger scale.

### Keywords

**physical therapy (specialty)/education, rheumatic diseases, community networks, continuing medical education, program evaluation**

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## Introduction

Physical therapy is a frequently applied treatment in patients with rheumatic diseases. In patients with rheumatoid arthritis (RA), about 25–40% of the patients are being treated by a physical therapist over a period of 1 year [1, 2]. Home-based physical therapy has proved to be an effective treatment strategy in patients with inflammatory rheumatic diseases [3–5]. The majority of patients with rheumatic conditions are treated by physical therapists in private practices in primary care. Referrals are made either by the rheumatologists or by the general practitioner. Patients in need of more intensive or comprehensive care are admitted to inpatient, outpatient or day patient facilities for multidisciplinary team care, including physical therapy.

Despite the fact that rheumatoid arthritis and osteoarthritis are the most common conditions treated by physical therapists [6], it has been observed that treatment of patients with rheumatic diseases by physical therapists is hampered by a lack of specific knowledge and technical and communicative skills. In RA patients, 54.7% rated the physical therapists' rheumatic expertise as not up to the patients' standard [7]. Moreover, inadequate quality ratings for physical therapists were observed regarding information on the course of the disease, home adjustments and aids and the assurance of a good co-ordination of care [7]. Concerning the latter aspect, physical therapists are judged more and more by patients and other health professionals not only with respect to their professional skills but also regarding their ability to co-operate with a range of care providers from different disciplines [8]. This co-operation is often considered as insufficient by RA patients and their families [9]. Insufficient knowledge and skills of health professionals regarding specific conditions is a common problem in healthcare. With the ongoing new developments in medical and non-pharmacological treatment of many conditions, continuing education (CE) has been accepted as a prerequisite for the maintenance and improvement of quality of care. In physical therapy practice, CE has developed considerably during the last decade, as a significant part of quality systems. Important characteristics for CE to be effective comprise a small-group format with a learner-directed agenda of topics, information from various sources including local opinion leaders and opportunity for practice and feedback [10, 11]. This format finds its basis in the social constructivist theory [12, 13]. According to this theory, learning is not only seen as an individual responsibility. Rather, knowledge is constructed when individuals engage in talk and activity about shared problems or tasks. Few studies have evaluated continuing education pro-

grammes for physical therapists so far [14]. Experiences with a postgraduate training programme for physical and occupational therapists treating patients with RA revealed that the large majority of participants had changed their assessment and management of people with arthritis as a result of the course [15]. Moreover, the training enhanced their communication with other health professionals. Apart from the elements related to CE programmes described above, a large variety of interventions to improve professional practice have been investigated, such as traineeships outside the regular practice setting, patient-participation, local consensus processes and financial incentives [16, 17]. Often several interventions are combined in strategies targeted at improving the performance of health care professionals.

Given the results of various interventions employed to improve professional practice, we used a multifaceted approach [16] to improve physical therapy in primary care for patients with rheumatic conditions. The intervention aimed to point at those aspects of care that were judged as insufficient by patients: knowledge, technical and communicative skills and collaboration among health professionals. A regional, small group format for CE was chosen as the backbone of the intervention. The group was clearly designated as a network to make it recognisable for patients, rheumatologists and other health professionals. Moreover, the network designation and additional activities other than CE were employed to underline the purpose of the intervention with respect to the enhancement of communication among physical therapists and rheumatologists as an important part of professional practice.

The evaluation of the intervention focussed on its feasibility and consisted of intermediate or process endpoint measures such as participation rate, compliance, quality of the CE programme, teaching practices, knowledge, execution of network activities, communication, number of patients with rheumatic conditions who were treated. In addition, an evaluation of patients' satisfaction was included. By instituting the intervention in two regions in the Netherlands, the impact of regional differences regarding rheumatological care on the feasibility of the intervention could be studied.

## Methods

### Design

In two regions in the Netherlands (Leiden; Region I and Enschede; Region II), networks of primary health care physical therapists within the catchment area of

**Table 1.** Contents of a CE programme in connection with regional physical therapy networks in rheumatology (adapted from Stokes et al. [15])

	Presentation method	Topics		Hours
Basic training course (3 months period)	Lectures	Pathophysiology; Clinical features and pharmacological, surgical and non-pharmacological management of various rheumatic diseases		15
		Management of hand and foot problems in RA		8
	Demonstrations, case presentations and case work-ups	Clinical examination and treatment modalities in various rheumatic diseases		7
Teaching practice	Bedside teaching by physical therapist and rheumatologist	Individual and group exercise therapy; Group hydrotherapy; Clinical examination and treatment by a rheumatologist		8
Workshops (bimonthly, over a period of 24 months)	Lectures	Communication between health care providers and patients; Joint replacement; Hand problems; Thermotherapy; Intensive exercise therapy in RA; Case presentation RA		14
	Demonstrations, case presentations and case work-ups in connection with the lectures	Problem-oriented approach and goal setting in complex RA patients		10
			Grand total	62

two rheumatological centres were set up. A 2-year continuing education programme and various strategies to enhance collaboration among primary health care physical therapists and rheumatologists were the key elements of the project. The networks were called FYRANET, a Dutch acronym for Physical Therapy, Rheumatic Conditions and Networks.

### Recruitment of physical therapists

In November 1999, an information letter including an invitation for an information meeting was sent by regular mail to the 133 and 60 primary care physical therapists private practices established in the Leiden and Enschede regions, respectively. Given the fact that the maximum number of participants per region was to be 45, and a geographically equal spread of participants over the region was aimed at, only one

physical therapist per primary care practice could subscribe.

### The CE programme

The CE programme was organised simultaneously in both regions and consisted of a basic 5-day postgraduate course, followed by bimonthly workshops (Table 1). Faculty was recruited from the two rheumatological centres and included 6 rheumatologists, 2 orthopaedic surgeons, 18 physical therapists, 2 occupational therapists, 2 rheumatological nurse specialists and 2 social workers. Problem-based learning activities [18] were a major part of the CE programme. The basic programme focussed on examination and treatment of patients with various rheumatic diseases by means of lectures, demonstrations, case presentations and case work-ups. Three additional workshops were dedicated to communication between the physical thera-

pist and people with chronic diseases and other health care providers. Education on involvement of patients in physical therapy goal setting was part of the content of these seminars [19]. All CE activities were certified by the Dutch professional organisation of physical therapists, the Royal Dutch Society for Physiotherapy (KNGF). Participants shared in the costs for organising and performing the CE activities, including quality certification.

## Network activities

After the basic course had been completed, the participating physical therapists were formally installed as a network in both regions. A list of their addresses was distributed among rheumatologists, general practitioners, orthopaedic surgeons, clinical nurse specialists and local patient organisations, in order to inform them about the possibility of referring patients to the network physical therapists. Membership was to be continued if participants took part in at least 80% of the CE activities. From this moment bimonthly workshops and teaching practices were organised. The teaching practices within the two rheumatological centres consisted of bedside teaching by a physical therapist and a rheumatologist (Table 1).

Additional activities to enhance communication among physical therapists and rheumatologists included:

A helpdesk enabling telephone or e-mail consultations of physical therapists or rheumatologists connected to the rheumatological centres. This facility was aimed at promotion of discussion on complex patient cases.

Regular distribution of newsletters containing information about the network and other regional activities, congress announcements and new developments in physical therapy and other treatments for patients with rheumatic diseases.

Three local focus group sessions [20] were organised regarding the exchange of information among physical therapists and rheumatologists in the two regions.

## Assessment methods

As the evaluation of the project was primarily aimed at the assessment of its feasibility, mainly process measures (participation rate, compliance, feedback on organisation, didactics and contents of the CE programme, teaching practices knowledge, execution of network activities, communication, number of patients with rheumatic conditions who were treated) were included. In addition, a comparison of patients' satisfaction with physical therapy inside and outside the

networks was done. All assessments were done by a physical therapist and movement scientist (JV) who was not involved in the training course as a teacher.

## Characteristics of participants

At the start of the project, of all participating physical therapists age, sex and years of practical experience were recorded.

## Evaluation of the CE programme and teaching practices

The physical therapists' compliance with the various activities of the CE programme and teaching practices were recorded by means of an attendance list. The basic course and subsequent workshops were evaluated by means of a questionnaire. This questionnaire was based on a questionnaire already in use for evaluation of other CE activities and comprised 16 items, divided into the domains organisation (n=2), didactics (n=9) and contents (n=5). Participants were asked for their extent of agreement with various statements using a 6-point Likert scale (range 1="strongly disagree" to 6="strongly agree").

The participants' satisfaction with the visits to a rheumatologist's consulting hours and the physical therapist's bedside teaching was assessed by means of a 10 cm horizontal visual analogue scale, with the labels 0="as worse as can be" on the left side and 10="as good as can be" on the right side. Moreover, participants had the opportunity to provide written comments.

## Professional knowledge

At the beginning and the end of the basic course and 18 months thereafter, the participants completed a knowledge questionnaire. The format of this questionnaire was already in use at the University of Professional Education Leiden. The questionnaire comprised 91 and 65 multiple choice questions in Regions I and II, respectively, with 59 questions being analogous in both regions. All questions were of one type: multiple choice (4 choices) with one correct answer, with the answer category 'don't know' matching every question. The test covered the whole spectrum of the course topics and was composed by the faculty of the course. To promote acceptance, the test was filled in anonymously. As the number of questions varied between the two regions, the final score of every participant was expressed as a percentage (number of correct answers/total number of questions). The same questionnaire was used at all three time points. To discrim-

inate between the levels of knowledge of the participating physical therapists and experts in the field we administered the questionnaire to a reference group of 14 Dutch physical therapists working in various specialised rheumatology clinics or departments.

## Network activities

The institutional care physical therapists used a diary to record the number of times they were consulted by the primary care physical therapist by telephone or e-mail for discussing specific and complex patient cases. Furthermore, all newsletters that were distributed, the script of the CE programme and the minutes of the local focus group sessions were gathered.

## Communication among health professionals

Eighteen months after the networks had been installed, a communication questionnaire was sent to all participating physical therapists and to the rheumatologists of the two medical centres. The self-developed questionnaire comprised questions regarding the quantity and quality of mutual communication at that moment as compared with 18 months before.

## Number of patients with rheumatic conditions treated by primary care physical therapists

To compare any changes in the number of patients treated by physical therapists within the networks and by physical therapists outside the networks data from the major health insurance companies in the regions of Leiden and Enschede ('Zorg en Zekerheid' and 'Amicon', respectively) were used. First, physical therapists working in the two regions were divided into participating in the network or not. Then, three diagnoses concerning inflammatory arthritis (rheumatoid arthritis, ankylosing spondylitis and aseptic poly-arthritis) and two periods were defined (Period 1: October 1999–June 2000 and Period 2: October 2000–June 2001). In both periods, the total number of patients with one of these three diagnoses treated by a physical therapist was counted for every physical therapist working in the region. All data were provided anonymously.

## Patient satisfaction

Eighteen months after the networks had been installed, all 63 participating physical therapists were

asked to give a satisfaction questionnaire to one of their patients with RA. Moreover, 2 rheumatologists working outside the regions in which the networks had been instituted were asked to deliver 60 additional satisfaction questionnaires to patients who were treated by a physical therapist in their region. Of these 60 questionnaires, forty were actually handed over to patients. All patients had RA according to the 1987 American Rheumatism Association criteria [21] and had been treated by a physical therapist for 6 weeks or more. The questionnaires were filled in and sent back anonymously to the principal investigator (JV), to avoid social desirable answering. The design of the questionnaire was similar to a multidimensional questionnaire that has been developed to evaluate RA patients' satisfaction with multidisciplinary care [22]. This questionnaire appeared to be reliable and showed face and construct validity [22]. Its contents are in accordance with a multidimensional instrument developed to measure satisfaction with physiotherapy [23]. The questionnaire comprised 36 statements covering the following 8 domains: knowledge, technical skills, information, empathy, involvement in goal setting, autonomy, coordination among health professionals and effectiveness of treatment. Patients indicated their extent of agreement with the statements on a 5-point Likert scale (0="totally disagree", 4="totally agree"). The subscores of 6 domains ranged from 0 to 16 and the subscores of two domains ranged from 0 to 24 (see Table 4). The total score ranged from 0 (totally unsatisfied) to 144 (totally satisfied). The satisfaction questionnaire also comprised an overall satisfaction report mark, which ranged between 0 (completely dissatisfied) to 10 (completely satisfied). Reliability analysis of the 77 questionnaires that were returned revealed that internal consistency of the total satisfaction comprising all 36 items was excellent with Cronbach's alpha [24] being 0.95. Cronbach's alpha ranged between 0.68 and 0.85 for the 8 domain scales. Spearman rank-order correlation between the total questionnaire score and the overall satisfaction report mark was 0.65 ( $p < 0.001$ ). Regarding the measurement of patient satisfaction, the Medical Ethics Committees of both hospitals were consulted and approved of the study. As the satisfaction study was strictly anonymous and did not include data on the patients' health status, written informed consent was not to be obtained.

## Statistical analysis

Measures with a normal distribution were expressed as means and SD, otherwise, medians and ranges are presented. Characteristics of the participants in both regions were compared by means of Mann–

Whitney U or Chi-Square tests where appropriate. Knowledge questionnaire scores at the different time points and satisfaction questionnaire scores between the 2 groups of patients were compared by means of Mann–Whitney U tests. As the knowledge questionnaires were filled in anonymously, paired comparisons were impossible. Change scores regarding the number of patients with inflammatory rheumatic conditions treated by physical therapists in the two regions were computed by subtracting the number of patients in period 1 from the number of patients in period 2. Differences between periods 1 and 2 were analysed by the Wilcoxon Signed Rank test within the groups of physical therapists who did and who did not participate in the networks. Comparisons regarding the change scores between physical therapists who did and who did not participate in the networks were done by the Mann–Whitney U test. The comparisons of the satisfaction scores were adjusted for multiple comparisons by means of applying Bonferroni adjusted significance levels ( $p \leq 0.005$ ).

## Results

In the Leiden region 42 physical therapists out of 133 practices (32%) and in the Enschede region 21 physical therapists out of 60 practices (35%) participated in the project. Age and years of practical experience differed significantly between the regions. The median age was 40.5 (range 24–54) and 49.0 (range 38–54) years and the median number of years of practical experience 14.5 (range 1–30) and 23.0 (range 14–29) years in regions I and II, respectively, (both  $p$ -values  $< 0.001$ ; Mann–Whitney U test). In regions I and II, 62% and 48% of the participants were female, respectively ( $p = 0.418$ ; Chi Square test). All 63 participating physical therapists were actively involved in the networks 18 months after the start. In the two regions, the total number of rheumatologists and rheumatologists in training varied slightly, and was 22 on average during the intervention period.

### Organisation of the CE programme and teaching practices

Fifty-seven of the 63 participants (90%) attended all 5 days of the basic course, 5 participants (8%) 4 days, whereas 1 participant had an exemption from the basic course. Fifty-one (81%) of the participants filled in the evaluation form regarding the course. In both regions, the participants' median satisfaction ratings of the basic course were 5.0 (range 2–6) for organisation, didactics and content. Eight and 9 additional workshops were organised in regions I and II, respectively. The median attendance rate was 94% (range

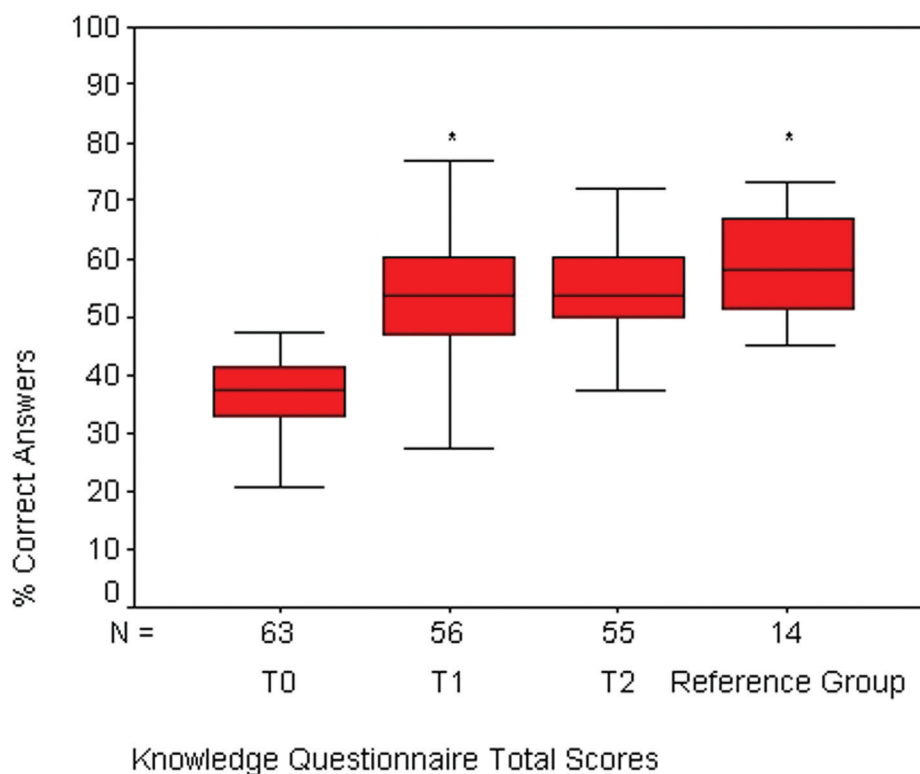
25–100) with median satisfaction ratings being 5.0 (range 2–6) for all workshops, pertaining to organisation, didactics and content. All 63 participants attended both the consulting hours of a rheumatologist and the bedside teaching practice of a physical therapist working in a rheumatological centre. The median rating scores for the teaching practices were 6.7 (range 1.1–8.8) for the visit to the rheumatologist and 6.6 (range 2.2–9.8) for the visit to the physical therapist. Thirty-six (57%) and 45 (73%) of the 63 participants indicated that the visits to the rheumatologist and the physical therapist, respectively, had changed their views on the treatment of patients with rheumatic diseases. Written suggestions for improvement of the teaching practices included demonstrations of hydrotherapy and group exercise therapy and attendance of a multidisciplinary team conference. For all of the abovementioned results, there were no significant differences between regions I and II (data not shown).

### Professional knowledge

At least 55 of the participants (87%) filled in all three knowledge questionnaires. The median scores of correctly answered questions by the participants at the different time points are shown in Figure 1. The level of knowledge increased significantly from 37% (range 18–47%) at the start of the basic course to 54% (range 27–77%) immediately afterwards ( $p < 0.001$ ). The level of knowledge was maintained until 18 months after the basic course (median score 55%, range 33–79%). There were no significant differences between the results of the two regions (data not shown). The median score of the expert group was significantly different ( $p < 0.001$ ) from the level of knowledge of the participants at the start of the basic course (median score 58%, range 45–74%), substantiating the ability of the questionnaire to discriminate between groups with different levels of knowledge.

### Network activities

The information from the diaries used by the institutional care physical therapists showed that the number of contacts (by telephone or e-mail) initiated by primary care physical therapists participating in the networks was about two per month on average in both regions. Newsletters were distributed to all participants with a frequency of one newsletter per 6 months. During the local focus group sessions 4 rheumatologists, 4 physical therapists, 2 rheumatological nurse specialists and 4 representatives of the local patient organisations discussed with the aim of developing a draft communication guideline. Major bottle-necks



**Figure 1.** Knowledge questionnaires have been administered at the start (T0), at the end (T1) of the training course, and repeated 18 months later (T2). The same questionnaire was used in order to compare the level of knowledge. The questionnaire also has been administered to an expert group of physical therapists (at moment T2). The results (percentage of correct answers) are shown in the boxplots.

identified in the communication between rheumatologists and physical therapists and between primary care physical therapists and physical therapists in institutional care included:

- The rheumatologist's accessibility by telephone.
- The contents of the written referral by the rheumatologist.
- The contents of the physical therapist's report about the treatment course.

These aspects were subsequently addressed in a draft guideline which was to be further implemented after the intervention period.

### Communication between physical therapists and rheumatologists

Fifty-one of the 63 physical therapists (81%) and 14 of the 22 rheumatologists (64%) filled in the questionnaire on the impact of the intervention on the extent and quality of communication (Table 2). A considerable number of the physical therapists thought that the number of referrals (n=23; 45%) and contacts (n=21; 39%) had increased, whereas 15 (29%) of them found the quality of communication had improved. About half of the rheumatologists perceived

an increase in quantity and quality of communication with physical therapists.

### Number of patients with rheumatic conditions treated by primary care physical therapists

The health insurance companies could provide data regarding 51 of the 63 primary care physical therapists participating in the networks and 198 primary care physical therapists that did not participate in the networks. The total number of physical therapists involved in this analysis is larger than the total number of physical therapists who were initially invited to participate in the project, because the health insurance companies used a different definition of the circumscription of the regions.

The mean number of patients treated over a period of 9 months by primary care physical therapists who participated in the networks increased significantly after the institution of the networks (p=0.029), whereas the mean number of patients treated by primary care physical therapists outside the networks did not change (p=0.63). The mean difference of number of patients between the two periods regarding physical therapists who did and did not participate in the

**Table 2.** Opinions of physical therapists and rheumatologists regarding referrals and communication 18 months after the institution of regional physical therapy networks including a CE programme

Physical Therapists (N=51)	Number	(%)
Increase of referrals from rheumatologists	23/51	(45)
Increase of number of rheumatologists with whom contacts	21/51	(39)
Increase of number of written or telephone contacts with rheumatologists	21/51	(41)
Improvement of quality of communication with rheumatologists	15/51	(29)
Rheumatologists (N=14)		
Increase of referrals to network physical therapists	7/14	(50)
Increase of number of physical therapists with whom contact	6/14	(43)
Increase of number of written or telephone contacts with physical therapists	7/14	(50)
Improvement of quality of communication with physical therapists	8/14	(57)

# Results are expressed as the number (percentage) of physical therapists or rheumatologists agreeing with the various statements in a questionnaire.

networks was statistically significant ( $p=0.03$ ) (Table 3).

### Patient satisfaction with physical therapy

The results of the patient satisfaction questionnaire are shown in Table 4. Fifty-one patients treated by a physical therapists participating in the network and 26

patients treated by a physical therapists who did not participate in a network returned the questionnaire (response rates 80% and 67%, respectively). Except for the domains involvement in goal setting, co-ordination and effectiveness and the overall report mark, the satisfaction scores within the various domains were significantly higher in the group of patients who were treated by a physical therapist participating in the network than in the group of patients who were not. With respect to the domain involvement in goal-setting, patients in the network group were more satisfied than patients treated by a physical therapist working outside the network, however, the result did not reach statistical significance ( $p=0.051$ ). In addition, the total scores of perceived satisfaction and the overall satisfaction report mark were significantly better in the group of patients who were treated by a physical therapist participating in the network.

### Discussion

Despite the fact that physical therapy is a common intervention in patients with rheumatic diseases [1, 2], a considerable number of patients finds the physical therapist's rheumatic expertise as not up to the patients' standard [7]. The results of this study demonstrate that setting up a system of regional networks in connection with continuing education for physical therapists regarding the treatment of patients with rheumatic diseases is feasible. The participation rate was high (32–35% of all primary care practises) and compliance with the CE programme and network activities was excellent. All 63 participating physical therapists were actively involved in the networks 18 months after the start. In addition, positive results with respect to physical therapists' knowledge, communication between physical rheumatologists, the number of patients with a rheumatic condition treated

**Table 3.** Mean number of patients (standard deviation) treated by physical therapists within the networks and by physical therapists outside the networks before the start of the FYRANET project (Period 1: October 1999–June 2000) and from 4 months after the start of the project (Period 2: October 2000–June 2001), including the mean differences (standard deviation) between the two periods

	Period 1: October 1999–June 2000	Period 2: October 2000–June 2001	Mean-difference (SD)	p-value within groups	p-value between groups
Mean number of patients treated by physical therapists within networks (SD) (N=51)	4.4 (5.1)	5.5 (4.7)	1.1 (3.6)	0.029	0.03
Mean number of patients treated by physical therapists outside networks (SD) (N=198)	3.5 (3.8)	3.5 (4)	-0.1 (2.8)	0.63	



**Table 4.** Satisfaction with physical therapy in patients treated by physical therapists participating in a network (Network; n=51) and in patients treated by physical therapists who did not participate in a network (Outside network; n=26)

Domain (subscore range)	Number of Items	Network		Outside network		p value
		n = 51		n = 26		
Knowledge (0–16)	4	13	(8–16)	9	(4–16)	<0.001*
Technical skills (0–16)	4	13	(6–16)	10	(5–15)	<0.001*
Information (0–16)	4	12	(8–16)	8	(5–15)	<0.001*
Empathy (0–16)	4	13	(5–16)	12	(3–16)	<0.001*
Involvement goal-setting (0–24)	6	20	(10–24)	18	(11–24)	0.051
Autonomy (0–16)	4	13	(8–16)	12	(4–16)	0.002*
Co-ordination (0–24)	6	15	(9–24)	13	(9–22)	0.025
Effectiveness (0–16)	4	12	(4–16)	12	(8–16)	0.950
Total Score (0–144)	36	109	(80–142)	93	(62–127)	0.001*
Overall Satisfaction Report Mark (0–10)		8.3	(1.3)	7.7	(0.8)	0.017

# Results are presented as medians and ranges (domain scores and total score) or as means and standard deviations (overall satisfaction report mark).

\* Statistically significant with the Bonferroni adjusted significance level set at  $p \leq 0.005$ .

by primary care physical therapists within the networks and patient satisfaction were found.

The CE programme we developed and executed resembled a Canadian postgraduate training programme on rheumatoid poly-arthritis for physical and occupational therapists [15]. In that programme as well as in ours, a small group format was employed and lectures, demonstrations, case presentations, workshops, case work-ups and field practice were included, and it was executed in various provinces in Canada. In both programmes, the involvement of local rheumatologists was promoted to enhance communication among physical therapists and rheumatologists. Two years after the networks had been set up, a considerable proportion of physical therapists and rheumatologists indicated that mutual communication had improved, whereas patients treated by physical therapists participating in the networks indeed experienced a greater involvement in the treatment and a better co-ordination of care than patients treated by physical therapists who did not participate in the network, supporting the validity of a regional strategy.

Our CE programme differed from the Canadian programme on two major points: First, the Canadian programme was designed as a single intervention, whereas our aim was to set up an ongoing programme with a multifaceted approach [16] that keeps pace with the rapid developments in rheumatological care. For that purpose, additional workshops were organised every 2 months after the initial course. In order to

keep compliance with the programme high, accreditation of the ongoing programme was obtained from the Royal Dutch Society for Physiotherapy (KNGF). Second, involvement of patients in physical therapy goal setting and coordinated care were leading threads throughout the course and in special workshops in our programme. Determining treatment based on mutual goals of patient and physical therapist has previously been found to be an essential prerequisite for patient compliance in rheumatology [25]. For that purpose, specific methods and tools to address the patients' perspective and enhance their participation in the decision-making process were discussed in the CE programme. Examples of such tools are the Rehabilitation Problem-Solving Form [26] and the Canadian Occupational Performance Measure (COPM) [27].

With respect to the effectiveness of educational programmes, the abovementioned Canadian programme has been examined in a randomised controlled trial in which a comparison with traditional physical therapy was made. In that trial, 91 patients with RA were included [28]. Apart from a better salicylate compliance in the experimental group, there were no differences in disease activity and functional ability between the two groups at 4 and 12 months. The authors attributed this lack of effectiveness to incomplete compliance along the therapeutic chain, in which the primary care physician played a major role. Our study focussed on the feasibility rather than effectiveness and for that purpose process endpoint measures that

were thought to be directly related to the educational intervention were used.

The endpoint measures employed in the present study are in line with the view that the evaluation of educational interventions should include at least four dimensions: satisfaction of participants, learning (knowledge and skills), behavioural change (transfer of knowledge and skills to workplace) and outcomes (impact on patients) [29]. The programme showed positive outcomes on all four dimensions. Regarding participants' satisfaction with the CE programme and related activities, response rates were good ( $\geq 70\%$ ). Most of the questionnaires employed were already used in the evaluation of other CE activities. Two questionnaires (teaching practices, communication) were self-developed, and their clinimetric properties have not been determined. The patient satisfaction questionnaire has been validated in RA patients in a previous study [22].

With respect to patient satisfaction, the results of this study indicated that patients treated by a physical therapist who participated in a network were more satisfied than the patients who were treated by a primary care physical therapist who was not connected to a network. These results have to be interpreted with some caution, as there is a possibility that the network physical therapists distributed the questionnaires to a selection of patients who were extremely satisfied with the treatment, whereas the rheumatologists did not. On the other hand, the choice of the physical therapists was limited, because the number of RA patients treated by these physical therapists was relatively small. Moreover, the questionnaires could be filled in anonymously and were returned to an independent researcher. In addition, unknown differences among the regions could be the basis of the differences in satisfaction found.

Ideally, a satisfaction study should have been carried out in connection with an effectiveness study. To draw firm conclusions about clinical effectiveness, another study design would be required, e.g. a controlled study comparing regions in which a network is instituted with regions where no networks are installed. These data would have to be collected in a longitudinal study with baseline and follow-up data. Other measures than the patients' subjective general opinion of effectiveness are needed, such as measures of pain, joint mobility, muscle force, aerobic capacity and functional ability. More data regarding the comparability of the patients' sociodemographic characteristics and health status in the two groups would be needed. In addition, concurrent treatment groups such as changes in medication would have to be recorded and taken into account. In the present project, a controlled trial could however not be accomplished, because of constrained time

and resources. The absence of a control group also limits the validity of the endpoint measures knowledge and communication. As the same knowledge questionnaire was used at the three time points, a learning effect cannot be ruled out. The use of different sets of questionnaires could have solved this problem.

A matter of concern for the transfer of knowledge and skills to the actual working situation and for the continuation of the networks may be the fact that the number of patients with rheumatic conditions treated per physical therapist were, although increasing, relatively low. The low number of patients is, however, in line with the prevalence of inflammatory rheumatic conditions in The Netherlands. The prevalence of inflammatory rheumatic conditions is about 2.2% [30] of the total population of about 16,000,000 people in The Netherlands. Twenty-five percent of these patients are being seen by a physical therapist over a one-year period [1, 2]. With a total of 18,000 physical therapists and exercise therapists in our country, the average number of patients with an inflammatory rheumatic condition treated by a physical therapist over one year is expected to be about 4.9.

Given this relative low number of patients, continuously bringing the networks to the notice of patients, rheumatologists, physical therapists and other health professionals is a major challenge for the future. Another challenge is keeping the CE programme up to the standard of clinically relevant contents and maintaining official certification related to the quality rules of the Royal Dutch Society for Physical Therapy. By June 2004, 4 years after the start of the networks, 62 of the 63 participants are still actively involved in the networks with the attendance rate of the various activities being  $\geq 75\%$ . Apparently, the CE programme is interesting and it is conceivable that knowledge and skills can be translated to other patient groups. In conclusion, setting up a system of regional networks in connection with continuing postgraduate educational programmes for physical therapists in rheumatology is feasible. Future research should further assess the effectiveness, the long-term compliance and implementation on a larger scale. We think that the results of this project can be of use for other regions in order to start developing rheumatological networks in connection with CE as well as for networks with other patient groups or even other health professionals.

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