Physical therapy and physical activity in patients with rheumatoid arthritis

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••• Chapter 4
Physical therapy in rheumatoid arthritis: results of a national survey

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• • • Abstract

Background and aim: For tailored implementation of evidence based recommendations and guidelines on physical therapy in patients with rheumatoid arthritis (RA) insight into current physical therapy practice is needed.

Method: Two hundred and fifty general physical therapists and 211 specialized physical therapists with advanced arthritis training were sent a questionnaire to assess the frequency with which they applied a set of assessments (n=10) and interventions (n=7) included in a Dutch physical therapy guideline for RA. Differences between general and specialist physical therapists were analyzed with Student's t-tests or Chi Square tests where appropriate.

Results: In total, 233 physical therapists (51%) responded. Of those, 96 (41%) had completed an additional arthritis course and were designated as specialist physical therapists. Among the physical therapists who returned the questionnaire, 69% (or more) reported that they 'always' assess limitations in daily functioning, pain, morning stiffness, muscle strength, joint range of motion, joint stability, gait and limitations in leisure activities as part of their initial assessment, and 37% and 48% reported to 'always' assess aerobic capacity and limitations in work situations, respectively. Concerning interventions, exercise therapy and education were 'always' applied by 70% and 68% of the responders, respectively. Only a minority of responders reported 'always' applying ultrasound, electrical stimulation, heat therapy, massage and passive mobilizations (0%, 0%, 5%, 5% and 14%, respectively). Apart from aerobic capacity and work limitations, all other assessments were reported as 'always' applied by significantly ($p<0.05$) more specialist physical therapists than general physical therapists. Regarding interventions, significantly more specialist physical therapists reported that they 'always' apply exercise therapy and education. Significantly fewer specialist physical therapists reported 'always' using heat therapy, massage and mobilizations than in the general group ($p<0.05$).

Conclusion: The majority of physical therapists reported that they 'always' apply most of the assessments and interventions that were recommended in a Dutch physical therapy guideline for the management of RA. Areas for improvement include the assessment of aerobic capacity and work limitations. The observed

differences between specialist and general physical therapists support the added value of advanced arthritis courses.

• • • Introduction

The care of patients with rheumatoid arthritis (RA) is complex and often includes health care providers from different disciplines [1-3]. Physical therapy is relatively frequently used as an intervention for patients with RA. Over recent years, the research on the effectiveness of physical therapy in RA has grown [4]. In addition, the evidence is more and more translated into practice guidelines and recommendations [5-11], some of which are specifically for physical therapists [12-14].

Until now, little is known about how the contents of guidelines and recommendations on physical therapy management in RA relate to what patients receive in daily practice. The literature suggests that in a 12-month period, between 25 and 45% of patients with RA receive treatment from a physical therapist [15-18], and that approximately 70% of patients with RA have contact with a physical therapist at some point during the course of their disease [4]. However, these studies do not report on the indications for referral and/or treatment by a physical therapist or on the type of treatment provided.

In a study by Li et al [19], the use of various non-pharmacologic treatments (exercise therapy, heat therapy and self-management education) was evaluated among patients with RA by means of a questionnaire. It was found that 75%, 79% and 57% of these RA patients had been advised by their physician, physical therapist or occupational therapist to use this treatment, respectively. Another study among RA patients [20], found that 41%, 31% and 14% of the patients had been prescribed exercise therapy, massage and electrical stimulation, respectively. Both studies reported on advice and prescriptions regarding physical therapy, but did not address the actual provision of physical therapy management, including assessment, intervention and evaluation. This information is relevant, as insight into current physical therapy practice may reveal areas where current practice is and is not in line with practice guidelines and recommendations; thus indicating areas where additional education of physical therapists is needed.

Given the scarcity of data on the currently provided physical therapy management of RA patients, the aim of this study was to make an inventory of current physical therapy RA practice from the perspective of physical therapists.

• • • Subjects and Methods

Study design and subjects

This cross-sectional survey was aimed at physical therapists with only basic training regarding the management of arthritis (general physical therapists), and those who had taken part in a formal advanced arthritis training course (specialist physical therapists). The general physical therapists comprised a random selection of 250 physical therapists who were a member of the 20,367 registrants of the Royal Dutch Society for Physical Therapy (KNGF). This was done by means of digital number allocation to the registry [every member was randomly assigned a number from 0 to 20,367; subsequently the lowest 250 numbers were selected]. Specialist physical therapists were selected by means of the registries of regional networks of physical therapists working in rheumatology (n=211) [21]. A majority of these physical therapists have participated in advanced arthritis training courses, such as the 10-day certified Dutch arthritis training provided by the Dutch Institute of Allied Health Care (Nederlands Paramedisch Instituut). Networks of physical therapists with special interest and/or specific knowledge and skills regarding the treatment of patients with rheumatic diseases have been instituted in more than 10 regions in The Netherlands [21, 22]. Physical therapists that had completed an additional arthritis course were regarded as specialists in rheumatology. Both groups were sent an information letter (April 2008) with a questionnaire and a pre-stamped envelop, and were invited to participate in this study. After 3 and 6 weeks, those who had not responded received a paper reminder including a paper version of the questionnaire sent via postal mail.

Sociodemographic characteristics

Data with regard to age (years), gender, professional education level (bachelor; master or PhD), work situation (private practice; hospital; arthritis clinic;

rehabilitation centre; or other), hours practicing, years of experience, additional arthritis training (by means of a certified additional arthritis course) (yes or no), and number of RA patients treated per year were collected.

Physical therapy management

The questionnaire to list current physical therapy management (assessment and intervention) used in this study was based on a survey developed by a Canadian team of the University of British Colombia [22]. Before applying the questionnaire in this study, the questionnaire was translated and adopted to the Dutch situation. For the translation into the Dutch language we used a rigorous protocol: (1) a forward translation from English to Dutch was done by two bilingual clinicians [FK and JV], including one with expertise in physical therapy [JV]; (2) a backward translation of the draft Dutch version into English was done by two bilingual clinicians [SD and EH], including one with expertise in physical therapy [EH]; and (3) an ad hoc committee comprised of five bilingual clinicians, including three with expertise in physical therapy, and a research team member [FK, SD, EH, FG, JV and TVV] examined the forward and backward translated documents and agreed on a final Dutch version. Then, the questionnaire was pre-tested for face and content validity with PTs working in rheumatology (n = 10) in The Netherlands [22].

For the current analysis, relevant topics regarding physical therapy diagnostic assessments and interventions were identified. In the absence of quality indicators derived from existing guidelines, all diagnostic and therapeutic topics related to recommendations in the recently developed Dutch guideline were selected (Hurkmans 2011). Based on this list of topics, a questionnaire on the frequency of application of specific assessments ("To what extent do you assess the following topics in patients with RA?", 10 items; score: always, sometimes or never), and interventions ("To what extent do you provide the following interventions to patients with RA?", 7 items; score: always, sometimes or never) was developed.

Statistical analysis

Categorical data were described as numbers and percentages, and continuous

data with a Gaussian distribution as mean and standard deviation (SD) if not, medians and interquartile ranges were presented.

Differences between the frequencies of the application of diagnostic assessments and interventions between general physical therapists and specialist physical therapists were analyzed by means of the unpaired Student's t-test or Chi Square test where appropriate. Furthermore, to correct for years of experience in physical therapy, these differences between general physical therapists and specialist physical therapists were also analyzed by means of Mantel-Haenszel statistics. We considered p-values less than 0.05 to be statistically significant in these analyses, and all analyses were conducted using SPSS 16.0 for Windows [SPSS Chicago IL, USA].

• • • Results

Participating physical therapists

Table 1 shows the characteristics of the participating physical therapists. In total, 233 of the 461 questionnaires were returned, resulting in a response rate of 51%. The response was 121/250 (48%) among general physical therapists and 112/211 (53%) among physical therapists participating in a network. Ninety-six responders (41%) had completed an additional arthritis course (in this study regarded as specialist physical therapists), 60 (61%) within the network group and 36 (27%) within the general group. There were no statistically significant differences between the characteristics of general physical therapists and specialist physical therapists (see Table 1).

Diagnostic assessments and interventions

Table 2 shows the frequencies with which general and specialist physical therapists applied a set off 10 specific diagnostic assessments and 7 interventions in their practice.

Diagnostic assessments

The results for the diagnostic topics show that a majority of all physical therapists reported 'always' assessing patients' limitations in daily functioning (74%), amount

Table 1. Characteristics of participating PTs (n=233)*			
	All PTs (n=233)	**General PTs (n=137)**	**Expert PTs (n=96)**
Female gender (n (%))	123 (53%)	74 (54%)	48 (50%)
Age (yrs)	43 (10.8)	42 (11.2)	45 (10.1)
Hours practicing	34 (10.8)	33 (10.4)	35 (11.3)
Experience (yrs)	19 (10.3)	18 (10.6)	21 (9.8)
Educational level (n(%))			
Bachelor	218 (94%)	127 (93%)	90 (94%)
Master	11 (5%)	6 (4%)	5 (5%)
PhD	1 (1%)	0 (0%)	1 (1%)
Other	11 (5%)	10 (7%)	4 (4%)
Work situation (n (%))			
Private practice	163 (70%)	93 (68%)	69 (72%)
Hospital	32 (14%)	22 (17%)	10 (11%)
Arthritis clinic	5 (2%)	2 (2%)	3 (3%)
Rehabilitation center	14 (6%)	9 (7%)	5 (5%)
Other	42 (18%)	25 (18%)	17 (18%)
Average number of RA patients treated per year	5 (8.6)	4 (5.9)	6 (11.3)

** Values are expressed as a mean (SD) unless indicated otherwise. Differences between the general and expert group were analyzed by means of the Student's t-test or Chi Square test where appropriate*
PTs: physical therapists

of pain (73%), morning stiffness (72%), muscle strength (71%), joint range of motion (72%), joint stability (69%), gait (73%) and limitations in leisure activities (72%) Aerobic capacity and limitations in work situations were 'always' assessed by fewer physical therapists (37% and 48%, respectively).

The proportion of physical therapists who reported 'always' or 'sometimes' applying specific assessments significantly differed between the general group and the specialist group, with more specialist physical therapists reporting that they 'always' apply specific assessments. Exceptions were the assessment of aerobic capacity, and limitations in the work situation, with equal proportions of physical therapists reporting to 'always' apply these assessments. No significant differences were found when comparing the percentages of general physical therapists and specialist physical therapists who reported 'never' performing these assessments. When correcting these results for years of experience, similar results were found, however, differences in assessing muscle strength and joint stability were no longer significant.

Table 2. Proportion of PTs with and without additional arthritis training frequently applying diagnostic assessments and therapeutic interventions in patients with RA

	All PTs (n=233)			General PTs (n=137)			Expert PTs (n=96)		
DIAGNOSTIC PROCESS									
Assessment of:	always	some-times	never	always	some-times	never	always	some-times	never
Patients' limitation in daily functioning	74	26	0	67*	32#	1	84	16	0
Amount of pain	73	25	2	65*	32#	3	83	16	1
Morning stifness	72	25	3	65*	31#	4	82	16	2
Aerobic capacity	37	60	3	35	63	2	41	55	4
Muscle strength	71	25	4	65*	32#	3	80	16	4
Range of motion of joints	72	26	2	64*	33#	3	83	16	1
Stability of joints	69	28	3	64*	33#	3	77	19	4
Gait	73	25	2	68*	31#	1	82	16	2
Limitations in work situations	48	49	3	46	52	2	51	45	4
Limitations in leisure activities	72	26	2	66*	32#	2	81	17	2
THERAPEUTIC PROCESS									
Exercise therapy	70	12	18	62*	13	25±	82	10	8
Education	68	14	18	64*	11	25±	73	19	8
Ultrasound	0	9	91	1	9	90	0	10	90
TENS **	0	35	65	0	40	60	1	32	67
Heat therapy	5	52	43	6	60#	34±	4	46	50
Massage	5	55	40	4	69#	27±	6	46	46
Manual therapy (mobilizations)	14	54	32	16	66#	18±	13	46	41

**Significant (<0.05) difference compared to percentage always in expert PTs*
 # Significant (<0.05) difference compared to percentage sometimes in expert PTs
± Significant (<0.05) difference compared to percentage never in expert PTs
PTs: physical therapists
***TENS: transcutaneous electrical nerve stimulation*

Interventions

With regard to the therapeutic topics the majority of all physical therapists reported 'always' applying the following interventions: exercise therapy (70%) and education on disease management (68%). Exercise therapy was 'sometimes'

applied by 12% of the physical therapists, and 'never' applied by 18%. Education was 'sometimes' applied by 14% of all physical therapists, and 'never' by 18% of them. With regard to the interventions ultrasound, transcutaneous electrical nerve stimulation (TENS), heat therapy, massage and mobilisations, a minority of all physical therapists 'always' applied these interventions (0%, 0%, 5%, 5% and 14%, respectively). Nine percent, 35%, 52%, 55% and 54% reported 'sometimes' applying these interventions, and 91%, 65%, 43%, 40% and 32 reported 'never' applying these interventions. Comparisons of these proportions showed that specialist physical therapists more often applied exercise therapy and education (both $p < 0.05$) than general physical therapists.

Comparisons of the percentages of general and specialist physical therapists reporting to 'sometimes' and 'never' perform interventions showed significantly fewer specialists reported to 'sometimes' apply heat therapy, massage or mobilisations, whereas significantly more specialists reported 'never' applying them (all $p<0.05$). For exercise therapy, significantly fewer specialists reported 'never' applying this intervention ($p <0.05$). When correcting these results for years of experience, similar results were found. However, the differences between the general group and specialist group for education on self-management and heat therapy did not reach statistical significance.

• • • Discussion

This study examined the use of various physical therapy diagnostic assessments and interventions in patients with RA, from the perspective of physical therapists. It was found that during the diagnostic process, the majority of physical therapists reported 'always' assessing limitations in daily functioning, pain, morning stiffness, muscle strength, joint range of motion, joint stability, gait and limitations in leisure activities. Aerobic capacity and limitations in work were assessed less frequently. Furthermore, the majority of all physical therapists reported 'always' or 'sometimes' applying exercise therapy and education in patients with RA. Only a minority of physical therapists reported 'always' applying ultrasound, TENS, heat therapy, massage and manual therapy. Physical therapists who had taken part in advanced arthritis training courses reported performing relevant assessments and

applying exercise and education more frequently than physical therapists who had not had such training.

Currently there are no comparable studies available evaluating which diagnostic topics are included in the assessments done by physical therapists in patients with RA. With regard to studies evaluating the application of physical therapy interventions, two studies were found [19, 20]. However, in these studies, percentages were reported of the use of various physical therapy interventions among the total RA population. In our study the percentages concern physical therapy interventions that were reported to be applied only by physical therapists. Consequently, our percentages concern only RA patients that are being treated by a physical therapist, and are a selection of the whole RA population. Moreover they pertain to physical therapists' rather than patients' reports, so that a direct comparison of data is not possible.

Currently physical therapy management is included in international, as well as national, guidelines regarding the management of patients with RA [5-13]. In one guideline, the latest Dutch RA guideline [14], the diagnostic process has been described. The present study demonstrates that, with the exception of assessing aerobic capacity and work limitations, most recommended topics are usually included in the initial assessment.

Concerning treatments, exercise therapy and education appeared to be the most frequently applied interventions. This indicates that current practice is in line with all available RA guidelines, in which exercise therapy and education are mentioned as cornerstones of the physical therapy management of patients with RA [5-14]. The other interventions (ultrasound, TENS, massage, heat therapy and manual therapy) were found to be less often applied, however it is difficult to say whether current physical therapy practice is in line with the available evidence, as current guidelines are not conclusive [5-14].

In our study, we found statistically significant differences between specialist physical therapists and general physical therapists regarding their reported frequencies of performing diagnostic assessments and interventions. Even when correcting for years of experience, most differences between general and specialist physical therapists remained statistically significant. Although it

remains unclear whether other factors such as practice standards of the facility or caseload might have influenced these results, it seems that additional advanced arthritis education leads to more evidence-based practice. This could indicate that educational implementation strategies might be effective, but with that said, various studies have shown that implementing guidelines into daily physical therapy practice is a difficult process, which often yields an unsatisfactory outcome [23-25]. Studies on the effectiveness of specific implementation strategies (e.g. educational interventions and workshops) were found to only slightly increase guideline use among physical therapists compared to passive implementation (i.e. information dissemination) [23, 24], whereas no differences were found on patient outcomes [24, 25]. Further research is necessary to establish which barriers and facilitators influence the use of RA guidelines, and which implementation strategies enhance the uptake of evidence-based physical therapy recommendations and guidelines.

There are some limitations of this survey. First, the study has a cross-sectional design, and should therefore be complemented by a follow-up over time in order to allow for firmer conclusions about causality. Secondly, this study relied on self-reported data by physical therapists, which is an inherent limitation in most surveys examining chronic illnesses and treatment utilization. The extent to which the reported frequencies of assessments and interventions truly reflect daily practice remains unknown. Using face-to-face interviews or checking patient records may enhance the reliability of such data, but such methods are very time consuming. Thirdly, it is uncertain whether our data can be generalized to other countries, due to cross-cultural differences in the usage of physical therapy in general. Finally, although the response rate was 51%, which is is relatively high for a questionnaire among health professionals, it is possible that physical therapists who responded to this questionnaire were different from the physical therapists who did not. This may have resulted in selection bias and therefore our results are probably not generalizable to all physical therapists.

Based on our results, we can conclude that most physical therapists, both specialist and general, apply physical therapy management that is in line with current available RA guidelines. However, the observed differences between specialist physical therapists and general physical therapists could indicate that

an additional advanced arthritis course would enhance evidence-based practice. Further research with regard to the barriers and facilitators for the use of RA guidelines and the effectiveness of various active implementations strategies is necessary.

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