Walking exercise in patients with intermittent claudication. Experience in routine clinical practice

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SUMMARY

Background: *In patients with intermittent claudication, exercise in the form of walking is effective in reducing pain and maximising achievable walking distance. However, data are lacking on the implementation of walking exercise in these patients.*

Aims: *To explore the current behaviour and views of patients with intermittent claudication towards taking walking exercise.*

Design of study: *Postal questionnaire and focus group meetings.*

Setting: *Two academic general practice networks (Utrecht and Maastricht Universities) in The Netherlands.*

Method: *Three hundred and seventy-five patients with intermittent claudication, selected from the files of general practitioners participating in two academic general practice networks, were sent a postal questionnaire; 216 (58%) were returned. Nine of these responders also attended a focus group meeting.*

Results: *Seventy per cent (151/216) of the patients reported having received advice about walking exercise. If specified, the advice given most often recommended walking in the local neighbourhood (56%, 84/151). Fifty-two per cent (113/216) of all patients actually performed walking exercise and only 32% of them received any kind of supervision. Among the barriers for taking walking exercise, 'comorbidity', 'lack of (specific) advice' and 'lack of supervision' were often mentioned. Among the stimuli to start and continue walking, 'following the doctor's advice', 'relief of complaints' and 'a better general condition' were often mentioned by patients.*

Conclusions: *Walking exercise was not carried out by almost half of patients with intermittent claudication in this study. Lack of specific advice and supervision were found to be important barriers to taking walking exercise.*

Keywords: *arterial occlusive disease; arteriosclerosis; exercise; exercise training; intermittent claudication; walking.*

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Introduction

INTERMITTENT claudication is the most common symptomatic type of peripheral arterial disease and, in The Netherlands, its prevalence ranges from about 1.6% in those aged 45 years, to 6.6% in those aged 75 years.[1,2] There is evidence that walking exercise is effective in improving the achievable walking distance in patients with intermittent claudication, although it remains unknown which type of walking exercise is the most effective (and cost-effective). In a Cochrane review of exercise for intermittent claudication (10 trials included), an improvement in the maximal walking time (weighted mean difference = 6.5 minutes, 95% confidence interval [CI] = 4.4 to 8.7) and an overall improvement in walking ability of approximately 150% (range = 74–230%) was reported.[3] In one randomised study, functional status (including walking ability, physical, social and role functioning, and overall health) was assessed, suggesting some improvement after supervised exercise training.[4] Clinical guidelines on intermittent claudication propose that conservative therapy (for example, 'stop smoking and start walking') is maximised before invasive therapy, such as percutaneous angioplasty or vascular surgery, should be considered.[5] For instance, the Dutch College of General Practitioners' guideline includes the advice to walk three times daily for 15–30 minutes, walking 10 steps further when the pain begins then resting until the pain disappears before continuing. Despite the supposed significance of walking exercise to improve walking distance and quality of life of patients with intermittent claudication, and clear recommendations in current guidelines, large scale implementation of walking exercise is probably not achieved in The Netherlands. In fact, precise information about the current implementation of walking exercise is lacking and little is known about patient-related factors explaining adherence and non-adherence to available clinical guidelines. In this study, we assessed how many patients with intermittent claudication received advice to exercise by walking and how many of these patients actually started to take exercise. Furthermore, we evaluated which factors affected patients' behaviour.

Method

Study design

Patients with intermittent claudication in primary health care were sent a postal questionnaire. A small selection of the responders was invited to attend focus group meetings.

Subjects

Patients with intermittent claudication were recruited by approaching general practitioners (GPs) participating in the

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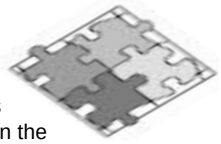

What do we know?

Walking exercise is beneficial in patients with intermittent claudication, but data on the implementation of walking exercise are lacking.

What does this paper add?

In contrast with current guidelines, structured walking exercise was not undertaken by almost half of the patients with intermittent claudication participating in this study. Stimuli and barriers for adhering to walking advice were identified.

Utrecht University General Practice Network and the Registration Network Family Practices of Maastricht University. The Utrecht University General Practice Network consists of seven computerised (urban and rural) group practices and covers about 50 000 patients living in the central area of The Netherlands. Since 1989, clinical diagnoses and drug prescriptions have been registered in the medical records using the International Classification of Primary Care (ICPC) codes.[6] The Registration Network Family Practices consists of 21 computerised practices and covers about 80 000 patients living in the south of The Netherlands. This network uses ICPC codes to register chronic health problems and diseases.[7] Thirty-seven GPs from 15 general practice centres agreed to participate in the study.

A computerised searching protocol was used to allow GPs or practice assistants to screen the patient files. This protocol selected patients who met the following criteria: age >30 years and, either diagnosed with ICPC code K92 during the past 6 years (atherosclerosis/peripheral vascular disease) or the term 'claudication' (or part of it) present in the patient's file. A second screening was then performed by the GP to assess whether the initially selected patients did indeed suffer from intermittent claudication, spoke the Dutch language, and did not suffer from any mental or physical disability that would make it impossible to fill out a questionnaire; for example, dementia. The remaining patients were eligible for the study.

Data collection

A questionnaire was sent to the 375 subjects selected with intermittent claudication. The questionnaire contained 54 encoded or open questions regarding advice received about walking, walking behaviour, physical activity, and comorbidity. Subsequently, the responders were divided into four groups:

- subjects who had never received any advice about walking and had never attempted to start walking exercise;
- subjects who had never received any advice about walking, but were successful in performing walking exercise;
- subjects who had received advice about walking, but had not started walking; and
- subjects who had received advice about walking and were successful in performing walking exercise.

Table 1. Characteristics of the 216 responding patients with intermittent claudication.

Characteristic	
Mean age (years)	66.9 (range 42–97)
Male (%)	69
Highest education (*n* [%])	
Primary school	89 (41)
Secondary school	84 (39)
College/university	23 (11)
Other	20 (9)
Smoking behaviour (*n* [%])	
Smoker	82 (38)
Ex-smoker	101 (47)
Never smoked	20 (9)
Comorbidity (self-reported *n* [%]))	
Hypertension	72 (33)
Hypercholesterolemia	65 (30)
Diabetes	37 (17)
Angina pectoris	47 (22)
Myocardial infarction	43 (20)
Minor stroke/stroke	20 (9)
Osteoarthritis	102 (47)
Pulmonary disease	107 (50)
Comorbidity causes problems with walking (*n* [%])	
No	101 (47)
A bit	63 (29)
Much or very much	27 (13)
Perceived severity of the intermittent claudication at time of diagnosis (*n* [%])	
Not	19 (9)
A bit	41 (19)
Much	72 (33)
Very much	71 (33)
Perceived disability of the intermittent claudication at time of diagnosis (*n* [%])	
No	25 (12)
Not much	43 (20)
Much	78 (36)
Very much	43 (20)

A random sample of subjects from each of these four groups (a total of 22) in the Utrecht region was invited to participate in one out of two organised focus group meetings, which were conducted according to Kitzinger's method.[8] The nine participants who agreed to attend these meetings were encouraged to sum up stimulating as well as obstructing factors for starting and continuing to take walking exercise.

Data analyses

The results of the questionnaire were analysed for the study population as a whole and for various subgroups, by univariate and multivariate logistic regression analysis. The outcomes of the focus group meetings were assessed and coded by two investigators.

Results

Responders

Of the initially selected subjects (834), 459 subjects did not appear to suffer from intermittent claudication (according to the GP at the second screening of the patient file) or were excluded because of inability to fill out the questionnaire. In

total, 375 questionnaires were sent to selected patients and 216 were completed (response rate 58%). The mean age of the participants was 66.9 years (range = 42–97 years) and 69% were men. A description of the responding patients is given in Table 1.

Walking advice

Seventy per cent (151/216) of the patients reported that they had received advice about walking. This advice was given both by GPs (in 93 patients) and by specialists (in 100 patients). The content of the advice given was generally not very specific, and not all of the patients answered the questions about content (Table 2). If specified, the advice most often recommended was to walk in the local neighbourhood (84/151, 56%). Twelve patients (12/151, 8%), were advised to walk on a treadmill, and 17 patients (11% of those who received advice) were referred to a physiotherapist. However, the majority of patients referred to physiotherapy were already receiving physiotherapeutic treatment for complaints other than intermittent claudication. In the focus groups, only a few participants were in favour of the suggestions to walk on a treadmill and to have regular appointments with a physiotherapist.

Walking exercise

Fifty-two per cent (113/216) of all patients reported that they walked for exercise, mostly (96) by walking in their local neighbourhood. A further nine patients exercised by walking on a treadmill. In Table 2 the way in which the exercise was carried out and the frequency and duration of the exercise is shown. Many patients neither reached the optimum walking intensity (only 44% walked through the pain) nor the optimum frequency (only 25% walked Ž3 times/day) of the exercise. Almost all of the patients reported that they walked during the day (in or around the house, for instance), though not in the form of walking exercise. When asked whether they tried to walk as much as possible, 111 out of 117 responders agreed. Most responders walked alone; only one of the responders walked in a group and only two stated that they would have preferred walking in a group, whereas the others were satisfied with walking alone. Supervised walking exercise was reported by 36 (32%) participants. The supervision consisted of regular 3- or 6-monthly consultations with a GP or specialist. The period during which walking exercise was carried out varied, but in 52 of the 67 'walkers' answering this question, it was more than 6 months. Forty-seven per cent (53/113) of patients in the walking exercise group reported that their symptoms improved with walking exercise, in 46 (41%) these remained the same, and in nine (8%) their condition worsened.

In Table 3, the characteristics of the four distinguished sub-groups are shown ('non-walkers' and 'walkers', those who received advice and those who did not). Of those who

Table 2. Walking advice and walking exercise in patients with intermittent claudication.

Walking advice	Patients who recieved this advice[a] *n* (%)	Patients who performed exercise this way[b] *n* (%)
Walk until the pain starts	36 (23.8)	30 (26.5)
Walk until maximum pain	22 (14.6)	24 (21.2)
Walk a few steps after the pain starts	52 (34.4)	50 (44.2)
Walk three or more times a day	34 (22.5)	28 (24.8)
Walk less than three times a day	21 (13.9)	29 (25.7)
Walk more than three times a week	24 (15.9)	32 (28.3)
Walk less than three times a week	6 (4.0)	6 (5.3)
Duration between 15 and 30 minutes	53 (35.1)	55 (48.7)
Other time span (mostly >30 minutes)	22 (14.6)	23 (20.4)

[a]*n* = 151/216 (70%). [b]*n* = 113/216 (52%).

Table 3. Walking advice and walking exercise in 216 patients with intermittent claudication and their general characteristics.

	Non-walkers		Walkers	
Characteristic	No advice	Advice	No advice	Advice
Number of patients	55	48	10	103
Mean age (years)	62.4	69.1	66.7	68.3
Male (%)	71	81	50	64
Smoking behaviour (*n*)				
Smokers	25	16	4	37
Ex-smokers	24	25	5	47
Never smoked	4	4	-	12
Comorbidity causing problems with walking (*n*)				
No/a bit	37	37	7	83
(Very) much	9	4	1	13
Perceived severity (*n*)				
Not/a bit	16	16	2	26
(Very) much	35	27	8	73
Perceived disability (*n*)				
No/not much	15	20	3	30
(Very) much	30	20	6	65

reported that they had received advice, 68% (103/152) actually took walking exercise. In the group that reported that they had not received advice, only 15% (10/65) walked. A comparison of the walkers versus the non-walkers revealed that there were no relevant differences in factors such as age, sex, smoking, comorbidity, perceived severity of condition and disability, and distance walked at time of diagnosis. Receiving advice was the most important determinant as to whether walking was carried out (odds ratio = 11.8, 95% CI = 5.5 to 25.1). In the questionnaire, there were four open questions to sum up possible reasons for starting or not starting walking exercise, and for continuing or stopping walking exercise, and these questions could be filled out by all participants. Possible reasons for these were also discussed in the focus groups. A summary of stimuli and barriers is shown in Box 1.

The reasons for starting to exercise by walking that were mentioned most often in the questionnaire were: to follow the doctor's advice and for the assumed consequent relief of symptoms. The major reason to continue walking was perceived improvement in symptoms (mentioned 55 times), followed by a perceived better physical condition overall (mentioned 11 times). An important reason for not starting to walk was comorbidity making it difficult to walk greater distances (*n* = 22), and not having many symptoms (*n* = 10). In the focus group sessions comorbidity, no advice or lack of specific information how to perform walking exercise, and lack of supervision were mentioned by patients as reasons for not starting or continuing walking exercise.

Reasons for starting walking exercise

- following the advice of a general practitioner or specialist
- to diminish the pain in the legs
- health reasons: good for health in general
- to increase maximal walking distance
- pressure from relatives or friends
- information from the booklet of the Association of Vascular Patients (VVVP)
- to avoid vascular surgery
- to maintain mobility as long as possible
- a family history of serious vascular disease: amputations and disability, acting as a warning

Reasons for not starting walking exercise

- comorbidity, making it difficult to perform walking exercise
- having had no advice, or no precise information about how to perform walking exercise
- embarrassment: walking and having to rest, people would see you
- lack of conscientiousness
- low pain tolerance, too painful
- season, bad weather conditions
- intermittent claudication not perceived as serious disease, or not having many symptoms
- having no more symptoms after invasive therapy

Reasons for continuing walking exercise

- relief of symptoms
- maximum walking distance increases
- collateral vessels will be formed
- conscientiousness
- to avoid deterioration of condition
- feeling better over all, getting in better physical condition
- walking is fun

Reasons for not continuing walking exercise

- no improvement of condition
- comorbidity
- bad weather conditions
- lack of supervision

Box 1. List of stimuli and barriers mentioned by patients in the questionnaires and during the focus group meetings.

Discussion

In this study, 70% of patients reported having received advice on taking walking exercise and only 52% actually carried out the exercise. Those who walked, often reached neither optimum intensity nor optimum frequency. Only 32% of all patients reported being supervised, although this happened infrequently (once every 3–6 months).

Our study had some limitations. Participants may give answers to a questionnaire that might be socially acceptible. Thus, our estimates of the proportions of patients that had received advice and were actually practising walking exercise could be too optimistic. Our results are better than the findings of a study in which only 36% of primary care physicians recommended walking exercise.[9] On the other hand, patients might have forgotten that they received advice, as follow-up visits were uncommon. Our response rate (58%) is not optimal and may have influenced our results. However, the response rate is comparable to many other postal questionnaires. It seems unlikely that the subject matter of the questionnaires would have influenced the response rate and therefore the results. The strengths of our approach included the use of primary care registration networks, through which the study was performed and which cover a large area of The Netherlands. Furthermore, the characteristics of the study population (mean age = 67 years, age range = 42–97 years, 69% male, invasive procedures in about 20–25% of patients) were in line with what one would expect with regard to intermittent claudication in general practice.

Giving patients advice to take walking exercise is very important to get them to start exercising and, interestingly, other factors appear to play only a minor role. However, the advice given should be more specific than that which was offered to our participants. To patients who perceive their illness as serious and disabling — and thus are more motivated to start walking — the doctor could stress the fact that sustained (>6 months) walking exercise can lessen the symptoms of intermittent claudication. To patients who experience relatively few symptoms, the doctor could focus on the positive effect of exercise on the general physical condition of the patient. Furthermore, changing lifestyle is not easy, and when a patient starts to exercise their doctor should provide support and motivation by inviting them more frequently to the practice, and by trying to help the patient to overcome individual barriers. With regard to claudication patients with concomitant disorders (see Table 1), there are no guidelines to rely on. Perhaps this category of claudication patients could profit most from supervised training with a physiotherapist.

In conclusion, walking exercise was not undertaken by almost half of patients with intermittent claudication. Lack of advice, unspecific advice, and lack of supervision were important barriers for performing walking exercise. Supervised walking exercise programmes, which are easy

to apply in primary care, and taking comorbidity and patients' illness-perceptions into account to improve adherence, should be developed, evaluated, and implemented.

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