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Citation

Wissen, M. A. T. van, Gademan, M. G. J., Vlieland, T. V., Straathof, B., Teuwen, M. M. H., Peter, W. F., ... Weely, S. F. E. van. (2023). Physical therapy in patients with rheumatoid arthritis and axial spondyloarthritis: the patients' perspective. *Scandinavian Journal Of Rheumatology*. doi:10.1080/03009742.2023.2195726

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Note: To cite this publication please use the final published version (if applicable).



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To cite this article: MAT van Wissen, MGJ Gademan, TPM Vliet Vlieland, B Straathof, MMH Teuwen, WF Peter, CHM van den Ende & SFE van Weely (2023): Physical therapy in patients with rheumatoid arthritis and axial spondyloarthritis: the patients' perspective, Scandinavian Journal of Rheumatology, DOI: [10.1080/03009742.2023.2195726](https://doi.org/10.1080/03009742.2023.2195726)

To link to this article: <https://doi.org/10.1080/03009742.2023.2195726>



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Published online: 04 May 2023.



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Physical therapy in patients with rheumatoid arthritis and axial spondyloarthritis: the patients' perspective

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Objective: To assess the duration, frequency, and content of individual physical therapy (PT) in patients with rheumatoid arthritis (RA) or axial spondyloarthritis (axSpA).

Method: In this cross-sectional study, an electronic questionnaire aimed at people with RA and axSpA was distributed through various communication channels of the Dutch Arthritis Foundation. It comprised questions on sociodemographic and health characteristics, received PT (currently and/or in the past year) and, if applicable, its duration, frequency, and content (active exercises, manual treatment, physical modalities, and/or counselling/education).

Results: The study included 257 and 94 patients with self-reported diagnoses of RA and axSpA, of whom 163 (63%) and 77 (82%) currently or had recently received individual PT. The duration of individual PT was long-term (> 3 months) in 79% of RA and 83% of axSpA patients, with an average frequency of once per week in most. Although active exercises and counselling/education were each reported by $\geq 73\%$ of the patients with RA and axSpA who received long-term individual PT, passive treatment modalities were also often offered ($\geq 89\%$), in particular massage, kinesiotaping, and/or passive mobilization. The same pattern was seen in patients receiving short-term PT.

Conclusion: The majority of patients with RA and axSpA received PT currently or in the past year, usually individually, long-term, and at a frequency of once a week. Although active exercises and education are recommended in guidelines, passive treatment options that are not advised were relatively often reported. An implementation study to identify barriers and facilitators regarding adherence to clinical practice guidelines seems warranted.

Despite major advances in the medical treatment of people with rheumatoid arthritis (RA) or axial spondyloarthritis (axSpA), the disease burden is substantial for many of them (1–4). To reduce the consequences of pain, stiffness, fatigue, functional disability, emotional distress, and/or participation limitations in these patients, the provision of non-pharmacological care by health professionals is of paramount importance (1, 5–7). Physical therapy (PT) is considered to be an important form of non-pharmacological care in these groups and is recommended in various national and international guidelines and recommendation (8–12). These guidelines recommend, in particular, active exercise therapy and education, whereas passive treatment modalities are either not recommended or discouraged (8–12).

Yet, little is known about the delivery of PT in daily clinical practice. Regarding RA, studies reported that over a period of 1 year about 25–50% of patients received PT (13–15), for axSpA the rates vary between 50% and 80% (16, 17). With respect to the duration of PT, two studies in patients with axSpA reported that most patients received individual PT ≥ 5 years, with an average frequency of less than once a week (16, 17).

Moreover, few studies are available regarding the content of PT in patients with RA or axSpA in daily practice. In a German study in 7326 patients with RA, prescription of passive treatment modalities in the previous year ranged between 13% and 39%, whereas patient education was reported by 5% (15). In a Canadian study, 83% of 253 patients with RA reported that they had received exercise therapy or heat/cold therapy in the past and 32% had tried education classes (18). A survey among patients with axSpA in Switzerland and the Netherlands found that about half of the patients received active exercises, whereas

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Received 6 December 2022; Accepted 23 March 2023

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DOI: 10.1080/03009742.2023.2195726

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passive treatment modality ranged from 2% to 55%, with massage being the most often reported passive treatment modality (16, 17). Education on physical activity and sports was reported by 32% or more of the responders (16, 17).

The results of studies among patients appear to be in line with surveys among physiotherapists. A Canadian survey among 298 physiotherapists found that the most often reported treatment modalities were mobility exercises and patient education, for both RA and axSpA (> 90%) (19). In addition, less than two-thirds of the physiotherapists selected strengthening exercises as intervention for these patients (19). Two other studies among physiotherapists treating patients with RA in the Netherlands (n = 233) and Ireland (n = 457) found that exercise therapy and education were applied by the majority of the physiotherapists, whereas 32–91% of the physiotherapists reported never applying passive therapies (20, 21).

The above-mentioned results are difficult to interpret as the methods employed varied with respect to patient selection, treatment modalities included in the survey, and/or the time windows. Some of the studies were executed more than 20 years ago, limiting the generalizability to current delivery of PT. Furthermore, none of the above-mentioned studies examined factors associated with delivery of PT or its duration. Previous literature found that patient characteristics such as age were associated with PT, with older patients receiving less PT (13).

To optimize the delivery of PT in RA and axSpA, an evaluation of its current usage and content is needed. Therefore, this study aimed to assess whether patients received PT, and, if so, to assess the duration, frequency, and content of individual PT, in particular the delivery of active and/or passive treatment modalities. In addition, we studied the patient characteristics of those receiving and not receiving individual PT, and those receiving short- or long-term PT.

Method

Study design

This study was part of a larger cross-sectional survey study on the use of PT in people with rheumatic and musculoskeletal diseases, which was executed between December 2020 and July 2021. An exemption for additional medical ethical review was provided by the Medical Research Ethics Committee of the Leiden University Medical Center (LUMC) (N20.153). The study was conducted in accordance with the Handbook for Good Clinical Research Practice of the World Health Organization (22) and the principles of the Declaration of Helsinki (23). All participants provided informed consent for their participation. For the current

study, only data from patients reporting a diagnosis of RA and/or axSpA were analysed.

Participants, recruitment, and setting

Individuals were eligible for the current study if they were aged 16 years or older, diagnosed with RA or axSpA (self-reported), and able to complete an online questionnaire in Dutch. Patients reporting both an RA and an axSpA diagnosis were excluded. Patients were recruited by the Dutch Arthritis Society; a questionnaire was disseminated between December 2020 and July 2021 via their website (www.reumanederland.nl), newsletter, and Facebook page. Patients were also recruited by the Facebook page of the LUMC. In the Netherlands, PT can be delivered either on referral or with direct access (no referral from physician needed). For both RA and axSpA, PT is not included in the basic (national, compulsory) insurance. Thus, reimbursement depends on whether patients have additional health insurance, with the reimbursed number of sessions depending on the insurance policy. The reimbursement of group exercise therapy for people with axSpA is variable, depending on the local organization.

Assessments

The assessment consisted of an online questionnaire that was completed once. The questionnaire was taken via the OnlinePROMs® software (2020; Interactive Studios) (conform SO27001 and NEN7510). The questionnaire comprised questions on the participants' sociodemographic and health characteristics, and on the use of PT. The questionnaire was completed anonymously and did not include any personal data, and the results could not be linked to an IP address.

Participants' sociodemographic and health characteristics.

Sociodemographic characteristics included age (years), gender (female/male/other/ rather not say), level of education (low: primary school or lower vocational education; medium: lower general secondary school or intermediate vocational education; high: higher general secondary school, higher vocational education, or university; other: none of these categories), having paid employment if < 66 years old (66 years and 4 months was the pensionable age in the Netherlands in 2021) (yes/no), status of living (living alone; yes/no), and treatment by a rheumatologist, currently or in the past (yes/no).

The presence of the comorbidities currently or in the past 12 months was assessed by a questionnaire that has been applied previously in research by our group (24). We classified the comorbidities into the presence of diabetes, cardiovascular diseases, pulmonary diseases,

cancer, migraine or severe headache, gastrointestinal complaints > 3 months, musculoskeletal pain not related to the rheumatic disease, allergy, urinary incontinence, liver disease, kidney diseases, depression, obesity, Parkinson's disease, and multiple sclerosis.

Health-related quality of life (HRQoL) was assessed using the validated Dutch translated Euro-Qol- 5 Dimensions 5-Level (EQ-5D-5L), comprising five questions covering the dimensions self-care, usual activities, pain/discomfort, mobility, and anxiety/depression (25, 26). The EQ-5D-5L score ranges from -0.446 to 1.000, with a score below zero representing a state that is considered to be worse than death (25, 26). Calculations were standardized to the Dutch population (27). In addition, patients completed a thermometer or visual analogue scale (EQ-VAS) on their perceived health status, with the score ranging from 0 (worst) to 100 (best).

Physical therapy treatment. The questionnaire on PT was based on an earlier, self-developed questionnaire that was administered to patients undergoing total hip or total knee arthroplasty (28) and in patients with systemic sclerosis (29). It addressed the following aspects:

PT treatment related to the rheumatic disease currently or in the past 12 months (yes/no);

If yes: individual PT (yes/no) and/or group PT (yes/no).

If patients reported individual PT, the following items were assessed:

1. Short-term PT duration, less than 12 weeks, in weeks (0–4; 5–8; 9–12 weeks); long-term PT duration, more than 12 weeks or varying periods, in months (3–6; 6–9; 9–12; 12–24; 24 months or longer)
2. Average frequency (< 1 per week; 1, 2, 3 or more per week; varying)
3. Treatment location (at the practice; at home; both at practice and at home; other)
4. Reasons for PT treatment [multiple answers possible: pain; stiffness, or limited range of motion of joints; fatigue; muscle weakness; decreased overall fitness and endurance; balance problems; limitations in daily activities; restrictions in paid employment; restrictions in unpaid employment (volunteer activities), restrictions in hobbies, sports, social activities; other]
5. Relationship of PT treatment with rheumatic disease (yes/no; other)
6. Satisfaction with number of treatments received (yes; no, too few; no, too many; other)
7. The content of PT was categorized into four categories:
 - a. Active exercises (multiple answers possible: aerobic exercises; muscle strengthening exercises of legs or arms; range of motion exercises of legs,

and/or arms, and/or neck, and/or back; active exercises; functional exercises including training of daily activities; balance exercises; breathing exercises; relaxation exercises; hydrotherapy)

b. Manual treatment (multiple answers possible: massage; passive mobilization of the legs and/or arms; passive mobilization of the neck and/or back)

c. Physical modalities (multiple answers possible: heat therapy; cold therapy; kinesiotaping; electrotherapy; dry needling)

d. Counselling/education (multiple answers possible: exercises to perform at home; physical activity promotion with an activity tracker; physical activity promotion with a personal programme; mode of delivery: oral information, written information on paper, written digital information, remote communication via e-mail/app/website)

8. Insurance status: voluntary additional insurance for PT (yes/no) and, if yes, the number of PT sessions reimbursed per year (fewer than 6; 6–9; 10–15; 16–25; 26 or more; unlimited or unknown sessions).

For the items including an open-ended option 'other', two authors (MW and TVV) examined the open-ended answers. If the answer matched one of the predefined answer categories, it was reclassified.

Statistical analysis

Descriptive statistics were used to present the patients' characteristics and health status, and the duration and content of PT. Continuous variables were presented as means with standard deviation (sd) or medians with ranges, and categorical variables as frequencies with percentages. For all differences between groups, patients who did and did not receive PT, and those with long-term PT and short-term PT, 95% confidence intervals (CIs) were calculated. Statistical comparisons and the 95% CIs were calculated for groups with more than 20 respondents, which was considered the minimum population size to execute meaningful and valid statistical comparisons. Comparisons were made using different statistical methods: for continuous variables the independent t-test or Mann-Whitney U test was used, depending on the distribution, for categorical variables the chi-squared test was used, with the results expressed as the difference in means or proportions with the 95% CI. A p-level of < 0.05 was considered statistically significant. All statistical analyses were performed with IBM SPSS Statistics for Windows, version 25.0 (released 2017, IBM Corp, Armonk, NY, USA).

Results

Patient characteristics

In total, 361 people completed the questionnaire, of whom 10 were excluded because they reported to have been diagnosed with both RA and axSpA, leaving 257 respondents reporting a diagnosis of RA and 94 of axSpA. Their characteristics are shown in [Table 1](#). In both groups, about one-third of the patients had one or more comorbidities. The EQ-5D-5L and EQ-VAS scores of the patient groups were within the same ranges (EQ-5D-5L: 0.60–0.62; EQ-VAS: 61.8–63.5), indicating a decreased quality of life. The majority of patients ($\geq 86\%$) with RA and axSpA had additional insurance for PT, mostly covering 10 PT sessions or more.

Physical therapy treatment

[Table 1](#) also shows the characteristics of patients receiving and not receiving individual PT, and in the case of individual PT, long-term and short-term PT. Overall, 64% of the patients with RA reported that they currently and/or had in the past 12 months received PT ($n = 164$, 163 individual PT and one group PT), whereas this proportion was 84% in the axSpA group ($n = 79$; 77 individual PT and two group PT). Of those reporting individual PT treatment, the duration was long-term in 79% of the patients with RA ($n = 128$) and in 83% of the patients with axSpA ($n = 64$). Of those reporting long-term PT, 56% and 57% patients with RA and axSpA, respectively, reported a duration of more than 2 years. In those receiving short-term PT, more than 39% of the patients considered the number of sessions as too few.

Statistical comparisons of the characteristics of patients who did and did not receive individual PT, or who received short-term versus long-term PT, were only performed in the RA patient group. Because in the axSpA patient group, there were fewer than 20 patients in both the group that did not receive individual PT and the group that received short-term PT. All differences between the groups, including 95% CIs, are shown in [Online Supplementary Tables S1 and S2](#). Comparison of the patients with RA who did and those who did not receive individual PT showed that patients receiving individual PT were less often in paid employment (44% vs 68%), less often had a medium level of education (35% vs 48%), and had lower average EQ-5D-5L (0.60 vs 0.66) and EQ-VAS scores (61.2 vs 67.6) compared to those who

did not receive individual PT. Moreover, patients with RA who received individual PT more often had additional health insurance compared to those who did not receive PT (93% vs 72%). Although statistical comparisons of the characteristics of patient with axSpA who were and were not receiving individual PT were hampered by the small number of patients with axSpA not receiving PT ($n = 17$), similar patterns were found. Of the patients with axSpA who reported individual PT, 63% had paid employment, and mean scores of 0.59 on the EQ-5D-5L and 59.4 on the EQ-VAS were generated. Of the patients with axSpA who did not report individual PT, 71% had paid employment, and they had mean scores of 0.69 on the EQ-5D-5L and 73.4 on the EQ-VAS. Additional insurance was reported by 92% of the patients with axSpA who received individual PT and by 59% of those who did not receive individual PT.

Such differences were not seen between RA patients with short-term and long-term PT. The results of the comparison between groups are shown in [Online Supplementary Tables S1 and S2](#).

Content of physical therapy

[Table 2](#) shows the content of individual PT, taking into account both short-term and long-term PT. The proportions of patients with RA reporting forms of active exercise (i.e. aerobic, muscle strengthening, active range of motion exercises, or functional exercises such as balance exercises) ranged from 32% to 68% in short-term PT and from 41% to 69% in long-term PT. In patients with axSpA, the proportions reporting forms of active exercise were 27–55% in those receiving short-term PT and 30–77% in those receiving long-term PT. Regarding manual treatment, i.e. massage and passive mobilization, in patients with RA the proportions ranged from 35% to 42% in those receiving short-term PT and from 58% to 67% in those with long-term PT. In patients with axSpA, the proportions reporting passive manual treatment were 55–82% in those receiving short-term PT and 57–75% in those with long-term PT. With respect to physical modalities (passive), the most frequently reported modalities were kinesiotaping and dry needling. Regarding counselling/education, exercises to perform at home were the most often reported topic in both patients with RA [short-term PT $n = 23$ (82%) and long-term PT $n = 77$ (93%) of patients reporting counselling/education] and patients with axSpA [short-term PT $n = 7$ (70%) and long-term PT $n = 45$ (94%) of patients reporting counselling/education].

Table 1. Characteristics of patients with rheumatoid arthritis or axial spondyloarthritis with no, short-term, or long-term individual physical therapy (PT).

	Rheumatoid arthritis						Axial spondyloarthritis								
	Individual PT (N = 163)			Individual PT (N = 77)			Individual PT (N = 163)			Individual PT (N = 77)					
	Total group (N = 257)	No individual PT (N = 94)	Individual PT (N = 163)	Short-term PT* (N = 35)	Long-term PT* (N = 128)	Total group (N = 94)	No individual PT (N = 17)	Individual PT (N = 77)	Short-term PT* (N = 13)	Long-term PT* (N = 64)	Total group (N = 94)	No individual PT (N = 17)	Individual PT (N = 77)	Short-term PT* (N = 13)	Long-term PT* (N = 64)
Age (years)	54.7 ± 12.3	53.7 ± 12.9	55.3 ± 11.9	55.8 ± 11.8	55.1 ± 12.0	47.0 ± 12.9	43.0 ± 12.4	47.8 ± 12.9	44.1 ± 8.9	48.6 ± 13.5	47.0 ± 12.9	43.0 ± 12.4	47.8 ± 12.9	44.1 ± 8.9	48.6 ± 13.5
Sex, female	246 (96)	87 (93)	159 (98)	35 (100)	124 (97)	81 (86)	13 (77)	68 (88)	12 (92)	56 (88)	81 (86)	13 (77)	68 (88)	12 (92)	56 (88)
Paid employment if < 66 years	(n = 180)	(n = 69)	(n = 111)	(n = 25)	(n = 86)	(n = 81)	(n = 11)	(n = 64)	(n = 11)	(n = 53)	(n = 81)	(n = 11)	(n = 64)	(n = 11)	(n = 53)
Educational level	96 (53)	47 (68)	49 (44)	12 (48)	37 (43)	52 (64)	12 (71)	40 (63)	6 (55)	34 (64)	96 (53)	47 (68)	49 (44)	12 (48)	37 (43)
Low	(n = 233)	(n = 91)	(n = 142)	(n = 30)	(n = 112)	(n = 86)	(n = 112)	(n = 69)	(n = 11)	(n = 58)	(n = 233)	(n = 91)	(n = 142)	(n = 30)	(n = 112)
Medium	58 (25)	20 (22)	38 (27)	9 (30)	29 (26)	11 (13)	3 (18)	8 (12)	2 (18)	6 (10)	58 (25)	20 (22)	38 (27)	9 (30)	29 (26)
High	93 (40)	44 (48)	49 (35)	12 (40)	37 (33)	31 (36)	3 (18)	28 (41)	4 (37)	24 (41)	93 (40)	44 (48)	49 (35)	12 (40)	37 (33)
Other	77 (33)	23 (25)	54 (38)	9 (30)	45 (40)	42 (49)	10 (59)	32 (46)	4 (37)	28 (48)	77 (33)	23 (25)	54 (38)	9 (30)	45 (40)
Married or cohabitating	5 (2)	4 (4)	1 (1)	0 (0)	1 (1)	2 (2)	1 (6)	1 (2)	1 (9)	0 (0)	5 (2)	4 (4)	1 (1)	0 (0)	1 (1)
	(n = 234)	(n = 92)	(n = 142)	(n = 30)	(n = 112)	(n = 86)	(n = 112)	(n = 69)	(n = 11)	(n = 58)	(n = 234)	(n = 92)	(n = 142)	(n = 30)	(n = 112)
	156 (67)	66 (72)	90 (63)	20 (67)	70 (63)	64 (74)	9 (53)	55 (80)	8 (73)	47 (81)	156 (67)	66 (72)	90 (63)	20 (67)	70 (63)
Treatment by rheumatologist	243 (95)	87 (93)	156 (96)	33 (94)	123 (96)	87 (93)	15 (88)	72 (94)	13 (100)	59 (92)	243 (95)	87 (93)	156 (96)	33 (94)	123 (96)
Currently	8 (3)	3 (3)	5 (3)	1 (3)	4 (3)	7 (7)	2 (12)	5 (7)	0 (0)	5 (8)	8 (3)	3 (3)	5 (3)	1 (3)	4 (3)
In the past	6 (2)	4 (4)	2 (1)	1 (3)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (2)	4 (4)	2 (1)	1 (3)	1 (1)
Never	98 (38)	36 (38)	62 (38)	11 (31)	51 (40)	30 (32)	5 (29)	25 (33)	4 (31)	21 (33)	98 (38)	36 (38)	62 (38)	11 (31)	51 (40)
Comorbidities	35 (14)	10 (11)	25 (15)	3 (9)	22 (17)	12 (13)	2 (12)	10 (13)	2 (15)	8 (13)	35 (14)	10 (11)	25 (15)	3 (9)	22 (17)
1	39 (15)	17 (18)	22 (14)	3 (9)	19 (15)	9 (10)	3 (18)	6 (8)	0 (0)	6 (9)	39 (15)	17 (18)	22 (14)	3 (9)	19 (15)
2	13 (5)	6 (6)	7 (4)	4 (11)	3 (2)	6 (6)	0 (0)	6 (8)	2 (15)	4 (6)	13 (5)	6 (6)	7 (4)	4 (11)	3 (2)
3	11 (4)	3 (3)	8 (5)	1 (3)	7 (5)	3 (3)	0 (0)	3 (4)	0 (0)	3 (5)	11 (4)	3 (3)	8 (5)	1 (3)	7 (5)
> 4	0.62 ± 0.3	0.66 ± 0.2	0.60 ± 0.2	0.60 ± 0.3	0.60 ± 0.2	0.60 ± 0.2	0.69 ± 0.3	0.59 ± 0.2	0.50 ± 0.2	0.60 ± 0.2	0.62 ± 0.3	0.66 ± 0.2	0.60 ± 0.2	0.60 ± 0.3	0.60 ± 0.2
EQ-5D-5L	(n = 223)	(n = 80)	(n = 143)	(n = 31)	(n = 112)	(n = 83)	(n = 14)	(n = 69)	(n = 11)	(n = 58)	(n = 223)	(n = 80)	(n = 143)	(n = 31)	(n = 112)
	63.5 ± 15.6	67.6 ± 16.8	61.2 ± 14.4	63.8 ± 16.5	60.5 ± 13.7	61.8 ± 16.6	73.4 ± 17.2	59.4 ± 15.5	56.9 ± 13.3	59.9 ± 16.0	63.5 ± 15.6	67.6 ± 16.8	61.2 ± 14.4	63.8 ± 16.5	60.5 ± 13.7
EQ-VAS	220 (86)	68 (72)	152 (93)	29 (83)	123 (96)	81 (86)	10 (59)	71 (92)	12 (92)	59 (92)	220 (86)	68 (72)	152 (93)	29 (83)	123 (96)
Additional insurance for physical therapy	Yes	3 (1)	0 (0)	0 (0)	0 (0)	2 (2)	1 (10)	1 (1)	0 (0)	1 (2)	Yes	3 (4)	0 (0)	0 (0)	0 (0)
If yes, number of sessions per year	< 6	30 (14)	17 (25)	13 (9)	3 (10)	10 (12)	3 (30)	7 (10)	3 (25)	4 (7)	< 6	17 (25)	13 (9)	3 (10)	3 (25)
6–9											6–9				

(Continued)

Table 1. (Continued).

	Rheumatoid arthritis						Axial spondyloarthritis					
	Total group (N = 257)			Individual PT (N = 163)			Total group (N = 94)			Individual PT (N = 77)		
	No individual PT (N = 94)	Individual PT (N = 163)	Short-term PT* (N = 35)	Long-term PT* (N = 128)	No individual PT (N = 17)	Individual PT (N = 77)	Short-term PT* (N = 13)	Long-term PT* (N = 64)				
10–15	8 (12)	24 (16)	11 (38)	13 (11)	1 (10)	6 (9)	2 (17)	4 (7)				
16–25	16 (24)	39 (26)	8 (28)	31 (25)	2 (20)	25 (35)	6 (50)	19 (32)				
≥ 26	10 (15)	68 (45)	6 (21)	62 (50)	1 (10)	27 (38)	0 (0)	27 (46)				
Unlimited	3 (4)	5 (3)	0 (0)	5 (4)	0 (0)	3 (4)	0 (0)	3 (5)				
Unknown	11 (16)	3 (2)	1 (3)	2 (2)	2 (20)	1 (1)	1 (8)	0 (0)				
Missing	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (2)				

Data are shown as mean ± sd or n (%). The number of patients (n) is reported if it deviates from the total number of patients.

*Short-term PT, patients with PT for < 3 months; Long-term PT, patients with PT for ≥ 3 months alternate periods.

†Low, primary school or lower vocational education; Medium, lower general secondary school or intermediate vocational education; High, higher general secondary school, higher vocational education, or university.

EQ-5D-5L, 5-level EuroQol 5 Dimensions; EQ-VAS, EuroQol visual analogue scale.

Discussion

This cross-sectional study on the duration, frequency, and content of PT among patients with RA and axSpA found that the majority was currently or had until recently been receiving individual PT, with a duration of more than 3 months and a frequency of once per week in most patients. Although active exercises and education are recommended in national and international guidelines, the results show that some passive treatment options (i.e. massage and passive manual treatment) were relatively often reported. In addition, patients with RA who received individual PT less often had paid employment, and had a higher educational level and a somewhat lower HRQoL compared to the patients who did not receive PT. The patients with RA who received individual PT more often had additional health insurance compared to the patients who did not receive PT. The same patterns were seen in patients with axSpA.

In this study, only a minority of respondents reported group exercise therapy. Even in patients with axSpA, this proportion was only 2.1%. This is in line with previous studies, where results showed that only 5.3% of the patients with axSpA received land- and water-based group exercise therapy and 5.0% group exercise therapy^{17, 30}. As group exercise is received more often by patients with axSpA than by those with RA, small numbers were expected. As it is known that group exercise therapy is relatively standardized⁽³¹⁾, patients reporting group exercise therapy were not requested to provide details on its provision.

In our study, the proportions of patients with RA and axSpA who reported individual PT (63% and 82%) were higher than the proportions found in the literature for patients with RA (13–15) and axSpA (16, 17). It remains unclear to what extent the difference is due to the fact that most of the RA studies were conducted quite some time ago, in other countries, and/or included a different selection of patients with RA or axSpA. Comparisons of patients with RA and axSpA across studies are hampered by the differences in the selection of patients, with selection criteria, for example, including the use of a particular age range (13, 14), specific classification criteria (13, 14), or having had recent joint replacements (14). Regarding the comparison of the rate of PT treatment in patients with other conditions, one study found that in a cohort of patients with systemic sclerosis, 63% had received PT over the past 12 months, which is also somewhat lower than in the present study (29).

There were few differences between patients who reported receiving PT and those who did not; however, small differences in the proportion of patients in paid employment, educational level and average HRQoL, were seen both in patients with RA and in those with axSpA. A previous Dutch study in patients with RA

Table 2. Characteristics of short-term and long-term individual physical therapy (PT) in patients with rheumatoid arthritis or axial spondyloarthritis.

	Rheumatoid arthritis (N = 144*)		Axial spondyloarthritis (N = 71*)	
	Short-term (N = 31)	Long-term (N = 113)	Short-term (N = 11)	Long-term (N = 60)
Duration of PT, short-term				
0–4 weeks	11 (35)		2 (18)	
5–8 weeks	13 (42)		3 (27)	
9–12 weeks	7 (23)		6 (55)	
Duration of PT, long-term				
3–6 months		19 (17)		12 (20)
6–9 months		10 (9)		6 (10)
9–12 months		12 (11)		2 (3)
12–24 months		9 (8)		6 (10)
> 24 months		63 (56)		34 (57)
Average frequency of PT				
< 1 per week	2 (6)	36 (32)	1 (9)	19 (32)
1 per week	22 (71)	53 (47)	9 (82)	31 (52)
2 per week	7 (23)	20 (18)	1 (9)	5 (8)
≥ 3 per week	0 (0)	2 (2)	0 (0)	0 (0)
Varying	0 (0)	2 (2)	0 (0)	5 (8)
Satisfaction with number of PT treatments				
Yes	12 (39)	53 (47)	4 (36)	23 (38)
Too few	12 (39)	47 (42)	7 (64)	32 (53)
Too many	1 (3)	5 (4)	0 (0)	3 (5)
Other†	6 (19)	8 (7)	0 (0)	2 (3)
Location of PT treatment				
At the practice	30 (97)	106 (94)	11 (100)	58 (97)
At home	0 (0)	1 (1)	0 (0)	1 (2)
Both at the practice and at home	0 (0)	4 (4)	0 (0)	1 (2)
Other‡	1 (3)	2 (2)	0 (0)	0 (0)
Reasons for receiving PT (multiple answers possible)				
Pain	27 (87)	107 (95)	11 (100)	59 (98)
Stiffness or limited range of motion of joints	28 (90)	112 (99)	11 (100)	59 (98)
Fatigue	15 (48)	62 (55)	7 (64)	36 (60)
Muscle weakness	27 (87)	79 (70)	5 (45)	32 (53)
Decreased overall fitness and endurance	17 (55)	74 (65)	4 (36)	36 (60)
Balance problems	14 (45)	50 (44)	3 (27)	24 (40)
Limitations in daily activities	23 (74)	69 (61)	6 (55)	39 (65)
Restrictions in paid employment	9 (29)	43 (38)	7 (64)	34 (57)
Restrictions in unpaid employment (volunteer activities)	4 (13)	22 (19)	1 (9)	15 (25)
Restrictions in hobbies, sports, social activities	27 (87)	84 (74)	6 (55)	45 (75)
Other§	1 (3)	5 (4)	0 (0)	0 (0)
Impairment(s), limitation(s), and/or restriction(s) related to RMD	31 (100)	109 (96)	10 (91)	57 (95)
Content of PT: exercises				
Active exercise therapy (multiple answers possible)	26 (84)	97 (86)	8 (73)	52 (87)
Aerobic exercises	10 (32)	47 (42)	3 (27)	21 (35)
Muscle strengthening exercises – legs	17 (55)	61 (54)	4 (36)	24 (40)
Muscle strengthening exercises – arms	15 (48)	62 (55)	5 (45)	27 (45)
Range of motion exercises – legs and arms	21 (68)	75 (66)	6 (55)	37 (62)
Range of motion exercises – neck and back	14 (45)	78 (69)	6 (55)	46 (77)
Active exercises – functional activities	15 (48)	51 (45)	4 (36)	21 (35)
Balance exercises	10 (32)	46 (41)	3 (27)	18 (30)
Specific active exercise therapy (multiple answers possible)	2 (6)	32 (28)	3 (27)	18 (30)
Breathing exercises	0 (0)	12 (11)	2 (18)	10 (17)
Relaxation techniques	1 (3)	12 (11)	2 (18)	7 (12)
Hydrotherapy	2 (6)	15 (13)	0 (0)	7 (12)

(Continued)

Table 2. (Continued).

	Rheumatoid arthritis (N = 144*)		Axial spondyloarthritis (N = 71*)	
	Short-term (N = 31)	Long-term (N = 113)	Short-term (N = 11)	Long-term (N = 60)
Content of PT: manual treatment (multiple answers possible)	18 (58)	101 (89)	9 (82)	56 (93)
Massage	13 (42)	76 (67)	9 (82)	45 (75)
Passive mobilization – legs and arms	11 (35)	69 (61)	7 (64)	34 (57)
Passive mobilization – neck and back	11 (35)	65 (58)	6 (55)	45 (75)
Content of PT: physical modalities (multiple answers possible)	10 (32)	72 (64)	6 (55)	36 (60)
Heat therapy	0 (0)	10 (9)	1 (9)	3 (5)
Cold therapy	0 (0)	2 (2)	0 (0)	1 (2)
Kinesiotaping	4 (13)	56 (50)	5 (45)	25 (42)
Electrotherapy	1 (3)	13 (12)	2 (18)	2 (3)
Dry needling	8 (26)	28 (25)	3 (27)	19 (32)
Content of PT: counselling/education (multiple answers possible)	28 (90)	83 (73)	10 (91)	48 (80)
Exercises to perform at home	23 (74)	77 (68)	7 (64)	45 (75)
Physical activity promotion – activity tracker	2 (6)	17 (15)	0 (0)	3 (5)
Physical activity promotion – personal programme	12 (39)	45 (40)	5 (45)	27 (45)
Oral information	14 (45)	62 (55)	4 (36)	35 (58)
Written information	2 (6)	13 (12)	2 (18)	6 (10)
Website/online information	3 (10)	17 (15)	2 (18)	6 (10)
Contact therapist by e-mail/app/website	3 (10)	32 (28)	4 (36)	21 (35)

Data are shown as n (%). *Total number of responders deviates from Table 1, as not all responders answered the follow-up questions about short-term and long-term individual PT.

RMD, rheumatic and musculoskeletal diseases.

Other: †still under treatment (n = 3), coronavirus disease 2019 (COVID-19) pandemic (n = 4), medical complications (n = 1), no clear interpretation of the answer (n = 6). ‡outside because of COVID-19 (n = 1), combination of treatment in the practice and by video calling (n = 2). §specific joint, i.e. hip and shoulder (n = 2), lymph oedema (n = 2), general inflammation (n = 2), hypermobility (n = 1).

found that younger patients (< 55 years) received PT more frequently than older patients (13), whereas in our study no impact of age on the number of PT sessions was seen. In the total group of 257 and 94 patients with RA and axSpA, the majority of patients had additional health insurance. However, the patients with RA and axSpA receiving individual PT more often had additional health insurance than those not receiving PT. This finding may indicate that access to PT care is influenced by insurance status.

Regarding the duration of the PT, in both RA and axSpA, the majority of patients reported PT treatment for more than 3 months. For RA, the proportion of patients receiving long-term PT is difficult to compare with other studies, whereas for axSpA the overall long-term PT is in line with previous studies in Switzerland and the Netherlands (16, 17). It must be noted that, in particular, in the axSpA group the number of patients with short-term PT was very small. Additional research into the underlying needs for long-term PT treatment, including both patients and their treating physiotherapists, is needed.

Concerning the content of PT treatment, our results are in line with previous studies suggesting that the use of active

exercises is suboptimal, whereas some passive interventions are applied relatively often (i.e. massage, passive mobilization, kinesiotaping, and dry needling). This finding needs further exploration, as in some clinical practice guidelines for the management of RA and axSpA, the application of active rather than passive treatment modalities is recommended. An example is the American College of Rheumatology recommendations for management of ankylosing spondylitis and non-radiographic axSpA (32), stating that educating patients in self-management in using an independent exercise programme is one of the main goals of PT. Thus, active interventions are preferred over passive interventions, where passive interventions could supplement, but not substitute for, active PT. On the national level, a Dutch PT guideline for the management of RA (10) discourages the use of passive interventions, including low-level laser therapy, electrostimulation, ultrasound, massage, thermotherapy, medical taping, and dry needling, and states that passive mobilization can only be considered to support active exercise therapy as a short-term intervention in patients without active inflammation (10, 33). Moreover, a national set of recommendations on PT in axSpA also stresses the use of active exercises rather than passive interventions (11). The rationale for the use of

specific treatment modalities was, however, beyond the scope of this paper. So, despite evidence-based recommended exercise therapy including strengthening and aerobic exercise for patients with RA and axSpA, physiotherapists underused these guidelines. There is a need to increase awareness of the recommended guidelines for patients with axSpA and RA.

This study has a number of limitations. First, the diagnosis was based on self-report, and therefore the RA and axSpA diagnoses cannot be confirmed. Secondly, recruitment was carried out in the community rather than in rheumatology clinics. We therefore cannot calculate a response rate or determine the extent to which response bias has occurred. Thirdly, patients with RA and axSpA recruited from the community may have different characteristics from those who are treated by rheumatologists. However, as most patients indicated that they had been treated by a rheumatologist, the impact of the recruitment may have had little impact in that respect. Also, we did not ask the patients about their satisfaction with treatment other than the number of sessions, such as satisfaction with its overall effect, the expertise of the therapist, or the equipment in the practice. Finally, although the questionnaire was based on one used in previous research projects (28, 29), it is conceivable that patients did not accurately report the characteristics of the treatment that they received. On the other hand, in studies where a similar survey was administered to both patients and physiotherapists, overall similar results were obtained (29, 34).

Conclusion

The results show that the majority of patients with RA and axSpA received individual PT, currently or in the past year, long-term, and at a frequency of once a week. Passive treatment options (i.e. massage, passive mobilization, kinesiotaping, and dry needling) were relatively often applied in the individual PT treatments, although active exercises and education are recommended in national and international guidelines for patients with RA and axSpA. These results underline the need to evaluate the barriers and facilitators for the use of treatment recommendations among the various stakeholders. Following these results, a tailored implementation strategy to optimize adherence to practice guidelines could be developed and evaluated.

Acknowledgement

The authors would like to thank the Dutch Arthritis Society (ReumaNederland) for their cooperation on this study.

Data availability statement

The data underlying this article will be shared upon reasonable request to the corresponding author.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by The Netherlands Organization for Health Research and Development (ZonMw, L-EXTRA: 852004018, L-EXSPA: 852004019), Ministry of Health, Welfare and Sport (Ministerie van Volksgezondheid, Welzijn en Sport (VWS)), the Dutch Arthritis Society (ReumaNederland), and Royal Dutch Society for Physical Therapy (KNGF).

Author contributions

Substantial contributions to the conception or design of the work: TPM Vliet Vlieland, CHM van den Ende, MGJ Gademan, and SFE van Weely; and drafting the article or revising it critically for important intellectual content: MAT van Wissen, MGJ Gademan TPM, Vliet Vlieland, B Straathof, MMH Teuwen, WF Peter, CHM van den Ende, and SFE van Weely; and final approval of the version to be published: MAT van Wissen, MGJ Gademan, TPM Vliet Vlieland, B Straathof, MMH Teuwen, WF Peter, CHM van den Ende, and SFE van Weely; and agreement to be accountable for appropriate portions of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: MAT van Wissen, MGJ Gademan TPM, Vliet Vlieland, B Straathof, MMH Teuwen, WF Peter, CHM van den Ende, and SFE van Weely.

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References

1. Dougados M, Baeten D. Spondyloarthritis. *Lancet* 2011;377:2127–37.
2. Mielants H, Van den Bosch F. Extra-articular manifestations. *Clin Exp Rheumatol* 2009;27:S56–61.
3. Sepriano A, Regel A, van der Heijde D, Braun J, Baraliakos X, Landewé R, et al. Efficacy and safety of biological and targeted-synthetic DMARDs: a systematic literature review informing the 2016 update of the ASAS/EULAR recommendations for the management of axial spondyloarthritis. *RMD Open* 2017;3:e000396.

4. Smolen JS, Aletaha D, McInnes IB. Rheumatoid arthritis. *Lancet* 2016;388:2023–38.
5. Baillet A, Vaillant M, Guinot M, Juvin R, Gaudin P. Efficacy of resistance exercises in rheumatoid arthritis: meta-analysis of randomized controlled trials. *Rheumatology* 2011;51:519–27.
6. Hurkmans E, van der Giesen FJ, Vliet Vlieland TPM, Schoones J, Van den Ende ECHM. Dynamic exercise programs (aerobic capacity and/or muscle strength training) in patients with rheumatoid arthritis. *Cochrane Database Syst Rev* 2009;2009:CD006853.
7. O'Dwyer T, O'Shea F, Wilson F. Exercise therapy for spondyloarthritis: a systematic review. *Rheumatology Int* 2014;34:887–902.
8. Rausch Osthoff AK, Niedermann K, Braun J, Adams J, Brodin N, Dagfinrud H, et al. 2018 EULAR recommendations for physical activity in people with inflammatory arthritis and osteoarthritis. *Ann Rheum Dis* 2018;77:1251–60.
9. Vliet Vlieland TPM, van den Ende CH. Nonpharmacological treatment of rheumatoid arthritis. *Curr Opin Rheumatol* 2011;23:259–64.
10. Peter WFH, Swart NM, Meerhoff GA, Vliet Vlieland TPM. Clinical practice guideline for physical therapist management of people with rheumatoid arthritis. *Phys Ther* 2021;101:zab127.
11. van Weely SFE, van der Giesen FJ, van Gaalen FA, van der Horstbruinsma IE, Ramiro S, Weel AEAM, et al. Aanbevelingen fysiotherapie bij mensen met axiale spondyloarthritis [in Dutch]. 2019.
12. Rausch Osthoff AK, Juhl CB, Knittle K, Dagfinrud H, Hurkmans E, Braun J, et al. Effects of exercise and physical activity promotion: meta-analysis informing the 2018 EULAR recommendations for physical activity in people with rheumatoid arthritis, spondyloarthritis and hip/knee osteoarthritis. *RMD Open* 2018;4:e000713.
13. Jacobi CE, Boshuizen HC, Rupp I, Dinant HJ, van den Bos GAM. Quality of rheumatoid arthritis care: the patient's perspective. *Int J Qual Health Care* 2004;16:73–81.
14. Lacaille D, Anis AH, Guh DP, Esdaile JM. Gaps in care for rheumatoid arthritis: a population study. *Arthritis Rheum* 2005;53:241–8.
15. Zink A, Listing J, Ziemer S, Zeidler H. German collaborative arthritis centres. Practice variation in the treatment of rheumatoid arthritis among German rheumatologists. *J Rheumatol* 2001;28:2201–8.
16. Hilberdink B, Vliet Vlieland T, van der Giesen F, van Gaalen F, Goekoop R, Peeters A, et al. Adequately dosed aerobic physical activity in people with axial spondyloarthritis: associations with physical therapy. *Rheumatol Int* 2020;40:1519–28.
17. Rausch Osthoff A-K, van der Giesen F, Meichtry A, Walker B, van Gaalen FA, Goekoop-Ruiterman YPM, et al. The perspective of people with axial spondyloarthritis regarding physiotherapy: room for the implementation of a more active approach. *Rheumatol Adv Pract* 2019;3:rkz043.
18. Li LC, Maetzel A, Pencharz JN, Maguire L, Bombardier C. Community Hypertension and Arthritis Project (CHAP) team. Use of mainstream nonpharmacologic treatment by patients with arthritis. *Arthritis Rheum* 2004;51:203–9.
19. Feldman DE, Orozco T, Bernatsky S, Desmeules F, El-Khoury J, Laliberté M, et al. Do physical therapists follow evidence-based practices for treatment of inflammatory arthritis? Results from an online survey. *Physiother Theory Pract* 2022;1–10.
20. Hurkmans EJ, Li L, Verhoef J, Vliet Vlieland TPM. Physical therapists' management of rheumatoid arthritis: results of a Dutch survey. *Musculoskeletal Care* 2012;10:142–8.
21. McKenna S, Kelly G, Kennedy N. A survey of physiotherapists' current management and the promotion of physical activity, in people with rheumatoid arthritis. *Disabil Rehabil* 2019;41:2183–91.
22. World Health Organization. Handbook for good clinical research practice (GCP): guidance for implementation. Geneva: World Health Organization, 2005.
23. World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA* 2013;310:2191–4.
24. Peter WF, Dekker J, Tilbury C, Tordoir RL, Verdegaal SHM, Onstenk R, et al. The association between comorbidities and pain, physical function and quality of life following Hip and knee arthroplasty. *Rheumatol Int* 2015;35:1233–41.
25. EuroQol Group. EuroQol – a new facility for the measurement of health-related quality of life. *Health Policy (New York)* 1990;16:199–208.
26. Devlin NJ, Shah KK, Feng Y, Mulhern B, van Hout B. Valuing health-related quality of life: an EQ-5D-5L value set for England. *Health Econ* 2018;27:7–22.
27. Versteegh MM, Vermeulen KM, Smaa E, de Wit GA, Prenger R, Stolk EA. Dutch tariff for the five-level version of EQ-5D. *Value Health* 2016;19:343–52.
28. Peter WF, Tilbury C, Verdegaal SHM, Onstenk R, Vehmeijer SB, Vermeulen EM, et al. The provision of preoperative and postoperative physical therapy in elderly people with hip and knee osteoarthritis undergoing primary joint replacement surgery. *Curr Orthop Pract* 2016;27:173–83.
29. Liem SIE, van Leeuwen NM, Vliet Vlieland TPM, Boerrigter GMW, van den Ende CHM, de Punder LAJ, et al. Physical therapy in systemic sclerosis: the patient perspective. *Arthritis Care Res (Hoboken)* 2023;75:145–51.
30. Hilberdink B, Carbo M, Paap D, Arends S, Vliet Vlieland T, van der Giesen F, et al. Differences in characteristics, health status and fulfillment of exercise recommendations between axial spondyloarthritis patients with and without supervised group exercise. *Semin Arthritis Rheum* 2022;15:152035.
31. Hilberdink B, van der Giesen F, Vliet Vlieland T, van Gaalen F, van Weely S. Supervised group exercise in axial spondyloarthritis: patients' satisfaction and perspective on evidence-based enhancements. *Arthritis Care Res* 2020;72:829–37.
32. Ward MM, Deodhar A, Akl EA, Lui A, Ermann J, Gensler LS, et al. American College of Rheumatology/Spondylitis Association of America/Spondyloarthritis Research and Treatment Network 2015 recommendations for the treatment of ankylosing spondylitis and nonradiographic axial spondyloarthritis. *Arthritis Rheumatol* 2016;68:282–98.
33. Hurkmans EJ, Peter WFH, Swart NM, Meerhoff GA, Vliet Vlieland TPM. KNGF guideline rheumatoid arthritis. [Online] 2018; Available from: <https://www.kngf.nl/binaries/content/assets/kennisplatform/onbeveiligd/guidelines/reumatoide-arthritis-2020/kngf-rheumatoid-arthritis-ra-2018-practice-guideline.pdf>.
34. Liem S, van Leeuwen NM, Vliet Vlieland T, Boerrigter G, van den Ende CH, de Punder LAJ, et al. Physical therapy in patients with systemic sclerosis: physical therapists' perspectives on current delivery and educational needs. *Scand J Rheumatol* 2022;51:394–401.

Supplementary material

Supplemental data for this article can be accessed online at <https://doi.org/10.1080/03009742.2023.2195726>